

***REPORT ON THE ACHIEVEMENTS OF  
THE FACULTY OF PHARMACY FOR  
2014***

## Report on the Achievements of the Faculty of Pharmacy for 2014

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*The bibliography is divided by department chairs and arranged by:*

*Independent works and textbooks*

*Scientific papers and professional publications*

*Invited lectures*

*Patents*

*The detailed bibliography according to the Cobiss system is accessible on the Faculty of Pharmacy's website.*

## **FOREWORD**

*Dear readers,*

*Thank you for taking time to take a look at the Report on the Achievements of the Faculty of Pharmacy of the University of Ljubljana. The report was prepared partially based on a summary of the business report and partially based on the Faculty's yearbook. The report is an additional activity with which we are informing the lay and professional public about the Faculty's operations and key achievements in a certain year, and the report also provides basic yearbook information about employees, their activities, performed study programmes and of course about successful completion of studies by our students in all three cycles.*

*The Faculty of Pharmacy's vision is to contribute by helping to shape the future and at the same time remain an academic, educational and research institution that is open to the world, responsive and responsible and recognisable among European faculties of pharmacy by creating and spreading scientific knowledge and acting for the welfare of Slovenian citizens and general development and thus strengthening the national identity. Openness to the world and recognisability in the region and beyond on the one hand and care for the well-being of Slovenian citizens and the strengthening of the Slovenian identity on the other are not conflicting concepts. Identity does not mean self-sufficiency in the sense of closing ourselves off behind our own local borders and opening ourselves to the world does not mean blindly copying models that might have proven beneficial in a different environment but might not be appropriate for the Slovenian environment. With a critical attitude, we are realising our vision through the day-to-day activities of the entire community of teachers, students, professionals and technical staff - we are building on our own knowledge, obtaining experience via international exchange programmes and academic visits, making connections at the international level and carefully choosing the right solutions. Among numerous activities, we would like to highlight two examples characteristic of our work in the previous year:*

*The organisation of the 20th Annual EAFP Conference on the subject of "Science-Based Pharmacy Education: Towards Better Medicines and Patient Care" was a truly unique event, the preparation for which took several years. Approximately 145 participants (mostly deans and vice deans or management staff from faculties or schools with pharmacy study programmes) from over 30 countries from three continents exchanged their experiences and opinions at lectures, workshops and discussions. This way, we have fulfilled the Faculty's mission regarding openness, responsiveness, academic responsibility and recognisability as well as suitably positioned Slovenian knowledge and experience in the wider region. Also a part of the conference was the working session of the PHAR-QA project committee's meeting - "Ensuring Quality of Education and Training of European Pharmacists", which was financed by the European agency for culture and education, EACEA. As part of the project, the Pharmacy is coordinating the activities of 18 countries in one of the four regions of the wider European area. The goal of the project is establishing a European network for quality*

*assurance in education and training of pharmacists and preparing a harmonised model for establishing a suitable agency. This way, the Faculty is fulfilling its vision and mission of spreading scientific knowledge, building on its own knowledge and participating in the formation of the guidelines in the wider European area beyond Horizon 2020.*

*The other activity was an external institutional evaluation by the German agency ASIIN. I have already stated the reasons for the external evaluation during the crisis in the 2013 Report. It was the Faculty's first ever external institutional assessment since its establishment as an independent faculty in 1995/96 and even since it has been a department. The evaluation and preparation for it was carried out over a span of two years as part of the University of Ljubljana's quality assurance project. The fact that the report contains more than 60 pages of self-evaluation with several 100-page long appendices only hints at the actual scope of preparations. Of key importance was the manner of the preparation of the report on how we see ourselves in terms of operational structure, organisational culture and supervisory mechanisms of self-evaluation. The Faculty's expanded Quality and Accreditation Commission performed exceptional work, but of key importance was the inclusion of the Faculty's entire collective into these activities, which enabled each and every individual to make their own contribution as part of a series of discussions among organisational units. This exacting, lengthy approach demanded a high level of commitment from all participants, the management, the employees and the students. But this approach was in itself the goal. The main goal was namely not to prepare a report for the evaluators but the self-reflection of the entire community of the Faculty of Pharmacy and the strengthening of the awareness of what we are, who we are and where our challenges lie. The fact that we made the right decision is also evident in the report on external evaluation. We are still waiting for the final report (following our response), but the evaluators confirmed that we are on the right path: we are able to recognise quality and are committed to ensuring quality. They agree this is not only written in our documents, but that we are realising it on a daily basis with our outlook and thoughts focused on the future. This way, they have also acknowledged our position, which I wrote about last year - that we are no longer interested only in how good we are in a certain field and in what we have achieved but also in what more can be achieved and where our challenges are. The conclusion of the evaluation commission was the following: **"The management is focused on the development and sufficient critical mass of quality staff, and committed students are an assurance of quality."** This is very commendable for the entire collective of the Faculty. This conclusion of course does not mean that there are no issues or that everything is perfect, but that we are aware of our challenges, that we are solving any complications and that we are continuing on our path of development. I am proud to be the dean of such a faculty.*



Prof. Borut Božič, PhD  
Dean

## **1 PRESENTATION OF THE FACULTY OF PHARMACY**

The fundamental obligations of every university and their faculties involve creating, transferring and preserving knowledge. Besides innovation and research, this also includes efficient teaching as well as preserving historical memory related to the profession. The Faculty of Pharmacy was formally established in 1995, but not from scratch. The university study of pharmacy has been conducted comprehensively in Ljubljana since 1960. However, the first forms of the study of basic pharmaceutical knowledge already existed during the years from 1946 to 1949, and various forms of education for pharmacists in the Slovenian area are considerably older. The education of pharmacists and the introduction of the doctrine of good work in the pharmaceutical field developed in the 17th and 18th centuries on the territory of Slovenia as the Pharmaceutical Code for the Duchy of Carniola were established in the year 1710. In the nineteenth century, the pharmacists who were working on the territory of the present-day Slovenia studied at the universities in Vienna, Graz and Padua and later also at the University of Zagreb. The comprehensive study of pharmacy was formed at the Department of Pharmacy at the Faculty of Natural Sciences and Technology, from which the Faculty of Pharmacy was later established. All this history is an integral part of the present day Faculty of Pharmacy. Not because of any nostalgia for the past but rather because of our awareness of how deeply rooted our history is from which a huge tree with a vast canopy can grow. This is reflected in the diversity of our research work, where every leaf, every individual counts. At the same time, it represents our commitment to pedagogical work via internal connections, just as the crown of the tree is connected with twigs and branches and the flow of sap from the roots to the very last leaf.

The Faculty of Pharmacy has declared itself as a scientific and research oriented pedagogical institution. It is not a formal orientation, but it defines us on a day-to-day basis as the way we work. We rank at the very top of the University of Ljubljana in terms of the number of publications in scientific journals, the number of quotations and the number of projects in cooperation with the economy sector. This way of work and thinking is also an integral part of the study programmes. The central programme of Pharmacy is being constantly renewed and updated and was subject to some of the more significant changes: it was changed from a 4-year course into a 4.5-year course, then into a harmonised 5-year programme with additional practical training instead of an internship and lastly into a 5-year Bologna study programme. This way, the studies last for the period that was suggested as early as 1946, although without the half-year practical training. The studies continue with the doctoral programme of Biomedicine, which is performed as part of the University's Doctoral School and involves several faculties and associate institutes. All the students of the Faculty can reach the doctoral degree through the study programmes – first and second cycle of Laboratory Medicine, Cosmetology and Industrial Pharmacy – but at the same time they are employable according to the programme they completed. The scientific approach during the time of the studies also develops critical thinking and flexibility, so that the graduates know their way around the atypical environments of their profession. This is of extreme importance nowadays due to the severe economic conditions on the one hand and the demands for constant flexibility and innovation on the other. The basic goal of the Faculty of Pharmacy is to provide quality education and professional and scientific training to graduates who are aware of the ethical principles and can perform demanding work independently at pharmacies as well as in the pharmaceutical industry in all four fundamental segments (R&D, production, analytics, marketing and sales), hospital pharmacies, clinical biochemical and other medical laboratories, control-analysis laboratories, research institutions, educational organisations, national and regulatory bodies and elsewhere where work and the presence of professionals from the wider field of pharmacy, laboratory medicine and medical and cosmetic product safety are necessary to increase safety and health care.

The mission of the Faculty of Pharmacy is built on people who are aware of our personal mission in the framework of the higher education institution:

1. The development, planning and carrying out of higher education in all three cycles; the education and training of staff for performing scientific, development and professional work in the wider fields of pharmacy and laboratory medicine.

2. Planning and performing scientific and research-based work in the wider scope of pharmacy, clinical biomedicine and broader natural science fields in association with Slovenian and foreign scientific institutions.

3. Taking care of professional activities in the field of health and healthcare services in the framework of pharmacy and laboratory activities; performing professional and developmental work for the requirements of the pharmaceutical and cosmetic industry, governmental institutions and the promotion of the pharmaceutical industry in the Republic of Slovenia and abroad.

4. Training and education of qualified experts and managers for working in a globally competitive environment in pharmacy, laboratory medicine and cosmetology with a combination of scientific approaches and innovative teaching tools for the creation and spreading of knowledge to the global society with the purpose of human welfare and healthy aging.

As part of the University of Ljubljana, the Faculty of Pharmacy builds its reputation, integrity and development on the basis of excellence, effectiveness and the ethical stance of the students and teachers. We are building on the long-term tradition of pharmaceutical experience in Slovenia and beyond. However, our focus is directed towards the future.

The vision of the Faculty of Pharmacy is to contribute by helping to shape the future and at the same time remain an academic educational and research institution that is open to the world, responsive and responsible and recognisable among European faculties of pharmacy by creating and spreading scientific knowledge and acting for the welfare of **Slovenian citizens and general development and thus strengthening the national identity.**



*Entrance to the Faculty of Pharmacy (Stara Tehnika building)*



## **HOW IS THE FACULTY OF PHARMACY ORGANISED?**

Internally, the faculty is divided into the following organisational units: the management, 6 department chairs, the faculty registry and the institute of pharmacy. The chairs and the institute cover the following organisational subunits: the infrastructural centre, the authorised laboratory and specialised subunits or centres.

The department chairs form the core of the pedagogical, scientific and research, development and professional work of the faculty. At the same time, they also form a connecting element of the research work that is underway at the individual chairs as well as within research groups, research project groups and research programme groups. The latter forms of operation are not organisational units of the Faculty and depend on the needs and possibilities of obtaining resources for research work through tenders as well as the demands for establishing connections in interdisciplinary groups regarding individual research issues.

### **The Chair of Clinical Biochemistry**

For the successful diagnosis of illnesses, it is crucial to know their causes, which are the subject of research at the Chair of Clinical Biochemistry. Treatment cannot be successful and safe until the cause of an illness and its symptoms are known. With clinical biochemistry, which is the widest area of laboratory medicine, it is possible to establish the causes and consequences of changed concentrations or molecular changes to a substance in the body. Those substances that are urgently necessary for the correct functioning of the organism or substances that are degradation products define the organism state. Changes at the molecular level predict the change in the physiological state of the organism, which leads to illness in most cases. Clinical biochemistry studies the changes at the level of the genes – genomics, transcriptions – transcriptomics, proteins – proteomics and the metabolism products – metabolomics.

Pharmacogenomics uses knowledge involving the genome in various segments of pharmaceutical science. Changes in the structure and expression of genes are studied, and it is established whether they cause the formation of different proteins or a change in the quantities of proteins that can lead to the development of illness. When the cause is known, the target search for new effective medicines can start and the most suitable can be chosen. Knowing the genes that take part in pathophysiological mechanisms is the basis for the development of potential gene medicines. Our research activity also goes in the opposite direction, thus from known medicine to the person. How a person will accept a medicine is predicted by analysis of the gene record.

In the field of tumorigenesis and apoptosis, answers to questions are sought using genetic technologies, and we want to know why a specific cell becomes malignant and which of the molecules in the process of transformation into a tumour cell could become the target for a new medicine.

The laboratory diagnostics of immunological disorders and hypersensitivity represent a link between the areas of clinical biochemistry and immunology, the lesson of which is performed within the Chair; the narrower research work in this field is directed towards the molecular grounds of autoimmunity. By studying autoimmunity mechanisms, we can establish why the immunological defence system makes the mistake and works against its own organism.

The Chair also contains the laboratory for molecular diagnostics – KKB. This is a medical laboratory with a work permit by the Ministry for Health of the Republic of Slovenia.

## **The Chair of Pharmaceutical Biology**

The Chair of Pharmaceutical Biology deals with research into medicines of natural origin (herbal, biotechnological and cellular) and their targets.

It develops the analysis methods for checking the identity and quality of herbs, and it establishes how to get the most qualitative medical herbs. It identifies the biological active substances in the herbs and researches the biological effectiveness of the healthy substances in herbs and fungi that haven't yet been used for medical treatment, and in this way it is searching for promising new medicines.

With the development of genetic engineering, the possibility of acquiring new healthy effects from a recombinant origin has spread. For these purposes, we use the modern techniques of pharmaceutical biotechnology to research medical plants and recombinant medicines, and thus proteins that are identical to human proteins but produced in fermenters. Using special molecular biological techniques (transplanting the biological combinatorial libraries), the peptides and proteins of the completely new structures with the desired biological effect are developed.

Using the methods of molecular and cellular biology, we also research the molecular mechanisms of the formation and progression of cancer, antitumor response, arteriosclerosis, obesity, neurodegenerative and other illnesses with the purpose of defining the most important targets for therapeutic and diagnostic functionality.

## **The Chair of Pharmaceutical Chemistry**

At the Chair of Pharmaceutical Chemistry, we prepare molecules with new beneficial effects on the basis of validated targets. We plan the new molecules using modern computer methods according to the structure of their binding place or on the grounds of 3D similarity with known biologically active molecules. Further chemical synthesis follows, and the result is the desired compounds. At the moment, we are preparing new enzyme blockers that take part in the process of blood clotting, compounds that block the biosynthesis of the bacterial cell wall, compounds with antitumor functionality and compounds with an effect on the immune system. The molecules are evaluated biologically and toxicologically and are optimised on the basis of the relationship between the structure and their characteristics. In collaboration with the pharmaceutical industry, we also develop new synthesis methods and patent independent procedures of medically effective synthesis.

## **The Chair of Pharmaceutical Technology**

The Chair of Pharmaceutical Technology performs pedagogical and research work in the field of designing, preparing and evaluating of traditional pharmaceutical forms and progressive supply systems. It is directed towards the challenges of how the synthesised drug, which can be a traditional low-molecular compound or biomacromolecular with known physical and chemical and pharmacodynamical characteristics, can be integrated into a pharmaceutical form suitable for a definite method of application. Through the choice of the corresponding helper substances and technological procedures, a pharmaceutical form with the desired characteristics is produced and is evaluated using the most developed techniques, among which are atomic force microscopy, nanoindentation, rheometry, inverse gas chromatography, photon correlation spectroscopy, dynamic differential colorimetry and methods based on the biological evaluation of the resulting formulations in vitro, i.e. by the use of cell cultures.

The chair covers the following research areas: preformulating research into drugs and helper substances, approaches for increasing the solubility and the speed of dissolving of medical substances (cocrystals, solid dispersions, nanosuspensions, lipid-based systems...), the development of solid pharmaceutical forms (granules, pellets, pills, minipills, microcapsules), semi-solid and liquid dispersal systems (micro and nano emulsions, liquid crystals, hydrogels) and modern (nano) delivery systems for controlled or directed release (liposomes, nanoparts, nanocapsules and nanofibre). The essential novelty at this Chair is the nanotechnological approaches and the production of nanomedicines both for academic use and for use in industry as well as nano-delivery systems and solid pharmaceutical forms with modified releasing.

### **The Chair of Biopharmacy and Pharmacokinetics**

When a biologically active molecule (substance) is created, that doesn't mean that we have a medicine. The substance must be delivered in the corresponding amount and speed to the place of action (into the tissue, organ or organ system) in the body where, after contact with the enzyme or receptor, it initiates the effect (e.g. decreasing the blood pressure, decreasing the cholesterol level, preventing an asthma attack). For this purpose, we incorporate them into a delivery system by which the speed of the processes is controlled and responsible for the performance, strength and effect duration. If we have a pill for oral administration with adopted releasing, we must assure that after its ingestion the process of release in the digestive system will take place so that suitable absorption into the central blood circulation will be assured. The substance should be disintegrated as little as possible at this stage, and most of it should arrive where it is needed and eliminated from there as slowly as possible. For this purpose, we have developed laboratory methods with which we:

- integrate drugs into delivery systems (microcapsules, microspheres),
- research the release of substances from delivery systems,
- research the absorption of substances from the digestive system and
- research the distribution and degradation of substances in the body.

Research at the level of laboratory tests are urgently needed, because only in this way can we define the influence of biological and technological factors on the mentioned processes.

When enough data is collected, the mentioned processes are mathematically described and we predict the concentrations of the substances in the different organs and their effects using computer-supported methods. The latter depend on the dose, the type of the delivery system, the method of delivery (e.g. dosing, injection into a vein, inhalation into the lungs), genetic predispositions and the functioning of the organs of secretion (kidneys, liver). In this way, we put less stress on animal and human test subjects in the various phases of the development and testing of medicines, we arrive at the final results faster and we also get instructions for the performance of new laboratory tests.

Our research is essential for transforming a substance into a medicine that must have the best functionality with the least possible undesired effects.

### **The Chair of Social Pharmacy**

At the Chair of Social Pharmacy, we study the effects of medicinal products on modern man and the society. We deal first of all with control of the arrival of medicinal products onto the market and into patients' hands. We use natural-science methods of research in our work, but they are very often interwoven with sociological methods. Within pharmacoepidemiology, we monitor the security and effectiveness of medicines on a greater number of people - at the level of population; through

pharmacoeconomics, we reduce the cost aspects of medicine use. We are especially interested in research into pharmaceutical activities at the level of pharmacy. Through the programmes involving so called pharmaceutical care, which are firstly evaluated through our research, we try to improve the quality of life of the patient. For this purpose, we use modern information and communication methods. In the framework of the Chair of Social Pharmacy, we research the characteristics of Slovenian and international regulations that regulate the area of medicine and pharmaceuticals. In this way, we contribute to the formation of new legislation and introducing the highest standards into daily practice.

### **The Institute of Pharmacy**

The Institute of Pharmacy is a central connecting organisational unit of the Faculty that follows research trends in the wider pharmaceutical and biomedical field and gives proposals regarding the direction of research and performs fundamental scientific-research, development and application projects as well as professional projects and tasks, mainly those that exceed the activities of individual chairs. The Institute can operate without any employees as a project or work liaison of workers from various chairs or with their own employed workers.

### **Registry**

The Faculty Registry is an organisational unit that takes care of the organisational, legal and management issues and processes, performs professional administrative work in the areas of finance, accounting, human resources, studies and research and is in charge of informatics, the library and maintaining the real estate, surroundings and equipment used in the performance of the national programme of higher education and the national programme of scientific research activities. The Faculty Registry performs management and administration work and financial and economics tasks in connection with the market activity of the Faculty.

As well as the described formal organisation, the organisation culture of all employees is also important. With such a comprehensive approach, the Faculty of Pharmacy of the University of Ljubljana has been able to sufficiently adapt to the challenges of the area of research work and become stable enough to perform its teaching obligations. Thus, we combine the modern approaches of pedagogical and scientific-research work in providing education to contemporary experts in the fields of pharmacy work, the pharmacy industry, laboratory medicine, cosmetology in the regulatory systems and distribution systems and also basic and applicative research and education.

(Chapter 1 prepared by: B. Božič, D. Černe, S. Kreft, S. Gobec, M. Gašperlin, A. Kristl, M. Kos)

## **2 THE FACULTY OF PHARMACY IN 2014**

The Faculty of Pharmacy educates experts who are qualified to work and manage sustainable development in the areas of pharmacy, cosmetology and clinical biochemistry. Its activities are:

- education at the undergraduate and postgraduate levels,
- basic, applicative and development research in the field of natural science and technology,
- professional participation, technical testing, analysing, advising, etc.

Its seat is in Ljubljana, at the address Aškerčeva cesta 7, telephone number: 01 47 69 500, fax number: 01 42 58 031, e-mail: tajnistvo@ffa.uni-lj.si, ID number: 1626973, tax ID number: SI 11690682, website: <http://www.ffa.uni-lj.si>

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Academic assembly	Chairman:	Prof. Marija Sollner Dolenc, PhD
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Student council	Chairman:	Luka Kosec

Committees:

Habilitation committee	Chairman:	Prof. Marija Bogataj, PhD
Awards committee	Chairman:	Prof. Albin Kristl, PhD
Study committee	Chairman:	Prof. Aleš Obreza, PhD
Doctoral study committee	Chairman:	Prof. Aleš Obreza, PhD
R&D committee	Chairman:	Prof. Irena Mlinarič Raščan, PhD
Quality and accreditation committee	Chairman:	Assist. Prof. Bojan Doljak, PhD
Professional issues committee	Chairman:	Assoc. Prof. Mitja Kos, PhD
Foreign education recognition committee	Chairman:	Prof. Aleš Obreza, PhD
IT committee	Chairman:	Tanja Gregorič

## **STUDY PROGRAMMES**

The educational activity at the Faculty of Pharmacy is based on more than 50 years of constant development of the pedagogical competences of teachers, which results in highly scientifically and research-qualified graduates in the fields of pharmacy, laboratory biomedicine and cosmetology who are appreciated and very employable on the market.

### **Undergraduate and Postgraduate Study Programmes of the Faculty of Pharmacy:**

Pharmacy, long-cycle master's study programme (EMFAR);  
Laboratory Biomedicine, university study programme (S1LBM);  
Cosmetology, university study programme (S1KOZ);  
Industrial Pharmacy, postgraduate master's degree study programme (S2INF);  
Laboratory Biomedicine, postgraduate master's degree study programme (S2LBM);  
Pharmacy, university study programme (UPF), additional year;  
Biomedicine, interdisciplinary doctoral study programme (field: Pharmacy, field: Clinical Biochemistry and Laboratory Biomedicine, field: Toxicology);  
EMFAR, S1LBM, S1KOZ, S2LBM and S2INF studies and the interdisciplinary doctoral study programme of Biomedicine are studies in accordance with the Bologna process. All the courses are full time. The number of enrolment places is limited for all the study programmes.



*Faculty of Pharmacy lecture room with participants at the EAFP conference*

### **Specialisation Postgraduate Study:**

Pharmacy (theoretical contents are provided by the Faculty, the entity in charge of the activity is the Chamber of Pharmacy of Slovenia). Areas: Formation of Medicines, Analysis of Medicines, Clinical Pharmacy, Pharmacognosy and Drugstore Pharmacy and international specialisation in Radiopharmacy.

Medical Biochemistry (theoretical contents are provided by the Faculty, the entity in charge is the Chamber of Laboratory Medicine).



**Lifelong Learning:**

Laboratory Biomedicine: accredited parts of the S2LBM programme. Accredited three parts (30 ECTS each): Basic Natural Science Biomedicine Content, General Professional Content of Laboratory Biomedicine and Directed Professional Content of Laboratory Biomedicine.

Lifelong education for Masters of Pharmacy: Biological Medicine.

Institution cooperating in organizing the Meeting of the Paul Ehrlich Euro-PhD Network.

**Number of Students:**

1528 students in all the programmes of undergraduate and postgraduate study. The total number is comparable to the last three academic years.

Until 2010/11, the number of students increased by approximately 100 a year, mainly due to double generations of pharmacists (transition from the old to the new programme) and due to the opening of new study programmes (S2LBM, S2INF, SIKOZ).

In the next few years, a decrease in the total number of students is expected, because the transition to the Bologna programmes will end and due to the lower number of enrolment places (lack of available space, savings measures in the field of higher education and science). The decrease is not in accordance with the vision of the Faculty and the needs of the market. We expect that in three academic years, the number of students will stabilise at around 1400.

Table 2.1: The number of students by individual cycles in the 2013/2014 academic year in comparison with 2012/2013.

<b>Type of Study Programme</b>	<b>2012/13</b>	<b>2013/14</b>
1st Cycle	256	270
2nd Cycle	178	171
EMFAR + UPF	972	993
3rd Cycle	84	74
Specialisation studies of the Chamber of Pharmacy	18	20
Specialisation studies of Medical Biochemistry	8	1
<b>Total</b>	<b>1516</b>	<b>1528</b>

Table 2.2: Growth of total number of students in the years 2008-2014.

<b>Academic Year</b>	<b>Number of Students</b>	<b>Growth Index*</b>
2008/2009	1282	1.00
2009/2010	1395	1.09
2010/2011	1479	1.17
2011/2012	1540	1.20
2012/2013	1516	1.18
2013/2014	1528	1.19

Growth index is shown according to the total number of students (1282) in the academic year 2008/09.

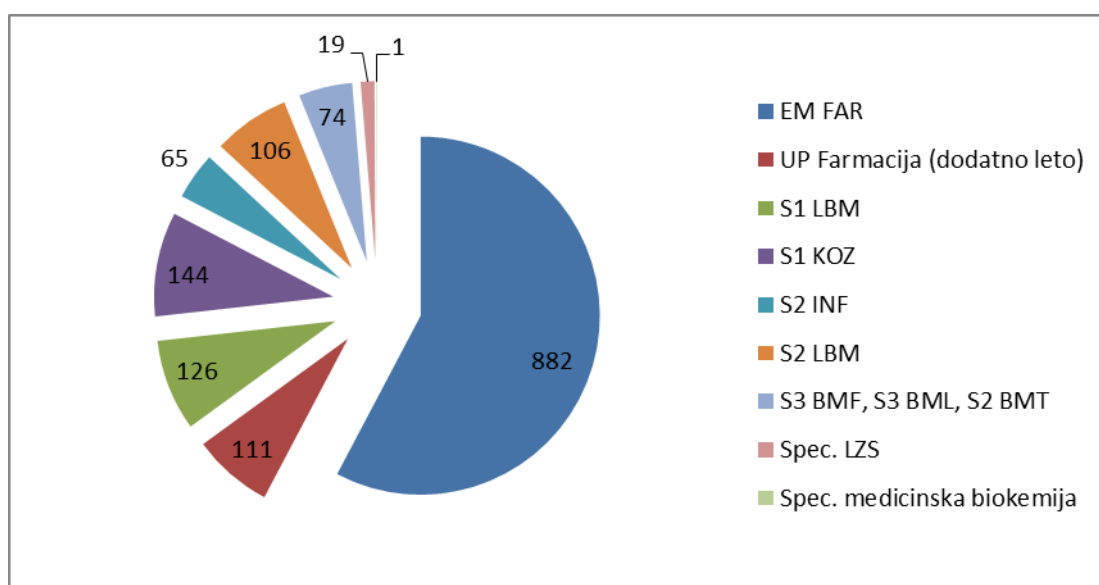


Chart 2.1: No. of students in the Faculty's study programmes in 2013/14.

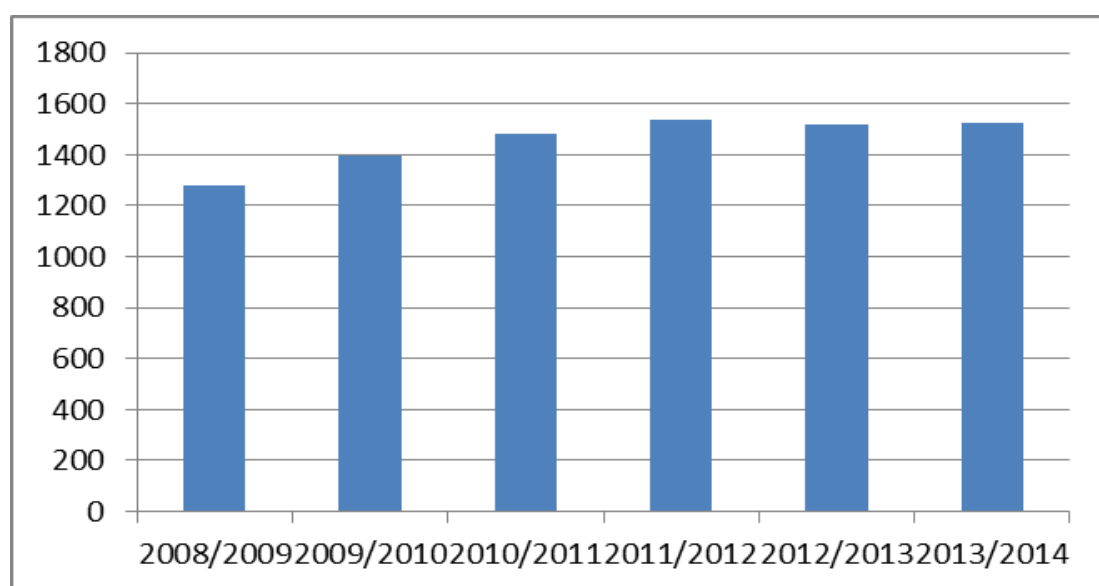


Chart 2.2: Growth in number of students at the Faculty from 2008 to 2014

### Presentations of the Study Programmes and Enrolment:

The interest in studying in all the programmes is extremely strong. Courses are presented at open days, at informative visits, at the "Informativa" fair and at the interested secondary schools. The students of the Faculty of Pharmacy also take part in the presentations and in the printing of the materials.

Upon first enrolment, foreign citizens must demonstrate knowledge of the Slovenian language (Faculty Senate decision FFA 2013, decision UL 2014). All the study programmes are in Slovenian, therefore knowledge of the Slovenian language is a fundamental condition for performing the study requirements and for successful progress according to the programme. Students from other language regions have problems with the transition from the 1st to 2nd year of study in all study

programmes. Besides the different cultural environment, possible social issues and the demanding study programmes, not speaking the language is the reason that more than 50% of such candidates fail to progress and consequently repeat the year or even lose their status as a student.

The condition to enrol at EMFAR in the 2014/2015 academic year is still a passed natural science subject in the “Matura” exam (required for the first time in the 2012/2013 study year). Students with a natural science subject have a significantly easier transition from the 1st to 2nd year of study.

Candidates who want to enrol in the S2LBM study programme and who haven't achieved the corresponding competences during earlier studies must, according to the Decision of the Commission for the Study Affairs, take the bridge exam in Clinical Biochemistry I.

Stricter conditions for enrolment - a more precise definition of the programmes from which students can transfer and enrol in the S2INF study programme during the enrolment period for the 2013/14 study year, with the purpose of maintaining the level of the achieved knowledge (the senate decision of 2013).

### Student Transition Rate:

The transition of students in all study programmes is very good and it differs from the average of the University of Ljubljana.

- In the EMFAR programme, the transition of the generation from the 1st to the 2nd year has been 90% on average in the last few years, and the cumulative transition from the 1st to the 5th year is 70% on average.
- In the master's study programmes, the transition rate is somewhat lower; last year, it improved for the S2 ING study programme and decreased for the S2 LBM. The cause is primarily the candidates' lack of foreknowledge at the time of enrolling into the first year. The effect of stricter entry conditions on the transition will become more evident in the future.

The reason for the high level of transition is great commitment on the part of students and pedagogic workers. An important contribution towards this also comes from non-pedagogical workers, who assure good working conditions (students mention the kindness of the employees at the student office and the transition to digital management of the timetable).

Table 2.3: Transition between study years in the last three school years.

Study Programme	2012/13	2013/14	2014/15*
<b>EMFAR</b>			
from 1st to 2nd year	94.9%	88.4%	91.2%
from 2nd to 3rd year	92.0%	99.3%	111%**
from 3rd to 4th year	90.4%	97.1%	96%
from 4th to 5th year	84.8%	92.0%	88.8%
<b>S1LBM</b>			
from 1st to 2nd year	88.4%	110%**	97.5%
from 2nd to 3rd year	124.0%**	65.8%	73%
<b>S1KOZ</b>			
from 1st to 2nd year	73.2%	87.0%	76.0%
from 2nd to 3rd year	91.2%	106.7%**	98%
<b>S2INF</b>			
from 1st to 2nd year	84.6%	56.5%	84%

**S2LBM**

from 1st to 2nd year	90.7%	89.7%	69%
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Data valid on 1 October 2014

\*\* over 100% transition due to the transition of students from the old to the Bologna study programmes or the sporadic enrolment of students who went on a study break after performing their study requirements.

**COMPLETED DIPLOMAS IN THE YEAR 2014:**

In 2014, the following completed studies:

- 277 graduates from 1st and 2nd cycle (84 UPF, 91 EMFAR, 32 S1LBM, 22 S1KOZ, 30 S2LBM, 16 S2INF, 2 VSPLBM).
- 28 graduates from 3rd cycle (2 masters of science and 26 doctors of science)

The total number of finished diplomas is somewhat higher than in 2013.

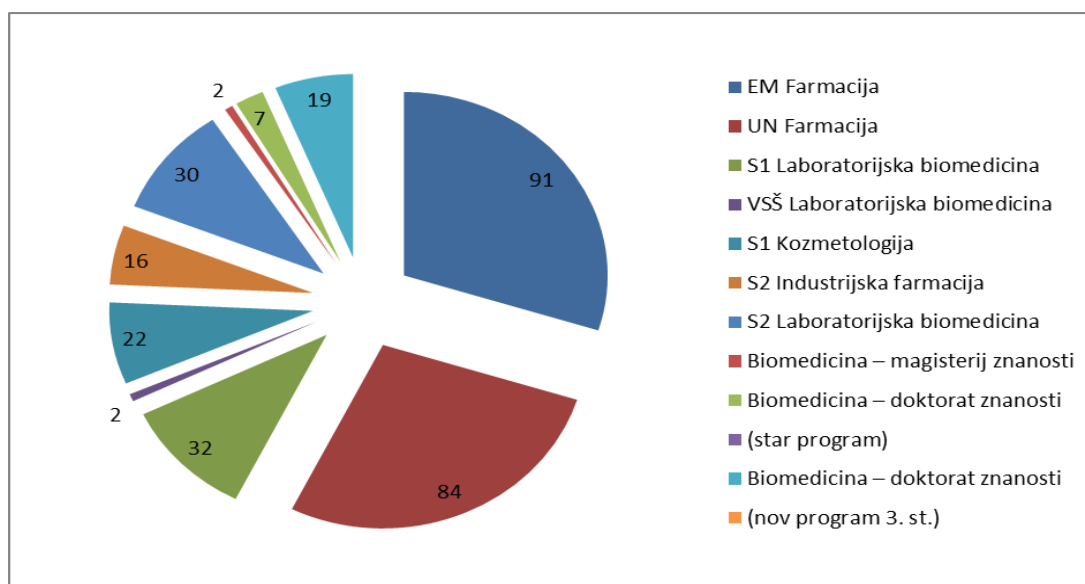


Chart 2.3: The number of graduates according to individual programmes in 2014 (from 1 January to 31 December 2014).

Table 2.4: Comparison of completed diplomas in 2013 (from 1 January to 31 December 2013) and in 2014 (1 January to 31 December 2014).

Study Programme	2013	2014
EMFAR	35	91
UPF	140	84
S1LBM	45	32
S1KOZ	5	22
VSPLBM	3	2
S2INF	9	16
S2LBM	13	30

<b>Biomedicine</b> - former Master of Science (MSc)	4	2
<b>Biomedicine</b> - former programme (Dr)	2	7
<b>Biomedicine</b> - new programme (Dr)	13	20
<b>TOTAL:</b>	<b>269</b>	<b>305</b>

### The Performance of Teaching Activities:

The timetables are formed so that students can take part in all the obligatory study content and the optional subjects they are interested in - and just those they have selected.

The students are especially supportive of writing seminar papers for the optional subjects, because they cover the themes they are interested in and with which they can develop their presentation skills.

The number of outside personnel and demonstrators at the exercises remained low and was limited to volunteering due to austerity measures at the Faculty of Pharmacy.

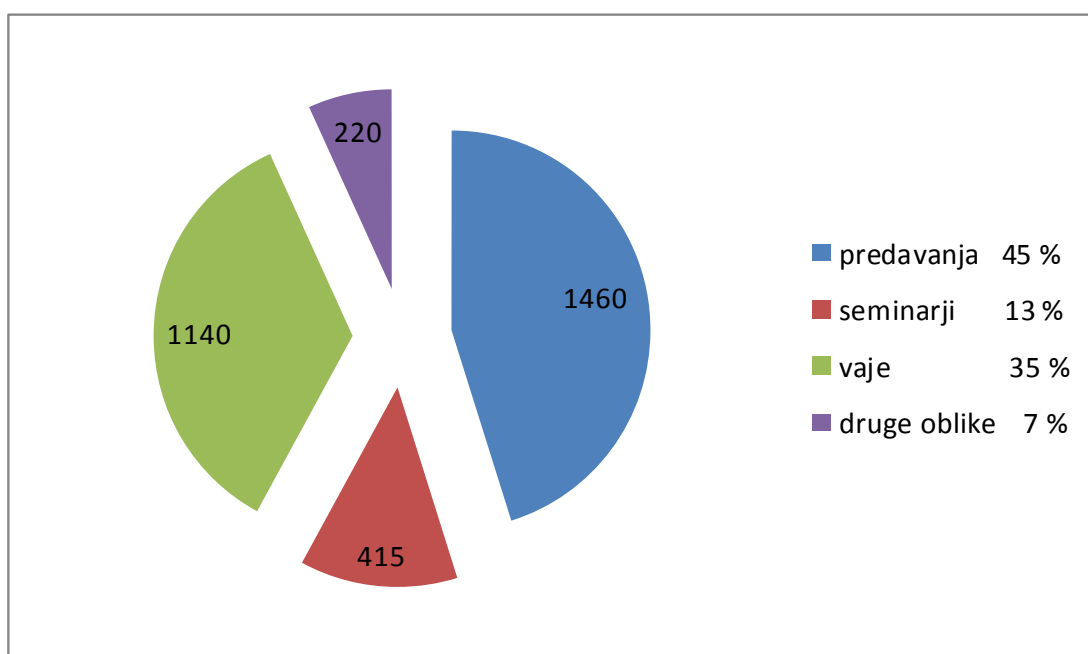


Chart 2. 4: Arrangement of contact hours of the EMFAR study programme. It is also similar to the other study programmes of the 1st and 2nd cycle.

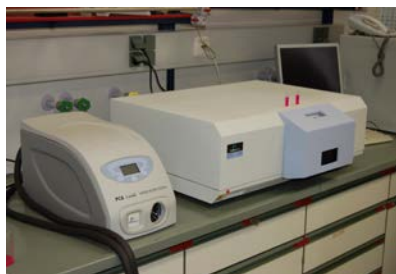
### Presentation of Study Programmes at the Faculty of Pharmacy



#### LONG-CYCLE MASTER'S Study Programme of Pharmacy

The long-cycle master's study programme of Pharmacy (300 ECTS, 10 semesters), in accordance with the demands of Directive 2005/36/EC on professional qualifications, which suitably covers pharmaceutical, natural science, medical and other content, qualifies the student for performing professional work and tasks anywhere in the pharmaceutical field and also provides the basis for continuing studies at the doctoral level and is open to continued lifelong professional training. The study lasts 5 years and includes the obligatory half year practical training in teaching institutions (public, private and hospital pharmacies) and the preparation of the master's thesis and its defence.

The possibility of choice is included in the course at three levels: alternative subjects, optional subjects offered by the Faculty, including choosing the field the student's master's thesis will discuss, and the general possibility of selecting subjects within the University. The optional content is offered in such a spectrum that we cover all the standard areas of narrower fields and we follow the developments in the profession. But we also take care to avoid too much choice, so that the quality of teaching does not decrease due to an excessive dispersion of students. Greater possibility of choice is also limited by restrictions of time and space.



#### UNIVERSITY Study Programme of Laboratory Biomedicine

The renewed first cycle study programme of Laboratory Biomedicine (180 ECTS, 6 semesters) is on the one hand highly focused on practical, technical and technological skills and knowledge and on the other hand also provides biomedical science and research content, through which we want to increase the possibility of employment of the graduates in research institutions that perform biomedical research. There is a lot of research of this kind and, considering the care for human health and improved quality of life, even more can be expected in the future. At the same time, we want to help our better students to continue their education in the second and third cycles and in specialisation. The possibility of choice is planned for the 3rd year, when students are already familiar with not only natural science but also wider areas of laboratory biomedicine. The possibility of choice is provided in three ways: via subjects offered by the Faculty's programme, via the list of other studies at the Faculty or within the University of Ljubljana and the general possibility of selecting subjects.

#### UNIVERSITY Study Programme of Cosmetology

The first cycle study programme of Cosmetology is a study programme that lasts 3 years, includes 180 ECTS and is the first of its kind in Slovenia. Its main purpose is to train professionals in the field of cosmetology science. Besides basic knowledge of natural sciences, the programme also offers deeper knowledge of the professional sciences of cosmetology. This means knowledge of natural and synthetic materials as ingredients of cosmetic products, cosmetic active substances, their desired, harmful and toxic effects, the types of cosmetic products, their design, formation and production, approaches to estimating security and effectiveness, the use of suitable analytical methods, control and the marketing and advertising of cosmetic products. Through a great number of optional subjects, the programme deepens the knowledge of natural science and cosmetic sciences, provides additional knowledge about service activities in the sense of care and maintaining the body in good condition, way of life and nutrition as is dictated by cosmetic science and it additionally offers the social skills that follow cosmetic science like communication science, foreign languages, psychology of perceptions, aspects of marketing and advertising, etc. This programme trains professionals that are competent for employment in the cosmetic industry, regulative and inspection service, representation offices with cosmetic products and in advising and marketing cosmetic products at various institutions.

#### MASTER'S Study Programme of Laboratory Biomedicine



The 2nd cycle master's study programme of Laboratory Biomedicine is a study programme that lasts for 2 years and covers 120 ECTS. The fundamental goal of the programme is education of highly skilled professionals (Masters of Laboratory Biomedicine) for various narrow fields of laboratory medicine that will be able to quickly adapt to numerous changes and new challenges in the field of medical diagnostics of human biological materials. Upon finishing their studies, Masters of

Laboratory Biomedicine will be able to conduct independent professional work in medical laboratories and will thus fill the gap that exists in the professions of the healthcare system provided by the present university education. At the same time, they will be able to perform the basic research approaches and therefore more easily and critically monitor the transfer of new technologies into practice.

#### MASTER'S Study Programme of Industrial Pharmacy

The master's study programme (2nd cycle) of Industrial Pharmacy is a study programme that lasts 2 years and includes a total of 120 ECTS. The professional title achieved by the graduate is Master of Industrial Pharmacy. The basic Faculty's guiding principle in preparing the new study programme was that the graduates in natural science (chemistry, biotechnical, biotechnological and others) and technical programmes (machine science, electrical engineering and others), after a completed Bologna degree, can obtain the necessary pharmaceutical skills and the corresponding education for a second degree that allows them to work in the pharmaceutical industry in the field of production and medicine analyses.

This postgraduate master's study programme and the curriculum of the planned programme were created based on domestic and international experience and the expected development of the domestic and foreign pharmaceutical industry. During the programme, lectures are performed by Slovenian and foreign professors and industry experts, theoretical knowledge is consolidated interactively in the industrial environment, examples from practice are discussed and the programme also involves individual and group work and innovative solutions to presented examples.

#### DOCTORAL Study Programme of Biomedicine

The postgraduate study programme of Biomedicine was overhauled in accordance with the Bologna directives three years ago. Now it lasts 3 years, includes 180 ECTS and only involves doctoral study. The third cycle doctoral study programme of Biomedicine first began with the enrolment into the first year in the 2007/08 academic year. It is performed within the UL FFA, and it covers the scientific areas of Pharmacy, Clinical Biochemistry, Laboratory Biomedicine and Toxicology.

### **REACCREDITATIONS OF STUDY PROGRAMMES**

2014 was the second of three consecutive years that are related to the procedures of the reaccreditation of the study programmes. In 2015, the accreditation for EMFAR, S1LBM and S2INF shall expire, while S1KOZ and S2LBM expire one year later.

The extensive documents for reaccrediting EMFAR, S1LBM and S2INF were sent to the Slovenian Quality Assurance Agency for Higher Education (SQAA) and documents for S1KOZ and S2LBM to the University of Ljubljana for a preliminary inspection.

After the difficult transition from the old to the new programme after the first implementation, the study programmes at the Faculty have been found to be stable. In the coming years (upon reaccreditation), we plan on following them up and identifying possible deficiencies and implementing the suitable measures for improvement.

### **Systemic and Long-Term Study Issue Management**

- The system of contact between the students and pedagogical staff involving various topics:
  - Introductory meeting of the first year students from all programmes with the vice dean for education, at which they learn about the study particularities, student rights and ways of obtaining information during studies. The last meeting was organised at a more suitable hour so that more students could take part. The Student Council of the Faculty of Pharmacy printed a student booklet (Spatula) for all students that contains basic information about the studies

and the study rules.

- The meeting of students of the 4th year of EMFAR with the coordinator before the beginning of the practical training.
  - Regular meetings at the beginning of the academic year between the professors in charge of subjects for S1LBM and S2LBM and between the coordinators of the programme and the student representatives.
  - Regular meetings of the vice dean for education and professors in charge of the subject with the representatives of students for each year if there is any confusion concerning performing the study programmes (the conditions for promotion, exam rules, handouts for lectures).
  - Meetings with the vice dean for international cooperation, the coordinator of the SEP (Student Exchange Program) and the IMP (Individual Mobility Project).
- Regular discussions regarding pedagogical issues at the Committee for Study Affairs and also at regular and extraordinary meetings of the Faculty's Senate.
  - Integration of extracurricular activities into diploma supplements:
    - performed student exchange or practical training,
    - awards and recognitions from the University of Ljubljana and the Faculty of Pharmacy,
    - activity in the bodies of the University and the Faculty,
    - authorship or co-authorship of published articles in journals with an IF impact factor.

Due to the procedures of reaccreditation of first cycle and second cycle study programmes, in the 2013/2014 academic year only minor changes of study programmes were performed in accordance with the instructions from the Committee for First-Cycle and Second-Cycle Study Programmes of the University of Ljubljana. Syllabuses of some study programme courses have been supplemented and amended and are currently in the reaccreditation procedure.

In the 2013/14 academic year, the professors in charge of subjects at the Faculty analysed the performance of their subjects in terms of study load and ECTS (2013 Senate decision).

To avoid irregularities in assessing knowledge with preliminary exams and exams, the teachers and assistants received detailed written instructions regarding the 4th, 5th and 6th attempts to pass an exam, the timeliness of publishing the results and the implementation of oral exams. In the future, new teachers will also receive instructions on how to perform knowledge assessments.

The maximum number of students per optional subject has been reduced to 25 students per subject in order to ensure greater dispersion and better coverage of all provided optional subjects and quality performance of the subjects, especially in terms of seminar papers. The management has the right to, at its own discretion, enable the performance of even those courses that have less than 10 students. The transition to the electronic system enables the arrangement of students via an online classroom and depending on the average in previous years. Students are very pleased with the system, which will thus continue to be used and improved in the future.

<b>Key Achievements, Advantages and Good practice</b>	<b>Reasoning for the Impact on the Quality</b>
Preparation of materials for reaccreditation of EMFAR, S1LBM and S2INF for Slovenian Quality Assurance Agency for Higher Education (SQAA) and S1KOZ and S2LBM for the University of Ljubljana.	Consolidation of quality indicators for all mentioned study programmes.



Improvement of the lectures that the students of the Faculty of Pharmacy are attending at other members of the University as a result of improved communication channels between the coordinators of the Faculty's study programmes and external lecturers.	More effective knowledge and better student competences.
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<b>Opportunities for Improvements</b>	<b>Proposed Measures for Improvement</b>
A more comprehensive flow of information between the stakeholders in individual study programmes. Faster and more effective exchange of good practice between study programmes.	Organisation of the first joint pedagogical conference of all the Faculty's study programmes in 2015.

### **First Cycle with an Evaluation of Study Programmes**

Examples of completed quality loops for actual, identified shortcomings of the S1LBM and S1KOZ study programmes that were implemented during the previous year (coordinated between the coordinators of the mentioned studies in cooperation with teachers, assistants and students) are showing a gradual but constant growth of the quality of education.

Due to its duration, the EMFAR study programme is sometimes considered as a 1st cycle study programme and sometimes as a 2nd cycle study programme. More than a half of the students at the Faculty are enrolled in this programme, therefore the majority of implemented and completed quality loops result from the EMFAR programme. Thus, it is not specifically emphasised here, but nonetheless everything in Chapter 3.1.1 Educational Activity also applies to this study programme. Besides the EMFAR coordinator, the vice dean of education is also strongly involved in the educational aspect of EMFAR.

### **Second Cycle with an Evaluation of Study Programmes**

Based on the identified shortcomings of the S2LBM and S2INF study programmes, completed quality loops were implemented in cooperation between both coordinators of the two study programmes, teachers, assistants and students.

### **Third Cycle with an Evaluation of Study Programmes**

In 2014, the Faculty of Pharmacy was visited by a group of international and Slovenian evaluators from the Slovenian Quality Assurance Agency for Higher Education. The purpose of the visit was the reaccreditation of the third cycle study programme of Biomedicine. The assessors have commended the fact that we all (the management, the teachers, the coordinators, professional services, students, etc.) have a clear vision of the programme and its place in the University's strategy.

They also highlighted the following possibilities for improvement:

- a clearer action plan at the level of the members of the University and the programme council,
- a clearer definition of criteria for grades in individual subjects,
- engaging the students in management,
- informing students about the assurance of anonymity of surveys,
- better availability of mentors in some areas,
- raising the interdisciplinary character to an even higher level,
- expanding the presentation of doctoral topics and similar to the entire programme.

### **Post Undergraduate and Postgraduate Study Programmes**

The last generation of UPF enrolled into an additional year during which it is performing, in accordance with European Directive 2005/36/ES, the prescribed 6 month internship and preparing the diploma thesis. Due to the resulting extension of the studies to 11 semesters and the fact that after completing the organised forms of study the students have the right to one additional year, we have individually extended the student status by one semester.

## **STAFFING CONDITIONS AND AVAILABLE SPACE AT THE FACULTY OF PHARMACY IN 2014**

On 31 December 2014, the Faculty of Pharmacy employed 108 permanent teaching staff (4 persons with 20% employment and 1 with 10% employment) and professional administrative and technical staff, 17 early stage researchers employed during the time of training or education for obtaining a doctorate degree and performing assistance work with part-time employment and 16 researchers temporarily employed in research projects (1 with 5% employment, 1 with 10% employment and 2 with 20% employment).

Of the permanent employees:

- 36 are university teachers (18 full professors, 9 associate professors and 9 assistant professors),
- 4 university teachers (full professors) with 20% employment,
- 33 assistants, of which 8 are assistant professors and 3 associate professors,
- 1 assistant with 10% employment,
- 1 lecturer/teacher of sports,
- 15 technical associates,
- 1 librarian,
- 13 professional and administrative workers and
- 4 technical staff (maintenance staff, receptionists and cleaners).

2014 was the first year where we only performed Bologna study programmes, as the period of the double performance of programmes - the old study programmes and the new - ended in 2013. This decreased the growth in the total number of students at the faculty - the preliminary plateau of around 1500 students in all forms of education was achieved. The numbers are also lower due to the decreased enrolment numbers in previous years, which were the result of attempting to manage the financial, spatial and staff shortages at the Faculty. In 2014/2015, we once again somewhat raised the available enrolment numbers for the Pharmacy programme and normalised the situation.

The number of employees has not changed in the past year and is still too low considering the demonstrated needs and norms of pedagogical, research and professional work at the Faculty. Unfortunately, due to the limits put on recruitment in the public sector, the number of employees cannot be increased. This has had a negative effect on us, because in past years we employed rationally and were planning on gradually raising the number of staff over a longer period. Now, formal administrative measures prevent us from implementing the envisaged staff policy.

The shortage of available space has been a constant issue for the Faculty's operations in recent years. The Faculty owns, manages or rents rooms in 6 buildings at three locations and due to the content of study programmes, the students also attend lectures at 4 other faculties. In the short and medium term, we are trying to resolve the issue with premises at Aškerčeva street and in the surrounding area, where in 2014, after the Faculty of Chemistry and Chemical Technology moved, we took over the management and use of the dean's old building and the entire backyard lecture room. At the Trg mladinskih delovnih brigad square location, we are still trying to resolve the ownership issues, while the rented laboratory rooms on Tržaška street are at full capacity.

In the long-term, we are focusing on new construction for which in 2013 we prepared a document for investment identification of the project in the direct vicinity of the new Faculty of Chemistry and Chemical Technology. This is only an initial document, but we nonetheless are pressing on with the activities to make this project a reality in the future.

(Chapter 2 prepared by: B. Božič, A. Obreza, S. Menard, T. Kadunc, Z. Gantar)

### **3 WE ARE PROUD OF...**

#### **PROMINENT EVENTS IN 2014**

##### ***Hosting the 20th EAFP Annual Conference Ljubljana 22-24 May 2014***

##### **“Science-Based Pharmacy Education: Towards Better Medicines and Patient Care”**

The Faculty of Pharmacy is proud to have been a host of the 20th EAFP Annual Conference (European Association of Faculties of Pharmacy) in May 2014. The conference is one of the key European meetings about the pharmaceutical future with a lively exchange of experience and visions. The main topic and thread of the conference was “Science-Based Pharmacy Education: Towards Better Medicines and Patient Care”.



*The management of the European Association of Faculties of Pharmacy and the dean of the Faculty of Pharmacy*

The main purposes of the meeting were to exchange opinions and good practices, to open doors to the diversity of teaching tools, the diversity of approaches to teaching and the diversity of local characteristics, but with a clear commitment to have qualified pharmacists all across Europe who are capable of making safe and effective medicines, and to support the rising expectations of the public regarding healthcare services. All this is achievable through close cooperation between the research sphere, the education sphere and the professional sphere, which was a guiding principle at the conference. 145 participants (mostly deans and vice deans and management workers or heads of areas of expertise in pharmacy) from 30 countries from three continents exchanged their experience and opinions at lectures, workshops and discussions. 25 Slovenian and foreign lecturers from academia, the industry and pharmacy and 38 poster presentations together with the participants formed the content based on five topics: Pharmacy Education Triangle: Linking Education, Science and Stakeholders; Wider Horizons for Pharmacists; Embracing New Drugs, Technologies and Delivery Systems into Curricula; Clinical Pharmacy and Pharmaceutical Care: Education and Research; Pharmaceutical Networking.

A special meeting was intended as a tribute to the deceased Chairman of EAFP Professor Bart Rombaut, a visionary for the development of pharmacy education that should prepare students for future professional and scientific challenges.

The conference also included activities from the field of the European project PHAR-QA, Ensuring Quality of Education and Training of European Pharmacists, with the goal of establishing a European network for ensuring and comparing quality and the preparation of a harmonised model for establishing a suitable agency for the quality of pharmacy education.

The social aspect of the conference encompassed the opening ceremony with a welcome speech by the rector of the University of Ljubljana, Prof. Ivan Svetlik, PhD, the cultural programme performed by students from the Faculty of Pharmacy, the reception at the office of the mayor of the City of Ljubljana, Mr. Zoran Janković, a walk through the Ljubljana old town and a trip to the Castle Hill for a formal dinner at the Ljubljana Castle, which with its evening romance and beautiful views fascinated the participants.

Through the noted organisation of the meeting that in its entirety took place at the Faculty of Pharmacy, we demonstrated our organisational abilities, our role in the wider European area and our active role in shaping the future that is in accordance with the Faculty's vision.



*Participants of the 20th EAFP Annual conference at the Ljubljana Castle*

### ***International Institutional Evaluation of the Faculty of Pharmacy***

The Faculty of Pharmacy as an educational, research and professional institution in the fields of pharmacy, laboratory medicine and cosmetology was institutionally evaluated in 2014 by the renowned ASINN evaluation agency according to internationally established standards. The ASINN accreditation agency, which has its head office in Düsseldorf, is a member of the European Quality Assurance Register for Higher Education (EQUAR) at the European Association for Quality Assurance in Higher Education (ENQA).



The evaluation is part of the process of assuring and improving quality. The implementation of the first international evaluation of the Faculty of Pharmacy was made possible as part of the project Quality of the University of Ljubljana (KUL) and involved an in-depth analysis at three levels: structure (systemic framework, legislation, rules, organisation), processes (transparency, effectiveness, rationality) and values (culture of quality, employee and student satisfaction).

The evaluation of the Faculty of Pharmacy was performed in three stages: preparation of extensive self-evaluation report by the Faculty, harmonisation of any confusion and technical details with the representatives of the ASINN via a video conference, two-day visit by external, independent evaluators (two professors from the University of Heidelberg, two professors from the University of Freiburg and two students of pharmacy at the University of Coimbra).

The Faculty prepared the self-evaluation report collectively under the coordination of the extended Committee for Quality and Accreditation. Several cycles of preparations involved students, the management and employees from all organisational units of the Faculty. In accordance with the ASINN criteria, the self-evaluation report evaluated the Faculty's areas of operation:

- I. **Quality Policy** (quality goals, quality management)
- II. **Study Programmes, Courses and Training** (introduction, development and implementation, cooperation with external stakeholders, exam system, recognition of study achievements obtained outside the faculty, support activities for the studies)
- III. **Resource Management** (materials and human resources for teaching and learning, development of staff, research activity)
- IV. **Document Management** (transparency of rules, regulations and documentation)
- V. **Monitoring and Self-Evaluation System** for the above-mentioned areas.

A group of external evaluators performed interviews with the members of the Faculty's management (dean, vice-dean), representatives of the University of Ljubljana (vice-rector, general secretary), the Committee for Quality and Accreditation, the Registry, the Administrative Board, the administrators of study programmes, teachers, assistants, researchers, students, employers and graduates and doctorate holders.

In the draft of the report on the institutional evaluation of the Faculty, the ASINN accreditation agency wrote:

The Faculty of Pharmacy has established a good and effective organisational structure. In developing the offer of education, the Faculty is focused on goals in accordance with the commitment to quality

and vision of good teaching and successful learning. The Faculty is developing and carrying out study programmes in accordance with the goals and quality specifications.

The processes at the Faculty are established rationally, are constantly developing and are changing regularly. The findings of the quality assurance system are regularly integrated into the decision-making and management processes. The Faculty has regular, periodic examinations of whether the study programmes, courses and trainings provided by this higher education institution are in accordance with the quality of related expectations. Also examined are the criteria for assessing the feasibility and the worthwhileness of possible adjustments to the study programmes.

The prevailing values and methods that direct the majority of processes at the Faculty are strategically focused on achieving the desired results and support the organisation as a whole. The Faculty successfully combines various interests of organisational units in forming and further development of the teaching services on offer and harmonises them with the strategy of the institution's development as a whole. It supports cooperation between teachers as well as students in the creation and further development of study programmes. The Faculty has also established mechanisms for cooperation with suitable interested stakeholders.

The Faculty of Pharmacy is committed to further improving its educational, research and professional activity. In accordance with the final report of the ASIIN accreditation agency, it shall prepare a follow-up action plan with specified steps for the realisation of all unutilised opportunities and challenges in the future.

### ***6th Jesenovec's Days of Laboratory Medicine***

On 30 September 2014, the 6th Research Days of Laboratory Medicine - Jesenovec's Days took place at the Ljubljana Faculty of Pharmacy under the framework of the Faculty and the Institute of Clinical Chemistry and Biochemistry at the Ljubljana University Medical Centre, which also included presentations of new findings and perspectives in the clinical and laboratory environment, research novelties in the field of veins and new researchers.

The scientific and organisational committee was composed of: Milan Skitek, PhD, Prof. Darko Černe, PhD, Prof. Janja Marc, PhD, Aleš Jerin, PhD, Alenka Štiglic, Janja Zupan, PhD, Mateja Šter, MSc, Martina Gobec, PhD, Vid Mlakar, PhD, and Nataša Karas Kuželički, PhD.

Milan Skitek, PhD, from the Institute of Clinical Chemistry and Biochemistry at the Ljubljana University Medical Centre emphasised that the meeting was research-oriented. It was attended by renowned and established researchers, mentors and teachers. Besides the above, it involved a presentation by early stage researchers of their work and vision for the future.

According to him, these days have been useful and of interest ever since the beginning in 2002 for laboratory professionals as part of a higher added value and connectedness with the healthcare system as well as the wider public and users of such services. The goal of the meeting is still to connect practitioners and users of laboratory medicine in terms of higher effectiveness of the profession and better care for patients and to bring the research activity closer to the wider public and give it greater recognition in the eyes of the general public.

Jesenovec's days are primarily intended for healthcare professionals, associates and the informed public as a traditional meeting and meeting point of experts and professionals with an international character.

According to Prof. Janja Marc, PhD, from the Ljubljana Faculty of Pharmacy, laboratory medicine is a large and strong field of expertise composed of various subsections. Due to its heterogeneity as well

as due to the topicality, research in the field of laboratory medicine is plentiful and usually oriented towards discovering, checking, comparing and utility of laboratory diagnostics indicators.

Research in the field of Slovenian laboratory medicine is part of so-called translation laboratory medicine, since its purpose is to transfer research results into clinical practice for the wellbeing of the patient. The newly formed, individual-tailored laboratory medicine wishes to develop individual-tailored diagnostic approaches that could also be followed up by individualised and adjusted therapy, explained Prof. Janja Marc, PhD.



### ***Professional Education in the Field of the Pharmacy of Biological Medicine***

As in recent years, in 2014 the Faculty of Pharmacy organised the June postgraduate education in pharmacy, which took place on the 10th, 11th and 17th of June. The topic of the professional meeting was biological medicinal products.

The history of the development of modern biotechnology began in the 1970s. The first great success achieved by biological medicinal products came in 1982, when the US regulatory authorities for treating diabetes approved recombinant human insulin. In the following three decades, biological medicinal products achieved an almost unimaginable spread. Thus, the global market of biological medicinal products now totals more than 180 biological medicinal products and many more are being studied in clinical trials.

We have planned professional education on biological medicinal products from the aspect of topicality as well as usefulness for employees in the wider pharmaceutical profession. In the introductory lectures, we highlighted the topic with an overview and perspectives for the use of biological medicinal products and their importance in treating cancer. Then, we discussed the fields of inflammatory processes and endocrine diseases and observed the clinical aspect of the use of epoetins and low molecular heparins. We were also introduced to classic and modern delivery systems for biological medicinal products and in the last section presented the experience from the field of pharmacy work, with an emphasis on stability of pharmaceutical forms with biological medicinal products.

Five lecturers from the Faculty of Pharmacy (Prof. Borut Štrukelj, Prof. Janko Kos, Associate Prof. Matjaž Jeras, Assist. Prof. Petra Kocbek and Assist. Prof. Tomaž Bratkovič) and two external lecturers (Assistant Alenka Premuš Marušič from the Murska Sobota General Hospital and Tomislav Lptoš from the Pharmacy of the Ljubljana University Medical Centre).

### ***Meeting of Slovenian Pharmaceutical Chemists***

The Section of Pharmaceutical Chemistry of the Slovenian Pharmaceutical Society organised the 1st Meeting of Slovenian Pharmaceutical Chemists, which took place on 25 September 2014 at the Faculty of Pharmacy. The organisational committee was composed of the chairman of the meeting's organisational committee Associate Prof. Marko Anderluh, PhD, chairman of the Section of Pharmaceutical Chemistry of the Slovenian Pharmaceutical Society Prof. Danijel Kikelj, PhD, Associate Prof. Janez Ilaš, PhD, and Assistant Prof. Žiga Jakopin, PhD. The purpose of the meeting was the promotion of pharmaceutical and chemical science and creating conditions for possible new cooperation with Slovenian as well as foreign researchers.



*The chairman of the meeting's organisational committee, Assoc. Prof. Marko Anderluh, PhD*

Despite the fact that many researchers in Slovenia engage in pharmaceutical chemistry, which in terms of topics is a very broad field, the field has not yet had any joint meetings that would join this interest group. The history of pharmaceutical chemistry in Slovenia was presented by Prof. Aleš Krbavčič, PhD, followed by a keynote speech by Prof. Slavko Pečar, PhD. For establishing common links, high quality scientific work, which was the main thread of the meeting, is of key importance. The participants had the opportunity to get to know the breadth of the research expertise in this area. Prof. Dušan Turk, PhD, and Assistant Prof. Jernej Iskra, PhD, presented the work they do at the Jožef Stefan Institute. Prof. Marijana Novič, PhD, presented the work she does at the National Institute of Chemistry, which is also where student Anita Kotar, the youngest lecturer at the meeting, is performing her research work under the mentorship of Prof. Janez Plavec, PhD. Prof. Jurij Svete, PhD, from the Faculty of Chemistry and Chemical Technology talked about the synthesis of pyrazole analogues of histamine. In her lecture, Researcher Vesna Hodnik demonstrated the work of the Infrastructural Centre for Analysis of Molecular Interactions at the Biotechnical Faculty. That the key to success is mutual linking within as well as beyond the Slovenian borders was proven by the organisers by inviting three foreign lecturers: Prof. Andrije Šmelcerovića, PhD, from Serbia, Prof. Silvane Raić Malić, PhD, from Croatia, and the lectures ended with a guest from India, Prof. Parimal C. Sen, PhD. All lectures were followed by interactive discussions that enabled a more detailed insight into the field for the participants. The meeting of Slovenian pharmaceutical chemists set a foundation for future cooperation between various fields of pharmaceutical chemistry, and we are eagerly awaiting the next meeting in 2015.

### ***10th Central European Symposium on Pharmaceutical Technology (CESPT 2014)***

The 10th Central European Symposium on Pharmaceutical Technology took place in Portorož between 18 and 20 September 2014. The main topic of the symposium focused on the needs of patients and was titled "Translation of Basic Concepts into Drug Delivery for Specific Populations". The needs of patients represent an increasingly important factor in the development of delivery systems for drugs and the entire process of designing drugs. The principle of getting a drug "from the laboratory to the hospital bed" as quickly as possible is becoming increasingly relevant. The latest achievements in pharmaceutical technology and biopharmacy and related fields make it possible to fulfil the needs present in individual patient populations with greater ease. This is followed by personalised treatment that requires advanced approaches, such as for example "in silico" modelling for forecasting the needs of every individual patient. In the development of medicinal products, the importance of advanced pharmaceutical forms with complex mechanisms of releasing drugs is increasing. This requires suitable testing, which was demonstrated by the participants at the CESPT 2014 symposium with their contributions.



The lectures at the symposium were presented in four sessions: Advanced Drug Delivery Systems for Specific Populations, New Frontiers of Biopharmaceutical Evaluation to Promote Early Drug Registration, Tuning Physicochemical Properties of Nanomaterials to Efficacy and Safety and Recent Achievements of the Modelling Approach in Personalised Medicine. In total, there were 5 plenary lectures, 5 invited lectures, 33 oral presentations and 89 posters. The presenters, through the quality and diversity of their contributions, met and even exceeded the expectations of the organisers. Delivery systems of drugs such as orodispersible formulations, mini-tablets, nanostructural delivery systems (nanoparticles, nanofibre, nanotubes, nanosuspensions, nanoemulsions, nanocrystals, nanohydrogels), microstructural delivery systems (micro-spheres, microemulsions), magnetic liposomes, hydrogels responsive to heat, solid self-emulsive delivery systems, polymere micelles, solid dispersions, mucoadhesive delivery systems, chrono-pharmaceuticals, biopolymeres and pellets were analysed from the aspect of physicochemical properties of drugs and helper substances, technologies for formulation and in vitro testing. Besides this, the authors presented in vitro/ex vitro, in vivo and in silico experimental models for studying mechanisms and the kinetics of LADME processes. In addition, they also presented the latest achievements in the field of biorelevant dissolving tests, the research of transdermal transfer of substances and models for forecasting the biological usefulness of substances for eye medicinal products.

The symposium was international, since it was attended by more than 165 participants from 20 countries, and it represents a foundation for expanding new findings and social networking.

***8th Annual Meeting of the PSSRC Network (Pharmaceutical Solid State Research Cluster), Ljubljana, Portorož, 16 - 18 September 2014***



Annual Symposium  
Ljubljana and Portorož, Slovenia  
16<sup>th</sup>-18<sup>th</sup> September, 2014

The meeting of the participants of the PSSRC network (11 faculties of pharmacy from the EU and one from New Zealand) focused on pre-formulation and formulation stages of the development of solid pharmaceutical forms, especially tablets, including a demonstration of the majority, even the latest, of techniques

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(e.g. terahertz, raman spectroscopy) that are used in this research.

Here we should emphasise the contributions from Slovenian lecturers who prepared a presentation of coating pellets with a simulation of the spraying and measurements of the velocity of drops in a Wurster chamber, about evaluating the speed of the movement of tablets in perforated drums, determining the solubilisation parameters of ibuprofen and its lysine salt, about the segregation of heterogeneous single component pharmaceutical powders in vertical tube connections, the structure and biological operation of the organometallic complex, mechanical properties of pharmaceutical materials, the results of the manufacture of nanofibers with resveratrol and about the development of mini framework systems with extended operation.

The closed section, only for members of the network, took place on 16 and 17 September at the Faculty of Pharmacy. Researchers and their mentors had the opportunity to see our Faculty, and the impression we got was that they found that the Slovenian pharmaceutical and technological school and Faculty of Pharmacy of the University of Ljubljana were suitably promoted as an educational and research institution.

On the third day of the meeting, all participants of the annual meeting presented themselves at the “open section” in Portorož, which was combined with the satellite symposium of the 10th Central European Symposium on Pharmaceutical Technology. It encompassed 9 top quality lectures, of which two lecturers were Slovenian.

The presented research topics from both sections of the 8th Annual Meeting of the PSSRC Network were collected in the form of two-page summaries in two separate Proceedings.

### ***Faculty of Pharmacy Research Day***

Research Day is a demonstration of respect towards the achievements of the Faculty, namely the achievements of our associates and students that exceed the average, and the day is intended to grant them special attention.

Celebrating Science is the motto of Research Day at the Faculty, and through this event the Faculty celebrated the festive Week of the University of Ljubljana.

Research Day was divided into two sections. The morning section started with an overview of good forms of cooperation with the pharmaceutical industry. We were joined by Matjaž Oven, PhD, Darja Ferčej - Temeljotov, PhD, Alenka Pariš, PhD, and the award winners of Biocamp, Assist. Boris Brus and Daliborka Dušanič, PhD. With great pleasure, we accepted the statement of our partners from the industry that “a new sprout grows every spring” from strong roots of mutual cooperation. We appreciate that in their vision of development they also include partnership with the Faculty of Pharmacy.



The day continued with lectures by the dean's 2014 award winners, who confirmed that the most visible achievements are the result of creativity, commitment, teamwork and good mentorship.

The solemnity of the afternoon section of the event was reinforced by the keynote speaker, Prof. Janko Kos, PhD, with the lecture titled "Proteolytic Enzymes - Friend or Foe?" After that, the Faculty's Prešeren Awards were awarded for above average student research assignments, and the students with the best results during their regular study programme were honoured.



## **AWARDS AND RECOGNITIONS FOR THE ASSOCIATES OF THE FACULTY OF PHARMACY**

At the formal session of the Senate of the University of Ljubljana on 2 December 2014 the rector of the University, Prof. Ivan Svetlik, PhD, awarded the highest honours: honourable doctor, the plaque "Pro universitate labacensi", Golden plaques and the solemn certificate for young university teachers and associates.

The second day of the traditional University Week thus ended at the Assembly Hall (Zbornična dvorana) of the University of Ljubljana. The participants were addressed by the rector of the University of Ljubljana, Prof. Dr. Ivan Svetlik, and the central part of the event was the awarding of the highest recognitions of the University of Ljubljana.

The recipients of the Golden Plaque, which is awarded at the University of Ljubljana to individuals for exceptional merits in developing scientific, teaching or artistic creation and for strengthening the university's reputation, were Prof. Ivan Štuhec, PhD, from the Biotechnical Faculty, Prof. Dušan Mramor, PhD, from the Faculty of Economics, Prof. Dr. Marjan Svetličič from the Faculty of Social Sciences, Prof. Damjan Miklavčič, PhD, from the Faculty of Electrical Engineering, Prof. Aleš Mrhar, PhD, from the Faculty of Pharmacy, Prof. Roman Drnovšek, PhD, from the Faculty of Mathematics and Physics, Prof. Stojan Petelin, PhD, from the Faculty of Maritime Studies and Transport, Prof. Marko Bajec, PhD, from the Faculty of Computer and Information Science and Assistant Prof. Mile Kosi from the Academy of Music, who unfortunately passed away a few days before the award ceremony. The ceremonial documents for young university teachers and associates at the University of Ljubljana are awarded for exceptional educational and research achievements. This year's recipients were: Assist. Prof. Miha Rogina from the Academy of Music, Assistant Prof. Vito Logar, PhD, from the Faculty of Electrical Engineering, Assistant Prof. Petra Kocbek, PhD, from the Faculty of Pharmacy and Assistant Prof. Miha Ravnik, PhD, from the Faculty of Mathematics and Physics.

The solemn assembly was also addressed by the chairman of the scientific council of the Institute Jožef Stefan and professor at the Faculty of Mathematics and Physics, Prof. Dragan Mihailović, PhD. In his speech, he opened new challenges for the future with an emphasis on ingenuity, which according to him is necessary for top achievements.

***Professor Aleš Mrhar, PhD, MSc in Pharmacy, was the recipient of a Golden Plaque of the University of Ljubljana for exceptional merits in developing scientific, educational or artistic creation of the University and for strengthening its reputation.***

Prof. A. Mrhar has been employed at the Faculty of Pharmacy of the University of Ljubljana since 1976, first as an assistant and as a full time professor since 1994. As an assistant, he was in charge of the exercises in Pharmaceutical Technology II and as part of the exercises set up a course for statistics that in 1983 he further supported by publishing the textbook *Statistical Methods in Pharmacy* as a co-author. After being elected for the title of Assistant Professor in 1985, he took charge of the subject Biopharmacy with Pharmacokinetics and during the reform of the university study of pharmacy in the mid 1980s set up two new subjects, Measuring Methods in Pharmacy, which today is continued with updated content and performed by others under the name Instrumental Pharmaceutical Analysis, and Pharmaceutical Informatics, which is now being taught in several versions within all study programmes of the Faculty of Pharmacy of the University of Ljubljana. As a full time professor, he lectures for the subjects Biopharmacy with Pharmacokinetics and Clinical Pharmacy on all levels and in all programmes of the Faculty of Pharmacy. At the end of 2014, he was a mentor to 177 diploma graduates, 23 master's degree graduates, 20 specialists and

12 doctorate holders. He was also a mentor to a larger number of winners of Krka and Prešeren awards.

Since 2001, he has been the head of the activity for the implementation of clinical pharmacy methods into treatment with medicinal products at the primary, secondary and tertiary level of the healthcare system. He supports these activities with research in the field of pharmacoeconomics and pharmacoepidemiology on the one hand and with research in the field of pharmacokinetic-pharmacodynamic modelling in relation to clinical effects of drugs under the conditions of genetic polymorphism of transfer, enzyme and receptor systems on the other. He successfully transfers the results of such research into teaching activity at the doctoral and specialist programmes and into research work at Slovenian hospitals.



The research work of Prof. Mrhar started with the development of mathematical models for evaluating pharmacokinetic effects, and through simulations on an analogue-hybrid computer, he helped develop many generic drugs in the pharmaceutical industry and optimise their use in the original clinical environment. For these important scientific achievements, he received an award from the Kidrič Fund in 1990 as a co-author. From the mid 1990s on, he has been cooperating in the development of experimental models for the study of mechanisms and the kinetics of release, absorption and metabolism of substances for the planning, development, preparation and evaluation of their delivery systems to the body. As a co-author, he has published 160 articles in journals with an impact factor, supported with 750 quotes (source: WOS, 31 December 2014). He is also a reviewer for Slovenian and several international journals with an impact factor. He is a co-author of international patents from the field of biopharmacy. In his role as an internationally established researcher, he has been in charge of the programme group “Pharmaceutical Technology: from Drug Delivery Systems to Therapeutic Outcomes of Medicines” since 2001.

The research work of Prof. Mrhar became internationally recognisable when in 1995 as chairman he started a series of Central-European symposiums on pharmaceutical technology, each with approximately 250 attendants from abroad and Slovenia. By 2014, ten symposiums had been organised, six of which took place in Slovenia. The symposium’s position in the European research space and its scientific relevance has been demonstrated by the guest editorship of three thematic issues of the journal *International Journal of Pharmaceutics* and two thematic issues of the journal

*European Journal of Pharmaceutical Sciences* that contained the scientifically most recognisable contributions from the symposiums organised in 2001 in Vienna, 2003 and 2008 in Ljubljana, 2012 in Dubrovnik and 2014 in Portorož.

Prof. Aleš Mrhar, PhD, has also performed numerous functions at the University and outside it. He was the head of the former Department of Pharmacy during the period from 1991 to 1995 when the Faculty of Natural Sciences and Technology was wrapping up its mission and when new faculties began to arise, including the Faculty of Pharmacy, which was established with a decree on the transformation of the University of Ljubljana in January 1995, and Prof. Mrhar was appointed by the then rector of the University of Ljubljana, academic Miha Tišler, as the acting dean for the transitory period until the first dean with full authority was elected in October 1995. In the period between 1991 and 1995, Prof. Mrhar, together with deputies Julijana Kristl and Uroš Urleb, succeeded in completely renovating and functionally equipping the premises of the Star tehnika building to carry out the reform of the university study of pharmacy by implementing a 9 semester programme and in presenting the emerging faculty as an organised system with a recognisable pedagogical and scientific and research excellence and content relevant for government and administration institutions of the newly formed state of Slovenia as well as for the pharmaceutical industry and the healthcare system.

Throughout this time, Prof. Mrhar was also active in the professional discipline and the state administration. From 2001 to 2003, he was the chairman and from 2003 on has been a member of the Expanded Expert Council for Drugstore Pharmacy at the Ministry of Health of the Republic of Slovenia, from 1996 to 2011, he was a member of the Committee for Medicinal Products at the Public Agency of the Republic of Slovenia for Medicinal Products and Medical Devices, from 2005 to 2010, he was a member of the Committee for Health Care and Social Affairs at the Council of the RS for Higher Education and from 2006 to 2008, he was a member of the Health Council at the Ministry of Health of the RS and a coordinator of the Committee of the Health Council for Biological Medicinal Products.

In 1998, he received the Minařik Award for special achievements in the pharmaceutical profession and science.

Due to the above facts, Prof. Mrhar received a Golden Plaque of the University of Ljubljana on 2 December 2014.

#### ***Professor Stanko Srćiĉ, PhD, MSc in Pharmacy - recipient of the Minařik Award***

At the proposal of the technological section, in May 2014 the Slovenian Pharmaceutical Society awarded Prof Stanko Srćiĉ the highest professional award - the Minařik Award.

Professor Stanko Srćiĉ is one of the top European pharmaceutical technologists, teachers and researchers. With his entire work, he provides the Slovenian pharmaceutical profession an indispensable mark as an extraordinary teacher in all three cycles of pharmaceutical education, a firm central pillar of the field of solid pharmaceutical forms in the Republic of Slovenia and also holds a special place globally.



The achievements of Prof. Stanko Srčič are the result of his extremely committed pedagogical work and creative research, which through the search for technological novelties was focused throughout on developing laboratories and knowledge in Slovenia and growth comparable with colleagues in Europe and beyond. He followed the global technological development and into the pharmaceutical study programme introduced the subjects Physical Pharmacy, Industrial Pharmacy and Quality of Medicinal Products as early as 1995. He was the head and coordinator for the preparation of materials and the accreditation procedure for the master's study programme of Industrial Pharmacy (2007) and now operates as the administrator of the programme.

Prof. Srčič has walked a rich research path in the broad field of pharmaceutical technology, acting throughout with a personal note and great commitment to progress. He implemented his ideas on new research approaches by carefully selecting technological equipment for procurement and integrated them into research and pedagogical work together with his doctorate holders who today occupy important and responsible positions of employment in Slovenia and abroad. Together, they introduced analysis techniques into the Slovenian pharmaceutical field such as differential thermal analysis, inverse gas chromatography, atomic force microscopy,  $^{14}\text{N}$  nuclear quadrupole resonance and nanoindentation. Among technological procedures, they performed the majority of their work in the field of fluid bed technologies in a Wurster chamber for which they optimised the process by modifying the hardware and through a computer simulation of the particle movements in it and in the field of tableting research through the use of various compression models. Early research in the field of pellets is extremely important, since the so-called Ljubljana School arose from this, and its knowledge has been important for both Slovenian pharmaceutical manufacturers.



*Recipient of the Minařik Award, Professor Stanko Srčič, PhD*

Besides international recognisability, Professor Srčič always strived to actively link the university environment with industry (pharmaceutical and mechanical industry), which is reflected in the implementation of numerous productive projects and the implementation of innovative ideas in the form of Slovenian and international patent applications (3) and awarded patents (5). He is also the recipient of the golden award of the Chamber of Commerce and Industry of Slovenia (2004). He is an expert from the academic environment who practically never refuses to help or cooperate with the industry.

His international role is also reflected in the initiation and management of numerous bilateral cooperations as well as CEEPUS network and TEMPUS projects. Based on European recognisability, the Chair of Pharmaceutical Technology at the Faculty of Pharmacy of the University of Ljubljana was also invited to the prestigious club of the Pharmaceutical Solid State Research Cluster (PSSRC), which combines 11 European pharmaceutical faculties and one faculty from New Zealand.

For more than ten years, he has been active professionally in the field of the regulation of medicinal products for use in veterinary medicine at the national level and the highest European level. Since 2004, he has been a member of the Committee for Medicinal Products for Veterinary Use (CVMP, EMA), the deputy chairman of the Scientific Advice Working Party (SAWP) at CVMP and an expert of the European Medicines Agency (EMA). He is a member of the editorial boards of Pharmaceutical Technology Europe (since 2005) and Recent Patents on Drug & Delivery Formulation (since 2007), and during the period 1996-2005 and 1992-2000, he was a member of the editorial boards of Acta Pharmaceutica and Farmaceutvski vestnik. Since 2013, he has been a member of the scientific advisory body at the Research Centre Pharmaceutical Engineering in Graz.

As part of the Slovenian Pharmaceutical Society, in 1988 he was one of the founders of the Technological Section and was its first chairman. He participated in numerous annual symposiums of the technological Section as a chairman or a member of the expert organisational board or as a lecturer.

***Assistant Prof. Petra Kocbek, PhD - Recipient of the Ceremonial Certificate for Younger Teachers and Associates at the University of Ljubljana***

During the week of the University of Ljubljana in December 2014, Assistant Prof. Petra Kocbek, PhD, received the Ceremonial Certificate for Younger Teachers and Associates at the University of Ljubljana

Assistant Prof. Petra Kocbek is the lecturer for subjects Pharmacy Nanotechnology I and II, cooperates in numerous subjects within the undergraduate and postgraduate study programmes and is a respected and desired mentor to students preparing diploma, master's and doctoral theses. In terms of research, she deals with nanosuspensions, inorganic and polymer nano particles, target drug delivery and nanofibers.

Scientific achievements are extremely important for the profession in Slovenia and abroad, because the developed procedures can be used to form difficult-to-dissolve substances not only in the field of



medicinal products but also in the field of foods and elsewhere. As a new system, nanosuspensions make it possible to transform already established substances as well as develop medicinal products with new substances; nanoparticles with substances and ligands on the surface support the concept of active targeting in in vitro conditions and its advantage in treating cancer, while the developed nanofibers provide an option for faster healing of wounds and

support to the regeneration of tissue.

The results have great potential for the development of medicinal products with synthetic low molecular and modern biological substances. Evidence of the relevancy of these fields is also her cooperation in research programmes and projects in Slovenia as well as cooperation in EU FP7 NANOPHOTO and in projects with the industry.

A confirmation of her exceptional scientific successfulness is also publications of original scientific articles in international journals with a high impact factor, the number of quotes and the h-index. She excels in terms of the originality of her research work, her superior initiative and perseverance as well as her preparedness to selflessly share her knowledge and experience with students and colleagues.

***Luka Kosec, Recipient of the Award of the University of Ljubljana for Students for Special Achievements and Extra Curricular Activities***

Luka Kosec, who during the 2013/2014 academic year was a master's degree candidate for the long-cycle master's study programme of Pharmacy, besides regular and successful studies also held a series of positions in student organisations at the Faculty and the University. He was the representative of the academic year, the chairman of the Student Council of the Faculty, a representative in the Student Council at the University and the Academic Chamber and a member of several committees. He was active in the Pharmaceutical Students' Society and the Student Section of the Slovenian Pharmaceutical Society. He was a member of the Slovenian delegation at the congress of the International Pharmaceutical Students' Federation and the congress of the European Pharmaceutical Students' Association. In his successful combination of study requirements, positions in bodies and extracurricular activities, he excelled in understanding issues and had an active and positive attitude towards finding solutions.

***Assistant Špela Zupančič, the First Recipient of the Krka award for Special Achievements in the Field of Research Work for Her Work as Part of the Master's Degree Study Programme***

On Friday 17 October 2014, the Krka Awards fund awarded Špela Zupančič with the Krka Award for Special Achievements in the Field of Research Work for her exceptional master's thesis entitled "Formulation and Characterisation of Curcumin Loaded Nanodelivery System for Inhalation", which she created under the mentorship of Assist. Prof. Petra Kocbek and Satyanarayane Somavarapuja, PhD, from the UCL School of Pharmacy, London. In the history of the Krka Awards, she is the first recipient for Special Achievements for a master's thesis, because until now these awards were awarded only for exceptional doctoral achievements.



Curcumin has numerous positive effects, but clinical trials have shown only small effectiveness with oral intake. Thus, Špela Zupančič developed a new formulation by incorporating curcumin into DQAsoms, liposome-like structures from dequalinium, which on in vitro models showed a potential for local delivery into the lungs and the targeting of mitochondrium. This is an innovative approach that provides an option for improving the effectiveness of treatment with curcumin on several different levels.

***Assist. Tina Trdan Lušin, PhD, Pregl Award of the National Institute of Chemistry for Outstanding Doctoral Work in the Field of Chemistry and Related Sciences***



As part of her doctoral thesis, she studied the pharmacogenetic aspects of metabolism and

transportation of newer selective oestrogen receptor modulators, raloxifene and bazedoxifene. Selective oestrogen receptor modulators are substances that are supposed to prevent the loss of bone mass and occurrence of fractures, decrease the risk for the formation of breast cancer and uterine cancer and relieve menopausal symptoms, whereby they should not increase the risk for the occurrence of coronary heart diseases, stroke and Venous thrombosis. Thus, they are a promising substance for treating osteoporosis and breast cancer, two diseases that are highly present in modern population and represent a great health care, social and financial burden for the individual and the state.

As part of her doctoral thesis, the award winner was looking for the causes of the great inter-individual variability of the clinical effectiveness and toxicity of raloxifene and bazedoxifene. She carried out very extensive research work that included a synthesis of the substance, the development of analysis methods, development and use of a large number of various in vitro models for determining metabolic and transport properties and a clinical trial. She determined the cause for the different responsiveness of patients to raloxifene and explained that with the help of specifying the genetic markers before the use of the medicinal product, it would be possible to anticipate patient response to the medicinal product. Thus, therapy could be adjusted to an individual patient and thus ensure a more effective and safe treatment. In osteoporosis cases, such individual-tailored therapy could be especially welcome, since otherwise the effectiveness of treatment of this disease can only be checked after a longer period of time.

Tina Trdan Lušin, PhD, performed her research work at the University of Ljubljana, the Faculty of Pharmacy, the Chair of Biopharmacy and Pharmacokinetics and at the Department of Clinical Pharmacology and Toxicology of the University hospital in Zürich. She published the results of her research in nine articles in renowned international journals.

#### ***Boris Brus, the Dean's Award of the Faculty of Pharmacy at the University of Ljubljana***

Boris Brus received the 2014 Dean's Award of the Faculty of Pharmacy at the University of Ljubljana for his scientific article entitled "Discovery, Biological Evaluation, and Crystal Structure of a Novel Nanomolar Selective Butyrylcholinesterase Inhibitor" published in the Journal of Medicinal Chemistry.

#### ***Žiga Hodnik, the Dean's Award of the Faculty of Pharmacy at the University of Ljubljana***

Žiga Hodnik received the 2014 Dean's Award of the Faculty of Pharmacy at the University of Ljubljana for his scientific article entitled "Bazedoxifene Scaffold-Based Mimetics of Solomonsterols A and B as Novel Pregnane X Receptor Antagonists" published in the Journal of Medicinal Chemistry.

#### ***International Patent for the Treatment of Inflammatory Bowel Disease***

Source: Lunder Mojca, Ravnikar Matjaž, Štrukelj Borut, Berlec Aleš, Čeh Boris. Modified food grade microorganism for treatment of inflammatory bowel disease: patent US 8754198 B2, 2014-06-17. [S. l.]: United State Patent Office, 17 June 2014.



US008754198B2

(12) **United States Patent**  
**Lunder et al.**

(10) **Patent No.:** **US 8,754,198 B2**

(45) **Date of Patent:** **Jun. 17, 2014**

(54) **MODIFIED FOOD GRADE  
MICROORGANISM FOR TREATMENT OF  
INFLAMMATORY BOWEL DISEASE**

FOREIGN PATENT DOCUMENTS

EP	1 477 802 A1	11/2004
WO	97/14806	4/1997
WO	00/23471	4/2000
WO	2007/025977	3/2007

(75) Inventors: **Mojca Lunder**, Ljubljana (SI); **Matjaz Ravnikar**, Ljubljana (SI); **Borut Strukelj**, Ljubljana (SI); **Ales Berlec**, Ziri (SI); **Boris Ceh**, Ljubljana (SI)

OTHER PUBLICATIONS

Hugot et al., "Etiology of the inflammatory bowel diseases", Int J Colorectal Dis., 14, 1999, pp. 2-9.

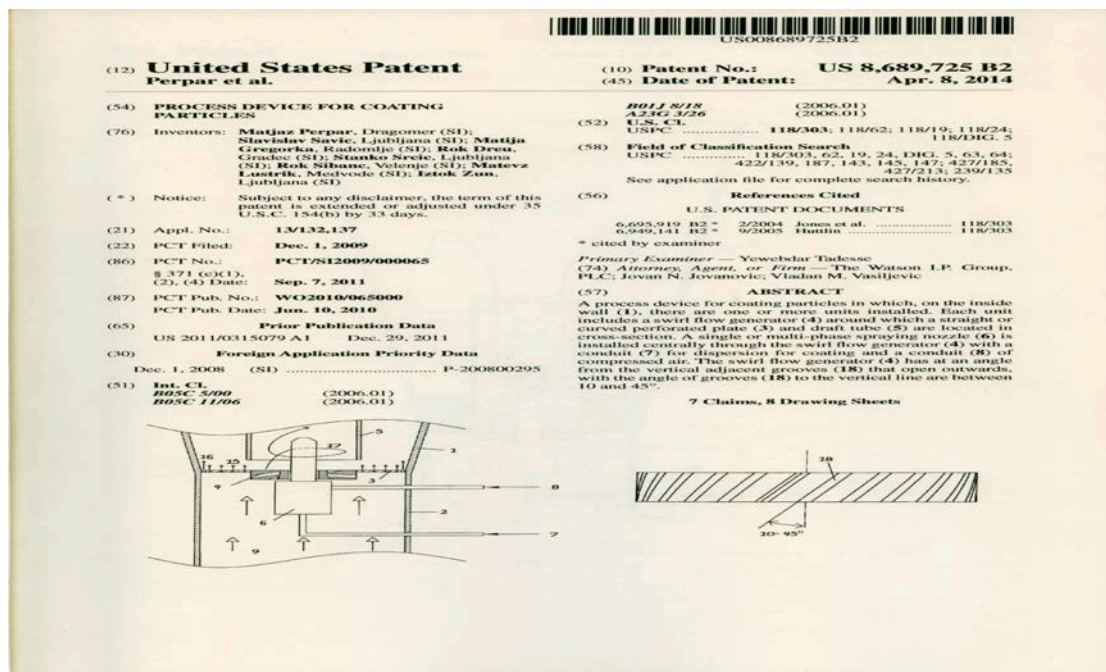
Chronic inflammatory bowel disease is a severe chronic inflammation of the digestive tract that can manifest itself as Crohn's disease or ulcerative colitis. The cause of the disease is not known, but it has been discovered that it is a mix of environmental and genetic factors and the gut microbiota. Chronic inflammatory bowel disease is incurable, and the progress of the disease is relieved with aminosalicylates, antibiotics, corticosteroids and biological medicinal products, among which monoclonal antibodies against the proinflammation cytokine TNF $\alpha$  are prevalent. The application of antibodies is very unfavourable for the patient, and besides this the therapy causes numerous side effects.

The international patent represents a protection of the procedure of the preparation of recombinant microorganisms for treating chronic inflammatory bowel disease. Microorganisms from the group of lactic bacteria are safe, are used as probiotics and can also be used for delivery of biological substances to the digestive tract. The invention describes the recombinant bacteria *Lactococcus lactis* that expresses the binding protein for TNF $\alpha$  and incorporates it onto its surface. This way, it forms a binder of the anti-inflammatory cytokine on the spot of the inflammation in the digestive tract where it inactivates the excess quantity of TNF $\alpha$  and removes it. The bacterial delivery protects proteins against acidic and protease degradation, which enables oral application. The patent also includes the option of anchoring the TNF $\alpha$ -binding proteins onto genetically unchanged bacteria, which is beneficial from the viewpoint of regulations.

### ***International Patent for a Process Device for Coating Particles***

Source: Matjaž Perpar, Slavislav Savić, Matija Gregorka, Rok Dreu, Stanko Srčič, Rok Šibanc, Matevž Luštrik and Iztok Žun

The subject of the invention is a process device for coating particles that falls within the field of chemical and pharmaceutical technology. It represents an improvement to the process equipment for coating particles by spraying from the bottom and works on the principle of fluidisation technology. The process device for coating particles, according to the first mode of practising, has a classic structure of a Wurster chamber but an innovative mode of injecting air, which, within the draft tube of the chamber where coating is performed, establishes a swirling motion of air and particles. This results in a better uniformity of the thickness of the coating between particles and better utilisation of the process, while also ensuring a lower portion of agglomerates. The second mode of practising of the patent, the uniformity of the thickness of the coating particles and the share of unwanted agglomerates are improved by incorporating pressure powered slots next to the distribution plate or at the height of the draft tube, which removes the issue of particles getting stuck next to the lower circumferential part of the chamber or increases the randomness of the trajectories of particle being coated.



## NEWLY APPOINTED FULL PROFESSORS

### Prof. Saša BAUMGARTNER, PhD



was born in 1969 in Ljubljana. After finishing secondary school in Kočevje, she enrolled to study pharmacy at the Faculty for Natural Science and Technology of the University of Ljubljana, where she graduated in 1993 with honours. She continued studying for a master's degree and obtained it in 1998, also with honours. For her master's thesis, she received the Krka Award. At the Faculty of Pharmacy at the University of Ljubljana, she continued with doctoral studies and in 2001 successfully defended her doctoral thesis.

She has been employed at the University of Ljubljana, the Faculty of Pharmacy since 1994, first as an early stage researcher and now as a university teacher, and since 2011, she has also held the position of vice-dean for international cooperation. As a guest researcher and lecturer, she cooperated at the Institute of Pharmaceutical Science at the University of Graz in Austria.

In the field of pedagogic activities, she is cooperating in three study programmes of the Faculty of Pharmacy: the long-cycle master's study programme of Pharmacy, the 1st cycle university study of Cosmetology and the 2nd cycle master's study programme of Industrial Pharmacy. She is also collaborating in the doctoral study of Biomedicine and in the international postgraduate education of Radiopharmacy.

Her research activities are related to active cooperation in projects of the Ministry and the industry. The field she is studying is biocompatible polymers that are used for forming solid oral and dermal pharmaceutical forms with modified release. She is cooperating with various experts, mainly from the Institute Jožef Stefan and the Faculty of Chemistry and Chemical Technology of the University of

Ljubljana. She is interested in various mechanisms of the uptake of water and other physiological liquids, interaction between polymers and substances and various polymer structures in the presence of various media, all with the purpose of better understanding release mechanisms and their forecasting. Lately, she has also been engaged in making nanofibers for wet healing of wounds. She is also utilising her research work in the management of various projects in collaboration with the industry.

As an author or co-author, she published 42 articles with a review, of which 34 in journals indexed by SCI, and she is also a co-author of many study materials and university textbooks. She has proven her international recognisability with 592 quotes, and she is a mentor for 44 diploma theses, 2 faculty Prešeren Awards, 1 specialisation and 5 doctoral theses.

She is an active member in several Slovenian and foreign professional organisations and is active as an editor, reviewer and plenary lecturer at international scientific conferences. For her active work in the Slovenian Pharmaceutical Society, in 2009 she received the Minařik Award, and last year she received an award from the Student Council of the University of Ljubljana for the best teacher.

At the University of Ljubljana, Prof. Saša Baumgartner, PhD, was in 1996 elected to the title of assistant, in 2003 to the title of assistant professor and in 2008 to the title of associate professor in the field of pharmaceutical technology and biopharmacy.

***Prof. Marija BOGATAJ, PhD***



was born in 1963 in Ljubljana. After finishing secondary school, she decided to continue her education by studying pharmacy at the Faculty for Natural Science and Technology of the University of Ljubljana, where she graduated in 1986 and then continued with the master's study programme, which she completed in 1990. At the Faculty of Pharmacy at the University of Ljubljana, she then enrolled into doctoral studies and in 1995 successfully defended her doctoral thesis.

She has been a full employee at the University of Ljubljana, the Faculty of Pharmacy since 1987, first as an intern/assistant and now as a university teacher. As a guest researcher and lecturer, she worked in Italy at the University of Trieste, the Department of Chemical and Pharmaceutical Science, and in France at the Paris-Sud, Chatenay-Malabry Faculty. In the field of research, she is still working closely with researchers from the University of Greifswaldu in Germany.

In the field of pedagogic activities, she is working in two study programmes of the Faculty of Pharmacy: the long-cycle master's study programme of Pharmacy and the 2nd cycle master's study programme of Industrial Pharmacy. She is also collaborating in the doctoral study of Biomedicine.

Her research activities are related to active cooperation in projects of the Ministry and the industry. The fields she is studying are primarily biorelevant release from solid pharmaceutical forms with an emphasis on in vivo/in vitro correlation, development of new systems and research of release mechanisms, microencapsulation and development of bioadhesive microspheres for application in urinary bladder.

As an author or co-author, she published 49 articles in international journals indexed by SCI, of which 11 articles from the 1st quarter of the SCI ranking. She is also a co-author of two patents and a co-

author of a university textbook and several study materials. She was a student mentor for more than 85 diplomas, ten student research works, two Prešeren Awards, two master's theses and six doctoral theses.

She is an active member in several Slovenian and foreign professional organisations and in an organisational committee for the preparation of international symposiums. Last year, she received an award from the Student Council of the University of Ljubljana for the best teacher.

At the University of Ljubljana, Prof. Marija Bogataj, PhD, was in 1992 first elected to the title of assistant, in 1998 to the title of assistant professor, in 2003 to the title of associate professor and in 2014 to the title of full professor for the field of pharmaceutical technology and biopharmacy.

***Prof. Darko ČERNE, PhD***



was born in 1962 in Ljubljana. He graduated in 1988 at the University of Ljubljana, the Faculty for Natural Science and Technology, where he studied pharmacy. He received his master's degree in 1994 and his doctoral degree in 2002 at the Faculty of Pharmacy. At the Ministry of Health, he received a specialisation for medical biochemistry in 1993.

From 1988 to 2005, he was employed at the Ljubljana University Medical Centre, at the Institute of Clinical Chemistry and Biochemistry as the head of the Emergency Laboratory. From 2005 to 2008, he was employed at the College of Health Care Izola, University of Primorska and held the position of vice-dean for education. Since 2008, he has been employed at the University of Ljubljana, Faculty of Pharmacy. This year, he was appointed the Head of the Chair of Clinical Biochemistry.

In the field of pedagogic activity, he is the head of several subjects of the 1st and 2nd Bologna cycle study programmes of the Faculty of Pharmacy and co-head of subjects at the Faculty of Chemistry and Chemical Technology and the Biotechnical Faculty. In 2011 and 2012, he was a guest professor and scientific associate at the Faculty of Pharmacy at the University of Belgrade and at the Medical Faculty at the University of Pecz in Hungary.

His scientific activity is related to studying ethiopathogenetic causes for the occurrence of atherosclerosis and its acute complications. He is also studying the metabolism of lipids and lipoproteins in cancer in relation to the bioenergy of tumours. Lately, he has been researching the possibilities of using extracellular nucleic acids in the diagnostics of diseases and complications of atherosclerosis and tumour diagnostics. As a co-author, he published 37 scientific articles, of which 24 in journals indexed by SCI. He has 91 quotes and is the co-author of a university textbook, four chapters in a monograph publication and several study materials. He is a mentor or co-mentor for 41 diploma theses, 3 faculty Prešeren Awards, two master's theses and a doctoral thesis.

At the University of Ljubljana, he was elected in 1994 to the title of assistant, in 2003 to the title of assistant professor, in 2008 to the title of associate professor and in September 2013 to the title of full professor for the field of clinical biochemistry and laboratory biomedicine.



## **DEAN'S AWARDS**

### **Recipients of the 2014 Dean's Awards:**

BORIS BRUS for the scientific article entitled: "Discovery, Biological Evaluation and Crystal Structure of a Novel Nanomolar Selective Butyrylcholinesterase Inhibitor" published in the Journal of Medicinal Chemistry.

ŽIGA HODNIK for the scientific article entitled: "Bazedoxifene Scaffold-Based Mimetics of Solomonsterols A and B as Novel Pregnane X Receptor Antagonists" published in the Journal of Medicinal Chemistry.

KLEMEN NAVERŠNIK for the scientific article entitled: "Routine real-time cost-effectiveness monitoring of a web-based depression intervention: a risk-sharing proposal" published in Journal of Medical Internet Research.

ŠPELA ZUPANČIČ for the scientific article entitled: "Design and development of novel mitochondrial targeted nanocarriers, DQAsomes for curcumin inhalation" published in Molecular Pharmaceutics.

VALENTINA BERTONCELJ for the scientific article entitled: "Development and bioevaluation of nanofibers with blood-derived growth factors for dermal wound healing" published in the European Journal of Pharmaceutics and Biopharmaceutics.

## **PREŠEREN AWARDS**

### ***The recipient of the 2014 University Prešeren Award is:***

ŠPELA KOS for the article entitled: "The Effect of Hypoxia Mimetics on Epigenic Management of Gene Expression and on the System RANK/RANKL/OPG in Osteoblasts" (mentor: Associate Prof. Barbara Ostanek).

### ***Recipients of the 2014 Faculty Prešeren Awards are:***

VALENTINA BERTONCELJ for the article entitled: "Formulation of nanofibers with growth factors and their effect on cell response in vitro" (mentor: Assistant Prof. Petra Kocbek, PhD).

DARJA BOŽIČ and DANIJELA JOŠIČ for the article entitled: "The influence of PACSIN2 in rs2413739 and MOCOS rs594445 polymorphisms on the efficiency and safety of thiopurine therapy in children with acute lymphoblastic leukaemia" (mentor: Assist. Prof. Nataša Karas Kuželički, PhD, co-mentor: Assist. Alenka Šmid).

HANA BRELIH and DARKA MAŠA SIMONIČ for the article entitled: "Molecular properties of autoantibodies' interactions with beta 2-glycoprotein I as a basis for new diagnostic and therapeutic approaches in treating of antiphospholipid syndrome" (mentor: Prof. Borut Božič, PhD, co-mentor: Assist. Prof. Saša Čučnik, PhD).

MARKO BUNC for the article entitled: "Design, synthesis and evaluation of cinnamic acid derivatives and benzoic acid derivatives as potential antifungal substances" (mentor: Assist. Prof. Matej Sova, PhD, co-mentor: Nada Kraševc, PhD).

DAVID ZINRAJH for the article entitled: "Study of phosphatidylethanolamine N-methyltransferase gene expression in non-small cell lung cancer tissue" (mentor: Prof. Darko Černe, PhD).

### **FACULTY OF PHARMACY STUDENT AWARDS**

45 Faculty of Pharmacy Student Awards were awarded in 2014.

The Faculty Awards are awards granted to graduates who during their studies made regular, uninterrupted progress and completed all their study requirements (except the diploma) within one year from the date of enrolling into the graduation year with an average grade of 8.75 or higher.

The Faculty Award consists of a plaque and a material prize.



**Recipients of the 2014 Faculty of Pharmacy Awards are:**

#### ▪ **UP PHARMACY AWARDS**

Klemen Božič	Anita Kotar
Marko Bunc	Janja Mirtič
Tjaša Brcar	Urša Nagode
Andrej Emanuel Cotman	Gašper Poklukar
Nikola Dominković	Hana Polak
Mana Gartnar	Marcel Prikeržnik
Tjaša Gornik	Sara Redenšek
Sabina Grašič	Jernej Repas
Keli Hočevar	Sara Stančev
Kristina Homec	Žane Temova
Kristina Kacin	Marko Trampuž

#### ▪ **UN LABORATORY BIOMEDICINE AWARDS**

Žan Pušnik	Martina Tomažin
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#### ▪ **UN COSMOTOLOGY AWARDS**

Laura Brezovar	Urška Kramberger
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Klara Kravos  
Nika Marušič  
Vesna Pirnat

Alenka Struna  
Barbara Štepic  
Ana Unkovič

▪ **UP MASTER'S PROGRAMME LABORATORY BIOMEDICINE AWARDS**

Katarina Dežman  
Barbara Golob  
Eva Jarc  
Jurka Klun  
Klemen Kodrič  
Tadeja Kuret  
Tamara Obreza

Ana Pavlovič  
Perc Katja  
Anja Švigelj  
Blanka Ulaga  
Mihaela Vaupotič  
Mojca Zupančič

***FACULTY OF PHARMACY STUDENT COMMENDATIONS***

222 Commendations of the Faculty of Pharmacy were awarded in 2014.

Faculty Commendations are recognitions awarded only to the best students from an individual study year: EM Pharmacy, UN Laboratory Biomedicine, UN Cosmetology, postgraduate master's degree study of Industrial Pharmacy and postgraduate master's degree study of Laboratory Biomedicine. The conditions for receiving this award are regular study progress and an average mark of 8.75 or higher for all study requirements during the relevant study year, regardless of the conditions for advancement into the higher study year.

The Faculty Commendation consists of a certificate (a plaque).

***The recipients are:***

• **2013/2014 1ST YEAR EM PHARMACY**

Lea Benčina  
Andraž Bevk  
Ula Božič  
Laura Činč  
Maša Dolenc  
Rok Hribšek  
Santina Jazbinšek  
Andrej Kobold  
Petra Kocmur  
Marko Kočevar  
Jan Kumar  
Samo Kuzmič  
Mojca Lačen  
Maja Marčič  
Gregor Marič  
Eva Mežnaršič

Nika Osel  
Maruša Pečovnik  
Anja Perko  
Aljaž Pisnik  
Eva Praunseis  
Matic Proj  
Anja Sinjur  
Vesna Sočan  
Maša Sterle  
Sabina Šenica  
Špela Šmon  
Katja Šopar  
Žan Toplak  
Tjaša Vidic  
Tina Viler  
Anže Zidar

• **2013/2014 2ND YEAR EM PHARMACY**

Damjan Avsec

Neža Alič

Enej Bole  
Rebeka Borovnik  
Tina Breskvar  
Urška Češarek  
Ana Dolšak  
Maja Gamser  
Andrej Grobin  
Karmen Hajšek  
Tjaša Herlah  
Benjamin Justin  
Rok Kaker  
Petra Kapš  
Manca Kolar  
Tanja Komučar  
Ema Krajnc  
Katja Kramberger  
Uroš Markoja  
Sandra Mramor  
Sebastjan Nemec  
Doroteja Novak  
Veronika Pelicon  
Tina Perko

Tina Vida Plavec  
Eva Pokovec  
Manca Potočnik  
Urša Pratneker  
Ksenija Ravnikar  
Emanuela Senjor  
Sabina Starič  
Tjaša Steiner  
Ana Carolina Štekar  
Andrej Šterman  
Jernej Štukelj  
Tatjana Šučur  
Ana Temeljotov  
Monika Tonejc  
Armando Tratenšek  
Neža Trpin  
Danijel Videc  
Matej Zore  
Matic Zorko  
Maja Zupančič  
Timotej Žvanut

- **2013/2014 3RD YEAR EM PHARMACY**

Jan Breznikar  
Tjaša Frelj  
Kaja Gantar  
Samo Guzelj  
Tanja Jakoš  
Aljaž Jeromel  
Ina Kosmač  
Katarina Nemec

Gašper Pisanec  
Eva Shannon Schiffrer  
Žiga Skok  
Mateja Stopinšek  
Nina Strah  
Luka Šrot  
Blaž Vraničar

- **2013/2014 4TH YEAR EM PHARMACY**

Matevž Aubrecht  
Rok Barle  
Kaja Bergant  
Matic Bergant  
Tamara Bergoč  
Sarah Siri Blejc  
Vesna Gorenjak  
Anja Gregorc  
Lea Ješe  
Urška Jug  
Lidija Kač  
Jerneja Kladnik  
Eva Knuplež  
Lidija Kovač

Jure Loboda  
Primož Lokošek  
Neža Muhič  
Mitja Pohlen  
Alja Prah  
Tea Rakovec  
Jakob Rihter  
Petruša Rozman  
Ema Sever  
Sara Strasner  
Tjaša Vidmar  
Petra Zupan  
David Zupančič

- **2013/2014 1ST YEAR UN LABORATORY BIOMEDICINE**

Tina Draškovič  
Mojca Hunski  
Tina Košuta  
Eva Kozjek  
Neža Levičnik  
Tina Levstek  
Anja Ličen  
Barbara Lipovšek

Maruša Mišmaš  
Ema Müller  
Veronika Novak  
Aleks Peternel  
Tamara Rojnik  
Samantha Roudi  
Staša Vintar

- **2013/2014 2ND YEAR UN LABORATORY BIOMEDICINE**

Mateja Cigoj  
Nuša Debevec  
Marjetka Glavič  
Anja Herceg  
Tomaž Kajtna

Tina Kuhar  
Tjaša Legen  
Katja Mehle  
Tjaša Pavlin  
Maja Svetličič

- **2013/2014 3RD YEAR UN LABORATORY BIOMEDICINE**

Petra Hadžidaova  
Mojca Justin  
Maja Kambič  
Tina Kljun

Vesna Krašovec  
Žan Pušnik  
Blaž Šketelj  
Martina Tomažin

- **2013/2014 1ST YEAR UN COSMETOLOGY**

Nina Bahun  
Valerija Janežič  
Nuša Japelj

Ana Kovačič  
Kity Požek  
Anja Rijavec

- **2013/2014 2ND YEAR UN COSMETOLOGY**

Sara Kimm Fuhrmann  
Tjaša Grum  
Anja Jazbec  
Elizabeta Jevnikar  
Vita Kavčič  
Maruša Klemenčič  
Sara Koprivnik  
Ana Krstova  
Anamarija Kuhar

Eva Mihevc  
Maša Močnik Roner  
Nika Nusdorfer  
Anja Plešec  
Timeja Planinšek Parfant  
Urška Povše  
Mojca Pušnik  
Nika Zupanc

- **2013/2014 3RD YEAR UN COSMETOLOGY**

Laura Brezovar  
Tia Grgičević  
Špela Hafner  
Olga Jerković  
Klementina Kozoderc  
Urška Kramberger  
Klara Kravos  
Nuša Krivec  
Nika Marušič

Katarina Mehle  
Vesna Pirnat  
Alenka Struna  
Barbara Štepic  
Tia Kristian Tajnšek  
Mateja Testen  
Ana Unkovič  
Špela Vodopivec

- **2013/2014 1ST YEAR LABORATORY BIOMEDICINE MASTER'S STUDY PROGRAMME**

Ana Boneš

Ana Ercegovič Rot

Barbara Kern

Ida Lesar

Ajda Trdin

Matic Ukmar

Maša Vidmar

- **2013/2014 2ND YEAR LABORATORY BIOMEDICINE MASTER'S STUDY PROGRAMME**

Katarina Dežman

Eva Jarc

Jurka Klun

Klemen Kodrič

Eva Kotnik

Tadeja Kuret

Tamara Obreza

Katja Perc

Ana Pavlovič

Jerneja Slevce

Tamara Štutuš Temovski

Anja Švigelj

Blanka Ulaga

Mihaela Vaupotič

Mojca Zupančič

- **2013/2014 1ST YEAR INDUSTRIAL PHARMACY MASTER'S STUDY PROGRAMME**

Maja Avbelj

Dragica Glavič

Katja Mikolič

Žiga Strmšek

- **2013/2014 2ND YEAR INDUSTRIAL PHARMACY MASTER'S STUDY PROGRAMME**

Maja Bjelošević

Tanja Goršak

Mateja Rapuš

Špela Voh

## **2014 KRKA AWARD WINNERS**

### ***Krka Awards for Special Achievements in the Field of Research Work***

Čvan Trobec Katja (mentor: Mitja Lainščak, co-mentor: Mojca Kerec Kos): "Impact of body composition changes and cachexia on bisoprolol and ramipril pharmacokinetics and renal function estimation in patients with chronic heart failure", COBISS.SI-ID: 3754097.

Hodnik Žiga (mentor: Danijel Kikelj, co-mentor: Lucija Peterlin Mašič): "Design, synthesis and evaluation of analogs of bioactive compounds from marine sponges of the genera *Agelas* and *Theonella*", COBISS.SI-ID: 3753073.

Štefanič Marko (mentor: Marija Bogataj, co-mentor: Franc Vrečer): "The importance of gastric emptying kinetics of enteric coated pellets in fasted state for in vitro release and in vitro/in vivo correlation", COBISS.SI-ID: 3754353.

Zupančič Špela (mentor: Assist. Prof. Petra Kocbek, PhD, co-mentor: Satyanarayana Somavarapu, PhD): "Formulation and Characterisation of Curcumin Loaded Nanodelivery System for Inhalation", COBISS.SI-ID: 3752817.



### **Krka Awards for Research Work**

Artenjak Andrej (mentor: Borut Božič, co-mentor: Saša Čučnik): "Influence of high avidity anti- $\beta$ 2-glycoprotein I antibodies and oxidatively modified natural antibodies on human coronary artery endothelial cells grown in vitro", COBISS.SI-ID: 3754609.

Bogdan Helena (mentor: Franc Vrečer, co-mentor: Darko Uršič): "Influence of buffer systems on in vitro drug release from solid dosage forms", COBISS.SI-ID: 3754865.

Kastelic Jože (mentor: Danijel Kikelj, co-mentor: Odon Planinšek): "Preparation, characterisation and evaluation of physico-chemical properties of fluconazole cocrystals with carboxylic acids", COBISS.SI-ID: 3807089.

Kralj Eva (mentor: Prof. Albin Kristl, PhD, co-mentor: Assist. Prof. Simon Žakelj, PhD): "The influence of imatinib active transport on the therapeutic outcome of chronic myeloid leukemia", COBISS.SI-ID: 3753329.

Kregar Sabina (mentor: Petra Kocbek, co-mentor: Leena Peltonen): "Preparation of glibenclamide nanocrystals by pearl milling", COBISS.SI-ID: 3755121.

Oberški Lara, Vozel Tinkara (mentor: Tomaž Bratkovič, co-mentor: Zdenka Keuc): "An investigation on epitope mapping of polyclonal antibodies, directed against ghrelin", COBISS.SI-ID: 3755633.

Pajk Matjaž (mentor: Franc Vrečer, co-mentor: Matej Smrkolj): "The optimisation studies of polymorphic forms of API with high-throughput screening", COBISS.SI-ID: 3755377.

Rožman Eva (mentor: Odon Planinšek): "Formulation and evaluation of multiple solid dispersion of carvedilol with polyethylene glycol and mesoporous silicate", COBISS.SI-ID: 3753585.

Zajc Peter (mentor: Matej Sova): "Synthesis and evaluation of pyrimidino-guanidine antagonists of Toll-like receptor 4", COBISS.SI-ID: 3753841.

(Chapter 3 prepared by: B. Božič, A. Obreza, S. Baumgartner, I. Mlinarič Raščan, D. Černe, S. Kreft, S. Gobec, M. Gašperlin, A. Kristl, M. Kos, T. Kadunc, Z. Gantar)

### **WINNER OF LEK BIO CAMP**

More than 35 undergraduate and postgraduate students from ten countries, namely from Slovenia, Croatia, Serbia, Bosnia and Herzegovina, Austria, Italy, Germany, the Netherlands, Poland and Russia, attended the 4th regional BioCamp in Ljubljana, which is organised by Lek, a member of the Sandoz Group. The competition involving the preparation of a case study on how to develop and launch a new product was won by **Boris Brus** from the Faculty of Pharmacy.

## **SPORT ACHIEVEMENTS**

In the 2013/14 academic year, the students and the employees at the Faculty of Pharmacy of the University of Ljubljana achieved a series of remarkable results in sports at the championships of the University of Ljubljana as well as at state and international competitions.

2nd year student of Laboratory Medicine Maruša Mišmaš won a prestigious award for the most exceptional young athlete of 2014 in Slovenia.

The largest breakthrough in league competitions of the University of Ljubljana during this academic year was achieved by the futsal players, who amidst extremely intense competition were ranked among the best four university members and thus took part in the finals. Unfortunately, they ran short of winning a medal, but we can nonetheless be proud that we have the most educated futsal team that also includes a few doctors of science.

In 2014, our teams only achieved fourth place, but it should be taken into account that the students and employees at the Faculty of Pharmacy were up against other university member faculties that have a much larger selection of players.

### **UNIVERSITY SPORTS:**

#### FUTSAL

Students (men), 4th place UFL:

Miha Belak, Klemen Jerman, Mensud Omerović, Mitja Pišlar, Anže Rupnik, Izidor Sosič, Matej Štaus, Aleš Žula, Matej Furman, Jernej Štukelj, Matic Zorko

#### UNIVERSITY VOLLEYBALL LEAGUE

Students (women), 4th place:

Nika Zidarič, , Vesna Jug, Kristina Kacin, Lea Ješe, Tia Grgičević, Katarina Mehle, Monika Čančar, Nina Štravs, Anita Bajuk, Urša Pratneker, Špela Prijon, Petra Ropret, Petra Srdič, Tanja Abramovič

#### UNIVERSITY VOLLEYBALL LEAGUE

Students (men), 4th place:

Matjaž Sušec, Aleš Žula, Boris Brus, Rok Hrovat, Jani Jamnik, Andrej Artenjak, Tim Rahne, Gašper Vrhunc, Aljž Pisnik, Simon Brodnjak, Samo Kuzmič, Martin Mikelj

#### BEACH VOLLEYBALL

4th place: Samo Kuzmič, Simon Brodnjak

#### JUDO

3rd place: Žan Logar

#### UNIVERSITY BASKETBALL LEAGUE

Students (men), 17th place:

Žiga Jeraj, Aleš Svete, Domen Kutoša, Gregor Hertl, Jure Loboda, Martin Grosek, Matjaž Weiss, Nejc Golob, Blaž Robnik

#### SWIMMING

Team, 5th place at the Faculty

Relay, Students (women), 3rd place: Iza Blagajac, Mateja Stopinšek, Vita Hren, Deu Janežič Petra

Relay, medley, 4th place: Iza Blagajac, Peter Grutschreiber, Anže Pavlič, Mateja Stopinšek

Breaststroke, 5th place: Mateja Stopinšek



## CHESS

Freestyle, 4th place: Vita Hren  
Team, 2nd place at the Faculty  
Students (men), 1st place: Jure Borišek  
Employees (men), 1st place: Aleš Obreza  
Students (women), 3rd place: Jelena Topič



## ATHLETICS

Team, 2nd place at the Faculty  
800m running, 1st place: Maruša Mišmaš  
100m running, 3rd place: Kaja Glavač  
3000m running, 2nd place: Tina Čačilo  
Long jump, 1st place: Kaja Glavač  
Shot put, 1st place: Kaja Glavač



## SQUASH

Team, 2nd place at the Faculty  
3rd place: Izidor Sosič  
4th place: Stanko Gobec  
5th place: Aleš Žula

## RELAY RUNNING

5th place at the Faculty: Mitja Pišlar, Damjana Gregorič, Nace Zidar, Neža Vrečar, Rok Frlan, Mojca Pernek, Eva Shannon Sshifrer, Anže Božič, Ema Valentina Sajovic, Miha Belak

**Students of the Faculty with the status of professional athlete were, despite their study requirements, very successful at state and international competitions.**

Some of the exceptional sports results:

## ATHLETICS

Maruša Mišmaš, young athlete person of 2014 in Slovenia  
- 1st place - state and university championship  
- 10th place - 3000m steeplechase, European championship (state senior record)  
- 11th place - cross-country, European championship, younger seniors

Neja Filipič

- 1st place - long jump, state championship, older juniors

## SPORTS GYMNASTICS

Andraž Lamut

- 2nd place - parallel bars, state championship  
- 2nd place - vault, state championship

## HANDBALL

Katja Legan – ŽRK Krka

- 2nd place - state championship - juniors

## DANCING

Matej Voušek

- 1st place, world championship, seniors, show dance small group, Prague, Czech Republic



- 3rd place, world championship, seniors, show dance duo, Prague, Czech Republic
- 2nd place, world cup, seniors, show dance duo, Germany
- 1st place, world championship, seniors, modern, small group, Poland
- 1st place, world championship, seniors, modern formation, Poland

Tina Kljun and Ajda Vičič

- 2nd place, show dance, state championship
- 3rd place, show dance formation, seniors, IDO world championship, Prague, Czech Republic

Tina Draškovič

- 1st place, street dance, state championship
- 2nd place, street dance, European championship



BIATHLON

Anthea Grum

- 1st place, state championship
- 2nd place, total for Slovenian cup, juniors
- 32nd place, youth world championship, Presque Isle, USA

JUDO

Anja Štanger

- 1st place, state championship
- 3rd place, European cup, Belgrade
- 3rd place, European cup, juniors, Ligano

BASKETBALL

Urša Žibert - Women's Basketball Club Triglav

- 1st place, Slovenia Cup
- 2nd place in the premier basketball league for women-seniors
- 1st place, state championship in street basketball
- 2nd place at the European championship in street basketball

FOOTBALL

Jernej Štukelj - football team for the University of Ljubljana

- 1st place, state championship, University of Maribor: University of Ljubljana
- 9th place, EU Games, Rotterdam, the Netherlands



#### 4 INTERNATIONAL ACTIVITY IN 2014

The international activity of the Faculty of Pharmacy is one of the key factors of the quality educational process and is performed in accordance with the Faculty's strategy and the strategy of the University of Ljubljana, where one of the main goals is also increased internationalisation of the entire area of higher education. We are especially aiming to increase the mobility of students as well as the teaching staff and researchers. By entering into bilateral agreements and integrating the Faculty into various international networks, we wish to enable mobility to the maximum possible number of students at the Faculty and by allowing them to acquire general competences to increase their competitiveness in their search for employment. The Faculty's international activity is also reflected in the organisation of summer schools and conferences and by joining various international research projects. The Faculty's international activity is thus integrated into the pedagogical and scientific research activity as well as organisational activity of the entire Faculty.

#### INTERNATIONAL ACTIVITY IN THE STUDIES AREA

In the studies area, the international activity encompasses mainly the activities related to various exchanges as well as the organisation of various summer schools. In general, the number of students that took part in one of the forms of exchanges abroad (Table 4.1) has increased. The mobility programmes that make exchanges possible are:

- a) **ERASMUS**: in 2014, 62 bilateral agreements were concluded with foreign universities that enable exchanges for students with the purpose of studying abroad (SMS). Based on a suitable study agreement, the student can meet the study requirements for an individual year abroad, which after returning to the parent institution are recognised fully. As part of the Erasmus exchanges, it is also possible to perform placement (SMP), which mainly requires an active role from the students who decide on this type of mobility.



Figure 4.1: Depiction of ERASMUS cities with partner faculties with which the Faculty of Pharmacy is cooperating

- b) Norwegian Financial Mechanism (**NFM**): makes it possible to acquire funds for exchanges with Norway, Iceland and Lichtenstein. The exchanges are carried out according to almost exactly the same mechanism as Erasmus exchanges, and we are proud that despite strong competition, our students also won grants and are already taking part in the first study exchange in Oslo and 2 placements, one in Tröms and once in Reykjavik.
- c) **BASILEUS**: encouraging academic mobility from the countries of the West Balkans and the EU; in 2014, we accepted 3 students to the faculty, and 2 of our students took part in exchanges.
- d) **CEEPUS programmes** are intended for student exchanges in Central Europe, whereby the exchanges are possible within the CEEPUS network or outside when students and researchers apply as “free-movers”. CEEPUS (Central European Exchange Programme for University Studies) is a regional programme the aim of which is to establish and encourage mobility of students and professors in cooperating countries. In 2014, the summer school in Portorož was organised as part of the CEEPUS *Novel diagnostic and therapeutic approaches to complex genetic disorders (CIII-HR-0611)* network.
- e) Programmes of the international (**IPSF**) and European (**EPSA**) association of pharmaceutical students enable shorter one-month two-way exchanges. 44 students participated in these programmes in 2014.
- f) Other types of mobility are, for example, the participation of our students in research summer schools in the USA, performing practical training as part of IAESTE and COST projects; foreign students obtain a CMEPIUS grant as “free movers” in order to complete a part of their study requirements at our Faculty.

*Table 4.1: Number of our students who performed a part of their study requirements abroad and the number of foreign students who attended exchange at our faculty in 2014 or who are regularly enrolled in a programme at the Faculty during the academic year (2014/15)*

Number of students	<b>TOTAL</b>	ERASMUS + NFM	BASILEUS	CEEPUS	IPSF placements	Other exchanges (free-movers, IAESTE, etc.)	Regularly enrolled students 2014/15
Students of the Faculty abroad	<b>101</b>	70 +3	2	4	18	4	-
Foreign students at our Faculty	<b>128</b>	35	3	30	26	3	36

Approximately 7.33% of all regularly enrolled students from the first and second cycle of the study programme complete a part of their requirements or obtain additional competences for future work abroad. We have noticed that this year the number of students abroad is somewhat lower compared to the previous year. One of the reasons for the decreased number is definitely financial and the other the fact that our students mainly want to go on exchanges to countries that are either German speaking or which have their lectures in English. And it is harder to conclude bilateral agreements

with these countries, because the provision of reciprocity is required. Despite this, our students have been very successful in performing their requirements abroad. The majority complete all their study requirements with high grades. All this indicates that our students prepare for the exchange responsibly and have good learning basics and the capability to adjust to other cultures.

The most widespread exchanges are still as part of the Erasmus programme (Chart 4.1), and in 2014, shorter CEEPUS exchanges were also plentiful. It was the first time that the number of foreign students at our faculty was larger than the number of outgoing students - the balancing of the number of outgoing and incoming students is one of the aims of internationalisation. If we analyse the exchanges in terms of student exchanges, one can notice the number of students going to an exchange is still higher than the number of students coming to the Faculty.

We have noticed there is a very high number of students going abroad, especially as part of placements (Chart 4.1), where at the foreign institution they perform their research work, work in pharmacies or are acquiring experience in relation to the profession for which they are studying. Students of all study programmes, even Cosmetology and Laboratory Biomedicine, for which there are somewhat less student exchanges available can take part in these exchanges, since it is otherwise difficult to find similar programmes at foreign universities. Thus, in 2014, besides students of EM Pharmacy, students from other study programmes started going abroad: 4 students from Cosmetology, 6 students from Industrial Pharmacy and 5 students from Laboratory Medicine.

In 2014, students of the Faculty, in cooperation with the vice dean for international cooperation, organised a massively attended **Mobility Day**, where students are provided key information on what types of mobility are possible at the Faculty. Detailed information in relation to various mobility calls for enrolments is provided to students throughout the year at various meetings that are also attended by students who have already taken part in a mobility programme and who present their experience with the exchange. In 2014, one of the workshops with a high number of attendees was organised by the main Erasmus tutor, Mateja Polak, who presented the guidelines for searching for placements. We would like to emphasise that the students of the Faculty from all study programmes are very successful in looking for placements and are often helped by all the employed teachers at the Faculty. We should also point out that many tutors abroad are very satisfied with the work of our students abroad, which they express in writing in the reports about the performed work. The students of the Faculty are increasingly becoming aware that some general competences acquired with the exchanges will present a key advantage in their search for employment. Therefore, they are attending various types of exchanges and are preparing for Slovenian and foreign calls for proposals to receive financing. One of our students thereby obtained a grant in the USA and took part in an intensive 10-week research summer school.

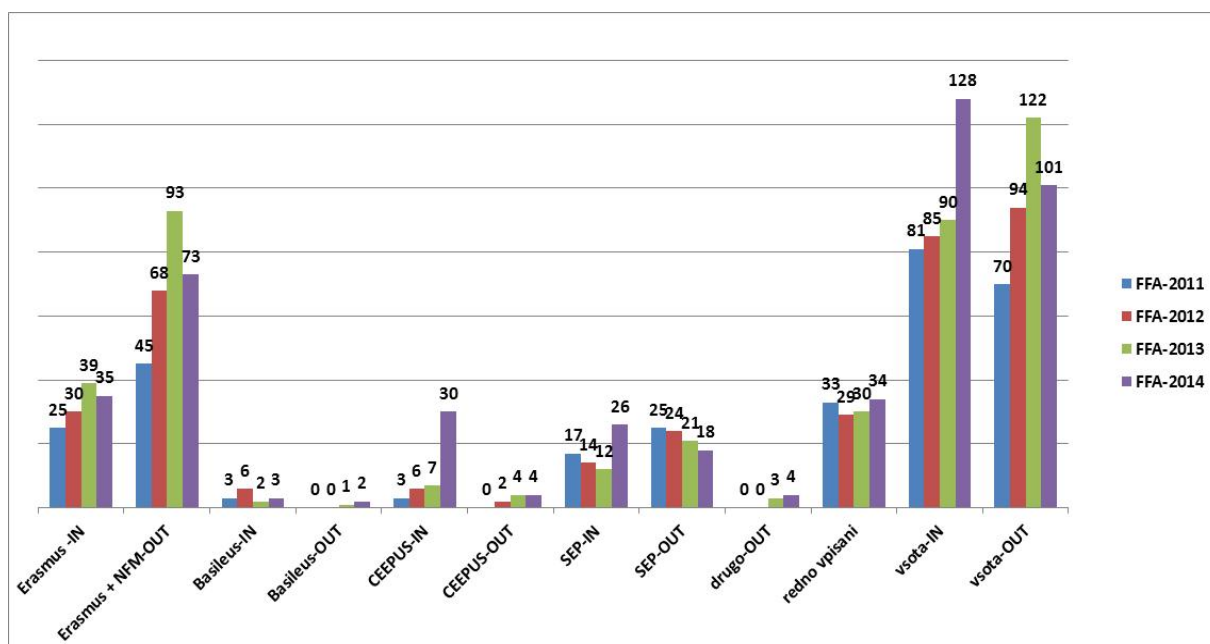


Chart 4.1: Comparison of the number of students attending exchanges by years

When analysing the number of incoming students, we have noticed that it is the first time that the number of foreign students visiting at the Faculty is higher than the number of our outgoing students. A particular increase in numbers is due to incoming students via the CEEPUS programme attending the summer school organised by the Faculty (Chart 4.1). For Erasmus and other exchanges, the number has remained approximately the same throughout recent years. The reason for the lack of any significant increase of the number of foreign students at our faculty is still primarily due to the fact that the majority of lectures are performed in Slovenian, and the growth has also been somewhat hindered by the economic crisis. At the Faculty, we are taking care of foreign students on various levels, from the organisation of laboratory exercises in English to individual consultations with the performers of subjects, also in English. Written and oral exams are also in English, and the majority of study literature is also available in foreign languages. We have also implemented a tutorship system for foreign students that has made studying at our faculty easier for many. A large majority of students at our Faculty mainly want to perform individual research work, since we have very good conditions for that, and owing to communications in English, there are no language barriers present during such work.

The international recognisability of the Faculty is also being spread and strengthened internationally by teachers and researchers in various ways. From shorter pedagogical or scientific visits to various presentations of scientific work at conferences. In 2014, there were as many as 87 teachers and researchers of the Faculty active abroad with various activities:

- 16 were abroad as guest teachers and researchers,
- 50 as participants at conferences; the majority of them were invited lecturers,
- 5 attended various meetings where they actively discussed and presented the results in international project groups,
- 16 were attendees of various summer schools and seminars.

During the 2014 academic year, the Faculty hosted 21 foreign teachers and researchers, namely 10 teachers and 11 researchers, which is approximately the same as in previous years. For 2015, we are planning more visits as part of the Internationalisation project that will increase the number of visiting professors. These exchanges also promote better recognisability of the Faculty and the establishment of new international connections.

## **ORGANISATION OF INTERNATIONAL MEETINGS**

### ***Hosting the 20th EAFP Annual Conference***

From 22 to 24 May 2014, The Faculty of Pharmacy of the University of Ljubljana successfully organised the 20th EAFP international conference and thus focused its activities on greater recognisability of the Faculty. The emphasis that pharmaceutical faculties with their programmes are scientifically oriented and that they transfer this into all teaching curricula was also reflected in the title of the congress: ***Science Based Education: Towards Better Medicines and Better Patient Care***. The chairman of the conference was Prof. Borut Božič, PhD. During the conference, a meeting of the committee for the European project PHAR-QA, Ensuring Quality of Education and Training of European Pharmacists (PHAR-QA), was organised, as part of which the Faculty of Pharmacy of the University of Ljubljana is coordinating 18 countries from the Eastern region. With events such as these, the Faculty is confirming its mission as a scientifically-oriented pedagogical institution. More on the conference in the Prominent Events chapter.

### ***Organisation of the International Summer School***

As part of the CEEPUS CIII-HR-0611-04-1415 network - ***Novel diagnostic and therapeutic approaches to complex genetic disorders***, the Faculty of Pharmacy has organised the CEEPUS international summer school, which took place from 23 to 29 August 2014 in Portorož. The summer school was organised by Prof. Janja Marc, PhD and Assistant Irena Prodan Žitnik, PhD. 43 participants took part in the school from 6 countries (Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Hungary, Czech Republic), of which 10 were teachers and 33 were undergraduate and postgraduate students of laboratory medicine, medical biochemistry, pharmacy and medicine. The main topics of the summer school were: cardiovascular diseases, immunological diseases and metabolic disorders, which were covered with 38 lectures and 3 interactive workshops. All participants participated actively at the school: teachers with 45 minute lectures and students with 20 minute presentations of their research work and other selected topics. The CEEPUS summer school was accredited by the Faculty of Pharmacy of the University of Ljubljana with 3 ECTS. The conditions for obtaining the 3 ECTS were regular presence at lectures, preparation of a presentation and passing a written exam. Surveys of the participants have shown that they were delighted by the professional as well as the social part of the programme and they also commended the organisation of the school.

### ***International Summer School on the Development of Solid Pharmaceutical Forms -Pharmaceutical Solid State Research Cluster - PSSRC***

From 16 September to 18 September 2014, an intensive summer school on the development of solid pharmaceutical forms took place at the Faculty of Pharmacy. It was organised with the help of funds from the Internationalisation project at the University of Ljubljana. PSSRC is an association of leading faculties and institutes in Europe that engage in the development of solid pharmaceutical forms and so the cluster includes institutions from the following countries: France, Germany, Finland, Denmark, Belgium, Portugal, Austria and Slovenia. The meeting is organised every year in a different country. Traditionally it was a two-day summer school only for cluster members and then in the form of an open symposium that this year was entitled ***Functionality Related Characteristics of Materials for Controlled Release***. As part of the cluster's "closed sessions", a summer school took place at the Faculty in two parallel sections where practically all participants presented their own research work

in the form of short spoken presentations. Sections were managed by experienced researchers from the field. The cluster's open day was joined as a satellite symposium of the Central European Technological Symposium CESPT and took place in Portorož. Here, leading researchers in the field of solid pharmaceutical forms presented their scientific research. More than 100 Slovenian and foreign participants attended the summer school, of which many were undergraduate and postgraduate students and their mentors. The chairman of the professional organisational committee was Prof. Stanko Srčič, PhD. The organisation of this meeting naturally strengthened the importance of Slovenian pharmaceutical technology and industrial pharmacy in general within the field of pharmacy.

## **ASSOCIATION WITH FOREIGN HIGHER EDUCATION INSTITUTES OR ORGANISATIONS**

### ***Guest Foreign Teachers at the Faculty of Pharmacy***

- Prof. Jerka Dumić Belamarić, PhD, Faculty of Pharmacy and Biochemistry, University of Zagreb, Croatia
- Prof. Hans Uwe Simon, PhD, University of Bern, Medical Faculty, Institute of Pharmacology, Bern, Switzerland
- Prof. Tamas Kőszegy, PhD, Medical University Pecs Hungary, Department of laboratory medicine, Pecs, Hungary
- Prof. Florian Rüker, PhD, University of Natural Resources and Life Sciences, Vienna, Austria
- Prof. Parimal C.Sen, PhD, Bose Institute Kolkata, India
- Prof. Mario Pazzagli, PhD, University of Florence, Firenze, Italy
- Prof. Daniel Bar-Shalom, PhD, University of Copenhagen, Department of Pharmacy, Copenhagen, Denmark
- Prof. Carole Ferraro Peyret, PhD, Institut des Sciences Pharmaceutiques et Biologiques (ISPB), Université Lyon, France
- Prof. Radoslaw Starosta, PhD, University of Wroclaw, Faculty of Chemistry, Wroclaw, Poland
- Assistant Prof. Malin Lindqvist Appell, PhD, Linköpings Universitet, Department of Medical and Health Sciences, Linköping, Sweden

### ***Guest Foreign Researchers at the Faculty of Pharmacy***

- Prof. Sandra Šupraha Goreta, PhD, University of Zagreb, Faculty of Pharmacy and Biochemistry, Zagreb, Croatia
- Prof. Gulbaram Ustenova, PhD, University Almaty, Faculty of Pharmacy, Almaty, Kazakhstan
- Prof. Elena Boldyreva, PhD, Novosibirsk State University, Novosibirsk, Russia
- Helene Barreteau, PhD, Université de Paris Sud, France
- Radolphe Auger, PhD, Université de Paris Sud, France
- Edina Vranić, PhD, Faculty of Pharmacy, University of Sarajevo, BiH
- Aidarkhan Batyrkhan, PhD, University Almaty, Faculty of Pharmacy, Almaty, Kazakhstan
- Daris Grizić, Faculty of Pharmacy, University of Sarajevo, BiH
- Sofija Stanković, Faculty of Pharmacy, University of Belgrade, Serbia
- Christian D. Muller, Université de Strasbourg, Faculte de Pharmacie, Strasbourg, France
- Denis Rychkov, Novosibirsk State University, Novosibirsk, Russia



## ***Teachers and Associates of the Faculty Visiting or Training Abroad***

### **a) Teachers, Assistants**

- Prof. Marija Bogataj, PhD, Prof. Mirjana Gašperlin, PhD, Prof. Julijana Kristl, PhD, Prof. Aleš Mrhar, PhD, Prof. Stanko Srčič, PhD, Prof. Saša Baumgartner, PhD: “9th World Meeting on Pharmaceutics, Biopharmaceutics and Pharmaceutical Technology”, Lisbon, Portugal
- Prof. Borut Štrukelj, PhD, international congress “Immunology 2014 – AAI Annual Meeting”, Pittsburgh, USA
- Prof. Janja Marc, PhD, visiting/international exchange CEEPUS - at the Faculty of Pharmacy of the University of Belgrade, Serbia
- Prof. Albin Kristl, PhD, conference and international workshop “4th International Regulatory Workshop on A to Z on Bioequivalence, Bioanalysis, Dissolution and Biosimilarity”, Budapest, Hungary
- Assistant Prof. Ilija Ilić, PhD, Assist. Rok Šibanc, PhD, Assist. Zoran Lavrič, PhD: workshop “Colorcon Coating School”, Budapest, Hungary
- Prof. Stanislav Gobec, PhD, Assist. Izidor Sosič, PhD, Boris Brus: visit to the College of Pharmacy, University of Minnesota, Minneapolis, USA
- Prof. Danijel Kikelj, PhD, Assist. Žiga Hodnik, PhD, Assist. Damijan Knez: “4th Symposium Paul Ehrlich MedChem Euro-PhD Network”, Hradec Králové, Czech Republic
- Prof. Janja Marc, PhD, international summer school “2nd ESPT Summer School – Pharmacogenomics and Other Omics Leading to Personalised Medicine: Established and Emerging Scientific, Clinical and Ethical Aspects”, Rome, Italy
- Prof. Borut Božič, PhD, “22nd International Congress of Clinical Chemistry and Laboratory Medicine (IFCC Worldlab 2014)”, Istanbul, Turkey
- Prof. Irena Mlinarič Raščan, PhD, Assist. Alenka Šmid, Assist. Tijana Markovič: “Inflammation, Immunomodulation, Inspiration – 13th International Summer School”, Stein am Rhein, Switzerland
- Prof. Aleš Mrhar, PhD, 6th International Congress of Serbian Pharmacists, Belgrade, Serbia
- Prof. Saša Baumgartner, PhD, visit to Ss.Cyril and Methodius University in Skopje, Faculty of Pharmacy, Skopje, Macedonia
- Prof. Julijana Kristl, PhD, meeting of partners of higher education institutions for the HOME project, Porto, Portugal
- Prof. Stanislav Gobec, PhD, visit to Euipе Enveloppes Bactériennes et Antibiotiques IBBMC, Université Paris Sud, Paris, France
- Prof. Borut Štrukelj, PhD: guest teacher at Kazakh National Medical University, Almaty, Kazakhstan
- Prof. Janko Kos, PhD, visit to UCLA, Los Angeles, USA
- Prof. Janko Kos, PhD, symposium “Blood-based Biomarkers for Optimal Screening of Colorectal Neoplasia”, Copenhagen, Denmark
- Prof. Janko Kos, PhD, Congress of the Federation of European Biochemical Societies - FEBS, Paris, France
- Prof. Borut Štrukelj, International Conference on Food and Biotechnology and International Summer School for Early Stage Researchers, Tbilisi, Georgia
- Prof. Stanislav Gobec, PhD, Prof. Danijel Kikelj, PhD, Prof. Aleš Obreza, PhD, Associate Prof. Marko Anderluh, PhD, Assist. Prof. Žiga Jakopin, PhD, Assist. Prof. Tihomir Tomašič, PhD, Assist. Prof. Nace Zidar, PhD, Assist. Roman Šink, PhD, Assoc. Prof. Anamarija Zega, PhD, Assoc. Prof. Janez Ilaš, PhD: “23rd Symposium of the European Federation for Medicinal Chemistry (EFMC)”, Lisbon, Portugal
- Prof. Saša Baumgartner, PhD, “17th International Pharmaceutical Technology Symposium – IPTS 2014”, Antalya, Turkey

- Prof. Janja Marc, PhD, Prof. Irena Mlinarič Raščan, PhD, Assist. Irena Prodan Žitnik, PhD: “7th Santorini Conference Biologie Perspective: Systems Medicine, Personalised Health and Therapy”, Santorini, Greece
- Assoc. Prof. Tomaž Vovk, PhD, “14th International Conference on Oxidative Stress Reduction, Redox Homeostasis and Antioxidants”, Paris, France
- Assist. Prof. Ilija Ilić, PhD, Assist. Mateja Egart, Assist. Zoran Lavrič, PhD: intensive workshop “2nd LIAT-Ph: Designing Medicinal Products and Production while Taking into Account Development with Integrated Quality”, University of Belgrade, Serbia
- Assoc. Prof. Mitja Kos, PhD, Assist. Nejc Horvat, Assist. Ana Janežič: PCNE Working Symposium: Progress in DRPs, Medication Review and PhC Guidelines, Silema, Malta
- Assoc. Prof. Mitja Kos, PhD, “43rd ESCP Symposium: Patient Safety. Bridging the Gaps”, Copenhagen, Denmark
- Assist. Prof. Ilija Ilić, PhD, seminar “Oral Solid Dose Forum”, Budapest, Hungary
- Assist. Prof. Ilija Ilić, PhD, seminar “Colorcon Modified Release Forum”, Barcelona, Spain
- Assist. Janja Zupan, PhD, “World Congress on Osteoarthritis, Osteoarthritis Research Society International”, Paris, France
- Assist. Simona Mencej Bedrač, PhD, Assist. Vid Mlakar, PhD: “ECTS 2014 Conference”, Lisbon, Portugal
- Assist. Katarina Bolko Seljak, Assoc. Prof. Petra Kocbek, PhD: intensive course “Bioprocessing Training Course”, Dublin, Ireland
- Assist. Martina Gobec, PhD, mentorship of ERASMUS diploma, Vilnius University, Department of Botany and Genetics, Faculty of Natural Sciences, Vilnius, Lithuania
- Assist. Matjaž Ravnikar, PhD, one year further training at the University of Natural Resources and Life Sciences (BOKU), Vienna, Austria

## **b) Researchers**

- Assist. Anja Pišlar, PhD, symposium “The Molecular Basis of Brain Disorders”, Miami, USA
- Assist. Špela Zupančič, international conference and workshops “Bio Barriers 2014”, Saarbrücken, Germany
- Assist. Martina Hrast, research work at the Institute for Structural Biology, IBS, Grenoble, France
- Assist. Špela Zupančič, international seminar with workshops “International training school on characterisation of electrospun nanofibers: Hands-on experience”, Ankara, Turkey
- Assist. Boris Brus, one-month research work at the IBS Institute, Grenoble, France
- Assist. Ana Mitrović, international workshop “Interdisciplinary signalling workshop”, Visegrad, Hungary
- Assist. Damijan Knez, training at NanoITC, Eschborn, Germany
- Assist. Damijan Knez, training at EFMC – 9th EFMC Short Course on Medicinal Chemistry, Oegstgeest, Netherlands
- Assist. Špela Zupančič, seminar “Electrospinning: exploiting electrohydrodynamics and rheology for the control of nanofiber structural and physical properties”, Udine, Italy
- Assist. Tijana Markovič, “9th World Congress on Alternatives and Animal Use in the Life Sciences”, Prague, Czech Rep.
- Petra Zadravec, international scientific conference “12th Discussions in Structural Molecular Biology”, Nové Hradky, Czech Rep.
- Darja Gramec, international symposium “MDO Symposium”, Stuttgart, Germany
- Tjaša Vižin, conference “Cellular signalling and cancer therapy”, Cavtat, Croatia
- Jernej Luzar, EAACI Congress 2014, Copenhagen, Denmark
- Petra Zadravec, “11th Symposium on Lactic Bacteria”, Egmond aan Zee, Netherlands
- Tjaša Vižin, “14th Young Scientists’ Forum (YSF)” and FEBS EMBO conference, Paris, France

### ***Exchanges and Collaborations between Employed Teachers, Associates and Researchers at Foreign Educational and Research Institutions in 2014 (grouped according to institutions)***

- Prof. Stanko Srčić, PhD, Prof. Mirjana Gašperlin, PhD, Prof. Janja Marc, PhD: Faculty of Pharmacy, University of Belgrade, Serbia
- Prof. Stanislav Gobec, PhD, Assist. Martina Hrast, PhD, Assist. Boris Brus: Institute of Structural Biology, IBS, Grenoble, France
- Prof. Stanislav Gobec, PhD, Assist. Izidor Sosič, PhD: Faculty of Bioscience Engineering, Ghent University, Belgium
- Prof. Stanislav Gobec, PhD, Assist. Izidor Sosič, PhD, Boris Brus: College of Pharmacy, University of Minnesota, Minneapolis, USA
- Prof. Stanislav Gobec, PhD: Eupe Enveloppes Bactériennes et Antibiotiques IBBMC, Université Paris Sud, Paris, France
- Prof. Janko Kos, PhD, University UCLA, Los Angeles, USA
- Prof. Saša Baumgartner, PhD, Ss.Cyril and Methodius University in Skopje, Faculty of Pharmacy, Skopje, Macedonia
- Prof. Borut Štrukelj, PhD: Kazakh National Medical University, Almaty, Kazakhstan
- Prof. Saša Baumgartner, PhD, Prof. Aleš Mrhar, PhD: University of Tuzla, Faculty of Pharmacy, Tuzla, BiH
- Prof. Stanislav Gobec, PhD: Eupe Enveloppes Bactériennes et Antibiotiques IBBMC, Université Paris Sud, Paris, France
- Assist. Matjaž Ravnikar, PhD: University of Natural Resources and Life Sciences, Vienna, Austria
- Assist. Martina Gobec, PhD: Vilnius University, Department of Botany and Genetics, Faculty of Natural Sciences, Vilnius, Lithuania

### **Conclusion**

In 2014, the Faculty of Pharmacy was very active internationally. We have maintained a relatively high number of student exchanges for all three study programmes, we are strengthening the importance of the tutorship system for foreign students, we have successfully organised two international summer schools, we organised the EAFP congress and we participated in the implementation of the CESPT congress. All the above is proof that the Faculty is strongly integrated in the international study and scientific spheres and that internationalisation is a focus of all stakeholders taking part in the Faculty's activities, which is one of the key strategic goals of the University of Ljubljana and thus also of the Faculty of Pharmacy.

(Chapter 4 prepared by: S. Baumgartner, T. Kadunc)

## **5 SCIENTIFIC, RESEARCH AND PROFESSIONAL ACTIVITIES OF THE FACULTY OF PHARMACY IN 2014**

Science is the foundation of the Faculty of Pharmacy's mission and is reflected in its educational programmes and in our integration in the profession. We are inextricably bringing together research, innovation and health care, all principal components of the knowledge triangle in educational processes of pharmacists and experts of laboratory biomedicine and cosmetology.

We have devoted special attention to integrating students into research work. Besides the implemented forms of work on projects that we perform at the Faculty as part of research assignments and diploma and master's theses, we have enabled students active integration into research work via the project *Po kreativni poti do praktičnega znanja* (Creatively towards Practical Knowledge), which was performed in cooperation with employers from the industry.

We have strengthened our good relations with the industry through new forms of cooperation that improve on the professional and research work with the goal of developing human resources at the academic and commercial institution.

The Faculty, through its activities last year, has proven its strong integration in the European research area. We organised an information day Initiative for Innovative Medicinal Products, *imi2*, and the meeting of the European Association of Faculties of Pharmacy, EAFP. We have also acquired the status of an observer in the management board of the EATRIS ERIC association for translation research. The intensification of the activity in the consortium of translation research includes the achievement of the Faculty's priorities with the purpose of the strengthening of infrastructural platforms, which will enable better research in an innovative segment and shall support top quality basic research.

### **ORGANISATION OF INTERNATIONAL MEETINGS**

#### ***Initiative for Innovative Medicinal Products Information day***

At the start of the new financial framework, the European commission is organising, in cooperation with national ministries, information events intended for presenting various schemes of financing science. We prepared one such event through cooperation of the Faculty and the Ministry of Education, Science and Sport. The information day was intended for promoting the second operational stage for innovative medicinal products. Innovative Medicines 2 (*imi 2*) was intended for Slovenian researchers from academic institutions and the industry. *Imi 2* is a 10-year research programme worth €3.4 billion that the EC is co-creating with the pharmaceutical industry (<http://www.imi.europa.eu/content/imi-2>).

An introduction to the Horizon 2020 programme was provided by Urban Krajcar, MSc, from the Ministry of Education, Science and Sport and Elmar Nimmersgern, PhD, from the EC. The activities and priorities of *imi-2* were presented by Ms. Magda Chlebus, EFPIA, and Mr. Colm Carroll, *imi*. Prof. Roman Jerala, PhD, from the National Institute of Chemistry and Prof. Irena Mlinarič-Raščan, PhD, from the Faculty of Pharmacy presented their institutions and their strategic guidelines in this field. Matjaž Oven, PhD, and Darja Ferčej-Temeljotov, PhD, as representative of the pharmaceutical

industry, provided their perspective on the possibilities of cooperation in IMI2. We are striving towards creativeness and innovation.



*In the photo: Matjaž Oven, PhD (Lek dd), Mr. Colm Carroll, IMI, Darja Ferčej-Temeljotov, PhD (Lek dd), Ms. Magda Chlebus (EIFPA), Elmar Nimmesgern, PhD (European Commission), Tatjana Švajger, MSc, Prof. Irena Mlinarič- Raščan, PhD (Faculty of Pharmacy), Prof. Roman Jerala, PhD (National Institute of Chemistry)*

## ORGANISATION OF RESEARCH ACTIVITIES AT THE FACULTY OF PHARMACY

The Faculty's research work is carried out as part of four programme groups and numerous projects. The programme groups are financed as part of the ARRS national programme. In 2014, the researched programmes were financed in the scope of 11.40 FTE. The Faculty of Pharmacy of the University of Ljubljana carried out 17 foundation research projects, 4 application research projects, 1 postdoctoral project, a large number of development and research projects with the industry, European projects in the scope of 8.2 FTW and several bilateral projects. The research work is performed by the majority of the teaching staff as part of a 20-percent employment in projects or programmes and fully employed researchers. In 2014, the Faculty acquired 3 new early stage researchers (MR), which is less compared to previous years: 2013 (4), 2012 (5), 2011 (6), 2010 (6). The reason for this is the decreased scope of financing for MR projects and thus increased competitiveness among researchers. University teachers-researchers are definitely in a worse position, since the excessive load of their teaching duties only allows them to perform research work in a limited scope in comparison with fully employed researchers at the institutes. The system of assessing research work, which includes quantitative qualitative research parameters, does not include pedagogical activity or the related transfer of knowledge.

Publications are one of the parameters of the successfulness of research work. In 2014, researchers from the Faculty published 116 original and 22 overview scientific articles, 3 short scientific papers and several patent applications in cooperation with the pharmaceutical industry. An increase in the number of quotes is expected (Chart 5.1 and 5.2). In 2014, we published a lower number of articles per unit of research time, which can be explained by a higher commitment towards a higher quality of publications. We are publishing more complex and demanding articles, because the number of articles in journals with higher impact factor is rising and the number of articles with the lowest impact factor is falling. The reason is also the greater load on teachers with teaching activities, including the reaccreditation of programmes, ensuring quality and international integration (Chart 5.3, Table 5.1 and 5.2).

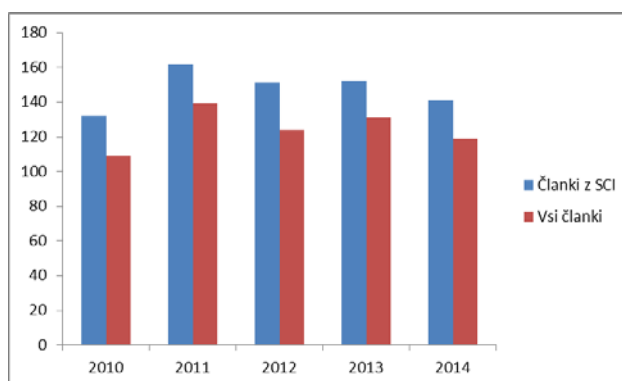


Chart 5.1: Number of scientific publications of the Faculty (2010-2014).

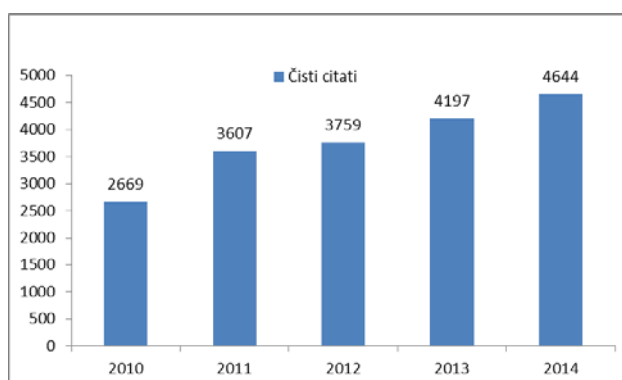


Chart 5.2: Number of quotes of the Faculty (2010-2014).

Table 5.1: Number of articles with impact factor

IMPACT FACTOR	2010	2011	2012	2013	2014
SCI up to 1	23	18	15	8	8
SCI up to 2	24	31	22	22	15
SCI up to 3	25	29	28	36	39
SCI up to 4	22	36	24	38	36
SCI up to 5	10	13	15	9	13
SCI above 5	6	12	11	7	8
Total	110	137	115	120	119

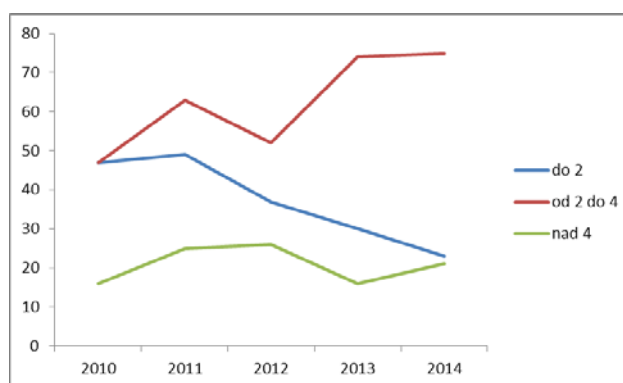


Chart 5.3: Number of published articles by SCI categories (up to 2, from 2 to 4 and above 4 during 2010-2014).

Table 5.2: The ratio of scientific articles and quotes per FTE researchers who are financed from ARRS and EU sources (programmes and projects) and ARRS (early stage researchers).

year	Funds for full researchers (FTE) Source				No. of all scientific articles/FTE	No. of articles in journals with SCI /FTE	Number of quotes/FTE
	ARRS	EU	MR	total			
2010	14.67	0.92	24.60	40.2	2.9	2.4	66.4
2011	15.42	6.33	19.60	41.4	3.9	3.4	86.8
2012	17.55	4.95	20.30	42.8	4.0	3.0	87.8
2013	17.96	8.2	18.28	44.4	3.4	3.0	94.4
2014	19.80	8.2	16.8	44.8	3.2	2.7	103.6

### Research Programmes of the Faculty

1. Pharmaceutical Technology: Designing, Preparation and Evaluation of Modern Drug Delivery Systems, under the management of Prof. Aleš Mrhar, PhD, combines researchers from the Chair of Biopharmacy and Pharmacokinetics, the Chair of Pharmaceutical Technology and the Chair of Social Pharmacy.

The programme encompasses all segments, from studying basic properties of drugs and helper substances to the evaluation of medicinal products as economic and ethical. The main goal of the programme is to develop methodologies for the recognition and decrease of inter-individual variability of substances in clinically desired and undesired substances and thus increase the effectiveness of treatment. We are developing procedures for designing particles with desired properties that we utilise in designing, making and evaluating modern (nano) delivery systems that enable the transport of substances to the site of action and/or within intracellular uptake, protection against proteolytic enzymes and controlled release. We study biopharmaceutical and pharmacokinetic processes after applying the above mentioned substance delivery systems and stability and bioanalytical substances with an emphasis on the development of more friendly technologies. We are developing new experimental models for studying release and for evaluating permeability of substances through the mucous of the digestive tract and urinary bladder. As part of the programme, we have also developed several types of in vitro models for simultaneous studying of the transportation and metabolism of substances, while also taking into account pharmacogenetic aspects. The developed pharmacokinetic-pharmacodynamic models make it possible to forecast the clinical results of medicinal products and identify the reasons for their variability.

2. Pharmaceutical Chemistry: Design, Synthesis and Evaluation of Substances, under the management of Prof. Danijel Kikelj, PhD, combines researchers from the Chair of Pharmaceutical Chemistry, the Chair of Clinical Biochemistry and the Chair of Pharmaceutical Biology.

The goal of the research programme is to discover new substances and to clarify the mechanism of their functioning at the molecular level. The programme encompasses rational design of substances based on known and newly validated targets, synthesis and isolation of substances and their biological and physical chemical evaluation. A validated target shall be selected among proteins with a known 3D structure that are available in the PDB database, and as part of our own pharmacogenetic research, we shall strive to discover, isolate and validate new target macromolecules. Among enzymes with a known 3D structure, we shall select as targets for the development of inhibitors enzymes of the coagulation cascade Mur ligase and 85C antigen and among receptors integrin alpha-V-beta-3. By analysing the expression of genes using the microarray technology, we are planning identification, isolation and validation of new target macromolecules that participate in the regulation of apoptosis.

3. Pharmaceutical Biotechnology: Man and the Environment, under the management of Prof. Janko Kos, PhD, combines researchers from the Chair of Pharmaceutical Biology, the Chair of Clinical Biochemistry and the Department of Biotechnology of the Institute Jožef Stefan.

The work of the programme group involves all modern scientific trends with the purpose of increasing the knowledge of life, of preserving human health and of a clean environment. Besides basic mechanisms of cell functioning, the strongest emphasis is on studying the mechanisms of the creation and progress of certain diseases, because by knowing the main factors in disease processes we can identify new targets for a more successful diagnosis and therapy. Past achievements of the programme group's members in this field, which are reflected in numerous publications and quotes, demonstrate that our contribution of new knowledge towards the global treasury of knowledge is very important. Also important is the group's work in searching for new possible substances and diagnostic approaches and in the development of analytical and biotechnological methods. In its research, the group is using and implementing the latest scientific techniques and methodologies. The group's interaction with other researchers in Slovenia and globally ensures a flow of knowledge and continued good results.



4. Clinical Biochemistry: Genes, Hormonal and Personality Changes in Metabolic Disorders, under the management of Prof. Janez Preži, PhD, operates at the Ljubljana University Medical Centre and at the Faculty of Pharmacy, the Chair of Clinical Biochemistry, coordinated by Prof. Janja Marc.

The programme is designed based on own years of experience and achievements in the field of clinical and laboratory research that studies chronic metabolic disorders, osteoporosis, diabetes and the polycystic ovarian syndrome. We are studying osteoporosis on the level of local regulators of bone turnover. The goal of the research is to highlight the importance of local regulators for the etiopathogenesis of osteoporosis. We expect to identify the serum marker that will be in correlation with the developments in the bone tissue. We are also planning to research the effect of germline mutations of some of the responsible genes on the treatment (pharmacogenetics) and on early discovery of persons with increased risk for osteoporosis. In the field of diabetes, we are researching the occurrence of cell resistance in peripheral tissues to insulin. For patients with polycystic ovarian syndrome, we are interested in the changes of the mechanism of the transfer of glucose into adipocytes after a treatment with metformin or rosiglitazone. We expect to make a contribution towards the understanding of etiopathogenesis of polycystic ovarian syndrome that is based on insulin resistance.

#### 5. Other Collaborations

Researchers from the Faculty also collaborate in research programmes performed at other institutions, namely Experimental Biophysics of Complex Systems, managed by Associate Prof. Igor Serša, PhD, at the Institute Jožef Stefan, Systemic Autoimmune Diseases, managed by Assist. Prof. Snežna Šemrl Sodin, PhD, at the Ljubljana University Medical Centre and Cellular Physiology 10-7, managed by Prof. Robert Zorec, PhD, also at the Ljubljana University Medical Centre.

#### **ARRS Research Projects:**

Inhibitors of Cysteine Carboxypeptidases as Regulators of Autoimmune and Neurodegenerative Processes (head: Prof. Kos Janko, PhD)

Design, Formulation and Characterisation of Biomimetic Nanocomposite Systems for Effective Tissue Regeneration (head: Prof. Dr. Julijana Kristl, PhD)

Development and Evaluation of Radiolabelled Bio-molecules for Targeted Radionuclide Therapy and Imaging of Neuroendocrine Tumours (coordinator at the Faculty: Prof. Irena Mlinarič Raščan, PhD, head: Jurij Fettich, PhD, Ljubljana University Medical Centre)

Transport and RNA Binding of TDP-43 and FUS - Implications for ALS/FTLD Spectrum of Neurodegenerative Disease (coordinator at the Faculty: Assist. Prof. Tomaž Bratkovič, PhD, head: Boris Rogelj, PhD, BRIS Institute)

The Role of Genetic Polymorphisms in Treatment Result and Occurrence of Side effects in Children with Cancer (coordinator at the Faculty: Prof. Irena Mlinarič Raščan, PhD, head: Assist. Prof. Janez Jazbec, PhD, Division of Paediatrics)

The Influence of Active Transport and Patients' Genotypes on the Therapeutic Outcome of Chronic Myeloic Leukemia (head: Prof. Albin Kristl, PhD)

Genetic Factors in Osteoporosis (head: Prof. Janja Marc, PhD)

Analysis of Folate Metabolism Biomarkers in the Risk Assessment for Neural Tube Defects (coordinator at the Faculty: Prof. Irena Mlinarič Raščan, PhD, head: Prof. Ksenija Geršak, PhD, Ljubljana University Medical Centre)

Micro RNA - New Diagnostic and Therapeutic Targets in Osteoporosis (coordinator at the Faculty: Prof. Janja Marc, PhD, head: Prof. Janez Preželj, PhD, Ljubljana University Medical Centre)

Dysregulation of TDP-43 Expression in Amyotrophic Lateral Sclerosis and Frontotemporal Lobar Degeneration (coordinator at the Faculty: Assist. Prof. Tomaž Bratkovič, PhD, head: Boris Rogelj, PhD, BRIS Institute)

Nitroxoline and Its Derivatives as New Antitumour Drugs (head: Prof. Janko Kos, PhD)  
Protein Engineering of Recombinant Probiotic Lactic Acid Bacteria for Treatment of Irritative Bowel Disease (head: Prof. Borut Štrukelj, PhD)  
TRANS TIO Translational Pharmacogenomic Research of Thiopurine Therapy (head: Prof. Irena Mlinarič Raščan, PhD)  
Intra-Pocket-targeted Nanomedicines for Treatment of Periodontal Disease (head: Prof. Julijana Kristl, PhD)  
Computational Tools Development for Modelling of Pharmaceutically Interesting Molecules (coordinator at the Faculty: Prof. Stanislav Gobec, PhD, head: Prof. Dušanka Janežič, PhD, University of Primorska, the Koper Faculty of Mathematics, Natural Sciences and Information Technologies)  
The Role of Cysteine Protease Inhibitors in NK Cell Mediated Lysis of Tumour Cells (coordinator at the Faculty: Prof. Janko Kos, PhD, head: Prof. Janko Kos, PhD, Institute Jožef Stefan)  
Development of Molecularly Imprinted Polymers and their Application in Environmental and Bio-analysis (coordinator at the Faculty: Prof. Albin Kristl, PhD, head: Tina Kosjek, PhD, Institute Jožef Stefan)

#### **ARRS Applied Research Projects:**

Complex Hyperspectral System for Automatic Analysis and Control of Pharmaceutical Pellet Coating Processes (coordinator at the Faculty: Prof. Stanko Srčič, PhD, head: Prof. Boštjan Likar, PhD, University of Ljubljana, Faculty of Electrical Engineering)  
Preclinical Development of New Antibacterial Drugs (head: Prof. Stanislav Gobec, PhD)  
Theoretical and practical Aspects of Terminology and Terminography in Connection with Internet Terminological Resources (coordinator at the Faculty: Prof. Aleš Obreza, PhD, head: Andreja Žele, PhD, the Centre for Scientific Research of the Slovenian Academy of Sciences and Arts)  
Combating Bacterial Resistance: Optimisation of Bacterial Cell Wall Biosynthesis Inhibitors (head: Prof. Stanislav Gobec, PhD)

#### **Postdoctoral Research Project**

Design, Synthesis and Evaluation of New Voltage-Gated Sodium Channel Modulators (head: Assist. Prof. Nace Zidar, PhD)

#### ***Projects with the Industry***

We continued our successful collaboration with pharmaceutical and similar companies. Some of the partners are: Krka, LEK, Valdoltra, Arhel, Entrapharm, Vzajemna, Geneplanet, Poligenol, Siemens, Polimat, Novo Nordisk, Medis, Biogen Idec, AstraZeneca, Labena, AbbVi and others.

#### **Development of a Medicinal Product Prototype for a Market with high Regulatory Requirements**

The Faculty of Pharmacy, in cooperation with Lek, d.d., developed a prototype of a medicinal product that meets the most exacting regulatory requirements.

The development of the medicine prototype involved the cooperation of experts from the Faculty of Pharmacy and Lek. The collaboration of a wide interdisciplinary team, including technology experts for solid pharmaceutical forms, experts for the analysis of medicinal products and biopharmacy and *in vitro-in vivo* correlation and patent lawyers, along with good project management led to the achievement of excellent results.

The main challenge was the development of a medicinal product that required integrating substances of incompatible physical and chemical properties according to non-patented methods while ensuring pharmacokinetic and biopharmaceutical properties comparative with reference products and suitable stability.

The development of a medicinal product on the one hand requires understanding of the physical-chemical and pharmaceutical technological properties of drugs and helper substances and the interactions between them and on the other hand of pharmaceutical technological processes that enable the formation of a stable pharmaceutical forms. Besides demanding theoretical knowledge of novelties in the field of formulations, it turns out that expertise in the analysis of medicinal products, including the most modern techniques and in-depth theoretical knowledge of the co-effect of integrated materials or substances as well as the effect of technological processes on the properties of integrated substances, has become unavoidable.

With the help of tools for *in vitro-in vivo* correlation, we were able to make a prototype of a medicinal product with suitable biopharmaceutical properties and suitable stability attributes.

With the successful implementation of this project, the Faculty of Pharmacy is proving that our experts are capable of integrating the latest scientific findings in solving practical issues and of implementing the idea in an industrially feasible final product, while also ensuring a high level of quality control and process and equipment management.

We transfer our findings directly into the study process in all three cycles, we enable the inclusion of students into industry projects and we are striving towards the development of human resources. Thus, we are implementing the knowledge triangle that connects education, business acumen and research.

### **Infrastructure Centres**

The Faculty of Pharmacy has prepared a strategy for establishing two Infrastructure Centres: **Medicinal Product Analysis** and **EATRIS-TRI.si**.

The Infrastructural Centre for the Analysis of Medicinal Products was established with the expansion and renaming of the already existing infrastructural centre of the Faculty of Pharmacy of the University of Ljubljana under the framework of which the unit for NMR spectroscopy was active. In the next period, the infrastructure centres will be expanding into the wider area of the analysis of medicinal products.

Areas of expertise: development, validations and verifications of analytical methods, identification and specification of physico-chemical properties of drugs, helper substances and impurities, analytical support in the development of medicinal products and in the identification of the reasons for the deviations beyond the specifications, analysis of substances and metabolites in biological systems and analysis of vegetable drugs and their preparations. A large body of research equipment of the Faculty of Pharmacy intended for the analysis of medicinal products will be organised under the auspices of the centre.

**Infrastructural Centre for Translation Research - EATRIS-TRI.si** (European Advanced Translational Research Infrastructure - Translational Initiative Slovenia). The concept of the Infrastructural Centre for Translation Research in the field of pharmacy (TRI.si) is designed with the strategic goal of connecting and upgrading the infrastructure of the Faculty of Pharmacy, which will enable a faster



and more effective transfer of knowledge from basic research laboratories into products and services in the field of research, development and use of medicinal products.

The main goal of IC TRI is achieving the highest standards in translation research, which will provide us with greater competitiveness for projects on the market, better opportunities for research work, integration into international connections and access to large infrastructural centres. Ever since 2009, we have been participating in the activity of ESFRI - EATRIS (European Advanced Translational infrastructure).



The activities for becoming a member of EATRIS (European Advanced Translational Research Infrastructure) have intensified after a decision of the ARRS scientific council was made in autumn 2013 in accordance with the 2011-2020 Development Plan for Research Infrastructures to finance activities for association with EATRIS. In 2009, the Faculty of Pharmacy responded to the **Public Call for Collecting Proposals for International Projects of Developing a Large Research Infrastructure (RI) in which the Republic of Slovenia should participate.** The Faculty of Pharmacy shall be integrated into an association in the field of Research and Development of Medicinal Products and with its expertise and infrastructure become a member of the EATRIS network. The Faculty of Pharmacy also expressed an interest in taking over the initiative for a Slovenian centre for translation research, which following the example of EATRIS would include partners from the governmental, professional and scientific sphere and would be open to users (STRI: Slovenian Translational Research Initiative).

#### ***Projects of the 7th Framework Programme***



**MAREX** - Exploring marine resources for bioactive compounds: from discovery to sustainable production and industrial application. The purpose of the project is researching bioactive compounds of marine origin. The head of the project at the University of Ljubljana is Prof. Danijel Kikelj, PhD. 19 partners from EU member states, Lebanon, Chile, Turkey and India are collaborating in the project.

**ORCHID**, an open collaborative model for TB drug discovery and lead optimisation. The head of the project at the Faculty is Prof. Stanislav Gobec, PhD. The goal of the project is optimisation of leading compounds with anti-tuberculosis effect until the stage where it can go into clinical trials. The project is coordinated by the pharmaceutical concern GlaxoSmithKline Diseases of the Developing World, Spain.

#### **EU Projects**

**EACEA in the Programme of Lifelong Learning.** The Faculty of Pharmacy as a partner institution is collaborating in the European project EACEA in the programme of lifelong learning: **PHAR-QA: Quality assurance in pharmacy education and training in the EU** (527194-LLP-1-2012-1-BE-ERASMUS-EMGR). The Faculty of Pharmacy represents a regional management board and is coordinating one of 4 geographical areas of partner and participating faculties from EU member states and other European countries. The regional director is Prof. Borut Božič, PhD.

**(LIAT-Pharma) Linking Industry and Academia in Teaching Pharmaceutical Development and Manufacture:** a lifelong learning programme; the coordinator is College Green, Dublin; participating countries: Serbia, Finland, Great Britain and 5 companies, among those Brinox Slovenija. The

coordinator at the Faculty is Prof. Stanko Srčič.



**Degradation of Pharmaceuticals in Wastewaters from Nursing Homes and Hospitals as part of the LIFE+ programme.** The proposed project represents a solution for the removal of pharmaceuticals from waste water. The

Arhel Company is participating in the project as the project manager and shall be in charge of establishing, planning, implementation, monitoring, control and timely completion of the planned work programme. The head of the project at the Faculty is Prof. Albin Kristl, PhD.

**HOME** - is a programme of lifelong learning. The purpose of the project is to develop and strengthen the open higher education network, which shall make a contribution towards cooperation and open education in general. The partners shall make a contribution towards the establishment of an open institutional network. The head of the project at the Faculty is Prof. Julijana Kristl, PhD.

**INTEGRATE** - Interdisciplinary Training Network for Validation of Gram-Negative Antibacterial Targets. It is a H2020 project, Marie Skłodowska – Curie ITN. A foreign doctoral student shall study at the Faculty of Pharmacy as part of the project. The head of the project at the Faculty is Prof. Danijel Kikelj, PhD.

**Novel diagnostic and therapeutic approaches to complex genetic disorders** (CIII-HR-0611), coordinated by the University of Zagreb. It is a CEEPUS (Central European Exchange Programme for University Studies) project that is a regional programme, the aim of which is to establish and encourage mobility of students and professors in cooperating countries. The project includes faculties from partner countries Austria, Bulgaria, Czech Republic, Croatia, Hungary, Poland, Romania, Slovakia, Slovenia, Serbia, Albania, Macedonia and Montenegro. The coordinator at the Faculty is Prof. Janja Marc, PhD.

### ***European Structural Funds***

**Knowledge for the Future - A New Generation of Researchers of Life Sciences (NGRVŽ)** is being carried out as part of the Operational Programme for Human Resources Development. The goal of the project is to establish inter-generational and inter-regional cooperation between secondary school students, their mentors and top scientists with the purpose of obtaining new knowledge, early integration into top research and interpreting the above from the viewpoint of ethical values. Also important will be the development of the strategy for the transfer of top knowledge and encouraging the innovation of youth and integrating ethical issues into the syllabuses. The project is being coordinated by the Ljubljana National Institute of Chemistry, and besides the Faculty of Pharmacy of the University of Ljubljana and the Faculty of Arts, 13 secondary schools are also participating. The coordinator of the project at the Faculty of Pharmacy is Assist. Prof. Tomaž Bratkovič, PhD. Project duration: 2012-2014.



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**Quality - University of Ljubljana (KUL).** The project's goal is to support the development of a comprehensive quality assurance system harmonised with international standards that will enable and support continuous improvement of the quality of Slovenian higher education, especially the provision of quality, modernised study programmes. The project is



coordinated by the University of Ljubljana. The project's coordinator at the Faculty is Assist. Prof. Bojan Doljak, PhD. Project duration: 2013-2015.

### **Internationalisation of University of Ljubljana**

The purpose of the project is faster development and a greater scope of activities that lead to the internationalisation of the University of Ljubljana by encouraging the integration of foreign experts into the pedagogical and research process and activities that strengthen the recognisability of the University of Ljubljana in the international environment. The project is coordinated by the University of Ljubljana. The project's coordinator at the Faculty is Assist. Prof. Saša Baumgartner, PhD. Project duration: 2013-2015.

### **Researchers at the Start of Their Career**

The goal of the project is raising the research intensity and quality, which is directly reflected in the integration of research work of researchers at the start of their career with the industry and addresses industry needs. The purpose of the project, which is partially financed by the European Union with the European Social Fund and is managed by the Ministry of Education, Science and Sport, is to stimulate Slovenian companies to include young doctorate holders at research institutions into the formation of research activities and to transfer the created knowledge of researchers into the commercial research/development environment and thus increase the competitiveness of the Slovenian economy. The Faculty of Pharmacy acquired three projects, namely two in partnership with Lek, d.d. and one project in partnership with Labena, d.o.o.

**Obtaining Practical Knowledge via a Creative Path** The purpose of the public call for proposals was to support the development of competencies and the acquiring of practical knowledge and experience of students by using an innovative, problem-oriented and group approach towards solving practical problems, specifically by including them into projects that were being carried out as part of a direct partnership between higher education institutions and the industry. With the help of mentors from the educational and economic sphere and as part of the project activities that were carried out as an addition to the regular learning process, students were developing innovation, creative thinking and other competences that will make their transition from education into employment easier. The Faculty of Pharmacy acquired 4 projects; 21 students participated.



### ***COST Projects:***

Chemical Approaches to Targeting Drug Resistance in Cancer Stem Cells CMST COST Action CM1302 (Prof. Danijel Kikelj, PhD, Assoc. Prof. Lucija Peterlin Mašič, PhD).

Challenging organic syntheses inspired by nature - from natural products chemistry to drug discovery CMST COST Action CM1407 (Assist. Prof. Janez Ilaš, PhD, Prof. Danijel Kikelj, PhD).

Epigenetic Chemical Biology (EPICHEM) CMST COST Action CM1406 (Assist. Prof. Janez Ilaš, PhD).

Targeted chemotherapy towards diseases caused by endoparasites CMST COST Action CM1307 (Assoc. Prof. Lucija Peterlin Mašič, PhD).

Biomimetic Radical Chemistry CMST COST Action CM1201 (Prof. Marija Sollner Dolenc, PhD).

Electrospun nano-fibres for bio inspired composite materials and innovative industrial applications MPNS COST Action MP1206 (Assist. Prof. Petra Kocbek, PhD).

### ***Bilateral Projects:***

HEAD	COLLABORATING COUNTRY	PROJECT TITLE
Prof. S. Gobec, PhD	France	Development of Inhibitors Acting on Extracellular and Membrane Levels of Biosynthesis of Bacterial Peptidoglycan

Prof. O. Planinšek, PhD	Bosnia and Herzegovina	Formulation of Plastic Tablets with a Substance that is Difficult to Dissolve in Water for Chronotherapy
Prof. S. Gobec, PhD	USA	Development of New Anti-Microbial Substances for Treating Tuberculosis
Prof. S. Srčić, PhD	Russian Federation	The Development of Composites of Some Pharmacologically Effective Substances and their Analysis: Continuation
Prof. J. Marc, PhD	Croatia	The Role of Galectin-3 in Bone Diseases
Assoc. Prof. M. Anderluh, PhD	Serbia	Sifting of Oriented Chemical Libraries for Anti-Bacterial and Anti-Inflammation Action
Assist. Prof. N. Karas Kuželički, PhD	Serbia	Validation of the Dosing Algorithm for 6-Mercaptopurine in Groups of Paediatric Patients with Acute Lymphoblastic Leukaemia
Assoc. Prof. I. Grabnar, PhD	Serbia	Evaluating the Variability in Pharmacokinetics for Pharmacotherapy of Epilepsy Adjusted on an Individual Basis
Prof. S. Gobec, PhD	Argentina	Development of New Multiple Inhibitors as Potential Medicinal Products for Treating Alzheimer's Disease
Prof. D. Kikelj, PhD	Argentina	Semi-synthetic Derivatives and Analogues (Z,Z)-5(Trideca-4,7-Dienyl)-Resorcinola of Natural Origin as New Anti-Bacterial Compounds

## **COOPERATION OF THE TEACHERS OF FACULTY OF PHARMACY IN DIFFERENT BODIES**

### University of Ljubljana - Senate

- Prof. Borut Božič, PhD - member

### University of Ljubljana - Research and Development Work Committee

- Prof. Stanislav Gobec, PhD - member

### University of Ljubljana – Committee for Master’s Degree Study

- Prof. Darko Černe, PhD

### University of Ljubljana – Committee for Doctoral Studies

- Prof. Julijana Kristl, PhD - since 1 October 2014
- Prof. Danijel Kikelj, PhD

### University of Ljubljana – Committee for Granting Honorary Titles and Awards of the University of Ljubljana

- Prof. Julijana Kristl, PhD

### University of Ljubljana – Committee for Prešeren Awards

- Prof. Janko Kos, PhD

### University of Ljubljana - Committee for Preparing Starting Points and Monitoring the Financing of Higher Education and for Distributing of Funds at the University of Ljubljana

Prof. Borut Božič, PhD - member

### University of Ljubljana - Programme Council of Biomedicine

- Prof. Borut Božič, PhD - deputy chairman
- Prof. Stanislav Gobec, PhD - member

### University of Ljubljana - Innovation and Development Institute - Council

- Prof. Franc Vrečer, PhD
- Prof. Janko Kos, PhD

### Public Agency of the Republic of Slovenia for Medicinal Products and Medical Devices - Committee for Medicinal Products

- Prof. Aleš Krbavčič, PhD - chairman
- Prof. Samo Kreft, PhD - deputy chairman
- Prof. Mirjana Gašperlin, PhD

### Public Agency of the Republic of Slovenia for Medicinal Products and Medical Devices - Committee for Homeopathic Medicinal Products

- Prof. Aleš Obreza, PhD
- Prof. Saša Baumgartner, PhD

### Public Agency of the Republic of Slovenia for Medicinal Products and Medical Devices - Committee for Medicinal Products for Use in Veterinary Medicine

- Prof. Stanko Srčič, PhD - expert in the field of pharmac. tech.
- Assoc. Prof. Lucija Peterlin Mašič, PhD - expert in pharmac. chemistry



Public Agency of the Republic of Slovenia for Medicinal Products and Medical Devices - Committee for Pharmacopeia and Preparation of the National Supplement to European Pharmacopeia

- Prof. Jelka Šmid Korbar, PhD
- Prof. Mirjana Gašperlin, PhD
- Prof. Uroš Urleb, PhD
- Prof. Aleš Obreza, PhD
- Assist. Prof. Tanja Gmeiner Stopar, PhD

Slovenian Research Agency - Scientific Council for Biotechnical Science

- Prof. Janko Kos, PhD

Slovenian Research Agency - Scientific Council for Interdisciplinary Research

- Prof. Borut Štrukelj, PhD

Slovenian Research Agency - Scientific Council for Natural Sciences

- Prof. Julijana Kristl, PhD

Chamber for Laboratory Medicine of Slovenia - Department for Expert Issues

- Prof. Borut Božič, PhD - chairman

Chamber for Laboratory Medicine of Slovenia - Register Committee

- Prof. Borut Božič, PhD

Chamber for Laboratory Medicine of Slovenia - Committee for Specialisation

- Prof. Darko Černe, PhD

Chamber for Laboratory Medicine of Slovenia - Committee for Licenses and Education

- Prof. Janja Marc, PhD - chairman

Slovenian Academy of Sciences and Arts - Slovenian Pharmaceutical Terminology Dictionary

- Prof. Mirjana Gašperlin, PhD
- Prof. Jelka Šmid Korbar, PhD
- Prof. Borut Božič, PhD
- Prof. Samo Kreft, PhD
- Prof. Janja Marc, PhD
- Prof. Aleš Mrhar, PhD
- Prof. Saša Baumgartner, PhD
- Prof. Darko Černe, PhD
- Prof. Aleš Obreza, PhD
- Assoc. Prof. Matjaž Jeras, PhD
- Assoc. Prof. Mitja Kos, PhD
- Assist. Prof. Damjan Janeš, PhD
- Assist. Prof. Mojca Lunder, PhD

National Anti-Doping Commission

- Prof. Joško Osredkar, PhD - chairman

Ministry of Health of the Republic of Slovenia - Health Council

- Prof. Julijana Kristl, PhD

Ministry of Health of the Republic of Slovenia, Chemicals Bureau - Committee for Expert Issues in Relation to Cosmetic Products

- Prof. Mirjana Gašperlin, PhD

Ministry of Health of the Republic of Slovenia, Chemicals Bureau - Intradepartmental Sub-Committee for Good Laboratory Practice

- Assist. Prof. Bojan Doljak, PhD

Ministry of Health of the Republic of Slovenia - Group for Coordination of Implementation of the Rules on Conditions that must be met by Laboratories in the Field of Laboratory Medicine

- Prof. Borut Božič, PhD

Ministry of Health of the Republic of Slovenia - Expanded Professional Board of Pharmaceutical Services

- Prof. Mirjana Gašperlin, PhD
- Prof. Aleš Mrhar, PhD
- Prof. Aleš Obreza, PhD

Ministry of Health of the Republic of Slovenia - Expanded Professional Board of Diagnostics

- Prof. Borut Božič, PhD
- Prof. Janja Marc, PhD
- Prof. Darko Černe, PhD

Ministry of the Environment and Spatial Planning of the Republic of Slovenia - Scientific Council for Genetically Modified Organisms

- Prof. Irena Mlinarič-Raščan, PhD

Slovenian Scientific Foundation - Foundation Council

- Prof. Franc Vrečer, PhD

Slovenian Scientific Foundation - Scientific Council

- Prof. Franc Vrečer, PhD
- Prof. Janez Kerč, PhD

Innovation and Development Institute UL - member of the IRI Council

- Prof. Franc Vrečer, PhD

University Research Centre Novo mesto – Committees for Scientific and Research Activity and Experimental Development at the URC

- Prof. Franc Vrečer, PhD

Krka d.d. - Krka Awards Foundation Council

- Prof. Franc Vrečer, PhD - chairman of Scientific Committee at the Funds Council

Lek d.d. - Biocamp Organisation Committee

- Assist. Prof. Zdenko Časar, PhD
- Prof. Janez Kerč, PhD

Slovenian Pharmaceutical Society

- Prof. Julijana Kristl, PhD - chairman of the committee for awarding society awards

Slovenian Pharmaceutical Society - Issuing Council

- Prof. Franc Vrečer, PhD

Slovenian Pharmaceutical Society - Section for Pharmaceutical Chemistry

- Assoc. Prof. Marko Anderluh, PhD, chairman

Slovenian Pharmaceutical Society - Section for Pharmaceutical Technology

- Assist. Prof. Rok Dreu, PhD - chairman

Pharmacy Chamber of Slovenia – Working group for modernisation of the Rules on types, content and course of specialisations for holders of a master’s degree in pharmacy and for unification of competences and cognitive services in pharmacy activities

- Assoc. Prof. Mitja Kos, PhD

European Federation of Medicinal Chemistry, Work Group “Quality and Visibility of Training in Medicinal Chemistry”

- Assoc. Prof. Marko Anderluh, PhD - head

European Pharmacopeia, EDQM

- Prof. Uroš Urleb, PhD

European Medicines Agency (EMA), Committee for Herbal Medicines

- Prof. Samo Kreft, PhD

European Medicines Agency (EMA), Committee for Medicinal Products for Veterinary Use (CVMP)

- Professor Stanko Srčič, PhD

European Medicines Agency (EMA), Scientific Advice Working Party (SAWP-V)

- Professor Stanko Srčič, PhD

European Medicines Agency (EMA), Expert in the Quality of Medicines for Use in Veterinary Medicine

- Professor Stanko Srčič, PhD

Council of Europe, Consumer Health Protection, Cosmetics Committee (CD-P-SC (Steering Committee))

- Prof. Mirjana Gašperlin, PhD

European Organisation for Research and Treatment of Cancer (EORTC) - Express Group for Receptors and Biomarkers

- Prof. Janko Kos, PhD

European Pharmacopoeia, Group for Biological Medicines

- Assist. Prof. Tomaž Bratkovič, PhD

EC – European Strategic Forum for Research Infrastructure

- Prof. Irena Mlinarič-Raščan, PhD - member of the working group

Paul Ehrlich MedChem Euro-PhD Network - Council

- Prof. Danijel Kikelj, PhD - chairman

COST Action CM1106 Chemical Approaches to Targeting Cancer Stem cells – Management Board

- Prof. Danijel Kikelj, PhD

COST Action MP1206 Electrospun nano-fibres for bio inspired composite materials and innovative industrial applications – Management Board

- Prof. Petra Kocbek, PhD

European Federation of Medicinal Chemistry - Assembly

- Prof. Danijel Kikelj, PhD

International Network, Pharmaceutical Solid State Research Cluster (PSSRC)

- Professor Stanko Srčič, PhD - Steering Committee member

IUIS Subcommittee for the Standardisation and Quality Assessment of Immunological Diagnostics

- Prof. Borut Božič, PhD

Research Centre Pharmaceutical Engineering GmbH, Graz - Scientific Advisory Board

- Professor Stanko Srčič, PhD - member

European Society of Pharmacogenomics and Theranostics

- Prof. Janja Marc, PhD - general secretary

European Federation for Laboratory Medicine - Working Group for Personalised Laboratory Medicine

- Prof. Janja Marc, PhD - member

Ethics Committee for Animal Experiments

- Assist. Prof. Simon Žakelj, PhD - deputy chairman

Ministry of Agriculture, Forestry and Food - Expert Council for the Protection of Animals

- Assist. Prof. Jurij Trontelj, PhD - member

States Exam Centre - School Matura Committee

- Assist. Prof. Simon Žakelj, PhD - member
- Assist. Prof. Jurij Trontelj, PhD - member

Editorial Board of Current Medicinal Chemistry Journal

- Prof. Danijel Kikelj, PhD - member

Editorial Board of the European Journal of Pharmaceutics and Biopharmaceutics

- Prof. Kristl Julijana, PhD - member
- Professor Stanko Srčič, PhD - member

Editorial Board of the Journal of Biomedical Nanotechnology

- Prof. Kristl Julijana, PhD - member

Editorial Board of Macedonian Pharmaceutical Bulletin

- Prof. Saša Baumgartner, PhD - member

Editorial Board of the Journal of Biomedical Nanotechnology

- Prof. Julijana Kristl, PhD - member

Editorial Board of the Journal of Drug Delivery Science and Technology

- Prof. Julijana Kristl, PhD - member

Editorial Board of Acta pharmaceutica

- Prof. Stanko Srčič, PhD - member
- Prof. Odon Planinšek, PhD - member
- Prof. Janja Marc, PhD - member
- Prof. Danijel Kikelj, PhD - member

Editorial Board of the Pharmaceutical Technology Europe (UK)

- Prof. Stanko Srčič, PhD - member

Editorial Board of ARKIVOC

- Prof. Danijel Kikelj, PhD - member

Editorial Board of Recent Patents on Drug & Delivery Formulation (USA)

- Prof. Stanko Srčič, PhD - member

Editorial Board of the Farmaceutski vestnik Journal

- Prof. Borut Štrukelj, PhD - editor in chief
- Assoc. Prof. Tomaž Vovk - member of the editorial board and guest editor
- Prof. Janja Marc, PhD - member of the editorial board
- Assist. Prof. Jurij Trontelj, PhD - member of the editorial board

Editorial Board of the Lekarništvo Journal

- Prof. Borut Štrukelj, PhD - editor in chief

Editorial Board of the Farmakon Journal

- Prof. Marija Sollner Dolenc, PhD - editor in chief

Editorial Board of the Arhiv za higijenu rada i toksikologiju

- Prof. Marija Sollner Dolenc, PhD - regional editor
- Prof. Samo Kreft, PhD - member of the editorial board

Editorial Board of the MedChemComm Journal

- Assoc. Prof. Lucija Peterlin Mašič, PhD - member of the editorial board

Editorial Board of Acta chimica slovenica

- Prof. Danijel Kikelj, PhD - member of the editorial board
- Prof. Stanislav Gobec, PhD - member of the editorial board

Editorial Board of the Journal of Research in Pharmaceutical Sciences (BiH)

- Prof. Stanko Srčič, PhD - member of the editorial council

Editorial Board of the International Journal of Biomedical Science

- Prof. Borut Božič, PhD - member of the editorial board

Editorial Board of the Journal of the International Federation of Clinical Chemistry

- Prof. Borut Božič, PhD - member of the editorial board

Editorial Board of the Biochemia Medica

- Prof. Janja Marc, PhD - member

Editorial Board of Clinical chemistry and laboratory medicine

- Prof. Janja Marc, PhD - member

Editorial Board of Drug metabolism and Drug Interactions

- Prof. Janja Marc, PhD - member

Editorial Board of Genetics Research

- Assist. Prof. Nataša Karas Kuželički, PhD - member

Editorial Board of the Journal of Physiology and Pharmacology - Scientific and Advisory Board

- Prof. Borut Božič, PhD - member

Editorial Board of the Journal of Pharmaceutical Health Service Research

- Assoc. Prof. Mitja Kos, PhD - member

Editorial Board of the Zdravstveno varstvo Journal

- Assoc. Prof. Mitja Kos, PhD - member

Editorial Board of Zdravniški vestnik

- Prof. Aleš Mrhar, PhD - member

Editorial Board of the ACS Infectious Diseases - Scientific and Advisory Board

- Prof. Stanislav Gobec, PhD - member

Editorial Board of Slovenska kardiologija

- Prof. Joško Osredkar, PhD - member

Editorial Board of Radiology & Oncology in Frontiers in Immunology

- Prof. Janko Kos, PhD - member

Editorial Board of the Central European Journal of Biology

- Prof. Samo Kreft, PhD - regional editor

(Chapter 5 prepared by: I. Mlinarič Raščan, J. Merjasec, D. Černe, S. Kreft, S. Gobec, M. Gašperlin, A. Kristl, M. Kos)

## **6 STUDENTS' REPORT ON 2014 ACHIEVEMENTS**

### ***Month of the Pharmacist***

October 2014 saw the sixth Month of the Pharmacist and activities took place throughout October as we presented the intensity and diversity of extracurricular activities at the Faculty of Pharmacy to the freshmen to make the beginning of their study year easier with useful advice. At the beginning of the academic year, on 1 October 2014, as they received their student transcript book, we presented the freshmen the possibilities of engaging in other student activities besides their studies. They received folders containing information about the study programme and extracurricular activities. The day before, a presentation of individual faculties to the wider audience took place as part of the Reception of Freshmen of the University of Ljubljana at Prešeren Square. During the rest of October, numerous activities took place at the information stalls enabling students to exchange informal information about the study programme and to acquire study literature (used textbooks fair).

### ***The International Pharmaceutical Summer Camp***

From 15 to 20 July 2014, the students organised the 18th International Pharmaceutical Camp at the Radenci Centre of School and Extracurricular Activities in Gornji Radenci ob Kolpi. The topic of the event was "Skin".

During the Camp, diverse work methods were used such as lectures, workshops and roundtables, where we actively discussed the importance and role of skin, the treatment of skin diseases and cosmetics and other natural preparations for skin. Because an important part of our profession is also advising patients, we also organised a public campaign on the topic of skin where every participant could test being in the role of a consultant.

The professional programme thus included lectures and workshops, and a part of our time was also dedicated to a social programme that included sport and social activities for the participants. We prepared many activities and outdoor games. Through various activities, we tried to connect individual participants as much as possible, to encourage them to participate in sports activities and to introduce mainly foreign students to Slovenian culture. We did this with trips, a traditional dinner with typical Slovenian cuisine and mainly via socialising with Slovenian students.

60 participants attended the Camp. They improved their knowledge of skin, were educated about Slovenian culture and cross-cultural and mutual cooperation and began to live a healthier life.

### ***Spatula***

Spatula is the newsletter of the Association of Students of Pharmacy of Slovenia (the student section of the Slovenian Pharmaceutical Association), with which we inform students of pharmacy about extracurricular activities and novelties in the world of pharmacy at the local and international level. It is a periodical publication; the articles are published in Slovenian, except for articles by foreign authors, which are published in English.

The Spatula magazine includes the following regular topics:

- professional articles,
- interviews,
- events at professional evening,
- presentation of pharmaceutical activity in Slovenia,
- Erasmus practices,
- the study of pharmacy abroad,
- LBM section,

- news from the world of pharmacy,
- reports on sports achievements,
- report on extracurricular activities,
- Sudoku and a crossword puzzle.

In 2014, 3 issues of the newsletter were published, in February, May and October.

### ***Advising Patients***

This project is well-known among the students of pharmacy and also in the wider pharmaceutical public. The single competition takes place in two parts. The first part involves a lecture on disease and a lecture on medicine. The second is competitive and takes place at a pharmacy. The competitors compete in giving advice to an imaginary patient. The use of professional knowledge acquired from the lecture is graded, then the performance, the suitability of the communication with the patient and the general impression. The competition is suitable for freshmen as well as undergraduates.

The topic in 2014 was type 2 diabetes. The competitors compete for attractive prizes such as participation at the IPSF congress that took place in Portugal or at the International Pharmaceutical Summer Camp.

### ***Mini School of Clinical Pharmacy***

The project is similar to the Advising Patients project. It involves a lecture on a certain topic, followed by a competition. An important difference is that the contestants take on the role of a clinical pharmacist and besides advice they also fill out a special form about the patient and include a comment. The competition took place in December 2014. The topic was epilepsy. At the same time, we were also introduced to the current state in the field of clinical pharmacy in Slovenia.

### ***Volunteering at the Faculty of Pharmacy***

Our humanitarian group was also active in 2014. They organised collecting of clothes and goods for those affected by the flood in Serbia and Bosnia and Herzegovina.

In May, the students of the Faculty of Pharmacy attended the humanitarian run as part of the Wings for Life, the international non-profit organisation for spinal cord research. In December, they organised the traditional Christmas Bazaar, where mainly sweets, greeting cards and presents were sold. The collected money was sent to a socially endangered Slovenian family.

### ***Public Campaign: Diabetes***

The campaign was organised in cooperation with students of medicine on the international day of diabetes, 14 November 2014. It took place in Prešeren Square. The students introduced passers-by to the dangers of type 2 diabetes and explained to them the methods and principles of measuring the concentration of glucose in blood and the application of insulin. The students of medicine also performed these measurements.

### ***Public Campaign: Safe Use of Antibiotics***

The campaign was conducted virtually via the internet. For this event, we created a Facebook cover that we published on the date of the event on the profile of the association of students and invited the members of the group to also set the cover on their profiles. We also published an essay about this topic.



### ***Public Campaign: Circle of Health***

The campaign took place on Sunday, 7 April in Prešeren Square in Ljubljana. We prepared it together with the Association of Medical Students of Slovenia and the Association of Psychology Students of Slovenia as part of the Circle of Health (the 3rd annual traditional project prepared by students of medicine). We distributed brochures to passers-by with a summary of interaction; for children, we prepared balloons that they filled with helium. We also displayed dried plant drugs that most frequently enter into interaction with medicinal products (we borrowed them from the Chair of Pharmaceutical Biology).

### ***Public Campaign: Health Festival***

In 2014, Lekarne Ljubljana celebrated its 65th anniversary, so on 14 June 2014, the 1st Health Festival took place in the lobby of the Križanke Outdoor Theatre to commemorate the occasion. At the Festival, students of pharmacy also had their stand where they gave advice to visitors about the correct use of teas and interaction with medicinal products, and they also made a few teas at the stand. They presented the book *Sodobna fitoterapija* (Modern Phytotherapy) and the Spatula newsletter. They also prepared mixtures of teas with children and helped them make creams and ointments.

### ***Public Campaign: Medicinal Teas***

The project was carried out in June. Its basic goal is to visit elderly homes across Slovenia with the purpose of presenting the elders the medicinal effects of herbal teas. Before the campaign, there were lectures for students who participated in the campaign that were open to anyone else interested in the topic.

### ***Working Weekend of the Association of Students of Pharmacy of Slovenia***

This is a two-day event attended by the most active members of the Association of Students of Pharmacy and those who want to broaden their horizons and develop on a personal level. The programme is based on developing team work and planning projects for the following academic year. It involves various workshops and a training of soft skills (motivation, project management, communication, conflict solving, team-building and presentation techniques). Alongside professional work, there was of course a social programme that involved meeting other students and soft skills coaches. In 2014, the Working Weekend took place in ČŠOD Čebelica, in Čatež.

### ***IPSF SEP (Students Exchange Programme)***

Is a mobility programme that provides students of pharmacy the opportunity of getting to know the pharmaceutical profession in more than 50 countries of the world. It is one of the largest projects of the International Pharmaceutical Students' Federation (IPFS). The programme is carried out throughout the year and provides 1- to 3-month practical training and experience in the fields of working in general and hospital pharmacy, the pharmaceutical industry, research work and working as a clinical pharmacist. The majority of practical training is performed during the summer. In 2014, 26 foreign students performed practical training in Ljubljana, Kranj, Golnik and Portorož in the period from June to September. In 2014, the Faculty of Pharmacy enabled SEP practical training to three students at the Chair of Pharmaceutical Technology, two students each at the Chair of Social Pharmacy, Chair of Pharmaceutical Biology, the Chair of Pharmaceutical Chemistry and the Chair of Clinical biochemistry and to one student at the Chair of Biopharmacy and Pharmacokinetics. In total, it provided 12 positions for practical training. The interest of students from the Faculty of Pharmacy in performing practical training is growing each year. In 2014, practical training was made possible for 20 of our own students. The number of students who can perform practical training abroad namely depends on the number of students we are hosting.

### ***EPSA Individual Mobility Project***

EPSA Individual Mobility Project (IMP) is a long-term project that provides students of pharmacy and recently graduated pharmacists and graduates of pharmaceutical science the possibility of obtaining work and research experience in all areas of the pharmaceutical profession. IMP was created with the desire for interlinking of the European pharmaceutical industry, institutions and organisations of students of pharmacy.

The IMP programme has the potential to unify European countries in terms of mobility of the students of pharmacy. The project offers students and recent graduates at least a 6 and maximum a 12 month long paid traineeship in an international pharmaceutical company.

This year, we have applied for nine IMP practical training placements, which is the maximum number of open positions so far. A student of industrial pharmacy was also accepted to the practical training, which she performed at the University of Helsinki.

### ***Other Projects in 2014***

**“Quo vadis, Pharmacy”** Congress - the congress lasted three days, and thirteen lecturers held a lecture. The lectures were divided into two sections: a section on clinical and a section on industrial pharmacy.

Information Days and “Informativa” Fair - in cooperation with the Faculty of Pharmacy, the students organised a presentation of the Faculty, the study programmes and extracurricular activities.

**Professional Evenings** - professional evenings are lectures on a certain topic organised by the students themselves in collaboration with lecturers and guest lecturers. This way, some topics are covered based on the students’ own initiative that they believe should be discussed as they are not emphasised enough due to the shortage of time during the studies, and they can thus make a significant contribution to their own education. In 2014, the students organised professional evenings on the topic of vaccines and diabetes.

**Website** - the website of the Association of Students of Pharmacy of Slovenia was renewed. On the website, students can find up-to-date information about the developments at the Faculty of Pharmacy and study literature.

**Skiing on Vogel** - skiing of pharmacists took place on Vogel at the beginning of March 2014.

**Picnic** - this was organised in May, and it is the last socialising event before the end of the academic year and before the summer exam period.

**Mobility day** - a project of the Faculty of Pharmacy and the Association of Students of Pharmacy of Slovenia, where the students were presented the possibility of the study programmes, exchange and practical training abroad (ERASMUS exchanges, ERASMUS, SEP and IMP training).

**Professional/Social Trip to Budapest** - 5-7 December 2014, two day trip with an organised professional and social programme. Approximately 50 students from the Faculty of Pharmacy went on the trip.

### ***IPSF World Congress (Porto, Portugal, August 2014)***

At the beginning of August, the International Pharmaceutical Students’ Federation (IPSF) organised its 60th World Congress, which took place in Portugal. The primary purpose of this 10-day socialising of pharmacy students from around the world is the annual meeting of the IPSF General Assembly, which consists of all the member national organisations of pharmaceutical students. The general assembly is the head organ of IPSF, where the annual reports on events in the Federation are presented, decisions are made and the new executive board is elected.

While the 3 official delegates from each country take part in the assembly, lectures, workshops and training in soft skills also take place.

The IPSF congress also includes two days of symposium, which in 2014 was entitled Science into Practice, Practice into Science. 25 Slovenian students attended the congress in Portugal.

***EPSA Annual congress (Budapest, Hungary, April 2014)***

The European Pharmaceutical Students Association (EPSA) organises its largest event every year in spring. It is an annual congress that consists of a rich professional and social programme. At the congress, delegates meet from every member organisation (2 delegates per organisation) with the function of decision-making and the right to vote at the official General Assemblies. Delegates have the task of representing the interests of students represented by their associations, thus the Slovenian delegates represent the interest and opinions of the Slovenian students of pharmacy and simultaneously represent the organisation of the study of pharmacy in Slovenia and are looking for new ideas and possibilities for improving extracurricular activities for our students. They are thus informed about projects of mobility, student offers for participation in various congresses of professional partners of the EPSA (DIA, EAHP etc.), options for training and possibilities for financing various projects. They also have the possibility of contacting and improving contacts with other member organisations, which strengthens the collaboration between students all over Europe. As part of the General Assembly, the official delegates elect a new EPSA team.

And the option of making contact and participating in the professional part of the programme is also given to other participating students via a two-day thematic symposium as well as workshops and trainings in soft skills that take place at the same time as the General Assembly. At the end of the congress, upon evaluating the event, students have the possibility of obtaining points for the LLC certificate (Life-Long Learning Certificate), which is granted by EPSA for participation at professional events.

***EPSA Summer University (Ohrid, Macedonia, August 2014)***

The summer university is the most informal EPSA event without any General Assembly. This year, the Summer University took place in Ohrid, where the students from member associations had the opportunity to socialise in a relaxed atmosphere and obtain new skills with the help of training and workshops about networking, the European Union, Communication, etc.

***EPSA Autumn Assembly (Hradec-Kralove, Czech Republic, October 2014)***

The autumn assembly is the second largest and most important EPSA event, where the representatives of the member organisations come together at the meeting of the General Assembly and, in the mid-term of their mandate, present their work and plans for the future. Similar to other congresses, the duties and the rights of the two Slovenian delegates at the meetings of the Assembly are to represent the opinion of Slovenian students of pharmacy and to vote. Like the annual congress, the autumn assembly also combines a professional (thematic symposium, workshops, soft skill training) and a social part. Here, students can also obtain points that count towards an LLC certificate.

(Chapter 6 prepared by: the Student Council of the Faculty of Pharmacy)

## **7 GRADUATES OF THE FACULTY OF PHARMACY IN 2014**

### **UNIVERSITY STUDY PROGRAMME OF PHARMACY (PRE-BOLOGNA PROGRAMME)**

Apat Ana (mentor: Stanko Srčič, co-mentor: Mingshi Yang): Vpliv intrinzične viskoznosti izhodne polimerne raztopine na lastnosti delcev polivinilpirolidona, pridobljenih s sušenjem z razprševanjem = Correlation between intrinsic viscosity of PVP and particle properties of spray dried products, COBISS.SI-ID: 3710577.

Bajrić Sadiković Mirela (mentor: Stanko Srčič, co-mentor: Smiljana Milošev Tuševljak): Nova farmakovigilancijska zakonodaja in vpliv na regulatorno prakso = New pharmacovigilance legislation and impact on regulatory practice, COBISS.SI-ID: 3779953.

Baricevic Andrea (mentor: Aleš Mrhar, co-mentor: Sachin Shah): Vpliv energijske pijače na QT interval in srčni utrip = The impact of energy drinks on QTc and heart rate parameters, COBISS.SI-ID: 3672433.

Bartolič Tina (mentor: Odon Planinšek, co-mentor: Klemen Kočever): Proučevanje vpliva pogojev ohlajanja raztopin manitola na lastnosti liofilizatov = Study of the influence of cooling conditions of mannitol solutions on the properties of lyophilisates, COBISS.SI-ID: 3674737.

Bogdan Helena (mentor: Franc Vrečer, co-mentor: Darko Uršič): Vpliv pufrskih sistemov na >>in vitro<< sproščanje zdravilnih učinkovin iz trdnih farmacevtskih oblik = Influence of buffer systems on 'in vitro' drug release from solid dosage forms, COBISS.SI-ID: 3681905.

Bole Jožica (mentor: Matjaž Jeras, co-mentor: Polona Klemenc): Genotipizacija virusa hepatitisa B pri krvodajalcih v Sloveniji = Genotyping of hepatitis B virus in blood donors in Slovenia, COBISS.SI-ID: 3681649.

Brajnik Teja (mentor: Lucija Peterlin Mašič, co-mentor: Vid Mlakar): Preučevanje izražanja genov COL5A1, COL11A1, GREM1 in MAOA v človeških osteosarkomskih celicah, izpostavljenih bisfenoloma A, S in AF = Study of changes in expression of COL5A1, COL11A1, GREM1 and MAOA genes in human osteosarcoma cells exposed to bisphenols A, S and AF, COBISS.SI-ID: 3621233.

Bratož Maja (mentor: Igor Locatelli, co-mentor: Andreja Čufar): Klinični in ekonomski vidik uporabe protimikrobnih zdravil z omejenim predpisovanjem v Univerzitetnem kliničnem centru Ljubljana = Clinical and economic aspect of use of antimicrobials with restricted use in University Medical Center of Ljubljana, COBISS.SI-ID: 3727985.

Brumen Urban (mentor: Stanislav Gobec, co-mentor: Samo Turk): Iskanje novih zaviralcev undekaprenil pirofosfatne sintaze z računalniškimi metodami = Searching for new inhibitors of undecaprenyl pyrophosphate synthase with computational methods, COBISS.SI-ID 3592561.

Ceklin Tasja (mentor: Irena Mlinarič Raščan, co-mentor: Rosemary Smyth): Razvoj dvodimenzionalne gelske elektroforeze za določanje serumskih bioloških označevalcev pri poškodbah jeter podgan, povzročenih z ogljikovim tetrakloridom = Development of two-dimensional gel electrophoresis for detection of serum biomarkers of carbon tetrachloride induced liver injuries in rats, COBISS.SI-ID: 3645809.

Čargo Tina (mentor: Mojca Kerec Kos, co-mentor: Iztok Grabnar): Populacijska analiza farmakokinetike ramiprila pri starostnikih s kroničnim srčnim popuščanjem = Population pharmacokinetic analysis of ramipril in elderly with chronic heart failure, COBISS.SI-ID: 3663985.

Čuček Evelin (mentor: Simon Žakelj, co-mentor: Katja Kristan): Razvoj visoko zmogljivega preskusa sproščanja na avtomatskem pipetorju = Development of a high-throughput automated dissolution method on automated pipettor, COBISS.SI-ID: 3624305.

Duh Denis (mentor: Igor Locatelli, co-mentor: Alenka Premuš Marušič): Optimiziranje zdravljenja z zdravili pri bolnikih z težavami v Splošni bolnišnici Murska Sobota = Optimizing drug therapy for patients with swallowing difficulties in Murska Sobota General Hospital, COBISS.SI-ID: 3643761.

Fazlič Sanela (mentor: Aleš Mrhar, co-mentor: Peter Korošec): Analiza rezultatov specifičnih IgE protiteles med leti 2003 in 2012 na kliniki Golnik = Analysis of the results of measurement of the specific IgE antibodies in the period from 2003 to 2012 at the Clinic Golnik, COBISS.SI-ID: 3768945.

Fridl Aleš (mentor: Ilija Ilič): Izdelava in vrednotenje trdnih disperzij karvedilola v mezoporoznem nosilcu silicijevega dioksida, izdelanih z metodo sušenja z razprševanjem = Preparation and characterisation of carvedilol solid dispersions in mesoporous carrier silicon-dioxide using spray drying method, COBISS.SI-ID 3799409.

Furman Tadeja (mentor: Mojca Kržan, co-mentor: Polonca Ferk): Analiza predpisovanja antipsihotikov v Sloveniji v obdobju 2003-2012 in predvidevanje možnosti neželenih učinkov zaradi medsebojnega delovanja hkrati predpisanih zdravil = The analysis of prescribing antipsychotics in Slovenia in the period from 2003 to 2012 and the prediction of possible adverse effects caused by interaction between co-administered drugs, COBISS.SI-ID: 3795569.

Gabrič Petra (mentor: Aleš Mrhar, co-mentor: Tanja Čufer): Vrednotenje kakovosti življenja bolnikov s pljučnim rakom v povezavi z varnostjo sistemskega zdravljenja prvega reda = Evaluation of quality of life in patients with lung cancer in relation to safety of first line systematic treatment, COBISS.SI-ID: 3662961.

Glinšek Petra (mentor: Mitja Kos, co-mentor: Marija Mravljak): Medsebojno delovanje zdravil pri bolnikih na kronični hemodializi in peritonealni dializi na oddelku za interno medicino Splošne bolnišnice Slovenj Gradec = Drug-drug interactions in patients on chronic hemodialysis and peritoneal dialysis in the internal medicine department of the General Hospital Slovenj Gradec, COBISS.SI-ID: 3658097.

Golob Maja (mentor: Borut Božič, co-mentor: Joško Osredkar): Zloraba anabolnih hormonov v športu: poznavanje v javnosti in analiza primera = Abuse of anabolic hormones in sports: public knowledge and case study, COBISS.SI-ID: 3615857.

Golob Hočevar Mojca (mentor: Jurij Trontelj): Razvoj in validacija metode za določanje haloperidola in reduciranega haloperidola v krvnih madežih s tekočinsko kromatografijo, sklopljeno s tandemsko masno spektroskopijo = Development and validation of a method for the dermination of haloperidol and reduced haloperidol in dried blood spots using liquid chromatography tandem mass spectrometry, COBISS.SI-ID: 3688049.

Gorenc Anja (mentor: Rok Dreu): Vpliv pretočnih lastnosti tabletnih zmesi ter pogojev polnjenja na enakomernost mase in vsebnost učinkovine v mini tabletah = The effect of flowability of tablet mixtures and different die-filling approaches on uniformity of tablet mass and the uniformity of content of active substance in mini-tablets, COBISS.SI-ID 3585137.

Hadžić Sandra (mentor: Mojca Kržan, co-mentor: Sabina Passamonti): Primerjava privzema histamina in kvercetina v astrocite novorojene podgane = Differences in histamine and quercetin uptake in neonatal rat astrocytes, COBISS.SI-ID: 3698289.

Hari Iva (mentor: Lucija Peterlin Mašič, co-mentor: Jan Tytgat): Optimizacija strukturno odvisnih parametrov pri sklopljeni masni spektrometriji za izbrane sintezne kanabinoide ter njihova modulacija ionskih kanalov = Optimisation of compound-dependent parameters in the tandem mass spectrometry for selected synthetic cannabinoids and their modulation of ion channels, COBISS.SI-ID: 3621745.

Horvat Karmen (mentor: Metoda Lipnik Štangelj, co-mentor: Ilonka Ferjan): Vpliv ibuprofena in paracetamola na sproščanje histamina iz mastocitov peritonealne votline podgane = The effect of ibuprofen and paracetamol on histamine release from rat peritoneal mast cells, COBISS.SI-ID: 3681137.

Hribar Melita (mentor: Darko Černe, co-mentor: Grača Soveral): Rešetanje zaviralcev akvaporina 1 in 3 na humanih eritrocitih z metodo merjenja sipane svetlobe v zaustavljenem toku = Screening for aquaporin 1 and 3 inhibitors in human red blood cells with stopped-flow light scattering method, COBISS.SI-ID: 3654257.

Jakovac Samo (mentor: Marko Anderluh): Sinteza triptaminskih derivatov s protimikrobnim delovanjem in z zaviralnim delovanjem na bakterijsko glikoziltransferazo = Synthesis of tryptamine derivatives with antibacterial activity and inhibitory effect on bacterial glycosyltransferase, COBISS.SI-ID: 3598705.

Japelj Nika (mentor: Borut Božič, co-mentor: Paul J. Ciclitira): Vpliv aminokislinskih substitucij v alfa-gliadinskih peptidih na njihovo imunogenost pri celiakiji = Effect of amino acid substitutions in alpha-gliadin peptides on their immunogenicity in coeliac disease, COBISS.SI-ID: 3636081.

Kavčič Grega (mentor: Odon Planinšek): Razvoj plaščnih tablet v vodi težko topne zdravilne učinkovine z oblogo, ki počí = Development of rupturable press-coated tablets containing a poorly water-soluble drug, COBISS.SI-ID: 3624049.

Kebe Katra (mentor: Tomaž Vovk): Populacijska farmakokinetika bisoprolola pri bolnikih s kroničnim srčnim popuščanjem = Population pharmacokinetics of bisoprolol in patients with chronic heart failure, COBISS.SI-ID: 3585393.

Kerin Helena (mentor: Aleš Mrhar): Vpliv pH in časa zadrževanja ogrodnih tablet v simuliranem želodčnem mediju na sproščanje natrijevega diklofenakata = The influence of pH and the retention time in simulated gastric medium on diclofenac sodium release from matrix tablets, COBISS.SI-ID: 3654001.

Klemenc Šinkovec Darja (mentor: Joško Osredkar, co-mentor: Borut Božič): Klinični pomen določanja koncentracije proteina S100B kot pokazatelja poškodbe možganov po operaciji srca = Clinical significance of determining the concentration of protein S100B as indicator of a brain injury after cardiac surgery, COBISS.SI-ID: 3608945.

Knap Karmen (mentor: Simon Žakelj): Določanje aktivnosti prenašalca PEPT1 v različnih regijah črevesa podgane in vitro na osnovi permeabilnosti aciklovirja in valaciklovirja = Determination of the in vitro PEPT1 activity in different regions of the rat intestine on the basis of acyclovir and valacyclovir permeability, COBISS.SI-ID: 3598449.

Kokot Eva (mentor: Tomaž Vovk): Razvoj analizne metode za določevanje krvnih koncentracij etopozida v posušeni krvnih madežih s tekočinsko kromatografijo visoke ločljivosti in fluorescenčno detekcijo = Development of analytical method for determination of blood concentrations of etoposide in dried blood spots with high performance liquid chromatography and fluorescence detection, COBISS.SI-ID: 3683441.

Koritnik Nika (mentor: Samo Kreft, co-mentor: Gorazd Drevenšek): Primerjava akutnih učinkov para-kumarne in protocatehujske kisline ter izvlečka lubja navadne jelke na ishemično-reperfuzijske okvare izoliranega srca podgane = Comparison of acute effects of para-coumaric acid, protocatechuic acid and silver fir bark extract on ischemia-reperfusion injury in isolated rat heart, COBISS.SI-ID: 3628657.

Kozjek Martina (mentor: Odon Planinšek, co-mentor: Biljana Janković): Mletje karvedilola s salicilno kislino in vrednotenje nastalih produktov = Grinding of carvedilol with salicylic acid and evaluation of arisen products, COBISS.SI-ID: 3615601.

Kramarič Tina (mentor: Janko Kos, co-mentor: Joaquin Timoneda Timoneda): Vpliv retinoidov in [alfa]-tokoferola na jetrni oksidativni stres in sintezo [gama]-glutamilcistein ligaze = Influence of retinoids and [alpha]-tocopherol on liver oxidative stress and synthesis of glutamate cysteine ligase, COBISS.SI-ID: 3758705.

Kramer Klemen (mentor: Mojca Kerec Kos, co-mentor: Lea Knez): Ovrednotenje farmacevtske storitve pregleda interakcij med zdravili za sistemsko zdravljenje pljučnega raka in ostalimi zdravili = Review of drug interactions between drugs for systemic treatment of lung cancer and other concomitant therapy: evaluation of a clinical pharmacy service, COBISS.SI-ID 3652209.

Kranjec Petra (mentor: Lucija Peterlin Mašič, co-mentor: Miran Brvar): Pregled zastrupitev z zdravili in drugimi snovmi, obravnavanih v urgentnih ambulantah Univerzitetnega kliničnega centra Ljubljana v letu 2012 = Cases overview of poisoning with drugs and other substances treated in medical emergency units of University Medical Centre Ljubljana in 2012, COBISS.SI-ID: 3729265.

Kukovec Mojca (mentor: Tomaž Vovk, co-mentor: Stane Pajk): Derivatizacija valprojske kisline s 3-(2-bromoacetil)-7-(diethylamino)kumarinom in razvoj analizne metode za določanje njenih koncentracij v plazmi = Derivatization of valproic acid with 3-(2-bromoacetyl)-7-(diethylamino)coumarin and development of analytical method for the determination of its concentrations in plasma. COBISS.SI-ID: 3683697.

Kukovec Anja (mentor: Alenka Zvonar Pobirk): Izdelava samo-emulgirajočih trdnih zmesi z resveratrolom z metodo sušenja z rasprševanjem = Formulation of solid self-emulsifying mixtures with resveratrol by spray drying technology, COBISS.SI-ID: 3798897.

Kvas Urška (mentor: Joško Osredkar): Določanje 8-izoprostana in 8-hidroksideoksigvanosina v urinu in amnijski tekočini kot označevalca oksidativnega stresa med nosečnostjo = Determination of 8-isoprostane and 8-hydroxydeoxyguanosine in urine and amniotic fluid as markers of oxidative stress during pregnancy, COBISS.SI-ID: 3609457.

Lamut Andraž (mentor: Marko Anderluh): Sinteza in biološko vrednotenje dendronskih antagonistov receptorja DC-SIGN = Synthesis and biological evaluation of dendron antagonists of receptor DC-SIGN, COBISS.SI-ID: 3728241.

Lešnik Marjeta (mentor: Mitja Kos): Dojemanje zdravstvenih trditev prehranskih dopolnil z vidika laične javnosti = Perceptions of health claims on dietary supplements from the perspective of lay public, COBISS.SI-ID: 3673969.

Linasi Matjaž (mentor: Marija Bogataj): Vpliv saharoze in pektina na sproščanje paracetamola iz tablet s hipromelozo = The influence of sucrose and pectin on the release of paracetamol from tablets containing hypromellose, COBISS.SI-ID: 3683185.

Linec Živa (mentor: Aleš Obreza, co-mentor: Izidor Sosič): Sinteza 4,8-dimetilpsoralenskih zaviralcev imunoproteasoma = Synthesis of 4,8-dimethylpsoralene inhibitors of immunoproteasome, COBISS.SI-ID: 3598193.

Mesec Uroš (mentor: Stanislav Gobec, co-mentor: Martina Hrast): Iskanje novih potencialnih zaviralcev N-acetilglukozamin enolpiruvil tranferaze z rešanjem knjižnice spojin Fakultete za farmacijo = Searching for novel potential inhibitors of N-acetylglucosamine enolpyruvyl transferase by screening a compound library of Faculty of pharmacy, COBISS.SI-ID: 3743601.

Nabergoj Dominik (mentor: Danijel Kikelj, co-mentor: Christian D. Muller): Vrednotenje protivnetnega in proapoptotičnega delovanja sinteznih analogov klatrodina na humanih monocitnih levkemičnih celicah THP-1 = Evaluation of anti-inflammatory and proapoptotic activities of synthetic clathrodin analogues in human THP-1 monocytic leukemia cells, COBISS.SI-ID: 3671153.

Nagode Katja (mentor: Aleš Mrhar, co-mentor: Cvetka Bačar Bole): Vrednotenje interakcij med zdravili pri bolnikih s shizofrenijo, shizotipsko in blodnjavo motnjo v Psihiatrični bolnišnici Idrija = Evaluation of drug interactions among patients with schizophrenia, schizotypal and delusional disorder in Psychiatric Hospital Idrija, COBISS.SI-ID: 3682161.

Oprčkal Metka (mentor: Marija Sollner Dolenc): Ocena varne uporabe barvil v farmacevtskih izdelkih, registriranih barvil v farmacevtskih izdelkih, registriranih v republiki Sloveniji = Assessment of the safe use of colours in pharmaceutical products registered in Republic of Slovenia, COBISS.SI-ID: 3664497.

Osterc Nuša (mentor: Saša Baumgartner, co-mentor: Matej Pavli): Proučevanje sproščanja doksazosin mesilata iz ogrodnih tablet na osnovi polianionskih karagenanov = Study of the release of doxazocin mesylate from matrix tablets based on polyanionic carrageenans, COBISS.SI-ID: 3660913.

Pegam Nataša (mentor: Mitja Kos): Sistematični pregled raziskav in elementov pravilnosti uporabe inhalacijskih zdravil pri bolnikih z astmo ali KOPB = A systematic review of studies and elements of appropriate inhaler technique in patients with asthma or COPD, COBISS.SI-ID: 3584881.



Penič Anja (mentor: Janja Marc): Izražanje genov za antioksidativne encime v vzorcih subhondralne kostnine = Genes expression of antioxidative enzymes in the samples of subchondral bone, COBISS.SI-ID: 3624817.

Perko Jure (mentor: Samo Kreft): Protiglivično delovanje izvlečka iz zeli in korenine škrlatne ehinaceje (*Echinacea purpurea*) = Antifungal activity of purple coneflower (*Echinacea purpurea*) herb and root extract, COBISS.SI-ID: 3674481.

Petauer Jerneja (mentor: Mitja Kos): Vrednotenje dejavnikov nakupnega vedenja pri homeopatskih zdravilih = Evaluation of factors affecting purchasing behaviour of homeopathic medicines, COBISS.SI-ID: 3676785.

Podričnik Snežana (mentor: Marko Anderluh, co-mentor: Martina Hrast): Cianotiofenski zaviralci ligaze MurF kot potencialne protibakterijske učinkovine = Cyanothiophene inhibitors of MurF ligase as potential antimicrobial agents, COBISS.SI-ID: 3638641.

Popović Poljanec Urša (mentor: Metoda Lipnik Štangelj): Primerjava vpliva nekrostatina-1 in nekrostatina-7 na regulirano smrt astrocitov podgan = Comparison of the effect of necrostatin-1 and necrostatin-7 on regulated cell death of rat astrocytes, COBISS.SI-ID: 3664241.

Prekoršek Iztok (mentor: Odon Planinšek): Proučevanje sproščanja indometacina iz trdnih disperzij mezoporoznega silicijevega dioksida = Studying release of indomethacin from solid dispersion mesoporous silicon dioxide, COBISS.SI-ID: 3670897.

Pukšič Polona (mentor: Tomaž Vovk, co-mentor: Martina Gobec): Proučevanje vpliva starejše generacije protiepileptičnih učinkovin na nastanek oksidativnega stresa v celičnih linijah = The influence of old-generation of antiepileptic drugs on oxidative stress development in cell lines, COBISS.SI-ID: 3698545.

Ravnikar Mateja (mentor: Janja Marc, co-mentor: Simona Jurković Mlakar): Povezava polimorfizmov v genih SOD1, SOD2 in CAT z razvojem otroka v odvisnosti od prenatalne izpostavljenosti Hg<sup>2+</sup> in MeHg = Association of SOD1, SOD2 and CAT genetic polymorphisms with child development depending on prenatal exposure to Hg<sup>2+</sup> and MeHg, COBISS.SI-ID: 3595121.

Rekar Barbara (mentor: Aleš Obreza): Najžlahtnejša umetnost kemije, prevod izbranih poglavij in kritično ovrednotenje dela Christopherja Glaserja, popolni kemik iz leta 1677 = The most precious art of chemistry, translation of some chosen chapters and critical evaluation of Christopher Glaser's work, the complete chemist, from year 1677, COBISS.SI-ID: 3679601.

Repovž Miha (mentor: Stane Srčič, co-mentor: Matejka Burjak): Vpliv načina temperiranja na fizikalno-kemijske in biofarmaceutske lastnosti filmsko obloženih pelet z etilcelulozo = The study of influence of curing on physio-chemical and biopharmaceutical properties of ethylcellulose film coated pellets, COBISS.SI-ID: 3655281.

Rizmal Petra (mentor: Marija Bogataj): Vpliv časa zadrževanja gastrorezistentnih pelet v kislem mediju na sproščanje učinkovine ob povečanem pretoku = Impact of enteric coated pellets residence time in acidic medium on drug release at higher flow rate, COBISS.SI-ID 3586161.

Rogić Aleksandra (mentor: Iztok Grabnar): Sistematični pregled poročil vrednotenja vlog za pridobitev dovoljenja za promet podobnih bioloških zdravil v Evropski uniji = A systematic review of assessment reports for granting marketing authorization of biosimilars in European Union, COBISS.SI-ID: 3781489.

Romanič Ana (mentor: Igor Locatelli, co-mentor: Matej Štuhec): Razvoj epidemioloških modelov za oceno motnje pozornosti s hiperaktivnostjo pri otrocih v Sloveniji = Development of the epidemiological models to estimate the prevalence of attention deficit hyperactivity disorder among children in Slovenia, COBISS.SI-ID: 3688305.

Rupnik Anže (mentor: Stanislav Gobec, co-mentor: Izidor Sosič): Načrtovanje in sinteza derivatov azetidin-2-ona kot potencialnih zaviralcev penicilin vezočih proteinov iz rezistentnih sevov = Design and synthesis of azetidin-2-one derivatives as potential inhibitors of penicillin-binding proteins from resistant strains, COBISS.SI-ID 3609713.

Savšek Špela (mentor: Mitja Kos): Ovrednotenje ključnih parametrov ambulantnega predpisovanja zdravil v Sloveniji v obdobju 2002-2008 = Evaluation of key parameters of prescribing medicines in primary care in Slovenia for the period 2002-2008, COBISS.SI-ID 3729521.

Sever Marko (mentor: Tomaž Bratkovič, co-mentor: Samo Turk): Postavitev homolognega modela receptorja CCR2 in vrednotenje interakcij potencialnih peptidnih ligandov in silico = Creation of CCR2 receptor homology model and evaluation of potential peptide ligand interactions in silico, COBISS.SI-ID: 3794033.

Sklepič Milan (mentor: Darko Černe, co-mentor: Urban Švajger): Razvoj postopka izolacije makrofagov iz nedrobnoceličnega rakavega tkiva in njihova fenotipizacija = Development of procedure for macrophage isolation from non-small cell lung cancer and their phenotypization, COBISS.SI-ID 3592817.

Stipanič Svetlana (mentor: Stanko Srčič): Definicija in pomen regulatorne prakse in njeno razumevanje glede na pozicijo in izobrazbo zaposlenih v farmacevtski industriji = Definition and importance of good regulatory practice and understanding due to position and education of employees in pharmaceutical industry, COBISS.SI-ID: 3585649.

Škvarč Nina (mentor: Samo Kreft): Ugotavljanje primesi kortikosteroidov z metodo tankoplastne kromatografije v mazilih z naravnimi izvlečki = Screening for corticosteroid addition in ointments containing natural extracts by applying the method of thin layer chromatography, COBISS.SI-ID: 3671409.

Šolaja Tatjana (mentor: Mitja Kos): Ovrednotenje moralnega presojanja študentov Fakultete za farmacijo Univerze v Ljubljani = An assessment of the moral development of pharmacy students at the Faculty of Pharmacy University of Ljubljana, COBISS.SI-ID: 3609201.

Treiber Urška (mentor: Pegi Ahlin Grabnar, co-mentor: Heike Bunjes): Uporabnost diferenčne dinamične kalorimetrije za določanje koncentracije učinkovine v lipidnih nanodelcih = Applicability of differential scanning calorimetry for the determination of drug concentration in lipid nanoparticles, COBISS.SI-ID: 3679345.

Urigelj Karmen (mentor: Mojca Kržan, co-mentor: Tomaž Zupanc): Pregled zastrupitev s smrtnim izidom v zahodnem delu Slovenije v letih 2008-2012 = Fatal poisoning in western part of Slovenia during the years 2008-2012, COBISS.SI-ID: 3788145.

Valenčič Živa (mentor: Joško Osredkar): Klinični pomen določanja povišanih koncentracij troponina I in srčnega tipa maščobne kisline vezočega proteina pri bolnikih, obravnavanih na urgentnem bloku = Clinical significance of determination elevated troponin I and heart-type fatty acid binding protein in patients treated in the emergency room block, COBISS.SI-ID: 3615345.

Valič Fabčič Vida (mentor: Aleš Obreza, co-mentor: Janez Vodičar): Zavetnika lekarništva sveta Kozma in Damjan v slovenski umetnosti = The patron saints of pharmacy, St. Cosmas and St. Damian in Slovenian art, COBISS.SI-ID: 3800177.

Vidmajer Lea (mentor: Samo Kreft, co-mentor: Iztok Jože Košir): Validacija kromatografske metode za analizo steviol glikozidov v zeli stevije (*Stevia rebaudiana*) in analiza vzorcev različnih kemotipov in različnih žetev = Validation of chromatographic method for analysis of steviol glycosides in stevia herb (*Stevia rebaudiana*) and analysis of samples of different chemotypes and different harvests, COBISS.SI-ID: 3709809.

Vlah Anja (mentor: Lucija Peterlin Mašič, co-mentor: Miran Brvar): Pregled in vrednotenje zastrupitev s prepovedanimi drogami v letu 2011 v Univerzitetnem kliničnem centru Ljubljana = Review and evaluation of illicit drugs intoxications in 2011 at the University Medical Centre Ljubljana, COBISS.SI-ID: 3594609.

Vrbek Sanja (mentor: Tihomir Tomašič, co-mentor: Christian D. Muller): Vrednotenje proapoptičnega delovanja sinteznih analogov klatrodina na humanih celicah embrionalnega karcinoma NTERA-2 klon D1 = Evaluation of proapoptotic activity of synthetic clathrodin analogs in human embryonal carcinoma cells NTERA-2 clone D1, COBISS.SI-ID: 3674225.

Vrhovnik Nina (mentor: Lucija Peterlin Mašič, co-mentor: Miran Brvar): Preučevanje kliničnih primerov hipoglikemije kot posledice zastrupitev z venlafaksinom = Clinical cases of hypoglycemia induced by venlafaxine poisoning, COBISS.SI-ID: 3601265.

Vrtačnik Neža (mentor: Žiga Jakopin, co-mentor: Martina Gobec): Vrednotenje protivnetnega in antioksidativnega delovanja 1,2,4 - oksadiazolnih derivatov resveratrola = Evaluation of anti-inflammatory and antioxidant activity of 1,2,4 - oxadiazole analogs of resveratrol, COBISS.SI-ID: 3614833.

Vuković Branka (mentor: Žiga Jakopin, co-mentor: Marija Sollner Dolenc): Načrtovanje in sinteza aciliranih analogov tripeptida Gly-L-Ala-D-Glu kot agonistov receptorja NOD2 = Design and synthesis of acylated tripeptide Gly-L-Ala-D-Glu analogs as NOD2 receptor agonists, COBISS.SI-ID: 3748465.

Zakšek Špela (mentor: Stanko Srčič, co-mentor: Stefania G. Baldursdottir): Vpliv intrinzične viskoznosti izhodne polimerne raztopine na lastnosti delcev polivinilacetata, pridobljenih s sušenjem z razprševanjem = Correlation between intrinsic viscosity of different polyvinyl acetate solutions and particle properties of spray dried solid dispersion, COBISS.SI-ID 3623793.

Zalokar Katja, (mentor: Lucija Peterlin Mašič): Določanje estrogene aktivnosti bisfenolov A, AF in S in vitro = Evaluation of estrogenic activity of bisphenols A, AF and S in vitro, COBISS.SI-ID: 3628913.

Židan Tanja (mentor: Pegi Ahlin Grabnar): Formulation and evaluation of fucoidan/chitosan nanoparticles as a delivery system for proteins = Izdelava in vrednotenje nanodelcev iz fukoidana in hitosana kot dostavnega sistema za proteine, COBISS.SI-ID 3586929.

### **UNIVERSITY STUDY PROGRAMME OF COSMETOLOGY**

Brezovar Laura (mentor: Petra Kocbek, co-mentor: Robert Roškar): Izdelava in stabilnost trdnih lipidnih nanodelcev s koencimom Q10 = Preparation and stability of coenzyme Q10 loaded solid lipid nanoparticles, COBISS.SI-ID: 3702641.

Črešnik Maja (mentor: Mirjana Gašperlin, co-mentors: Philippe Piccerella, Christophe Suazet): Microencapsulation of liquid formulation with antioxidants by vibration nozzle method = Mikrokapsuliranje tekočih formulacij z antioksidanti z metodo vibrirajoče membrane, COBISS.SI-ID: 3709041.

Dernulovec Eva (mentor: Marija Sollner Dolenc, co-mentor: Anja Menard Srpčič): Primerjava zakonodaje za uvoz kozmetičnih izdelkov na evropski in ameriški trg = Comparison of regulation for import of cosmetic products on European and American market, COBISS.SI-ID: 3736689.

Gobec Petra (mentor: Mirjana Gašperlin, co-mentor: Mirjam Gosenca): Vpliv različnih vlažilnih krem na hidracijo kože in transepidermalno izgubo vode = The influence of different moisturizing creams on skin hydration and transepidermal water loss, COBISS.SI-ID: 3699057.

Hafner Špela (mentor: Petra Kocbek, co-mentor: Robert Roškar): Vgrajevanje koencima Q10 v lipidne nanodelce in razvoj metode za njegovo določanje v formulaciji = Incorporation of coenzyme Q10 into lipid nanoparticles and development of a method for its determination in formulation, COBISS.SI-ID: 3703153.

Jakopin Julija (mentor: Damjan Janeš, co-mentor: Pegi Ahlin Grabnar): Razvoj in vrednotenje losjona za telo s saponini = Development and evaluation of body lotion with saponin, COBISS.SI-ID: 3680881.

Kozoderc Klementina (mentor: Petra Kocbek, co-mentor: Stane Pajk): Vpliv derivatov D-glukonamida na lastnosti liposomov = Impact of D-gluconamide derivatives on liposome characteristics, COBISS.SI-ID: 3702129.

Marušič Nika (mentor: Marija Sollner Dolenc, co-mentor: Damjana Drobne): Ugotavljanje genotoksičnosti nanodelcev cinkovega oksida s kometnim in mikrojedrnim testom na celični liniji MDCK = Assessment of zinc oxide nanoparticles genotoxicity on MDCK cell line with comet and micronucleus assay, COBISS.SI-ID: 3732593.

Mestnik Anja (mentor: Mojca Lunder): Rastni dejavniki v kozmetiki: poznavanje in uporaba v laični in strokovni javnosti = Growth factors in cosmetics: knowledge and use in general and scientific public, COBISS.SI-ID: 3702385.

Murkovič Maja (mentor: Pegi Ahlin Grabnar): Proučevanje vpliva sestave in velikosti liposomov na transepidermalno izgubo vode in hidracijo kože = A study of the influence of liposome composition and size on transepidermal water loss and skin hydration, COBISS.SI-ID: 3702897.

Pavc Daša (mentor: Jožko Cesar): Določanje vsebnosti koencima Q10 v kozmetičnih izdelkih = Determination of content of coenzyme Q10 in cosmetic products, COBISS.SI-ID 3727729.

Pirnat Vesna (mentor: Marija Sollner Dolenc): Primerjava vsebnosti in varnosti uporabe dišav v naravnih in necertificiranih trdih milih ter gelih za prhanje = Comparison of content and safety of fragrances used in natural and non-certified solid soaps and shower gels, COBISS.SI-ID: 3708785.

Račnik Špela (mentor: Marija Sollner Dolenc, co-mentor: Kata Kolšek): Določanje vpliva resveratrola in njegovih analogov na glukokortikoidne receptorje = Determination of the effects of resveratrol and its analogs on the glucocorticoid receptors, COBISS.SI-ID: 3730033.

Ropret Petra (mentor: Pegi Ahlin Grabnar): Preučevanje vpliva lipofilnih sestavin kozmetičnih izdelkov na hidratacijo kože in transepidermalno izgubo vida = The influence of lipophilic ingredients in cosmetic products on skin hydration and transepidermal water loss, COBISS.SI-ID: 3701873.

Rožman Veronika (mentor: Saša Baumgartner): Določanje koncentracije modelne kozmetično aktivne sestavine v termoreverzibilnem hidrogelu = Determination of model cosmetically active ingredient concentration in thermoreversible hydrogel, COBISS.SI-ID: 3699313.

Samobor Tina (mentor: Mirjana Gašperlin): Izdelava in vrednotenje negovalne kreme z eteričnim oljem suhocvetnice = Manufacturing and evaluation of skin-care cream with essential oil of immortelle, COBISS.SI-ID: 3651953.

Schaffer Matej (mentor: Mojca Lunder, co-mentor: Luka Wechtersbach): Zagotavljanje mikrobiološke zaščite z janeževo in levulinsko = Cosmetic preservation with p-anisic and levulinic acid, COBISS.SI-ID: 3742321.

Strnad Maja Ana (mentor: Pegi Ahlin Grabnar): Proučevanje sestave varovalnih kozmetičnih izdelkov za sončenje = A study of the composition of sunscreens, COBISS.SI-ID: 3709297.

Testen Mateja (mentor: Žiga Jakopin, co-mentor: Marija Sollner Dolenc): Varnost uporabe barvil v losjonih in mlekih za telo = Safety usage of colorants in body lotions and body milk, COBISS.SI-ID 3703409.

Toporiš Janja (mentor: Matjaž Jeras): Uporaba botulinskega toksina in dermalnih polnil v lepotni kirurgiji = Use of botulinom toxin and dermal fillers in aesthetic plastic surgery, COBISS.SI-ID: 3698801.

Unkovič Ana (mentor: Marija Sollner Dolenc): Prisotnost in varnost uporabe parabenov in ftalatov v kozmetičnih izdelkih na slovenskem tržišču = Presence and safe use of parabens and phthalates in cosmetic products on the Slovenian market, COBISS.SI-ID: 3709553.

Vrhovec Anja (mentor: Marija Sollner Dolenc): Primerjava varnosti uporabe sestavin v kremah za obraz s certifikatom in brez njega = Comparison of safety of ingredients in face cream with and without certificate for natural cosmetics, COBISS.SI-ID: 3790705.

## **UNIVERSITY STUDY PROGRAMME OF LABORATORY BIOMEDICINE (PRE-BOLOGNA PROGRAMME)**

Frankovič Natalija (mentor: Uroš Mlakar, co-mentor: Helena Podgornik): Določanje povprečne fluorescence eritrocitov z eosin -5- maleimidom = Determination of red blood cell mean fluorescence by eosin -5- maleimide, COBISS.SI-ID: 3736433.

Jeraj Marija (mentor: Joško Osredkar): Določanje aktivnosti amilaze in lipaze pri bolnikih z akutnim in kroničnim pankreatitisom = Determining the activity of amylase and lipase in patients with acute and chronic pancreatitis, COBISS.SI-ID: 3710065.

## **LONG-CYCLE MASTER'S STUDY PROGRAMME OF PHARMACY**

Ambrož Martina (mentor: Aleš Mrhar, co-mentor: Maja Petre): Zdravljenje pooperativne bolečine po popolni artroplastiki kolena in kolka na oddelku za ortopedijo v Univerzitetnem kliničnem centru Maribor = Post-operative pain management after total knee and hip arthroplasty at University Medical Centre Maribor, COBISS.SI-ID: 3793521.

Antlej Kaja (mentor: Tomaž Vovk, co-mentor: Stéphane Gibaud): Priprava in karakterizacija nitrozotiolov kot donorjev dušikovega oksida = Preparation and characterization of nitrosothiols as nitric oxide donors, COBISS.SI-ID: 3770225.

Antončič Maja, (mentor: Marko Anderluh, co-mentor: Anna Bernardi): Synthesis of alpha-D-mannosyl glycoconjugates aimed to target mannose-binding lectins = Sinteza alfa-D-manoliziranih glikokonjugatov kot ligandov za lektine, specifične za manozo, COBISS.SI-ID: 3788401.

Benčan Martina (mentor: Janez Kerč, co-mentor: Javor Kac): Preučevanje vplivov temperaturnih obremenitev na fizikalno-kemijske lastnosti vazelina in njegovo stabilnost = Study of the effects of temperature on the physico-chemical properties of white petrolatum and its stability, COBISS.SI-ID: 3711601.

Bibič Lučka (mentor: Mirjana Gašperlin, co-mentor: Daniel Bar-Shalom): Razvoj mikrokapsul z albendazolom v poltrdnem vehiklu za peroralno jemanje = Formulation of albendazole microcapsules for oral administration in a semi-solid carrier, COBISS.SI-ID: 3739249.

Blažič Mojca (mentor: Julijana Kristl): Proučevanje trdnih lipidnih nanodelcev z resveratrolom in vgrajevanje v polimerna nanovlakna = Investigation of solid lipid nanoparticles with resveratrol and their incorporation in polymeric nanofibers, COBISS.SI-ID: 3663729.

Bobnar Kamnikar Renata (mentor: Julijana Kristl, co-mentor: Anne Marie Fadda): Liposomi s kvercetinom: priprava, vrednotenje in in vitro transdermalna študija = Liposomes with quercetin: preparation, evaluation and in vitro transdermal study, COBISS.SI-ID: 3593073.

Božič Klemen (mentor: Marija Bogataj): In vitro simulacija pH profila prebavnega trakta in vpliv na sproščanje natrijevega diklofenakata = In vitro simulation of the gastrointestinal pH profile and the impact on the release of diclofenac sodium, COBISS.SI-ID: 3788657.

Cotman Andrej Emanuel (mentor: Danijel Kikelj, co-mentor: Rok Frlan): Načrtovanje in sinteza analogov 4,5-dibromo-1H-pirola s tirozinskim fragmentom kot zaviralcev giraze B s protibakterijskim delovanjem = Design and synthesis of 4,5-dibromo-1H-pyrrole analogues with tyrosine fragment as gyrase B inhibitors with antibacterial activity, COBISS.SI-ID: 3711345.

Čadež Ana (mentor: Albin Kristl, co-mentor: Katja Berginc): Ovrednotenje slovenskega trga rastlinskih prehranskih dopolnil za živčevje, dihala, imunski sistem, kosti, mišice in sečila = Slovenian market evaluation of herbal food supplements for nervous system, respiratory system, immune system, bones, muscles and urinary tract, COBISS.SI-ID: 3639921.

Dolenc Martina (mentor: Mitja Kos): Sodelovanje pacientov s hipertenzijo pri zdravljenju z zdravili v Sloveniji = Patient adherence to antihypertensive medicine in Slovenia, COBISS.SI-ID: 3677553.

Gašperlin Kaja (mentor: Mojca Kržan): Vloga membranskega prenašalca za monoamine pri privzemu histamina v astrocite novorojene podgane = The role of plasma membrane monoamine transporter in histamine uptake into neonatal rat astrocytes, COBISS.SI-ID: 3610993.

Germič Nina (mentor: Irena Mlinarič Raščan, co-mentor: Hans-Uwe Simon): Lokacija z avtofagijo povezanega proteina 12 v celici = Subcellular localization of autophagy-related protein 12, COBISS.SI-ID: 3652721.

Gjerek Jernej (mentor: Irena Mlinarič Raščan, co-mentor: Antonio Suárez García): Dehalogoniranje 3-kloro-1,2-propandiola s sevi *Pseudomonas aeruginosa* = Dehalogenation of 3-chloro-1,2-propanediol by strains of *Pseudomonas aeruginosa*, COBISS.SI-ID: 3769713.

Golob Nejc (mentor: Marko Anderluh, co-mentor: Christe Elisabeth Müller): Sinteza sulfofenilksantinskih derivatov kot visokofinitetnih in selektivnih antagonistov adenozijskih receptorjev A2B = Synthesis of sulfophenylxanthine derivatives as high affinity and selective adenosine A2B receptor antagonists, COBISS.SI-ID: 3733873.

Grmek Nina (mentor: Mojca Kržan, co-mentor: Tomaž Zupanc): Analiza zastрупitev s smrtnim izidom v zahodnem delu Slovenije od 2006 - 2013 = Fatal poisoning in West Slovenia between years 2006 and 2013, COBISS.SI-ID: 3711857.

Heindler Nina (mentor: Stanislav Gobec, co-mentor: Marie Dolores Pujol Dilmé): Načrtovanje in sinteza novih potencialnih zaviralcev proteina KRAS = Design and synthesis of new potential protein KRAS inhibitors, COBISS.SI-ID: 3731569.

Hertiš Urška (mentor: Matej Sova, co-mentor: Urban Švajger): Sinteza in vrednotenje derivatov 2-(5-benzoilpirimidin-2-il) gvanidina kot potencialnih antagonistov Toll-u podobnega receptorja 4 = Synthesis and evaluation of 2-(5-benzoylpyrimidin-2-yl) guanidine derivatives as potential antagonists of Toll-like receptor 4, COBISS.SI-ID: 3735153.

Hočevar Sandra (mentor: Borut Štrukelj, co-mentor: Christa E. Müller): Kloniranje, izražanje in farmakološka karakterizacija nukleobaznih transporterskih in receptorskih proteinov = Cloning, expression and pharmacological characterization of nucleobase transporters and receptors, COBISS.SI-ID: 3793777.

Hribernik Nataša (mentor: Marija Bogataj): Vpliv saharoze in pektina v medijih različnih pH vrednosti na sproščanje paracetamola iz tablet s prirejenim sproščanjem = The influence of sucrose and pectin in media with various pH values on the release of paracetamol from modified-release tablets, COBISS.SI-ID: 3781233.

Hrovat Klemen (mentor: Odon Planinšek, co-mentor: Gregor Mali): Priprava in proučevanje amorfnih vzorcev hidroklorotiazida = Preparation and the study of the amorphous state of hydrochlorothiazide, COBISS.SI-ID: 3738225.

Hudoklin Petra (mentor: Marija Sollner Dolenc, co-mentor: Boštjan Erjavec): Fotokatalitska oksidacija bisfenola A in njegovih analogov z imobiliziranim TiO<sub>2</sub> = Photocatalytic oxidation of bisphenol A and its analogs with immobilized TiO<sub>2</sub>, COBISS.SI-ID: 3737713.

Humar Polona (mentor: Lucija Peterlin Mašič): Določanje učinka novejših zaviralcev gorenja TBB in TBPH ter njunih metabolitov na androgenske in glukokortikoidne receptorje = Determination of impact of new flame retardants TBB and TBPH and their metabolites on the androgen and glucocorticoid receptors, COBISS.SI-ID: 3732081.

Janc Tadeja (mentor: Janez Mravljak, co-mentor: Stane Pajk): Kemijska glikozilacija rodamina B in 6G z D-manozo in D-glukozo = Chemical glycosylation of rhodamine B and 6G with D-mannose and D-glucose, COBISS.SI-ID: 3711089.

Janžekovič Mitja (mentor: Mitja Kos): Tržna raziskava poslovnega okolja farmacevtske industrije ob vstopu na venezuelski trg zdravil = Market research of business environment of pharmaceutical industry upon entering the Venezuelan pharmaceutical market, COBISS.SI-ID: 3680625.

Jeklar Katarina (mentor: Janja Marc, co-mentor: Janja Zupan): Izražanje genov za antioksidativne encime v vzorcih hrustanca = Antioxidative enzymes' gene expression in cartilage samples, COBISS.SI-ID: 3672177.

Jerič Eva, (mentor: Danijel Kikelj, co-mentor: Rok Frlan): Načrtovanje in sinteza derivatov 3-amino-2-tioksitiazolidin-4-ona in 1H-pirol-3-amina kot potencialnih zaviralcev giraze B = Design and synthesis of 3-amino-2-thioxo-thiazolidin-4-one and 1H-pyrrole-3-amine scaffold derivatives as potential inhibitors of DNA gyrase B, COBISS.SI-ID: 3790193.

Junc Andreja (mentor: Rok Dreu, co-mentor: Biljana Janković): Vpliv premera matrice na proces stiskanja in lastnosti tablet = Influence of diameter die on tableting process and on tablet properties, COBISS.SI-ID: 3640433.

Jurič Marko (mentor: Petra Kocbek): Optimizacija sestave in metode izdelave magnetoliposomov = Optimization of magnetoliposome composition and their preparation method, COBISS.SI-ID: 3795825.

Kavčič Vesna (mentor: Aleš Mrhar, co-mentor: Lea Knez): Uporaba pripravkov v samozdravljenju pri bolnikih s pljučnim rakom - opazovalna presečna študija = The use of complementary medicines among lung cancer patients: an observational cross-sectional study, COBISS.SI-ID: 3790449.

Kenda Maša (mentor: Tomaž Bratkovič, co-mentor: Ulf Andersson Ørom): Alternativni promotorji genov za mikro RNA = Alternative microRNA promoters, COBISS.SI-ID: 3733361.



Knific Tamara (mentor: Stanislav Gobec, co-mentor: Izidor Sosič): Načrtovanje in sinteza zaviralcev imunoproteasoma psoralenskega strukturnega tipa = Design and synthesis of psoralene-based inhibitors of the immunoproteasome, COBISS.SI-ID: 3703921.

Kolenc Irena (mentor: Simon Žakelj): Barierne lastnosti Peyerjevih plošč in mukusa tankega črevesja podgane za učinkovine vgrajene v mikropelce = Barrier properties of Peyer's patches and rat small intestinal mucus for drugs loaded in microparticles, COBISS.SI-ID: 3731825.

Koren Žan (mentor: Matej Sova, co-mentor: Sabina Berne): Sinteza in biokemijsko preizkušanje zaviralcev benzoatne 4-monooksigenaze kot novih protiglivičnih spojin = Synthesis and biochemical testing of benzoate 4-monooxygenase inhibitors as novel antifungal compounds, COBISS.SI-ID 3652977.

Kovač Jana (mentor: Janko Kos, co-mentor: Andreas G. Schatzlein): Sinteza, vrednotenje in fragmentacija derivata etilenglikol hitosana = Synthesis, characterization and fragmentation of quaternary ammonium palmitoyl glycol chitosan, COBISS.SI-ID: 3674993.

Kozulić Pirher Alja (mentor: Janko Kos, co-mentor: Carole Ferraro-Peyret): Aktivacija signalne poti mTOR in ekspresija žilnega endotelijskega rastnega dejavnika v gastrointestinalnih neuroendokrinih celicah = mTOR activation and expression of vascular endothelial growth factor in gastrointestinal neuroendocrine cells, COBISS.SI-ID 3732337.

Kregar Sabina (mentor: Petra Kocbek, co-mentor: Leena Peltonen): Izdelava nanokristalov glibenklamida z mokrim mletjem v krogličnem mlinu = Preparation of glibenclamide nanocrystals by pearl milling, COBISS.SI-ID: 3622001.

Krošelj Katja (mentor: Aleš Obreza, co-mentor: Izidor Sosič): Sinteza furo[3,2-g]kromenonskih zaviralcev imunoproteasoma = Synthesis of furo[3,2-g]chromenone derivatives as immunoproteasome inhibitors, COBISS.SI-ID 3739505.

Kruljec Nika (mentor: Tomaž Bratkovič): Načrtovanje in priprava modelnega rekombinantnega proteina, označenega s streptavidin-vezavnim peptidom = Design and preparation of a model recombinant protein, labeled with streptavidin-binding peptide, COBISS.SI-ID 3712113.

Lamešič Dejan (mentor: Odon Planinšek): Sferična kristalizacija laktoze = Spherical crystallization of lactose, COBISS.SI-ID: 3710833.

Lapanja Nevenka (mentor: Marija Sollner Dolenc, co-mentor: Petra Kolenc Peitl): Sinteza in radiooznačevanje analogov minigastrina, konjugiranih z različnimi bifunkcionalnimi kelatorji = Synthesis and radiolabeling of minigastrin analogues, conjugated with different bifunctional chelators, COBISS.SI-ID: 3703665.

Ledinek Anja (mentor: Marko Anderluh, co-mentor: Jan Tytgat): Analitika gama-hidroksibutirata v postmortem krvnih vzorcih; dokazovanje posušenih krvnih madežev v primerjavi z vzorci polne krvi = Analytics of gamma-hydroxybutyrate in postmortem blood; dried blood spots versus whole blood samples, COBISS.SI-ID: 3645553.

Macut Helena (mentor: Nace Zidar): Načrtovanje in sinteza novih 4,5-dibromo-N-fenil-1H-pirol-2-karboksiamidnih in N-fenil-1H-indol-2-karboksiamidnih zaviralcev DNA giraze B = Design and synthesis of novel 4,5-dibromo-N-phenyl-1H-pyrrole-2-carboxamide in N-phenyl-1H-indole-2-carboxamide DNA gyrase B inhibitors, COBISS.SI-ID: 3704433.

Makovec Tilen (mentor: Rok Dreu): Primerjava lokalnih hitrosti pelet v Wursterjevi in modificirani Wursterjevi komori z metodo dvojnega osvetljevanja = Comparison of local pellet velocities between conventional Wurster chamber and swirl generator - equipped Wurster chamber with method of double exposure, COBISS.SI-ID: 3640177.

Malavašič Uroš (mentor: Žiga Jakopin): Načrtovanje in sinteza rigidnih derivatov dipeptida D-Glu-mezo-DAP = Design and synthesis of rigid dipeptide D-Glu-meso-DAP derivatives, COBISS.SI-ID: 3730801.

Marolt Marija (mentor: Irena Mlinarič Raščan, co-mentor: Martina Gobec): Vrednotenje psoralenskih analogov kot zaviralcev imunoproteasoma = Evaluation of psoralene analogues as inhibitors of the immunoproteasome, COBISS.SI-ID: 3747953.

Medved Simona (mentor: Damjan Janeš): Analiza za aromo pomembnih hlapnih spojin v plodovih navadnega šipka = Analysis of volatile compounds important for the aroma of dog-rose fruits, COBISS.SI-ID: 3731313.

Meke Andreja (mentor: Pegi Ahlin Grabnar): Izdelava in vrednotenje lipidnih nanosistemov z resveratrolom = Preparation and characterization of resveratrol loaded lipid nanosystems, COBISS.SI-ID: 3682673.

Meško Maja (mentor: Janko Kos, co-mentor: Urša Pečar Fonovič): Priprava rekombinantnega katepsina S v *Pichia pastoris* in njegova uporaba pri testiranju zaviralcev = Preparation of recombinant cathepsin S in *Pichia pastoris* and its use for the testing of inhibitors, COBISS.SI-ID: 3796081.

Mevc Ana (mentor: Janko Kos, co-mentor: Anja Pišlar): Vrednotenje amfifilnih nitroksidnih radikalov kot induktorjev apoptoze = Evaluation of amphiphilic nitroxide radicals as inducers of apoptosis, COBISS.SI-ID: 3677297.

Mihorko Andrej (mentor: Janez Kerč, co-mentor: Mateja Cegnar): Liofilizacija nanodelcev z razprševanjem v tekoči dušik = Spray-freeze-drying of nanoparticles, COBISS.SI-ID: 3738737.

Miklašič Nuša (mentor: Mojca Kržan, co-mentor: Alenka Pavlič): Analiza stanja in možnosti za farmakološko preprečevanje anksioznosti pri zobozdravniških posegih otrok v Sloveniji = Analysis of the state of and the possibilities for pharmacological anxiety prevention during dental procedures on children in Slovenia, COBISS.SI-ID: 3677041.

Miklavčič Katarina (mentor: Saša Baumgartner): Proučevanje sproščanja pentoksifilina iz karagenskih ogrodnih tablet v različnih medijih in korelacija s tvorbo gelske plasti = The study of pentoxifylline from carrageenan hydrophilic matrix tablets in various media and correlation with the formation of the gel layer, COBISS.SI-ID: 3747697.

Mlakar Špela (mentor: Barbara Ostanek, co-mentor: Mojca Kerec-Kos): Vpliv izbranih polimorfizmov v genih OPRM1, ABCB1 in COMT na varnost in učinkovitost terapije s fentalinom pri otrocih = Impact of selected polymorphisms in OPRM1, ABCB1 and COMT genes on safety and efficacy of therapy with fentanyl in children, COBISS.SI-ID: 3671665.

Mlinar Urška (mentor: Stanko Srčič): Vrednotenje uporabe bližnje infrardeče (NIR) spektroskopije za spremljanje homogenosti vsebnosti v procesu mešanja = Evaluation of the use of near infrared (NIR) spectroscopy for monitoring the content uniformity in the mixing process, COBISS.SI-ID: 3610481.

Munda Barbara (mentor: Igor Locatelli, co-mentor: Matej Štuhec): Sistematični pregled in metaanaliza učinkovitosti zdravil za zdravljenje motnje pozornosti s hiperaktivnostjo pri otrocih = Comparative effectiveness of drugs for the treatment of attention deficit hyperactivity disorder among children: a systematic review and meta-analysis, COBISS.SI-ID: 3728497.

Mužan Ana (mentor: Albin Kristl, co-mentor: Katja Berginc): Ovrednotenje predstavitev prehranskih dopolnil na slovenskem tržišču, namenjenih uravnavanju telesne mase = Evaluation of dietary supplement presentations in the Slovenian market for the regulation of body weight, COBISS.SI-ID: 3655025.

Nastran Možina Mojca (mentor: Mojca Kerec-Kos, co-mentor: Iztok Grabnar): Populacijska farmakokinetika fentanila pri otrocih z bronhiolitisom = Population pharmacokinetics of fentanyl in children with bronchiolitis, COBISS.SI-ID: 3731057.

Oreški Ana (mentor: Matej Sova): Sinteza in vrednotenje citotoksičnosti derivatov cimernih kislin na celičnih linijah mononuklearnih celic = Synthesis and evaluation of cinnamic acid derivatives cytotoxicity of mononuclear cell lines, COBISS.SI-ID: 3586417.

Ostrovšnik Anina (mentor: Mitja Kos, co-mentor: Matija Tomšič): Sodelovanje pacientov z revmatoidnim artritisom pri zdravljenju z zdravili v Sloveniji = Patient adherence to antireumatic medication in Slovenia, COBISS.SI-ID: 3775345.

Pišek Nataša (mentor: Aleš Mrhar, co-mentor: Maja Petre): Raziskava predpisanih potencialno manj primernih zdravil za starostnike na Kliniki za interno medicino, Univerzitetnega kliničnega centra Maribor = Analysis of prescribed potentially less appropriate medications for elderly at the Department of Internal Medicine, University Medical Centre Maribor, COBISS.SI-ID: 3793265.

Plankar Nina (mentor: Pegi Ahlin Grabnar): Vpliv velikosti trdnih lipidnih nanodelcev na transepidermalno izgubo vode in hidracijo kože = Size effect of solid lipid nanoparticles on transepidermal water loss and skin hydration, COBISS.SI-ID: 3769457.

Plut Janja (mentor: Jurij Trontelj, co-mentor: Lucija Peterlin Mašič): Preučevanje reaktivnih metabolitov in estrogene aktivnosti bisfenola A diglicidiletra = Evaluation of reactive metabolites and estrogenic activity of bisphenol A diglicidilether, COBISS.SI-ID: 3682417.

Podlipnik Maja (mentor: Žiga Jakopin): Načrtovanje in sinteza 1,2,4-oksadiazolnih analogov resveratrola = Design and synthesis of 1,2,4-oxadiazole analogs of resveratrol, COBISS.SI-ID: 3680369.

Porenta Suzana (mentor: Aleš Mrhar, co-mentor: Bojana Beovič): Analiza predpisovanja rezervnih protimikrobnih zdravil v UKC Ljubljana = Analysis of prescribing for restricted antibiotics and antifungals in UMC Ljubljana, COBISS.SI-ID: 3776881.

Potrč Tanja (mentor: Petra Kocbek): Načrtovanje in izdelava nanovlaken iz polikaprolaktona in zmesi polietilenoksida in hitosana = Formulation and preparation of nanofibers from polycaprolactone and mixture of polyethyleneoxide and chitosan, COBISS.SI-ID: 3586673.

Preskar Peter (mentor: Marko Anderluh, co-mentor: Christa E. Müller): Sinteza 2-substituiranih adenzinskih derivatov kot agonistov A2A adenzinskih receptorjev = Synthesis of 2-substituted adenosine derivatives as A2A adenosine receptor agonists, COBISS.SI-ID: 3776625.

Primc Kaja (mentor: Aleš Mrhar, co-mentor: Matej Dobravc Verbič): Raziskava skladnosti predpisovanja kemoterapije za intravensko aplikacijo na gastro-onkološki ambulantni kliničnega oddelka za gastroenterologijo Univerzitetnega kliničnega centra Ljubljana = Evaluation of intravenous chemotherapy prescribing at the ambulatory care for gastrointestinal cancer at the department of gastroenterology of University Medical Centre Ljubljana, COBISS.SI-ID: 3732849.

Prislan Polona (mentor: Mitja Kos): Sistematični pregled raziskav vrednotenja sodelovanja bolnikov z astmo ali KOPB pri zdravljenju z zdravili = A systematic review of studies evaluating adherence to medicine in patients with asthma or COPD, COBISS.SI-ID: 3625073.

Pucelj Teja (mentor: Stanko Srčič, co-mentor: Jyrki Tapio Heinämäki): Koprocesirane direktno stisljive pomožne snovi predhodno obdelane celuloze in fukoze = Co-processed direct-compression excipients of pretreated cellulose and fucose, COBISS.SI-ID: 3610737.

Reisman Katja (mentor: Aleš Mrhar, co-mentor: Polona Drogenik): Optimizacija zdravljenja z metildigoksinom v Univerzitetnem kliničnem centru Maribor = Optimisation of methyl digoxin therapy at University Medical Centre Maribor, COBISS.SI-ID: 3704177.

Rožman Kaja (mentor: Matej Sova): Načrtovanje, sinteza in vrednotenje derivatov gvanidina kot antagonistov Toll-u podobnega receptorja 4 = Design, synthesis and evaluation of guanidine derivatives as antagonists of Toll like receptor 4, COBISS.SI-ID: 3617393.

Rus Jasna (mentor: Marija Bogataj): Vpliv pektina in saharoze na sproščanje paracetamola iz ogrodnih tablet = The influence of pectin and sucrose on the release of paracetamol from modified-release tablets, COBISS.SI-ID: 3616881.

Rus Tjaša (mentor: Marija Sollner Dolenc): Proučevanje zlorabe prepovedanih drog med študenti Univerze v Ljubljani = The study of drug abuse among students of the University of Ljubljana, COBISS.SI-ID: 3770737.

Slapnik Diana (mentor: Irena Mlinarič Raščan, co-mentor: Micaela Morelli): S 3,4-metilendioksimetamfetaminom povzročena nevrotoksičnost na eksperimentalnih miših = 3,4-methylenedioxymethamphetamine induced neurotoxicity in experimental mice, COBISS.SI-ID: 3624561.

Šetina Andrea (mentor: Jurij Trontelj, co-mentor: Fabrice Pirot): Razvoj in vitro sistema za hemodializo amiodarona = Development of an in vitro dialysis system for blood purification of amiodarone, COBISS.SI-ID: 3737969.

Šifrar Jaka (mentor: Aleš Obreza): Zgodovina lekarništva na Celjskem v arhivskih virih = The history of community pharmacies in the Celje region with emphasis on archival documents, COBISS.SI-ID: 3780977.

Špendal Andreja (mentor: Albin Kristl, co-mentor: Katja Berginc): Literaturni pregled in analiza podatkov o prehranskih dopolnilih, ki vsebujejo čebelje proizvode na slovenskem tržišču = Literature overview and analysis of data relating to food supplements with bee products on the Slovenian market, COBISS.SI-ID: 3668081.

Štih Karmen (mentor: Samo Kreft, co-mentor: Meta Kokalj): Razvoj metode za prepoznavanje rastlinskih drog z infrardečo spektroskopijo = The development of a method for identifying herbal drugs using infrared spectroscopy, COBISS.SI-ID: 3733105.

Tehovnik Luka (mentor: Aleš Mrhar, co-mentor: Tanja Čufer.): Vrednotenje kakovosti življenja bolnikov s pljučnim rakom v povezavi z učinkovitostjo systemskega zdravljenja prvega reda = Evaluation of quality of life in relation to efficacy of first-line systemic treatment in lung cancer patients, COBISS.SI-ID: 3733617.

Tratnik Vesna (mentor: Mojca Kerec-Kos): Določanje vezave moksifloksacina na plazemske proteine = Determination of moxifloxacin binding to plasma proteins, COBISS.SI-ID: 3741809.

Trnovec Helena (mentor: Tihomir Tomašič): Sinteza indolamidnih in dikloropirolamidnih zaviralcev DNA giraze B = Synthesis of indolamide- and dichloropyrrolamide-based inhibitors of DNA gyrase B, COBISS.SI-ID: 3683953.

Velkavrh Katja (mentor: Marija Bogataj, co-mentor: Juan José Torrado Durán): Vpliv pH medija in hitrosti mešanja v napravi z veslastim mešalom na sproščanje deksketoprofena iz tablet = Effect of pH and stirring rate on dexketoprofen release from tablets in paddle apparatus, COBISS.SI-ID: 3791217.

Viraj Tanja (mentor: Mojca Lunder): Rešetanje in vrednotenje zaviralne aktivnosti spojin naravnega izvora in izvlečka skorje bele jelke na encim alfa-glukozidaza = Screening and evaluation of inhibitory activity against alpha-glucosidase by natural compounds and *Abies alba* bark extract, COBISS.SI-ID: 3642225.

Višič Marko (mentor: Iztok Grabnar, co-mentors: Tim Hucho, Steffen Waldherr): Nova metoda za določevanje navzkrižne reaktivnosti protiteles na osnovi vezavnih ravnovesij = A new method for determining the cross-reactivity of antibodies based on binding equilibrium data, COBISS.SI-ID: 3610225.

Vodišek Tanja (mentor: Nataša Karas Kuželički): Ovrednotenje polimorfizma rs13171357 kot novega farmakogenetskega kazalca v slovenski populaciji = Characterisation of polymorphism rs13171357 as a new pharmacogenomic marker in Slovenian population, COBISS.SI-ID: 3641969.

Vrhnjak Tjaša (mentor: Janez Mravljak): Sinteza in vrednotenje spinsko označenih alkilfosfolipidov = Synthesis and evaluation of spin-labeled alkylphospholipids, COBISS.SI-ID: 3644017.

Vrtačnik Katja, (mentor: Tihomir Tomašič): Sinteza monovalentnih in tetravalentnih glicerolomanozidov kot potencialnih antagonistov receptorja DC-SIGN = Synthesis of monovalent and tetravalent glycerolmannosides as potential antagonists of receptor DC-SIGN, COBISS.SI-ID: 3652465.

Zupanek Tjaša (mentor: Mitja Kos): Presečna raziskava dogovorjenih cen zdravil v Republiki Sloveniji = Cross-sectional study of price negotiation for medicines in the Republic of Slovenia, COBISS.SI-ID: 3738481.

Žiberna Tjaša (mentor: Mirjana Gašperlin): Stabilnost resveratrola v trdnih samo-mikroemulgirajočih sistemih = Stability of resveratrol in solid self-microemulsifying drug delivery systems, COBISS.SI-ID: 3663473.

Žnidar Tina (mentor: Mitja Kos, co-mentor: Milan Čižman): Stroškovna učinkovitost preprečevanja okužb respiratornega sincicijskega virusa z monoklonskimi protitelesi pri otrocih v Sloveniji = Cost-effectiveness of preventing respiratory syncytial virus infections with monoclonal antibodies in children in Slovenia, COBISS.SI-ID: 3739761.

### **MASTER'S STUDY PROGRAMME OF INDUSTRIAL PHARMACY**

Brudar Dejan (mentor: Jožko Cesar): Optimizacija parametrov kromatografske ločbe z uporabo eksperimentalnih načrtov = Parameter optimization of chromatographic separation with the design of experiments, COBISS.SI-ID: 3735409.

Drčar Tina (mentor: Ilija Ilić): Vpliv pogojev granuliranja v hitro vrtečem mešalniku na stisljivost izdelanih zrn = The impact of the granulation conditions in a high-shear mixer on compaction of produced granules, COBISS.SI-ID: 3778417.

Gojkovič Tadeja (mentor: Mirjana Gašperlin): Načrtovanje sestave in preučevanje stabilnosti krem s polhovim oljem = Development and stability study of creams containing dormouse oil, COBISS.SI-ID: 3769969.

Grah Jasna (mentor: Marija Sollner Dolenc): Sinteza derivatov 3-aminobenzonitrila s potencialnim protibakterijskim delovanjem = Synthesis of 3-aminobenzonitrile derivatives with potential antibacterial activity, COBISS.SI-ID: 3786097.

Igličar Javornik Petra (mentor: Petra Kocbek): Modifikacija površine superparamagnetnih nanodelcev železovega oksida z metodo adsorpcije polielektrolitov = Modification of iron oxide nanoparticle surface with adsorption of polyelectrolytes, COBISS.SI-ID: 3680113.

Kralj Marica (mentor: Marko Anderluh): Sinteza glikomimetičnih antagonistov receptorja DC-SIGN z diarilamidopropanolomanozidno strukturo = Synthesis of DC-SIGN receptor's glicomimetic antagonists with diarylamidopropanolomanosid structure, COBISS.SI-ID: 3734129.

Kumperščak Monika (mentor: Tomaž Bratkovič): Ovrednotenje nove metode izolacije rekombinantnega kemokina CCL2 iz inkluzijskih teles s kombinacijo površinsko aktivnih snovi = Evaluation of the new method of isolation of recombinant chemokine CCL2 from inclusion bodies by using a combination of surfactants, COBISS.SI-ID: 3735921.

Mervar Boštjan (mentor: Franc Vrečer, co-mentor: Andrej Petkovič): Regulatorna in tehnične rešitve zaščite farmacevtskih izdelkov pred ponarejanjem = Regulations and technical solutions of protecting pharmaceutical products against counterfeiting, COBISS.SI-ID: 3661169.

Nerat Mojca (mentor: Mojca Kerec Kos, co-mentor: Přemysl Mladěnka): Vpliv 6,7-dihidroksi skupine pri flavonih na in vitro sposobnost keliranja železa = The effect of 6,7-dihydroxygroup in flavones on in vitro iron chelating activity, COBISS.SI-ID: 3775601.

Pajk Matjaž (mentor: Franc Vrečer, co-mentor: Matej Smrkolj): Optimizacija študija pojavnih oblik zdravilnih učinkovin z visokozmogljivim rešetanjem = The optimisation studies of polymorphic forms of API with high-throughput screening, COBISS.SI-ID: 3663217.

Pavlovič Silva (mentor: Franc Vrečer): Vpliv parametrov oblike delcev na primerljivost rezultatov vrednotenja velikosti delcev z lasersko difrakcijo in slikovno analizo = The influence of particle shape parameters on the comparability of the results of the evaluation of particle size by laser diffraction and image analysis, COBISS.SI-ID: 3671921.

Polutnik Nataša (mentor: Franc Vrečer, co-mentor: Saša Baumgartner): Proučevanje izbranih s funkcionalnostmi povezanih lastnosti hipromeloze na sproščanje zdravilne učinkovine iz ogradnih tablet s podaljšanim sproščanjem = Study of selected through functionality related properties in hypromellose on release of the active substance from prolonged-release matrix tablets, COBISS.SI-ID: 3783281.

Ponikvar Igor (mentor: Rok Dreu): Vrednotenje lokalnega volumskega deleža pelet v valju Wursterjeve komore s transmitanco laserskega žarka = Evaluation of the local volume fraction of pellets in a classic Wurster chamber with transmittance of the laser beam, COBISS.SI-ID: 3658353.

Šimunović Eva (mentor: Aleš Obreza, co-mentor: Rok Frlan): Sinteza derivatov 2,4-dihidroksibenzojske kisline kot potencialnih zaviralcev ligaze D-ala-D-ala = Synthesis of 2,4-dihidroksibenzoic acid derivatives as potential inhibitors of D-ala-D-ala ligase, COBISS.SI-ID: 3712369.

Tomašič Tadej (mentor: Marko Anderluh, co-mentor: Polonca Štefanič): Določanje protibakterijskega delovanja cianotiofenskih zaviralcev ligaze MurF = Determination of antibacterial activity of cyanothiophene MurF ligase inhibitors, COBISS.SI-ID: 3594865.

Založnik Živa (mentor: Odon Planinšek, co-mentor: Ilija Ilić): Vpliv dinamike stiskanja na kompresibilnost izbranih polnil in kompatibilnosti izdelanih tablet = Effect of compression dynamics on compressibility of selected excipients and compatibility of produced tablets, COBISS.SI-ID: 3616113.

### ***MASTER'S STUDY PROGRAMME OF LABORATORY BIOMEDICINE***

Bonifačić Gorana (mentor: Marija Sollner Dolenc): Klinični pomen določanja simetričnega in asimetričnega dimetilarginina pri bolnikih s kronično ledvično boleznijo = Clinical significance of symmetric and asymmetric dimethylarginine identification on patients with chronic kidney disease, COBISS.SI-ID: 3790705.

Čas Teja (mentor: Matjaž Jeras, co-mentor: Elvira Maličev): Uvedba in vrednotenje nove metode za določanje prisotnosti plodovih eritrocitov v materini krvi = Implementation and evaluation of a new method for determination of the presence of fetal red blood cells in maternal blood, COBISS.SI-ID: 3736177.

Čibej Hermina (mentor: Helena Podgornik, co-mentor: Janez): Določanje klinično pomembnih kromosomskih preureditev pri nevroblastomu = Determination of clinically important chromosomal rearrangements in neuroblastoma, COBISS.SI-ID 3750513.

Farič Jasmina (mentor: Helena Podgornik): Stimulacija limfocitov B pri kronični limfocitni levkemiji s CpG-oligodeoksinukleotidi in interlevkinom 2 = The stimulation of B lymphocytes in chronic lymphocytic leukaemia with CpG-oligodeoxynucleotide and interleukin 2, COBISS.SI-ID: 3742065.

Galjot Anita (mentor: Janja Marc, co-mentor: Simona Jurković Mlakar): Nevrotoksičnost in vloga polimorfizmov v genih GSTM1 in GST1 pri prenatalni izpostavljenosti Hg<sup>2+</sup> in MeHg = Neutotoxicology and the role of GSTM1 and GSTT1 gene polymorphisms in prenatal exposure to Hg<sup>2+</sup> and MeHg, COBISS.SI-ID: 3601777.

Hohler Petra (mentor: Janez Mravljak, co-mentor: Stane Pajk): Vrednotenje od pH odvisnih foto-fizikalnih lastnosti izbranih rodaminskih derivatov = Evaluation of pH dependent photo-physical properties of selected rhodamine derivatives, COBISS.SI-ID: 3601521.

Hvala Polanc Mihela (mentor: Joško Osredkar): Povezanost povišanih koncentracij živega srebra v lasih nosečnic s porodno težo otroka = Relations between elevated mercury in the hair of pregnant women and birth weight of infant, COBISS.SI-ID: 3677809.

Jančar Nataša (mentor: Milan Skitek, co-mentor: Aleš Jerin): Spremljanje bioznačevalcev in ocene glomerulne filtracije pri bolnikih z levkoaraiozo = Monitoring of biomarkers and assessment of glomerular filtration in patients with leukoaraiosis, COBISS.SI-ID: 3609969.

Jeglič Mramor Ana (mentor: Peter Černelč, co-mentor: Tadej Pajič): Ocena določitve koncentracije hepcidina v serumu bolnikov z anemijo = Assessment of the determination of hepcidin concentration in serum of anemic patients, COBISS.SI-ID: 3737201.

Kaše Simona (mentor: Milan Skitek, co-mentor: Elizabeta Božnar Alič): Primerjava mikroskopskega določanja celic v likvorju z avtomatizirano metodo na hematološkem analizatorju = Comparison of microscopic method with automated method for counting cells in cerebrospinal fluid, COBISS.SI-ID: 3668337.

Konda Grega (mentor: Helena Podgornik): Vrednotenje avtomatiziranega sistema za izdelavo, barvanje in mikroskopski pregled krvnega razmaza = Evaluation of automated system for smearing, staining and microscopic examination of blood examination of blood smears, COBISS.SI-ID: 3698033.

Kos Špela (mentor: Barbara Ostanek): Vpliv tripsinizacije in alternativnih metod priprave celic na integriteto ribonukleinskih kislin, izoliranih iz različnih adherentnih celičnih linij = The influence of trypsinization and alternative procedures for cell preparation on the integrity of ribonucleic acids isolated from different adherent cell lines, COBISS.SI-ID: 3758449.

Kralj Ines (mentor: Matjaž Jeras, co-mentor: Tanja Lađić): Vzpostavitev, validacija in primerjalno vrednotenje nove analize metode za določanje aktivnosti faktorja strjevanja krvi Xa pri pacientih na terapiji z rivaroksabanom = Establishment, validation and comparative evaluation of a new analytical method for determining the activity of blood coagulation factor Xa in patients on therapy with rivaroxaban, COBISS.SI-ID: 3697777.



Kunaj Mirjana (mentor: Janja Marc, co-mentor: Gorazd Drevenšek): Proučevanje izražanje genov NOS2 in NOS3 v podganjih aortah pri zdravljenju s subterapevtskimi odmerki atorvastatina, losartana in perindopriila = NOS2 and NOS3 gene expression in rat thoracic aortas during treatment with subtherapeutic dosages of atorvastatin, losartan and perindopril, COBISS.SI-ID: 3595377.

Kunilo Jamnik Sabina (mentor: Janja Marc, co-mentor: Blanka Vidan-Jeras): Ugotavljanje polimorfizma gena MICA v slovenski populaciji in povezanosti s pojavom celiakije pri otrocih in mladostnikih = Detection of MICA gene polymorphism in Slovenian population and its association with the occurrence of celiac disease in children and adolescents, COBISS.SI-ID: 3712625.

Lončar Tadeja (mentor: Barbara Ostanek, co-mentor: Maruša Debeljak): Molekularno genetska analiza gena KCNH2 pri bolnikih s sindromom podaljšane dobe QT = Molecular genetic analysis of KCNH2 gene in patients with long QT syndrome, COBISS.SI-ID: 3777137.

Malavašič Tina (mentor: Darko Černe, co-mentor: Helena Podgornik): Prikaz makrofagno specifičnih membranskih označevalcev na celicah z visokim izražanjem mRNA LPL v nedrobnoceličnem pljučnem rakavem tkivu = Display of macrophage specific membrane markers in mRNA overexpressing cells in non-small cell lung cancer, COBISS.SI-ID: 3734641.

Obrul Suvajac Matjaž (mentor: Janja Marc, co-mentor: Vid Mlakar): Prikaz transkripcijskega dejavnika SRY v osteoblastih in njegov vpliv na izražanje proteina RANKL = Presence of transcriptional factor SRY in osteoblasts and its effect on protein RANKL expression, COBISS.SI-ID: 3736945.

Orešnik Špela (mentor: Saša Čučnik, co-mentor: Snežna Sodin-Šemrl): Optimizacija modela celjenja poškodbe monoplastne kulture primarnih humanih pljučnih fibroblastov = Optimization of the wound healing model for primary human lung fibroblast monolayer culture, COBISS.SI-ID: 3640689.

Pavlovič Ana (mentor: Janko Kos, co-mentor: Ina Vorberg): Vloga endocitotskih poti pri tvorbi agregatov citosolnih prionov = The role of endocytic pathways for cytosolic prion aggregate induction, COBISS.SI-ID: 3799921.

Perc Katja (mentor: Marija Sollner Dolenc, co-mentor: Boštjan Erjavec): Fotokatalitsko odstranjevanje bisfenolov A, F in AF v pretočnem reaktorju z imobiliziranim katalizatorjem na osnovi TiO<sub>2</sub> = Photocatalytic removal of bisphenols A, F and AF in a mixed flow reactor with immobilized catalyst based on TiO<sub>2</sub>, COBISS.SI-ID 3772529.

Pipuš Mateja (mentor: Primož Rožman, co-mentor: Elvira Maličev): Primerjava dveh laboratorijskih preiskav za potrditev s heparinom izzvane trombocitopenije = Comparison of two laboratory assays for confirmation of heparin-induced thrombocytopenia, COBISS.SI-ID: 3734385.

Prunk Mateja (mentor: Janja Marc, co-mentor: Jerka Dumič): Pomen določanja galektina-3 v serumu pri osteoporozi in osteoartrizi = Role of serum galectin-3 determination in osteoporosis and osteoarthritis, COBISS.SI-ID: 3679857.

Stropnik Julijan (mentor: Janja Marc): Uporaba kostnih biokemijskih kazalcev za ocenjevanje zapletov pri terapiji z zaviralci alfa-reduktaze = The use of biochemical bone markers for the assessment of complication in the treatment with alpha-reductase inhibitors, COBISS.SI-ID 3710321.

Špiranec Mia (mentor: Matjaž Jeras, co-mentor: Marko Cukjati): Primerjalno vrednotenje števila trombocitov v vzorcih venske in kapilarne krvi kot napovednih kazalnikov izplena tromboferez, COBISS.SI-ID: 3737457.

Šutuš Temovski Tamara (mentor: Darko Černe, co-mentor: Katarina Trebušak Podkrajšek): Vloga genetskih variant promotorske regije gena DEPTOR pri razvoju debelosti in inzulinske rezistence = The role of genetic variants in promoter region of DEPTOR gene in obesity and insulin resistance development, COBISS.SI-ID 3770481.

Švec Tinka (mentor: Borut Božič, co-mentor: Tanja Kveder): Uvedba metode za določanje protiteles proti dvojnoverižni DNA z uporabo neradioaktivnih reagentov = Implementation of a nonradioactive method for determination of autoantibodies against doublestranded DNA, COBISS.SI-ID: 3640945.

Švigelj Anja (mentor: Katarina Trebušak Podgrajšek): Vpliv izbranih vrst variant gena za apolipoprotein E na koncentracije plazemskih lipidov pri bolnih s sladkorno boleznijo tipa 1 = Influence of selected variants in gene encoding apolipoprotein E on plasma lipid concentrations in patients with type 1 diabetes, COBISS.SI-ID: 3748209.

Uhan Kastelic Simona (mentor: Zoran Grubič, co-mentor: Veronika Prevodnik Kloboves): Zanesljivost diagnosticiranja patoloških sprememb na žlezni celicah v brisih materničnega vratu, COBISS.SI-ID: 3599473.

Žerovnik Vesna (mentor: Lucija Peterlin Mašič, co-mentor: Vid Mlakar): Preučevanje izražanja genov RUNX2, ID1, ID3, LRP5, COL1A2 in TNFRSF11B v človeških osteosarkomskih celicah, izpostavljenih bisfenolom A, S in AF = The study of RUNX2, ID1, ID3, LRP5, COL1A2 and TNFRSF11B gene expression in human osteosarcoma cells exposed to bisphenol A, S and AF, COBISS.SI-ID: 3799665.

### **SCIENTIFIC MASTER'S PROGRAMME**

Guštin Boštjan (mentor: Tomaž Vovk): Razvoj analiznih metod za terapevtsko spremljanje koncentracij lamotrigina in njegovega metabolita 2-N-glukuronida v plazmi in krvnih madežih = Development of analytical methods for therapeutic drug monitoring of lamotrigine and its metabolite 2-N-glucuronide in plasma and dried blood spots, COBISS.SI-ID: 3587441.

Rihter Glinšek Jelka (mentor: Mitja Kos): Ekonomski vidiki uvedbe obnovljivega recepta za hormonske kontraceptive v Sloveniji = Economic perspectives on introduction of renewable prescription of hormonal contraceptives in Slovenia, COBISS.SI-ID: 3684209.

### **DOCTORS OF SCIENCE**

Arsovska Emilija (mentor: Anamarija Zega): NMR aided design of inhibitors of bacterial enzymes D-alanine:D-alanine ligase (DdiB) and MurD ligase = Načrtovanje zaviralcev bakterijskih encimov D-alanin:D-alanin ligaze (DdiB) in ligaze MurD z uporabo NMR spektroskopije, COBISS.SI-ID: 3775857.

Banovec Martin (mentor: Franc Vrečer, co-mentor: Odon Planinšek): Vpliv sestave filmske obloge na njene mehanske lastnosti in adhezijo na tabletna jedra = Influence of film coat composition on its mechanical properties and adhesion onto tablet core, COBISS.SI-ID: 274553856.

Brvar Nina (mentor: Iztok Grabnar): Vrednotenje kinetike absorpcije učinkovin za farmacevtske oblike s takojšnjim in prirejenim sproščanjem = Analysis of the absorption kinetics for immediate release and modified release dosage forms, COBISS.SI-ID: 3777649.

Bürmen Božena (mentor: Marija Bogataj): Proučevanje kinetike in mehanizma praznjenja pelet iz želodca v pogojih po hranjenju s pomočjo matematičnih modelov = Evaluation of kinetics and mechanism of fed gastric emptying of pellets by the aid of mathematical models, COBISS.SI-ID: 273246208.

Čvan Trobec Katja (mentor: Mitja Lainščak, co-mentor: Mojca Kerec Kos): Vpliv sprememb v telesni sestavi in kaheksije na farmakokinetiko bisoprolola in ramiprila in na oceno ledvične funkcije pri bolnikih s kroničnim srčnim popuščanjem = Impact of body composition changes and cachexia on bisoprolol and ramipril pharmacokinetics and renal function estimation in patients with chronic heart failure, COBISS.SI-ID: 273124608.

Egart Mateja (mentor: Stanko Srčič, co-mentor: Biljana Janković): Vrednotenje strukturno-mehanskih lastnosti zdravilnih učinkovin z instrumentalno nanoindentacijo ter njihov pomen pri izdelavi tablet = Evaluation of structural mechanical properties of active pharmaceutical ingredients with instrumented nanoindentation and their importance for tablet compression, COBISS.SI-ID: 3791473.

Fabris Jan (mentor: Zdenko Časar): Sinteza nekaterih super-statinov in študija tridimenzionalne strukture njihovih analogov s pomočjo jedrske magnetne resonance = Synthesis of some super-statins and study of the three dimensional structure of their analogues using nuclear magnetic resonance, COBISS.SI-ID: 274492416.

Fic Anja (mentor: Lucija Peterlin Mašič): In vitro molekularni mehanizmi delovanja bisfenola A in njegovih analogov v hormonsko odzivnih celicah = In vitro molecular mechanisms of bisphenol A and its analogs in hormone dependent cells, COBISS.SI-ID: 274542848.

Hodnik Žiga (mentor: Danijel Kikelj, co-mentor: Lucija Peterlin Mašič): Načrtovanje, sinteza in vrednotenje analogov bioaktivnih spojin iz morskih spužev rodov Agelas in Theonella = Design, synthesis and evaluation of analogs of bioactive compounds from marine sponges of the genera Agelas and Theonella, COBISS.SI-ID: 274478080.

Horvat Nejc (mentor: Mitja Kos): Vrednotenje lekarniške dejavnosti z vidika pacientov in stroke = Evaluation of pharmacy services from the patient and expert perspective, COBISS.SI-ID: 3773041.

Kastelic Jože (mentor: Danijel Kikelj, co-mentor: Odon Planinšek): Priprava, karakterizacija in določevanje fizikalno-kemijskih lastnosti kokristalov flukonazola s karboksilnimi kislinami = Preparation, characterisation and evaluation of physico-chemical properties of fluconazole cocrystals with carboxylic acids, COBISS.SI-ID: 274539264.

Kolšek Katra (mentor: Marija Sollner Dolenc, co-mentor: Janez Mavri): Študij mehanizmov bioloških učinkov bisfenola A in njegovih analogov z alternativnimi metodami = Mechanistic insights into biological actions of bisphenol A and its analogs with alternative methods, COBISS.SI-ID: 273580800.

Kunstelj Menči (mentor: Borut Štrukelj): Priprava in ovrednotenje usmerjeno pegiliranih konjugatov filgrastima = The preparation and characterization of site-directed conjugates of filgrastim, COBISS.SI-ID: 3588721.

Lakota Katja (mentor: Snežna Sodin Šemrl, co-mentor: Borut Božič): Vloga serumskega amiloida A pri vnetju in njegov vpliv na pridobljeno imunost = The role of serum amyloid in inflammation and adaptive immunology, COBISS.SI-ID: 3741553.

Mirjanić-Azarić Bosa (mentor: Darko Černe): Proučevanje izražanja genov odgovornih za pleiotropne učinke atorvastatina z analizo mRNA v plazmi bolnikov s stabilno angino pectoris = Study of expression of genes responsible for pleiotropic effects of atorvastatin using analysis of mRNA in plasma of patients with stable angina pectoris, COBISS.SI-ID: 3777905.

Nagelj Kovačič Nataša (mentor: Marija Bogataj): Vpliv sestave umetnih želodčnih medijev v pogojih po obroku na sproščanje učinkovin iz ogrodnih tablet na osnovi hidroksipropil metilceluloze = Influence of the composition of artificial media simulating postprandial stomach drug release from hydroxypropyl methylcellulose matrix tablets, COBISS.SI-ID: 3773553.

Naveršnik Klemen (mentor: Aleš Mrhar): Vloga korelacij v farmakoeconomijskih modelih = Dealing with dependency in pharmacoeconomic models, COBISS.SI-ID: 276449280.

Pelipenko Jan (mentor: Julijana Kristl, co-mentor: Petra Kocbek): Polimerna nanovlakna: razvoj, vrednotenje in celični odziv = Polymeric nanofibers: development, evaluation and cell response, COBISS.SI-ID: 3619441.

Repič Matej (mentor: Janez Mavri): Računalniško modeliranje katalitičnega mehanizma in zaviranja monoamin-oksidadze = Computer modelling of the catalytic mechanism and inhibition of monoamine oxidase, COBISS.SI-ID: 274553344.

Slana Marko (mentor: Marija Sollner Dolenc): Razgradnja enrofloksacina v iztrebkih piščancev pitancev = Degradation of enrofloxacin in chicken broiler excreta, COBISS.SI-ID: 3741297.

Šibanc Rok (mentor: Rok Dreu): Numerično modeliranje dvofaznega toka v Wursterjevi komori z računalniško dinamiko tekočin = Numerical modeling of two-phase flow in a Wurster chamber using computational fluid dynamics, COBISS.SI-ID: 3771505.

Štefanič Marko (mentor: Marija Bogataj, co-mentor: Franc Vrečer): Pomen kinetike prehoda gastrorezistentnih pelet skozi želodec v stanju na tešče za vrednotenje in vitro sproščanja ter in vitro/in vivo korelacijo = The importance of gastric emptying kinetics of enteric coated pellets in fasted state for in vitro release and in vitro/in vivo correlation, COBISS.SI-ID: 274552064.

Šuligoj Tanja (mentor: Borut Božič, co-mentor: Julia H. Ellis): Ugotavljanje imunogenosti glutenskih peptidov pri celiakiji = Assessment of gluten peptide immunogenicity in celiac disease, COBISS.SI-ID: 3746929.

Trdan Lušin Tina (mentor: Aleš Mrhar, co-mentor: Barbara Ostanek): Farmakogenetski vidiki metabolizma in transporta selektivnih modulatorjev estrogenskih receptorjev = Pharmacogenetic aspects of metabolism and transport of selective estrogen modulators, COBISS.SI-ID: 3619185.

Žigon Polona (mentor: Borut Božič, co-mentor: Saša Čučnik): Vezava antiprotrombinskih protiteles v in vitro in ex vivo modelih ter njihova klinična uporabnost pri bolnikih z avtoimunskimi boleznimi = Antiprothrombin antibodies binding using in vitro and ex vivo models indicate their clinical relevance for autoimmune patients, COBISS.SI-ID: 274544128.

Žula Aleš (mentor: Janez Ilaš, co-mentor: Danijel Kikelj): Načrtovanje, sinteza in vrednotenje analogov alkaloidov spužev rodu Agelas in peptidov cianobakterij rodu Nodularia = Design, synthesis and biological evaluation of the analogues of the alkaloids from Agelas sponges and peptides from Nodularia cyanobacteria, COBISS.SI-ID: 274569472.

(Chapter 7 prepared by: B. Toth)

## 8 SCIENCE AND RESEARCH ACTIVITY - PUBLICATIONS

### THE CHAIR OF BIOPHARMACY AND PHARMACOKINETICS

#### Scientific Papers and Professional Publications

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Mrhar Aleš: Clinical pharmacy in Slovenia: recent achievements and perspectives.- V: 1. hrvatski kongres kliničke farmacije s međunarodnim sudjelovanjem, 10.-12. travnja 2014, Hotel Four Points by Sheraton Panorama, Zagreb, Hrvatska = First Croatian Congress of Clinical Pharmacy with International Participation, 10-12 April 2014, Hotel Four Points by Sheraton Panorama, Zagreb, Croatia, knjiga sažetaka = Book of Abstracts, Zagreb, 2014, pp. 21-22, COBISS.SI-ID: 3637873.

Mrhar Aleš: Od potencialnih do ugotovljenih klinično pomembnih interakcij med zdravili.- V: 2. slovensko srečanje o klinični farmakologiji, Ljubljana, 24. januar 2014, Varna uporaba zdravil: zbornik prispevkov, 2. slovensko srečanje o klinični farmakologiji, Ljubljana, 2014, pp. 23-28, COBISS.SI-ID: 3591025.

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### **Lectures and Contributions at Conferences**

Mrhar Aleš: Farmakokinetika zdravil za kontracepcijo in hormonsko zdravljenje.- V: Zbornik prispevkov, Simpozij Ženski spolni hormoni v klinični praksi, Ljubljana, 2014, pp. 11-13, COBISS.SI-ID: 3591537.



## **THE CHAIR OF PHARMACEUTICAL BIOLOGY**

### **Independent Work**

Kreft Samo: Pharmacodynamic interactions between drugs and dietary supplements.- V: Dietary supplements: safety, efficacy and quality (Woodhead Publishing Series in Food Science, Technology and Nutrition, no. 267), Amsterdam, pp. 127-135, COBISS.SI-ID: 3782513.

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## **THE CHAIR OF SOCIAL PHARMACY**

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(Chapter 8 prepared by: B. Toth)