University of Ljubljana
Faculty of Pharmacy

CEMDC, Module 2

Website: http://cemdc.eu

November 19th-22nd, 2015.
Place: Ljubljana, Slovenia
Address: University of Ljubljana, Faculty of Pharmacy, Askerceva 7, 1000 Ljubljana
Module Leaders: Prof. dr. Irena Mlinaric-Rascan and Prof. dr. Beatriz Silva Lima

PHARMATRAIN BASE COURSE **MODULE 2: NON-CLINICAL, PHARMACEUTICAL AND EARLY CLINICAL DEVELOPMENT**
LEARNING OUTCOMES
At the end of this Module the student should be able to demonstrate an understanding of the:
1. Choice and predictive value of the non-clinical testing programme as part of the overall drug development plan for chemical and biological compounds.
2. Integration of non-clinical tests into the overall drug development plan (including scheduling of toxicology tests with respect to clinical trials).
3. Steps in the pharmaceutical development of a drug substance and final drug product (including chemical and biological compounds).
4. Planning of clinical trial supplies for test substance and comparators (active and placebo).
5. Overview of non-study requirements prior to First-into-Man studies.
6. Molecular and cellular basis of toxic reactions.
7. Principles and practical application of pharmacokinetics and toxicokinetics.
8. Early exploratory development in man.
9. Principles of clinical pharmacology and their application to clinical development.
10. Influence of genetic factors in drug development and drug response.

CEMDC, Module 2 **Day 1: Thursday, November 19th, 2015.**

Time	Lecturer	Titles and topics of the lectures and cases	Syllabus	Learning outcomes	Curriculum
8:30-9:00	B. Bozic S. Kerpel-Fronius	Welcome and introduction			
9:00-9:45	B. Silva-Lima	Scheduling of general toxicological studies: Mechanism of toxicities, detection & elucidation. Importance of plasma level measurements in toxicological studies	3.2, 3.3 3.7, 3.8	1, 2, 6	M 2.1, 2.2, 2.4
9.45-10:30	I. Grabnar	In vitro / in silico modelling of human kinetics (Attention: general PhK was already presented in Module 1)	1.7, 3.4, 3.5	1, 7	M 2.7
10.30-11.00		*Break*			
11:00-11:45	I. Grabnar	Importance and practical application of metabolic (ADME), pharmacokinetics (PhK) and toxicokinetics (TK) studies in non-clinical studies (Attention: general PhK was already presented in Module 1)	3.11	7	M 2.7
11:45-12:30	B. Doljak	Principles and significance of GLP in non-clinical studies			
12:30-13:45		*Lunch*			
13:45-14:30	B. Silva-Lima	Safety Pharmacology, hypersensitivity	3.10	2, 5	M2.6
14:30-15:15	R. Bass	Introduction. Principles of non-clinical (NC) safety testing: ICH guidelines M3 (ICHM3)	3.6, 3.7, 3..8	2, 6	M2.2, 2.4, 2.6
15:15-15:45		*Break*			
15:45-16.30	B. Silva-Lima,	Case discussions (1): Species & model selection	1.7, 3.4, 3.5	1	M2.1, 2.2, 2.4
16:30-17:15	S. Kerpel-Fronius	Case discussions (1): Species & model selection	1.7, 3.4, 3.5	1	M2.1, 2.2, 2.4
17.15-18:00	All	Presentations by the students			

CEMDC, Module 2 Day 2: Friday, November 20th, 2015.

Time	Lecturer	Titles and topics of the lectures and cases	Syllabus	Learning outcomes	Curriculum
9:00-9:45	I. Mlinaric-Rascan	Choice of systems; species for NC testing; 3Rs ethical framework for conducting scientific experiments using animals humanely.	1.7, 3.4, 3.5	1	2.1, 2.3
9.45-10:30	I. Mlinaric-Rascan	Introduction to biological medicinal products	1.7, 3.4, 3.5	1	M 2.2, 2.4
10.30-11.00		*Break*			
11:00-11:45	J.Rozman-Pungecar	Introduction to biosimilar medicinal products	1.7, 3.4, 3.5	1	M2.1, 2.2, 2.3,
11:45-12:30	B. Silva-Lima	Non-clinical development of biological medicinal products	4.1, 4.2	3, 4	M2.8-2.9, 2.10, 2.12
12:30-13:45		*Lunch*			
13:45-14:30	M. Horvat	Non-clinical and clinical pharmacologic aspects of biosimilar development			M2.1, 2.2, 2.3,
14:30-15:15	R. Bass	Investigation Brochure: assess of NC data before First in Human (FIH) application; go/no-go decision; the role of biomarkers	3.7, 3.9	2, 5	M 2.1, 2.2, 2.5, 2.13
15:15-15:45		*Break*			
15:45-16.30	B. Silva-Lima	Identifying and mitigating risks of investigational medicinal products for FIH clinical trials. Conventional and high risk medicinal products	5.3, 5.4	5, 8	M2.5, 2.13
16:30-17:15	S. Kerpel-Fronius	Early exploratory development in man. Principles of clinical pharmacology and their application to clinical development. Phase 0 study of conventional and high risk medicinal products. Influence of genetic factors in drug development and response.	5.3, 5.4	8, 9, 10	M2.5, 2.8, 2.9, 2.13, 2.16
17:15-18:00	B. Silva-Lima	Introduction to group work. Estimation of FIH dose for conventional agents. Estimation of FIH dose for high risk agents	5.3, 5.4	8	M2.14

CEMDC, Module 2 Day 3: Saturday, November 21st, 2015

Time	Lecturer	Titles and topics of the lectures and cases	Syllabus	Learning outcomes	Curriculum
9:00-9:45	M. Cerne	Genotoxicity and carcinogenicity testing. Scheduling and data interpretation	3.7, 3.9	1	M2.1-M2.2, 2.5
9.45-10:30	R. Bass	Reproductive and developmental toxicology for CT in women of child bearing potential (WCB), pregnant women	3.9	2	M2.5
10.30-11.00		*Break*			
11:00-11:45	R. Bass	NC studies for clinical trials in pediatric population	3.9, 14.6	2	M2.5
11:45-12:30	A. Zvonar-Pobirk	Choice of formulation, pediatric formulations. Pharmacopoeias	4.3, 10.20, 10.22	3, 4	M2.7, 2.8, 2.9, 2.10, 2.11
12:30-13:45		*Lunch*			
13:45-14:30	S. Kerpel-Fronius	Non-clinical requirements for CTs with anticancer drugs	3.9	1, 2, 9	M 2.17, 2.18
14:30-15:15	All	Presentations by the students on FIH			
15:15-15:45		*Break*			
15:45-16:30	B. Silva-Lima	Introduction to group work: the glitazone case			
16:30-17:15	All	Presentations by the students			

CEMDC, Module 2 **Day 4: Sunday, November 22nd, 2015**

Time	Lecturer	Titles and topics of the lectures and cases	Syllabus	Learning outcomes	Curriculum
9:00-10.45		*MCQ Examination of module 2*			
10.45-11:15		*Break*			
11:15-12:00	B. Silva-Lima	Future challenges for safety testing • Attrition of new compounds; different approaches for NC studies • The development and application of biomarkers for safety	1.7, 3.4, 3.5	1	M 2.2
12:15-13:00	S. Kerpel-Fronius I. Mlinaric-Rascan	Discussion of the right answers to the MCQs. Closing discussion of module 2			
13:00-14:00		*Lunch*			

Confirmed by:
B. Silva-Lima
J.Rozman-Pungecar
B. Doljak
IMR