

Modeling Delays in Pharmacokinetics and Pharmacodynamics

Course Outline

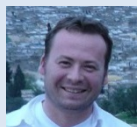
The course will provide an overview of biological systems exhibiting delays, concepts of lifespan driven pharmacodynamic response, modeling of cell maturation, and nonlinear mixed effect lifespan models. Delay differential equations (DDEs) will be introduced and implemented in PK/PD software such as NONMEM and Monolix. The course will consist of both lectures and hands-on computer exercises built in Berkeley Madonna. Source codes for DDE based PK/PD models will be provided to the participants.



Instructors



Wojciech Krzyzanski, PhD, MA. Associate Professor at Department of Pharmaceutical Sciences, University at Buffalo. Holds PhD in applied mathematics and MA in pharmacology. Research focus on pharmacokinetics and pharmacodynamics of hematopoietic growth factors and pharmacometrics.



Gilbert Koch, PhD. Postdoctoral Associate at Department of Pharmaceutical Sciences, University at Buffalo. Holds PhD in applied mathematics. Research focus on delay and lifespan modeling, and anti-cancer effects in combination therapy.



Juanjo Jose Perez-Ruixo, PhD. Scientific Director in the Pharmacokinetics and Drug Metabolism Department at Amgen. Holds PhD in pharmaceutical sciences. Research focus on quantitative pharmacology of growth factors, oncology and bone therapeutics.



Johannes Schropp, PhD. Professor at Department of Mathematics and Statistics, University of Konstanz. Research focus on PK/PD modeling and numerics of dynamical systems.



Sameer Doshi, BS. Senior Scientist in the Department of Pharmacokinetics and Drug Metabolism at Amgen. Holds a BS in biochemistry. Research focus on pharmacometrics and PK/PD of erythropoietins and oncology therapeutics.



Jérôme Kalifa, PhD. Lixoft CEO. Applied mathematician in data analysis, signal & image processing, inverse problems, wavelets, statistical estimation and scientific software. Holds PhD in applied mathematics.

Program

June 10th Tuesday

9:00 - 9:15	Introduction	12:20 - 13:20	Lunch break
Krzyzanski		13:20 - 14:1	Modeling of cell maturation
9:15 - 9:50	Biological systems exhibiting delays	Koch	<ul style="list-style-type: none">• Transit compartment models of cell aging
Krzyzanski	<ul style="list-style-type: none">• Hematopoietic cascade• Immune system response• Apoptotic cancer cells	Krzyzanski	<ul style="list-style-type: none">• Modeling of cytotoxic effects• Hands-on III
9:50 - 10:25	Concept of lifespan driven pharmacodynamic response	14:10 - 14:50	Lifespan models of hematopoietic growth factors
Koch	<ul style="list-style-type: none">• Lifespan controlled cell loss• Distributions of lifespan• Lifespan PD models with delays	Doshi	<ul style="list-style-type: none">• Implementation of DDEs in NONMEM
10:25 - 11:15	Basic lifespan based indirect response models	Perez-Ruixo	<ul style="list-style-type: none">• PD models of rHuEPO• PD models of PegTPO
Krzyzanski	<ul style="list-style-type: none">• Drug effect on response production• Drug effect on lifespan distribution• Hands-on I	14:50 - 15:05	Coffee break
11:15 - 11:30	Coffee break	15:05 - 15:45	New modeling software for DDE systems
11:30 - 12:20	Introduction to delay differential equations	Kalifa	<ul style="list-style-type: none">• DDE in Monolix for population analysis• Mlxplore for DDE model exploration• DDE model simulator for R and Matlab
Schropp	<ul style="list-style-type: none">• Overview of DDE systems• Categories of DDE models• Hands-on II	15:45 - 16:00	Final comments and remarks
		Koch	

Registration

Course location: The course will be held at Palacio de Congresos de Alicante, Av de Dénia, 47, 03013 Alicante, Spain, 7.7 km from the Cruise Terminal of Alicante. Phone: +34 965 26 99 62. Fax: +34 965 26 37 97. Website: <http://www.palaciocongresosalicante.com>

Fee: Individual fee: €180. This includes course documentation, midsession refreshments and lunch. Students may enroll at a fee of €80.

Registration: Please register ASAP in view of the limited course capacity of 30 participants. Confirmation of registration will be returned upon receipt, together with an invoice for the course fee. Registration will not be final until payment is received.

Cancellations: Cancellations with a full refund may be made until April 17, 2014. No refund is possible on cancellations received after this date. Substitutions may be made at any time.

Payment: University at Buffalo Foundation Inc. Bank transfers and credit card payments are accepted as well as checks.

Registration form: Modeling Delays in Pharmacokinetics and Pharmacodynamics, June 10, PAGE 2014.

Name _____ Title _____ Organization _____

Address _____

City _____ State/Country _____ Postal Code _____

Telephone _____ Email _____ Student Yes _____ No _____

For credit card payment*: Please circle Visa MasterCard American Express Discover

Credit card number*: _____ Expiration date*: _____ Security code*: _____

Signature: _____

* You may provide that information in separate e-mail/by phone for security purposes.

Please return to: Wojciech Krzyzanski, Department of Pharmaceutical Sciences, 370 Kapoor Hall, Buffalo, NY, 14214, USA;
Phone: (716) 645-4847; Fax: (716) 829-6569; Email: wk@buffalo.edu.