Naxsim2
– A Software for Dynamic Interactive Simulation

Systems Pharmacology – Pharmacokinetics
Vacation School, March 24-28, 2014, University of Warwick, UK

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SLU
Swedish University of
Agricultural Sciences

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Aim of Maxsim2

- Simulation software of pk and pd processes
- Teaching tool using real-time simulations
  - Learning must be fun
  - Maxsim2 is efficient (real-time)

- Focus on graphical presentations using the 'slider'
- Design of experiments (refine, reduce, replace)
- Optimizing dosing regimens in 'patients'

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The Learning Process

1. Simulate and watch
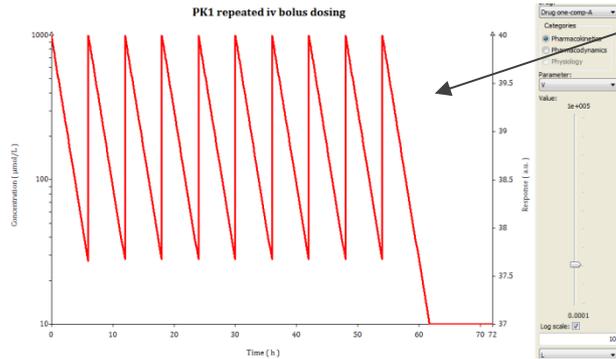
2. Hold curve
3. Slide and watch
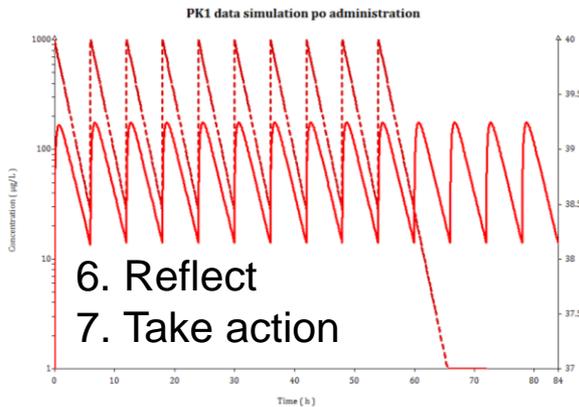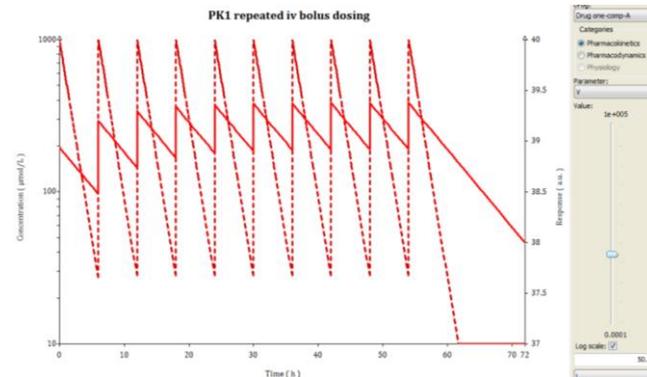
6. Reflect
7. Take action

4. Explain observations
5. Relate to equation(s)

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Maxsim2 – An Interactive PKPD Simulator

- Physiologically Based PK/PD
- Compartment model methodology
- Organs: Muscle, Gut, Brain, Liver, Kidneys, and Blood, (and Lungs)
- Static and Dynamic Response Models
- Dynamic Interactive GUI
- Direct Visual Feedback of Parametric Variations

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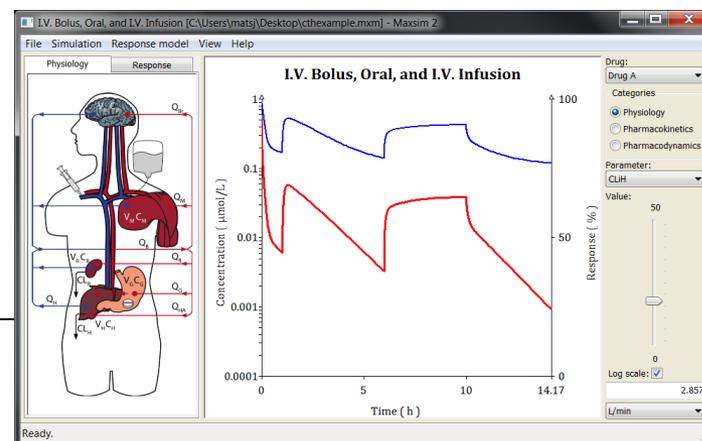
Naxsim2 – Features

Pharmacokinetic Models:

- Physiological Models
  - Tissue-Blood Drug Uptake
    (Human, Rat, Cat, Dog, Horse)

- Compartment Models
  - One-Compartment
  - Two-Compartment
  - Target-mediated Drug Disposition

Dosage regimens:

- Extravascular (oral, subcutane, etc)
- I.V. infusion
- I.V. bolus

Pharmacodynamic Models:

- Indirect Response Models
  - Inhibition of production/loss
  - Stimulation of production/loss

- Instantaneous Response Models
  - Ordinary Emax
  - Stimulatory Sigmoidal Emax
  - Inhibitory Sigmoidal Emax

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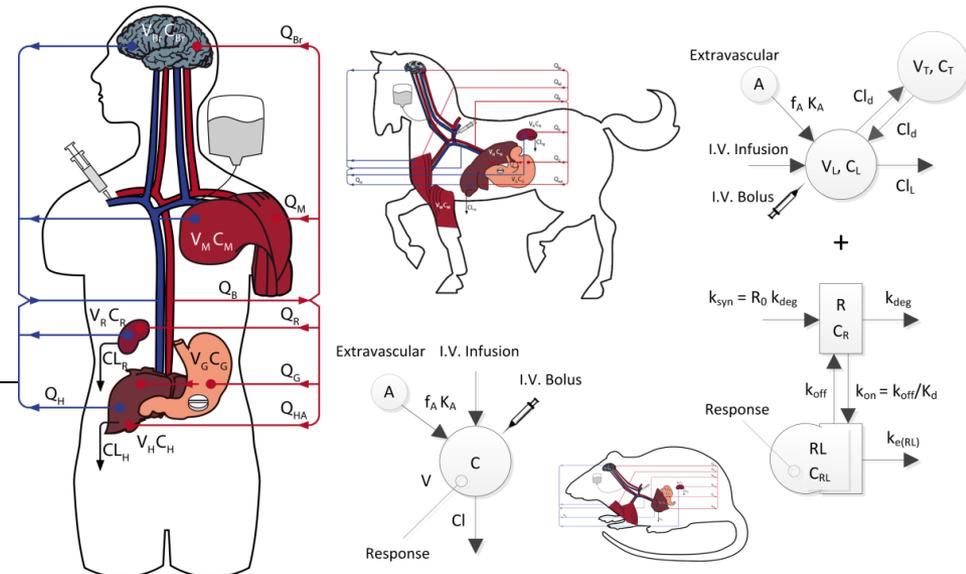
Maxsim2 – Lung Disposition
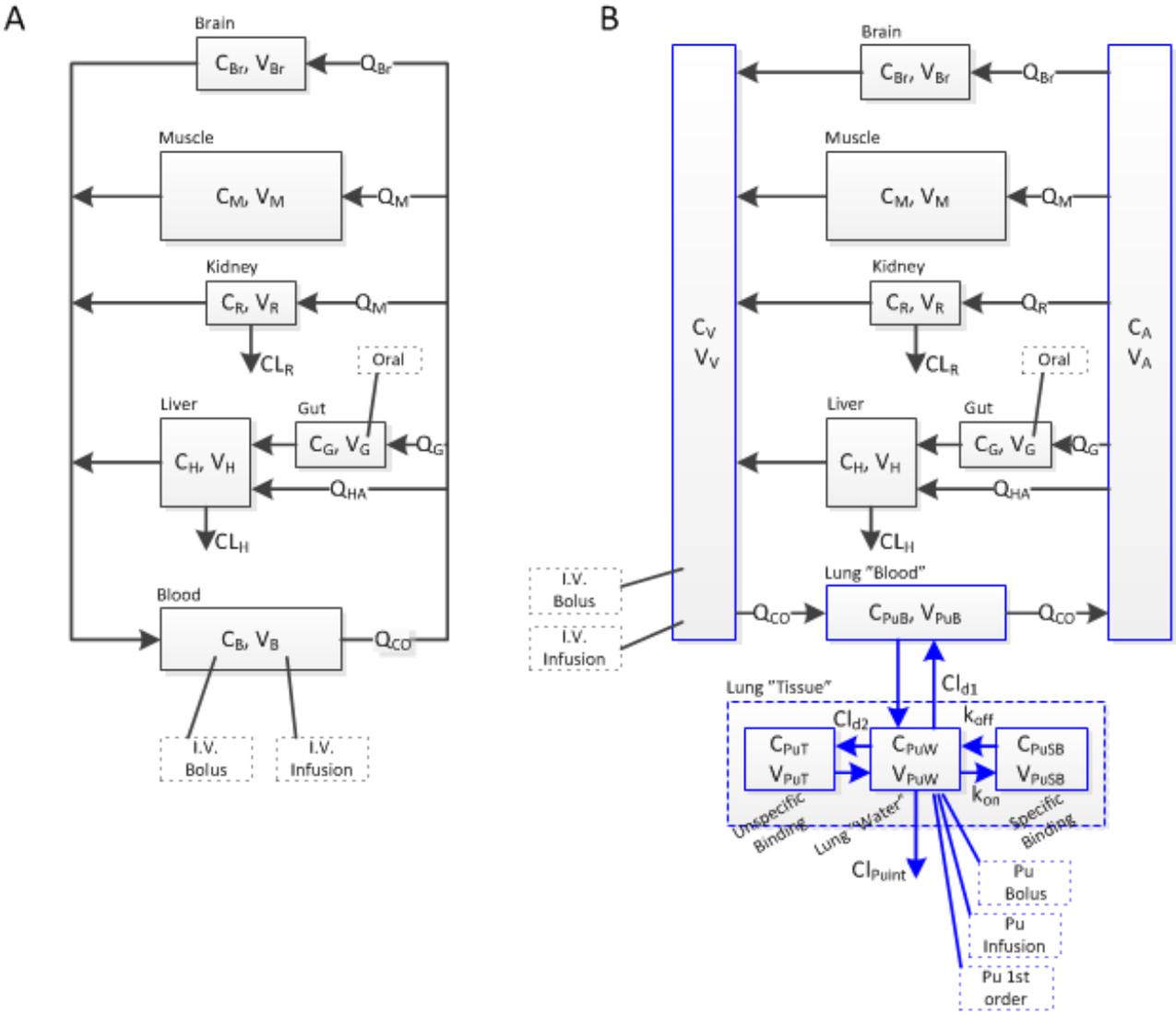
Maxsim2 – Miscellaneous

Scientific Advisory Board:

- Johan Gabrielsson, Professor in Integrative Pharmacology, Swedish University of Agricultural Sciences, Sweden

- Bernd Meibohm, Professor of Pharmaceutical Sciences University of Tennessee, USA

- Hugues Dolgos, Head Global DMPK Merck Serono, Switzerland

- Rasmus Jansson Löfmark, Senior Scientist, AstraZeneca R&D Mölndal, Sweden

- Gunnar Tobin, Professor of Pharmacology, Gothenburg University, Sweden

- Version 2.0

- Windows

- Mac OSX

- 30 days trial!

www.maxsim2.com

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$\mathcal{N}axsim2$ – An Interactive PKPD Simulator, DEMO!