Biomedical Simulations Resource
University of Southern California

Software Short Course On

MODELING AND DATA ANALYSIS IN PHARMACOKINETICS AND PHARMCODYNAMICS USING ADAPT 5

April 8-9, 2010

Sponsored by

Biomedical Simulations Resource
University of Southern California
and
Department of Pharmaceutical Sciences
University at Buffalo

Course Coordinators

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Preface

This Short Course is intended for current and aspiring basic and clinical research scientists who are involved with the application of modeling, simulation and data analysis methods to problems involving drug kinetics and drug response. The Short Course will focus on the use of the ADAPT software package for modeling, simulation and estimation in pharmacokinetics and pharmacodynamcs.

The course will include background lectures on mathematical, statistical, and computational aspects of pharmacokinetic/pharmacodynamic modeling, with an emphasis on the theory and application of individual and population analysis methods. Case studies will illustrate the application of the ADAPT software, and will involve hands-on computer work cover the following topics: pharmacokinetic/pharmacodynamic modeling; least squares and maximum likelihood estimation; Bayesian estimation; estimation with multiple response models; population modeling; covariate model building. It is hoped that this Short Course will give the participants an exposure to the broad class of pharmacokinetic/ pharmacodynamic modeling problems that can be solved using ADAPT.

ADAPT is made available through the Biomedical Simulations Resource at the University of Southern California, which is supported by the Bioengineering Program of the National Institute for Biomedical Imaging and Bioengineering at the NIH (P41-EB001978).

David Z. D'Argenio
Los Angeles
April 2010

ADAPT Short Course Schedule

Thursday April 8, 2010

9:00	Background: ***Modeling with ADAPT***
10:15	Illustration: ***Doses and Covariates*** **(SIM)**
10:45	**Break**
11:00	Background: ***Individual Estimation: Fundamental Principles***
12:00	Case Study: ***WLS/ML Estimation*** **(ID)**
12:30	**Lunch Break**
1:15	Case Study: ***Indirect Response PD Model*** **(ID)**
1:45	Case Study: ***Target Mediated Drug Disposition*** **(SIM)**
2:15	**Break**
2:30	Background: ***Population Estimation: Theory for the Practitioner***
3:30	Case Study: ***Drug Absorption*** **(MLEM)**
4:15	Case Study: ***Indirect Response PD Model*** **(MLEM)**
5:00	Recap and Looking Forward

ADAPT Short Course Schedule

Friday April 9, 2010

9:00	Case Study: ***Bioavailability Crossover Study*** **(NPD)**
9:15	Background: ***Population Modeling with Covariates***
10:00	**Break**
10:30	Case Study: ***Covariate Modeling*** **(MLEM)**
11:15	Illustration: ***PBPK Modeling*** **(SIM/ID)**
12:00	**Lunch Break**
1:00	Case Study: ***Tumor Xenograft Modeling*** **(MLEM)**
1:45	Case Study: ***IVGTT Glucose/Insulin Modeling*** **(MLEM)**
2:15	Discussion: ***Other Program Features and Q&A***
3:00	Adjourn