Biomedical Simulations Resource
University of Southern California

Software Short Course On

MODELING AND DATA ANALYSIS IN PHARMACOKINETICS AND PHARMACODYNAMICS USING ADAPT

March 11 – 12, 2002

Hyatt Regency
Bethesda, Maryland

Sponsored by

Biomedical Simulations Resource
University of Southern California
and
Molecular Pharmacology Section
Center for Cancer Research
National Cancer Institute

Course Coordinator

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Preface

This Short Course is intended for basic and clinical research scientists who are actively involved in the application of modeling, computational 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 simulation, parameter estimation, and design of experiments in pharmacokinetics and pharmacodynamcs. The course will include background lectures on mathematical, statistical, and computational aspects of pharmacokinetic/pharmacodynamic modeling and simulation, parameter estimation, error analysis, design of experiments and clinical trial design.

Case studies will illustrate the application of the ADAPT software for solving a variety of modeling, estimation and experiment design problems. The case studies involve hands-on computer work and will cover the following topics: modeling with covariates; pharmacodynamic modeling (including direct and indirect response models); least squares and maximum likelihood estimation; Bayesian estimation; estimation with multiple response models; sample schedule design; population simulation. It is hoped that this Short Course will give the participants a thorough exposure to the broad class of pharmacokinetic/pharmacodynamic modeling and data analysis problems that can be solved using ADAPT.

David Z. D'Argenio
Los Angeles
March 5, 2002

ADAPT Short Course Schedule
Monday, March 11, 2002

8:30   Background: *Modeling with ADAPT*

9:30   Case Study: *Doses and Covariates*

10:15   **Break**

10:30   Background: *Parameter Estimation*

11:15   Case Study: *WLS/ML Estimation*

12:00   **Lunch Break**

1:15   Case Study: *Multiresponse Estimation*

2:00   Case Study: *Bayesian Estimation*

2:45   **Break**

3:00   Case Study: *Direct Response PD Models*

3:45   Case Study: *Indirect Response PD Models*

4:30   Case Study: *More PD Models*

5:00   Summary and a Look Ahead

ADAPT Short Course Schedule

Tuesday, March 12, 2002

8:30   Case Study: ***PD Model for Tolerance/Rebound***

9:15   Case Study: ***Absorption Delays***

10:00   **Break**

10:30   Case Study: ***Relative Bioavailability***

11:15   Case Study: ***Measured Inputs***

12:00   **Lunch Break**

1:00   Case Study: ***Sample Schedule Design***

1:45   Background: ***Clinical Trial Simulation***

2:15   Case Study: ***Fixed vs Weight-Based Dosing***

3:00   Concluding Remarks