

# MODELING AND DATA ANALYSIS IN PK/PD USING ADAPT

Department of Pharmaceutical Sciences  
University at Buffalo  
February 20-21, 2014

## Course Coordinators

David Z. D'Argenio  
University of Southern California

Wojciech Krzyzanski  
University at Buffalo



## Preface

The course includes background lectures on mathematical, statistical, and computational aspects of pharmacokinetic/pharmacodynamic modeling, with an emphasis on the theory and application of individual analysis methods. An introduction to hierarchical population modeling will also be provided. Case studies will illustrate the application of the ADAPT software, and will involve hands-on computer work cover the following topics: pharmacokinetic modeling; pharmacokinetic/pharmacodynamic modeling; least squares and maximum likelihood estimation; Bayesian estimation; estimation with multiple response models; population modeling. This Short Course will give the participants an exposure to the broad class of pharmacokinetic/pharmacodynamic and systems 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  
February 2014



## **ADAPT Short Course Schedule**

### **Thursday, 20 February 2014**

8:30 Background: **Modeling with ADAPT**

9:45 Case Study: **Model Building (SIM)**

10:15 **Break**

10:30 Background: **Individual Estimation: Fundamentals**

11:45 Case Study: **WLS/ML Estimation (ID)**

12:30 Case Study: **Direct Response PK/PD Models (ID)**

1:00 **Lunch Break**



## **ADAPT Short Course Schedule**

### **Thursday, 20 February 2014**

2:30 Case Study: **Indirect Response PK/PD Models (ID)**

3:00 Case Study: **Transit Compartment Signal  
Transduction Modeling (ID)**

3:45 **Break**

4:00 Case Study: **IVGTT Glucose/Insulin Model (ID)**

4:45 **Q&A**

5:00 **Adjourn**



**ADAPT Short Course Schedule**  
**Friday, 21 February 2014**

- 9:00 Case Study: **Metabolite Modeling (ID)**
- 9:30 Case Study: **Absorption Modeling (ID)**
- 10:00 Case Study: **Tumor Xenograft PD Response (ID)**
- 10:30 **Break**
- 10:45 Case Study: **Target Mediate Drug Disposition (SIM)**
- 11:15 Case Study: **Desensitization of nAChR Receptors  
and Nicotine Addiction (SIM)**
- 12:00 **Lunch Break**



**ADAPT Short Course Schedule**  
**Friday, 21 February 2014**

- 1:00 Background: **Population Modeling: Fundamentals**
- 2:00 Case Study: **PK Modeling Example (MLEM)**
- 2:45 **Break**
- 3:00 Case Study: **Indirect Response PD Model (MLEM)**
- 3:45 Case Study: **Modeling with Covariates (MLEM)**
- 4:30 **Q&A/Other Modeling Issues/Program Features**
- 5:00 **Adjourn**

