Modeling Multiscale Cardiovascular and Respiratory System Dynamics
August 23-27, 2010 N140 William H. Foege Building
University of Washington, Seattle, WA 98195
(Ultimate Draft Syllabus)

	830-1015 AM	*1030-1215 AM*	*1315-1500 PM*	*1515-1730 PM*
Monday 8:30 AM	Introductions: Bassingthwaighte Modeling overview Strategies, Objectives in Multi-scale Modeling Hands on: Login	Gary Raymond: Aspirin: discussion of hypotheses, modeling clearance by reaction Hands on: Begin with compartmental models, 2-comp exchanges Publication Standards Coding for reproducibility	Butterworth: JSim structure and function -----Work Time------ Download JSim? --Importing from CellML and SBML----- Bassingthwaighte: Progress Curves: Xanthine Oxidase kinetics (Optimize) ODEs--Hands on:	Bassingthwaighte: Lecture: Blood Tissue Exchange Multiple Indicator Dilution Expt Crone Extraction Data Mass Balance -work Time on PDEs - 5:30 PM
Tuesday 8:30 AM	Jiri Kofranek Electrophysiol in Modelica Introduction to large models: Quanatitative Human Physiology	Kofranek, Waniewski, Butterworth, Sauro 1.Computing Platforms: Matlab, JSim, Modelica, PCEnv, etc 2. Archives: SBML, CellML JSim and others, incl. platform dependent ones.	Joseph Anderson: Modeling Pulmonary Mechanics and Gas Exchange I: modeling with electrical analogs Jhony Caucha: Modeling Forced Expiratory Velocity Practical Application	Joseph Anderson: Modeling Pulmonary Mechanics and Gas Exchange II. spatially distributed permeation. Spatial profiles in capillary. Diffusion. Model Verification Methods 5:30 PM
Wednesday 8:30 AM	Hong Qian: Stochastic and Deterministic Modeling. Where do they intersect? 1. Stochastic chem 2. Gillespie algorithm	Hong Qian: Biochem Network Models and their analysis. Building biochem networks. Critical paths.	Eric Shea-Brown: When does feedback destroy the precision of neural spike times? Stochasticity in neural information flow: Channels, APs, synaptic vesicles	Eric Shea-Brown Electrophys, mono-scale cell models: Boltzmann channel Boltz => HHActionPot Bassingthwaighte: Beeler-Reuter Action Potential Real **Multi-scale**: Rudy2010 5:30 PM

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Thursday 8:30 AM	Herbert Sauro: Quantitative Synthesis of real Genetic Networks Working with Jarnac and SBML and Biomodels and CellML databases	Herbert Sauro: Quantitative Simulation Analysis of Metabolic Nets Validation:	Bart Jardine: Matlab Intro CircAdapt Jacek Waniewski: constructing a peritoneal dialysis model using Matlab --work with Matlab: --compartmental model --diffusion model Model Validation:	Waniewski: (cont) Bassingthwaighte :Lung Purine Uptake (Pearson) participants construct distributed multipath model from BTEX10 to BTEX20 to multipath. Model Validation END BY 5:15 PM 5:30 PM: drive to Pier 55 ferry to Blake Island, Tillicum Village salmon dinner
Friday 8:30 AM	Jim Caldwell: rMBF: Regional Myocardial Blood Flow using PET Imaging. Test of Model Validity Optimization for rMBF ====Hands on ===	Bassingthwaighte Model stages for rMBF estimation from PET images Kevin Hsu: Effect of Noise in the data Parameter Evaluation	Gary Raymond and Max Neal: Modular Modeling Example constructions with FORTRAN and SemGen Standards for Modules	Wrap-up: Key strategies? Review Platt 1964. Mono- versus multi- scale. Reproducible science Integration Biology More sets of standards? Code Sharing 5:30 PM

~jbb/t15/2010/Sched2010   21aug10