

BioSB Course Constraint-based modelling: introduction and advanced topics (Draft Program)

Key:	Practical	Lecture			
November 2019	Mon 25th	Tues 26th	Wed 27th	Thurs 28th	Friday 29th
9:30-10:30	Principles of COBRA (Ronan Fleming)	Constraint-based Analysis: biased methods (Ronan Fleming)	Human metabolic reconstruction and modelling (tbc)	Introduction to thermodynamic constraints on biochemical networks (Ronan Fleming)	Constraint-based modelling of metabolic dysfunction in Parkinson's disease (Agnieszka Wegrzyn)
10:30-11	Coffee				
11-12	Reconstruction (tbc)	Constraint-based Analysis: unbiased methods (Ronan Fleming)	Integration with transcriptomic and proteomic data (Agnieszka Wegrzyn)	Use of thermodynamic constraints for regressions and predictions (Matthias Heinemann)	Resource balance analysis (Bas Teusink)
12-1:30	Lunch				
1:30-2:30	Standards & Annotation (Brett Oliver)	Metabolic engineering overview (Filipe Branco dos Santos)	Integration with <u>exo-metabolomic</u> data (Ronan Fleming)	Molecular structures and atom mappings in metabolic networks (German Preciat)	Whole-body modelling of human metabolism (Ines Thiele)
2:30-3:30	Quality-controlled Model generation with the COBRA Toolbox (Ronan)	Metabolic engineering with FAME (Brett Oliver)	General principles and modelling basics of ^{13}C MFA (Katarina Noh)	Atomically resolving a metabolic network with the COBRA Toolbox (German Preciat)	
3:30-4	Coffee				
4 - 5	Quality-controlled Model generation with the COBRA Toolbox (Ronan Fleming)	Metabolic engineering with FAME (Brett)	Typical ^{13}C workflows including experimental design (Katarina Noh)	Thermodynamic assignment of reaction directionality with the COBRA Toolbox (Ronan Fleming)	Usage of systems biology tools in biopharmaceutical industry: current state and perspectives (Anne Richelle)
5-5:30	Discussion & wrap-up	Discussion & wrap-up	Discussion & wrap-up	Discussion & wrap-up	Discussion & wrap-up
5:30	Drinks (BioSB)				
7:00	Dinner (self-organised)	Dinner (self-organised)	Dinner (self-organised)	Dinner (TBC)	