# 0. Sunday August 5, 2018: Python

 9:00 – 10:30 Welcome (James A Glazier), Python Training I (Andy Somogyi)
 Python installation + programing concepts

 10:30 – 10:45 Break

 10:45 – 12:15 Python Basics (Andy Somogyi)

 12:15 – 1:00 Lunch [provided]

 1:00 – 2:30 Python functions and file management (Andy Somogyi)

 2:30 – 2:45 Break

 2:45 – 4:15 Python examples and exercises (Andy Somogyi)

 4:15 – 4:30 Break

 4:30 – 6:00 Python examples and exercises (Andy Somogyi)
 After Class—Start Installing CC3D and TELLURIUM on people’s computers

 [Dinner on your own]

# 1. Monday August 6, 2018: Modeling Biological Networks w/ ODEs & SBML

 9:00 – 10:30 Welcome and Intro to Modeling (James A Glazier)

 10:30 – 10:45 Break

 10:45 – 12:15 Install Tellurium + introduction to modeling networks/SBML (Herbert Sauro)

 12:15 – 1:00 Lunch [provided]—Three mini-presentations during lunch (~10 minutes each)

 1:00 – 2:30 SBML and Biomodels (Herbert Sauro)

 2:30 – 2:45 Break

 2:45 – 4:15 Simulation exercises (Herbert Sauro)

 4:15 – 4:30 Break

 4:30 – 6:00 Simulation exercises (Herbert Sauro)

 6:15 Group Dinner [at participant expense, location to be announced]

# 2. Tuesday August 7, 2018: SBML

 9:00 – 10:30 Parameter fitting using Tellurium/Python (Herbert Sauro)

 10:30 – 10:45 Break

 10:45 – 12:15 Common motifs found in cellular networks (Herbert Sauro)

 12:15 – 1:00 Lunch [provided]—Three mini-presentations during lunch (~10 minutes each)

 1:00 – 2:30 PBPK modeling using SBML (Jim Sluka)

 2:30 – 2:45 Break

 2:45 – 4:15 PBPK—SBML parameter fitting, parameter sensitivity (Jim Sluka)

 [Dinner on your own]

# 3. Wednesday August 8, 2018: Introduction To CC3D

 9:00 – 10:30 CC3D background + Twedit++. Understanding the structure of CC3D simulations (Maciek Swat)

 10:30 – 10:45 Break

 10:45 – 12:15 Understanding cell adhesion - cell sorting simulations (Maciek Swat)

 12:15 – 1:00 Lunch [provided]—Three mini-presentations during lunch (~10 minutes each)

 1:00 – 2:30 Getting comfortable with CC3D Python scripting - understanding cell attributes, file I/O . etc...

 2:30 – 2:45 Break

 2:45 – 4.15 Growth + mitosis. (Maciek Swat)

 4:15 – 4.30 Break

 4:30 – 6.00 Tutorials plus 1:1 sessions (Maciek Swat)

[Dinner on your own]

# 4. Thursday August 9, 2018: Intermediate CC3D

9:00 – 10:30 Chemotaxis, chemical fields, custom field visualizations etc. (Maciek Swat)

10:30 – 10:45 Break

10:45 – 12:15 Cellular Links + introduction to compartmentalized cells (Maciek Swat)

12:15 – 1:00 Lunch [provided]—Three mini-presentations during lunch (~10 minutes each)

1:00 - 2:30 From single cell to vascularized tumor - exercise in planning and building multi-cell simulation
(Maciek Swat)

2:30 – 2:45 Break

2:45 – 4:15 Linking SMBL to CC3D (Jim Sluka/James Glazier)

4:15 – 4:30 Break

4:30 – 6:00 Demos + exercises with SBML Jim Sluka/James Glazier)

[Dinner on your own]

# 5. Friday August 10, 2018: CC3D in practice

 9:00 – 10:30 Cancer stem cells (Gilberto Thomas)

 10:30 – 10:45 Break

 10:45 – 12:15 Deep cell movement and CE (Juliano)

 12:15 – 1:00 Lunch [provided]—Three mini-presentations during lunch (~10 minutes each)

 1:00 – 2:30 Cell compartments and epithelial folding (James Glazier)

 2:30 – 2:45 Break

 2:45 – 4:15 Convergent Extension Simulations (James Glazier/Maciek Swat)

 4:15 – 4:30 Break

 4:30 – 6:00 Demos + open discussion (Julio Belmonte)

 6:15 Optional Group Dinner and Drinks [at participant expense, location to be announced]

# 6. Saturday Aug 11, 2018 Private tutorials and collaborations

 **Held in Simon Hall 047—Contact Somogyi, Belmonte and Glazier for access information**

 9:00 – 4:00 Start, flexible schedule for the rest of the day

 [Meals on your own]

# Course Instructors

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| --- | --- | --- | --- | --- |
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