

3DVC_Orange3_Infrastructure

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Topic III: infrastructure to unify/interface simulation and experimentations

- Interfacing between experimental and computational
 - need to make output of simulation "look familiar" to experimental outputs, so experimentalist can easily interpret it
 - e.g. In MRI field, simulation outputs images look like MRI images so clinician can directly use it
- How to make simulation and experiment less separate
- In biology hard to get data to build model
 - in contrast to synthetic biology, where most people are in engineers so better understand what data are needed for model builders
 - in contrast in biology/system biology, lack of understanding what parameters are needed to measure to build models
- Essentially experiments are done based on models, maybe not complicated- or mathematical models (but e.g. pathways, concept are all simple models)
- Need to build / start with good/simple conceptual models
- How to encourage interplay between computational and experimentalist
 - fund project /participate in project that has both parts
 - but not easy, currently usually only happen in very large collaborative projects
- Single-project funding models vs. collaborative, i.e. getting different people to come contribute to same project
- How to create portal/ways people from different/fields/subjects can know of what other people do and form collaboration?
- Build models that abstract away the details so people can use the models without understanding having detail knowledge of how the models is built or work?
 - what technical requirement are needed so experimentalist can see modelling is just another tools (analogy -- most use microscope but don't need to know optic and how to build microscope, don't need to collaborate with microscope builder to use it for biological projects)
- can we make modelling as experimental protocols
- training / workshop that teach students/researcher how to use modelling tools etc.
- template of models for use in different context
 - so experimentalist can tune it to specific needs
- example: cardiologist use computational models extensively
 - question: -when/what make experimentalist reach out to modellist
 - how much do they believe in models and start using them???