Summary of short-term visit May 17 – May 20

1. Public Information (to be linked on the NIMBioS website) Provide a single paragraph (8-10 lines) on what exactly was done at the meeting and on the future plans. At the end of this paragraph, list the names and affiliation (including departments) of all participants at the meeting.

Our team numerically solved a system of partial differential equations (PDEs) to approximate the complex dynamics of a spatially-explicit agent-based model. Both the agent-based model and the PDE system included a control variable. Given a cost for the control, we used optimal control theory to find an optimal control for the PDE system. We then implemented a discretized version of the optimal control in the agent-based model and evaluated it for optimality. We will continue to modify the numerical implementation of the PDE solver and investigate under what conditions this optimization approach works.

Participants:

- Scott Christley, University of Chicago, Department of Surgery
- Suzanne Lenhart, University of Tennessee, Department of Mathematics
- Rachael Miller Neilan, Duquesne University, Department of Mathematics and Computer Science
- Matt Oremland, Virginia Tech, Department of Mathematics
- Rene Salinas, Appalachian State University, Department of Mathematical Sciences