



# NIMBioS: A National Institute to Foster Mathematical and Biological Linkages

Louis J. Gross

Professor of Ecology and Evolutionary  
Biology and Mathematics

University of Tennessee - Knoxville

NIMBioS Director

[NIMBioS.org](http://NIMBioS.org)

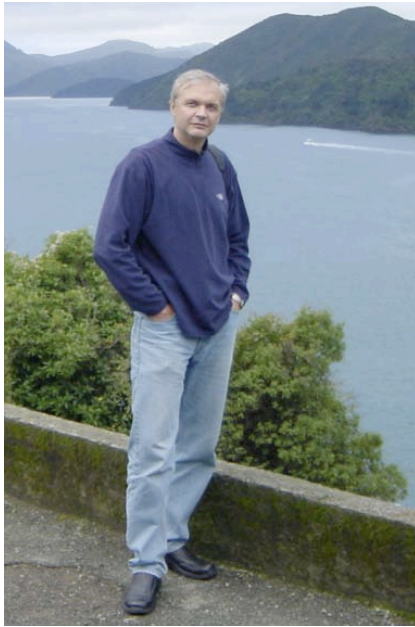


U.S. Department of  
Homeland Security

# Vision

- Foster new collaborative efforts to investigate fundamental and applied questions arising in biology using appropriate mathematical and computational methods
- Enhance the essential human capacity to analyze complex biological questions and develop necessary new mathematics
- Encourage broader public appreciation of the unity of science and mathematics.

# Our Leadership Team



Sergey  
Gavrilets -  
Scientific  
Activities



Cynthia Peterson -  
Graduate Education



Suzanne Lenhart -  
Outreach, Education &  
Diversity



Chris Welsh -  
Deputy Director



Graham Hickling -  
Partner Relations

# OurStaff



Pam Bishop –  
Program Evaluation  
Coordinator



Jane Comiskey –  
Web Specialist



Kelly Sterner –  
Outreach/Education  
Coordinator



Chandra Eskridge  
– Executive Asst.



Michael Peek – IT  
Manager



Jennifer Thomas –  
Travel and Logistics



Eric Carr – HPC  
Specialist



Catherine Crawley –  
Communications  
Coordinator



Toby Koosman–  
Business Manager

# General Methods

- Choosing fundamental problems that will benefit from cross-disciplinary collaborations.
- Choosing applied problems of sufficient general interest to be readily extended beyond an initial region/ organism/ system.
- Building appropriate collaborations to address these fundamental and applied problems.
- Developing education and outreach opportunities to diversify participation in these collaborations at all levels.

# Specific Methods

- Focused research projects (**Working Groups**) to build collaboration among diverse communities.
- Building collaborations through more open-ended general problems, addressed through multiple approaches (**Investigative Workshops**).
- Skill and methods-based programs (**Tutorials**) that foster a broader understanding of potential applications of modern math and computational science in biology.
- An expansive set of **education-linked-to-research** endeavors from elementary through post-doctoral level that provide diverse opportunities at the math/biology interface.

# General Scientific Themes

- How do the properties of integrated biological systems arise from the properties of the components?
- How can we effectively integrate mathematical formulations operating at different hierarchical levels in biological organization into a system-level view?

# General Questions for a Working Group

- What data are available?
- What math and modeling techniques are available?
- What are the empirical patterns that cannot be explained by existing theories?
- How can we adapt existing models to fully use available data?
- What kinds of data are needed to better inform the models?
- What new math or modeling techniques and methods need to be developed?



# Post-doctoral Fellows

- Post-docs are independent researchers chosen based upon a proposal that fits NIMBioS opportunities
- Each post-doc is assigned two mentors, one from mathematical/ computational sciences and one from biology.
- Post-docs are given the opportunity to teach regular UT classes and to make short term visits to our partner Minority Serving Institutions.

**Sabbatical Fellows** - we offer a limited number of these for visits longer than a month

**Short-term Visitors** - for periods of a few days to less than a month to use our facilities or collaborate



# What we expect from each activity we sponsor:

- Great science/education
- A collaborative approach to problems and willingness to share expertise
- Suggestions for next steps and additional NIMBioS activities
- Have a good time (ask us for music/dance or other local activity suggestions)

# Some administrative matters:

- The NIMBioS staff are available to assist you with any administrative matters or for questions
- We'd be happy to recommend restaurants or other local activities
- Activities here have top priority for our IT staff while in residence - for coding assistance or any IT needs
- Evaluation - please respond to our request for your assessment of this which will be sent to your email - done electronically
- Recycling - please help by using the recycling bins
- Consent form for photos - please sign and leave in box
- See Chandra Eskridge or Jennifer Thomas for any questions regarding finances - if we are covering this for you there will be a flat \$28 per diem for dinners - no receipt necessary. We do need a receipt for taxi costs.
- We need a copy of passport/visa for non-US folks if you have not already provided this.

# Metrics of success:

- The major metric is whether the Workshop leads to new collaborations that result in transformative science. Assessment of this includes whether you established a new collaboration here that leads to science/mathematics beyond what was discussed here. The impact of these collaborations may be assessed from papers published, research proposals submitted for support, new courses developed, new student projects designed, symposia organized at professional society meetings, etc. ***It is very important to the ongoing success of NIMBioS that we are aware of your activities as follow-up to this Workshop and that you acknowledge the workshop in any resulting science. There is a button on the website to submit your products as well as suggested acknowledgement wording. PLEASE KEEP US INFORMED.***
- Another direct metric is **whether future activities here arise** from the Workshop. This can be Working Groups, short-term visits, projects for our REU program, etc. We encourage you to consider these as potential follow-up activities.