

# Center for Biocomplexity Colloquium

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***“Spanning scales - the combination of Mathematics and High Performance Computing impacts Computational Biology”***

**Tuesday, October 6, 2009**  
**4:00pm**  
**127 Hayes-Healy Center**  
***\*Tea at 3:30pm in 257 Hurley\****

Computation is playing an ever increasing and vital role in the biological and healthcare sciences. In many instances, scientists are developing mathematical models and using high performance computing to carry out analysis and simulations that provide insight into biological systems. The complexity of these models often demands increasing compute power and sophisticated mathematics for the solution. In collaboration, biological scientists are using thousands of processors to look at their problems in new ways, leading to science breakthroughs. In this talk, I will briefly describe the features of the computational laboratory, I use. I then describe a few examples in bioinformatics and computational biology where mathematics and high performance computing are converging. While progress is being made, there remain many challenges for computational scientists using massively parallel systems on “Big” science problems with impact on society that until now or in current implementations have fallen short. In conclusion, I will point out some of the computational trends that I believe hold opportunity for coupling high performance computing and mathematics to tackle multi-scale biological science problems.