



INTEGRATIVE BIOLOGY
THE UNIVERSITY OF TEXAS AT AUSTIN

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Applicant: Shweta Bansal

Mentor: Dr. Lauren Ancel Meyers

February 14, 2007

To whom it may concern:

I am writing this letter in very strong support of Shweta Bansal's application for the DIMACS Advanced Studies Institute on Mathematical Modeling of Infectious Diseases in Africa. I am Shweta's Ph.D. advisor in the Computation and Applied Mathematics (CAM) graduate program at the University of Texas.

Shweta is an exceptionally bright and independent mathematical biologist. She successfully integrates her strong background in mathematics and computation with a profound interest in biological sciences. Shweta thinks deeply and creatively, and has a contagious enthusiasm for science. Of the four Ph.D. students in my group, she is the best mathematical biologist and the strongest writer. Compared to her peers worldwide, I believe that she is among the top few mathematical epidemiology Ph.D. students.

Shweta has had broad set of experiences applying computational tools to cutting edge technological and biological problems. Before joining my lab at University of Texas, she applied numerical methods to model DNA structure and used mathematics to assess methods for reconstructing evolutionary trees. Shweta is now developing mathematical models that predict the large-scale spread of respiratory-borne infectious diseases, like influenza and SARS. Her thesis work has already resulted in two peer-reviewed publications in top ranking journals. In a collaborative paper in the *Proceedings of the Royal Society of London: Biological Sciences*, she developed a new mathematical approach to predicting the structure of a host population following an epidemic of an immunizing disease. Shweta is also first author of a paper in *PLoS Medicine* which applies methods from percolation theory to designing optimal strategies for flu vaccination. Both the Wall Street Journal and the L.A. Times published articles highlighting this research. Also based on this work, Shweta won the award for *Best Epidemiology Paper* at the Annual Meetings of the Society for Mathematical Biology in 2006.

In the final year and a half of her Ph.D., Shweta is pursuing several other theoretical and applied projects. She is developing mathematical methods to

study the roles of pathogen evolution and community structure (modularity) in network disease dynamics. She is also applying these and other methods to analyzing the impact of airplane travel on national and global epidemiological dynamics. I strongly believe that this work will result in both valuable methodological contributions and important public health insights.

Shweta will benefit greatly from attending the workshop. She would certainly embrace this invaluable opportunity to learn new modeling approaches and the infectious diseases plaguing Africa. As a young scientist beginning to look towards postdoctoral studies and beyond, this is an ideal time for her to broaden her expertise. I would be more than delighted to mentor Shweta on any project that stems from this experience.

With training and talent at the interface of mathematics and biology, Shweta is well on her way toward a very successful scientific career. Shweta and students like her are the bright spots in the future of science in America. I wholeheartedly encourage you to accept her into the workshop.

Sincerely,

A handwritten signature in blue ink, reading "Lauren Ancel Meyers". The signature is fluid and cursive, with the first name "Lauren" and last name "Meyers" clearly legible.

Lauren Ancel Meyers