



The College of
WILLIAM & MARY

Department News, 2005 Spring

Faculty Grants

Math and science united in metapopulation research



William and Mary's dual propensities for interdisciplinary research and for involving undergraduates in front-line scientific investigation combine nicely in the new conjoint biology-and-mathematics project, Undergraduate Research in Metapopulation Biology.

The program was funded for five years by a recent \$647,000 grant from the National Science Foundation (NSF). The three principal investigators of the project—[Dan Cristol](#) and [John Swaddle](#), associate biology professors, and [Sebastian Schreiber](#), an associate mathematics professor—got together recently to discuss how undergraduates will become involved in the program. The three principal investigators will be joined in the project by three other William and Mary faculty members, [Timothy Killingback](#) and [Junping Shi](#), who are assistant professors in the mathematics department, and [Randy Chambers](#), an associate professor in the biology department. The six faculty members will mentor the undergraduate students, develop new interdisciplinary classes and seminars and sponsor a biannual regional bio-math conference.

Full news article in W&M News: [Math and science united in metapopulation research](#)
Another news article by Daily Press: [William & Mary research to blend math, biology](#)
Project summary at NSF: <http://www.nsf.gov/awardsearch/showAward.do?AwardNumber=0436318>



Photo on the right: (left column from top: (from biology) Dan Cristol, John Swaddle and Randy Chambers; right column from top: (from mathematics) Sebastian Schreiber, Tim Killingback and Junping Shi)



Professor [Michael W. Trosset](#) receives a research grant of \$126,000 from the National Science Foundation (NSF). The project name is *Collaborative Research: Statistical Decision-Theoretic Methods for Robust Design Optimization*, and the duration is from September 1, 2004 to August 31, 2007. This research project will address the problem of developing rigorous, computationally tractable methods for robust design. The methods to be developed will be demonstrated on aerodynamic design optimization problems of vital interest at NASA Langley Research Center. Undergraduates from across mathematics, computer science and engineering will be involved with this research. ([Full project summary at NSF](#))



Professor [Roy Mathias](#) receives a research grant of \$99,999 from the National Science Foundation (NSF). The project name is *Stochastic Automata Networks in Cell Biology -- Modeling, Computation and Analysis*, and the duration is from September 1, 2004 to August 31, 2006. Professor Mathias will spend an immersion year in mathematical biology learning the biological background required for the modeling of ion channels and other problems in mathematical biology. He is EPSRC Visiting Fellow/MIMS Distinguished Visitor in of Manchester, for Fall 2004 semester, and he is Senior Visitor in Center for Mathematical Biology, The Mathematical Institute, Oxford University from Jan-Dec 2005. ([Full project summary at NSF](#))



Professor [Charles R. Johnson](#) receives a REU site grant from the National Science Foundation (NSF). The project name is *REU Site: Matrix Analysis and Applications*, from May 15, 2004 to May 15, 2007, and with first year amount of \$48,000. Since 1990, William and Mary has hosted an NSF-funded summer Research Experiences for Undergraduates (REU) program in mathematics. REU students choose their research projects from a group of problems described by faculty mentors during the first week of the program. These problems were not textbook exercises. Instead, they were open-ended projects designed to attack unsolved questions related to linear algebra and, in some cases, to its applications in bio-mathematics, computational mathematics. At the end of the summer, students presented written and oral summaries of their projects and, if history is a guide, about half of their papers will grow into refereed journal articles with the students and research mentors are co-authors. (A list of previous publications by our mathematics faculty members and undergraduate co-authors can be found at <http://www.math.wm.edu/~klsmit/udres.html>) ([Full project summary at NSF](#))

Faculty Movement



Tim Killingback Eva Czabarka Bueno Cachadina Evan Haskell Andrea Kremer

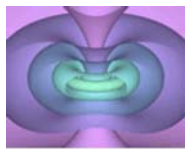
- Professor [George Rublein](#) is the Acting Chairman of the department from July 2004-July 2005, when Chairman and Ferguson Professor [Chi-Kwong Li](#) takes sabbatical leave.
- Professors [Timothy Killingback](#) and [Eva Czabarka](#) joined the faculty of Department of Mathematics as new assistant professors. Professor [Timothy Killingback](#)'s research area is biomathematics, and he obtained his PhD degree from University of Edinburgh in 1984; Professor [Eva Czabarka](#)'s research area is statistics, and she obtained her PhD degree from University of South Carolina in 1998.
- Professors [Bueno Cachadina](#) and [Evan Haskell](#) joined the faculty of Department of Mathematics as new visiting assistant professors since August 2004. Professor [Bueno Cachadina](#)'s research area is linear algebra, Numerical Linear Algebra, and Orthogonal Polynomials, and she obtained her PhD from Universidad Carlos III de Madrid, Spain, in 2004; Professor [Evan Haskell](#)'s research area is biomathematics, and he obtained his PhD degree from New York University in 2000.
- Professors Brandy Rapatski and Gianluca Guadagni will be the visiting assistant professors for the 2005 spring semester. Professor Brandy Rapatski's research area is biomathematics and dynamical systems, and she obtained her PhD degree from University of Maryland in 2004; Professor Gianluca Guadagni's research area is stochastic analysis, and he obtained his PhD degree from ?
- Professor [Hugo Woerdeman](#) has taken the new position of Professor and Department Head of Department of Mathematics, Drexel University, Philadelphia, PA, since January 2005. We wish him the best in his new post. ([Hugo's new webpage](#))
- Professor [Zhongzhi Bai](#) and Professor Zhitao Zhang, both from Chinese Academy of Sciences, Beijing, China, visit our department March-June, 2004. Professor Bai's research area is numerical linear algebra, and numerical optimization, and Professor Zhang's research area is nonlinear partial differential equations, and variational methods. Their visits are supported by Ky Fan fund of American Mathematical Society and a matching fund from College of William and Mary.

Research and Conference News

- Professor [Vladimir Bolotnikov](#) won the 2004 Simon Teaching Prize. (see [Mathematics Faculty and Student Awards](#) page)
- Professor [Charles Johnson](#) is one of plenary speakers in the [12th International Linear Algebra Society \(ILAS\) Conference](#), in Regina, Saskatchewan, Canada, June 26-29, 2005. Professor [Chi-Kwong Li](#) will deliver the LAMA lecture in the same conference, and Professor Li is also the co-organizer of Minisymposia "Preserver Problems".
- Professor [Timothy Killingback](#) and his collaborators published a research article in [Science Magazine](#), one of premier science journals in the world. The paper title and publication date are

The Evolutionary Origin of Cooperators and Defectors
 Michael Doebeli, Christoph Hauert, and Timothy Killingback
 Science 29 October 2004; 306: 859-862
- Professor [Chi-Kwong Li](#) takes various research activities in his sabbatical (Fall 2004-Spring 2005). In early Fall 2004, he visited University of Connecticut, University of Kentucky and San Jose State University; and in Dec 2004, he visited Hokkaido University and University of Kyoto in Japan, and Suchow University in Taiwan for colloquium talks and research projects.

- Professor [Roy Mathias](#) spends his sabbatical (Fall 2004-Spring 2005) in UK. He is EPSRC Visiting Fellow/MIMS Distinguished Visitor in of Manchester, for Fall 2004 semester, and he is Senior Visitor in Center for Mathematical Biology, The Mathematical Institute, Oxford University from Jan-Dec 2005.
- Professor [Sebastian Schreiber](#) organizes [Mathematical and Computational Biology \(MCB\) Seminar](#) in Fall 2004. Researchers and students on mathematical biology across the campus (including mathematics, biology and applied sciences) participated the weekly seminar to share the current research in MCB on campus, describe current biological research that could benefit from modeling perspective, and learn about mathematical techniques relevant to MCB.
- Professor [Sebastian Schreiber](#) is one of co-organizers of AMS-SIAM special session on ["Recent Advances in Mathematical Ecology"](#). Professor [Junping Shi](#) is one of co-organizers of AMS-SIAM special session ["Reaction Diffusion Equations and Applications"](#), on the [Joint Mathematics Meetings](#), Atlanta, January 5-8, 2005. Joint Mathematics Meetings is the largest mathematics meeting in the country which attracts more than 4000 mathematical people.
- Professor [Junping Shi](#) is the organizer of special session ["Recent Developments on Nonlinear Elliptic Equations and Variational Problems"](#), on the [AIMS' fifth international conference on Dynamical Systems and Differential Equations](#), California State Polytechnic University, Pomona, California, June 16-19, 2004. Sixteen eminent speakers from USA, Japan, China, Taiwan region, and France presented their work in the session.
- Professor [Junping Shi](#) is one of plenary speakers in [Workshop on Spatial Ecology: The Interplay between Theory and Data](#), which was held in the new Institute of Theoretical and Mathematical Ecology (ITME), University of Miami, Coral Gables, Florida, January 7-10, 2005.
- Professor [Junping Shi](#) will take junior research leave in 2005 Spring semester. He will give a two-week lecture series on steady state solutions of reaction-diffusion equations in Tokyo Metropolitan University, Tokyo, Japan in February; from February to April, he will visit University of New England and University of Sydney in Australia for joint research projects; and he will visit National Tsing-Hua University in Hsinchu, Taiwan in early May.
- Professor [Nahum Zobin](#) is promoted to full professor in May 2004, and he spends his sabbatical (Fall 2004-Spring 2005) in Princeton University.



Science



Student Awards and News

Alumni News

Created by Junping Shi, Jan. 15, 2004

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