Greetings from the Chair

Dear Alumni and Friends,

The 2012-2013 academic year was another successful one for the Department and for our faculty and students.

A new development for the Department this year was the introduction of the BSCB seminar series. The series included five high-profile speakers who attracted large audiences from the biological, statistical and computer science communities at Cornell. A list of the speakers and some details about their talks can be found at http://www.bscb.cornell.edu/seminars.php.

The 2013 graduating class in the Biometry and Statistics major consisted of 23 students, about half of whom are planning to enter graduate school this fall in a diverse array of fields of study, including Neuroscience (at Harvard), Genetics (Stanford), Biostatistics and Epidemiology (Columbia), Statistics (Cornell), and Economics (Chicago). At least three graduates are starting Medical School, and many of those entering the workforce obtained positions at well-known companies such as Aon Hewitt, Oracle, PricewaterhouseCoopers, and Bank of America Merrill Lynch.

Congratulations to the 2013 graduates and best wishes to all our alumni,

James Booth
Professor and Chair

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News from Professor Alon Keinan

The work of Alon Keinan, the Robert N. Noyce Assistant Professor in Life Science and Technology, views modern human health through the lens of human evolution. One research focus in his lab involves the recent explosive growth of human populations. In a paper in Science last year, they showed that this growth has led to a large excess of rare genetic variants in human populations, with important implications to the number of genetic variants involved in complex human disease. These results have received considerable attention, including in Nature and in the American Journal of Human Genetics. They were also featured as part of Discover Magazine 100 top stories of 2012 and will be featured in the spring issue of CALS Magazine.

Prof. Keinan was recently awarded the Ellison Medical Foundation New Scholar in Aging Award (2012-2016) & Edward Mallinckrodt, Jr. Foundation (2013-2016).

Diana Chang, a graduate student in the Keinan Lab, won the Hsien Wu and Daisy Yen Wu Scholarship Award.

Li Ma, Postdoctoral Associate, recently accepted the position of tenure track assistant professor of Biometrics/Applied Statistics in the Department of Animal Science at the University of Maryland, College Park. He will start his new position on July 1, 2013. Best wishes, Li, on your new career path.

News from Professor Adam Siepel

Adam Siepel is currently on sabbatical leave and will spend the remainder of the 2012-2013 academic year at Churchill College, Cambridge University, on a Guggenheim Fellowship.

Adam’s research group was awarded a 5-year $1.7M grant from the National Institutes of Health to develop new computational and statistical methods for inference of ancient human demography and measurement of the influence of natural selection on noncoding regions in the human genome.

Lenore Pipes, a Ph.D. student in the Tri-I Computational Biology and Medicine program who is working with Adam Siepel in BSCB and Chris Mason at Weill Cornell, won a prestigious Graduate Research Fellowship from the National Science Foundation.

Ilan Gronau, a research associate in the Siepel Lab, was awarded a 2013 fellowship from the Cornell Center for Comparative and Population Genomics (3CPG).

Charles Danko, a postdoctoral scholar in the Siepel Lab, was lead author on a paper in the journal Molecular Cell on an innovative new method for measuring the rates at which genes in the human genome are transcribed.

News from Professor Jacob Bien

Jacob is our newest faculty member, joining BSCB last year. He recently had a paper accepted into the Annals of Statistics. Jacob is a rising star and we will be hearing more from him in the future!

Selected Publications

A Biometry & Statistics major for the class of 2013, Melissa F. Green will be accepting a job with Aon Hewitt as a Global Benefits Analyst in Miami, Florida, after her graduation. During her time at Cornell, Melissa studied both the Tagalog and Spanish languages, as well as studied and interned in Barcelona, Spain. She also served as Co-President of the Cornell Filipino Association and was lead facilitator of [MiX]ed @ Cornell, a workshop series geared to support and foster the multiracial community on campus. Given her international background and experience, Melissa looks forward to pursuing a career whose boundaries extend far beyond a continental business setting.

Faculty & Student Highlight

Professor Haiyuan Yu
Assistant Professor, Department of Biological Statistics & Computational Biology

Haiyuan and his students and postdocs have had a very productive year. His students Jishnu Das from the Computational Biology field and Tommy Vo from the Biochemistry, Molecular and Cell Biology field, together with their colleagues, published a paper in Science Signaling, in which they produced a large-scale verified protein-protein interactome network, StressNet, for stress response and signal transduction pathways in the fission yeast, S. pombe. In this study, they also performed the first systematic cross-species interactome mapping using StressNet and a protein interactome network of orthologous proteins in the budding yeast, S. cerevisiae. By directly testing interactions between proteins in one yeast species and their corresponding binding partners in the other yeast species with yeast two-hybrid assays, they found that about half of the interactions that are traditionally considered “conserved” form modified interaction interfaces that may potentially accommodate novel functions. Based on their analyses, they introduced a number of new concepts and approaches for investigating the evolution of protein interaction networks.

His student Yu Amanda Guo from the Genetics, Genomics and Development field and their colleagues published a paper in American Journal of Human Genetics, in which they examined the relationships between disease mutations within a 3D structurally resolved human interactome network. They found that although recessive mutations on the interaction interface of two interacting proteins tend to cause the same disease, this widely accepted “guilt-by-association” principle does not apply to dominant mutations. Furthermore, their results show that a significant fraction of truncating mutations can generate functional protein products, contrary to the common belief that truncating mutations most often cause complete loss of function. In all, Haiyuan and his students and postdocs published six papers in the past year. In the upcoming year, Haiyuan and his team are aiming to generate a whole-proteome interactome network for S. pombe and to carry out a proteome-wide cross-species interactome mapping effort between the two yeast species. Together with his collaborator, Dr. Steven Lipkin, from Weill Cornell Medical College, Haiyuan also received a new R01 grant from the National Institutes of Health (NIH) to support their exciting new project, in which they will use their 3D network models to determine the functional consequences of hundreds of coding variants in the human genome and to discover driver mutations in several familial cancer types.

Graduate Student Highlight: Jaaved Mohammed
Computational Biology & Medicine, Expected Graduation December 2014

Jaaved is a fourth year student in the Tri-Institutional Training Program in Computational Biology and Medicine. His research is centered on microRNA evolution and he is supervised by Dr. Adam Siepel of BSCB and Dr. Eric Lai of the Sloan-Kettering Institute. For this thesis, Jaaved is cataloging the complete microRNA repertoire across the twelve sequenced Drosophila species using deep-sequenced small RNA libraries, and he is working to characterize the varied evolutionary features of this class of small RNA. These features include characteristics of their emergence and biogenesis, their birth and death across the species tree, and their stabilization or adaptation by forces of natural selection. In order to achieve this, Jaaved uses the board expertise and resources of molecular evolution and phylogenomics from the Siepel Lab, such as, for creating models of birth and death rates and testing for selection. In his free time, Jaaved likes cooking, and listening to and pretending to sing A Cappella music.

Undergraduate Student Highlight: Melissa Green
Biometry & Statistics, Graduated May 2013

A Biometry & Statistics major for the class of 2013, Melissa F. Green will be accepting a job with Aon Hewitt as a Global Benefits Analyst in Miami, Florida, after her graduation. During her time at Cornell, Melissa studied both the Tagalog and Spanish languages, as well as studied and interned in Barcelona, Spain. She also served as Co-President of the Cornell Filipino Association and was lead facilitator of [MiX]ed @ Cornell, a workshop series geared to support and foster the multiracial community on campus. Given her international background and experience, Melissa looks forward to pursuing a career whose boundaries extend far beyond a continental business setting.
Congratulations 2012-2013 Graduates

Outstanding Teaching Assistant Awards

Fall 2012 - Spring 2013

Graduate: Diana Chang
BTRY 4820/6820, Statistical Genomics: Coalescent Theory & Human Population Genomics

Undergraduate: Tom Chen
BTRY 3020, Biological Statistics II

Graduate Students in Computational Biology and Statistics

Lynn Johnson, Ph. D.
Statistical Science
“Topics in Linear Models: Method for Clustered, Censored Data and Two-Stage Sampling Designs”
May 2013 ~ Advisor: Robert Strawderman

Gabriel Hoffman, Ph.D.
Genetics & Development
“Modeling Biological Processes in Genome-wide Association Studies using Regularized Regression”
May 2013 ~ Advisor: Jason Mezey

Biometry and Statistics Undergraduate Majors

Amanda Brown
Mara Calce
Peter Campbell
Elly Chu
Jordan Goldstein
Melissa Fabregas Green
Chong Guo
Shanwenyi He
Jennifer Heumann
Penelope Hobbs (double major)
Julian Homburger (double major)
Brian Krieger
Paul Lee
Hongyu Li
Anthony Maers (double major)
Layne Morowitz
Connor Pardell
Natasha Saidikowski
Jonathan Shtaynberger
Mark Tai
Jingbo Yi (double major)
Yasong Yu (double major)
Charles Zou (double major)
What are they doing now?

**Haim Bar**, PhD Statistics, January 2012, Advisor: James Booth
After graduation Haim worked as Statistical Consultant with the Cornell Statistical Consulting Unit. He recently accepted a position as an Assistant Professor at the University of Connecticut.

**Xin Ma**, PhD Statistics, January 2012, Advisor: Carlos Bustamante
After graduation Xin joined Wing Wong's group at Stanford University as a Postdoctoral Fellow.

**Chuan Gao**, PhD Computational Biology, May 2012, Advisor: Jason Mezey
After graduation Chuan moved to Duke University where he is a Postdoctoral Fellow with in Barbara Engelhardt’s group.

**Caitlin Cunningham**, PhD Statistics, August 2012, Advisor: James Booth
Caitlin is now an Assistant Professor at LeMoyne College in Syracuse.

**Rajendran Narayanan**, PhD Statistics, August 2012, Advisor: Martin Wells
Raj is a Visiting Scientist at the Indian Statistical Institute in Kolkata, India.

**David Clement**, PhD Statistics, January 2011, Advisor: Robert Strawderman
David works as a Quantitative Analyst for SmartOdds in London, UK.

**Benjamin Logsdon**, PhD Computational Biology, January 2011, Advisor: Jason Mezey
Ben moved to Seattle at the end of January 2011 and began a position as a Postdoctoral Research Associate at the Fred Hutchinson Cancer Research Center working with Charles Kooperberg, James Dai, and Alex Reiner.

**Maria Asencio**, MS Statistics, May 2011, Advisor: Giles Hooker
Maria is working as an analyst for Mosaic ATM which produces air traffic management systems.

**Kirsten Eilertson**, PhD Statistics, May 2011, Advisor: Carlos Bustamante
After graduating Kirsten accepted a Biostatistician position at The J. David Gladstone Institutes in San Francisco. She recently accepted a position as a Research Assistant Professor at Penn State University.

**Jeremiah Degenhardt**, PhD Computational Biology, May 2010, Advisor: Carlos Bustamante
Jeremiah is a Computational Biologist at Genentech in the San Francisco Bay Area - Developing and implementing methods for the analysis of whole genome seq, Exome seq, RNA seq and ChIP seq, with a focus on cancer genomics.

**Lin Li**, PhD Computational Biology, May 2010, Advisor: Carlos Bustamante
After graduation in Lin joined Xihong Lin’s group at Harvard as Postdoctoral Research Fellow. He is now a Statistician with Biostat. Solutions, Inc.

**Matthias Kormaksson**, PhD Statistics, August 2010, Advisor: James Booth
After graduating Matthias was hired as a Postdoctoral Associate at the Weill Cornell Medical College where he worked on the analysis of high-dimensional epigenetics of leukemia. Matthias now works for IBM Research in Rio de Janeiro, Brazil.

**Elizabeth Schifano**, PhD Statistics, August 2010, Advisor: Robert Strawderman
After completing her degree Liz spent two years as a Postdoctoral Research Fellow in the Department of Biostatistics at Harvard School of Public Health. She is now an Assistant Professor in the Department of Statistics at the University of Connecticut.

**Kirk Lohmueller**, PhD Computational Biology, 2009, Advisors: Carlos Bustamante and Andrew Clark
After graduating, Kirk accepted a Postdoctoral Fellow position with Rasmus Nielsen’s group at Berkeley. He recently joined the Department of Ecology and Evolutionary Biology at UCLA as an Assistant Professor.

**Vadim Zipunnikov**, PhD Statistics, August 2009, Advisor: James Booth
After completing his degree Vadim was hired as Postdoctoral Associate in the Department of Biostatistics at Johns-Hopkins University where he worked on methods development for functional Magnetic Resonance Imaging data. He is now an Assistant Professor in the same department.
Please consider a gift to the BSCB Excellence Fund!

Contributions in any amount to the BSCB Excellence Fund helps support activities such as student travel to attend conferences, conduct research, bring in internationally/nationally renowned speakers to Cornell.

Gifts can be made online [HERE](#) or by mail. Checks payable to Cornell University

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We want to hear from you!

Our Graduate and Undergraduate Alumni are very important to us! Please send us updates on your job placement, graduate studies or career choices.

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DEPARTMENT OF BIOLOGICAL STATISTICS AND COMPUTATIONAL BIOLOGY
The faculty of BSCB are located on the Ithaca campus in Weill Hall, Comstock Hall and Biotechnology Building