

COLLEGE OF SCIENCE DEPARTMENT OF STATISTICS

# META

SUMMER 2017  
ALUMNI NEWSLETTER



**Oregon State**  
University

# META

## SUMMER 2017

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2017 has been a  
phenomenal year



Oregon State University  
College of Science



# FROM THE HEAD

**Virginia (Ginny) Lesser**  
Department Head

Welcome to the second issue of the Department of Statistics newsletter! We received much supportive feedback after our first issue in summer 2015. We look forward to producing a newsletter every year or two to give you updates from the department, but you can keep up with the latest news on our website, [stat.oregonstate.edu](http://stat.oregonstate.edu).

We have had an exciting two years. After being located in the basement of Kidder Hall for more than 50 years, we moved our faculty, main office and most of our graduate students from Kidder Hall to the second floor of Weniger Hall. Faculty are happy to have offices with windows to the outside world. We have space for our library, a kitchen meeting place and a larger computer laboratory. Thanks to the generous support of our alumni and friends, your gifts were put to great use and helped us purchase additional computers for the lab. This was clearly needed since we now have more than 30 M.S. students and nearly 25 Ph.D. students!

We have been actively working on the development and delivery of our online data analytics programs. We appreciate the feedback we received from alumni, especially those working in data

analytics, who shared their thoughts on coursework that would have been helpful in their careers.

Using this feedback, along with our program reviews of other programs in this area, we worked with OSU's School of Electrical Engineering and Computer Science to develop an M.S. in Data Analytics. This 45-credit program is offered entirely online, and includes a mix of statistics classes, developed and taught by our faculty, and three computer science classes developed by computer science faculty specifically for this program. This degree includes a capstone project, in which teams of students, under the direction of an advisor, analyze complex data to address an important question of interest, culminating in a written report and oral presentation.

If you, as our alumni or friends, could offer these students any opportunities to work with large data from your business, please let us know! We are looking to partner with industries, businesses and government agencies to provide analytical assistance to your organization as well as provide our students with real-world problems to study and solve.

We also offer an online Graduate Certificate in Data Analytics, which includes 18 credit hours of core courses from the master's program. Both programs launched in fall 2016, and we are encouraged by the strong interest we have seen so far. The online M.S. and Certificate programs are designed to appeal to graduates seeking to upgrade their knowledge and qualifications while remaining in employment.

In fall 2017, we plan to offer a newly developed quantitative literacy course that offers students an alternative to fulfill OSU's quantitative requirement.

In this newsletter, you will read about the many achievements of our talented faculty and students. We welcome Katie McLaughlin and Javier Rojo, who joined our department this year. Tony Reyna joined us as part-time office manager.

Thanks for all your support via email. I hope to see many of you this summer at the Joint Statistical Meetings in Baltimore. Please join us for an Alumni Reception August 1 from 5:30-7 p.m. at the Hilton Hotel, 401 Pratt Street.

# FACULTY

Excellence in research, teaching and leadership.

## Welcome new hires!

### Katherine McLaughlin

Assistant Professor

Dr. McLaughlin completed her Ph.D. in statistics at the University of California at Los Angeles in 2016. Her thesis focused on a rational-choice preferential recruitment model for respondent-driven sampling. Working collaboratively with the Hard-to-Reach Population Methods Research Group and the World Health Organization, she developed new statistical methodology geared toward improved estimation of hidden populations, including those at high risk for HIV/AIDS.

McLaughlin's research interests are in the areas of survey sampling methodology, social network analysis, network sampling and social science applications of statistics. She earned a B.A. in statistics and classical civilization from the University of California, Berkeley in 2011.

### Javier Rojo

Korvis Professor of Statistics

Dr. Rojo joined the Department as the inaugural Korvis Professor of Statistics in January 2017. He served as chair of

the Department of Mathematics and Statistics at the University of Nevada at Reno from 2013-2016 and held the Seneca C. and Mary B. Weeks Endowed Chair in Statistics. Prior to that, Rojo was a professor of statistics at Rice University from 2001 to 2013. He started his academic career at the University of Texas, El Paso, as an assistant professor in 1984.

Rojo has made significant research contributions in the areas of survival analysis, nonparametric function estimation, statistical decision theory, random matrices and dimension reduction techniques. He has authored more than 75 research articles in top-ranked statistics journals and has edited four books, including *Selected Works of E.L. Lehmann* by Springer-Verlag. He served as editor of the *Journal of Nonparametric Statistics* from 2007-2010 and organizes and chairs *The Lehmann Symposium*, a series of talks on theoretical statistics in honor of renowned statistician Erich L. Lehmann, who was Rojo's doctoral advisor at the University of California, Berkeley.

Rojo is an elected fellow of the Institute of Mathematical Statistics, the American Statistical Association

(ASA), the American Association for the Advancement of Science and the International Statistical Institute. In 2010, he received the Don Owen Award from the ASA. The award is presented to a statistician who embodies the three-fold accomplishments of excellence in research, statistical consultation and service to the statistical community.

Rojo's commitment to increasing student diversity and helping low-income, minority and first-generation students to excel in mathematics and statistics has deep roots in his personal life.

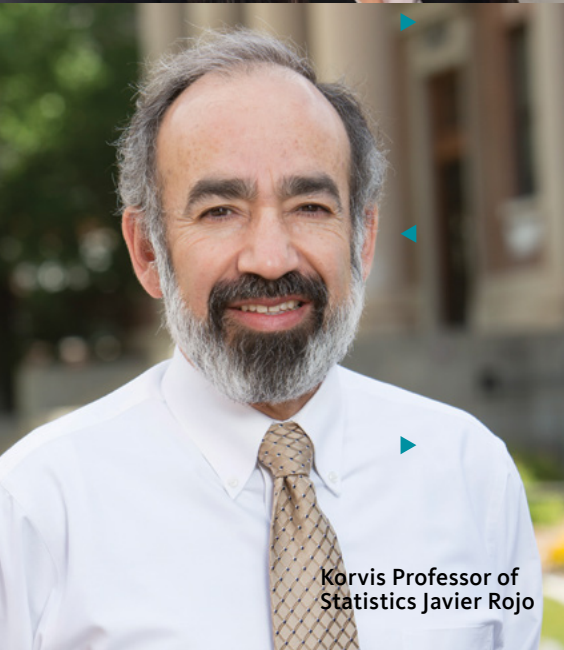
Born to working-class Mexican parents, Rojo, a first-generation college student, completed his schooling in Ciudad Juárez. One of five children, Rojo worked "as a painter, a railway worker and a gas station attendant in high school" to help pay for his education.

Having excelled in mathematics at school, Rojo attended the University of Texas, El Paso, where he earned a bachelor's degree in mathematics. He earned a master's degree in statistics from Stanford University and a Ph.D. in statistics from the University of California, Berkeley, in 1984.

"JULI'S  
UNPARALLELED  
ENTHUSIASM  
ENGAGES HER  
STUDENTS." ▶



Assistant Professor  
Katherine McLaughlin



Korvis Professor of  
Statistics Javier Rojo

## Awards and honors

Our faculty swept the 2017 Winter Teaching Awards in the College of Science!

Associate Professor **Sarah Emerson** won the Loyd F. Carter Award for Outstanding and Inspirational Teaching in Science, Graduate.

Instructor **Juliann Moore** was honored with the Loyd F. Carter Award for Outstanding and Inspirational Teaching in Science, Undergraduate. Moore fell in love with statistics as a psychology undergraduate at Oregon State after taking ST 351 and 352 with Jeff Kollath, and went on to pursue an M.S. in Statistics, graduating in 2011. Now in her dream job, Juliann has enjoyed being involved in iteratively improving statistics classes, particularly ST 201. The improvements have had a positive impact on student grades, reducing the DFW rate (the rate at which students receive D-grades, F-grades or Withdrawals) by 14%.

Associate Professor **Lan Xue** received the 2015 Faculty Senate Promising Scholar Award, which recognizes the

scholarship of junior faculty.

Professor **Alix Gitelman** was awarded the 2015 D. Curtis Mumford Faculty Service Award. The award recognizes individuals for exceptional, ongoing and dedicated interdepartmental, interdisciplinary and interinstitutional service to the faculty and to OSU.

Assistant Professor **Charlotte Wickham** received first place for her interactive data visualization project in the CrowdAnalytix visualization global competition sponsored by the EMC Corporation.

Assistant Professor **Debashis Mondal** received the 2015 Young Researcher Award in Theory and Methods from the International Indian Statistical Association. Mondal became an elected member of the International Statistical Institute in 2016.

College of Science Dean and Statistics Professor **Sastry G. Pantula** was honored for his outstanding and extensive service to the statistics profession with the 2016 Paul Minton Service Award from the Southern Regional Council on Statistics at the 2016 Joint Statistics Meetings in Chicago.

## Congratulations! Promotions and tenure

**Claudio Fuentes** has been promoted to associate professor with tenure in 2017. His research interests include clustering and classification problems, Bayesian methods and applied statistics. Fuentes has a joint appointment in the College of Public Health and Human Sciences.

**Yuan Jiang** has been promoted to associate professor with tenure in 2017. His research focuses on the areas of data integration, genome-wide association studies and statistical genetics. Jiang teaches courses in genomics research and data analysis.

**Debashis Mondal** has been promoted to associate professor with tenure in 2017. He pursues research in spatial and environmental statistics, Markov chain Monte Carlo and time series analysis. Mondal received a National Science Foundation (NSF) CAREER Award for his project “New Directions in Spatial Statistics” (2013–2018).

**Sarah Emerson** has been promoted to associate professor with tenure in 2016. Her research has involved projects in several complementary areas of statistical research: clinical trial design, biomarker evaluation and statistical genetics applications, as well as methodological and theoretical work in high-dimensional data settings and statistical learning. Sarah was a co-PI on a grant funded by the National Institutes of Health, to work collaboratively on developing statistical methodology and visualization techniques for next-generation genome-sequencing data.

Emerson is a highly dedicated and effective teacher, who has thrice received the department’s Outstanding Teaching Award for “Significant

Contribution to the Educational Experience of Statistics Students” from the department’s students. She has been closely involved with developing the curriculum and the course contents for the department’s newly launched master’s program in Data Analytics.

**Jeffrey Kollath** was promoted to senior instructor II in 2016. He has been primarily responsible for teaching the Introduction to Statistical Methods I course (ST 351) and the Introduction to Statistical Methods II course (ST 352). He has provided mentorship to a long list of our graduate teaching assistants who support the computer laboratories associated with this course. In 2006, Kollath developed these classes as the first courses that our department offered online. He has consistently worked on improving these classes using modern technology. His innovations in class have not gone unnoticed. In 2015, Kollath received the College of Science’s Frederick H. Horne Award for Sustained Excellence in Teaching.

### On the road: Conference highlights

Assistant Professor **Duo Jiang** was an invited speaker at the 2016 International Chinese Statistical Association (ICSA) Applied Statistics Symposium, and presented her research on “Adaptive multiple-trait association detection with population structure adjustment” at the conference.

Assistant Professor **Thomas Sharpton** was an invited speaker at the 2016 General Meeting of The Obesity Society, which was held in New Orleans, LA. He spoke about “How Microbiomes are Distributed Across Space, Time, and Host Physiology.” Sharpton was also an invited speaker and presented his research at the 2017 Plant and Animal Genomics

Conference in San Diego, California; the 2016 MetaCenter Meeting, held at the University of Oregon; and the 2016 International Conference on Biological Ontology at OSU.

**Sarah Emerson** was a speaker at the Corvallis Women in Data Science (WiDS) satellite event on February 3, 2017, organized by the Department of Mathematics. Emerson’s talk was a part of Stanford University’s 2017 WiDS Conference. The conference, hosted at Stanford and at over 75 locations worldwide, focused on the latest data-science related research, applications in multiple domains and how leading-edge companies are using data science for success.

Assistant Professors **Sharmodeep Bhattacharyya** and **Katherine McLaughlin** presented their research at the 2017 Center for Genome Research and Biocomputing (CGRB) spring conference on April 7 on campus. McLaughlin presented her research on “Accessing Hidden Populations at High Risk for HIV/AIDS Using Respondent-Driven Sampling.” Bhattacharyya’s talk was titled, “Union-of-Intersection (UoI) methods for Data-Driven Discovery and Prediction.” Assistant professor Duo Jiang served on the organization committee for the 2017 CGRB spring conference.

**Javier Rojo** delivered the Presidential Invited Address at the 2017 Conference of the Western North American Region of the International Biometric Society (WNAR) in Santa Fe, New Mexico, June 25–28. Graduate students Matthew Higham and Camden Lopez presented their research and submitted papers as part of the student paper competition. Sarah Emerson is the current president of WNAR.

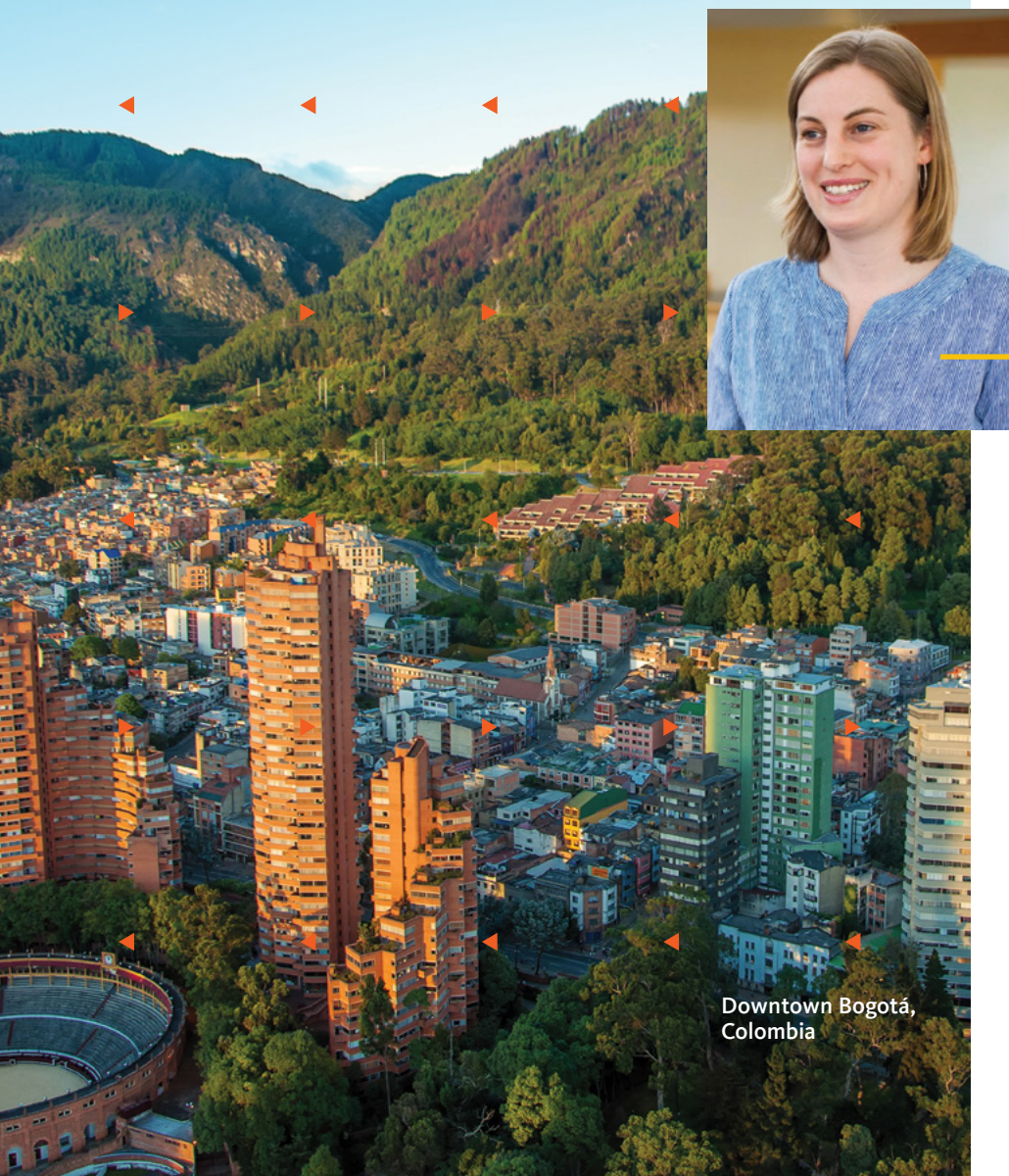
Banff National Park,  
Canada

## Taking statistics around the world

Assistant Professor **Yuan Jiang** visited the National University of Singapore on a collaborative research project for three weeks in April-May 2016.

Assistant Professor **Debashis Mondal** is an organizer of the workshop “Challenges in the Statistical Modeling of Stochastic Processes for the Natural Sciences,” July 9-14, 2017 in Banff, Canada.

Mondal organized and spoke at an invited session on *Novel Methods and Applications in Spatial and Spatiotemporal Statistics* at the 2016 International Biometric Conference in Victoria, Canada. He presented a seminar on spatial statistics at the Department of Statistics and Actuarial Science at Hong Kong University in December 2016.

Downtown Bogotá,  
Colombia

Assistant Professor **Charlotte Wickham** was an instructor for Data Science in R, a 10-hour module, as part of the M.S. in Analytics at Universidad de los Andes, Bogotá, Colombia.

Assistant Professor **Claudio Fuentes** visited the Pontifical Catholic University of Chile to collaborate with researchers.

Assistant Professors **Duo Jiang** and **Yuan Jiang** co-organized an invited session on Statistical innovation for network analysis at the 2016 International Biometric Conference in Victoria, Canada. Duo Jiang also presented her work in this session.

Professor **Virginia Lesser** will speak at the 2017 European Survey Research Organization in Lisbon, Portugal on using non-probability panels vs. probability surveys to collect public opinion data.

## New grant to train undergraduate students in data analytics

The department was awarded its first Research Experiences for Undergraduates (REU) grant this year. The National Science Foundation's REU program supports comprehensive, hands-on research experience for undergraduate students in the STEM fields, and awards funds to initiate and conduct projects that engage a number of students in research.

Associate Professors **Lan Xue** and **Yanming Di** and Assistant Professors **Thomas Sharpton** (PI; joint appointment with microbiology), **Duo Jiang** and **Yuan Jiang** received the NSF REU grant from the American Statistical Association. The grant will fund a 10-week research and training opportunity for

undergraduate students.

REU students will gain exposure to the entire data analysis process as it relates to biological research. Students will analyze DNA sequence data and use statistical methods to determine how the types of bacteria that live in the gut, known as the gut microbiome, influence human health. The project will prepare students to capitalize on the growing professional opportunities in data analytics.

This new REU in the area of microbiome informatics research is a pivotal part of the Oregon State Microbiome Initiative (OMBI, see next page) and is slated to advance education and research in the statistical, biological and computational sciences at OSU. OMBI launched this spring.

# RESEARCH

## Innovations in research + teaching

### Summer research for undergraduates

Professor Javier Rojo has moved his award-winning Research for Undergraduates Summer Institute of Statistics program site to Oregon State from the University of Nevada, Reno.

In 2003 as a professor at Rice University, Rojo started the country's first Research Experiences for Undergraduate (REU) Program in the field of statistics, which has been extremely successful in recruiting, training and guiding underrepresented minority and economically disadvantaged students towards

advanced degrees in mathematics and statistics.

The institute conducts a 10-week intensive summer program for the study of statistics and its applications for a cohort of 12-15 students every year.

The program has been supported and funded by the NSF and the National Security Agency (NSA) for the last 14 years. Owing to Rojo's sustained efforts and leadership, the American Mathematical Society (AMS) selected his REU program for its "Mathematics Programs That Make a Difference" award in 2014.

## New research grants

"Risk and uncertainty quantification in marine science and policy"

\$3,000,000

Collaborators: OSU Colleges of Earth, Ocean & Atmospheric Sciences; Engineering; and Liberal Arts; OSU Departments of Fisheries and Wildlife and Mathematics

"Using phylogenetic structure to clarify the evolutionary ecological distribution of microorganisms"

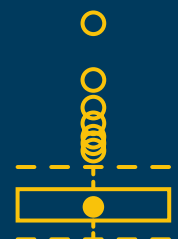
\$732,000

Collaborators: OSU Department of Microbiology and the University of Illinois Urbana-Champaign

"Analysis of genes affecting plant regeneration and transformation in Poplar"

\$4,000,000

Collaborators: OSU Colleges of Forestry and Engineering; OSU's Science & Math Investigative Learning Experiences; Oak Ridge National Laboratory; industry.





Professor **Alix Gitelman** is co-PI on a five-year, \$3 million, multidisciplinary National Science Foundation Research Traineeship (NRT) program. Lorenzo Ciannelli, a professor of ocean ecology, is the principal investigator on the project. The grant, “Risk and uncertainty quantification in marine science and policy,” is aimed at advancing graduate education training in STEM fields and will prepare a new generation of natural resource scientists and managers to study, protect and manage ocean systems. The program emphasizes the use of data science and mathematical and statistical models to address climate and policy problems in marine systems. The first cohort of graduate trainees started in September 2016, and a second cohort is being recruited.

**Thomas Sharpton**, an assistant professor of microbiology and statistics, received a three-year, \$732K NSF grant for his proposal, “Using phylogenetic structure to clarify the evolutionary ecological distribution of microorganisms.” The research will focus on developing analytical methods that clarify how communities of microorganisms have evolved in the context of their ecological conditions, and on discovering evolutionary groups of microbes that are essential to the ecosystem.

Assistant Professor **Yuan Jiang** is co-PI on a five-year, \$4 million collaborative grant from the NSF for a project on genetically engineered crops, “Analysis of genes affecting plant regeneration and transformation in Poplar.” Along with Principal Investigator Steven Strauss from the College of Forestry, Jiang and others will investigate better methods of mapping the genes that control the process of regeneration and transformation by using DNA sequence databases, imaging and computations. The project is developing new and more efficient image acquisition and analysis software that will enable scientists in many fields to study plant regeneration and related processes more rapidly and precisely.

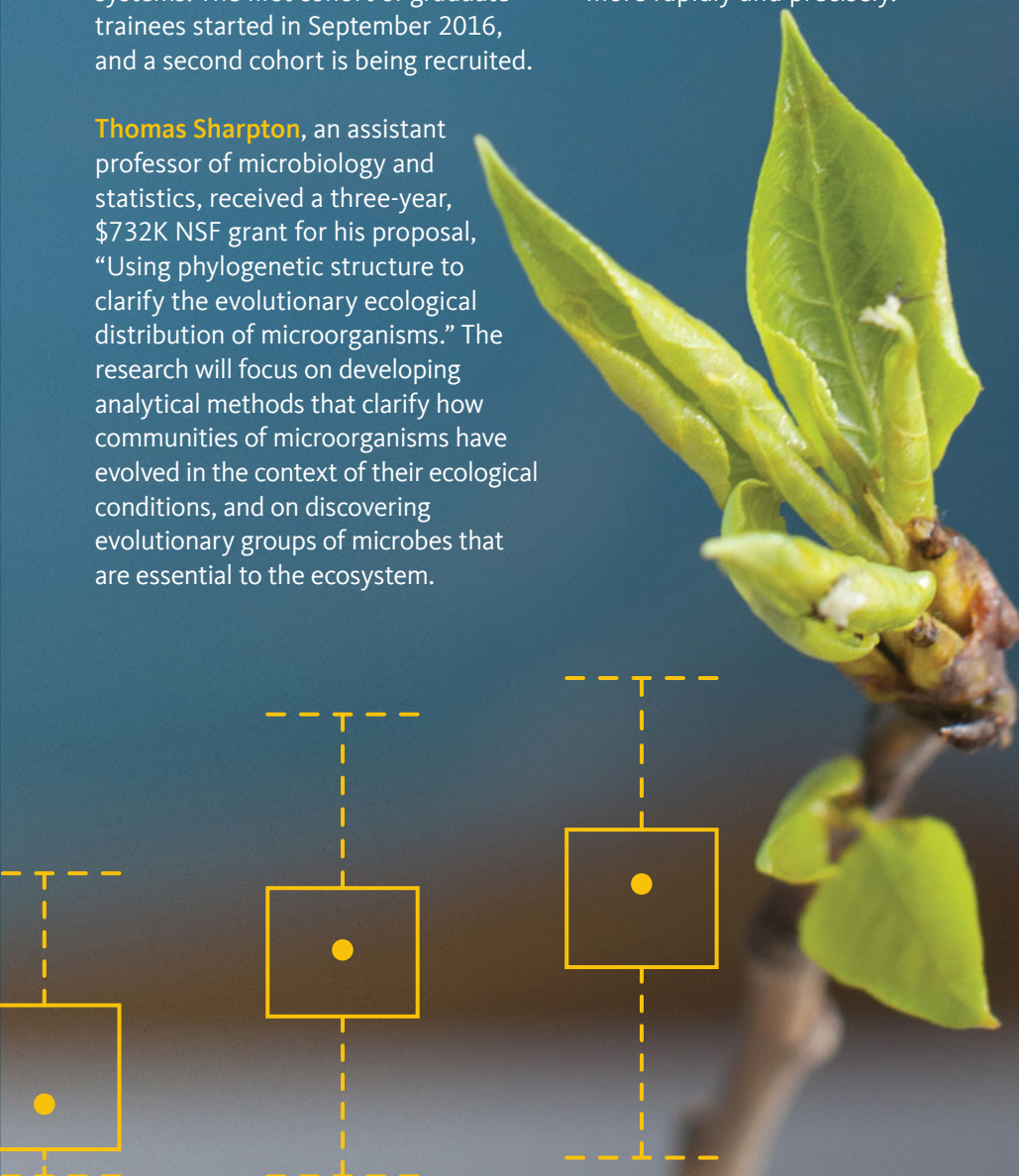
## The science of microbiomes: Oregon State University Microbiome Initiative

**Thomas Sharpton**, assistant professor of microbiology and statistics, is leading the recently launched OSU Microbiome Initiative (OMBI), a university-wide, National Science Foundation and Oregon State University supported education and research program that will open up new scientific and environmental applications of microbiome science.

Sharpton represented OSU at a White House announcement of the \$121 million National Microbiome Initiative (NMI) by the Office of Science and Technology Policy last May. He is a nationally recognized expert on the human gut microbiome and its relation to health.

Microbes are everywhere, from humans to animals, crops, soil, air and oceans, and they have gripped the imagination of both scientists and the public, who are striving to grasp their impact on human and environmental health. For example, the Bill & Melinda Gates Foundation is investing \$100 million in research that will investigate the microbiomes of guts and soils to fight childhood malnutrition and crop diseases respectively.

OMBI will bring together researchers from various disciplines to understand the intricacies of microbial ecosystems and the role of the microbiome in human health and disease; collaborate on solutions for human and environmental health; diversify the field of microbial science; and disseminate and develop microbiome research methods.



One of the oldest statistics programs in the country, OSU Statistics recently took the big data plunge by launching two new online programs that teach students across the country how to turn massive troves of data into practical and understandable information. The department has started an online Master of Science and a Graduate Certificate in Data Analytics programs, the first of their kind in Oregon.

Job surveys for the top 10 best jobs in the last three years have consistently ranked statistics-related careers very high on a list based on the criteria of income, growth outlook, stress and environmental factors. The message is unambiguous: talented statisticians and data geeks rule the market.

The 2017 jobs report released by the website CareerCast.com has even better news: Statistician tops the list as the No.1 job, and other quantitative and data-focused jobs follow close behind: Operations Research Analyst is No. 3 and Data Scientist is No. 5.

The science and art of mining and distilling useful information from huge datasets has never been in greater demand, and the department is doing its share to meet the surging need for data analytics skills in this era of data explosion.

The Bureau of Labor Statistics projects demand for statisticians to grow 27 percent nationwide between 2012 and 2022. An eye-opening 2011 report from McKinsey Global Institute indicates there could be a shortage of 140,000-190,000 analytically skilled workers by 2018. A routine search reveals hundreds of openings for data science jobs in Oregon, ranging from iconic Portland-area companies such as Nike and Intel to fast-paced startups and a myriad of environmental,

# ONLINE DATA PROGRAMS PREPARE STUDENTS FOR TOP JOBS

healthcare and consulting companies. All trends indicate that if you possess a love for data and a good head for numbers, a bright future beckons.

OSU statisticians are adept at dealing with complex and messy data, and many have extensive experience mining data for insights across the fields of environmental science, agriculture, forestry and engineering. The courses in the new data analytics program are taught by award-winning and outstanding research faculty who have exposure to real data and extensive hands-on experience.

The online programs are offered through Oregon State Ecampus, which consistently ranks as one of the nation's best providers of online education. In January 2017, OSU's online programs were ranked in the top 10 for the third year in a row by *U.S. News & World Report*.

The data analytics committee in the department, as well as faculty from the School of Electrical Engineering and Computer Science, have created a rigorous, interdisciplinary curriculum that combines statistics, computer science, mathematics and plenty of real world data projects to give students deep and valuable experience with how to grapple with large amounts of variables and expose the underlying data structure. The objective is to impart a foundation in statistical reasoning, software and programming skills, and real-world experience that will make the graduates appealing to employers in a variety of industries.

The M.S. program finishes up with a capstone project, a concrete example students can provide to an employer as evidence that they are ready to hit the ground running.

Assistant Professor of Statistics Charlotte Wickham, who is teaching online courses in the foundations of data analytics and data visualization, observed that the 45-credit, two-year master's program and the 18-credit, one-year graduate certificate program are designed for students who love playing with data in Excel and want to take their skills to the next level. Students will be trained in advanced computational and statistical skills spanning the collecting and storing of data to modeling, analyzing, and efficiently communicating results to stakeholders.

Wickham has taught diverse groups of students, some of whom are enrolled in the online statistics programs and others who hail from disciplines such as fisheries and wildlife and ecology. Statistics faculty Sarah Emerson and Katherine McLaughlin are teaching other OSU online courses in data analytics this year.

Wickham has been pleasantly surprised by the discoveries she has made while teaching her first course in the program. While the learning objectives and coursework are as rigorous as a traditional statistics class, the invisibility of one's students can be a tad disorienting. However, there are strong positives in a virtual classroom, chiefly among them being high levels of peer interaction and an enthusiastic and collaborative learning atmosphere.

"Students have been really forward with asking questions in the online discussions, and not having to respond on your feet means my responses are generally more complete." She added, "I also really like seeing the resources that students go out and find on their own. I'm sure on-campus students do this too, but it's less likely they share them with me and the class."

Data analytics can be used to address many salient global issues, such as drug discovery, climate change and (inset) epidemics of infectious diseases in urban environments.

## Jianfei Zheng Destination: Statistics

Fifth-year Ph.D. student **Jianfei Zheng** found his way to statistics after completing a master's in civil engineering at Oregon State. After finishing his undergraduate studies at the Beijing Institute of Technology in China, Zheng moved to Corvallis to pursue graduate education in transportation engineering.

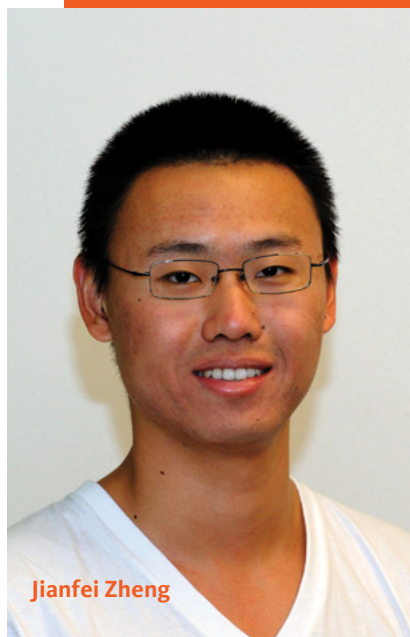
His interests shifted from engineering to statistics when he took a number of statistics classes in the department to learn more about analyzing large amounts of transportation data. When his engineering advisor moved to a different university, Zheng happily transferred to the statistics Ph.D. program.

Although he had some catching up to do in mathematics, Zheng has gone on to shine academically. He received the 2016 Li Award for overall excellence in the department.

"I got a lot of support from my professors and teaching assistants. I am also a really quick learner and I never question my ability to learn new stuff," said Zheng.

With his advisor, Associate Professor Lan Xue, Zheng is pursuing research in the area of longitudinal studies, with a focus on missing data and ways to address those gaps by collecting independent additional information.

Zheng enjoys swimming and playing basketball, frisbee and video games in his free time. He hopes to work as a statistician in industry after completing his doctorate. Zheng absolutely loves teaching in the department and would like to teach statistics to employees in industry.



Jianfei Zheng

# Meet our STUDENTS

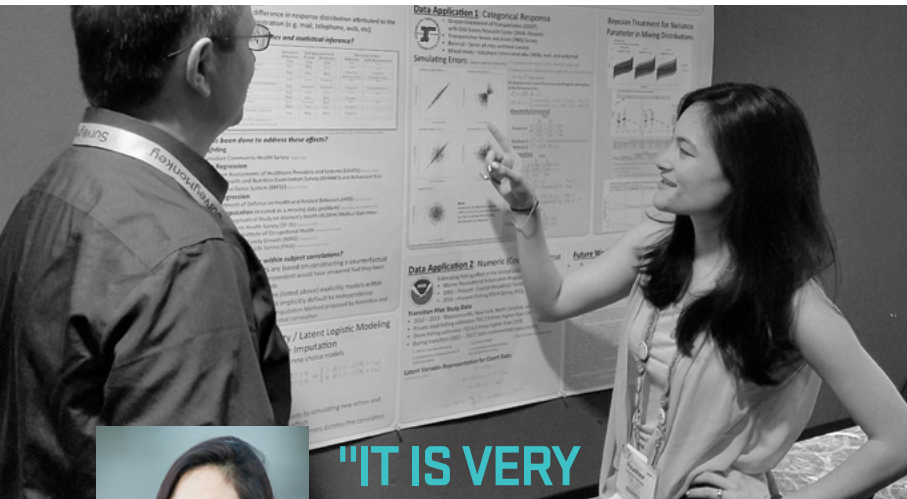
## Awards and honors

Doctoral student **Heather Kitada-Sullivan** won the best poster award at the 2015 Joint Statistics Meeting in the American Statistical Association Survey Research Methods Section for her poster, "Adjusting for effects of survey model differences across a longitudinal mixed-mode study." She also received a travel award to attend the 2017 American Association for Public Opinion Research Conference in New Orleans, LA.

Heather also led her team to victory in the ResearchHack 3.0 competition at the 2017 annual conference of the American Association of Public Opinion Researchers. She wrote a Shiny app that provided innovative and useful insight into data from the U.S. Census Bureau.

Doctoral student **Kai Li** received a travel award to attend the 2016 International Biometric Society Conference in Victoria, BC, Canada.

Graduate student **Chuan Tian** received a travel award to attend the 2016 Summer Institute in Statistics for Big Data at University of Washington in Seattle, WA.



Heather Kitada-Sullivan

**"IT IS VERY IMPORTANT TO SHOW CHILDREN THAT SCIENTISTS ARE DIVERSE."**

### *Heather Kitada-Sullivan* It starts with statistics

Fifth-year Ph.D. student **Heather Kitada-Sullivan** enjoys working in both statistics and the wider world of science communication, outreach and advocacy. A native of Pasadena, a third-generation Japanese-American and the eldest child of a dentist couple, Heather grew up learning and performing Japanese dance in Pasadena's Buddhist temples with her younger sister, competing in science fairs and taking part in Girl Scout activities.

She came to Oregon in 2008 to study for an undergraduate degree in mathematics at Lewis and Clark College in Portland and stayed on to pursue a Ph.D. in statistics at OSU.

Passionate about undergraduate teaching, Heather has amassed tons of teaching experience. She has taught statistics courses at OSU and

at OSU Cascades in Bend. She enjoys connecting with students and watching them master the material.

Alongside her doctoral research, Heather has earned a Graduate Certificate in College and University Teaching (GCCUT), a two-year program which she completed in a year. She serves as a graduate teaching assistant for the GCCUT program and was the lead fellow at OSU's Center for Teaching and Learning where she developed curriculum for training new graduate teaching assistants in pedagogy and school policies. Heather was recognized and honored for her leadership in education at OSU at the Board of Trustees dinner.

Heather was awarded the Rose Hill Foundation Statistics Fellowship for academic achievement. Her graduate research focuses on sampling and survey methodology. With her advisor

Sarah Emerson, she is exploring statistical methods to correct for biases that stem from different modes of collecting surveys (telephone, mail and web) as well as different models to estimate bias.

Heather's decision to study for an advanced degree in statistics, she says, owes a lot to Emerson's support.

"The reason I am so excited to work with her is because she is a great researcher and she has this drive to find answers. She is also very creative," remarked Heather.

An out-and-out numbers enthusiast, Heather married her statistics classmate, Nick Sullivan, on Pi Day (March 14, 2015). Sullivan currently works at John Deere in Iowa.

She has done a lot of statistical consulting for other scientists and for different companies, and recently authored a paper with area physicians after they reached out to her for statistical assistance on a patient study.

Heather, who wants to make the most of her experience at OSU, is also an OMSI (Oregon Museum of Science and Industry) Science Communication Fellow. In this role, Heather participates in STEM outreach events for young children.

"It is very important for OMSI to show children, especially young girls, that scientists are diverse. Children see us and they realize that there are so many different types of people who can be scientists and it broadens their horizons," observed Heather.

Heather wants to continue her mission of teaching and outreach in statistics. Her dream is to teach at a liberal arts college and make a difference in the lives of her students.

# ALUMNI

Making us proud



"THIS PLACE  
IS FULL OF  
MEMORIES  
FOR ME."

Osama Hussien ('89)

## Egyptian alumnus visits Oregon State after 25 years

**Osama Hussien** (Ph.D. '89) took a trip down memory lane while visiting Oregon State University after 25 years. Currently a professor of statistics at Alexandria University in Cairo, Egypt, Hussien returned to Corvallis for the 2016 International Indian Statistical Association (IISA) Conference (see page 16) in August, co-organized by the Department of Statistics. He was struck by how much the campus had changed.

"This place is full of memories for me. I had a very nice time here," observed Hussien, who had initially made his way into the basement of Kidder Hall before discovering that the Statistics Department had moved to Weniger Hall.

Hussien eagerly discussed the ties between Egyptian statistics and OSU Statistics in the 1980s. He was part of a cohort of seven Egyptian students in the department, most of whom, like Hussien, had graduated from the Institute of Statistics in Cairo before coming to OSU. They followed in

the footsteps of the dozens of other Egyptian students who had made the journey to OSU before them.

"The trend began in the seventies. I actually know the first two Egyptian students who got their doctorates in statistics at OSU," remarked Hussien.

Hussien's path to OSU Statistics was slightly more circuitous. He first enrolled at the University of Iowa but found the place intolerably cold. Hussien remembered Justus Seely, former chair of OSU Statistics, who had visited Cairo to give a talk at the Institute of Statistics in the early eighties. He called Seely, who encouraged him to transfer to the Ph.D. program in statistics at Oregon State.

Co-advised by David Birkes and David Thomas, Hussien completed a thesis in the field of robust statistics. He fondly recalled the outstanding teaching by Don Pierce and the warmth and generosity of his advisors.

After completing his Ph.D., Hussien joined Alexandria University as an

assistant professor. He has also taught statistics at universities in Saudi Arabia, Libya and Lebanon.

## Statistics alumnus supports faculty excellence

When asked about memories of his time as a master's student in the department, **Rich Carone** ('72) quips, "It hasn't quite been 50 years, so I should be able to remember something!" Endowed with a ready sense of humor and a gift for technological entrepreneurship, Carone is a well-known figure and change-maker in Corvallis where he is the CEO of Korvis Automation, a high-tech equipment manufacturing company which has about 125 employees.

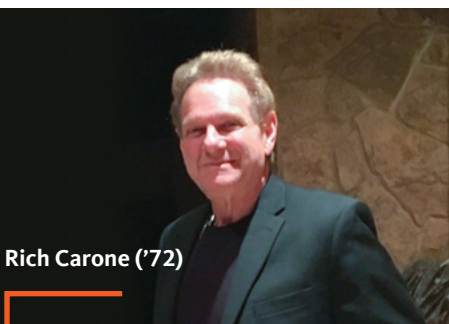
Korvis is a leading technology and manufacturing company based in Oregon with additional offices in Singapore and Shanghai. Housed in a 182,000-square-foot complex, Korvis is a manufacturing powerhouse producing complex machines for markets as diverse as life sciences, renewable energy, electronics, optics,

3D printing and semiconductors. Korvis was recognized as the Oregon Manufacturing Company of the Year for medium-sized businesses in 2011 by *Portland Business Magazine*.

Arriving at Oregon State from the University of Utah, where he earned a B.S. in mathematics, Carone went on to make Corvallis his home. Except for a four-year stint in the U.S. Air Force as a software engineer, he has lived in Corvallis since 1970.

Carone spent a year in the statistics department, and the classes and professors have left a lasting impression. His favorite professors then included Justus Seely, Fred Ramsey and David Butler. The latter was a young instructor at the time who wound up becoming a close associate of Carone and works at Korvis. Butler is currently professor emeritus in the department.

Over the years, Carone has deepened his association with Oregon State. He has hired many OSU statistics and engineering graduates at Korvis and currently serves on the College of Science Board of Advisors. Carone admires the “mathematical maturity and fantastic programming skills” of OSU statistics alumni who have worked at Korvis over the years.



Rich Carone ('72)

“Having both public and private support for pure research is very useful.”

He recently established the Korvis Professorship to provide support for science faculty in the College of Science, especially for faculty members in physics or quantitative sciences. The endowed position is for a duration of three years. Javier Rojo, who joined the department this year, is the inaugural Korvis Professor of Statistics.

Donors of endowed professorships provide critical support that enhances the research, teaching and service of the university’s most distinguished faculty. Endowed professorships also serve as a prestigious recruiting tool helping to attract and retain top research scientists in a university.

Carone is characteristically self-effacing about the potential impact of his gift. He cares about advancing research in the field of statistics and in the world of science more generally.

“It is important to have pure research and having both public and private support for that is very useful,” said Carone. “It is hard for private businesses, like Korvis, to do science and research because we don’t get paid for it and our stock holders have no patience for that. So, what we can do is support pure research at the university and apply that science in our work.”

Carone started his career in Corvallis with Hewlett Packard in the late seventies as a software manager. Beginning in the late eighties, he has been the CEO of tech companies that were remarkably ahead of the curve. Carone was a co-founder of Intelledex and Accu-Fab Systems, both early robotics companies. The latter was a producer of custom robotics systems. He set up Korvis in 2002 and currently puts his education in operations research acquired at OSU over 40 years ago to good use as a manager of manufacturing.

## Congratulations to our graduates on their recent career successes!

**Addison James** (Ph.D. '16) is a data scientist at Intel Corporation in Beaverton, Oregon.

Thesis: "Information Criterion for Nonparametric Model-Assisted Survey Estimators."

Co-Advisors: Virginia Lesser, Lan Xue

**Joe Maurer** (Ph.D. '16) is a statistician at W.L. Gore & Associates in Flagstaff, Arizona.

**Lu Wang** (Ph.D. '16) is a postdoctoral researcher in vaccine and infectious disease at Fred Hutchinson Cancer Research Center.

Thesis: "Nonparametric Estimation of Additive Models with Shape Constraints."

Advisor: Lan Xue

**Bin Zhuo** (Ph.D. '16) works as a biostatistician at Celerion Inc., a pharmaceutical company in Lincoln, Nebraska.

Thesis: "Higher-level Analysis of RNA-Seq Experiment: Multiple Data Sets and Multiple Genes."

Advisor: Yanming Di

**Shivani Patel** (M.S. '17) is a data scientist at Concur Technologies in Bellevue, Washington.

## Milne lectures

The Spring 2017 Milne Lecture was presented by **Michael I. Jordan**, the Pehong Chen Distinguished Professor in the Department of Statistics and the Department of Electrical Engineering and Computer Science at the University of California, Berkeley. In his talk, "On Computational Thinking, Inferential Thinking and Data Science," Jordan discussed how the rapid growth in the size and scope of datasets in science and

technology has created a need for novel foundational perspectives on data analysis that blend the inferential and computational sciences.

The Fall 2015 Milne Lecture on November 23 featured **Peter Bickel**, renowned statistician and emeritus professor at the University of California, Berkeley. His talk, "Statistics: The transfer science, Big Data and an experience with ENCODE" addressed the new challenges posed by "big" and

complex data as well as ENCODE, a public research project that aims to identify all functional elements in the human genome and serves as one of the follow-ups to the Human Genome Project.

The Milne Lectures in Mathematics, Statistics, and Computer Science are a collaborative series of distinguished lectures launched in 1981 to honor founding Mathematics Department Chair William Edmund Milne, a pioneer in numerical analysis.

+ [math.oregonstate.edu/milne](http://math.oregonstate.edu/milne)

# EVENTS

## A year of arts and science

### Microbiome events

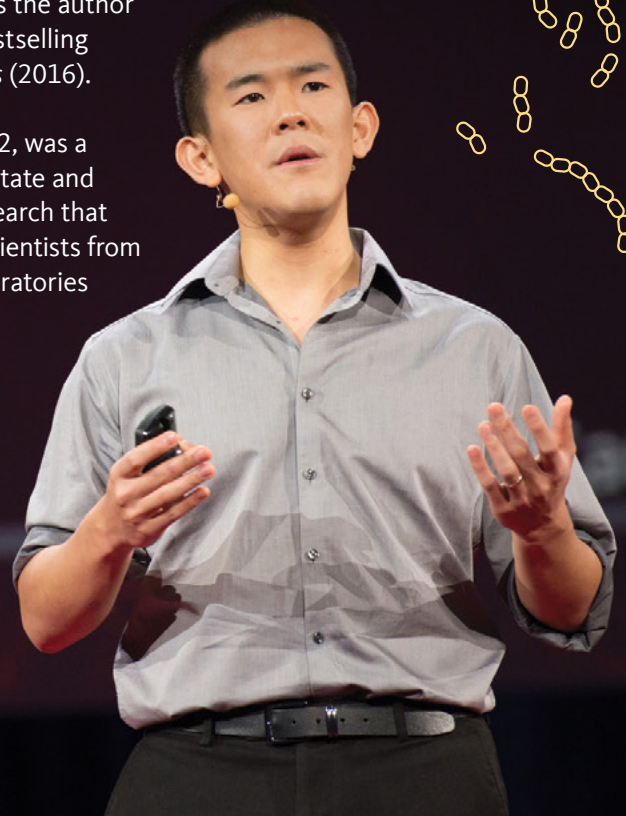
The OSU Microbiome Initiative (OMBI, see page 7) launched a series of events to strengthen and expand the horizons of microbiome research at Oregon State on May 11-12, 2017. A hands-on microbiome data analysis training workshop taught students and researchers how to collect, generate and analyze microbiome data. Attendees participated in discussions of the theory and methodology associated with microbiome sample collection and processing, DNA sequencing, and bioinformatic analysis.

Award-winning science writer **Ed Yong** gave a public lecture on the invisible

and teeming world of microbes across a range of species. Yong is the author of *The New York Times* bestselling book, *I Contain Multitudes* (2016).

The final event, on May 12, was a discussion forum on the state and future of microbiome research that brought together seven scientists from universities, national laboratories and research centers.

Photo: James Duncan Davidson

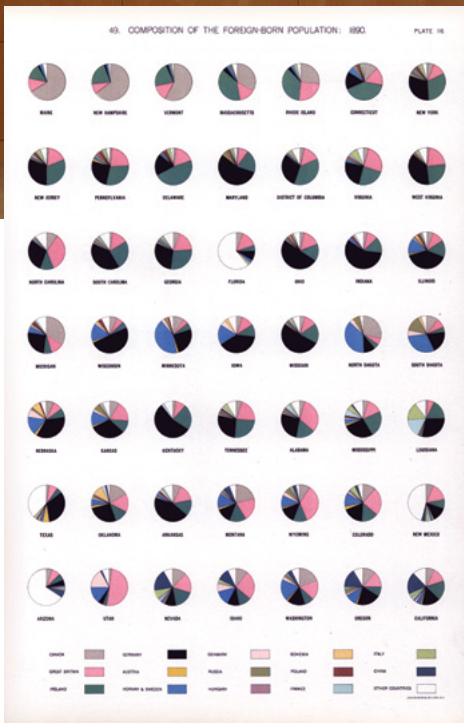


+ [ombi.oregonstate.edu](http://ombi.oregonstate.edu)





"Beautiful Science, Useful Art" spans six centuries of data visualization. (Left) Composition of the foreign-born population: 1890, from Statistical Atlas of the United States, 1898.



## Data visualization exhibit combines art and science

In collaboration with Anne Bahde, librarian at OSU's Special Collections and Archive Research Center (SCARC), Assistant Professor **Charlotte Wickham** co-curated a fascinating exhibition on data visualization, entitled, "Beautiful Science, Useful Art: Data Visualization Through History."

Wickham and Bahde have uncovered examples of data visualization dating from 1500 through 2016 in SCARC's rare books and archival collections. The purpose of data visualization has been to make information

easier to understand through visual presentation and arrangement. The exhibition will showcase the diversity of data visualization categories, with examples from papers of renowned scientists, artists and researchers, and historical specimens with data from the sciences, social sciences, history, art, economics, natural resources, agriculture and more.

Wickham and Bahde have combed through historical visualizations to highlight four elements constant to the endeavor of data visualization since its genesis: integrity, beauty, utility and novelty. The curators investigate how the practice of visualizing data has inspired new insights in numerous fields and encouraged collaboration across disciplinary boundaries.

The exhibition opened in Valley Library on April 3, 2017, and will run through the summer. The exhibit is a part of "SPARK: A Year of Art and Science," a year-long series of special events celebrating the blending and blurring of boundaries between art and science at Oregon State University throughout 2016-2017.

## Statistics seminar series

We hosted a range of seminars over the past year, continuing our tradition of holding seminars by a mix of speakers from academics, government and industry, including some of our former students and faculty.

**Peter Bickel** and **Michael Jordan** from the University of California, Berkeley delivered the 2016 and 2017 Milne Lectures, respectively. Other speakers from universities in the United States included **Thuan Nguyen** and **Tomi Mori** from Oregon Health Sciences University; **Adrian Raftery**, **Don Percival**, and **Timothy Thornton** from the University of Washington; and **Bodhisattva Sen** from Columbia University. OSU Professor Emeritus **Don Pierce** spoke about the "Modern Likelihood-Frequentist Inference."

We hosted speakers who addressed applications of data analytics in their organizations and companies. For example, **Brian Sikora** discussed opportunities in health care analytics at Kaiser Permanente; **Andrew Ferlitsch** from Sharp Labs of America discussed his work on war crime data; **Jinna Liu** from Ecova provided an overview on how big data is impacting the utility industry; **Craig Johns**, a distinguished data scientist from Oracle, discussed causal inference in advertising; **John Henry** from Maiden Re explained the role of big data in the insurance industry; and marketing expert **Kristin Luck** discussed her career path from a research assistant to a data science-driven entrepreneur.



Assistant Professor Sharmodeep Bhattacharyya, Associate Professor Lan Xue and Department Chair Ginny Lesser at IISA.

## Hundreds of statisticians converge for International Statistics Conference

In August 2016 the department hosted the 2016 International Indian Statistical Association (IISA) Conference, “Statistical and Data Sciences: A Key to Healthy People, Planet and Prosperity,” in the state-of-the-art Learning Innovation Center (LIc) on campus. The conference attracted about 200 statisticians from around the world, including participants from Japan, China, the United Kingdom, Nigeria and Egypt. Statisticians hailed from a broad spectrum of academia, industry, government and research institutes.

**Debashis Mondal**, associate professor of statistics at OSU, was the lead

organizer and program committee chair of the conference. The conference’s focus on data sciences and their role in human health and industry aligns with the department’s investments in data science research and educational training.

Graduate students from OSU and other universities participated in four short pre-conference courses taught by statisticians from Columbia University, Northwestern University, the University of California at Los Angeles and SAS Institute. A National Science Foundation (NSF) funding/grant supported a number of students and young researchers attending the conference.

The conference featured plenary addresses by Kanti Mardia from the University of Leeds and Oxford University, who presented “Some Societal High Impact Studies from Statistics on Manifolds,” and Xiao-Li Meng from Harvard University who discussed “Statistical Paradises and Paradoxes in Big Data.”

The four keynote talks were delivered by American Statistical Association (ASA) Vice-President Katherine Ensor from Rice University, Debashis Ghosh from the University of

Colorado, Kannan Natarajan, senior VP and global head of biometrics and data management at Novartis Pharmaceuticals, and Ajit Tamhane from Northwestern University.

Numerous OSU statistics faculty and graduate students presented talks at the conference.

In addition to a vast selection of technical talks, the conference offered sessions on early career development; collaborations across academic, industry and government organizations; and funding opportunities in industry and federal agencies. Sastry G. Pantula, Dean of the College of Science at OSU, participated on the career development panel.

Sessions ranged from statistical innovation and applications in big data and network analysis to public health and ecology.

IISA 2016 was generously supported by NSF, Merck, TEOCO, Cytel, ASA, GCE Solutions, Elsevier, SAS, Oregon State University’s Division of International Programs, Ecampus, and the Dean’s Office in the College of Science at Oregon State University.

## ASA Datafest

The American Statistical Association's Datafest, a nationally coordinated data analysis competition, was held at Oregon State University April 15-17, 2016. Nine teams comprising 37 students and faculty from OSU, University of Oregon and Reed College were matched up in the data contests.

The competition kicked off Friday, April 15 in Weniger Hall and continued through Sunday, April 17. Students came prepared with laptops locked and loaded with data analysis software and tools.

DataFest Oregon is a celebration of data, which involves teams of undergraduates working around the clock to find and share meaning in a large, rich, and complex data set. Kudos to Assistant Professor Charlotte Wickham for leading, planning and organizing ASA DataFest.

Students won prizes in the categories of best insight, best use of external data and best visualization. Winners received medals, a book bundle, and a one-year membership to the American Statistical Association.

DataFest Oregon was sponsored by the College of Science, the Department of Statistics, the American Statistical Association, Google, DataCamp and Oregon State University.

*Right top: Winners of the Best Visualization Award: statistics students Xiaoxi Gu, Mai Nguyen, Mei Meng, Arpita Mukherjee, Yiran (Rain) Wang*



## Statistics well represented at Joint Statistical Meetings

A number of faculty and students will present their research at the 2017 Joint Statistical Meetings (JSM).

**Jeff Kollath** will present his work evaluating the use of learning assistants in undergraduate statistics courses.

**Katherine McLaughlin** will present research titled "Empirical Assessment of Programs to Promote Collaboration: A Network Model Approach." She will also chair a session on "Understanding HIV/AIDS epidemics with newly available data sources."

**Sastry G. Pantula** will speak at a roundtable talk, "Strengths, Opportunities and Challenges in the era of BIG Data: An Asian Statistician's Perspective." Pantula is also an invited speaker at the panel "Advancing Statistics in Universities: Deans' Viewpoints."

**Lan Xue** will present research titled "Semiparametric Estimation of Longitudinal Data with Nonignorable Attrition Using Refreshment Samples."

Graduate students **Laura Gamble** and **Miao Yang** will present posters.

Graduate student **Nima Dolatnia** will be presenting in a speed session which includes a short talk and a poster

Graduate students **Faraz Niyaghi** and **Heather Kitada-Sullivan** will give oral presentations of their research.

Many statistics faculty and graduate students attended 2016 JSM in Chicago, July 30-August 4, and seven presented talks. Several Ph.D. students also presented talks and posters at the conference.

## Department of Statistics

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