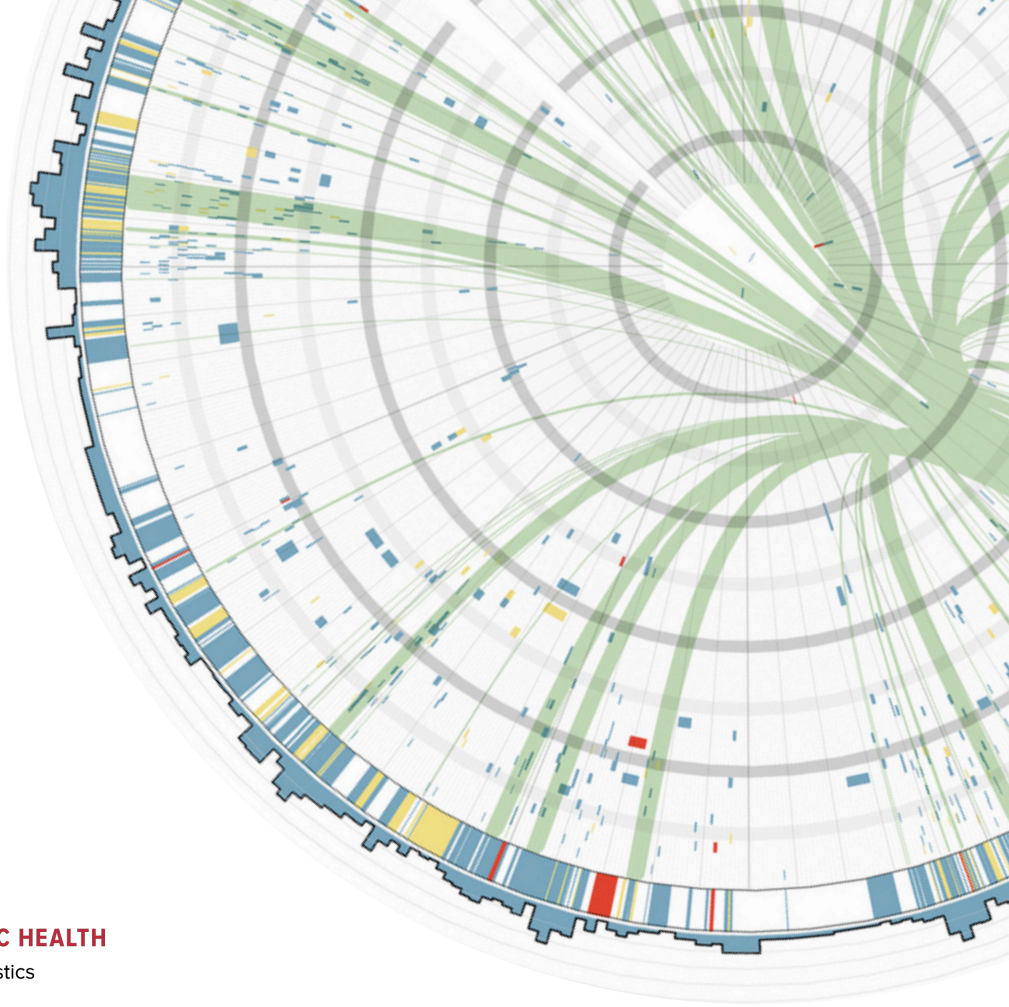**HARVARD T.H. CHAN** | **SCHOOL OF PUBLIC HEALTH**
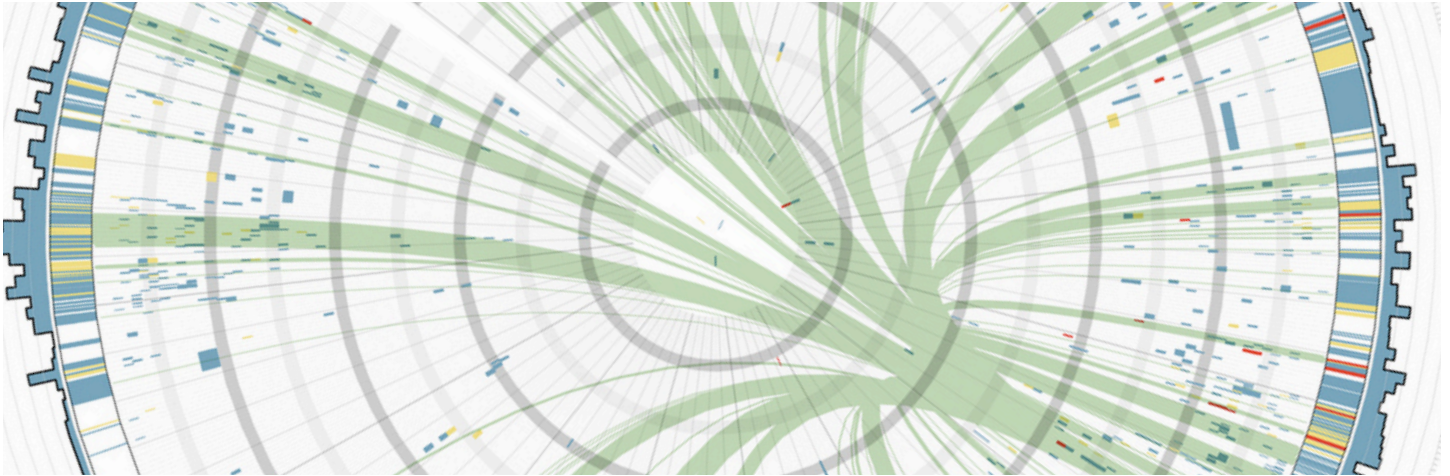Department of Biostatistics

# PIPELINES INTO
# BIOSTATISTICS

Dedicated to increasing the presence of underrepresented groups in Biostatistics and Computational Biology through formal training, collaborative research, and mentoring.

**Visiting Faculty Workshop** | Wednesday, July 22-24, 2015
**Annual Symposium** | Thursday, July 23, 2015

# PIPELINES INTO **BIOSTATISTICS**



# Introduction

In 1994, the Department of Biostatistics at Harvard T.H. Chan School of Public Health established the Summer Program in Quantitative Sciences to encourage underrepresented minority students' future participation in graduate programs in Biostatistics and Public Health. The program is supported by a new T36 grant from NIGMS: "Pipelines into Biostatistics: Training in Quantitative Public Health" for which Dr. Rebecca Betensky is the Principal Investigator. The Summer Program is now expanded to include a 6 week summer program, a Visiting Faculty Workshop, and a post-baccalaureate internship program.

The Pipeline into Biostatistics Annual Symposium is a new component to the Department's Summer Program in Quantitative Sciences. Attendees are current and past summer program participants, faculty, fellows, graduate students, visiting faculty from minority serving institutions, and the external advisory board.

In conjunction with the Symposium, we are hosting a three-day Faculty Workshop.  We have invited four faculty members from quantitative fields at minority serving undergraduate institutions to attend our annual symposium and to spend two days in intensive meetings with Harvard Chan faculty and students. Our goal is to expose these faculty members to the field of quantitative Public Health so that they can return and educate their undergraduate students about these exciting career options. We also aim to learn from visiting faculty how to strengthen our pipeline programs and better support underrepresented students in our graduate programs.

# PIPELINES INTO **BIOSTATISTICS**

## Keynote Speaker

### Sherilynn J. Black, Ph.D.

Assistant Professor of the Practice, Medical Education
Director, Office of Biomedical Graduate Diversity
Co-Principal Investigator, Duke University BioCoRE Program
Duke University Medical Center

## "Climate Change: Expanding the Impact of Diversity Interventions in Higher Education"

It is often assumed that local and national diversity initiatives only affect underrepresented students, and are less relevant in the development of non-underrepresented students, faculty, or institutional leadership. Traditional approaches to increasing representation in the STEM/ biomedical "pipeline" often include programs that are specifically designed for one population of students and focus on one specific need in that student population. However, a new programmatic model implemented at Duke University provides evidence that the impact of diversity initiatives is dramatically increased when additional stakeholders are included in the process and programmatic initiatives are expanded to contain multi-layered content that impacts the university community in many ways. This presentation will highlight some of the specific strategies developed by the Duke University Office of Biomedical Graduate Diversity to successfully expand the positive impact of diversity initiatives to the wider university community, ultimately leading to an enhanced experience for underrepresented PhD candidates.

*with special guest speaker:*

### Minerva Cordero, PhD

Associate Dean, College of Science
Professor, Department of Mathematics
Distinguished Teaching Professor
The University of Texas at Arlington

*speaking on:* "Advocating for Diversity from a Personal & Professional Perspective"

# Speaker Bios

## Sherilynn J. Black, Ph.D.

Dr. Sherilynn Black is an Assistant Professor of the Practice in Medical Education in the Duke University School of Medicine. She completed her undergraduate degree in Psychology (Biology minor) as a Morehead-Cain Scholar at the University of North Carolina at Chapel Hill and graduated with Highest Honors. She then completed her doctoral studies in the Department of Neurobiology at Duke University and completed additional studies in the School of Education at the University of North Carolina at Chapel Hill. Her current research focuses on identifying the common variables associated with successful STEM student-development interventions in higher education, and in creating computational models that are predictive of the success of higher education intervention programs. Dr. Black currently serves as the founding Director of the Office of Biomedical Graduate Diversity for the Duke University School of Medicine. Her office works to bring talented underrepresented graduate students to Duke and to enrich their experiences over the course of their doctoral studies through a series of professional development opportunities, academic enrichment programs, mentoring programs, and cohort-formation activities. Dr. Black is also a co-Principal Investigator of the Duke Initiative for Maximizing Student Development (IMSD) program referred to as the Duke Biosciences Collaborative for Research Engagement (BioCoRE). Duke BioCoRE provides extensive mentoring and scientific engagement opportunities for talented and diverse undergraduate and graduate students in the biomedical and behavioral sciences. Dr. Black also serves in a number of additional roles in the Duke community, including serving as a member of the a President's Council on Black Affairs, the co-Advisor for the Duke Chapter of the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS), a faculty advisor for the Duke Bridges to the Doctorate Program, and as a faculty affiliate for the Duke Center for Science Education. She has received several distinctions for her work, including the Samuel DuBois Cook Award in 2015. Dr. Black is also deeply engaged in promoting STEM diversity efforts on a national level. She currently serves the international membership of the Society for Neuroscience as a faculty stakeholder in the Neuroscience Scholars Program and as a member of the Online Programs Steering Committee, and she is also an appointed member of the AAMC Group on Graduate Research, Education, and Training (GREAT Group). She partners with the National Institutes of Health to lead national workshops on diversity initiatives in the basic sciences. Dr. Black continues to form institutional partnerships across the nation to build programmatic and institutional collaborations directed towards increasing diversity in the biomedical and basic sciences.

## Minerva Cordero, Ph.D.

Minerva Cordero, PhD, received degrees in mathematics from the University of Puerto Rico (B.S.), the University of California at Berkeley (M.S.) and The University of Iowa (PhD). She conducts research in the areas of Finite geometries and Combinatorics. Her research has been supported by the National Science Foundation, the National Security agency, and others. She has given numerous talks at several national and international conferences. Dr. Cordero is a very dedicated teacher.  She received several awards for her outstanding teaching including the prestigious University of Texas System *Regents Outstanding Teaching Award* and the Texas Section *Award for Distinguished College or University Teaching of Mathematics*. Dr. Cordero is concerned with diversity in the sciences at all levels of academia. During the last five years she received generous funding from the National Science Foundation to support her work with the Arlington Independent School District schools with the largest percentage of underrepresented minorities. Nationally she served as Governor-at-Large for Minority Interests for the Mathematical Association of America (MAA), was Chair of the MAA Committee for Minority Participation in Mathematics, and served as Chair of the Human Resource Advisory Committee of the Mathematical Sciences Research Institute (MSRI) at UC Berkeley. As Associate Dean for Academic Affairs in the College of Science Dr. Cordero oversees all matters pertaining to undergraduate programs in the College of Science at UT Arlington.

# Visiting Faculty Bios

## Dennis Davenport, Ph.D.

**Dr. Dennis Davenport** is currently an Associate Professor at Howard University and the Chairperson of Park City Mathematics Institute's (PCMI) Diversity Committee. He is on PCMI's Organizing Committee and co-directs the Workshop for Mentors of Undergraduate Mathematics Research by Minority Students. Davenport began his career at Miami University in Oxford, Ohio, where he developed a summer undergraduate research program, called the Summer Undergraduate Mathematical Science Research Institute (SUMSRI), which targets advanced mathematical science majors from underrepresented groups. From September 2000 to August 2002 and again from September 2009 to August 2011, he worked at the National Science Foundation as a Program Director in the Division of Undergraduate Education (DUE). While in DUE he worked on several NSF programs and was the Lead Program Officer for the Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM). Davenport received his PhD from Howard University, specializing in Topological Semigroups with applications to Ramsey Theory.

## Donald King, Ph.D.

**Dr. Donald King** is an Associate Professor at Northeastern University. He attained his undergraduate degree at Harvard College and earned his Ph.D. at MIT. His area of current research is in pure mathematics and concerns the relationship between representations of semi-simple Lie groups and the geometry of symplectic manifolds. (The sphere in 3 dimensional space is a familiar example of a two dimensional symplectic manifold.) Symplectic manifolds are geometric objects which are in vogue among physicists because the universe is believed to have ten dimensions and the six extra dimensions that we cannot experience or sense directly are believed to be tightly coiled up into certain symplectic manifolds known as Calabi-Yau manifolds. Calabi-Yau manifolds give the small scale structure of the universe through a property called mirror symmetry. King is exploring whether the concept of mirror symmetry can be exploited in the representation theory of semi-simple Lie groups. King runs the Bridge to Calculus program and the Mathematics and Science Talent Scholarship program, both of which are located at Northeastern University. He is also a Math Alliance mentor.

## Osvaldo Mendez, Ph.D.

**Dr. Osvaldo Mendez** is an Associate Professor in Department of Mathematical Sciences at the University of Texas, El Paso. His areas of specialization include Harmonic Analysis, Partial Differential Equations, Ordinary Differential Equations, Nonlinear Analysis, Functional Analysis, Nonlinear Differential Equations, and Spaces of Variable Integrability. Mendez attained his B.S. and M.Sc. at the Universidad Nacional de Rosario, Argentina, and earned his Ph.D. at the University of Minnesota. In addition to mentoring his students, Mendez is also a Math Alliance mentor.

## Visiting Faculty Bios

### Sally Thurston, Ph.D.

**Dr. Sally Thurston** is an Associate Professor in the Department of Biostatistics and Computational Biology at the University of Rochester Medical Center. Her work includes research, collaboration, teaching, and mentoring students. Her primary collaboration is with the Seychelles Child Development Study, which examines the effects of prenatal mercury exposure from fish consumption on childhood and adolescent neurodevelopment; others include studying the effects of air pollution in Beijing on birth outcomes, and effects of co-exposure to PCBs and mercury on childhood neurodevelopment. These studies have motivated her statistical research in modeling exposure effects on multiple correlated outcomes belonging to different outcome classes or "domains", and in correcting for measurement error bias that occurs when exposure is measured with error. Thurston is a Math Alliance mentor and her department has applied to become a Math Alliance Graduate Program Group.

### Arun Verma, Ph.D.

**Dr. Arun Verma** is chairman of mathematics department at Hampton University. He has been teaching mathematics at graduate and undergraduate levels for over thirty years. Dr. Verma earned his PhD from Indian Institute of Technology, Kharagpur, India in applied mathematics. Most of his research work focuses on time-dependent Newtonian fluid flow and Controlled thermo-nuclear fusion. He has presented numerous works on instructional technology at national and international meetings. The department of mathematics at Hampton has three programs; a traditional BS in mathematics, 5-year BS in mathematics and MT (masters in teaching)-teaching mathematics at secondary school level, and MS in applied mathematics. The number of undergraduate majors varies between 25 and 30 and from 4 to 8 in the graduate program.

# Faculty Workshop

Wednesday, July 22nd
Harvard T.H. Chan School of Public Health - Building II, Room 426

12:30 - 1:00pm          **Registration**

## Session I - Opening Remarks and Introductions

1:00 - 2:00pm          *Welcome*
                                  **Rebecca Betensky,** Professor of Biostatistics and Principal Investigator
                                  Harvard T.H. Chan School of Public Health

                                  *Visiting Faculty Introductions*
                                  **Dennis Davenport**, Associate Professor of Mathematics, Howard University
                                  **Osvaldo Mendez**, Associate Professor of Mathematics, University of Texas El Paso
                                  **Arun Verma,** Professor of Mathematics, Hampton University
                                  **Sally Thurston**, Associate Professor of Biostatistics and Oncology,
                                  University of Rochester
                                  **Donald King**, Associate Professor of Mathematics, Northeastern University

## Session II - Admissions Overview and Course Requirements

2:00 – 3:20pm          *Admission to the Biostatistics Doctoral and Master's Programs*
                                  **David Wypij**, Director of Master of Science Programs
                                  Senior Lecturer in Biostatistics
                                  Harvard T.H. Chan School of Public Health

                                  **Paige Williams**, Director of Graduate Studies
                                  Senior Lecturer in Biostatistics
                                  Harvard T.H. Chan School of Public Health

                                  *Required Courses and Qualifying Exams*
                                  **Brent Coull**, Professor and Associate Chair, Department of Biostatistics
                                  Harvard T.H. Chan School of Public Health

                                  **Rebecca Betensky**, Professor of Biostatistics and Principal Investigator
                                  Harvard T.H. Chan School of Public Health

3:20 – 3:30pm          **Break & Refreshments**

# PIPELINES INTO **BIOSTATISTICS**

# Faculty Workshop

Wednesday, July 22nd
Harvard T.H. Chan School of Public Health - Building II, Room 426

## Session III - What is Biostatistics, and Why Should Math and Quantitative Majors Consider It?

3:30 – 5:00pm

**Corwin Zigler**, Assistant Professor of Biostatistics,
Harvard T.H. Chan School of Public Health
**Sally Thurston**, Associate Professor of Biostatistics and Oncology,
University of Rochester
**Eric Tchetgen Tchetgen,** Professor of Biostatistics and Epidemiologic Methods,
Harvard T.H. Chan School of Public Health
**Ina Jazic**, PhD student in Biostatistics, Harvard T.H. Chan School of Public Health

## Session IV - Visiting Faculty Dinner (Kresge 110)

6:00pm

Attendees

**Rebecca Betensky**, Professor of Biostatistics and Principal Investigator,
Harvard T.H. Chan School of Public Health
**Jessica Boyle**, Diversity Coordinator for Biostatistics,
Harvard T.H. Chan School of Public Health
**Minerva Cordero**, Associate Dean and Professor of Mathematics,
University of Texas at Arlington
**Dennis Davenport**, Associate Professor of Mathematics, Howard University
**Venus Israni**, Assistant Director, Office of Diversity and Inclusion,
Harvard T.H. Chan School of Public Health
**Donald King**, Associate Professor of Mathematics, Northeastern University
**Xihong Lin**, Henry Pickering Walcott Professor of Biostatistics and Chair,
Department of Biostatistics, Harvard T.H. Chan School of Public Health
**Osvaldo Mendez**, Associate Professor of Mathematics, University of Texas El Paso
**Tonia Smith**, Student Services Manager, Harvard T.H. Chan School of Public Health
**Sheila Thomas**, Assistant Dean for Diversity and Minority Affairs,
Harvard Graduate School of Arts and Sciences
**Sally Thurston**, Associate Professor of Biostatistics and Oncology,
University of Rochester
**Arun Verma**, Professor of Mathematics, Hampton University
**David Wypij**, Senior Lecturer on Biostatistics, Harvard T.H. Chan School of Public Health

Speaker

*Not Just Statistics*
**Dr. Marcello Pagano**, Professor of Statistical Computing,
Harvard T.H. Chan School of Public Health

# PIPELINES INTO **BIOSTATISTICS**

## SPQS Annual Symposium

**Thursday, July 23rd**
Dana-Farber Cancer Institute - Smith Building, Room 308/309

| | |
|---|---|
| 8:30 - 9:00am | **Registration & Breakfast** |

**Session I - Opening Remarks and Introductions**

9:00 - 9:20am    **Rebecca Betensky**
Professor of Biostatistics and Principal Investigator
Harvard T.H. Chan School of Public Health

**Meredith Rosenthal**
Associate Dean for Diversity and Professor of Health Economics and Policy
Harvard T.H. Chan School of Public Health

**Xihong Lin**
Henry Pickering Walcott Professor of Biostatistics and Chair of the Department
Harvard T.H. Chan School of Public Health

**Session II – Keynote Speaker**

9:20 - 10:20am    *Climate Change: Expanding the Impact of Diversity Interventions in Higher Education*
**Sherilynn Black,** Assistant Professor of the Practice in Medical Education, Director of the Office of Biomedical Graduate Diversity, and Co-Principal Investigator of the BioCoRE program, Duke University.

**Session III – Summer Program Research Project Presentations**

10:25 - 10:45am    *Automated Phenotyping of Patient EMR Data: Feature Extraction and Selection*
**Rolando Acosta**, University of Puerto Rico, Humacao '16
**William Artman**, University of Rochester '16
**Cassandra Burdziak**, Rutgers University '16

Faculty Mentor: **Tianxi Cai**, Professor of Biostatistics
Harvard T.H. Chan School of Public Health
Graduate Mentor: **Sheng Yu**, Harvard T.H. Chan School of Public Health

10:50 - 11:10am    *Differential Outcomes by SES in Children Undergoing Treatment for Acute Lymphoblastic Leukemia*
**Sergio Barrera**, University of Arizona '16
**Randy Davila**, University of California, Davis '17
**Emily Roberts**, Coe College '16

Faculty Mentor: **Donna Neuberg**, Senior Lecturer on Biostatistics, Dana-Farber Cancer Institute and Harvard T.H. Chan School of Public Health
Mentors: **Traci Blonquist, MS** Dana-Farber Cancer Institute
Graduate Mentor: **Joey Antonelli**, Harvard T.H. Chan School of Public Health

## SPQS Annual Symposium

Thursday, July 23rd
Dana-Farber Cancer Institute - Smith Building, Room 308/309

| | |
|---|---|
| 11:15 - 11:30am | **Break & Refreshments** |
| 11:30 - 11:50am | *The Effects of Environmental Factors and the BRCA Genetic Mutation on Ovarian Cancer Risk*<br>**Andrea Lane**, University of North Carolina, Chapel Hill '16<br>**Jennifer Osei**, Cornell University '14<br>**Nathalie Quiroz**, Stony Brook University '15<br><br>Faculty Mentor: **Eric Tchetgen Tchetgen,** Professor of Biostatistics and Epidemiologic Methods, Harvard T.H. Chan School of Public Health<br>Graduate Mentor: **Kathy Evans,** Harvard T.H. Chan School of Public Health |
| 11:55 - 12:15pm | *The Effects of Probe Sequencing On Microarray Gene Expression Measurements*<br>**Kevin Kupiec**, Lake Forest College '17<br>**Randy Williams**, Fordham University '15<br>**Pedro Agrinsoni Munoz**, University of Puerto Rico, Humacao '15<br><br>Faculty Mentor: **Rafa Irizarry,** Professor of Biostatistics, Dana-Farber Cancer Institute and Harvard T.H. Chan School of Public Health<br>Graduate Mentor: **Ryan Sun,** Harvard T.H. Chan School of Public Health |

**Session IV – Summer Program Alumni: Conversation Over Lunch**

| | |
|---|---|
| 12:20 - 2:00pm | *Journeys in Biostatistics After the Summer Program*<br><br>Please take a moment to visit project posters of our recent alumni:<br><br>*Gene Regulation by Histone Methyltransferases in S.Cervisiae*<br>**Grace Choi**, University of Maryland, Baltimore County '16<br><br>*Development of Computational Tools to Enable Data Driven Research, with a Focus on Visualization and Exploration of Genomics and Epigenomics Data*<br>**Jake Conway**, University of Massachusetts, Lowell '16<br><br>*A Comparison of Prominent Models to Predict the Malignancy of Solitary Pulmonary Nodules*<br>**Lilyana Gross**, California State University, Monterey Bay '15 |

# PIPELINES INTO **BIOSTATISTICS**

## SPQS Annual Symposium

Thursday, July 23rd
Dana-Farber Cancer Institute - Smith Building, Room 308/309

**Session V – Pipelines, Mentoring, and Strategies**
2:00 - 3:00pm        *Advocating for Diversity from a Personal & Professional Perspective*
**Minerva Cordero**, Associate Dean and Professor of Mathematics,
University of Texas at Arlington

**Session VI – Post-Baccalaureate Research Project Presentations**
3:00 - 3:20pm        *Contrasting Breast Cancer Subtypes by Analyzing Differences in Network Structure*
**Kamrine Poels**, Post-baccalaureate Program Participant

Faculty Mentor: **John Quackenbush,** Professor of Computational Biology and
Bioinformatics, DFCI & Harvard T.H. Chan School of Public Health

3:25 - 3:45pm        *The Sexual Network of HIV in Botswana*
**Felicia Gibson**, Post-baccalaureate Program Participant

Faculty Mentor: **Victor DeGruttola,** Professor of Biostatistics
Harvard T.H. Chan School of Public Health

3:45 - 4:00pm        *Closing Remarks*
**Rebecca Betensky**
Professor of Biostatistics and Principal Investigator
Harvard T.H. Chan School of Public Health

# PIPELINES INTO **BIOSTATISTICS**

## Faculty Workshop

Friday, July 24<sup>th</sup>
Harvard T.H Chan School of Public Health - Building II, Room 426

**Session I – HSPH Student Presentations and Discussion**

9:30 - 11:00am          *Graduate Students' Journeys to and Experiences in Biostatistics at HSPH*
                        **Heather Mattie,** PhD Candidate
                        **Christina McIntosh,** PhD Candidate
                        **Alex Ocampo,** PhD Candidate
                        **Octavious Talbot,** PhD Candidate
                        **Kamrine Poels**

**Session II – Wrap Up**

11:00 - 11:10           Closing Remarks

11:20 - 12:00           Program Evaluations (FXB Building, Room G03)

12:00-1:00pm            **Lunch** (Building II, Room 426 -- optional)

# Alumni Poster Abstracts

## Gene Expression Networks of Histone Methyltransferases SET1 and SET5 in S. Cerevisiae

**Grace H. Choi[1]\*, Rushmie Kulkarni[2]\*, DoHwan Park[1], Erin Green[2]**

[1]Department of Mathematics & Statistics, University of Maryland Baltimore County,
1000 Hilltop Circle, Baltimore, MD 21250
[2]Department of Biological Sciences, University of Maryland Baltimore County,
1000 Hilltop Circle Baltimore, MD 21250
* These authors contributed equally to this work

Histone methyltransferases Set1 and Set5 play key roles in the modification of chromatin to regulate gene expression. In 2014, Martin *et al.* characterized new functional consequences of losing either one or both Set1 and Set5 in budding yeast. This work revealed that both methyltransferases are important for repressing lowly expressed genes near telomeres and retrotransposons. Our study revisits this raw data and performs alternative methods of RNA-seq analysis for gene expression profiling under a Bioconductor/R pipeline and CLC Genomics workbench protocol. After determining significant differentially expressed genes compared to a wild type (WT) strain, we performed hierarchical clustering and correlation analysis between the *set1Δ, set5Δ,* and *set1Δ set5Δ* mutants and microarray data of 16 additional strains lacking well-known chromatin regulators. Clustering based on a Pearson's correlation distance matrix indicates Set5 has an overlapping role with the histone deacetylase Rpd3 and Set1 works in tandem with COMPASS complex components. Preliminary gene ontology (GO) analysis shows significant enrichment for genes involved in sporulation in the *set1Δ* and *set1Δ set5Δ* datasets, suggesting an additional function of these histone methyltransferases. Overall, this method of RNA-seq analysis expands our understanding of Set1 and Set5's function and pathway relationships in the regulation of gene expression.

# Alumni Poster Abstracts

## UpSetR: A Novel R Package for Visualizing Intersecting Sets and Their Attributes

**Jake Conway[1] & Nils Gehlenborg, PhD[2]**
[1]University of Massachusetts, Lowell
[2]Harvard Medical School, Department of Biomedical Informatics

Understanding the relationships and interactions between data is imperative in bioinformatics. With copious amounts of biological data being generated today, there is high demand for tools that can visualize large numbers of sets and their intersections. Here we present UpSetR, a novel R package that visualizes large numbers of sets and intersections via a matrix-based technique. Along with visualizing data on a set-based level, UpSetR allows users to explore and visualize their data on an element-based level through the implementation of queries and attribute plots. Through its seamless integration with ggplot2 and the ability to apply virtually any query to the data, UpSetR is an extremely powerful tool for data exploration and producing publication quality visualizations.

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## A Comparison of Prominent Models to Predict the Malignancy of Solitary Pulmonary Nodules

**Lilyana Gross**
California State University, Monterey Bay

The most common manifestation of lung cancer is the appearance of solitary pulmonary nodules (SPNs) which can either be diagnosed as malignant (cancerous) or benign (non-cancerous). Traditionally, the investigative process to diagnose a SPN is costly and can be extremely invasive to the patient, including unnecessary surgery. With the introduction of stochastic modeling to the decision making process, clinicians have additional tools to classify if an SPN is cancerous or not based on clinical and biomarker data. I investigated and compared three models, that predict if the SPNs found in patients are benign or malignant. Based on the sensitivity analysis, I recommend that physicians use The Wang Model. The Wang Model has the highest specificity and AUC. A high specificity if extremely important because false negatives could be a fatal error when early detection of malignant SPNs is shown to increase life expectancy in patients.

## With Special Thanks...

**Principal Investigator**
**Rebecca Betensky**, Harvard Chan School

**Symposium and Summer Program Coordinator**
**Tonia Smith**, Harvard Chan School

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**Shaina Andelman**, Harvard Chan School
**Jessica Boyle**, Harvard Chan School
**Meagan Plante**, Harvard Chan School

**Program Mentors**
**Tianxi Cai**, Harvard Chan School
**Rafael Irizarry**, Harvard Chan School
**Jukka-Pekka Onnela**, Harvard Chan School
**John Quackenbush**, DFCI & Harvard Chan School
**Sheng Yu**, Harvard Chan School
**Donna Neuberg**, DFCI & Harvard Chan School
**Traci Blonquist**, Dana-Farber Cancer Institute
**Joey Antonelli**, Harvard Chan School

**Visiting Faculty Workshop Speakers**
**Sally Thurston**, University of Rochester
**David Wypij**, Harvard Chan School
**Paige Williams**, Harvard Chan School
**Brent Coull**, Harvard Chan School
**Corwin Zigler**, Harvard Chan School
**Eric Tchetgen Tchetgen**, Harvard Chan School
**Marcello Pagano**, Harvard Chan School

**Course Instructors**
**Josh Barback,** Harvard Chan School
**Heather Mattie**, Harvard Chan School
**Eleanor Murry**, Harvard Chan School

**Seminar Series Speakers**
**Francesca Dominici**, Harvard Chan School
**Sebastien Haneuse**, Harvard Chan School
**Xihong Lin**, Harvard Chan School
**Carla Moreira**, Harvard Chan School
**John Quackenbush**, DFCI & Harvard Chan School

**Professional Development Workshop Speakers**
**Randi Freidman**, Director of Career Services
**Dustin Gee**, Assistant Director of Employee Relations
**Carol Martin**, Harvard Medical School Diversity &
Inclusion Community Partnerships
**Felisa Nobles**, Harvard Chan Office of Diversity & Inclusion
**Kerri Noonan**, Harvard Chan Admissions Office

**Past Participants**
**Grace Choi**, University of Maryland Baltimore County, '14
**Jake Conway**, University of Massachusetts, Lowell, '14
**Erika Young Duncan**, Bank of America, '94
**Jennifer E. Williams-Frazier**, Florida A & M University, '04
**Lilyana Gross**, California State University, Monterey Bay, '14
**Jennifer James**, PAREXEL, '00
**Sabrina Khan**, Accenture, '05
**Dr. Michael Rambo**, McKesson
**Jennifer C. Smith**, Center for Disease Control, '00
**Souad Sosa**, The University of Texas at Arlington, '10
**Nina Yeboah**, Chicago Reading Africa, '07
**Dr. Daisy Zamora**, UNC-Chapel Hill, 03

**Post-Baccalaureate Internship Sponsors**
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Harvard Chan Department of Biostatistics
Harvard Chan Office of Diversity and Inclusion

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Metro Cab: (617)782-5500

**Contact Information**
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## Notes