



BIOSTATISTICS SEMINARS

All seminars are held from 4PM – 5PM

485 Lexington Ave, Conference Room B (2137)

- ❖ November 6, 2019 **Francisco Sanchez-Vega**
MSK
- ❖ November 13, 2019 **Yuelin Li**
MSK
- ❖ November 20, 2019 **Alexia Iasonos**
MSK
- ❖ November 13, 2019 **Kay See Tan**
MSK
- ❖ December 4, 2019 **Audrey Mauguen**
MSK
- ❖ December 11, 2019 **Marinela Capanu**
MSK

COMPUTATIONAL ONCOLOGY SEMINARS

ZRC Auditorium

- ❖ November 5, 2019 **Eytan Rupp**
3:30-4:30PM NIH
- ❖ December 20, 2019 **Peter Van Loo**
10-11AM Francis Crick Institute

EPIDEMIOLOGY SERVICE MEETINGS

485 Lexington Ave, Conference Room B (2137)

Please see emails for updates

- ❖ November 4, 2019 **Helena Furberg-Barnes**
MSK
- ❖ November 18, 2019 **Jonine Bernstein**
MSK
- ❖ December 16, 2019 **Margaret Du**
MSK

HEALTH OUTCOMES RESEARCH GROUP SEMINARS

All seminars are held from 12PM – 1PM

485 Lexington Ave, Conference Room B (2137)

- ❖ November 15, 2019 **Aaron Mitchell**
MSK
- ❖ December 13 2019 **Allison Lipitz-Snyderman**
MSK

OPEN POSITIONS

Please contact the manager for more information about open positions in our department.

- ❖ Assistant Research Biostatistician (Kathy Panageas)
- ❖ Data Software Analyst in Computational Oncology (Sohrab Shah)
- ❖ Post-Doctoral Fellowship in Biostatistics (Ronglai Shen/Jonine Bernstein)
- ❖ Post-Doctoral Fellowship in Biostatistics (Li-Xuan Qin)
- ❖ Post-Doctoral Fellowship in Computational Oncology (Ed Reznik)
- ❖ Post-Doctoral Fellowship in Computational Oncology (Sohrab Shah)

STAFF PROMOTIONS

- ❖ **Ling Chen** promoted to Manager, EpiBio Informatics Products



DEPARTMENT CHAIR
Colin Begg, PhD
EDITORS
Narre Heon
Lauren Rogak, MA
Amethyst Saldia
Yesenia Werner
Prusha Patel
Richard Koppenaal
Shireen Lewis, MPA
Joseph Kanik

WELCOME ANDRIY DERKACH

Andriy joined the Biostatistics Services as an Assistant Attending Biostatistician. He previously was Research Fellow at the Division Cancer Epidemiology and Genetics, National Cancer Institute. His methodological research focuses on the integration of high dimensional molecular and genetic data to detect associations with outcome. Recently, his interests include methods that identify biological mediators that link exposures with the risk of cancer. He will be collaborating with the Myeloma and Leukemia Services.



Andriy Derkach, PhD

FAREWELL TO DEAR FRIENDS

Jaya Mathangi Satagopan was a member of the Department of Epidemiology and Biostatistics for 24 years, and she was a woman of many talents. In addition to her Masters degree in statistics, she wrote her Ph.D. thesis on plant genetics. In 2019 she received a Masters in Science Communication and Public Engagement from the University of Edinburgh. Jaya was very collaborative in her research and worked across many departments, including Pathology, Dermatology, Population Sciences, Epidemiology, Clinical Genetics, and of course Biostatistics. She co-authored a book on Statistical Human Genetics with Robert Elston.

Jaya has been active in many roles within the American Statistical Association, and she was selected to be a Fellow in 2015. The ASA Fellow citation was “For influential methodological contributions in cancer epidemiology—especially in the area of genomic association studies—effective dissemination of statistical practice in medical sciences, inspirational mentoring of minority students, and dedicated service to the profession.” Jaya is also active in the International Genetic Epidemiology Society. Jaya has had a long interest and passion to teach and mentor students from high school and college. She co-created the very successful summer program of QSURE for mentoring college students to encourage new statistical graduates. She now has joined Rutgers School of Public Health and will be a Professor of Biostatistics in the Department of Biostatistics and Epidemiology where she will be a fabulous teacher and mentor.

Jaya has many other talents, including juggling, raising flowers and vegetables in her garden, baking bread, and studying solar eclipses. We will all miss her enthusiasm, passion for statistics, and energy, and wish her continued success in all her endeavors.



Jaya Satagopan, PhD

After over 15 years of service at MSK, the department bids farewell to our friend and colleague **Elena Elkin** as she moves on to the next stage of her career at Columbia University! Elena will be a Professor of Health Policy and Management at the Mailman School of Public Health with an appointment at the Herbert Irving Comprehensive Cancer Center. She will continue the work she began at MSK, in particular, studying decision-making about cancer screening and the cost and cost-effectiveness of clinical and public health interventions. She will also be teaching and advising students at the Mailman School of Public Health! We are grateful to have been able to work alongside Elena for so many years and look forward to continuing to collaborate in the future. Elena, we wish you all the best!



Elena Elkin, PhD

INTERNATIONAL WORKING GROUP FOR THE PROGNOSIS OF MDS

The Papaemmanuil laboratory is leading the International Working Group for MDS Prognostication (IWG-PM). Under the aegis of the MDS Foundation this international initiative unites >100 clinical and research investigators worldwide. The main objectives of this project are to redefine the WHO classification for MDS and to establish the Molecular-IPSS-R as the new gold standard clinical guidelines for MDS management globally. To achieve this, the Papaemmanuil laboratory has collaborated with 25 of the biggest MDS clinical centers to ascertain 7,000 diagnostic patient samples with uniform molecular, clinical and outcome information. Sequencing is performed at iGO and all analyses is led by Dr Bernard at the Papaemmanuil laboratory. Translation into clinical decision support guidelines is done in collaboration with the WHO and IPSS-R Oversight committees. In 2019 a Therapeutic Committee was also established, with a main objective to investigate predictors of response to hypomethylating agents.

STAFF ACHIEVEMENTS

Renee Gennarelli and **Jessica Lavery** gave an invited talk a Wake Forest University Department of Mathematics and Statistics on September 13th, discussing the role of biostatistics in cancer research for undergraduate and graduate students. .

Ed Reznik received the 2019 Young Investigator Award from the Kidney Cancer Association on Metabolic determinants of the tumor microenvironment and sensitivity to immunotherapy in ccRCC. Ed was awarded a Cycle for Survival Equinox Innovation Award for his project, Prospective Metabolomic Profiling for Biomarkers of Response to Metabolic Therapies in Acute Myeloid Leukemia.

Gordie Watt received an NCI Clinical Research Loan Repayment Program Award.

Ignacio Vazquez-Garcia a research fellow in Dr. Sohrab Shah's lab, received the Ann and Sol Schreiber Mentored Investigator Award. The Ann and Sol Schreiber Mentored Investigator Award provides funding for trainees who are working under the supervision of a mentor who is a recognized leader in the field of ovarian cancer research.

Sohrab Shah received a Collaborative Research Development Grant from OCRA entitled, Profiling co-evolution of ovarian cancer and its immune microenvironment. Other investigators include, Dennis Chi, Dmitriy Zamarin, Dana Tsui, Travis Hollmann, Britta Weigelt, Carol Aghajanian, Claire Friedman, Michael Berger, and Samuel Bakhoun. **Sohrab** was also awarded a contract from the Henry M. Jackson Foundation entitled, Gynecological Cancer Center of Excellence. The mission is to identify molecular alterations in gynecologic cancers and develop novel strategies for prevention, early detection, and precision treatment of these diseases.

Ann Zauber received the following awards: The **Andrew Guisti Scientific Award** "for activism on behalf of colorectal cancer patients and for focusing, like Andrew did, on pushing for great science that will translate to patient benefits as quickly as possible" from **Fight Colorectal Cancer**. The **AGA Research Service Award** "in recognition of extraordinary efforts which have advanced gastroenterological science and research." from **American Gastroenterological Association** national meeting during Digestive Disease Week. The **Distinguished Alumna Award** "for bringing distinction to your alma mater through your work as in advancing gastroenterological science and research" from **Hollins University**. As well as the **National Colorectal Cancer Roundtable Award for Distinguished National Leadership** from **National Colorectal Cancer Roundtable**, sponsored by **American Cancer Society and Centers for Disease Control and Prevention**.

PUBLICATIONS

Renee Gennarelli, **Allison Lipitz-Snyderman**, and colleagues published a paper, "[Risk for Clostridioides difficile Infection among Older Adults with Cancer](#)", in Emerging Infectious Diseases. They conducted a retrospective cohort study with a nested case-control analysis using population-based SEER-Medicare linked data to assess whether risk for Clostridioides difficile infection (CDI) is higher among older adults with cancer. The odds of CDI developing were higher among cancer patients than non-cancer patients (adjusted OR 1.15, 95% CI 1.04–1.26; p = 0.005). Specifically, risk was significantly higher for those who had liquid tumors and for those who had recently diagnosed solid tumors and distant metastasis. This population-based assessment can be used to identify targets for prevention of CDI.

Renee Gennarelli with her colleagues in the Department of Surgery published a paper "[Assessment of the Value of Comorbidity Indices for Risk Adjustment in Colorectal Surgery Patients](#)", in Annals of Surgical Oncology. They investigated the value of commonly used comorbidity indices (CIs) in risk adjustment for postoperative complications after colorectal surgery using data from 1,813 patients who underwent colectomy at MSK from 2009-2014. Outcomes of interest in the 90-day postoperative period included any surgical complication, surgical site infection (SSI) and Clavien–Dindo (CD) grade 3 or higher complication. We found that the inclusion of CSs in base risk-adjustment models did not improve the ability of the models to predict postoperative complications in colorectal surgery patients. Inclusion of these CIs alone does not guarantee adequate risk adjustment in colorectal surgery patients, and it is likely that patient and treatment data from the EMRs may suffice.

Lauren Rogak, **Ethan Basch**, and their colleagues co-authored a Brief Report, "[Assessment of Adverse Events from the Patient Perspective in a Phase III Metastatic Castration-Resistant Prostate Cancer Clinical Trial](#)", in JAMA Oncology. This brief report presents the findings from a correlative study within a randomized, double-blind, placebo-controlled phase III clinical trial. This study showed that it is feasible to implement PRO-CTCAE and that it improved the accuracy of symptomatic adverse event detection in a phase III cancer trials.

Deborah Korenstein, **Maha Mamoor**, and **Peter Bach** co-authored a Research Letter, "[Preventive Services offered in Executive Physicals at Top-Ranked Hospitals](#)", in JAMA. Executive physicals are provided by employers as perks for corporate leaders but can also be purchased by individuals with costs ranging from \$1,700-10,000. Prices and lists of nonlaboratory services for executive physical packages from "honor roll" and "best hospitals" from the 2018-2019 US News & World Report were assessed using United States Preventive Services Task Force guidelines to grade the appropriateness of services. It was found that services with insufficient evidence were frequently included. It is possible that the inclusion of these services in executive physicals at highly ranked institutions may be interpreted as endorsement of their importance, which could promote excessive, low-value care.

Allen Zhang (**Sohrab Shah** lab) with his colleagues published a paper "[Probabilistic cell-type assignment of single-cell RNA-seq for tumor microenvironment profiling](#)" in NatureMethods describing a new computational method for assigning cell types of the tumour microenvironment. Tumours are heterogeneous mixtures of cancer cells and many types of non-cancer cells, including immune cells. Recent technological advancements have enabled us to study how cancers grow and function at the single cell level. We developed CellAssign, an algorithm that processes single cell data to automatically decompose tumours into their constituent cell types using minimal prior knowledge.

Sohrab Shah and members of his lab published a paper, "[Dissociation of solid tumour tissues with cold active protease for single-cell RNA-seq minimizes conserved collagenase-associated stress responses](#)" in GenomeBiology. Prior to single-cell RNA-sequencing, solid tumours must be separated into individual cells through a biochemical process, the effects of which on the gene expression of each cell were unknown. To answer this, they sequenced over 150,000 single-cells from a variety of cancer models using different methods to separate them, and discovered the up-regulation of pathways associated with known cancer biology.

Amethyst Saldia, Sara Olson, **Xiaolin Liang**, and Molly Samson, along with other MSK collaborators authored "[Outcome of Pancreatic Cancer Surveillance Among High-Risk Individuals Tested for Germline Mutations in BRCA1 and BRCA2](#)" in Cancer Prevention Research. Using surveillance and demographic data collected through the MSK Pancreatic Tumor Registry, authors evaluated the surveillance results of 83 high-risk individuals (HRIs) with ≥ 1 first-degree relative with pancreatic ductal adenocarcinoma who underwent surveillance and testing for pathogenic germline mutations in BRCA1/2. A secondary analysis included 18 HRIs with known mutations in BRCA1/2 but with weaker family history. HRIs were evaluated over time using magnetic resonance cholangiopancreatography (MRCP) and endoscopic ultrasound when indicated by MRCP findings. Authors reviewed imaging results, blinded to mutation status. The outcome was the proportion with any pancreatic abnormality identified at initial or follow-up surveillance. Among the 83 HRIs in the main analysis, 48 had a mutation in BRCA1/2 and 35 did not. Overall, 16 of 48 (33%) BRCA1/2-positive and 13 of 35 (37%) BRCA1/2-negative participants had pancreatic abnormalities on imaging; in each group, all but one finding was an intraductal papillary mucinous neoplasm. Among those with pathogenic mutations but weaker family history, results were similar: 7 of 18 (39%) with pancreatic abnormalities. Results of surveillance for pancreatic abnormalities on imaging are similar regardless of BRCA1/2 mutation status. While the results from this small study need confirmation in other studies, at present there does not appear to be increased yield from targeting individuals with BRCA1/2 mutations for surveillance.

Gordie Watt, **Anne Reiner** and a collaborator authored the paper [Association of a Pathway-Specific Genetic Risk Score With Risk of Radiation-Associated Contralateral Breast Cancer](#) which sought to find the answer of whether a genetic risk score comprising variants in a DNA repair pathway associated with risk of developing a second primary contralateral breast cancer among women who underwent radiation therapy for a primary breast cancer.

GRANTS

Jaya Satagopan and **Sujata Patil** received their R25 grant “Building a Statistics Education Program for Preclinical Cancer Researchers”. Will be a subcontract to us now but Sujata is MPI

Sigrid Carlsson was funded a second PPFC grant “Improving Patient Involvement in Care—A Pilot Study of a Comprehensive Pelvic Floor Muscle Exercise Program Before and After Radical Prostatectomy to Prevent Urinary Leakage”

Sohrab Shah was awarded his OCRA (Ovarian Cancer Research Alliance Collaborative Research Development Grant) grant “Profiling co-evolution of ovarian cancer and its immune microenvironment”

Ignacio Vazquez Garcia was awarded OCRA (Ovarian Cancer Research Alliance Ann and Sol Schreiber Mentored Investigator Award) grant “Co-evolution and dynamics of malignant and immune cells in ovarian cancer”

Ed Reznik was awarded his KCA (Kidney Cancer Association) Young Investigator Award “Metabolic Determinants of Sensitivity and Resistance to Immunotherapy in ccRCC”. Ed was also awarded the Cycle for Survival Equinox Innovation Award “Prospective Metabolomic Profiling for Biomarkers of Response to Metabolic Therapies in Acute Myeloid Leukemia”

Eli Papaemmanuil was awarded the 2019 Geoffrey Beene Cancer Research Center grant “Modelling MDS transformation and disease progression in SF3B1 mutated MDS”

QSURE AT ICEC IN SALT LAKE CITY

In September, **Shireen Lewis**, **Kay See Tan** and **Jaya Satagopan** attended the 2019 International Cancer Education Conference in Salt Lake City, Utah, to represent QSURE. The NCI funded R25 program recently wrapped up its second full year, and the QSURE team presented on their experiences in administering the 10-week research internship. In addition to a poster presentation on the administrative side of QSURE, they also presented on the program’s responsible conduct of research curriculum.

HACKATHON

Ling Chen, Jiang Yu, and Brendan Phalan participated in the first inaugural MSK Hackathon. About 70 programmers, developers, clinicians, and managers gathered from various departments across the hospital for 48 hours to design, code, and deliver a prototype that solves real life problems at MSK. Each team presented their final work to a panel of judges consisting of senior executives. Ling Chen and Brendan Phalan’s team, the Octocats, won first place for their prototype of a medication support tool that allows patients to track and adhere to the routine necessary for complex poly-pharmacy and medication trial. Jiang Yu’s team, Alt-Ctrl-Cure, won third place for their prototype of a digital version of the Magnetic Board that enables nurse teams to assign nurses to cases based on important criteria. The best part of the Hackathon is working with people that come from different fields, with different ideas and interest, yet all working together to solve the same problem, each one adding his/her own input. It is also rewarding to participate in the advancing of technology at MSK. -Ling Chen



PENNY FOR YOUR THOUGHTS

The sustainability task force at 485 Lex is working towards MSK’s sustainability goal by spreading more awareness and mindfulness about waste segregation and energy compliance. You must have already seen a couple of these changes in the two pantries. There is a poster up for any questions you have regarding types of waste and how to discard, all questions are encouraged! A black bin has also been placed next to the trash cans to collect plastic bags. Fun fact - our building participates in an e-waste recycling program, and a list of eligible items and where to discard can be found on the display boards in the pantry.

Spare a minute to think before using single-use items like plastic spoons, forks, knives and paper cups. Dish soap and a sponge is available in both pantries to wash and reuse if you have silverware or a mug from home. For more information or to join, please contact [Tricia Neary](#).

MANY MIRACLES

Epi Bio’s very own **Sara Olson**, who retired earlier this year, was featured in the latest issue of MSK Bridges, a newsletter for cancer survivors. The article, written by Sara, discusses her journey with her daughter who is a pediatric cancer survivor. Excerpt below:

That was in March 1984, just a couple of weeks after her diagnosis of a tumor in the pituitary region and surgery at New York Hospital. A more specific diagnosis was not available based on the tissue from surgery, so radiation was the first course of treatment: six weeks of daily trips to Yale New Haven Hospital, nearer to our home. When Lizzie relapsed shortly after that treatment ended, there was a blood marker enabling a more specific diagnosis: an endodermal sinus tumor. It was “the rarest of the rare,” we were told, and doctors suggested chemo. There were two more remissions and heartbreaking relapses over the next year and a half, followed by treatment with a new regimen devised by another MSK pediatric oncologist for a different deadly cancer. This turned out to be a miracle for us, and today, Liz is a wonderful 43-year-old enjoying an independent life and good health, with a special quality to her grit and optimism that stems from her years of being different from other kids and dealing with difficult treatments and side effects.

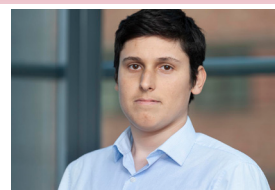
[Link to the full article which begins page 11](#)



NEW STAFF

Douglas Abrams, Bioinfo. Software Engineer

Douglas Abrams graduated from Colby College in May 2019 with a B.A. in Computational Biology and History. He is excited to join MSK as a Bioinformatics Software Engineer I in Sohrab Shah's lab and will be working on developing computational tools that advance cancer research.



Xing Bai, Assistant Research Biostatistician

Xing Bai joined the Center for Health Policy (CHPO) and the Drug Pricing Lab (DPL) as an Assistant Research Biostatistician. He recently graduated from the University of Minnesota – Twin Cities with a Master of Science in Biostatistics. Xing will be working alongside other Research Biostatisticians to conduct observational data analyses pertaining to health policy and health outcomes research using SEER-Medicare data. He will collaborate with Peter Bach, Anna Kaltenboeck, and other investigators within CHPO.



Colin Kimberlin, Clinical Research Coordinator

Colin joins us having previously worked as a program associate in the Center for Health Equity at the NYC Department of Health and Mental Hygiene, as well as a research assistant at the Yale School of Public Health. Colin received his Bachelor of Arts in Global Public Health and Anthropology from New York University. In his new role as Clinical Research Coordinator, Colin will be supporting the research needs of Andrew Vickers and Sigrid Carlsson on the health outcomes team.



Akriti Mishra, Assistant Research Biostatistician

Akriti Mishra previously worked as a statistical analyst at University of Pennsylvania, where she helped evaluate health policies. She graduated in 2016 from Rutgers University with a masters in Biostatistics. She will be supporting the Health Outcomes group on studies using databases such as SEER-Medicare.



Maryam Pourmaleki, NE WGS Student

Maryam Pourmaleki received a BA in Biochemistry from Vassar College in 2016. She spent the following 3 years studying the tumor microenvironment in metastatic melanoma using single-cell proteomics in Ingo Mellinger's lab at Memorial Sloan Kettering Cancer Center. She is currently a PhD student in the Tri-Institutional Computational Biology and Medicine program where she will continue studying the tumor microenvironment through integration of single-cell genomics, transcriptomics, and proteomics in Sohrab Shah's lab.



Nicole Rusk, Managing Editor/Grant Writer

Nicole Rusk joins the department after working as a Senior Editor at Nature Methods for many years. After obtaining her PhD in Molecular Biology at the University of Vienna, Austria, Nicole completed her postdoctoral training at UCSF, looking at the effect of mutations in the parathyroid hormone receptor on its ability to signal, and at North Shore Hospital in Long Island, where she investigated how variants that change the phosphorylation profile of a lipid phosphatase affect the migration potential of tumor cells. Nicole then joined a team of editors at Nature Publishing Group to launch Nature Methods; she has helped shape the journal on its course from a newcomer to an established publication for tools and methods development. The areas she covered at Nature Methods included genetics, genomics and genome engineering. She will be supporting the Computational Oncology team.



Molly Samson, Clinical Research Coordinator

Molly joins us having previously worked as a Research Study Assistant in Epi/Bio under Helena Furberg-Barnes, followed by a year in Ife, Nigeria conducting research with Margaret Du and Peter Kingham on a Fulbright Fellowship. She will be supporting the research needs of Margaret Du and Robert Kurtz in her new role as the primary Clinical Research Coordinator for the MSK Pancreatic Tumor Registry (IRB #02-102).



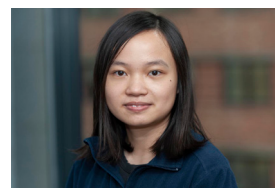
Varadan Sevilimedu, Principal Biostatistician

Varadan Sevilimedu joined the Department of Epidemiology and Biostatistics as a Principal Biostatistician recently after completing his training as a Post-Doctoral Associate at the Yale School of Public Health. In his current position at MSKCC, he will be involved in collaborative statistical research with the Departments of Breast Cancer Surgery and Radiology. He graduated in 2017 with a DrPH (Biostatistics) degree from the Jiann Ping Hsu College of Public Health, Georgia Southern University, Statesboro, Georgia and an MBBS (Bachelor of Medicine, Bachelor of Surgery) degree in 2004 from Gandhi Medical College, Hyderabad, India.



Hongyu Shi, Graduate Student

Hongyu Shi is a PhD student in Louis V. Gerstner Jr. Graduate School of Biomedical Sciences (GSK). She is co-advised by Dr. Sohrab Shah and Dr. Nikolaus Schultz. Her current research interest is understanding the tumor microenvironment of ovarian cancer with single-cell RNA sequencing.



Marc Williams, Graduate Student

Marc Williams studied physics before moving into quantitative biology, graduating with a masters degree in computational biology at University College London. He then completed a PhD in cancer genomics at the Barts Cancer Institute in London with Prof Trevor Graham, graduating earlier this year. During his PhD, he developed methods to quantify the evolutionary dynamics of tumors using computational modeling. He plans on continuing his research into tumor evolution using single cell approaches in the Shah lab.

