ICAHN INSTITUTE DEPARTMENT OF GENETICS AND GENOMIC SCIENCES NEWSLETTER

Issue 4/Spring 2015

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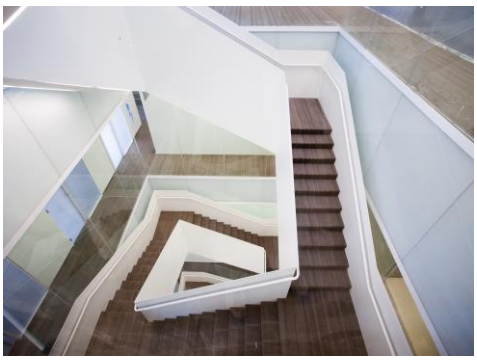


GENOMICS FACILITIES NEWS

Our **Connecticut Lab** obtained its Connecticut Laboratory Registration and is fully functional for sample receipt (blood, saliva, purified DNA) and sequencing on Life Technologies Ion Proton Platform. So far, the lab has sequenced over 500 research samples using the SuperPanel and Ion Proton instruments – the runs look very good. Data is in the hands of the client for analysis. The lab has also hired 20 full time employees. Contact **Todd Arnold** for more information on the CT lab.

AWARDS

Jonathan Karr was named Genomeweb Young Investigator

Judy Cho won the prestigious Scientific Achievement in Basic IBD Research at the annual meeting of Crohn's and Colitis Foundation of America (CCFA)

NEW SEMINAR SERIES

GENOMICS, BIG DATA, AND MEDICINE SEMINAR SERIES HOSTED BY ERIC SCHADT, PAMELA SKLAR, JUDY CHO, AND ORLI BAHCALL FROM NATURE REVIEWS GENETICS

Come see George Church, PhD, Professor of Genetics at Harvard Medical School, present on Monday, April 20th from 1:00-3:00pm in Davis Auditorium
Click here for more information on the GBM seminar series

Computational Genomics Seminar Series hosted by Zeynep Gumus and Robert Klein

Come see Murat Acar, PhD, an assistant professor of Molecular, Cellular, and Developmental Biology at Yale University, on Monday, May 4th at 1:15pm in Hess Seminar Room B.
Click here for more information on the a CG Seminar Series

GROUP SOCIAL EVENTS

Come join us at our next monthly connectivity event on Tuesday, May 5th from 12:00-1:00pm in Annenberg West Lobby. There will be lunch and a small giveaway at the end. We hope to see you there!

CONFERENCES

Gidon Akler gave a presentation at the GNE Myopathy/HIBM Advocacy Meeting sponsored by the Neuromuscular Disease Foundation entitled "Genetic carrier screening for HIBM and other genetic diseases prevalent in the non-Ashkenazi Jewish community."

Zeynep Gumus gave a keynote address titled, "Network Approaches in Computational Biology and Medicine" at the EJIBCE2014 meeting (Young Investigators in Computational and Structural Biology) at the University of Lisbon in Portugal.

Jonathan Karr spoke at Integrative Cell Models meeting in Leiden and at Japan-American Frontiers of Science Conference in Tokyo. Watch Jonathan's presentation in Tokyo here

Calogera Simonaro presented at the Translational Symposium: Accelerating Therapeutic at Development and Drug Discovery in Santiago, Chile entitled "Inflammatory mechanisms and the use of pentosan polysulfate in the Mucopolysaccharidoses" and at the World Symposia in Orlando.

Pin Xu presented at the Association for Research in Otolaryngology (ARO) meeting in Baltimore entitled "Eya1-Six1 transcriptional complex in inner ear neurosensory development."

Milind Mahajan presented at the 4th NGS Asia Congress in Singapore and gave a poster presentation at Advances in Genome Biology and Technology (AGBT) entitled "Deep Sequencing Identifies Noncanonical Editing of Ebola and Marburg Virun RNAs in Infected Cells."

Supinda Bunyavanich and Augusto Litonjua led a well-attended seminar at the 2015 Annual Meeting of American Association of Asthma, Allergy, & Immunology on examining the rationale and scientific evidence for the effects of prenatal diet on the development of asthma in childhood.

CONFERENCES

John Martignetti and team presented at the 22nd International Molecular Medicine Tri-Conference entitled "Personalized Cancer Surveillance and Recurrence Detection in Gynecologic Malignancies" and at the 16th annual Advances in Genome Biology and Technology (AGBT) meeting entitled "A novel and efficient pipeline for "precision-based" circulating tumor DNA detection in cancer patients."

Gregory Holmes reported on progress on "Transcriptome Atlases of the Craniofacial Sutures" at the First Annual Meeting of the FaceBase 2 Consortium at the Information Sciences Institute, University of Southern California.

Judy Cho presented at New York Genome Center where she discussed IBD in Ashkenazi Jewish populations in a presentation titled "Common and rare variation in inflammatory bowel disease (IBD): studies in Ashkenazi Jewish populations."

Benjamin Glicksberg presented at Pacific Symposium on Biocomputing (PSB) 2015 "An Integrative Pipeline for Multi-Modal Discovery of Disease Relationships."

Ethylin Jabs presented at the Smile Train Foundation on Genetic Epidemiology and Prevention of Oral Clefting and at NIH NICHD 10th Structural Birth Defects Meeting on Craniosynostosis Network.

Panagiotis Roussos presented at the American College of Neuropsychopharmacology on "Dissecting the cis regulation of gene expression in schizophrenia" and "Integrating genetics and epigenetics with large-scale RNA-sequencing in schizophrenia."

Rong Chen presented at the Inaugural Personalized Medicine Conference: Implementation of Next Generation Sequencing into Clinical Care on "Drug-centric Personalized Cancer Therapy Report."

PUBLISHED PAPERS

Ke Hao and colleagues published a paper in Nature Communications entitled "Genome-wide association study identifies peanut allergy-specific loci and evidence of epigenetic mediation in US children." Read paper here

Food allergies have been rising rapidly around the world over the past 20 years and now affect an estimated 2 to 10 percent of children in the United States, and have become a major clinical and public health problem.
In this study, the authors analyzed DNA samples from 2,759 participants (1,315 children and 1,444 of their biological parents). Most of the children had some kind of food allergy. They scanned approximately 1 million genetic markers across the human genome, searching for clues to which genes might contribute to increased risk of developing food allergies. They found that a genomic region harboring genes such as HLA-DB and HLA-DR and located on chromosome six is linked to peanut allergy. This study suggests that the HLA-DR and -DQ gene region probably poses significant genetic risk for peanut allergy as it accounted for about 20 percent of peanut allergy in the study population.

Lakshmi Mehta, Michelle Cahr, and colleagues published a paper in AJHG entitled "CRB2 Mutations Produce a Phenotype Resembling Congenital Nephrosis, Finnish Type, with Cerebral Ventriculomegaly and Raised Alpha-Fetoprotein." Read paper here

The paper describes the identification of a novel gene, CRB2, by whole exome sequencing, as a cause of congenital nephrosis with neurological abnormalities. This, together with a companion paper in the same issue of AJHG, are the first reports of human disease associated with mutations in this gene.

Judy Cho and colleagues published a paper in Clinical Gastroenterology and Hepatology entitled "Bridging the Gap Between Host Immune Response and Intestinl Dysbiosis in Inflammatory Bowel Disease: Does IgA Mark the Spot?" Read paper here

Inflammatory bowel disease (IBD) is a chronic, debilitating condition characterized by relapsing and remitting episodes of gastrointestinal inflammation, with multiple potential factors associated with disease onset and progression. This particular study investigates the role of the microbiome in IBD; it attempts to identify specific bacteria in specific pathogen-free (SPF) mice that are responsible for promoting a pro-inflammatory state by assessing the degree to which they are coated by the immunoglobulin, IgA. The findings suggest that bacteria highly coated IgA are potentially responsible for driving gut inflammation in patients with IBD. These results may represent a critical advance in our understanding of the complex interactions between the host immune system and commensal microorganisms as it relates to the development and disease course of IBD.

Pin Xu and colleagues published a paper in Developmental Cell entitled "Eya1 interacts with Six2 and Myc to regulate expansion of the nephron progenitor pool during nephrogenesis." Read paper here

During kidney development, the balance between self-renewal and differentiation of the nephron progenitors is essential for generating a sufficient number of nephrons in a mature kidney. However, fundamental questions about mechanisms driving self-renewal of the progenitors remain unanswered. In this study, we found that Eya1 interacts with Six2 and Myc to control self-renewing cell activity. Conditional deletion of Eya1 leads to premature differentiation of the progenitors. Six2 mediates nuclear translocation of Eya1, where it uses its threonine-phsophatase activity to control Myc phosphorylation and function in these preogenitors. Our results reveal a functional link between Eya1, Six2 and Myc in driving the maintenance of the multipotent progenitor population during nephrogenesis.

Supinda Bunyavanich and colleagues published a paper in the Journal of Allergy and Clinical Immunology entitled "Systems biology of asthma and allergic diseases: a multiscale approach." Read paper here

Supinda Bunyavanich and Eric Schadt review recent applications of system-wide profiling to asthma and allergy and provide perspective on building network models to integrate multi-scale data, including data from individually-captured personal health profiles.

PUBLISHED PAPERS

Bojan Losic and colleagues published a paper in Nature Communications entitled "Massive parallel sequencing uncovers actionable FGFR2–PPHLN1 fusion and ARAF mutations in intrahepatic cholangiocarcinoma." Read paper here

This paper presents a RNA and exome sequencing-based analysis to report a novel, frequent, disease-specific fusion event which possesses transforming and oncogenic activity within Intragepatic cholangiocarcinoma (iCCA), which is a fatal bile duct cancer with poor prognosis. It also reports damaging mutations in an oncogene at somewhat lower frequency, but taken together over 70% of iCCA patients harbor at least one actionable molecular alteration which is amenable to therapeutic targeting, potentially leading to much more effective early detection and treatment of this deadly disease. The fact that one of the fusion partners resides in an apparent fragile genomic locus implicated in other epithelial tumors may also broaden the scope of this finding.

Gregory Holmes, Harm van Bakel, Xueyan Zhou, Bojan Losic, and Ethylin Wang Jabs published a paper in Gene Expression Patterns entitled "BCL11B expression in intramembranous osteogenesis during murine craniofacial suture development." Read paper here

Sutures between bones are major growth sites during craniofacial development. Pathologic fusion of sutures occurs in a wide variety of craniosynostosis conditions, but our knowledge of suture-specific genes is poor. We describe the novel expression pattern of the BCL11B transcription factor protein during murine embryonic craniofacial bone formation. We found BCL11B expression to be associated with all craniofacial bones examined, with especially high expression in suture mesenchyme. BCL11B is expressed to potentially regulate the transition of mesenchymal differentiation and suture formation within craniofacial intramembranous bone.

Panagiotis Roussos and colleagues published a paper in Cell Reports entitled "A role for non-coding variation in schizophrenia" and a paper in Alzheimer's & Dementia entitled "TREM2 is associated with enhanced inflammation, neuropathological lesions and increased risk for Alzheimer's Dementia." Read Cell Reports paper here and Alzheimer's & Dementia paper here

Cell Reports: Roussos et al. found that schizophrenia risk variants are enriched for alleles that affect gene expression and lie within promoters or enhancers. The enrichment shows tissue specificity and is greatest when functional annotations derived from human cerebral cortex are used. For the L-type calcium channel (CACNA1C), the risk variant is associated with transcriptional regulation in the brain and is positioned within an enhancer sequence that physically interacts though chromosome loops with the promoter region of the gene.

Alzheimers & Dementia: Roussos et al examined the association of the nonsynonymous R47H TREM2 risk variant with neuropathology and molecular markes in a large postmortem cohort of neuropathologically confirmed cases with Alzheimer's disease and controls. They report association of TREM2 risk variant with more significant neuropathology (amyloid plaques and neurofibrillary tangles), increased TREM2 gene expression and increased neuroinflammatory markers.

Ethylin Wang Jabs, medical students and colleagues have published a series of papers characterizing the epidemiology, genetics, surgery, and outcomes of more than one million patients with cleft lip or palate worldwide from developing countries including China, India, and the continent of Africa. The big data set extracted is from the Smile Train, a non-profit charity organization for which Dr. Jabs is on the Medical Advisory Board.

Journal of Craniofacial Surgery: "Cleft lip and/or palate: one organization's experience with more than a quarter million surgeries during the past decade" read paper here

Plastic Reconstruction Surgery Global Open: "Oral clefting in China over the last decade" read paper here

BMC Pediatrics: "10 Year Experience and more than 35,000 orofacial clefts in Africa" read paper here

PUBLISHED PAPERS

Milind Mahajan and Omar Jabado published a paper in American Society for Microbiology entitled "Deep Sequencing Identifies Noncanonical Editing of Ebola and Marburg Virus RNAs in Infected Cells." Read paper here

This study is the first to use deep sequencing to profile viral mRNAs from either Ebola or Marburg viruses that describes previously unrecognized mechanisms, which increase coding diversity of viral mRNAs. This is also the first report of RNA editing in MARV, with single-nucleotide insertions in both the NP and L mRNAs resulting in translation of truncated versions of the NP and L proteins. These proteins may have novel functions within an infected cell or perhaps modulate the previously described function of their corresponding full-length proteins.

Bryn Webb, Patricia Wheeler, Jacob Hagen, Ninette Cohen, Michael Linderman, George Diaz, Thomas Naidich, Richard Rodenburg, Sander Houten and Eric Schadt published a paper in Human Mutation entitled "Novel, Compound Heterozygous, Single Nucleotide, Variants in MARS2 Associated with Developmental Delay, Poor Growth, and Sensorineural Hearing Loss." Read paper here

Bryn Webb, Sander Houten, Eric Schadt, and colleagues utilized whole exome sequencing to identify a novel mitochondrial disorder caused by recessive, single nucleotide variants in *MARS2*. Affected siblings had symptoms of developmental delay, growth failure, and sensorineural hearing loss. Interestingly, the sibs also had prominent pectus carinatum. Analysis of respiratory complex enzyme activities in patient fibroblasts revealed decreased Complex I and IV activities. Immunoblot analysis revealed reduced protein levels of NDUFB8 and COXII, representing Complex I and IV respectively. Additionally, a rescue experiment in fibroblasts increased NDUFB8 and COXII protein levels. This work reports a new mitochondrial translation deficiency disorder with a primary phenotype of developmental delay and hypotonia.

Benjamin Glicksberg, Li Li, Wei-yi Cheng, Khader Shameer, Joerg Hakenberg, Rafael Castellanos, Ma Meng, Lisong Shi, Hardik Shah, Joel Dudley, and Rong Chen published a paper in Pacific Symposium Biocomputing entitled "An integrative pipeline for multi-modal discovery of disease relationships." Read paper here

Rong Chen and colleagues published a paper in The Journal of Clinical Investigation entitled "Intronic locus determines SHROOM3 expression and potentiates renal allograft fibrosis." Read paper here

Pac Symp Bio: To leverage the wealth of genetic and clinical information in electronic medical records (EMR), we developed a computational pipeline and identified novel relationships between different diseases. Our findings suggest shared underlying etiology between several seemingly unrelated diseases and provided new insights into the architecture of complex human diseases. **JCI**: In collaboration with Dr. Barbara Murphy from Division of Nephrology at Mt. Sinai, we studied an intronic SNP in a gene previously linked to chronic kidney disease (CKD). Our results have revealed the molecular mechanism this SNP facilities TGF-b signaling and contributes to allograft injury in kidney transplant recipients.

Dalila Pinto and colleagues published a paper in Molecular Psychiatry entitled "The complexities of phenotypic manifestations of rare genic CNVs in Autism Spectrum Disorder." Read paper here

Autism spectrum disorders (ASDs) are phenotypically had genetically heterogeneous. To understand the impact of copy number variants (CNVs) on ASDs sub-phenotype outcomes, we set to examine whether phenotypic subgroups (or more homogenous phenotype groups) could be predicted by CNV carrier status. To do this, we focused on ASD individuals with at least one rare CNV impacting a gene, and identified groups of phenotype characteristics that would best classify CNV groups of individuals by using recursive partitioning via random forests (that do not require reduction of the predictor space), followed by standard association tests to validate random forest results. We find that in general the CNV status predicted outcome for a series of sub-phenotypes of interest, and that: 1) CNVs impacting genes known to be implicated in ASD and or intellectual disability genes were primarily associated with communication and language domains (e.g. verbal IQ); whereas 2) CNVs impacting differentially brain expressed genes were related to broader manifestations of adaptive function.

PUBLISHED PAPERS

Johan Björkegren, Jason Kovacic, Joel Dudley and Eric Schadt published a paper in Circulation: Cardiovascular Genetics entitled "Expression Quantitative Trait Loci Acting Across Multiple Tissues Are Enriched in Inherited Risk for Coronary Artery Disease" and a paper in the Journal of the American College of Cardiology entitled "Genome-Wide Significant Loci: How Important Are They?" Read Circulation paper here and read JAAC paper here

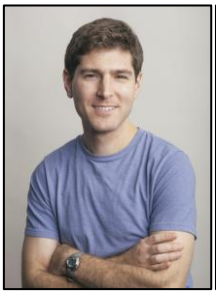
Circ: Ny performing eQTL analysis on a functional genomic dataset where seven cardiovascular disease-relevant tissues have been gene expression profiled with over 19.000 genes/sample and DNA genotyped using a 900K SNPs array for each of hundreds CVD patients- Johan Björkegren and colleagues show that eQTL affecting gene expression across multiple tissue are more relevant for CVD than those regulated in isolated tissue. The study also provides clues to candidate genes for genetic loci identified by genome-wide association studies.

JAAC: Int his state-of-the-art review, a new strategy to tackle the main cause of cardiovascular disease, coronary artery disease, using systems genetics is presented. The idea builds on extracting more disease-relevant information from existing genome-wide associations studies (GWAS) by integrating the analysis of these datasets with functional genomics datasets, like the in-house STARNET RNA sequence dataset.

Swapan Kumar Das, Neeraj Kumar Sharma, and Bin Zhang published a paper in BMC Medical Genomics entitled "Integrative network analysis reveals different pathophysiological mechanisms of insulin resistance among Caucasians and African Americans." Read paper here. Bin Zhang, Yongzhong Zhao and colleagues published a paper in Cancer Research entitled "PDGFRα and β Play Critical Roles in Mediating Foxq1-Driven Breast Cancer Stemness and Chemoresistance." Read paper here

BMC: We performed integrative gene network analyses of transcriptomic data in subcutaneous adipose tissue of 99 European Americans (Caucasians or CA) and 37 African Americans (AA) metabolically characterized as non-diabetic. We identified distinct ethnic-specific, insulin sensitivity (SI) associated gene regulatory networks and their putative key regulators. Our study provides critical insight into the transcriptional mechanisms and molecular processes underlying insulin sensitivity that could be implicated in T2D onset and may explain differences in T2D prevalence between CA and AA individuals.

Cancer Research: We reported that Foxq1, a forkhead box-containing transcription factor and EMT-inducing gene, promotes stemness traits and chemoresistance in mammary epithelial cells. We predicted Twist1, Zeb2, and PDGFRα and β as the downstream targets of Foxq1 and validated in vitro and in vivo that PDGFRα and β are directly regulated by Foxq1 or indirectly regulated through the Foxq1/Twist1 axis.



Jonathan Karr co-authored a conference paper with **Rui Chang** "Casual inference in biology networks with integrated belief propagation." Read paper here

HIGHLIGHTED PROFILES
Project Management Team

The newly formed Project Management Organization (PMO) is charged with applying fundamental project management tools and techniques to Institute projects (e.g. external collaborations, grants, etc.) helping drive their execution by achieving critical milestones. Project Managers will be embedded in project teams and, together with the Project Leader, drive the collaborative strategic decision-making necessary to successfully realize project goals. The Project Managers will strive to increase transparency into project activities, promoting open communication with the broader overall Institute and Department, as a key priority. In addition to their roles on teams, the Project Managers will develop, with support from many Institute colleagues, a web-enabled (24/7), infrastructure that will support, document and provide reporting capabilities for the overall innovative portfolio of Institute projects. These solutions will establish best practices and maintain standards related to project management, planning and execution across all projects to help ensure our overall project deliverables and goals are met. Each Project Manager highlighted below is professionally trained and each one brings a wealth of Project Management leadership, knowledge and skills to our organization.

Liz Somers

Liz brings with her 21+ years of experience. She also has a very solid science background, a track record of successfully managing complex projects and strong Management experience. Liz joined us on 12-January-2015, as Director, Project Management. Liz most recently worked for Merck (with a tenure of 19 years there) where she was an Associate Director Manager within their Global Project Management organization for the past 4 years. She successfully managed large, complex, cross-functional drug development teams in the Cardiovascular, Infectious Disease and Bone disease areas, as well as a staff of 6 entry level Project Managers. Liz was also instrumental in setting up the Project Management infrastructure at Merck which greatly helped to improve upon the maturity of the overall organization. Previous to this role, she was a Project Manager for the Rahway, NJ local integration team that was managing the Schering Plough integration efforts. In parallel, she was also a Biology Program team member in the Cardiovascular Discovery Sciences department within Target ID and Validation. She managed sample submission and was the key contact for the collaboration with Sirna in San Francisco for a year and a half period. Prior to that, she was a Research Biologist in the Cardiovascular disease area for four years, where she pioneered a Project Management role in the new targets area group. The rest of her Merck tenure includes a Research Biochemist for five years in the Cardiovascular, Immunology and Pharmacology groups, a Staff Biochemist in Pharmacology for three years and a Biochemist in Biochemistry for two years. Prior to her tenure at Merck, Liz was a Research Assistant at Rockefeller University in the lab of Cellular Physiology and Immunology.

Liz holds her Bachelor of Science in Biology from Bates College and a Master of Science in Molecular Biology from Lehigh University. She is a certified Project Management Professional (PMP) from the Project Management Institute and also holds her Six Sigma Yellow Belt certification.

Liz is managing all of the Project Managers listed below and currently supports the Pathogen Surveillance program in partnership with Deena Altman. She is located in Icahn 3rd floor – Greenland (L3-70), where she shares an office with the rest of the Project Management team. She can be reached at: 212-659-1419.

Amanda Hurley

Amanda brings with her 12+ years of experience. She also has a very solid science background, as well as, strong business skills and a successful track record of managing collaborations between two or more companies. Amanda joined us on 1-December-2014, as an Associate Director, Project Management. Amanda most recently worked for Merck (with a tenure of 8 years there) where she was a Senior Project Manager within their Global Project Management organization for 4 years. Amanda successfully managed large, complex, cross-functional drug development teams in the Cardiovascular and Diabetes disease areas. She was also instrumental in setting up the Project Management infrastructure at Merck which greatly helped to improve upon the maturity of the overall the past organization. Previous to her Project Management role, she was a Chemist for four years, where she streamlined assays and analyzed pharmacokinetic data for potential drug candidates with with the DMPK group. Prior to her tenure at Merck, she worked at the Battelle Memorial Institute in Columbus, Ohio as a Research Associate for 3 years. Amanda holds her Bachelor of Science degree in Chemistry from Ohio University and her MBA from Rutgers, the State University of New Jersey Business School. She is a certified Project Management Professional (PMP) from the Project Management Institute and also holds her Six Sigma Green Belt certification. Amanda is currently supporting our Janssen collaboration in partnership with Carmen Argmann and is working to transition the IVF program. She is located in Icahn 3rd floor – Greenland (L3-70), where she shares an office with the rest of the Project Management team. She can be reached at: 212-659-1571.

Kate Raustad

Kate brings with her 12+ years of experience. She also has a very solid science background a successful track record of managing ambiguous programs and collaborations with two or more companies. Kate joined us on 12-January-2015, as an Associate Director, Project Management. Kate most recently worked for Merck (with a tenure of 12 years there) where she

was a Senior Project Management within their Global Project Management organization for the past 4 years. She successfully managed large, complex, ambiguous, cross-functional drug development teams in the Oncology, Diabetes, Biologics, Cardiovascular and Immunology disease areas. Kate joined us on 12-January-2015, as an Associate Director, Project Management.

Kate most recently worked for Merck (with a tenure of 12 years there) where she was a Senior Project Management within their Global Project Management organization for the past 4 years. She successfully managed large, complex, ambiguous, cross-functional drug development teams in the Oncology, Diabetes, Biologics, Cardiovascular and Immunology disease areas. She was also instrumental in setting up the Project Management infrastructure at Merck which greatly helped to improve upon the maturity of the overall organization. Previous to her Project Management role, she was a Research Biologist in the Drug Metabolism department for four years. She was primarily responsible for issue driven ADME support and also worked as an *in vivo* surgeon. Prior to her Research Biologist role, Kate was a staff biologist for the Pharmacology department for two years. She was responsible for *in vivo* assay support and performed surgery on rodents. Kate also worked for the Merck Manufacturing Division as a Veterinary Testing Technician for 6 months and as a Process Analyst for one year for the department of Quality Assurance and Safety.

Kate holds her Bachelor of Science in Animal Science with a concentration in Pre-Veterinary Studies from the University of Delaware and a Master of Science in Biology from Rutgers, the State University of New Jersey. She is also a Certified Project Manager (CPM) and also holds her Six Sigma Yellow Belt certification.

Kate is currently supporting our Clinical Cancer Genomics program in partnership with Bob Maki and our Personalized Cancer Therapy (PCT) program. Kate is located in Icahn 3rd floor – Greenland (L3-70), where she shares an office with the rest of the Project Management team. She can be reached at: 212-659-1497.

Samantha Violante

Samantha (Sam) brings with her 11+ years of experience. She has a solid science background and a master's degree in Public Health. Sam joined us on 1-December-2014 as a Senior Project Manager. Sam most recently worked for Merck (with a tenure of 10 years there) where she was a Project Manager within their Global Project Management organization for the past 3 years. She successfully managed large, cross-functional drug development teams in the Diabetes disease areas. Sam was also instrumental in setting up the Project Management infrastructure at Merck. Specifically, she successfully led the build of the Project Management sharepoint teamsites for the entire project portfolio. Previous to her Project Manager role, she was an Associate Scientist for seven years, also at Merck, where she managed replication of solution compounds for distribution to clients and she led the coordination of integration activities for the transfer of one million compounds, when Merck merged with Schering Plough. Prior to her tenure at Merck, she worked at Acutest Laboratories as an Organic Analyst for one year.

Sam holds her Bachelor of Science degree in Biology from the Richard Stockton College of NJ and her Masters of Science in Public Health from Walden University. She is a Certified Project Manager (CPM), a certified Change Manager and she also holds her Six Sigma Green Belt certification. Sam is currently supporting our Lilly collaboration in partnership with Rad Savic and our digital health collaboration with Apple in partnership with Yvonne Chan. She is located in Icahn 3rd floor – Greenland (L3-70), where she shares an office with the rest of the Project Management team. She can be reached at: 212-659-1443.

Sarah Schuyler

Sarah brings with her 5+ years of experience in corporate consulting and healthcare operations. She has a human physiology background and is currently completing a master's degree in Public Administration. Sarah joined us on 1-December-2014 as a Project Manager. Sarah most recently worked for Stamford Hospital in Connecticut where she was a Business Manager for Perioperative Services for the past year. In that role, she oversaw daily business operations for surgical services, including analysis and reporting of financial performance, quality, operating room utilization, and operational efficiency. She also managed a 12-person administrative team and $36M surgical operating budget. Previous to her Business Manager role, she spent 3.5 years as a Project Manager at Booz Allen Hamilton, where she managed program assessments and business process improvement projects for three global financial services companies in order to achieve efficiency, cost savings, risk mitigation, and compliance. During her time at Booz Allen she also helped develop standard Project Management infrastructure for corporate clients, conducted business continuity trainings at five European client sites, and acted as Chair of the NYC Workforce Leadership Council. Prior to her tenure in consulting, Sarah served as an AmeriCorps volunteer and managed fundraising and charity projects for the Organization for Autism Research.

Sarah holds her Bachelor of Arts degree in Exercise & Sports Science from University of North Carolina at Chapel Hill and she is currently working on her MPA in Health Policy & Management from New York University with an expected graduation date in 2016. She is also a certified Project Manager Professional (PMP) from the Project Management Institute. Sarah is currently supporting our Berg collaboration in partnership with Carmen Argmann and Zhidong Tu, our Deepak Chopra collaboration in partnership with Eric Schadt and UCSD, and the AMP-AD grant in partnership with Bin Zhang. Sarah is located in Icahn 3rd floor – Greenland (L3-70), where she shares an office with the rest of the Project Management team. She can be reached at: 212-659-1484.

GRANTS

PI: Joe Scarpa, Mentor: Andrew Kasarskis

NRSA F30 Predoctoral MD/PhD Fellowship

NIH National Institute of Mental Health

March 1, 2015 – February 28, 2019

Probing networks underlying sleep and stress with multiscale data

This proposal focuses on identifying causal molecular networks common to sleep and stress traits in order to investigate novel disease mechanisms and therapeutic strategies relevant to neuropsychiatric disorders.

PI: Zuleyma Peralta,

Mentor: Harm van Bakel, Adolpho Garcia-Sastre

NRSA F31 Predoctoral Fellowship

NIH National Institute of Allergy and Infectious Diseases

December 1, 2014 – November 31, 2019

Analysis of Influenza Virus Polymerase Interactions With The Host Transcriptome

This proposal is to study influenza using a novel Next Generation Sequencing approach that will shed further light on influenza's cap-snatching mechanism selectivity and its importance to infection beyond simply producing capped vmRNAs, and may ultimately lead to the development of novel drugs that target this essential process.

PI: Patricia Kovatch

New York State Empire Development Fund

November 1, 2014 – August 31, 2015

Participate in the NY State High Performance Computing Consortium (HPC2)

HPC2 is a partnership between NYSERNet and supercomputing centers at RPI, Stony Brook, Brookhaven, SUNY Buffalo, and now Icahn School of Medicine, in order to increase New York State's competitiveness and foster economic development by providing industry and academic institutions with high performance computing resources.

PI: Dalila Pinto

NIH National Institute of Mental Health

December 1, 2014 – November 30, 2016

Long non-coding RNAs in gene regulatory networks underlying Autism

This project is also part of the PsychENCODE consortium initiative

GRANTS

Multiple-PI R01 grant

PI: van Bakel, Marrazzi

January 1, 2015 – December 31, 2019

Multi-level analysis of influenza virus polymerase and its role in pathogenesis

Infection with Influenza virus results in a wide range of outcomes, from mildly symptomatic to death. Using novel reporter viruses, proteomics, and next--generation sequencing techniques we will characterize, in a physiological setting of infection, the viral polymerase:host interactions, the basis of viral transcription, and the interplay between cellular and viral transcription at genomic scale. For each of these processes we will assess their role in influenza virulence and pathogenesis.

PI: Jose Clemente

NIH (New York University)

July 1, 2014 – June 30, 2016

Evolution of risk factors for Sinusitis in WTC exposed firefighters

This proposal will test the hypothesis that inflammatory cell concentration in a clinical Complete Blood Count (CBC) predicts subsequent sinusitis severity in WTC-exposed firefighters.

PI: Brian Brown

NIH National Institute of Allergy and Infectious Diseases
Leading research to understand, treat, and prevent infectious, immunologic, and allergic diseases.

R01 NIH National Institute of Allergy and Infectious Diseases

January 1, 2015 – December 31, 2019

Modulating Immunity to Nucleic Acids and Inducing Tolerance by Gene Transfer

The goal of this project is to develop a means to prevent the inflammatory response to gene-based drugs, and to use gene transfer to induce antigen-specific tolerance for preventing unwanted immune responses. The objectives of this project are: to identify molecular and cellular pathways that control the innate response to oligonucleotides and gene vectors, to target these pathways to dampen the innate response to gene delivery, and to exploit this effect for inducing immunological tolerance.

GRANTS

PI: Inga Peter

International Organization for the Study of Inflammatory Bowel Disease (IOIBD)

November 1, 2014 – October 31, 2015

Bacterial Transmission In Utero and IBD risk

The goal of this study is to better understand the link between maternal and newborn microbiome by investigation of the microbial composition of the stool of newborn babies born to mothers with inflammatory bowel diseases (IBD), Crohn's diseases and ulcerativecolitis, as compared to healthy mothers.

PI: Joel Dudley

Astra Zeneca

October 1, 2014 – September 30, 2016

Astra Zeneca gene expression and repurposing agreement

This collaboration will generate gene expression data for AstraZeneca compounds and use informatics at the IIGMB to identify novel target-disease associations and find drug repurposing opportunities.

PI: Joel Dudley

GlaxoSmithKline

December 1, 2015 – November 30, 2018

Collaboration with GlaxoSmithKline for Postdoctoral Scholar Position

The goal of this project is to establish a sponsored Postdoctoral Scholar position to investigate novel computational methods for drug repurposing, predictive toxicology, precision medicine, and target discovery.

PI: Joel Dudley

GlaxoSmithKline

December 12, 2014 – December 11, 2015

Stiefel/ Icahn School of Medicine at Mount Sinai Acne Disease Understanding

This project will fund a postdoc to investigate comprehensive understanding of the pathophysiology of acne and identify next generation therapeutics.

PI: Joel Dudley

Janssen Research & Development, LLC

February 10, 2015 – February 9, 2017

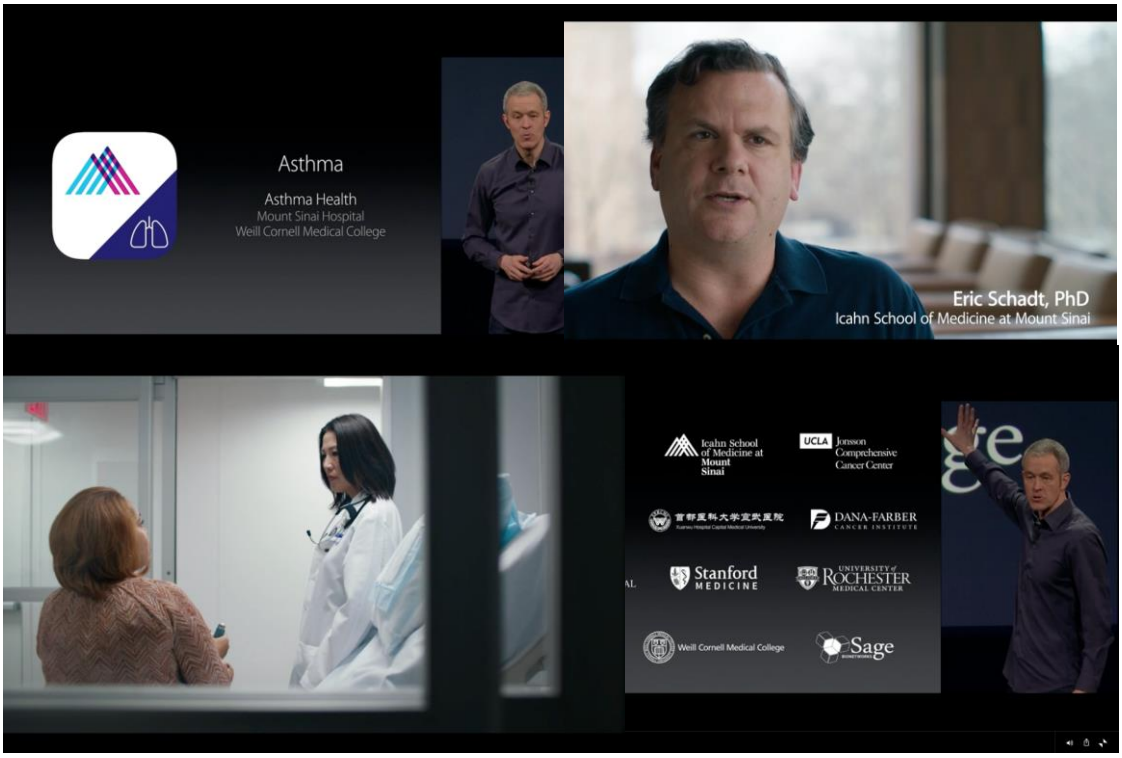
Asthma and COPD Chemogenomics and Drug Repurposing Study

The goal of this project is to apply integrative chemogenomic methods to elucidate disease understanding and therapeutic opportunities in Asthma and COPD

MEDIA HIGHLIGHTS

Apple announced the launch of ResearchKit and **Mount Sinai** was one of the 5 featured launch partners, with our Asthma Health App. Check out our webpage re: our Asthma Health App here

Click here and click "watch film" to see **Apple's** ResearchKit Marketing Video, which opens with **Eric** Schadt and includes glimpses of our Mount Sinai Campus.



BloombergBusiness

Click here to watch Eric Schadt's interview re: how the iPhone is helping doctor's battle diseases on **Bloomberg TV**

FOX NEWS

Click here to read a **Fox News** article on Eric Schadt
Click here to read an interview with Eric Schadt re: Apple's new ResearchKit published by **Fox News**

Modern Healthcare

Click here to read an interview with Yvonne Chan re: our Asthma App published by **Modern Healthcare**

BUSINESS INSIDER

Click here to read an interview with Yvonne Chan re: Apple's new ResearchKit launch published by **Business Insider**

MEDIA HIGHLIGHTS

Apple issued a press release re: the launch of HealthKit, which highlighted the **Icahn School of Medicine** and included quotes from **Eric Schadt**. Read the press release here

"When it comes to researching how we can better diagnose and prevent disease, numbers are everything. By using Apple's new ResearchKit framework, we're able to extend participation beyond our local community and capture significantly more data to help us understand how asthma works," said **Eric Schadt, PhD, the Jean C. and James W. Crystal Professor of Genomics at the Icahn School of Medicine at Mount Sinai**, and Founding Director of the **Icahn Institute for Genomics and Multiscale Biology**. "Using iPhone's advanced sensors, we're able to better model an asthma patient's condition to enable us to deliver a more personalized, more precise treatment."

Developed by the **Icahn School of Medicine at Mount Sinai** and **LifeMap Solutions**, the Asthma Health app is designed to facilitate asthma patient education and self-monitoring, promote positive behavioral changes and reinforce adherence to treatment plans according to current asthma guidelines. The study tracks symptom patterns in an individual and potential triggers for these exacerbations so that researchers can learn new ways to personalize asthma treatment.

MEDIA HIGHLIGHTS

THE WALL STREET JOURNAL. ≡ | LIFE & CULTURE

HEALTH & WELLNESS

New Genetic Tests for Women Who Are Expecting

A Growing Array of Tests to Check If Women Are Carriers for Mostly Rare Diseases

Lisa Edelmann, Director of our MS Genetic Testing Lab, was quoted in today's *Wall Street Journal* in an article "New Genetic Tests for Women Who are Expecting." **Read article here**

Ashkenazi Jews, those hailing from Eastern Europe, have long been tested for about 20 genetic disorders including Tay-Sachs disease, Canavan disease and familial dysautonomia, a neurological condition. ***New York's Mount Sinai Medical Center*** *recently expanded its screening for this group to include 38 possible diseases, after the hospital's genetic testing laboratory found these patients are at increased risk of being a carrier for a wider range of genetic conditions than previously thought.*

Mount Sinai also offers for as much as $1,000 broader carrier screening to all women, Jewish or not, for a total of 111 disorders. "If you want to know your carrier status for a larger number of diseases, do the all-inclusive testing," says ***Lisa Edelmann, director of Mount Sinai's genetic testing lab****. "So many people don't really know their full ancestry. I know on one side that I am a quarter Italian and at least a quarter Polish, but the other half is not as clear."*

The New York Times

Eric Schadt and **Stephen Friend** were interviewed for a front page article in ***The New York Times*** re: the Resilience Project, entitled "In a New Approach to Fighting Disease, Helpful Genetic Mutations Are Sought." **Read more** here.

TECHONOMY

Eric Schadt was interviewed by *Techonomy* regarding tech- empowered healthcare. Read article here

HEALTHCARE | INTERNET OF THINGS + EMAIL + PRINT

How Many Heartbeats Today? Are Patients Ready to Become Tech-empowered Healthcare Consumers?

By Meredith Salisbury | November 21, 2014, 3:43 AM | *Techonomy Exclusive*

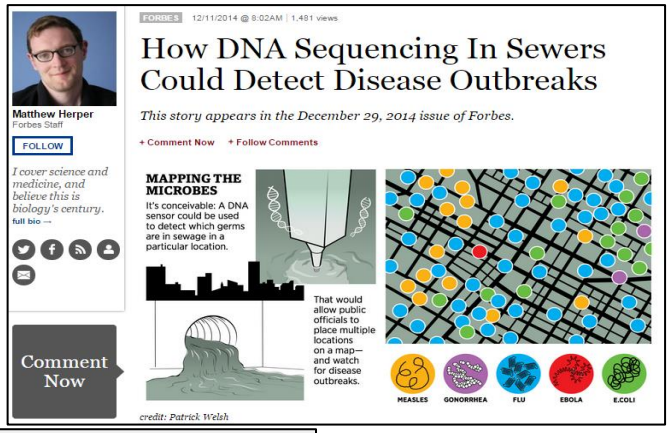
MEDIA HIGHLIGHTS

SCIENCE&VIE
QUAND LA SCIENCE DÉCRYPTE LA SOCIÉTÉ

Science & Vie, the French science magazine with approximately 4 million readers, published an article on the **Resilience Project** based on interviews with **Eric Schadt** and **Stephen Friend**.

Forbes

Eric Schadt was interviewed by *Forbes* regarding pathogen surveillance "How DNA Sequencing in Sewers Could Detect Disease Outbreaks." Read article here



Yale Daily News
THE OLDEST COLLEGE DAILY
ESTABLISHED 1878

Branford genomics facility expands

BY LIONEL JIN CHENTIAN
STAFF REPORTER

"Arnold said that while the Branford facility is still ramping up its operations, their goal is to process tens of thousands of genomic samples by the end of 2015. The facility is in the process of getting the required certification that would allow it to process patient samples for diagnostic use, but is already handling research samples.

The ***Yale Daily News***, the oldest college daily newspaper, published an article on our Connecticut Lab and interviewed **Andrew Kasarskis, Todd Arnold,** and **Krista Perrella.**
Read more **here.**

Jason Bobe was invited to a **White House** event where **President Obama** announced his **Precision Medicine Initiative.**

NEW HIRES

In the past few months, we have hired **49** people for the **Icahn Institute and GGS Department**

Adeeb Rahman Assistant Professor CSM6 Lab	**Yu-Feng Yvonne Chan** Assistant Professor CSM8	**Angela Yannes** Lab Coordinator Branford, CT	**Divya Hoon** Associate Researcher IMI-14 lab	**Kate Raustad** Program Manager IMI-3	**Sarah Aly** Clinical Research Coordinator 5 East 98th	**Chelsea Xu** Associate Researcher IMI-14 lab
Donald Marks LIMS Manager Branford, CT	**Patricia Glowe** Program Manager IMI-3	**Elizabeth Kreuser** Research Program Coodinator Branford, CT	**Amanda Hurley** Program Manager IMI-3	**Kenneth Santa Cruz** Clinical Research Coordinator 5 E 98th Street	**Yuefen Du** Lab Coordinator Atran 2	**Ningning Guo** Senior Scientist IMI-14
Michael Giordano Lab Quality Assurance Manager Branford, CT	**Pankaj Prasum** Assistant Professor Atran-1	**Samantha Violante** Program Manager IMI-3	**Sarah Schuyler** Program Manager IMI-3	**Leonid Rozenberg** Technology Specialist Union Square	**Chistopher Jaglal** Lab Coordinator Atran 2	**William Gibson** Associate Researcher CSM8
Ying Ru Associate Researcher IMI-14 lab	**Zhihua Li** Senior Associate Researcher CSM8 lab	**Kuixi (Josh) Zhu** Associate Researcher IMI-3	**Mridu Middha** Data Analyst CSM8	**Ting Zhang** Fellow IMI-14 lab	**Elisabeth Kipping** Sr. Clinical Research Coordinator IMI-3	**Yi Ge** Lab Coordinator Atran2
Weiping Ma Fellow Branford, CT Lab	**Darren Kong** Associate Researcher IMI-14 lab	**Jacob Marianovsky** Associate Researcher Atran-2	**Nadera Bholanauth** Patient Coordinator Atran-1	**Jody Ann Facey** Associate Researcher CSM8	**John Antonydas Gasper** Fellow IMI-14 lab	**Gregorio Rodriguez** Accessioning Specialist Branford, CT
Rileen Sinha Senior Scientist 1255	**Amy Conner** Genetic Specialist	**Krista Perrella** Lab Coordinator Branford, CT	**Maxwell Drogin** Trainee IMI-14 lab	**Amy Frate** Accessioning Specialist Branford, CT	**Nataly Roitershtein** Associate Researcher IMI-14	**Max Thomlinson** Bioinformatician IMI3
Derek Hibbs Lab Coordinator Atran-2	**Kristen Swithers** Bioinformatician CSM8 lab	**Victoria Parkington** Senior Associate Researcher Branford, CT	**Elizabeth Somers** Program Director IMI-3	**Pooja Sandhuria** Associate Researcher IMI-13 lab	**Om Prakash Pandey** Fellow IMI-3	**Nina Singh** Billing Coordinator Atran1

ANNOUNCEMENTS

Milind Mahajan taught an online course on transcriptome sequencing as part of Graduate School of Biomedical Sciences online teaching program.

Consistent with the theme of cutting-edge research in lipid and vascular biology research, the featured speakers on January 16th were **Judy Cho** and Garret Fitzgerald, MD FRS, Professor of Medicine and Pharmacology at Perelman School of Medicine.

For more information, click here.

Pallavi Devchand is the organizer of the **New Year Lipid and Vascular Biology Research Club.** This is a historic series that has traditionally featured renowned scientists. Mount Sinai is among five New York Institutions that participate in the 51st year of this series held at Rockefeller University.

For more information, visit our website

Find Mount Sinai & The Icahn Institute on:
Twitter, Facebook and YouTube

Thank you to all who contributed information for the Early Spring Issue of this newsletter. Please send any submissions for March, April and May to IIGMBadmin@mssm.edu