News, Literature, and Events in Braingenethics

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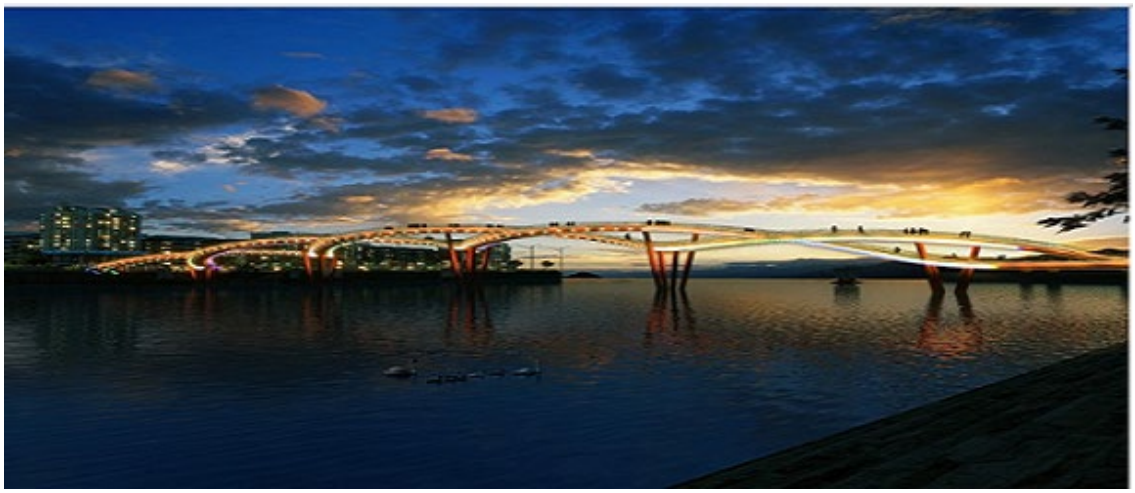
Braingenethics Update

Vol. 3, No. 10
January 2017
braingenethics.cumc.columbia.edu/



Columbia CEER Fellowship Opportunity

Post Doctoral Fellowship

The Center for Research on Ethical, Legal and Social Implications of Psychiatric, Neurologic and Behavioral Genetics at Columbia University announces the availability of a post-doctoral fellowship position to begin September 2017.

The goal of the fellowship is to train researchers whose work is focused on the ethical, legal and social implications of advances in genetics, with a special focus on psychiatric, neurologic, and behavioral genetics. Training programs, which will generally last 2 years, include course work, mentored research activities, guidance in seeking research funding, and participation in the activities of the Center. All activities are designed to accommodate the skills and interests of the fellows.Candidates should have a doctorate (e.g., PhD, JD, MD) in the social and behavioral sciences, genetics or other basic sciences, epidemiology, nursing, medicine, law, or one of the humanities, and substantial empirical research skills.

The deadline for application is **February 15, 2017**. For further information about the program and application materials, please contact the Training Director, Sharon Schwartz, PhD: sbs5@columbia.edu.

In the Literature

Personal Genomic Testing for Cancer Risk: Results From the Impact of Personal Genomics Study

Stacy W. Gray et al.

Through longitudinal surveys of new 23andMe customers, researchers investigated customers' behaviors in response to results from direct-to-consumer personal genomic testing. Most research participants did not significantly change their diet, exercise, advanced care planning or cancer screening behaviors, even in response to elevated cancer risk estimates.

- **In the Media:** Genetic Testing for Cancer Risk Doesn't Change Consumer Behavior, PGen Study Finds

Physician Attitudes Will Impact Adoption of Prenatal Whole Genome Sequencing

Jeannine Mjoseth

A survey of more than one thousand physicians concludes that technological and ethical issues related to prenatal whole genome sequencing must be assessed before the test becomes clinically available. The dearth of genetic counselors, and their necessity in conveying essential pre- and post-test care, is of particular significance.

Interpreting Heritability Causally

Kate E. Lynch and Pierrick Bourrat

Heritability estimates of traits can be interpreted differently in cases of gene-environment covariance. The authors argue that inconsistency in the literature surrounding the concepts of "genotype", "phenotype" and "environment" may contribute to these interpretations, and propose a definition of these terms that is adaptable in contexts of genetic and/or

In The Media

Your Success Is Shaped by Your Genes

Alison Beard

The Harvard Business Review interviews Duke University School of Medicine professor Daniel Belsky, discussing "The Genetics of Success" and other findings stemming from a longitudinal study of 918 people from Dunedin, New Zealand.

Exploring the Epigenetics of Ethnicity

Anna Azvolinsky

Researchers from the University of California, San Francisco investigated epigenomic links of race and ethnicity through analyses of genomic methylation patterns in Latino children. While 75% of methylation signatures can be explained by genetic ancestry, a quarter seem to be the result of social and environmental factors, and co-vary with self-identified race and ethnicity. More research is needed to understand the interchangeability of race and ethnicity with genetic ancestry in medical applications.

MicroRNA May Be the Cause of "Voices" in the Schizophrenic Head

GEN News Highlights

A study from St. Jude Children's Research Hospital suggests that microRNAs (miRNAs) could be responsible for "voices" and other hallucinations of schizophrenia. Researchers believe a particular miRNA could restore normal function in the brain circuits

environmental variance.

Is Construct Validation Valid?
Anna Alexandrova and Daniel M. Haybron
Construct validation, a dominant measure of well-being in contemporary research, uses psychometrics to ensure that self-reports of happiness, life satisfaction and perceived quality of life are valid measurement tools. The authors critique construct validation and propose suggestions for improvement of its metrics.

Precision Medicine in Context

The Precision Medicine Initiative's All of Us Research Program: An Agenda for Research on its Ethical, Legal, and Social Issues
Pamela L. Sankar and Lisa S. Parker
The Precision Medicine Initiative (PMI)'s All of Us Research Program aims to assemble a 1 million volunteers who will contribute longitudinal health data and biospecimens to a centralized national database. The authors identify three Ethical, Legal and Social Issues (ELSI) notable to the All of Us Program, specify which issues warrant ongoing research by the PMI and outside researchers, and propose that the PMI create a research program to investigate these topics.

The Fuzzy World of Precision Medicine: Deliberations of a Precision Medicine Tumor Board
Sarah A McGraw et al.
Through interviews and

associated with schizophrenia, implying a possible future direction for the development of antipsychotic drugs.

Singapore Team Identifies Gene That Could Play Role in Autism
Janice Tai
Researchers from the National University of Singapore and Duke University have discovered an association between autism spectrum disorder (ASD) and a mutation of the gene CDH13, which impacts brain circuitry and neuron communication. The study will be submitted to science journals next month.

Neural Stem Cells Serve as RNA Highways Too
Kelly Rae Chi
Research at Duke University School of Medicine offers a new perspective into Fragile X syndrome, an autism-related disorder. Scientists observed the rapid transport of mRNA across the endfeet of neural stem cells by FMRP, a protein deficient in people with Fragile X syndrome. These findings suggest that a deficiency of FMRP could reduce movement of mRNA and negatively impact brain function.

observations of a cancer precision medicine tumor board, researchers concluded that the analytic validity and clinical utility of scientific evidence, as well as the social contexts of the board, influence decisions about the return of results.

Evaluating Precision Medicine's Ability to Improve Population Health: reply to Khoury and Galea

Michael Hoosien & Mohamed Elshazly

To fully leverage the utility of precision medicine, biological componants other than genomics will need to be assessed. As affordable technologies make this possible, a "multiomics" approach may shed more light on disease-risk profiles.

Author Reply: Evaluating Precision Medicine's Ability to Improve Population Health

Muin J. Khoury & Sandro Galea

In response to Drs Hoosien and Elshazly, the authors reiterate that they are not opposed to the principle of precision medicine as a concept. Rather, it needs to be evaluated not only with respect to its ability to integrate complex data and improve health outcomes.

In the Literature, cont.

ASD and Schizophrenia Show Distinct Developmental Profiles in Common Genetic Overlap with Population-Based Social Communication Difficulties

Beate St.Pourcain et al.

This study investigated whether overlap in common genetic influences between autism spectrum disorders and schizophrenia and deficits in social communication depend on developmental stage. It concludes that both diseases share genetic influences for impairments in social communication, but have distinct genetic developmental profiles.

Genome-Wide Changes in lncRNA, Splicing, and Regional Gene Expression Patterns in Autism

Neelroop N. Parikshak et al.

This post-mortem genome-wide transcriptome analysis examines the noncoding regulatory factors that could contribute to autism spectrum disorders (ASD). The analysis finds significant correlations between ASD and various epigenomic signatures in long noncoding RNAs, alternative splicing of neuron-specific exons and gene expression in the frontal and temporal lobes.

Disease Burden and Symptom Structure

Read more PMiC in November's BGE.

Genome-Wide Analyses for Personality Traits Identify Six Genomic Loci and Show Correlations with Psychiatric Disorders
Min-Zhu Lo et al.
Investigators at the University of California San Diego School of Medicine identify six loci in the human genome that are significantly linked to personality traits, with some also correlated with psychiatric disorders. The GWAS study analyzed genetic variation among five personality traits and six psychiatric disorders.

- **In the Media:** Personality Traits Mapped to Specific Genomic Locations

23andMe, Big Data, and the Genetics of Depression
Jennifer Abbasi
This commentary reviews recent studies about the genetic influences of major depressive disorder (MDD), commenting in particular on a study from Pfizer, 23andMe and Massachusetts General Hospital, which utilized large datasets to identify significant variants associated with MDD. The author comments on the importance of big data in such studies, and on the significance of the introduction of for-profit companies for data collection and research.

- See our summary of the Massachusetts General study in the September Issue of Braingenethics.

Employment Opportunity at

of Autism in Neurofibromatosis Type 1
Stephanie M. Morris et al.
Multiple recent reports have found correlations between autism spectrum disorder (ASD) and neurofibromatosis type 1 (NF1). Through an international quantitative trait analysis, this study concludes that the diversity of mutations causing NF1 can function as quantitative trait loci for ASD. Future research and clinical work should regard NF1 as a comorbidity, and further investigate NF1's connections with the biological features of autism.

Increased Burden of Deleterious Variants in Essential Genes in Autism Spectrum Disorder
Xiao Ji et al.
In light of the highly heritable and complex genetic nature of Autism spectrum disorder (ASD), researchers investigated whether genes with a strong effect on survival and fitness could contribute to ASD risk. This mouse study identified several essential genes and mutations to focus on in continued research, and exemplified the utility of large-scale gene function studies in model organisms for the prioritization of genes and variants involved in ASD.

Association of Genetic Risk Variants With Attention-Deficit/Hyperactivity Disorder Trajectories in the General Population
Lucy Riglin et al.
This longitudinal study discovered an association between the persistence of attention-deficit/hyperactivity disorder (ADHD) symptoms across childhood and adolescence and higher polygenic risk scores for ADHD and childhood multimorbidity.

The ESC/E(Z) Complex, an Effector of Response to Ovarian Steroids, Manifests

|MC:SUBJECT|

The Hastings Center

Rice Family Fellowship in Bioethics and the Humanities

The Hastings Center seeks applications for a 1-year, full-time fellowship position. Supported by the National Endowment for the Humanities (NEH) and private donors, The Hastings Center's new Humanities Research Initiative is now looking to award the inaugural Rice Family Fellowship in Bioethics and the Humanities. The successful candidate will be no more than 5 years beyond dissertation studies in the humanities and will show the potential to creatively and energetically contribute to the Initiative's theme this year: "The Gift and Weight of Genomic Knowledge."

The deadline for application is **March 3, 2017**. Apply here, read more here, and contact fellowship@thehastingscenter.org with any additional questions.

an Intrinsic Difference in Cells From Women with Premenstrual Dysphoric Disorder

Neelima Dubey et al.

This study analyzed the impacts of opioid steroids on symptoms of women with premenstrual dysphoric disorder (PMDD). Women with PMDD display hyperexpression of an ovarian steroid-regulated gene silencing complex, suggesting that the dysregulation of such genes could contribute to PMDD.

- **In the Media:** Women's genes change during PMT, scientists find, raising hope for cure

Ultra-Rare Genetic Variation in Common Epilepsies: A Case-Control Sequencing Study

Epi4K Consortium and Epilepsy Phenome/Genome Project

In a case-control sequencing study with exome sequence data, researchers discovered that people with common forms of epilepsy also have gene variants previously linked only to rare epilepsies. These findings establish a genetic connection between common and rare, severe epilepsies, and confirm that variants contributing to epilepsy risk are exceptionally rare in the general population.

- **In the Media:** Genes Linked to Rare Epilepsies Also Implicated in Common Epilepsies

Upcoming Events

February Seminar on Ethical, Legal and Social Implications of Genetics

Monday, February 6th, 2016, 12:00 pm, Florence Irving Auditorium, Herbert Irving Comprehensive Cancer Center

This month's speaker is Dr. Consuelo Wilkins, the Executive Director of the Meharry-

Vanderbilt Alliance and an Associate Professor of Medicine at the Vanderbilt University Medical Center and Meharry Medical College. Dr. Wilkins's talk is titled "*Engagement, Equity, and the Promise of Precision Medicine.*"

2017 Genomics and Society: Expanding the ELSI Universe (The 4th ELSI Congress)

June 5, 2017, The Jackson Laboratory for Genomic Medicine and UConn Health, Farmington, CT

This is the latest in a series of major conferences for ELSI researchers and others interested in the ethical, legal, and social implications of genomic research.

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