News, Literature, and Events in Braingenethics

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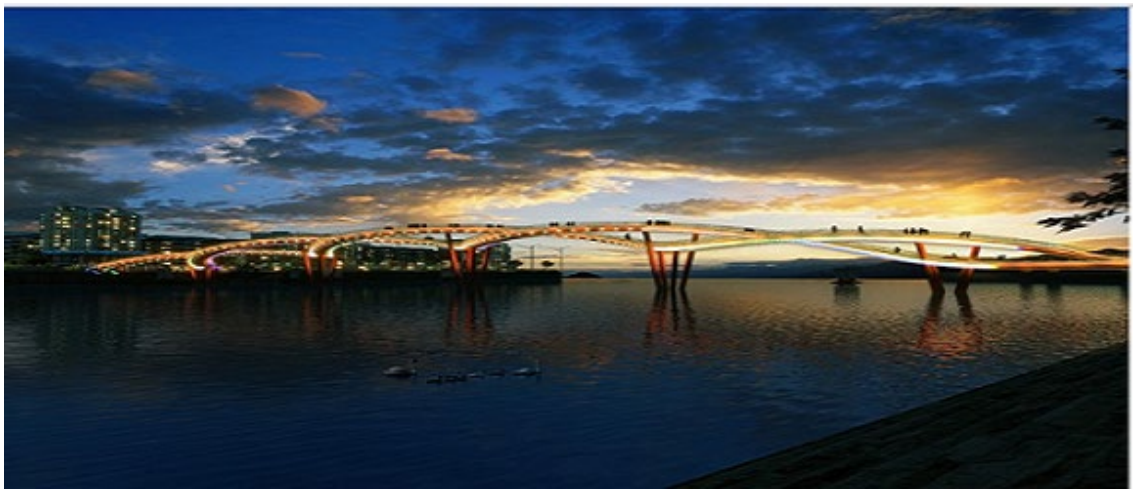

In the Literature

Integrating Behavioural Health Tracking in Human Genetics Research
Nelson Freimer and David Mohr
Internet-connected devices could transform our understanding of the causes of behavioural variation and its impact on health and disease, in particular for neuropsychiatric disorders.

Optimal Integration of Behavioral Medicine into Clinical Genetics and Genomics
William Klein et al.
Clinical genetics and genomics will exert their greatest population impact by leveraging the rich

In the Media

Why Genetic Tests Matter for Autistic People
Jessica Wright
Genetic tests for people with autism are far from routine and don't always yield results, but the information they offer can help with uncertainty, guilt, and a variety of co-occurring health issues.

Europe's Race to Ramp Up Genetic Tests for Autism
Marta Zaraska
Many countries in Europe are reckoning with the growing demand for genetic tests for autistic people, as well as the accompanying ethical and scientific considerations.

knowledge of human behavior that is central to the discipline of behavioral medicine. More concerted efforts are needed to integrate these fields. The authors consider barriers and potential actions to hasten such integration.

Genetic Testing Practices of Genetic Counselors, Geneticists, and Pediatric Neurologists with Regard to Childhood-Onset Neurogenetic Conditions

Sara Wofford et al.

Pediatric neurologists use genetic testing differently than geneticists and genetic counselors and report lower confidence in test use. Continued integration of genetics providers, such as genetic counselors, into pediatric neurology clinics may improve utilization of genetic testing while reducing the burden on pediatric neurologists.

Patient-Provider Communications about Pharmacogenomic Results Increase Patient Recall of Medication Changes

Brittany Borden et al.

Using genomic information during prescribing increases patient-provider communications, patient medication recall, and provider understanding of genomics, important ancillary benefits to clinical use of pharmacogenomics.

Predispositional Genome Sequencing in Healthy Adults: Design, Participant Characteristics, and Early Outcomes of the PeopleSeq Consortium

Emilie Zoltick et al.

The first results from the PeopleSeq Consortium, a collaboration of

Consistency, privacy, and equity are among those concerns.

Researchers Explore the Genetics of Eating Disorders

Amy Lewis

Large-scale genomic studies of anorexia and bulimia are turning up clues about the conditions' development and persistence.

Embryo Editing for Higher IQ Is a Fantasy. Embryo Profiling for It Is Almost Here

Erik Parens, Paul Appelbaum, and Wendy Chung

Due to the thousands of SNPs implicated in IQ, for the foreseeable future, editing embryos to enhance IQ is science fiction. However, profiling embryos for educational attainment, often used as a proxy for IQ, yields polygenic risk scores that can be used for embryo profiling today, bringing up many of the same ethical issues.

China's CRISPR Twins Might Have Had Their Brains Inadvertently Enhanced

Antonio Regalado

New research suggests that the alteration to the CCR5 that He Jiankui introduced to Chinese twins may have enhanced their ability to learn and form memories.

Doctors Plan to Test a Gene Therapy That Could Prevent Alzheimer's Disease

Antonio Regalado

A clinical trial at Weill Cornell Medicine is investigating a novel dementia treatment that involves flooding participants' brains with a low-risk version of *APOE*.

projects examining medical, behavioral, and economic outcomes of returning genomic sequencing information to healthy individuals, suggest that although learning genetic results is often accompanied by learning new ways to improve health, fewer than 10% of participants reported making changes to their diet, exercise habits, or insurance coverage because of their results.

Information and Genetic Counselling for Psychiatric Risks in Children with Rare Disorders
Andrew Cuthbert et al.
Parents of children with rare genetic disorders with co-occuring psychiatric disorders are often unsatisfied with communication of genetic test results and find support groups much more informative than geneticists, pediatricians, or websites.

Electronic Health Records Are the Next Frontier for the Genetics of Substance Use Disorders
Sandra Sanchez-Rioge and Abraham Palmer
Compared with other psychiatric disorders of similar heritabilities, the progress of substance use disorders genetics has been slow. With the growing availability of large-scale biobanks with extensive phenotypes from electronic health records and genotypes across millions of individuals, this platform is the next tool to accelerate substance use genetics research.

An African-Specific Haplotype in MRGPRX4 is Associated with Menthol Cigarette Smoking

In China, Some Parents Seek an Edge with Genetic Testing for Tots
Michael Standaert
Competition among China's school-age children is pushing parents to try genetic "talent testing," an assessment with little scientific basis that figures prominently in China's fast-growing genetics industry.

Using Genetic Tests to Tailor Antipsychotic Treatments to Individual Patients
Abigail Fagan
An international team of researchers discovered a strong link between polygenic risk score and response to antipsychotic medication. This is based on assessments of 510 individuals who recently experienced psychosis for the first time before and after 12 weeks of treatment.

Activist Who Met with Congressmen about 'DNA' Posted about Black 'Violence Gene'
Brandy Zadrozny and Ben Collins
Right-wing pundit Chuck Johnson, who has previously aired views about the genetic connection between race and violence, met recently with two Republican senators about genetics.

Julia Kozlitina et al.
A genetic variation only found in individuals of African ancestry contributes to inter-individual and inter-ethnic differences in the preference for mentholated cigarettes.

Current Clinical Use of Polygenic Scores Will Risk Exacerbating Health Disparities
Alicia Martin et al.
Due to ancestrally biased samples, clinical uses of PRS today would systematically afford greater improvement to European descent populations. To realize the full and equitable potential of PRS, greater diversity in genetic studies must be prioritized.

A Scientometric Review of Genome-Wide Association Studies
Melinda Mills and Charles Rahal
GWAS have increased dramatically in the last decade, including in sample size, traits studied, and discovery rates. However, there is little variety in sample ancestry (88% of studies were limited to European ancestry; 72% of studies' participants were from US, UK, and Ireland) and funding source (85% funded by the US, mostly through the NIH). There is a tight network of authorship and datasets. The

Spotlight on Expanded Genetic Testing

Why You Should Be Careful About 23andMe's Health Test
New York Times Editorial Board
The Editorial Board writes that 23andMe's health tests are much simpler than those used by clinical geneticists and physicians, and are more parlor trick than medicine. **Anne Wojcicki**, CEO of 23andMe, responds, arguing that their product empowers consumers who don't need to go through expensive, inaccessible medical providers to learn about their genetics.

The Massive NHS Plan to Record Every Single Person's DNA
Robert Plomin
The NHS is making genetic sequencing universally available. While they plan to charge up to about 500 pounds, Plomin anticipates that universal availability of WGS free at the point of delivery is inevitable and a good thing for citizens.

The NHS Should Run a Mile from the Genome Sequencing Goldrush

authors make ten policy recommendations to address issues in GWAS.

Beyond Medical Actionability: Public Perceptions of Important Actions in Response to Hypothetical Genetic Testing Results
David Seiffert et al.
Seiffert and colleagues surveyed the public regarding their perceptions of the importance of different actions one might take upon receiving hypothetical results from whole genome sequencing, where the results indicate a high risk of developing a genetic condition. They found significant associations between importance ratings and demographics variables, genetic condition, and perceived severity of the condition. Their research indicates that genetic counselors should consider a wide variety of possible patient actions beyond medical actionability when discussing genetic testing results.

Practical and Ethical Considerations of Using Personal DNA Tests with Middle-School-Aged Learners
Elizabeth Wright et al.
In this pilot study, a curriculum centered on analyzing personalized genetic-ancestry test results was tested during two-week science summer camps for middle-school-aged youth. Concerns over data privacy and sensitive information were addressed.

Genome-Wide Meta-Analysis of Depression Identifies 102 Independent Variants and Highlights the Importance of the Prefrontal

David King
Given the dubious predictive value of genomic sequence results for healthy people, and the many risks inherent in this program, efforts toward universal sequencing should be dropped.

Skeptics Unfairly Target UK Gene Sequencing Initiative
Meredith Salisbury
While the requirement for users to pay with both money and data should be reconsidered, overall this should be seen as a welcome development in the expansion of genomics to the consumer realm.

Precision Medicine's Rosy Predictions Haven't Come True. We Need Fewer Promises and More Debate
Michael Joyner and Nigel Paneth
The precision medicine boom exemplifies a reductionistic, gene-centric paradigm and not a large advance in good medical care. The merits of the project should be part of an open debate among many sides. (This piece references their parallel piece in the *Journal of Clinical Investigation*.)

Potential Excessive Testing at Scale: Biomarkers, Genomics, and Machine Learning
Kenneth Mandl and Arjun Manrai
In this Viewpoint, Mandl and Manrai discuss 3 mechanisms through which biomarker-based testing may be manipulated and recommend a systematic approach for recognizing, measuring, and counteracting the phenomenon in the genomic (and artificial intelligence) contexts.

Brain Regions

DM Howard et al.

Meta-analyzed data from three GWAS of depression comprising over 800,000 subjects identified 102 independent variants, 269 genes, and 15 genesets associated with depression. Eighty-seven of the independent variants remained significant in an independent replication sample of over 1.4 million subjects.

Investigating the Association Between Body Fat and Depression via Mendelian Randomization

Maria Speed et al.

Mendelian randomization analysis of UK Biobank and Psychiatric Genomics Consortium data suggest that both fat mass and height (short stature) are causal risk factors for depression, while non-fat mass is not. These results suggest that reducing fat mass will decrease the risk of depression.

Imputation of Behavioral Candidate Gene Repeat Variants in 486,551 Publicly-Available UK Biobank Individuals

Richard Border et al.

Border and colleagues used two reference datasets to estimate variable number tandem repeat variants in four genes implicated in psychiatric genetics but absent from UK Biobank data. The imputation procedure allows researchers using UK Biobank to study “imputed” (i.e. interpolated) data for these genes at over 96% accuracy.

Identification of Common Genetic Risk Variants for Autism Spectrum Disorder

More In the Literature

Expanding Parkinson's Disease Genetics: Novel Risk Loci, Genomic Context, Causal Insights and Heritable Risk

Mike Nalls et al.

In the largest genome-wide association study of Parkinson’s to date, Nalls and colleagues identified 90 independent genome-wide significant signals across 78 loci, including 38 independent risk signals in 37 novel loci. These variants explained 26-36% of the heritable risk of PD. They found significant genetic correlations with brain volumes, smoking status, and educational attainment.

Characterization of Intellectual disability and Autism Comorbidity through Gene Panel Sequencing

Maria Cristina Aspromonte et al.

A new next-generation gene sequencing panel offers improved clinical utility for testing for intellectual disability and autism spectrum disorder. The results indicate the efficiency of the targeted gene panel on the identification of novel and rare variants in patients with ID and ASD.

A Third Linear Association Between Olduvai (DUF1220) Copy Number and Severity of the Classic Symptoms of Inherited Autism

Jonathan Davis et al.

Building on previous research, the authors find a third dose-dependent association between a gene coding family called Olduvai sequences and autism severity, which provides strong evidence that this highly duplicated and underexamined protein domain family plays an important role in inherited autism.

Association of Polygenic Liabilities for Major Depression, Bipolar Disorder, and

Jakob Grove et al.
Grove and colleagues used a Danish population dataset to identify five genome-wide significant loci correlating with ASD and seven that overlap with schizophrenia, depression, and educational attainment. These results establish that GWAS performed at scale will be much more productive in the near term in ASD.

[Schizophrenia With Risk for Depression in the Danish Population]
Katherine Musliner et al.
In this case-cohort study of 34,573 individuals, each 1 SD increase in the polygenic risk for major depression was associated with a 30% increase in the hazard for a depression diagnosis in hospital-based psychiatric care.

[Genome-Wide Analysis of Insomnia in 1,331,010 Individuals Identifies New Risk Loci and Functional Pathways]
Philip Jansen et al.
Jansen and colleagues identify 202 loci implicating 956 genes in insomnia. The meta-analysis explained 2.6% of the variance. Mendelian randomization identified the causal effects of insomnia on depression, diabetes, and cardiovascular disease, and the protective effects of educational attainment and intracranial volume.

Upcoming Events

Seminar on Ethical, Legal and Social Implications of Genetics
Center for Research on Ethical/Legal/Social Implications of Psychiatric, Neurologic & Behavioral Genetics
Department of Psychiatry, Columbia University Medical Center

Monday, March 18th, 2019 12:00-1:00pm
Rm. 10-405A&B, Irving Institute for Clinical and Translational Research
10th Floor, Presbyterian Hospital (PH) Building, 622 W. 168th Street

Expanding the Duty to Follow to Include the Duty to Recontact?

Professor Bartha Maria Knoppers, PhD
Canada Research Chair in Law and Medicine

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Precision Medicine: Its Impact on Patients, Providers, and Public Health
Columbia Precision Medicine and Society Program

|MC:SUBJECT|

Keynote Speakers
Paul Starr, Princeton University
Harold Varmus, Weill Cornell Medical College

April 24-25, 2019
Columbia University
3rd Floor, Faculty House, Morningside Campus

For full schedule and registration, click here.

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