News, Literature, and Events in Braingenethics

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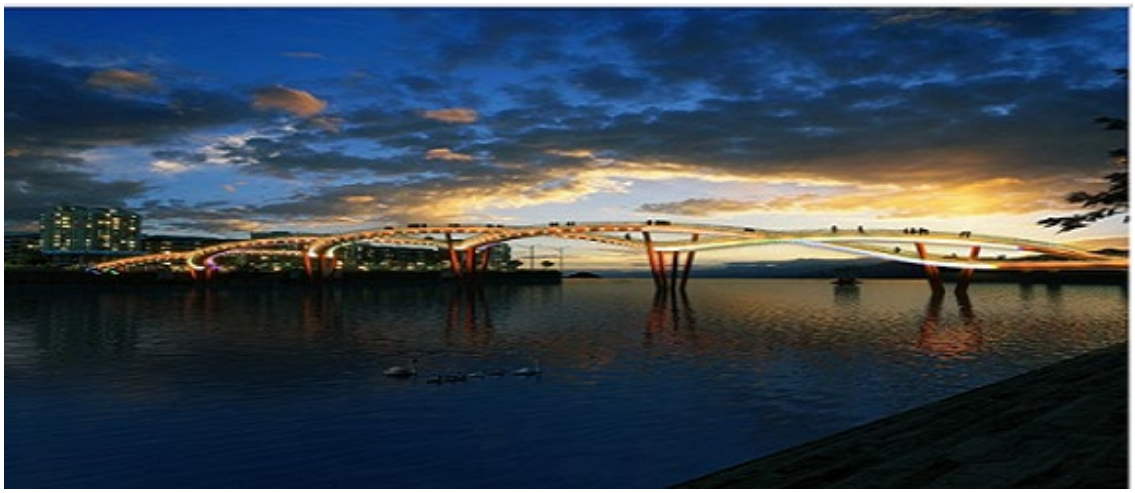

The next two Braingenethics Updates will appear in mid-November and mid-December. We will resume our end-of-month schedule for the February issue, coming out late January 2019.

In the Literature

Normative and Conceptual ELSI Research: What It Is, and Why It's Important

Lisa S. Parker et al.

The Ethical, Legal, and Social Implications (ELSI) Research Program of the National Human Genome Research Institute sponsors research employing both empirical and nonempirical methods. This paper seeks to elucidate the relationship between empirical and nonempirical methods in ELSI research, including normative and conceptual research.

In the Media

The Science of Alzheimer's

A Time Magazine Special Edition features articles on the role of genetics in Alzheimer's disease, new research and treatment directions, and various stories of lived experiences with the disease.

The Truth About Intelligence

A new issue of The New Scientist features pieces on the concept of intelligence, its genetic and environmental origins, and how

[Precision Psychiatry—Will Genomic Medicine Lead the Way?]

Murray B. Stein and Jordan W. Smoller

Psychiatry could require a paradigm shift to enable the development of empirically-based precision medicine decision-making. This paper finds that genomic medicine is the "tip of the spear" for the coming advances in precision psychiatry.

[Variations in Dysbindin-1 are Associated with Cognitive Response to Antipsychotic Drug Treatment]

Diego Scheggia et al.

Researchers have found that genetic variations reducing dysbindin-1 expression can identify individuals whose executive functions respond better to antipsychotic drugs. The findings reveal one of the pharmacodynamic mechanisms underlying individual cognitive response to treatment in patients with schizophrenia.

[Incorporating a Discussion of Genetic Attributions into Psychology Courses]

Jane P. Sheldon

The author calls for more emphasis on genetic attributions of disease in psychology courses, and speaks to how instructors can incorporate the concept into their course discussions.

[Cast into Doubt: Free Will and the Justification for Punishment]

Stephen Koppel et al.

Science elucidating the mechanistic causes of human behavior has thrown the notion of free will into doubt, leading some to predict a shift in public support away from retributive and toward consequentialist justifications for criminal punishment. This study explores the effects of free will doubt on support for retribution and consequentialism in response to drug crime, property crime, and violent crime. For high affect crime, people can increase their own IQ scores.

[Potential DNA Damage from CRISPR Has Been 'Seriously Underestimated,' Study Finds]

Sharon Begley

New [research] suggests editing with CRISPR-Cas9 can cause significantly more errors throughout the genome than experts thought. CRISPR editing can create large deletions and complex rearrangements that could potentially threaten the health of patients who would one day receive CRISPR-based therapy.

[HHS Confirms DNA Testing of Migrant Families with Additional Details]

GenomeWeb Staff Reporter

The Department of Health and Human Services confirmed that it is DNA testing migrant families to help it meet court-mandated deadlines for reuniting children separated at the border from their parents. An HHS spokesperson maintained that the government is only using DNA testing for the purpose of verifying parentage. See [last month's Braingenethics Update] for commentary on the ethical and legal issues of requiring DNA testing of migrant families.

[A New Documentary Chronicles the Lives of Triplets Separated at Birth in a Controversial Study – Here's How Scientists Continue to Use Twins in Research]

Charlotte Hu

The new documentary "Three Identical Strangers" explores a controversial effort to understand

free will doubt weakens support for retribution via blame, and increases support for consequentialism. However, for low affect crime, free will doubt weakens support for retribution to an even greater extent, yet also decreases support for consequentialism via blame.

Perspectives on Genetic Testing and Return of Results from the First Cohort of Presymptomatically Tested Individuals at Risk of Huntington Disease

Kelsey M. Stuttgen et al.

This qualitative study gathered opinions about genetic testing from people who received presymptomatic testing for Huntington's disease (HD) 20–30 years ago. Most—but not all—participants were in favor of an individual's right to decide whether and when to pursue HD testing, use of formal HD testing protocols, and returning medically actionable secondary findings. The majority of participants were opposed to physician ordering and direct-to-consumer HD testing without formal protocols, and to returning secondary findings of expanded HD alleles.

nature versus nurture, following the story of a secret study conducted in three genetically identical brothers who were separated at birth and raised by different families. The study was the only twin study that followed siblings from infancy, but due to controversies over ethics, the authors never published it and the data are sealed.

When a DNA Test Shatters Your Identity

Sarah Zhang

More and more people have discovered their parents are not their biological parents, with the help of direct-to-consumer DNA testing.

In Williams v Quest, State Supreme Court Leaves Room for Plaintiff to Argue Ordinary Negligence

Turna Ray

In a recent 4-1 ruling, the South Carolina Supreme Court indicated that Amy Williams' suit against Athena Diagnostics for wrongful death of her son would not be successful. Williams filed the suit in 2014, after learning the lab conducted but did not release a genetic test that she believes was critical to determining the cause of her son's seizures and subsequent death. Her case may still be allowed to advance based on allegations of ordinary negligence.

More on the case here.

Early Life Experience: It's in Your DNA

Robert Martone

A new study in Science suggests experiences while young can change the DNA sequence of the genome contained in brain cells.

[An 11-year-old Got Most of Her Genes from Her Dad, And Almost None from Her Mom]

Dan Vergano

An 11-year-old was born with genes that came almost entirely from her father, instead of half from each parent. Only about 25 people in the world – all girls – have been reported with this genetic syndrome, and this girl appears to be the first to have inherited it without developing cancer.

Read the original study in Nature.

More In the Literature

[DNA Methylation Signatures of Depressive Symptoms in Middle-aged and Elderly Persons: Meta-analysis of Multiethnic Epigenome-wide Studies]

Olivera Story Jovanova et al.

This cross-ethnic meta-analysis of epigenome-wide association studies (EWAS) identified epigenetic mechanisms underlying depression in middle-aged and elderly persons, using DNA methylation in blood. The study found 3 methylated sites pointing towards axon guidance as the common disrupted pathway in depression.

[De Novo Missense Variants in TRAF7 Cause Developmental Delay, Congenital Anomalies, and Dysmorphic Features]

Mari J. Tokita et al.

This study identified missense variants in

TRAF7, a multi-functional protein, in seven unrelated individuals referred for clinical exome sequencing, all of whom had developmental delay, congenital heart defects, limb and digital anomalies, and dysmorphic features. Findings suggest that missense mutations in TRAF7 are associated with a multisystem disorder and provide evidence of a role for TRAF7 in human development.

Common Variation near IRF6 is Associated with IFN-β-induced Liver Injury in Multiple Sclerosis

Kaarina Kowalec

Multiple sclerosis (MS) is a disease of the central nervous system treated with disease-modifying therapies, including the biologic interferon-β (IFN-β). Up to 60% of IFN-β-exposed MS patients develop abnormal biochemical liver test results. This study aimed to identify biomarkers of IFN-β-induced liver injury using a genome-wide association study. One identified variant had significant correlations with drug-induced liver injury, offering insight into safer drug use.

Genetic Testing of Children and Fetuses

Meta-analysis of the Diagnostic and Clinical Utility of Genome and Exome Sequencing and Chromosomal Microarray in Children with Suspected Genetic Diseases

Michelle M. Clark et al.

Whole-genome sequencing (WGS) and whole-exome sequencing (WES) are relatively new methods for diagnosing genetic diseases, whereas chromosomal microarray (CMA) is well established. This study found that the diagnostic utility and clinical utility of WGS and WES were higher than CMA in children with suspected genetic diseases.

Impacts of Variants of Uncertain Significance on Parental Perceptions of Children after Prenatal Chromosome Microarray Testing

Preeya Desai et al.

There are concerns regarding the potential harms in receipt of prenatal chromosome microarray (CMA) results, particularly variants of uncertain significance (VUS). This

paper examined the influence that the return of genomic results had on parental well-being and perceptions of children's development, and found that CMA VUS results have limited impact on parental well-being and perception of children's development. However, the initial diminished perception of child competency and later dissatisfaction with genomic testing indicate the need to assist parents in coping with ambiguous results.

Genetic Counselors' Perspectives about Cell-Free DNA: Experiences, Challenges, and Expectations for Obstetricians

Patricia K. Agatisa et al.

The expansion of cell-free fetal DNA (cfDNA) screening for a larger and diverse set of genetic variants, in addition for use among the low-risk obstetric population, presents clinical challenges. Prenatal genetic counselors interviewed in this study supported the use of cfDNA screening for the common autosomal aneuploidies, but noted reservations for its use to identify fetal sex and microdeletions. Participants reported barriers to ensuring that patients have the information and support to make informed decisions about using cfDNA to screen for these different conditions.

Our mailing address is:
The Hastings Center
21 Malcolm Gordon Rd.
Garrison, NY 10524

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