News, literature, and events in the ethical, social, and legal implications of psychiatric, neurologic, and behavioral genetics.

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In the Literature

The Blunt-Edged Sword: Genetic Explanations of Misbehavior Neither Mitigate nor Aggravate Punishment
By N. Scurich & P. Appelbaum

Previous research has suggested that behavioral genetic evidence of a predisposition to negative behaviors has modest to no impact on mitigation of punishment, at least for serious crimes. Data are presented on the effect of such evidence in a representative sample of the general population (n = 640) asked to consider three vignettes describing lesser offenses, dealt with in less formal adjudicatory settings and in everyday life. Public views of genetic influences on behavior may be less deterministic and more nuanced than is often thought.

Neuroscience and Behavioral Genetics in US Criminal Law: An Empirical Analysis
By N. Farahany

The goal of this study was to examine the growing use of neurological and behavioral genetic evidence by criminal defendants in US criminal law. Judicial opinions issued

Seminar on ELSI of Genetics

Center for Research on ELSI of Psychiatric, Neurologic & Behavioral Genetics
Dept. of Psychiatry, Columbia University Medical Center

"Return of Genomic Research Results: What About the Family?"

Barbara A. Koenig, Ph.D.
Professor of Medical Anthropology & Bioethics
UC, San Francisco

Mon, Feb 8, 2016
12:00-1:00pm
Board Room #6601
New York State Psychiatric Institute
1051 Riverside Drive

In the News

between 2005–12 that discussed the use of neuroscience or behavioral genetics by criminal defendants were identified, coded and analysed. Yet, criminal defendants are increasingly introducing such evidence to challenge defendants' competency, the effectiveness of defense counsel at trial, and to mitigate punishment.

Parents' Interest in Genetic Testing of Their Offspring in Multiplex Epilepsy Families
By C. B. Caminiti et al.

Based on a questionnaire study, the authors found that interest in diagnostic genetic testing is strong among parents with offspring with epilepsy, particularly when the test offers clinical utility. Testing interest is lower for a diagnostic test without clinical utility, or for a predictive test in offspring at risk of developing epilepsy in the future.

Too Much, Too Soon?: Commercial Provision of Noninvasive Prenatal Screening for Subchromosomal Abnormalities and Beyond
By M. Allyse & S. Chandrasekharan

The expansion in noninvasive prenatal screening is driven, at least in part, by for-profit companies striving to differentiate themselves in a highly competitive market. The field remains litigious, creating uncertainty and pressure to secure market share. While noninvasive subchromosomal testing is a potentially beneficial development for some pregnancies, test menus and how they are offered should be actively monitored to identify ethical and clinical concerns.

Sickle Cell Trait Diagnosis: Clinical and Social Implications
By R. P. Naik & C. Haywood

The sickle hemoglobin (HbS) point mutation has independently undergone evolutionary selection at least five times in the world because of its overwhelming malarial protective effects in the heterozygous state. Although sickle cell trait (SCT) is a largely protective condition in the context of malaria, clinical sequelae, such as exercise-related injury, renal complications, and venous thromboembolism can occur in affected carriers. The historical background of sickle cell disease (SCD) and SCT has provided lessons about how research should be conducted in the modern era to minimize stigmatization, optimize study conclusions, and inform genetic counseling and policy decisions for SCT.

Large Cross-National Differences in Gene × Socioeconomic Status Interaction on Intelligence
By E. M. Tucker-Dob and T. C. Bates

The authors performed a meta-analysis of tests of gene × SES interaction on intelligence and academic-achievement test scores, allowing for stratification by nation (United States vs.

Seeing the Spectrum

By S. Shapin, *The New Yorker*

A new history of autism.

Clinical Genetics Has a Big Problem That's Affecting People's Lives

By E. Yong, *The Atlantic*

Unreliable genetics research can lead families to make health decisions they might regret.

Fathers May Pass Down More Than Just Genes, Study Suggests

By C. Zimmer, *The New York Times*

A number of experiments in recent years have challenged conventional thinking on heredity. Heredity may be impacted by experience, not just by the genes that parents pass down to their children.

Steven Pinker on New Advances in Behavioral Genetics

S. Pinker, *The Wall Street Journal*

The findings of behavioral genetics have turned out to be substantial and robust, and new studies are linking genes with behavioral traits like IQ.

Genes That Protect Against Dementia (Maybe)

By R. Lewis, *PLOS BLOGS*

This blog post discusses a UC, San Diego School of Medicine study that looked for new mutations that might counteract the tendency towards dementia.

Genetics of Human Agency: A Call for Letters of Intent

Philosophical, theoretical, and empirical research applying modern genomics to complex human behavior.

Letters are due March 1, 2016.

non–United States), and conducted rigorous tests for publication bias and between-studies heterogeneity. In U.S. studies, they found clear support for moderately sized gene × SES effects. In studies from Western Europe and Australia, gene × SES effects were zero or reversed.

Personalized Medicine Beyond Genomics: Alternative Futures in Big Data-Proteomics, Environtome and the Social Proteome
By V. Özdemir et al.

Building on the "nesting principle" for governance of complex systems, the authors propose a three-tiered organizational architecture for big data science such as proteomics. The tiers include (a) scientists, (b) ethicists, and (c) scholars in the nascent field of "ethics-of-ethics," and this structure aims to cultivate a robust social proteome for personalized medicine. The authors suggest the synergistic value of social and biological proteomes to realize the full potentials of proteomics science for personalized medicine in psychiatry in the present era of big data.

Ethics, Genetic Testing, and Athletic Talent: Children's Best Interests, and the Right to an Open (Athletic) Future
By S. Camporesi and M. J. McNamee

The authors discuss the validity and reliability of the tests and the claims made by direct-to-consumer companies, before presenting a range of ethical issues concerning child-parent/guardian relations raised by these tests, which they frame in terms of parental duties, children's rights, and best interests. They argue that greater ethical emphasis needs to be put on the parental decision on the well-being on the child going forward, not on *ex post* justifications on the basis of the consequences.

Structural Brain Connectivity as a Genetic Marker for Schizophrenia
By M. M. Bohlken et al.

In 70 individual twins discordant for schizophrenia and 130 matched individual healthy control twins, structural equation modeling was applied to quantify unique contributions of genetic and environmental factors on brain connectivity and disease liability. Structural connectivity and network efficiency were assessed through diffusion-weighted imaging, measuring fractional anisotropy and streamlines. Network analysis revealed that genetic liability for schizophrenia is primarily associated with reductions in connectivity of frontal and subcortical regions, indicating a loss of integrity along the white matter fibers in these regions. The reported reductions in white matter integrity likely represent a separate and novel genetic vulnerability marker for schizophrenia.

Deciphering the Genetic Complexity of Schizophrenia
By T. D. Cannon

The Department of Psychology at the University of Virginia is initiating a $3.5 million three-year research program supported by the John Templeton Foundation. The program is led by Eric Turkheimer, Hugh Scott Hamilton Professor of Psychology.

You Have a Possibly Faulty Gene. Should Your Doctor Tell You?

Commentaries by Ellen W. Clayton, Michael Murray, and Susan Wolf

By P. Skerrett, STAT

Summer Institute of Social Science Genomics

June 19 - July 1, 2016

Sponsored by the Russell Sage Foundation's Working Group in Biosocial Science

Participation is restricted to Ph.D. students, postdoctoral researchers, and untenured faculty within 10 years of the Ph.D.

Rutgers University Inn and Conference Center in New Brunswick, New Jersey.

Studies using genetic epidemiologic methods to probe the genetic architecture of schizophrenia are increasingly giving way to those using genome-wide association approaches. In this issue of *JAMA Psychiatry*, Bohlken et al. report (above) that genetic epidemiologic methods, in particular structural equation modeling of twin and family correlations on intermediate traits of interest, can yield important insights into the genetic underpinnings of the disorder.

A Danish Twin Study of Schizophrenia Liability: Investigation from Interviewed Twins for Genetic Links to Affective Psychoses and for Cross-Cohort Comparisons
By U. Kläning et al.

The authors studied schizophrenia liability in a Danish population-based sample of 44 twin pairs (13 MZ, 31 DZ, SS plus OS) to replicate previous twin study findings using contemporary diagnostic criteria, to examine genetic liability shared between schizophrenia and other disorders, and to explore whether variance in schizophrenia liability attributable to environmental factors may have decreased with successive cohorts exposed to improvements in public health. Schizophrenia showed strong genetic links to other psychotic disorders but much less so for the broader category of psychiatric disorders in general. They observed a marginally significant decline in schizophrenia variance attributable to environmental factors over successive Western European cohorts.

Mice with Shank3 Mutations Associated with ASD and Schizophrenia Display both Shared and Distinct Defects
By Y. Zhou et al.

The authors characterized two lines of mutant mice with Shank3 mutations linked to autism spectrum disorder and schizophrenia. They found both shared and distinct synaptic and behavioral phenotypes. The data offered here demonstrate that different alleles of the same gene may have distinct phenotypes at molecular, synaptic, and circuit levels in mice, which may inform exploration of these relationships in human patients.

A Genome-Wide Association Study of Kynurenic Acid in Cerebrospinal Fluid: Implications for Psychosis and Cognitive Impairment in Bipolar Disorder
By C. M. Sellgren et al.

The authors conducted a genome-wide association study based on cerebrospinal fluid antagonist kynurenic acid in bipolar disorder and found support for an association with a common variant within 1p21.3. They demonstrate the potential of using biomarkers in genetic studies of psychiatric disorders, and may help to identify novel drug targets in bipolar disorder.

Dnmt3a2: A Hub for Enhancing Cognitive Functions

By A. M. M. Oliveira et al.

In this study the authors established a key role for an epigenetic factor, the de novo DNA methyltransferase, Dnmt3a2, in memory formation and extinction. They found that Dnmt3a2 is at the core of memory processes and represents a novel target for cognition-enhancing therapies to ameliorate anxiety and fear disorders and boost memory consolidation.

The Significant Association of Taq1A Genotypes in DRD2/ANKK1 with Smoking Cessation in a Large-Scale Meta-Analysis of Caucasian Populations

By Y. Ma et al.

Although a number of studies have analyzed the relation between the DRD2/ANKK1 gene Taq1A polymorphism and smoking cessation, the results remain controversial. The primary objective of the present study was to determine whether this variant indeed has any effect on smoking cessation. The authors conclude that polymorphism of Taq1A has an important role in the process of abstaining from smoking, and smokers carrying A2/A2 genotype have a higher likelihood of smoking cessation than those who carry A1/A1 or A1/A2.