News, Literature, and Events in Braingenethics

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In the Media

Ireland's GenoFit Study Aims to Understand Genomics of Health and Fitness

Monica Heger

The University College Dublin and Genomics Medicine Ireland have launched a study that aims to understand the relationship between genomics and individual health and fitness in Ireland's general population.

Intelligence and the DNA Revolution

Alexander P. Burgoyne and David Z. Hambrick

Recent large-scale genomic studies have investigated the neurobiological underpinnings of intelligence, and further support the

In the Literature

Blue Genes? Understanding and Mitigating Negative Consequences of Personalized Information about Genetic Risk for Depression

Matthew S. Lebowitz & Woo-kyoung Ahn

In this study, participants told that they carried a genetic predisposition to depression expressed significantly lower confidence in their ability to cope with depressive symptoms than participants told they did not carry this predisposition. While an educational intervention fully mitigated this negative effect, the authors are concerned by the notion that genetic information could exacerbate pessimism about one's ability to overcome symptoms.

thesis that intelligence is a complex interplay between genetic and environmental factors.

Study: Most Newborns with Epilepsy Benefit from Genetic Testing

SciencMag Staff Reporter

Two parallel studies have supported the value of genetic testing for the diagnosis and treatment of early-life epilepsy, but policy work is still need for genetic tests for be covered by insurance.

CRISPR Corrects RNA-Based Disease Defects

Kerry Grens

An international team of researchers used a CRISPR-Cas9-based technique to visualize and eliminate pathogenic RNA species produced by microsatellite repeat expansions in DNA that cause dominantly inherited diseases such as Huntington's disease and amyotrophic lateral sclerosis (ALS). Read more in Cell.

Novel Variants in ALS-Linked Genes Found in Sporadic Cases of Disease

GenomeWeb Staff Reporter

A whole-exome sequencing study from the University of Utah Medical School identified 18 rare coding variants never before linked to sporadic amyotrophic lateral sclerosis (ALS).

Researchers Uncover Genetic Gains and Losses in Tourette Syndrome

National Institutes of Health

A study published in Neuron identified rare copy number changes in two genes that may increase risk for Tourette syndrome.

New Genetic Risk Factor for Autism Spectrum Disorder Identified

Precision Medicine, Health Disparities, and Ethics: The Case for Disability Inclusion

Maya Sabatello et al.

Aside from advancing scientific knowledge, a major promise of precision medicine research are ongoing efforts to ensure inclusivity of racial and ethnic minorities, the views of persons with disabilities about PMR have not been well studied. Involving these populations in PMR is necessary for fulfilling precision medicine's scientific goals and promise of health equity, and for upholding the equal opportunity of persons with disabilities to enjoy the benefits of PMR.

Early-Life Epilepsies and the Emerging Role of Genetic Testing

Anne T. Berg et al.

This study found that genetic investigations, particularly broad sequencing methods, have high diagnostic yields in newly diagnosed early-life epilepsies regardless of key clinical features. The authors conclude that thorough genetic investigations, with sequencing in particular, should be incorporated into the initial evaluation of newly presenting early-life epilepsies and not just reserved for those with severe presentations and poor outcomes.

Ethical Application of Precision Medicine to Schizophrenia Management

Steven Daws

A recent effort has been made to better characterize the genetic architecture of schizophrenia and apply a precision medicine model to its treatment. This article considers ethical concerns that will likely arise as a precision medicine approach is taken.

Ethical Issues When Modelling Brain Disorders in Non-Human Primates

Carolyn P Neuhaus

There is growing interest in using gene

Oregon Health & Science University

A study published in the American Journal of Human Genetics identified new postzygotic mosaic mutations linked to the development of autism spectrum disorder.

Autism Linked to Migochondrial DNA Variation, Possible Cause Gains Traction

Christina Bennett

A paper in JAMA Psychiatry discovered that autism spectrum disorder appears to be overrepresented in some mitochondrial haplogroups that circulate in European, Asian, and Native American populations, consistent with functional mitochondrial contributions to the condition.

GWAS Data Analysis Generates List of Candidate Drugs for Psychiatric Conditions

GenomeWeb Staff Reporter

A genome-wide association study (GWAS) published in Nature Neuroscience helped to generate a list of candidate drugs that could be re-purposed for psychiatric conditions, linking transcriptomes from GWAS data to a database of drug-induced gene expression profiles.

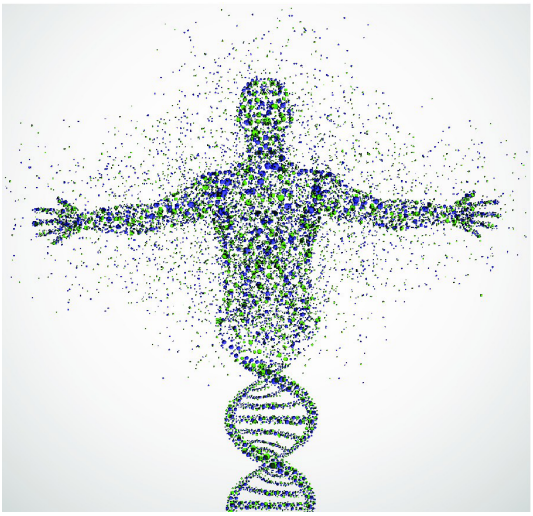
Two New Genes Linked to Alzheimer's Risk

Cardiff University

An international team of researchers has connected four rare coding variants in three microglial-expressed genes to late-onset Alzheimer's disease risk. Read more in Nature Genetics.

Alzheimer's Risk Similar for Both

editing to create non-human primate (NHP) models of brain disorders such as autism, depression and Alzheimer's, the phenotypes and genetic underpinnings of which are very difficult to model and study in other organisms, including humans, and desperately need new treatments. The paper concludes that it is not ethical to genetically engineer or otherwise create NHPs as model organisms of brain disorders.



Genetics in the Courtroom

Behavioural Genetics in Criminal Court

Nicholas Scurich and Paul S. Appelbaum

Introduction of genetic evidence of a predisposition to violent or impulsive behaviour is on the rise in criminal trials. However, data suggests that such evidence is ineffective at reducing judgements of culpability and punishment, and therefore its use in the legal process is likely to diminish.

Read more in Popular Science:

Your DNA Probably Didn't Make You Do It

Sexes Carrying APOE4

Judy George

A meta-analysis has found that men and women with the APOE4 allele have essentially the same risk of developing Alzheimer's disease from age 55 to 85, although women with the allele between 65 and 75 have a higher risk than men with the allele in the same age group.

Do Microbes Trigger Alzheimer's Disease?

Jill U. Adams

Recent work contributes to the revival of a long-standing hypothesis that pathogenic microbes may serve as triggers for Alzheimer's Disease's neuropathology.

A Powerful Alzheimer's Gene Hidden in a Family Tree

Michele Cohen Marill

Emory researchers are working to isolate the gene or genes at work in one large family with the highest known inheritance rate for late-onset Alzheimer's.

A Rare Dementia Gene Runs In The Family, But He's Fine — So Far

JoNel Aleccia

John Janda is a medical mystery as one of the few people to be symptom free with the genetic mutation for frontotemporal dementia.

Dog Friendliness Associated with Structural Variants in Genes Involved in Human Syndrome

GenomeWeb Staff Reporter

Researchers have traced the friendliness of dogs to structural variants affecting two genes linked to Williams-Beuren syndrome in humans, a condition marked by hypersociability among other things.

Nature, Nurture, and Capital Punishment: How Evidence of a Genetic–Environment Interaction, Future Dangerousness, and Deliberation Affect Sentencing Decisions

Natalie Gordon and Edie Greene

This study grows out of research that has shown that the low-activity MAOA genotype in conjunction with a history of childhood maltreatment increases the likelihood of violent behaviors. This genetic–environment (G × E) interaction was found to have little mitigating effect on sentencing preferences, although mock jurors were more likely to assign death sentences to defendants with a G x E interaction and a high risk of future dangerousness than with low risk.

β2-Adrenoreceptor Is a Regulator of the α-Synuclein Gene Driving Risk of Parkinson's Disease

Shuchi Mittal et al.

Copy number mutations in and impacting the SNCA gene, which lead to excess production of α-synuclein protein or Lewy bodies, is a possibly causative factor in Parkinson's disease (PD). While most drug development in PD is focused on α-synuclein protein clearance, this study worked off of the hypothesis that slowing the transcription of the SNCA gene to could prevent or slow down the production of α-synuclein protein and the disease progress. The study found that the β2-adrenoreceptor (β2AR) is a regulator of the α-synuclein gene (SNCA) and the transcription of α-synuclein and constitutes a potential target for PD therapies.

A Somatic Mutation in Erythro-Myeloid

23andMe, Lundbeck, Milken Institute Partner on Depressive, Bipolar Disorders Study

GenomeWeb Staff Reporter

23andMe, the Milken Institute and Lundbeck have begun to recruit participants for a study that will combine cognitive assessments with genetic data and survey responses to gain insights into the causes of major depressive and bipolar disorders.

Caprion Collaborating with FNIH to Test Alzheimer's Protein Panel

Adam Bonislawski

The Foundation for the National Institutes of Health Biomarkers Consortium and Caprion Bioscience are collaborating to test a five-protein panel for its use in early detection and prognostication of Alzheimer's disease.

In the Literature, cont.

Human Germline Genome Editing

ASHG Position Statement: Kelly E.Ormond et al.

With CRISPR/Cas9 and other genome-editing technologies, successful somatic and germline genome editing are becoming feasible. In this position statement, an American Society of Human Genetics (ASHG) workgroup concludes that, at this time, it is inappropriate to perform germline gene editing that culminates in human pregnancy, although there is no reason to prohibit in vitro germline genome editing on human embryos and gametes, with appropriate oversight and consent from donors, to facilitate research on the possible future clinical applications of gene editing. There should be no prohibition on making public

Progenitors Causes Neurodegenerative Disease

Elvira Mass et al.

This study demonstrated that a somatic mutation in mice can drive late-onset neurodegeneration. They identify activation of the MAP kinase pathway in microglia as a cause of neurodegeneration, which offers opportunities for therapeutic intervention aimed at the prevention of neuronal death in neurodegenerative diseases.

A Mitochondrial Etiology of Neuropsychiatric Disorders

Douglas C. Wallace

The genes that have been found to harbor loss-of-function mutations in patients with autism overlap with those associated with congenital heart disease and metabolic disorders. This paper asks: “what do “brain” diseases have to do with congenital heart disease and metabolic disorders?”

Infant Viewing of Social Scenes Is Under Genetic Control and Is Atypical in Autism

John N. Constantino

Social visual engagement shapes typical infant development from birth and is impaired in children affected by autism. This study found that variation in viewing of social scenes is strongly influenced by genetic factors, with effects directly traceable to the active seeking of social information. The characteristics that are the most highly heritable are also those that are differentially decreased in children with autism, implicating social visual engagement as a neurodevelopmental endophenotype not only for autism, but also for population-wide variation in social-information seeking.

Investigating the Neuroimmunogenic Architecture of Schizophrenia

Rebecca Birnbaum et al.

funds available to support this research. Future clinical application of human germline genome editing should not proceed without compelling medical rationale, a supporting evidence base, an ethical justification, and a transparent public process.

A Meta-Analysis of Genome-Wide Association Studies Identifies 17 New Parkinson's Disease Risk Loci

Diana Chang et al.

Common variant genome-wide association studies (GWASs) have, to date, identified >24 risk loci for Parkinson's disease (PD). This GWAS compared 6,476 PD cases with 302,042 controls, and identified 17 novel risk loci indicating a key role for autophagy and lysosomal biology in PD risk, and suggesting potential new drug targets for PD.

This study used systematic RNA sequencing to investigate the role of the immune system in a large sample of post-mortem brain of patients with schizophrenia in the dorsolateral prefrontal cortices and hippocampi. Overall, past reports claiming a primary pathogenic role of the immune system intrinsic to the brain in schizophrenia could not be confirmed.

Altered Metabotropic Glutamate Receptor 5 Markers in PTSD: In Vivo and Postmortem Evidence

Sophie E. Holmes et al.

Dysfunction of the glutamate system has been implicated in trauma and stress psychopathology, resulting in a growing interest in modulation of the glutamate system for the treatment of PTSD. Results of this study provide insight into molecular mechanisms underlying PTSD and suggest that mGluR5 may be a promising target for mechanism-based treatments aimed at mitigating this disorder.

How ApoE4 Endangers Brains

Emily Underwood

ApoE4 has been known to multiply the risk of Alzheimer's disease since 1993. While researchers have long investigated its connection to protein fragment β-amyloid, a recent study suggests instead that its most damaging effects may be linked to a different protein, tau. This new information shifts the debate over whether treatments should focus on tau or amyloid, by suggesting both could be targeted through ApoE4.

Upcoming Events

New York City Huntington's Disease Society of America Family Education Day

Saturday, October 28, 2017, 12:30-4:30 pm

Columbia University Medical Center's Russ Berrie Medical Science Pavilion

This event hosted, by Columbia University's HDSA Center of Excellence, will provide

both a patient and family perspective of HD. It will include lectures on nutrition, behavior, safety, physical therapy and activity, advocacy and research.

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