GENETICS, ETHICS, AND EDUCATION

Advances in human genetics and genomics are beginning to move outside the traditional realm of medicine and into the classroom. How will educational officials react when asked to incorporate personalized genomic information into the educational program?

This volume bridges the divide between science, education, and ethics around the emergent integration of genomics and education. By pairing comprehensive analysis of the issues with primers on the underlying science, the authors put all relevant parties on a level field to facilitate thorough consideration and educated discussion regarding how to move forward in this new era, as well as how best to support the future of education and the future of all students. The volume is unique in bringing together not only scholarly experts but also parents and laypersons. In doing so, it gives voice and understanding to a broad spectrum of disciplines that have a stake in the future of education.

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Current Perspectives in Social and Behavioral Sciences provides thought-provoking introductions to key topics, invaluable to both the student and the scholar. Edited by world’s leading academics, each volume contains specially commissioned essays by international contributors, which present cutting-edge research on the subject and suggest new paths of inquiry for the reader. This series is designed not only to offer a comprehensive overview of the chosen topics, but to display and provoke lively and controversial debate.

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ABBREVIATIONS

A adenine
AATD alpha-1 antitrypsin deficiency
ACE allelic variance (A), with contributions from shared (C) and unshared (E) environments
ACLA American Clinical Laboratory Association
ACOG American Congress of Obstetricians and Gynecologists
ACT American College Testing
AD atherosclerosis
ADHD attention-deficit hyperactivity disorder
ADI-R Autism Diagnostic Interview – Revised
ADOS Autism Diagnostic Observation Schedule
APA American Psychiatric Association
APOE4 alipoprotein E4
ART alternative reproductive technique
ASD autism spectrum disorder
ASRM American Society for Reproductive Medicine
C cytosine
CADDRE California Center for Autism and Developmental Disabilities Research and Epidemiology
CAP Colorado Adoption Project
CDC Centers for Disease Control and Prevention
CDCV common disease/common variant
CDRV common disease/rare variant
CLIA Clinical Laboratory Improvement Amendments of 1988
CMS Centers for Medicare and Medicaid Services
CNP copy number polymorphism
CNV copy number variants
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>COMT</td>
<td>catechol-O-methyltransferase gene</td>
</tr>
<tr>
<td>CRISPR</td>
<td>clustered regularly interspaced palindromic repeats</td>
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<td>CVD</td>
<td>cardiovascular disease</td>
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<tr>
<td>DDS</td>
<td>Department of Developmental Services</td>
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<td>DIPBEC</td>
<td>Diagnosis of Psychotic Behavior in Children</td>
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<td>DNA</td>
<td>deoxyribonucleic acid</td>
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<tr>
<td>DOE</td>
<td>Department of Energy</td>
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<td>DOHaD</td>
<td>Developmental Origins of Health and Disease</td>
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<td>DSM-IV</td>
<td><em>Diagnostic and Statistical Manual of Mental Disorders</em>, 4th Edition</td>
</tr>
<tr>
<td>DSM-IV-TR</td>
<td><em>Diagnostic and Statistical Manual of Mental Disorders</em>, 4th Edition, Text Revision</td>
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<tr>
<td>DSM-V</td>
<td><em>Diagnostic and Statistical Manual of Mental Disorders</em>, 5th Edition</td>
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<tr>
<td>DTC</td>
<td>direct-to-consumer</td>
</tr>
<tr>
<td>DTCGT</td>
<td>direct-to-consumer genetic/genomic testing</td>
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<tr>
<td>DZ</td>
<td>dizygotic</td>
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<td>EBN</td>
<td>evidence-based nutrition</td>
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<td>EEG</td>
<td>electroencephalography</td>
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<td>EGDS</td>
<td>Early Growth and Development Study</td>
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<td>EPD</td>
<td>experience-producing drive</td>
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<td>EPO</td>
<td>European Patent Office</td>
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<td>ERPs</td>
<td>event-related potentials</td>
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<td>ESTs</td>
<td>expressed sequence tags</td>
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<td>EU</td>
<td>European Union</td>
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<td>FAPE</td>
<td>Free Appropriate Public Education</td>
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<td>FDA</td>
<td>Food and Drug Administration</td>
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<td>FDCA</td>
<td>Food, Drug, and Cosmetic Act</td>
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<td>FERPA</td>
<td>Family Educational Rights and Privacy Act</td>
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<td>FH</td>
<td>familial hypercholesterolemia</td>
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<td>fMRI</td>
<td>functional magnetic resonance imaging</td>
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<td>FTC</td>
<td>Federal Trade Commission</td>
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<td>G</td>
<td>guanine</td>
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<td>GAO</td>
<td>US Government Accountability Office</td>
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<tr>
<td>GAT</td>
<td>genetic ancestry testing</td>
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<tr>
<td>GCTA</td>
<td>genome-wide complex trait analysis</td>
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<tr>
<td>GINA</td>
<td>Genetic Information Nondiscrimination Act</td>
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<tr>
<td>GPA</td>
<td>grade point average</td>
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<tr>
<td>GT</td>
<td>genetic testing</td>
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<td>GWAS</td>
<td>genome-wide association studies</td>
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<td>Abbreviation</td>
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<td>GxE</td>
<td>gene × environment interactions</td>
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<td>HGP</td>
<td>Human Genome Project</td>
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<td>Health Insurance Portability and Accountability Act</td>
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<td>HPA</td>
<td>hypothalamic pituitary adrenal axis</td>
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<td>HUGO</td>
<td>Human Genome Organization</td>
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<td>IDEA</td>
<td>Individuals with Disabilities Education Act</td>
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<td>IDEIA</td>
<td>Individuals with Disabilities Education Improvement Act</td>
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<tr>
<td>IEP</td>
<td>Individualized Educational Program/Plan</td>
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<td>IQ</td>
<td>intelligence quotient</td>
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<td>IRB</td>
<td>Institutional Review Board</td>
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<td>IVF</td>
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<td>LD</td>
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<td>LD</td>
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<td>LDT</td>
<td>laboratory developed test</td>
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<td>MAF</td>
<td>minor allele frequency</td>
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<td>magnetic resonance imaging</td>
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<td>MRT</td>
<td>mitochondrial replacement techniques</td>
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<td>NIEHS</td>
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<td>NIH</td>
<td>US National Institutes of Health</td>
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<td>NGS</td>
<td>next-generation DNA sequencing</td>
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<td>OGD</td>
<td>one gene one disorder</td>
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<td>PCR</td>
<td>polymerase chain reaction</td>
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<td>PGD</td>
<td>preimplantation genetic diagnosis</td>
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<td>PGS</td>
<td>personal genome service</td>
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<td>PKU</td>
<td>phenylketonuria</td>
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<td>PMA</td>
<td>premarket approval process</td>
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<td>PTSD</td>
<td>posttraumatic stress disorder</td>
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<td>RAC</td>
<td>Recombinant DNA Advisory Committee</td>
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<td>RD</td>
<td>reading disability</td>
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<td>REAL-G</td>
<td>Rapid Estimate of Adult Literacy in Genetics</td>
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<tr>
<td>rGE</td>
<td>genotype–environment correlations</td>
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<td>RRR</td>
<td>relative recurrence risk</td>
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<td>RTI</td>
<td>response to intervention</td>
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<tr>
<td>SAT</td>
<td>Scholastic Aptitude Test</td>
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<td>Stanford-Binet Intelligence Scales</td>
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<td>SES</td>
<td>socioeconomic status</td>
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<td>SLD</td>
<td>specific learning disorder</td>
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Abbreviations

SNP      single nucleotide polymorphism
SNV      single nucleotide variant
SRCD     Society for Research in Child Development
T        thymine
WAIS-R   Wechsler Adult Intelligence Scale – Revised
WES      whole-exome sequencing
WGS      whole-genome sequencing