ge²p² global foundation
governance, ethics, evidence, policy, practice

Genomic Medicine :: Governance, Ethics, Policy, Practice – A Monthly Digest

October 2023 Number 08

Genomic medicine – spanning pre-clinical basic science through clinical development and translation to daily patient interventions – continues to evolve at an extraordinary pace. Advances in the scientific and technical dimensions of genomic medicine are extensively communicated through the peer-reviewed journal literature and supporting grey literature.

Complementing this technical literature is a growing body of research, analysis and commentary addressing the governance, ethics, regulation, and policy dimensions of genomic medicine. Much of this content is communicated through academic journals and grey literature. This digest intends to capture and curate the most substantive examples of this non-technical content.

Further, we intend this digest to provide a useful summary of key strategic and programmatic announcements from across the genomic medicine ecology as issued by multilateral agencies, INGOs, governments/regulatory bodies, academic and research institutions, consortiums and collaborations, foundations, investors, and commercial organizations.

Given the complexity and velocity of the field, we recognize that this digest will be indicative, not exhaustive. We invite suggestions and ideas on how it can evolve to be more useful.

The digest is a program of the GE2P2 Global Foundation which is solely responsible for its content. Questions and comments should be directed to the Editor or Associate Editor:

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This edition reflects our substantially increased coverage of the genomic medicine landscape and organizes content as below:

Milestones, Strategic Announcements, Research, Actions

In this section, we will present what we assess to be significant developments in governance, ethics and policy in the genomic medicine field and provide additional context via an Editor's Note where indicated. Please help us strengthen this section by alerting us to developments we may not have encountered/included.

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First meeting of the WHO Technical Advisory Group on Genomics

17 October 2023 *Departmental news*

The newly established Technical Advisory Group on Genomics (TAG-G) held its first meeting, in Geneva on October 5-6. The TAG-G is composed of experts acting in their personal capacity, from various technical areas relevant to genomics, and from all WHO regions.

The meeting was an opportunity for the TAG-G members to meet in person for the first time, to discuss with colleagues from relevant departments at WHO in Geneva and regional offices, and to share their perspectives and visions on the work ahead. During the meeting, **Professor Iscia Lopes-Cendes was formally appointed as the Group Chair for the first term.**

In its capacity as an advisory body to the WHO Secretariat, the TA-G will have the following functions, as per its terms of reference:

- Provide technical guidance on activities to accelerate access to genomics technologies for global health;
- Recommend priority activities in order to accelerate access to genomics technologies for global health, including promotion and advocacy in addition to technical activities;
- Contribute to efforts in convening discussions to develop genomics-related guidance and reports;
- Bring attention to regional and sub-regional opportunities and experiences in genomics;
- Contribute to assessing on progress in accelerating access to genomics for global health.

The group decided to form working groups around specific focus themes relevant to genomics: Data sharing; Equity; Economics; Engagement with private sector; Workforce capacity; Communication & advocacy. The TAG-G agreed to meet 2-3 times a year, at least once in person.

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Technical Advisory Group on Genomics (TAG-G)

The Technical Advisory Group on Genomics (TAG-G) provides independent, **strategic advice to WHO** around technical areas relating to enhancing access to genomic knowledge and technologies for global health.

Objective and function

The TAG-G will provide **technical advice to support work aimed at accelerating access to genomics knowledge and technologies especially in low- and middle-income countries.** The group's main, but not exclusive, focus will be on human genomics…Terms of reference

Composition

Following a call for interests, WHO has appointed the 15 members of the TAG-G, who serve in their personal capacities to represent the broad range of disciplines relevant to genomics including but not limited to expertise on cancer, other non-communicable and congenital diseases, human genomic variation, pharmacogenomics, implementation of genome-based technologies into clinical practice, ethics and other relevant social science domains related to human genomics…

Members

Iscia Lopes-Cendes (Chair)
University of Campinas, Brazil

Ahmad Abou Tayoun
Al Jalila Children's Hospital, Mohammed Bin Rashid University of Medicine and Health Sciences, United Arab Emirates
Marc Abramowicz
University of Geneva, Switzerland
Zilfalil Bin Alwi
Universitii Sains Malaysia (USM), Malaysia
Tiffany Boughtwood
Australian Genomics, Australia
Yosr Hamdi
Institute Pasteur of Tunis, Tunisia
Tim Hubbard
King's College London, Genomics England, Health Data Research UK, United Kingdom of Great Britain and Northern Ireland
Kazuto Kato
Osaka University, Japan
Partha Pratim Majumder
John C. Martin Centre for Liver Research & Innovations, Science & Engineering Board, Indian Statistical Institute, India
Deborah Mascalzoni
Eurac Research Bolzano, Italy - Uppsala University, Sweden
Rokhaya Ndiaye
Université Cheikh Anta DIOP, Senegal
Michèle Ramsay
University of the Witwatersrand, South Africa
Gabriela Repetto
Clinica Alemana Universidad del Desarrollo, Chile
Vorasuk Shotelersuk
Chulalongkorn University, Thailand
Sherry Taylor
University of Alberta, Canada

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Editor's Note:
We paused when we read the project announcement below. We continue to reflect on *technical advice* remit of the TAG above and the overall state of *global stewardship and governance* in the gene editing space in the post-London Summit period – *Natura abhorret vacuum.*

Project to Examine "Deliberate Extinction" of Species

Press Releases Hastings Center
NEW YORK, October 4 – A new project at **The Hastings Center will propose recommendations for deciding if especially dangerous species should be eradicated with gene editing technology.**

Candidate species could include mosquitos that transmit infectious diseases such as malaria; the new world screw worm, which eats the living flesh of animals including human beings; and rats, which pose public health and environmental threats to threatened and endangered species in many places. Nonetheless, the prospect of using genome editing to extinguish a wild species is inherently troubling for many people.

"It's conceivable that we could use gene editing technology to eliminate an entire species from our planet," said Gregory E. Kaebnick, a senior research scholar at The Hastings Center who is a principal investigator. "But would that ever be the right thing to do? And how should we approach such a decision?"

The project, which is funded by the National Science Foundation, will support regulatory oversight and promote broad public deliberation about genome editing. In addition to Kaebnick, the project is led by James Collins of Arizona State University. Hastings Center research scholar Athmeya Jayaram is an investigator

The work will be shared through an open-access report and publications for professional and nonprofessional audiences. The project will also build scholarship on these issues, by enlisting a group of scholars in the development of the report and by providing training in values-oriented research to a graduate student in ecology or conservation biology.

The scholarly focus of the project is on philosophical and ethical questions raised by the idea of extinction via genome editing.

Why, exactly, might that idea be troubling? Some of these questions are about the value of species, biodiversity, and the human relationship to nature generally, whether humans ought to reduce the suffering of wild animals, and how trade-offs should be made between public health, agricultural, animal welfare, conservation, values, and other goals. Other questions are about the nature of genome editing and how it differs from other ways of controlling species. Yet other questions include how the public should be engaged in science policy.

The project will contribute to environmental ethics, conservation biology, science and technology studies, and political science.

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Understanding the Global Gain-of-Function Research Landscape

Analysis
Caroline Schuerger, Steph Batalis, atherine Quinn, Ronnie Kinoshita, Owen Daniels, Anna Puglisi
CSET [Center for Security and Emerging Technology - Georgetown University Walsh School of Foreign Service]
August 2023
PDF: https://cset.georgetown.edu/wp-content/uploads/20220035_Gain-of-Function-Research_FINAL.pdf

Gain- and loss-of-function research have contributed to breakthroughs in vaccine development, genetic research, and gene therapy. At the same time, a subset of gain- and loss-of-function studies involve high-risk, highly virulent pathogens that could spread widely among humans if deliberately or unintentionally released. In this report, we map the gain- and loss-of-function global research landscape using a quantitative approach that combines machine learning with subject-matter expert review.

Executive Summary
Gain-of-function (GOF) and loss-of-function (LOF) research are two valuable methodologies that allow scientists to study pathogens. These interconnected research approaches alter pathogens' genomes to add or subtract functionality, allowing scientists to examine and better understand how pathogens function and develop new vaccines and therapies.

Despite its widely recognized value for science, gain-of-function research has attracted attention and concern from U.S. policymakers due to what some see as inherent risks in this methodology, particularly following the outbreak and debated origins of the COVID-19 pandemic. The risk that gain-of-function research could inadvertently contribute to pandemics or widespread illness has sparked discussion about new regulations.

LOF research results in weakened pathogens—and thus does not impart the same risks as GOF research—and is rarely mentioned in policy debates in the same way as GOF research.

In this report, we map the gain- and loss-of-function global research landscape using a quantitative approach that combines machine learning with subject-matter expert review. We identify about 7,000 PubMed research papers related to our criteria for GOF and LOF research, published between 2000 and mid-2022.

Our research shows that GOF and LOF research are intertwined; they are conducted using the same experimental procedures and thus would both be impacted by any future regulations. As such, throughout this report, the two types of research are often discussed in tandem. Our aim is to help policymakers understand the research landscape in order to more effectively mitigate risks without impacting beneficial GOF and LOF research.

Our key findings include:

1. **Gain- and loss-of-function research is ongoing, global, and collaborative** with U.S.-affiliated researchers contributing to approximately half of identified publications between 2000 and mid-2022.
2. **Gain- and loss-of-function research frequently co-occur in the same study**. That said, LOF research appears in more publications than GOF research.
3. **Gain- and loss-of-function research is conducted over a range of different experimental methodologies, pathogens, and applications.**
    - Methodologies: GOF and LOF research does not require cutting-edge gene-editing technologies; 21 percent of all publications we identified for this report use serial passaging instead of other more technically sophisticated techniques such as CRISPR. The use of serial passage is more frequent in GOF publications than LOF publications.
    - Pathogens: GOF and LOF research involves pathogens that span the four biosafety levels (BSLs), with nearly all research being conducted on pathogens that are categorized as BSL-2, BSL-2+, or BSL-3.
    - Applications: a range of research topics involve GOF and LOF research. For example, approximately 24 percent of the identified publications were related to vaccine development and the most-studied pathogens are those that cause high global health burdens.

Based on our analysis, we assess **that GOF and LOF research will be difficult to regulate because:**

1. **Gain- and loss-of-function research are widely used in public health applications.** Regulations will need to target the types of research that cause the most risk without impeding disease research or therapy development.
2. **Gain- and loss-of-function research are intertwined.** Regulations that restrict GOF research will also restrict less risky LOF research, potentially delaying public health developments without achieving the desired safety enhancements.
3. **Researchers cannot always predict whether an experiment will cause a pathogen to become more or less virulent.** Experiments that were not anticipated to be GOF research may not be prevented by proactive regulatory requirements.
4. **Gain-of-function research can be conducted without access to gene editing technologies.** Regulating gene editing technologies, including CRISPR or DNA synthesis, would not affect the approximately 21 percent of experiments that were conducted using serial passaging.
5. **Risk varies among GOF studies, and should not be uniformly regulated.** The risk level of GOF and LOF research changes based on experimental factors including the pathogen's biosafety level, methodology, and the animal model(s) used. Regulations will need to target the types of research that cause the most risk rather than impose a one-size-fits-all regulatory policy that does not account for these vital differences.

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Institution/Organization Announcements *[list in formation]*

We recognize this listing is incomplete, unbalanced and skewed to the Global North…please help us make it more complete, more inclusive, and more useful by recommending additional organizations/institutions/ programs to monitor.

Academy of Medical Sciences [UK] [accessed 30 Aug 2023]
https://acmedsci.ac.uk/
News
[No new digest content identified]

Africa CDC - Institute of Pathogen Genomics [IPG] [accessed 30 Aug 2023]
https://africacdc.org/institutes/ipg/
Africa PGI is an initiative of the Africa CDC Institute for Pathogen Genomics, a continent-wide leadership initiative established in 2019 to support public health pathogen genomics and bioinformatics across Africa.
News & Announcements
[No new digest content identified]

African Society of Human Genetics [accessed 30 Aug 2023]
https://www.afshg.org/
Press Releases
[No new digest content identified]

Paul G. Allen Frontiers Group [accessed 30 Aug 2023]
https://alleninstitute.org/news-press/
News
[No new digest content identified]

American Board of Medical Genetics and Genomics (ABMGG) [accessed 30 Aug 2023]
http://www.abmgg.org/pages/resources_appeal.shtml
The mission of the ABMGG is to serve the public and medical profession by establishing professional certification standards and promoting lifelong learning as well as excellence in medical genetics and genomics.
[No new digest content identified]

American College of Medical Genetics and Genomics [accessed 30 Aug 2023]
https://www.acmg.net/
The ACMG is the only nationally recognized interdisciplinary professional membership organization that represents the interests of the entire medical genetics team including clinical geneticists, clinical laboratory geneticists, and genetic counselors.
News & Releases
[No new digest content identified]

American Society for Gene and Cell Therapy [ASGCT] [accessed 30 Aug 2023]
https://asgct.org/
News/Publications
The Gene, Cell, & RNA Therapy Landscape Q3 Report
ASGCT and Citeline
The third quarterly report! is the only field-wide report covering the therapeutics pipeline, clinical targets, developer progress, and more. PDF:
http://asgct.informz.net/z/cjUucD9taT00MDMzMzEyJnA9MSZ1PTM5OTQ2ODE4NCZsaT00MzMzMzc1Mw/index.html

ASGCT Policy Summit
September 18-19, 2023 | Renaissance Washington, DC Downtown Hotel
Program & Agenda
The Policy Summit brings together various policy, industry, and science stakeholders to discuss common challenges in the CGT field and explore innovative solutions.

Best of ASGCT: Annual Meetings Recent Top Abstracts Revisited
October 16, 2023 - October 16, 2023
Revisit the top abstracts from past Annual Meetings with presentations that cover post-meeting research and findings.

Risk Assessment of Lentiviral and AAV Gene Therapy Vectors
October 17, 2023 - October 17, 2023
Experts will discuss state-of-the-art technologies and assays for integration site profiling, clonality, and oncogenesis.

Risk Assessment for Gene Editing Technologies and Outcomes
October 18, 2023 - October 18, 2023
This session will help us understand and improve the safety and effectiveness of gene editing technologies.

Treating Genetic Diseases Prior to Birth from Stem Cells to Gene Delivery
October 19, 2023 - October 19, 2023
There is an urgent need to explore novel cell and gene therapy tools for prenatal application and to explore the ethical considerations surrounding this topic

American Society of Human Genetics (ASHG) [accessed 30 Aug 2023]
http://www.ashg.org/
We work to advance human genetics and genomics in science, health, and society through excellence in research, education, and advocacy.
Press Releases
ASHG Announces 2024 Board of Directors President Elect Sarah Tishkoff, Four New Directors to take office in January 2024
05th Sept. 2023– The American Society of Human Genetics (ASHG) announced today the election of Sarah Tishkoff, PhD as ASHG's 2024 President-elect; and of Christine Eng, MD; Scott Williams, PhD; Krystal Tsosie, PhD, MPH, MA; and Rebecca Meyer-Schuman, PhD to the ASHG Board of Directors. Their three-year term will begin on January 1, 2024.

Message from the President: ASHG 2023: Celebrating 75 Years, Engaging our Community to Build the Future

13th Sept. 2023 - Each year, as thousands of colleagues gather for the ASHG Annual Meeting, I'm reminded of the depth of the relationships that have been formed over the years in the human genetics and genomics research community amongst the many people who are passionate about sharing their science. It's a reminder that we're strongest when we work...

How Public-Private Partnerships Accelerate Genetic Research: Interview with Julie Gerberding, MD, MPH, President & CEO, Foundation for the National Institutes of Health

13th Sept. 2023 - ASHG recently spoke with Julie Gerberding, MD, MPH, President and CEO of the Foundation for the National Institutes of Health (FNIH), on how this organization leverages expertise across a breadth of scientific industries to address complex health challenges and accelerate research, particularly in human genetics and genomics. The FNIH is an independent, not-for-profit 501(c)(3) charitable….

ARM [Alliance for Regenerative Medicine] [accessed 30 Aug 2023]
https://alliancerm.org/press-releases/
Selected Press Releases; Events
Cell-Gene Meeting on the Mesa – 2023
October 10-12, 2023, Carlsbad, CA
[Selected session]
Day 1. Tuesday, October 10, 2023 4:00pm – 5:00pm
THE IMPORTANCE OF ETHICS IN GENE AND CELL THERAPY

With the recent technical and commercial success of cell and gene therapies comes select challenges facing the field. Many of these challenges can be categorized as "ethical" issues confronting leaders in the field and other key stakeholders. This panel will explore a broad range of some of the most difficult ethical dilemmas facing the industry.
Chair: Tim Hunt, CEO, Alliance for Regenerative Medicine (ARM)
Speakers:
- Chris Fox, President, Novartis Gene Therapies
- Ben Hurlbut, Ph.D., Associate Professor, School of Life Sciences, Arizona State University
- Janet Lambert, Former CEO, Alliance for Regenerative Medicine (ARM)
- Rob Perez, Operating Partner, General Atlantic; Founder and Chairman, Life Science Cares
- Durhane Wong-Rieger, Ph.D., President and CEO, Canadian Organization for Rare Diseases

ARRIGE [accessed 30 Aug 2023]
https://www.arrige.org/
News
[No new digest content identified]

Australian Genomics
https://www.australiangenomics.org.au/
News
Key group formed to advise on priorities of Genomics Australia
September 8, 2023

The Expert Advisory Group and its Terms of Reference for the new Genomics Australia have been announced as the establishment of the new entity gets under way.

The 17-member group, which held its second meeting last week, will advise governments on the design, role, key priorities, and critical partnerships of the new national body…

BMGF - Gates Foundation [[accessed 30 Aug 2023]
https://www.gatesfoundation.org/ideas/media-center
Press Releases and Statements
Grand Challenges Annual Meeting 2023 to be held in Dakar, Senegal
The GCAM 2023 is held this week in Dakar, Senegal from 8th to 12th of October 2023

Bill & Melinda Gates Medical Research Institute [accessed 30 Aug 2023]
https://www.gatesmri.org/news
The Bill & Melinda Gates Medical Research Institute is a non-profit biotech organization. Our mission is to develop products to fight malaria, tuberculosis, and diarrheal diseases—three major causes of mortality, poverty, and inequality in developing countries. The world has unprecedented scientific tools at its disposal; now is the time to use them to save the lives of the world's poorest people
News: Articles and Publications
[No new digest content identified]

Broad Institute of MIT and Harvard [accessed 30 Aug 2023]
A collaborative research institute focused on genomics and personalized medicine, undertaking various projects in genomic medicine.
https://www.broadinstitute.org/
Latest News
[No new digest content identified]

CDC – Office of Genomics and Precision Public Health [accessed 30 Aug 2023]
https://www.cdc.gov/genomics/default.htm
Updates
Cost-Effectiveness Analysis in Public Health Genomics and Precision Health: Recent Findings, Methodologic Issues, and the Path Forward
Webinar October 26, 2023, 11:00 am – 12:00 pm ET
Please join this free Zoom public health genomics webinar.
Registration is required.

Center for Genetics and Society [USA] [accessed 30 Aug 2023]
www.geneticsandsociety.org
…a non-profit public affairs and policy advocacy organization working to encourage responsible uses and effective societal governance of human genetic and reproductive biotechnologies.
Press
[No new digest content identified]

Center for the Ethics of Indigenous Genomic Research [CEIGR] – University of Oklahoma [accessed 30 Aug 2023]
https://www.ou.edu/cas/anthropology/ceigr
[No new digest content identified]

Center for ELSI Resources and Analysis (CERA) [accessed 30 Aug 2023]

https://elsihub.org/about/our-mission

Call for Proposals: The 6th ELSI Congress

The 6th ELSI Congress is now accepting proposals for panels, papers and posters on topics across the expanding range of ELSI research. The 6th ELSI Congress will be held at Columbia University in New York City from June 10-12, 2024. The theme of the conference will be Reimagining the Benefits of Genomic Science.

We welcome all with an interest in the ethical, legal, and social implications (ELSI) of genomic research. Researchers, scholars, practitioners, trainees, policymakers, journalists, and the general public are invited to share and explore the latest ELSI research at ELSIcon2024.

The deadline for submissions is 11:59 PM EST, Friday, December 1, 2023: Submit a Proposal

Francis Crick Institute [accessed 30 Aug 2023]
https://www.crick.ac.uk/news-and-reports
News
[No new digest content identified]

FDA Cellular & Gene Therapy Guidances [accessed 30 Aug 2023]
https://www.fda.gov/vaccines-blood-biologics/biologics-guidances/cellular-gene-therapy-guidances
[No new guidances listed]

Genetic Alliance [accessed 30 Aug 2023]
http://www.geneticalliance.org/
News/Press Releases
[No new digest content identified]

The Genomic Medicine Foundation [accessed 30 Aug 2023]
https://www.genomicmedicine.org
The Genomic Medicine Foundation is a non-profit organization providing up to date and evidence-based information on genetics/genomics relevant to clinical medicine and healthcare.
News, Events
[No new digest content identified]

Global Alliance for Genomics and Health [accessed 30 Aug 2023]
https://www.ga4gh.org/
News, Events
[No new digest content identified]

Genetic Alliance [accessed 30 Aug 2023]
https://geneticalliance.org/about/news
News
[No new digest content identified]

Genomics England [accessed 30 Aug 2023]
https://www.genomicsengland.co.uk/

We partner with the NHS to provide whole genome sequencing diagnostics. We also equip researchers to find the causes of disease and develop new treatments – with patients and participants at the heart of it all.
Latest
Genomics England announces list of rare conditions to be included in world leading research study
02nd Oct. 2023 … The Generation Study is an NHS-embedded research study which aims to understand whether sequencing babies' genomes can help to discover rare genetic conditions earlier. It aims to look at the DNA of over 100,000 babies and gather evidence to consider whether whole genome sequencing could be rolled out as part of a future newborn screening programme…

Genomics England announces appointment of Dr Rich Scott as Interim Chief Executive Officer
28th Sept. 2023… n his role as Chief Medical Officer, Rich has played a pivotal role in Genomics England's work to support the launch of the NHS Genomic Medicine Service - the world's first Whole Genome Sequencing (WGS) diagnostics service at national scale. With his experience in rare disease diagnosis, Rich has also led Genomics England's Newborn Genomes Programme, one of 3 new initiatives announced last year to support our mission to create a world where everyone can benefit from genomic medicine…

Genetics Society of America (GSA) [accessed 30 Aug 2023]
http://genetics-gsa.org/
Using the tools of genetics and genomics, nearly 6,000 GSA members from more than 50 countries around the world investigate a wide variety of biological questions and applications.
News
[No new digest content identified]

Global Genomic Medicine Consortium [G2MC] [accessed 30 Aug 2023]
https://g2mc.org/
G2MC is an international community formed to advance the implementation of genomic medicine and improve health for all.
Previewing the Dead Sea Precision Medicine Conference in Israel
24th Aug. 2023 Dead Sea Conference October 11-13, 2023 Registration Open For Dead Sea Conference "The Disease Prevention, Detection and Treatment Conference: A unique meeting on Precision Medicine will be led by top professionals whose expertise is in discovery and use of molecular data to improve health. More than 80 international experts have already approved their participation and will lead parallel sessions

Global Citizens' Assembly on Genome Editing (GCA) [accessed 30 Aug 2023]
https://www.globalca.org/
Latest News
[No new digest content identified]

HHMI - Howard Hughes Medical Institute [to 30 Aug 2023]
https://www.hhmi.org/news
HHMI Awards Hanna Gray Fellowships to 25 Early Career Scientists
19th Sept. 2023…The HHMI Hanna H. Gray Fellows Program provides each fellow with up to $1.5 million in support for up to eight years spanning postdoctoral training through transition to an early career faculty position. The program is designed to give fellows the freedom to explore new scientific territory and follow their curiosity, while seeking answers to challenging scientific questions. Members of the newest cohort include researchers who are working to design new therapies to treat Parkinson's disease, advance

understanding of the aging process, and bring to light how climate change affects animal-microbial interactions…

H3Africa [accessed 30 Aug 2023]
https://h3africa.org/
News
[No new digest content identified]

ICH [accessed 30 Aug 2023]
https://www.ich.org/
Public Consultations; Work Products; Working Groups
[No new digest content identified]

Innovative Genomics Institute
https://innovativegenomics.org/about-us/
The IGI is composed of diverse researchers at the University of California, Berkeley, the University of California, San Francisco, and the University of California, Davis. Together, our scientists have powerful combined expertise. They conduct world-class research, driven by the real possibility of using genome engineering to treat human diseases, end hunger, and respond to climate change.
News
New Paper Points the Way to Make CRISPR Safer by Avoiding Chromosome Loss
03rd Oct. 2023….This project has been a tremendous journey from a fundamental question about CRISPR genome editing to potential clinical consequence," says first author Connor Tsuchida. "A real inflection point occurred when I presented the early parts of this project at a Cold Spring Harbor Laboratory Genome Editing Conference and met Howard Chang, beginning a huge collaboration between researchers and clinicians at UC Berkeley, UC San Francisco, the Gladstone Institutes, Stanford, and UPenn. We're really excited about the fact that not only does our study elucidate fundamental answers about this unintended consequence of CRISPR-Cas9 genome editing, but it also reveals a method for avoiding this potential genotoxicity, which hasn't been demonstrated before, for current and future clinical trials engineering T cells…

INSERM [to 30 Aug 2023]
https://www.inserm.fr/en/home/
Press Releases
[No new digest content identified]

Institut Pasteur [to 30 Aug 2023]
https://www.pasteur.fr/en/press-area
Press Documents
The Institut Pasteur & the University of Tokyo have signed a LOI to establish the Planetary Health Innovation Center, marking the first step towards the Institut Pasteur of Japan
03rd Oct. 2023 …. The PHIC is a cross-functional innovation center that will focus on finding solutions to mitigate the impact of human activity on the Earth's natural systems and will play a pivotal role in bringing together French and Japanese health innovation stakeholders. To achieve these goals, the PHIC will support academic-private partnerships, help further international career and business development in the biosciences, and connect stakeholders from France and Japan within innovation for health research. In

addition to the PHIC, the Institute Pasteur of Japan will host scientific teams dedicated to human and environmental health research on a global scale, with the aim of training and teaching future generations of researchers, and promoting innovation and knowledge transfer to achieve global health….

NIH [to 30 Aug 2023]
http://www.nih.gov/
News Releases
[No new digest content identified]

NIH National Human Genome Research Institute (NHGRI) [accessed 30 Aug 2023]
https://www.genome.gov/
News
NIH awards $5.8M to create genomic data science educational hub for early career researchers
07th Sept. 2023…National Institutes of Health will provide approximately $5.8 million over five years to create an educational hub for computational genomics and data science. The hub will provide new educational and research opportunities for students of diverse backgrounds, including those from groups historically underrepresented in the biomedical sciences.

NIH awards $50.3 million for "multi-omics" research on human health and disease
12th Sept. 2023 The National Institutes of Health is establishing the Multi-Omics for Health and Disease Consortium, with approximately $11 million awarded in the consortium's first year of funding. The new consortium aims to advance the generation and analysis of "multi-omic" data for human health research.

Jim Mullikin retires after making major contributions to genome sequencing
26th Sept. 2023….Dr. Mullikin first joined the Human Genome Project at the Sanger Center in England. There, he advanced DNA sequencing and analysis methods. His work contributed not just to sequencing the human genome, but also the genomes of important research organisms, such as mice, C. elegans and zebrafish…..

NHGRI appoints Drs. Sara Chandros Hull and Shawn Burgess as new deputy scientific directors
02nd Oct. 2023 ….The National Human Genome Research Institute (NHGRI), part of the National Institutes of Health, has selected Sara Chandros Hull, Ph.D., and Shawn Burgess, Ph.D., as deputy scientific directors of NHGRI's Intramural Research Program….

NIH – All of Us Research Program [accessed 30 Aug 2023]
https://allofus.nih.gov/news-events/announcements
An historic effort to collect and study data from one million or more people living in the United States. The goal of the program is better health for all of us. Our mission is to accelerate health research and medical breakthroughs, enabling individualized prevention, treatment, and care for all of us. This mission is carried out through three connected focus areas that are supported and made possible by a team that maintains a culture built around the program's core values.
Announcements
NIH's All of Us Research Program Awards $1.5 Million to Institutions Collaborating with Tribal Communities to Advance Precision Medicine
26th Sept. 2023….The National Institutes of Health's All of Us Research Program announced three awards totaling $1.5 million to institutions partnering with American Indian and Alaska Native (AI/AN) and Indigenous communities to advance health equity and precision medicine

Nuffield Council on Bioethics [to 30 Aug 2023]
https://www.nuffieldbioethics.org/news
News
[No new digest content identified]

Penn Center for Global Genomics & Health Equity [University of Pennsylvania] [accessed 30 Aug 2023]
https://globalgenomics.med.upenn.edu/index.php
Latest News
[No new digest content identified]

PHG Foundation
https://www.phgfoundation.org
The PHG Foundation is a non-profit think tank and a linked exempt charity of the University of Cambridge. We were originally founded as the Public Health Genomics Unit in 1997, and became the charitable PHG Foundation ten years later.
News
Synthetic health data, real regulatory challenge
05th Oct. 2023… Synthetic data— artificial data that closely mimic the properties and relationships of real data—is not a new idea but recent technological advances have brought it to prominence as a potentially transformative tool for research and innovation, particularly for AI development. High profile articles, from Forbes and the Wall Street Journal among others, highlight the potential of synthetic data (including AI-driven genomic data analysis). But most of them also note that the generation of synthetic data from real personal data may lead to breaches of privacy – e.g. Techmonitor's coverage highlighting that 'Synthetic data may not be AI's privacy silver bullet'.

The Royal Society [accessed 30 Aug 2023]
https://royalsociety.org/
What's New
[No new digest content identified]

UNESCO–The World Academy of Sciences [accessed 30 Aug 2023]
https://twas.org/
News
Scientific exchange programmes seek applicants
04 Oct. 2023
Research Professors in LDCs, Associateship programmes are now accepting candidates and proposals
TWAS announced two open calls for scientific exchange programmes today, both designed to facilitate collaboration between scientists in developing countries.
The TWAS-UNESCO Associateship Scheme is a collaboration between the Academy, UNESCO, and almost 300 centres of excellence in the South. Associates are appointed for three years and can make two months-long visits to the centre during that time to engage in research collaboration.
TWAS Research Professors in LDCs is open to research groups and scientific institutions in Least Developed Countries (LDCs) that would like to work with a TWAS Fellow, TWAS Young Affiliate, or TWAS Alumni. The TWAS scientist will be offered appointments as TWAS Research Professors for one year, during which they will visit their host institution for a period of two to four weeks.
Check here for a full listing of deadlines for opportunities from TWAS.

Wellcome Sanger Institute [accessed 30 Aug 2023]
https://www.sanger.ac.uk/
A leading genomics research institute in the United Kingdom, known for its work in sequencing genomes and understanding the role of genetics in health and disease.
News
1,000 species get their genomes sequenced for the first time
By Luke Lythgoe, Communications Officer for the Tree of Life Programme, Wellcome Sanger Institute
A thousand reference genomes of the highest quality have now been produced for diverse eukaryotic species across the tree of life. The feat has been achieved by the Wellcome Sanger Institute's Tree of Life Programme, where a scientific pipeline has been established to sample organisms, extract and sequence their DNA, assemble and curate their genomic data, and openly release these for use by researchers worldwide

WHO
https://www.who.int/news
22 September 2023 *Departmental news*
WHO releases step by step guide to help countries develop their national genomic surveillance strategy for pathogens with pandemic and epidemic potential
…To support countries in articulating their genomic surveillance strategy, WHO recently published "Considerations for developing a national genomic surveillance strategy or action plan for pathogens with pandemic and epidemic potential". This step-by-step guide outlines key considerations and an approach for developing a national strategy. It is intended for use by all stakeholders at the national and subnational levels relevant to the development and implementation of the strategy, including health authorities, One Health partners, donors, public health officers, academia, the private sector and laboratory specialists…

WHO - Human genome editing [accessed 30 Aug 2023]
https://www.who.int/teams/health-ethics-governance/emerging-technologies/human-genome-editing
News; Publications
[No new digest content identified; last update on page July 2021]

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Academic Journal Watch

This section aggregates key articles from a baseline of journals that are clearly focused on genomic medicine and supporting disciplines. These journal titles are listed for reference, even if there is no new content for this edition of the digest. This is complemented by weekly monitoring of about 150 journals across disciples and continuing use of google scholar to capture relevant content. Overall, this content is presented by journal source in alphabetical order. If you would like to suggest a journal to be monitored for this section, please contacts the editors as above.

American Journal of Human Genetics
https://www.cell.com/ajhg/current
Commentary
The need for an intersectionality framework in precision medicine research

Maya Sabatello, et al.

Summary

Precision medicine research has seen growing efforts to increase participation of communities that have been historically underrepresented in biomedical research. Marginalized racial and ethnic communities have received particular attention, toward the goal of improving the generalizability of scientific knowledge and promoting health equity. Against this backdrop, research has highlighted three key issues that could impede the promise of precision medicine research: issues surrounding (dis)trust and representation, challenges in translational efforts to improve health outcomes, and the need for responsive community engagement. Existing efforts to address these challenges have predominantly centered on single-dimensional demographic criteria such as race, ethnicity, or sex, while overlooking how these and additional variables, such as disability, gender identity, and socioeconomic factors, can confound and jointly impact research participation. We argue that increasing cohort diversity and the responsiveness of precision medicine research studies to community needs requires an approach that transcends conventional boundaries and embraces a more nuanced, multi-layered, and intersectional framework for data collection, analyses, and implementation. We draw attention to gaps in existing work, highlight how overlapping layers of marginalization might shape and substantiate one another and affect the precision-medicine research cycle, and put forth strategies to facilitate equitable advantages from precision-medicine research to diverse participants and internally heterogeneous communities.

Perspective

Ethical considerations when co-analyzing ancient DNA and data from private genetic databases

Éadaoin Harney, et al.

Open Access

The search for genetic connections between ancient and living individuals benefits from access to large genetic databases such as those maintained by genetic testing companies. We discuss the ethical issues we considered during our recent study of African Americans from Catoctin Furnace, Maryland, who were compared with 23andMe, Inc's genetic database.

Annual Review of Biomedical Data Science

https://www.annualreviews.org/journal/biodatasci

Article

First published online August 2023

The All of Us Data and Research Center: Creating a Secure, Scalable, and Sustainable Ecosystem for Biomedical Research

Kelsey R. Mayo, Melissa A. Basford, Robert J. Carroll, Moira Dillon, Heather Fullen, Jesse Leung, et al.

Abstract

The *All of Us* Research Program's Data and Research Center (DRC) was established to help acquire, curate, and provide access to one of the world's largest and most diverse datasets for precision medicine research. Already, over 500,000 participants are enrolled in *All of Us*, 80% of whom are underrepresented in biomedical research, and data are being analyzed by a community of over 2,300 researchers. The DRC created this thriving data ecosystem by collaborating with engaged participants, innovative program partners, and empowered researchers. In this review, we first describe how the DRC is organized to meet the needs of this broad group of stakeholders. We then outline guiding principles, common challenges, and innovative approaches used to build the *All of Us* data ecosystem. Finally, we share lessons learned to help others navigate important decisions and trade-offs in building a modern biomedical data platform.

Annual Review of Genetics

https://www.annualreviews.org/journal/genet

Article

First published online September 18, 2023

Manipulating the Destiny of Wild Populations Using CRISPR

Robyn Raban, John M. Marshall, Bruce A. Hay, and Omar S. Akbari

Abstract

Genetic biocontrol aims to suppress or modify populations of species to protect public health, agriculture, and biodiversity. Advancements in genome engineering technologies have fueled a surge in research in this field, with one gene editing technology, CRISPR, leading the charge. This review focuses on the current state of CRISPR technologies for genetic biocontrol of pests and highlights the progress and ongoing challenges of using these approaches.

Annual Review of Genomics and Human Genetics

https://www.annualreviews.org/journal/genom

Article

Published online August 2023

Sickle Cell Disease: From Genetics to Curative Approaches

Giulia Hardouin, Elisa Magrin, Alice Corsia, Marina Cavazzana, Annarita Miccio, and Michaela Semeraro

Abstract

Sickle cell disease (SCD) is a monogenic blood disease caused by a point mutation in the gene coding for β-globin. The abnormal hemoglobin [sickle hemoglobin (HbS)] polymerizes under low-oxygen conditions and causes red blood cells to sickle. The clinical presentation varies from very severe (with acute pain, chronic pain, and early mortality) to normal (few complications and a normal life span). The variability of SCD might be due (in part) to various genetic modulators. First, we review the main genetic factors, polymorphisms, and modifier genes that influence the expression of globin or otherwise modulate the severity of SCD. Considering SCD as a complex, multifactorial disorder is important for the development of appropriate pharmacological and genetic treatments. Second, we review the characteristics, advantages, and disadvantages of the latest advances in gene therapy for SCD, from lentiviral-vector-based approaches to gene-editing strategies.

Asian Biotechnology and Development Review

https://ris.org.in/journals-n-newsletters/Asian-Biotechnology-Development-Review

Article

What Do the British and Chinese Governing Visions on Human Genomic Research Tell Us about Biosovereignty?

Joy Y. Zhang

Published online August 2023*Abstract*

Genomic research lies at the core of national bioeconomies and is a strategic area for national scientific competitiveness. Drawing on the UK's latest national vision on genomic research and my participation in one of China's policy consultations on its implementing rules on human genetic resources, this paper demonstrates how China's conception of 'biosovereignty' may be counterproductive, both to its scientific competitiveness and to the health of its people. The key argument is that 'biosovereignty' is not a property of an individual, a community, or an institution. Rather it is a powerful assemblage of ideals, infrastructures and network of capitals that steers our collective future. It is simultaneously a social contract and a social construct, both of which are evolving with socio-technical realities. The paper provokes reflections on the role of the state in promoting equitable genomic research and the question on what 'biosovereignty' means and how it should be represented. Keywords: China, CRISPR genome editing, ethics, genomics.

Biologics

https://www.mdpi.com/journal/biologics

Review Article
First published online September 25, 2023
The Dawn of In Vivo Gene Editing Era: A Revolution in the Making
Sarfaraz K. Niazi
Abstract
Gene or genome editing (GE) revises, removes, or replaces a mutated gene at the DNA level; *it is a tool.* Gene therapy (GT) offsets mutations by introducing a "normal" version of the gene into the body while the diseased gene remains in the genome; *it is a medicine*. So far, no in vivo GE product has been approved, as opposed to 22 GT products approved by the FDA, and many more are under development. No GE product has been approved globally; however, critical regulatory agencies are encouraging their entry, as evidenced by the FDA issuing a guideline specific to GE products. The potential of GE in treating diseases far supersedes any other modality conceived in history. Still, it also presents unparalleled risks—from off-target impact, delivery consistency and long-term effects of gene-fixing leading to designer babies and species transformation that will keep the bar high for the approval of these products. These challenges will come to the light of resolution only after the FDA begins approving them and opening the door to a revolution in treating hundreds of untreatable diseases that will be tantamount to a revolution in the making. This article brings a perspective and a future analysis of GE to educate and motivate developers to expand GE products to fulfill the needs of patients.

Biopreservation and Biobanking
https://www.liebertpub.com/
Editorial
Published online August 17, 2023
Biobanking in the Asia-Pacific Region: The Challenges of International Biospecimen Sharing
Annette Schmid, Zisis Kozlakidis, and Marianna Bledsoe
The use of biospecimens is critical for the advancement of health research and biomedical innovation. However, access to well-characterized representative sample sets for global research is challenging due to the internationally fragmented legal, regulatory, and funding landscape for the collection, handling, and sharing of biospecimens and associated data.[1–5] The Science Policy Think Tank, a loosely affiliated group of individuals from industry, academia, and nonprofit entities with interest in science policy issues related to clinical research, has undertaken an effort to address these issues.
In collaboration with leaders of the International Society for Biological and Environmental Repositories (ISBER) Science Policy Committee, RIKEN Center for Integrative Medical Sciences, Ropes & Gray, and the Multiregional Clinical Trial Center of Brigham and Women's Hospital and Harvard (MRCT), the group has been exploring the international landscape for global research with biospecimens and associated data, including ethical and societal aspects.[6–10]
…Ultimately, the open forum highlighted the need to define shared ethical principles relating to secondary research uses of biospecimens and associated data, and to do so across the "life cycle" of biospecimens. National regulatory regimes and requirements can then be mapped onto these principles, with an ultimate goal of identifying how regulations align with accepted ethics principles and advocating for convergence among national regulations. The full report is available online.[6] An initial set of principles have been drafted and presented at in-person and virtual workshops at the 2023 ISBER Annual Meeting in Seattle and will be further discussed at a workshop at the annual meeting of the Public Responsibility in Medicine and Research that will be held in Washington, DC, on December 6, 2023.
In conclusion, the power of biospecimens is immense, and their use is critical for the advancement of health research and biomedical innovation. Although this is increasingly recognized by nations within the Asia-Pacific region, access to well-characterized representative sample sets for global research is challenging due to the internationally fragmented legal, regulatory, and funding landscape for the collection, handling, and sharing of biospecimens and associated data. The international community must work together to define shared ethical principles relating to secondary research uses of biospecimens and associated data, and to

advocate for convergence among national regulations. By doing so, biomedical innovation can become more globally relevant, equitable, and sustainable.

BMC Medical Ethics
http://www.biomedcentral.com/bmcmedethics/content
Research Open access Published: 21 September 2023
Researching the future: scenarios to explore the future of human genome editing
Cynthia Selin, Lauren Lambert, Stephanie Morain, John P. Nelson, Dorit Barlevy, Mahmud Farooque, Haley Manley and Christopher T. Scott

Forward-looking, democratically oriented governance is needed to ensure that human genome editing serves rather than undercuts public values. Scientific, policy, and ethics communities have recognized this necessity but have demonstrated limited understanding of how to fulfill it. The field of bioethics has long attempted to grapple with the unintended consequences of emerging technologies, but too often such foresight has lacked adequate scientific grounding, overemphasized regulation to the exclusion of examining underlying values, and failed to adequately engage the public.

Cell
Aug 17, 2023 Volume 186 Issue 17 p3523-3744
https://www.cell.com/cell/current
[No new digest content identified]

Cell Genomics
Aug 09, 2023 Volume 3 Issue 8
https://www.cell.com/cell-genomics/current
[No new digest content identified]

Children
https://www.mdpi.com/journal/children
Article
First published online August 9, 2023
Parental Preferences for Expanded Newborn Screening: What Are the Limits?
Liang, Nicole S. Y., Abby Watts-Dickens, David Chitayat, Riyana Babul-Hirji, Pranesh Chakraborty, and Robin Z. Hayeems
Abstract
The use of next-generation sequencing technologies such as genomic sequencing in newborn screening (NBS) could enable the detection of a broader range of conditions. We explored parental preferences and attitudes towards screening for conditions for which varying types of treatment exist with a cross-sectional survey completed by 100 parents of newborns who received NBS in Ontario, Canada. The survey included four vignettes illustrative of hypothetical screening targets, followed by questions assessing parental attitudes. Chi-square tests were used to compare frequency distributions of preferences. Results show that most parents supported NBS for conditions for which only supportive interventions are available, but to a significantly lesser degree than those with disease-specific treatments (99% vs. 82–87%, $p \leq 0.01$). For conditions without an effective treatment, the type of supportive care and age of onset of the condition did not significantly alter parent perceptions of risks and benefits. Parents are interested in expanded NBS for conditions with only supportive interventions in childhood, despite lower levels of perceived benefit for the child and greater anticipated anxiety from screen-positive results. These preferences suggest that the

expansion of NBS may require ongoing deliberation of perceived benefits and risks and enhanced approaches to education, consent, and support.

Clinical Therapeutics
August 2023 Volume 45 Issue 8 p685-806
http://www.clinicaltherapeutics.com/current
Editorial
Navigating the Ethical Dilemmas Associated With Genomic Sequencing of the Newborn
Jill L. Maron
Published online: August 10, 2023

Editorial
Pediatric Genomic Medicine: Value, Implementation, and Access
Tara A. Lavelle, Hadley Stevens Smith
Published online: August 08, 2023

Conversations with the Editors
Conversations With the Editors: Stewardship in Genomic Medicine—Insights From Health Care Payers at the Forefront of Clinical Innovation and Partnerships
Hadley Stevens Smith, Michael Sherman, Dawn Cardeiro
Published online: August 05, 2023

Advancing Understanding of Inequities in Rare Disease Genomics
Jillian G. Serrano, Melanie O'Leary, Grace E. VanNoy,...Heidi L. Rehm, Anne O'Donnell-Luria, Monica H. Wojcik
Published online: July 28, 2023

Clinical Trials
Volume 20 Issue 4, August 2023
https://journals.sagepub.com/toc/ctja/20/4
[No new digest content identified]

The CRISPR Journal
Volume 6, Issue 4 / August 2023
https://www.liebertpub.com/toc/crispr/6/4
[No new digest content identified]

Contemporary Clinical Trials
Volume 132 September 2023
https://www.sciencedirect.com/journal/contemporary-clinical-trials/vol/132/suppl/C
Research article Abstract only
Ethical, legal, and social implications (ELSI) and challenges in the design of a randomized controlled trial to test the online return of cancer genetic research results to U.S. Black women
Catharine Wang, Kimberly A. Bertrand, Michelle Trevino-Talbot, Maureen Flynn, ... Julie R. Palmer
Article 107309
Abstract
Background

A central challenge to precision medicine research efforts is the return of genetic research results in a manner that is effective, ethical, and efficient. Formal tests of alternate modalities are needed, particularly for racially marginalized populations that have historically been underserved in this context.
Methods
We are conducting a randomized controlled trial (RCT) to test scalable modalities for results return and to examine the clinical utility of returning genetic research results to a research cohort of Black women. The primary aim is to compare the efficacy of two communication modalities for results return: 1) a conventional modality that entails telephone disclosure by a Board-certified genetic counselor, and 2) an online self-guided modality that entails results return directly to participants, with optional genetic counselor follow-up via telephone. The trial is being conducted among participants in the Black Women's Health Study (BWHS), where targeted sequencing of 4000 participants was previously completed.
Results
Several ethical, legal, and social implications (ELSI) and challenges presented, which necessitated substantial revision of the original study protocol. Challenges included chain of custody, re-testing of research results in a CLIA lab, exclusion of VUS results, and digital literacy. Bioethical principles of autonomy, justice, non-maleficence, and beneficence were considered in the design of the study protocol.
Conclusion
This study is uniquely situated to provide critical evidence on the effectiveness of alternative models for genetic results return and provide further insight into the factors influencing access and uptake of genetic information among U.S. Black women.

Current Genetic Medicine Reports
Volume 10, issue 3, September 2022
https://link.springer.com/journal/40142/volumes-and-issues/10-3
[No new digest content identified]

Current Medical Research and Opinion
Volume 39, Issue 8 2023
https://www.tandfonline.com/toc/icmo20/current
[No new digest content identified]

Current Protocols in Human Genetics
https://currentprotocols.onlinelibrary.wiley.com/journal/19348258
[Accessed 30 Aug 2023]
[No new digest content identified]

European Journal of Human Genetics
https://www.nature.com/ejhg
Article
Evaluation of CTRL: a web application for dynamic consent and engagement with individuals involved in a cardiovascular genetic disorders cohort
Matilda A. Haas, Evanthia O. Madelli, Rosie Brown, Megan Prictor, Tiffany Boughtwood
14 September 2023 Open Access
Abstract
There has been keen interest in whether dynamic consent should be used in health research but few real-world studies have evaluated its use. Australian Genomics piloted and evaluated CTRL (‘control’), a digital consent tool incorporating granular, dynamic decision-making and communication for genomic research.

Individuals from a Cardiovascular Genetic Disorders Flagship were invited in person (prospective cohort) or by email (retrospective cohort) to register for CTRL after initial study recruitment. Demographics, consent choices, experience surveys and website analytics were analysed using descriptive statistics. Ninety-one individuals registered to CTRL (15.5% of the prospective cohort and 11.8% of the retrospective cohort). Significantly more males than females registered when invited retrospectively, but there was no difference in age, gender, or education level between those who did and did not use CTRL. Variation in individual consent choices about secondary data use and return of results supports the desirability of providing granular consent options. Robust conclusions were not drawn from satisfaction, trust, decision regret and knowledge outcome measures: differences between CTRL and non-CTRL cohorts did not emerge. Analytics indicate CTRL is acceptable, although underutilised. This is one of the first studies evaluating uptake and decision-making using online consent tools and will inform refinement of future designs.

Article

The reuse of genetic information in research and informed consent

David Lorenzo, Montse Esquerda, Margarita Bofarull, Victoria Cusi, Helena Roig, Joan Bertran, Joan Carrera, Francesc Torralba, Francisco José Cambra, Martí Vila, Martina Garriga & Francesc Palau

First published online September 13, 2023

Abstract

Important advances in genetics research have been made in recent years. Such advances have facilitated the availability of huge amounts of genetic information that could potentially be reused beyond the original purpose for which such information was obtained. Any such reuse must meet certain ethical criteria to ensure that the dignity, integrity, and autonomy of the individual from whom that information was obtained are protected. The aim of this paper is to reflect on these criteria through a critical analysis of the literature. To guarantee these values, ethical criteria need to be established in several respects. For instance, the question must be posed whether the information requires special attention and protection (so-called *genetic exceptionalism*). Another aspect to bear in mind is the most appropriate type of consent to be given by the person involved, on the one hand favouring research and the reuse of genetic information while on the other protecting the autonomy of that person. Finally, there is a need to determine what protection such reuse should have in order to avoid detrimental consequences and protect the rights of the individual. The main conclusions are that genetic information requires special care and protection (genetic exceptionalism) and that broad consent is the most practical and trustworthy type of consent for the reuse of genetic information.

European Journal of Medical Genetics

Volume 66, Issue 9, September 2023, 104810. 23 July 2023

https://www.sciencedirect.com/journal/european-journal-of-medical-genetics/vol/66/issue/9

[No new digest content identified]

Frontiers in Genetics

https://www.frontiersin.org/journals/genetics

Published September, 2023

Editorial

The ethics and challenges of studying the genetics of marginalized populations

Tina Lasisi, Katrina Claw, Keolu Fox, Arslan Zaidi

This Research Topic, entitled “The Ethics and Challenges of Studying the Genetics of Marginalized Populations,” offers a pointed examination of the ethical considerations embedded within the study of genetics in historically underrepresented groups. Although there is much discourse on the need to include data from historically marginalized groups in genetics research, we believe that true inclusion lies not only in

the diversification of samples but also that of researchers. As such, we have made a concerted effort in this Research Topic to invite contributors from diverse backgrounds.

Perspective
Published September, 2023
Precision Medicine Needs to Think Outside the Box
Daphne O. Martschenko, Jennifer L. Young
Abstract
Precision medicine offers a precious opportunity to change clinical practice and disrupt medicine's reliance on crude racial, ethnic, or ancestral categories by focusing on an individual's unique genetic, environmental, and lifestyle characteristics. However, precision medicine and the genomic studies that are its cornerstone have thus far failed to account for human diversity. This failure is made clearer when looking at individuals who encapsulate a mosaic of different genetic ancestries and do not fit neatly into existing population labels. This piece argues that precision medicine continues to rely on the same forms of crude categorization it seeks to unsettle. Until the scientific community creates inclusive solutions for individuals who fall outside or between our existing population labels, precision medicine will continue to fall short in its aims.

Editorial Article
Published online September 27, 2023
Toward a Better Understanding and Application of Benefit Sharing in Genomic and Global Health Research
Aminu Yakubu, Ann M. Mc Cartney, Dominique Sprumont
Abstract
Philosophically grounded in the principle of beneficence, discourse on the issue of benefits and benefit sharing in biomedical research has been ongoing for decades but has received additional impetus with the recent growth of genetics and genomics research. Over the past 2 decades an international consensus has been built highlighting the need for both compensatory and distributive justice through benefit sharing with research participants and their communities (Hugo ethics committee, 2000). Although initially applied in regard to therapeutic benefit sharing from clinical trials, this consensus has expanded to encompass benefits across all biomedical research including: genetic and non-genetic human subject research (White, 2007; Dauda and Dierickx, 2017; Bedeker et al., 2022), human pathogen research (Rourke, 2017), research involving access and use of biodiversity as well research involving Indigenous Knowledges (Heinrich et al., 2020; Tone-Pah-Hote and Redvers, 2022). It has been noted that existing national and international guidelines have failed to offer practical and transparent guidance to support biomedical researchers to share the benefits from their research (Sudoi et al., 2021). Additionally, although there are few documented cases of successful benefit sharing in practice, cases of poor benefit sharing implementation are more common with the most recent and visible case being the SARS-CoV 2 vaccine development and the distribution of benefits (Hassan et al., 2021; Sekalala et al., 2021). The Research Topic of articles presented in this issue aimed to pool together additional literature from a wide pool of researchers to add to the body of evidence on the issue of benefit sharing with the hope of addressing some of the gaps in practice and regulation.

Frontiers in Genome Editing
Volume 5, 2023
https://www.frontiersin.org/journals/genome-editing/volumes?volume-id=1151
Review
Published on 19 Sep 2023
Genome-wide CRISPR screens and their applications in infectious disease
Kaveri Srivastava, Bhaswati Pandit
doi 10.3389/fgeed.2023.1243731
…Genome-wide CRISPR screens provide strong mechanistic ways to identify the host dependency factors involved in various infections. We presented insights into genome-wide CRISPR screens conducted in the

context of infectious diseases both viral and bacterial that led to better understanding of host-pathogen interactions and immune networks. We have discussed the advancement of knowledge pertaining to influenza virus, different hepatitis viruses, HIV, most recent SARS CoV2 and few more. Among bacterial diseases, we have focused on infection with life threatening *Mycobacteria*, *Salmonella*, *S*. *aureus*, etc. It appears that the CRISPR technique can be applied universally to multiple infectious disease models to unravel the role of known or novel host factors.

Editorial
Published on 18 Sep 2023
Editorial: Genome edited organisms for agriculture—challenges and perspectives for development and regulation
Michael Eckerstorfer, Sarah Zanon Agapito-Tenfen, Gijs A. Kleter
We present this Research Topic of articles, which we believe will inform current and future discussions surrounding the regulation, traceability, and safety of genome-edited crops and derived food and feed products. A handful of genome edited-crops have already been commercialized in several nations across the globe and their number is likely to expand progressively in the coming few years. This prospect raises a number of questions, some of which are addressed in this Research Topic.

Genetics in Medicines
Volume 25, Issue 9 September 2023
https://www.sciencedirect.com/journal/genetics-in-medicine/vol/25/issue/9
Research article Open access
Committing to genomic answers for all kids: Evaluating inequity in genomic research enrollment
Natalie J. Kane, Ana S.A. Cohen, Courtney Berrios, Bridgette Jones, ... Mark A. Hoffman
Article 100895
Persistent inequities in genomic medicine and research contribute to health disparities. This analysis uses a context-specific and equity-focused strategy to evaluate enrollment patterns for Genomic Answers for Kids (GA4K), a large, metropolitan-wide genomic study on children.

Genome Medicine
https://genomemedicine.biomedcentral.com/articles
[Accessed 30 Aug 2023]
[No new digest content identified]

Human Gene Therapy
Volume 34, Issue 17-18 / September 2023
https://www.liebertpub.com/toc/hum/34/17-18
Reviews
Advances and Challenges in the Development of Gene Therapy Medicinal Products for Rare Diseases
Juan A. Bueren and Alberto Auricchio
Pages:763–775
Published Online:11 September 2023
https://doi.org/10.1089/hum.2023.152

Realizing the Potential of Gene Therapies for Rare and Ultra-Rare Inherited Diseases
Claire Booth and Alessandro Aiuti
Pages:776–781
Published Online:25 August 2023

https://doi.org/10.1089/hum.2023.127

Recent Advances Using Genetic Therapies Against Infectious Diseases and for Vaccination
Anne Galy, et al
Published Online:28 August 2023
https://doi.org/10.1089/hum.2023.123
Abstract
The development of prophylactic or therapeutic medicines for infectious diseases is one of the priorities for health organizations worldwide. Innovative solutions are required to achieve effective, safe, and accessible treatments for most if not all infectious diseases, particularly those that are chronic in nature or that emerge unexpectedly over time. Genetic technologies offer versatile possibilities to design therapies against pathogens. Recent developments such as mRNA vaccines, CRISPR gene editing, and immunotherapies provide unprecedented hope to achieve significant results in the field of infectious diseases. This review will focus on advances in this domain, showcasing the cross-fertilization with other fields (e.g., oncology), and addressing some of the logistical and economic concerns important to consider when making these advances accessible to diverse populations around the world.

Human Genetics and Genomics Advances
https://www.cell.com/hgg-advances/home
Article
Published online August 31, 2023
The legacy of language: What we say, and what people hear, when we talk about genomics
Middleton A, Costa A, Milne R, Patch C, Robarts L, Tomlin B, Danson M, Henriques S, Atutornu J, Aidid U, Boraschi D. et al.
Summary
The way we ''talk'' about genetics plays a vital role in whether public audiences feel at ease in having conversations about it. Our research explored whether there was any difference between ''what we say'' and ''what people hear'' when providing information about genetics to community groups who are known to be missing from genomics datasets. We conducted 16 focus groups with 100 members of the British public who had limited familiarity with genomics and self-identified as belonging to communities with Black African, Black Caribbean, and Pakistani ancestry as well as people of various ancestral heritage who came from disadvantaged socio-economic backgrounds. Participants were presented with spoken messages explaining genomics and their responses to these were analyzed. Results indicated that starting conversations that framed genomics through its potential benefits were met with cynicism and skepticism. Participants cited historical and present injustices as reasons for this as well as mistrust of private companies and the government. Instead, more productive conversations led with an acknowledgment that some people have questions—and valid concerns—about genomics, before introducing any of the details about the science. To diversify genomic datasets, we need to linguistically meet public audiences where they are at. Our research has demonstrated that everyday talk about genomics, used by researchers and clinicians alike, is received differently than is likely intended. We may inadvertently be further disengaging the very audiences that diversity programs aim to reach.

International Journal of Science and Research (IJSR)
https://www.ijsr.net
Research Article
First published online August 2023
Designer Babies: Revealing the Ethical and Social Implications of Genetic Engineering in Human Embryos
S. Sanjay, N. Hari Prasath
Abstract

The idea of "designer babies" was born as a result of advances in genetic engineering, which made it possible to create and modify the genetic makeup of human embryos. The advent of CRISPR-Cas9 technology revolutionized genetic editing, offering scientists a more efficient way to target specific genes and make modifications compared to previous methods. This breakthrough, combined with pre-implantation genetic diagnosis (PGD) and in vitro fertilization (IVF), has opened up possibilities for advancements in the field of designer babies. However, it is crucial to recognize that genetic engineering is still evolving and numerous technical, ethical, and safety challenges must be addressed before designer babies can become a commonplace practice. This article highlights the ethical considerations involved in using CRISPR-Cas9, PGD, and IVF in the pursuit of designer babies and regulatory frameworks and policy considerations surrounding these reproductive techniques. It also acknowledges the potential benefits, such as the prevention of genetic diseases, but underscores the significance of responsible research and regulation to ensure that these technologies are employed ethically and in line with societal values.

JAMA
https://jamanetwork.com/journals/jama
[No new digest content identified]

Journal of Medical Ethics
http://jme.bmj.com/content/current
[No new digest content identified]

The Lancet
https://www.thelancet.com/journals/lancet/issue/current
[No new digest content identified]

Medical Law Review
https://academic.oup.com/medlaw
Journal Article
First published online August 11, 2023
Paul Enríquez, Rewriting Nature: The Future of Genome Editing and how to Bridge the Gap Between Law and Science
Jeanne Snelling
Extract
I. INTRODUCTION
The prospect of genetically engineering human beings has captured the imagination of philosophers,[1] lawyers,[2] novelists,[3] and filmmakers for decades.[4] However, recent scientific advances indicate that it is no longer a mere theoretical possibility.[5] A suite of new gene editing (GE) technologies herald a transformative era in genomics-based research, the most well-known of which is clustered regularly interspaced short palindromic repeats (CRISPR)–cas 9. While not without technical challenges and risks,[6] CRISPR–cas 9 and its related technologies resolve many of the limitations of traditional genetic modification (GM) techniques using recombinant DNA. GE technologies enable more targeted modifications and are easier to perform. As a result, GE technologies have been enthusiastically embraced across the life sciences fields. In the context of human medicine, GE techniques promise to improve treatments for serious conditions (such as cancer and some chronic illnesses) with a known genetic cause. Historically, gene therapy involving human somatic (non-reproductive) cells has been technically challenging, with limited treatments progressing to market. GE techniques promise comparatively safer, more effective therapies. However, the application that has attracted the greatest attention is the potential to use GE techniques to introduce

genetic changes in germ cells, such as early human embryos, eggs, or sperm. What is now referred to as 'germline' gene editing (GGE) creates heritable changes that are transmitted not only to the person born but also to subsequent generations. Consequently, GGE has significant implications for human evolution. Theoretically, GGE could be used to 'edit out' an unwanted mutation in an *in vitro* embryo, such as the mutation associated with Tay Sachs disease.[7] Somewhat more controversially, GGE could at least hypothetically be used to engineer DNA changes that are linked with particular genetic advantage, such as mutations in the *EPOR* gene that are associated with enhanced levels of physical performance and endurance.[8] Leaving aside issues of safety and efficacy, the concept of genetically modifying human germ cells is contested; some welcome the prospect of 'directed human evolution',[9] while others question the morality and implications of modifying the human genome.[10]

Molecular Therapy
Sep 06, 2023 Volume 31 Issue 9 p2553-2812
https://www.cell.com/molecular-therapy/current
Opinion
Challenges in accelerated approvals for gene therapies
Rafael Escandon, John Lantos

The path to effective therapies across the landscape of the approximately 7,000 rare genetic diseases has been both tortuous and transformative. The Duchenne muscular dystrophy (DMD) experience represents the former and may be emblematic of the challenges faced when developing therapies for those genetic diseases with high unmet need but variable presentations that ultimately progress to disabling and fatal outcomes. To date, the FDA has approved four treatments in DMD, all through the mechanism of "accelerated approval" (AA).

Nature
Volume 622 Issue 7981, 5 October 2023
https://www.nature.com/nature/volumes/621/issues/7981
Perspective 04 Oct 2023
The status of the human gene catalogue
Paulo Amaral, Silvia Carbonell-Sala, Steven L. Salzberg
Abstract
Scientists have been trying to identify every gene in the human genome since the initial draft was published in 2001. In the years since, much progress has been made in identifying protein-coding genes, currently estimated to number fewer than 20,000, with an ever-expanding number of distinct protein-coding isoforms. Here we review the status of the human gene catalogue and the efforts to complete it in recent years. Beside the ongoing annotation of protein-coding genes, their isoforms and pseudogenes, the invention of high-throughput RNA sequencing and other technological breakthroughs have led to a rapid growth in the number of reported non-coding RNA genes. For most of these non-coding RNAs, the functional relevance is currently unclear; we look at recent advances that offer paths forward to identifying their functions and towards eventually completing the human gene catalogue. Finally, we examine the need for a universal annotation standard that includes all medically significant genes and maintains their relationships with different reference genomes for the use of the human gene catalogue in clinical settings.

Nature Biotechnology
Volume 41 Issue 8, August 2023https://www.nature.com/ng/
https://www.nature.com/ng/volumes/55/issues/8
[No new digest content identified

Nature Genetics
Volume 55 Issue 8, August 2023
https://www.nature.com/ng/volumes/55/issues/8
[No new digest content identified

Nature Human Behaviour
Volume 7 Issue 9, September 2023
https://www.nature.com/nathumbehav/volumes/7/issues/9
Article 26 June 2023
Multivariate genetic analysis of personality and cognitive traits reveals abundant pleiotropy
Hindley et al. used multivariate statistical genetics tools to examine the genetic underpinnings of cognitive and personality traits and find they are shared across higher order domains of mental functioning.
Guy Hindley, Alexey A. Shadrin, Ole A. Andreassen
Abstract
Personality and cognitive function are heritable mental traits whose genetic foundations may be distributed across interconnected brain functions. Previous studies have typically treated these complex mental traits as distinct constructs. We applied the 'pleiotropy-informed' multivariate omnibus statistical test to genome-wide association studies of 35 measures of neuroticism and cognitive function from the UK Biobank (n = 336,993). We identified 431 significantly associated genetic loci with evidence of abundant shared genetic associations, across personality and cognitive function domains. Functional characterization implicated genes with significant tissue-specific expression in all tested brain tissues and brain-specific gene sets. We conditioned independent genome-wide association studies of the Big 5 personality traits and cognitive function on our multivariate findings, boosting genetic discovery in other personality traits and improving polygenic prediction. These findings advance our understanding of the polygenic architecture of these complex mental traits, indicating a prominence of pleiotropic genetic effects across higher order domains of mental function such as personality and cognitive function.

Nature Reviews Genetics
Volume 24 Issue 10, October 2023
https://www.nature.com/nrg/volumes/24/issues/10
Comment 29 Aug 2023
Enhancing sustainable development through plant genetics
In April 2023, leading experts met with members of US Congress to discuss strategies to ensure global food security. Following on from this, Pamela Ronald emphasizes the role that plant genetics has in achieving these goals.
Pamela C. Ronald

Review Article 03 Feb 2023
Human-specific genetics: new tools to explore the molecular and cellular basis of human evolution
In this Review, the authors discuss our latest understanding of evolutionary genetic changes that are specific to humans, which might endow uniquely human traits and capabilities. They describe how new cellular and molecular approaches are helping to decipher the functional implications of these human-specific changes.
Alex A. Pollen, Umut Kilik, J. Gray Camp

New England Journal of Medicine
https://www.nejm.org/

[No new digest content identified]

Personalized Medicine
https://www.futuremedicine.com/journal/pme
[No new digest content identified]

PharmacoEconomics
https://www.springer.com/journal/40273
[New issue; No digest content identified]

The Pharmacogenomics Journal
https://www.nature.com/tpj/
Article
First published online September 19, 2023
Using ChatGPT to predict the future of personalized medicine
George P. Patrinos, Negar Sarhangi, Behnaz Sarrami, Nazli Khodayari, Bagher Larijani & Mandana Hasanzad
Abstract
Personalized medicine is a novel frontier in health care that is based on each person's unique genetic makeup. It represents an exciting opportunity to improve the future of individualized health care for all individuals. Pharmacogenomics, as the main part of personalized medicine, aims to optimize and create a more targeted treatment approach based on genetic variations in drug response. It is predicted that future treatments will be algorithm-based instead of evidence-based that will consider a patient's genetic, transcriptomic, proteomic, epigenetic, and lifestyle factors resulting in individualized medication. A generative pretrained transformer (GPT) is an artificial intelligence (AI) tool that generates language resembling human-like writing enabling users to engage in a manner that is practically identical to speaking with a human being. GPT's predictive algorithms can respond to questions that have never been addressed. Chat Generative Pretrained Transformer (ChatGPT) is an AI chatbot's advanced with conversational capabilities. In the present study, questions were asked from ChatGPT about the future of personalized medicine and pharmacogenomics. ChatGPT predicted both to be a promising approach with a bright future that holds great promises in improving patient outcomes and transforming the field of medicine. But it still has several limitations that need to be solved.

PLoS Biology
https://journals.plos.org/plosbiology/
[No new digest content identified]

PLoS Genetics
https://journals.plos.org/plosgenetics/
(Accessed 30 Sep 2023)
Identification and analysis of individuals who deviate from their genetically-predicted phenotype
Gareth Hawkes, Loic Yengo, Sailaja Vedantam, Eirini Marouli, Robin N. Beaumont, the GIANT Consortium , Jessica Tyrrell, Michael N. Weedon, Joel Hirschhorn, Timothy M. Frayling, Andrew R. Wood
Research Article | published 21 Sep 2023 PLOS Genetics

PLoS One

http://www.plosone.org/
[No new digest content identified]

PNAS - Proceedings of the National Academy of Sciences of the United States
https://www.pnas.org/
[No new digest content identified]

Precision Medicine - Cambridge Prisms:
https://www.cambridge.org/core/journals/cambridge-prisms-precision-medicine
Review Article
First published online September 12, 2023
The ethical challenges of diversifying genomic data: A qualitative evidence synthesis
Hardcastle, F., Lyle, K., Horton, R., Samuel, G., Weller, S., Ballard, L., . . . Lucassen, A.
Abstract
Objective
To explore the ethical issues arising from attempts to diversify genomic data and include individuals from underserved groups into studies exploring the relationship between genomics and health. *Design*
We employed a qualitative synthesis design, combining data from three sources: 1) a rapid review of empirical articles published between 2000 and 2022 with a primary or secondary focus on diversifying genomic data, or the inclusion of underserved groups and ethical issues arising from this, 2) an expert workshop, and 3) a narrative review.
Findings
Using these three sources we found that ethical issues are interconnected across structural factors and research practices. Structural issues include failing to engage with politics of knowledge production, existing inequities, and their effects on how harms and benefits of genomics are distributed. Issues related to research practices include a lack of reflexivity, exploitative dynamics, and the failure to prioritise meaningful co-production.
Conclusion
Ethical issues arise from both the structure and practice of research, which can inhibit researcher and participant opportunities to diversify data in an ethical way. Diverse data are not ethical in and of themselves, and without being attentive to the social, historical, and political contexts that shape the lives of potential participants, endeavours to diversify genomic data run the risk of worsening existing inequities. Efforts to construct more representative genomic datasets need to develop ethical approaches that are situated within wider attempts to make the enterprise of genomics more equitable.

Public Health Genomics
2023, Vol. 26, No. 1
https://karger.com/phg/issue/26/1
[No new digest content identified]

The Public Law Studies Quarterly (PLSQ)
https://jplsq.ut.ac.ir/?lang=en
Research Article
First published online August 2023
Human Genome Modification from a Human Rights Perspective
Morteza Naderi, Seyyed Ghasem Zamani
Abstract

The technology and knowledge are rapidly developing in the field of Genome Editing or Human Germline Engineering and will have a crucial role in disease diagnosis and identification of their treatments. Nevertheless, using germline-editing methods to modify the human genome raises serious medical, moral, and legal concerns. Germline modifications in humans and passing the edited genes to future generations might lead to unpredictable consequences. For the very same reason, human germline therapies raise challenges with regard to human rights obligations. The clinical uncertainties about the possible outcomes of the human germline modification on next generations and feasible violation of their rights caused voices to call for its absolute prohibition. Nevertheless, the Genome Editing is permitted under the rules of international law insofar as it complies with human rights obligations

Public Understanding of Science
https://journals.sagepub.com/home/PUS
[No new digest content identified]

Science
https://www.science.org/toc/science/current
[No new digest content identified]

Science Translational Medicine
https://www.science.org/toc/stm/current
[No new digest content identified]

Value in Health
September 2023 Volume 26 Issue 9 p1283-1434
https://www.valueinhealthjournal.com/current
THEMED SECTION: DATA, PRIVACY, AND HEALTH
A Rapid Review on the Value of Biobanks Containing Genetic Information
Elisabet Rodriguez Llorian, et al.
Published online: March 12, 2023
p1286-1295

Pre-Print Servers

Gates Open Research
https://gatesopenresearch.org/browse/articles
Selected Research
[No new digest content identified]

medRxiv
https://www.medrxiv.org/content/about-medrxiv
Selected Research
Research participants' perception of ethical issues in stroke genomics and neurobiobanking research in Africa
Ayodele Jegede, Olubukola Balogun, Olorunyomi Felix Olorunsogbon, Michelle Nichols, Joshua Akinyemi, Carolyn Jenkins, Mayowa Ogunronbi, Arti Singh, Reginald Obiako, Kolawole Wahab, Abiodun Bello, Albert

Akpalu, Fred S. Sarfo, Lukman F. Owolabi, Babatunde Ojebuyi, Muyiwa Adigun, Dorcas Olujobi, Rabiu Musbahu, Musibau Titiloye, Ibukun Afolami, Benedict Calys-Tagoe, Ezinne Uvere, Ruth Laryea, Adekunle Fakunle, Osi Adeleye, Deborah Adesina, Nathaniel Mensah, Wisdom Oguike, Nathaniel Coleman, Sunday Adeniyi, Lanre Omotoso, Shadrack Asibey, Lois Melikam, Jibril Yusuf, Abdullateef Gbenga, Aliyu Mande, Muhammed Uthman, Rajesh N. Kalaria, Mayowa Owolabi, Bruce Ovbiagele, Oyedunni Arulogun, Rufus O. Akinyemi
medRxiv 2023.10.03.23296473; doi: https://doi.org/10.1101/2023.10.03.23296473

There is a growing interest in stroke genomics and neurobiobanking research in Africa. These raise several ethical issues, such as consent, re-use, data sharing, storage, and incidental result of biological samples. Despite the availability of ethical guidelines developed for research in Africa, there is paucity of information on how the research participants' perspectives could guide the research community on ethical issues in stroke genomics and neurobiobanking research. To explore African research participants' perspectives on these issues, a study was conducted at existing Stroke Investigation Research and Education Network (SIREN) sites in Nigeria and Ghana.

Genome sequencing as a generic diagnostic strategy for rare disease

Gaby Schobers, Ronny Derks, Amber D Ouden, Hilde Swinkels, Jeroen V Reeuwijk, Ermanno Bosgoed, Dorien Lugtenberg, Su Ming Sun, Jordi Corominas Galbani, Janneke Weiss, Rien Blok, Richelle Olde Keizer, Tom Hofste, Debby Hellebrekers, Nicole D Leeuw, Alexander Stegmann, Erik-Jan Kamsteeg, Aimee Paulussen, Marjolijn Ligtenberg, Xiangqun Zheng Bradley, John Peden, Alejandra Gutierrez, Adam Pullen, Tom Payne, Christian Gilissen, Arthur VD Wijngaard, Han Brunner, Marcel Nelen, Helger Yntema, Lisenka Vissers
medRxiv 2023.09.28.23296271; doi: https://doi.org/10.1101/2023.09.28.23296271

To diagnose the full spectrum of hereditary and congenital diseases, genetic laboratories use many different workflows, ranging from karyotyping to exome sequencing. A single generic high-throughput workflow would greatly increase efficiency. We assessed whether genome sequencing (GS) can replace these existing workflows aimed at germline genetic diagnosis for rare disease.

The shared genetic risk architecture of neurological and psychiatric disorders: a genome-wide analysis

Olav B. Smeland, Gleda Kutrolli, Shahram Bahrami, Vera Fominykh, Nadine Parker, Guy F. L. Hindley, Linn Rødevand, Piotr Jaholkowski, Markos Tesfaye, Pravesh Parekh, Torbjørn Elvsåshagen, Andrew D. Grotzinger, The International Multiple Sclerosis Genetics Consortium (IMSGC), The International Headache Genetics Consortium (IHGC), Nils Eiel Steen, Dennis van der Meer, Kevin S. O'Connell, Srdjan Djurovic, Anders M. Dale, Alexey A. Shadrin, Oleksandr Frei, Ole A. Andreassen
medRxiv 2023.07.21.23292993; doi: https://doi.org/10.1101/2023.07.21.23292993 Revisi

Abstract

While neurological and psychiatric disorders have historically been considered to reflect distinct pathogenic entities, recent findings suggest shared pathobiological mechanisms. However, the extent to which these heritable disorders share genetic influences remains unclear. Here, we performed a comprehensive analysis of GWAS data, involving nearly 1 million cases across ten neurological diseases and ten psychiatric disorders, to compare their common genetic risk and biological underpinnings. Using complementary statistical tools, we demonstrate widespread genetic overlap across the disorders, even in the absence of genetic correlations. This indicates that a large set of common variants impact risk of multiple neurological and psychiatric disorders, but with divergent effect sizes. Furthermore, biological interrogation revealed a range of biological processes associated with neurological diseases, while psychiatric disorders consistently implicated neuronal biology. Altogether, the study indicates that neurological and psychiatric disorders share key etiological aspects, which has important implications for disease classification, precision medicine, and clinical practice.

GENETIC COUNSELING IN THE MIDDLE EAST

Shruti Shenbagam, Alan Taylor, Ruchi Jain, Khalid Fakhro, Fowzan Alkuraya, Ahmad Abou Tayoun
medRxiv 2023.09.07.23292346; doi: https://doi.org/10.1101/2023.09.07.23292346

Abstract
Genomic advancements have led to increased utilization of genetic testing in clinical care, yet barriers to accessing genetic counseling and genomics services remain, particularly in the Middle East where inherited diseases are highly prevalent due to consanguinity. Limited knowledge of healthcare professionals' experiences in genetic counseling in the Middle East necessitates understanding their perspectives for better service improvement in the region. A survey of 32 healthcare professionals providing genetic counseling services in the Middle East explored provider experiences, patient attitudes and cultural/psychosocial factors related to genetic testing. Among the respondents, 21 providers (65.6%), caring for patients of multiple ethnicities, including Arabs, recognised that there are unique challenges to counseling between these patient groups. Thematic data analysis identified that higher levels of consanguinity and stoic nature of the people are unique cultural considerations for this region. Language barriers and limited resources were identified as genetic counseling challenges. Overall, patients in the region demonstrated good coping abilities with a genetic diagnosis. Eighteen responses (56%) highlighted an overall positive attitude, with increasing awareness and acceptance towards genetic testing in this region. This study highlights the need for further research and interventions to address the unique challenges and improve genetic counseling services in the Middle East. Keywords: genetic counseling, genetic counselors, attitudes; middle east, patient attitudes, genetic counseling challenges

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Research Square
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[No new digest content identified]

Wellcome Open Research
https://wellcomeopenresearch.org/browse/articles
[Accessed 30 Aug 2023]
Selected Research
Review Open Access
REVISED- Public engagement with genomics [version 2; peer review: 1 approved with reservations]
Anna Middleton, et al.
Latest Version Published 18 Sep 2023
Abstract
As detailed in its flagship report, Genome UK, the UK government recognises the vital role that broad public engagement across whole populations plays in the field of genomics. However, there is limited evidence about how to do this at scale. Most public audiences do not feel actively connected to science, are often unsure of the relevance to their lives and rarely talk to their family and friends about it; we term this dis-connection a 'disengaged public audience'. We use a narrative review to explore: (i) UK attitudes towards genetics and genomics and what may influence reluctance to engage with these topics; (ii) innovative public engagement approaches that have been used to bring diverse public audiences into conversations about the technology. Whilst we have found some novel engagement methods that have used participatory arts, film, social media and deliberative methods, there is no clear agreement on best practice. We did not find a consistently used, evidence-based strategy for delivering public engagement about genomics across diverse and broad populations, nor a specific method that is known to encourage engagement from groups that have

historically felt (in terms of perception) and been (in reality) excluded from genomic research. We argue there is a need for well-defined, tailor-made engagement strategies that clearly articulate the audience, the purpose and the proposed impact of the engagement intervention. This needs to be coupled with robust evaluation frameworks to build the evidence-base for population-level engagement strategies.

Book Chapters/White Papers/Conference Papers/Other

Conference on Research Data Infrastructure
7 September 2023
Developing Consent Tools for the Research Community at the German Human GenomePhenome Archive (GHGA)
Andreas Bruns, Simon Parker, Fruzsina Molnár-Gábor, Eva C. Winkler
Abstract
The German Human Genome-Phenome Archive (GHGA) aims to enable the responsible sharing of human omics data for secondary research use across Germany and Europe. Informed consent is the most commonly used legal and ethical basis for processing omics data for secondary use. However, obtaining informed consent from Data Subjects can be challenging when data is to be widely shared and reused beyond the initial purpose of collection. To address these challenges, the ELSI (Ethical, Legal, and Social Implications) Group of GHGA has developed consent tools for the research community. First, we have developed a toolkit for prospective data collection, which consists of consent modules and complementary advice on how to update or create new consent forms. Second, we have created a legacy consent toolkit that can be used by researchers to assess whether the consent under which data was originally collected covers further data processing for secondary research purposes.

The German Human Genome-Phenome Archive
https://www.ghga.de/
White Paper
Patient Involvement in the Governance of the German Human Genome-Phenome Archive (GHGA)
Eric Apondo, Andreas Bruns, Andrea Züger, Katja Mehlis, Anne Müller, Frank Brunsmann, Jan Eufinger, Simon Parker, Christoph Schickhardt, Eva Winkler and the GHGA Consortium
Published online August 2023
Executive Summary
The German Human Genome-Phenome Archive (GHGA) is committed to addressing the needs and expectations of patients through patient participation and the development of appropriate governance structures (1). To explore patient perspectives on patient involvement in the governance of genomic data archives (GDAs) in general and possible forms of patient involvement in the governance of GHGA specifically, the GHGA Ethics Working Group (EA, AB, AZ, CS, EW) designed a participatory study in which we conducted two deliberative forums in July 2022 with 26 participants from the cancer and rare diseases communities1 in Germany. Two patient co-researchers (AM and FB), one each from the cancer and the rare diseases communities, were involved in designing and planning the study. In addition, we organised a follow-up consensus-building dialogue event in March 2023, bringing together study participants and representatives from GHGA to discuss unresolved issues from the forums and seek consensus on a concept for implementing patient involvement in the governance of GHGA. The dialogue event was attended by 17 of the initial 26 forum participants as well as 9 GHGA members.

The following were the main points raised by the forum participants. The participants:

- expressed a general willingness to support (secondary) medical research by sharing their genomic data,
- stressed the importance of data protection and privacy, but argued that it is also important to increase the usability of data for research,
- identified outreach activities as one of the main functions that would benefit from patient involvement,

- expressed an interest in being involved in data access procedures, insofar as this can be made possible,
- broadly supported a governance model with patient involvement through patient representatives.

The main elements of the concept developed in collaboration with the participants for implementing patient involvement in the governance of GHGA are as follows:

Establishment of a Patient Advisory Board (PAB) in GHGA: Patient involvement through patient representatives who constitute a Patient Advisory Board (PAB). The PAB should initially have 4 members.

Recruitment: The patient representatives should be recruited through an application process in collaboration with patient organisations.

Acknowledgement and compensation: The contributions of patient representatives should be acknowledged in the products of GHGA projects. The patient representatives should be financially compensated for their work.

Continuous training: GHGA should make resources available for continuous training of patient representatives.

Involvement of data controllers: Data Controllers 3 are responsible for data access and organising data access procedures. They should be involved in operationalising and increasing the impact of meaningful patient involvement.

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