One Million Genomes: From Discovery to Health

June 4–8, 2018 | Herrenhausen Palace | Hannover | Germany

Scientific Organizers:
Geoffrey S. Ginsburg, Duke University, USA
Teri Manolio, National Institutes of Health, USA
Patrick Boon Ooi Tan, Genome Institute of Singapore, Singapore

In cooperation with Volkswagen Foundation

The completion of the Human Genome Project in 2003 has catalyzed innovations in scientific research and in health care embodied in the term "precision medicine." Across the globe, many nations are investing in large-scale national sequencing cohort programs resulting in over one million human genomes sequenced and linked to dense phenotypic and clinical data. This Keystone Symposia conference will bring together scientists and leaders from healthcare and industry to discuss how to maximize the value of that investment for human health. It will assemble a unique and highly interdisciplinary international community to articulate how best to use these data-rich resources to provide novel insights into the biology of disease, tools for the management of patients and population health management strategies. The meeting will highlight challenges and potential solutions for germ-line and somatic sequencing programs and make recommendations for optimizing their impact on global health. The crucial role of free and open sharing and exchange of human variation data from these programs in allowing all of them to interpret novel variants and use them in clinical care will be emphasized. The meeting will focus on various scientific challenges for the field, including implementation science, the scalable data infrastructures and analyses required for impact on discovery and clinical care, and the value proposition for the investments that have been made in national programs. The leading edge of clinical impact of clinical sequencing with will be highlighted in sessions on pharmacogenomics, and in developing novel therapeutics.

Session Topics:
- Large-Scale National Sequencing Programs: Implementation to Impact
- Somatic Sequencing Programs: Biological Insights and Diagnosis
- Implementation Science for Genomic and Precision Medicine
- International Data Resources Enabling Genomic Medicine
- The Actionable Genome
- The Value Proposition for National Sequencing
- Pharmacogenomics: The Leading Edge of Genomics Impact in Medicine
- Use of Large-Scale Bio-Clinical Resources for Drug Discovery

Global Health Travel Award Deadline: January 9, 2018
Scholarship Application & Discounted Abstract Deadline: February 7, 2018
Abstract Deadline: March 7, 2018
Discounted Registration Deadline: April 11, 2018

Note: Scholarships are available for graduate students and postdoctoral fellows and are awarded based on the abstract submitted. Submitting an abstract is an excellent opportunity to gain exposure for your work. Global Health Travel Awards are for LMIC investigators. Abstracts submitted by the abstract deadline will also be considered for short talks on the program.

Upper image of GeneChip loaded with hybridized RNA courtesy of National Institute of Arthritis, Musculoskeletal and Skin Diseases, NIH and photographer Rhoda Baer

Meeting Hashtag: #KS1Mgenome
www.keystonesymposia.org/18G1

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MONDAY, JUNE 4

Arrival and Registration

TUESDAY, JUNE 5

Welcome and Keynote Address

*__Geoffrey S. Ginsburg__, Duke University, USA

Sandi Deans, National Health Service England, UK
Delivering Genomic Medicine at a Population Level Across a Health System – The NHS Experience

Large-Scale National Sequencing Programs: Implementation to Impact

*__Geoffrey S. Ginsburg__, Duke University, USA

Zhengming Chen, University of Oxford, UK
China Kadoorie Biobank of 0.5 Million People: Opportunities

Andres Metspalu, University of Tartu, Estonia
From Biobanking to Precision Medicine

Gad Rennert, Rappaport Faculty of Medicine, Technion – Israel Institute of Technology, Israel
Clalit's National Israeli 100K Genomes Personalized Medicine RCT

J. Michael Gaziano, VA Boston Healthcare System, USA
The Million Veteran Program: A Modern Mega-Cohort within a Large Healthcare System – Progress, Challenges and Future Directions

Mark Caulfield, William Harvey Research Institute, Queen Mary University of London, UK
Genomics England: The 100,000 Genomes Project

Kári Stefánsson, deCode Genetics, Iceland
Sequence Diversity of a Nation Providing Insights into the Nature of Disease and Health

Poster Session 1

Somatic Sequencing Programs: Biological Insights and Diagnosis

Peter Campbell, Wellcome Trust Sanger Institute, UK
Precision Oncology through International Collaboration and Data Sharing

Pawel Stankiewicz, Baylor College of Medicine, USA
New Mutation, Mosaicism and Human Disease Traits

*__Patrick Boon Ooi Tan__, Biomedical Research Council, Agency for Science Technology and Research, Singapore
Environment, Lifestyle and Genetics: Asian Perspectives and Implications for Precision Medicine

Adria Jaume Roura Canalda, Nencki Institute of Experimental Biology of Polish Academy of Sciences, Poland
Short Talk: Somatic Mutation History of Glioblastoma Patients with Recurrent Tumors

WEDNESDAY, JUNE 6

Implementation Science for Genomic and Precision Medicine

*__Teri A. Manolio__, NHGRI, National Institutes of Health, USA

Robyn L. Ward, University of Queensland, Australia
Genomic Test Evaluation Frameworks: A Review

John E.L. Wong, National University Health System, Singapore
Challenges of Precision Medicine Implementation in a High Volume Clinical Environment

Dana C. Crawford, Case Western Reserve University, USA
Short Talk: Participating in and Return of Results from Precision Medicine Research: A Survey of Diverse Participants from a Public Hospital in the United States

Kathryn North, University of Melbourne, Australia
Implementing Genomics into Healthcare: A National and Global Perspective

Geoffrey S. Ginsburg, Duke University, USA
A National Network for Implementing Genomic Medicine in Practice (IGNITE)

Workshop: Rapid Interpretation of Genomes and Variant Calling

*__Martin G. Reese__, Fabric Genomics, USA

Atsuko Imai-Okazaki, National Center for Global Health and Medicine, Japan
Incorporation of Originally-Developed Statistical Genetics Methods into a Clinical Sequencing Platform to Improve Efficiency and Quality of Variant Annotation

Peter Bauer, CENTOGENE AG, Germany
Clinical Benefit of Whole Genome Sequencing

Lina Ghaloul Gonzalez, University of Pittsburgh School of Medicine, USA
Novel Genomics Applications Reveal the Healthcare Eclipse and Lead to Better Clinical Outcomes

Natalie Jäger, German Cancer Research Center, Germany
Next-Generation Personalized Medicine for High-Risk Paediatric Cancer Patients - The INFORM Registry

*__Francisco M. De La Vega__, Fabric Genomics, Inc., USA
You Can't Interpret What You Don't See: Variant Calling from NGS Data for Clinical Applications

International Data Resources Enabling Genomic Medicine

*__Kathryn North__, University of Melbourne, Australia

Daniel G. MacArthur, Broad Institute, USA
Databases for Rare Disease

Barbara C. Biedermann, University of Basel, Switzerland
Short Talk: COBEDIAS Empiric Clinical Profiling - A Digital Tool to Phenotype Disease

Kristjan Metsalu, University of Tartu, Estonia
Estonian Healthcare Information System

THURSDAY, JUNE 7

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The Actionable Genome

*__Geoffrey S. Ginsburg__, Duke University, USA

__Heidi Rehm__, Harvard Medical School, USA
The Clinical Genome Resource

__James S. Ware__, Imperial College London, UK
Variation in Cardiac Disease Genes: Location Matters

__John R. Giudicessi__, Mayo Clinic, USA
Short Talk: Synergistic Use of Rare Disease and Public Exome Databases Question the Nature of Minor Non-Syndromic Long QT Syndrome-Susceptibility Gene-Disease Relationships

__Teri A. Manolio__, NHGRI, National Institutes of Health, USA
NHGRI/NIH Programs Developing Clinically Actionable Genomic Information

__Jill M. Hagenkord__, Color Genomics, Inc., USA
Universal Screening for the CDC Tier 1 Genomic Conditions: Opportunities for Health Systems, Government Health Agencies and Sequencing Initiatives

__Franziska Singer__, ETH Zurich, Switzerland
Short Talk: The Swiss Molecular Tumor Board: Comprehensive Molecular Cancer Diagnostics in the Clinics

Poster Session 2

The Value Proposition for National Sequencing

*__Maja Mockenhaupt__, Universitätsklinikum Freiburg, Germany

__Lotte Steuten__, Fred Hutchinson Cancer Research Center, USA
Multiplex NGS Testing in Cancer Care: An Economic Perspective on Hope, Hype and Value

__Sarah Wordsworth__, University of Oxford, UK
The Health Economic Evidence for Whole Genome Sequencing

__Surakameth Mahasirimongkol__, Ministry of Public Health, Thailand
Genomics Thailand: Precision Clinical Care on a National Scale

__Nusara Satproedprai__, Medical Life Science Institute, Thailand
Short Talk: Genomics Thailand: Human Genome Database for Improvement of Health and Medical Services of Thailand

__Brett Doble__, University of Oxford, UK
Short Talk: Using Routinely Collected "Big Data" to Estimate Healthcare Costs for Rare Disease Patients: An Early Analysis of the UK 100,000 Genomes Project

FRIDAY, JUNE 8

Pharmacogenomics: The Leading Edge of Genomics Impact in Medicine

*__Robyn L. Ward__, University of Queensland, Australia

__Henk-Jan Guchelaar__, Leiden University, Netherlands
The Ubiquitous Pharmacogenomics Project

__Mary V. Relling__, St. Jude Children's Hospital, USA
Clinical Implementation of Pharmacogenetics

__Gabor Marth__, University of Utah, USA
Short Talk: Precision Oncology of Advanced Disease: Insights into Refractory and Metastatic Cancers

__Maja Mockenhaupt__, Universitätsklinikum Freiburg, Germany
Using Genetics to Prevent Stevens Johnson Syndrome/Toxic Epidermal Necrolysis

__Jianjun Liu__, Genome Institute of Singapore, Singapore
The SaPHIRE Program – Enabling Adverse Drug Reaction Research in Real Time

__Folefac Aminkeng__, National University of Singapore/ Agency for Science, Technology & Research, Singapore
Short Talk: A missense variant of HFE is associated with Bleomycin-induced Lung Injury in South East Asian Hodgkin Lymphoma Patients

Use of Large-Scale Bio-Clinical Resources for Drug Discovery

*__Henk-Jan Guchelaar__, Leiden University, Netherlands

__Alan R. Shuldiner__, Regeneron Pharmaceuticals, Inc, USA
Discovery of Novel Drug Targets: High-Throughput Genomics of 250,000 Exomes

__Carolina Haefliger__, AstraZeneca, Sweden
Transforming Drug Research and Development with Genomics

__Jeong-Sun Seo__, Seoul National University Bundang Hospital and Macrogen, South Korea
GenomeAsia 100K (GA100K) and Asian Reference Genome

__Martin G. Reese__, Fabric Genomics, USA
Accurate and Rapid WGS Interpretation – In Clinical Care

Meeting Wrap-Up: Outcomes and Future Directions (Organizers)

SATURDAY, JUNE 9

Departure