



Global Genomic
Medicine Collaborative

***G2MC 2015 Symposium:
Implementing Genomic Medicine into Practice***

November 6 and 7, 2015

Matrix Building
Aspiration Theatre, Level 2M
30 Biopolis Street
Singapore 138671

Meeting Objectives:

- To highlight nations or organizations around the world that are implementing genomic medicine into practice
 - To foster/facilitate collaborations to enable the implementation of genomic medicine
 - To highlight best practices and lessons learned to enable others to effectively implement genomic medicine approaches
 - To identify and develop solutions for overcoming obstacles to genomic medicine implementation
 - To identify and discuss regulations and policies that impact the implementation of genomic medicine
 - To create a global tool box for implementation of genomic medicine into practice
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November 6, 2015

7:45 A.M. **Working Breakfast**

WELCOME AND OVERVIEW

8:30 A.M. **Welcoming Remarks and Goals for the Meeting**

Geoffrey Ginsburg, *G2MC Co-Chair*
Director, Duke Center for Applied Genomics & Precision Medicine;
Professor of Medicine and of Pathology and Biomedical Engineering,
Duke University Medical Center

Robyn Ward, *G2MC Co-chair*
Deputy Vice Chancellor, University of Queensland, Australia
Chair of Medical Services Advisory Committee, Australia



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John E. L. Wong, *Meeting Host*
Isabel Chan Professor in Medical Sciences
Chief Executive, National University Health System
Senior Vice President (Health Affairs), National University of Singapore

KEYNOTE ADDRESS

8:50 A.M. Introduction: John E. L. Wong, National University Health System

8:55 A.M. David Bentley
Vice President and Chief Scientist
Illumina

9:20 A.M. Brief discussion

SESSION I: COUNTRY UPDATES, PART I

Session Questions:

- What are the primary activities related to genomic medicine that your group has undertaken or completed in the past two years?
- What would you identify as your group's key accomplishments and challenges related to genomic medicine in the past two years?
- What opportunities do you see for collaboration with G2MC or among the attendees?

Moderator: Teri Manolio, Director, Division of Genomic Medicine, National Human Genome Research Institute (U.S.)

9:30 A.M. Introduction

New participant countries and updates from existing members:

Africa

9:35 A.M. **Division of Human Genetics, University of Cape Town (South Africa)**
Ambroise Wonkam
Medical Geneticist, Health Professions Council of South Africa;
Associate Professor/Senior Consultant, Division of Human Genetics;
Faculty of Health Sciences
University of Cape Town



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Middle East

9:45 A.M. **Clalit National Personalized Medicine Program (Israel)**
Gad Rennert
Director, Clalit National Cancer Control Center and National
Personalized Medicine Program;
Professor and Chairman,
Department of Community Medicine and Epidemiology,
Carmel Medical Center;
Rappaport Faculty of Medicine
Technion-Israel Institute of Technology

Europe

9:55 A.M. **Belgian Medical Genomics Initiative (Belgium)**
Marc Abramowicz
Professor and Head
Medical Genetics
University Libre de Bruxelles

10:05 A.M. **Luxembourg Centre for Systems Biomedicine (Luxembourg)**
Rudi Balling
Director
Luxembourg Centre for Systems Biomedicine
University of Luxembourg

South/Central Asia

10:15 A.M. **Human Genetics Unit, University of Colombo (Sri Lanka)**
Vajira Dissanayake
Director, Human Genetics Unit
University of Colombo

10:25 A.M. **Break**

Updates continued:

East Asia and Pacific

10:40 A.M. **National Health Committee (New Zealand)**



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Peter Guthrie
General Manager, National Health Committee
New Zealand

- 10:50 A.M. **Melbourne and Australian Genomics Alliance (Australia)**
Andrew Sinclair
Deputy Director
Murdoch Children's Research Institute
- 11:00 A.M. **Genetic Counselling Program, University of Sydney (Australia)**
Kris Barlow-Stewart
Director, Master of Genetic Counselling Program
University of Sydney
- 11:10 A.M. **Cancer 2015 (Australia)**
Steven Fox
Director of Pathology
Peter MacCallum Cancer Centre
- 11:20 A.M. **Towards a National Precision Medicine Strategy (Singapore)**
Patrick Tan
Professor
Duke-National University of Singapore Graduate Medical School/
Genome Institute of Singapore
- Tai E Shyong
Associate Professor
National University Hospital
- 11:30 A.M. **Genomic Medicine Program for Cancer (Japan)**
Satoru Miyano
Professor
University of Tokyo
- 11:40 A.M. Moderated panel discussion
- 12:10 P.M. **Break for Lunch**



SESSION II: LARGE-SCALE SEQUENCING PROJECTS

Session Questions:

- What information was used for the study design (e.g. sample size, demographics, phenotypes, patient recruitment and clinician engagement)? Was a pilot project used or considered?
- What sequencing platform was selected? Why? What is the sequencing depth for germline and somatic variants, if applicable?
- Are there any preliminary data from the study?
- How do you deal with the various ELSI? Are there any particular elements (e.g., cultural, religious issues) that require attention?
- What are the challenges and solutions to implement genomic data at each one of the following: patient, provider and health care system level?
- How will the program drive meaningful use in health care?

Moderators: George P. Patrinos, University of Patras and Fahd Al-Mulla, Kuwait University

1:10 P.M. Introduction

Large-Scale Sequencing Efforts Across the Globe:

1:15 P.M. **Genomics England**
Tim Hubbard
Head of Bioinformatics
Genomics England

1:25 P.M. **Iceland deCODE Project**
Kári Stefánsson
President, CEO, and Director
deCODE genetics

1:35 P.M. **Regeneron-Geisinger Genome Project (U.S.)**
Alan Shuldiner
Vice President and Co-Head
Regeneron Genetics Center
Regeneron Pharmaceuticals, Inc.

1:45 P.M. **Genome Qatar**
Asma Al-Thani
Head and Associate Professor of Virology
Health Sciences Department



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College of Arts and Sciences
Qatar University

1:55 P.M. **Estonian Genome Project**

Andres Metspalu
Professor and Director
Estonian Genome Center
University of Tartu

2:05 P.M. Moderated Panel Discussion

2:25 P.M. **Break**

Presentations continued:

2:40 P.M. **Precision Medicine Initiative in Korea**

Jeong-Sun Seo
Professor
Genomic Medicine Institute Department of Biochemistry and Molecular
Biology
Seoul National University College of Medicine

Jong-Il Kim
Professor
Genomic Medicine Institute Department of Biochemistry and Molecular
Biology
Seoul National University College of Medicine

Rong-Min Baek
Professor
Seoul National University College of Medicine

2:50 P.M. **Malaysia**

Zahurin Mohamed
Professor
Department of Pharmacology
Faculty of Medicine
University of Malaya

3:00 P.M. **Saudi Arabia**

Corina Shtir



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Senior Director of Population Genomics
Life Sciences Solutions
Thermo Fisher Scientific

- 3:10 P.M. **Precision Medicine Initiative (U.S.)**
Teri Manolio
Director, Division of Genomic Medicine
National Human Genome Research Institute
National Institutes of Health
- 3:20 P.M. **Scotland**
Sean Grimmond
Chair of Medical Genomics
Wolfson Wohl Cancer Research Centre
Institute for Cancer Sciences,
University of Glasgow
- 3:30 P.M. Moderated Panel Discussion
- 4:00 P.M. **Break**

SESSION III: COUNTRY UPDATES, PART II

Session Questions:

- What are the primary activities related to genomic medicine that your group has undertaken or completed in the past two years?
- What would you identify as your group's key accomplishments and challenges related to genomic medicine in the past two years?
- What opportunities do you see for collaboration with G2MC or among the attendees?

Moderator: Patrick Tan, Duke-NUS Graduate Medical School Singapore/Genomic Institute of Singapore

4:15 P.M. Introduction

Updates from current members:

Western Hemisphere

4:20 P.M. **Duke University Center for Applied Genomics and Precision Medicine (U.S.)**
Geoffrey Ginsburg, *G2MC Co-Chair*



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Director, Duke Center for Applied Genomics & Precision Medicine;
Professor of Medicine and of Pathology and Biomedical Engineering,
Duke University Medical Center

4:30 P.M. **University of Alabama-Hudson Alpha Center for Genomic Medicine (U.S.)**

Bruce R. Korf
Professor and Chair
Department of Genetics
University of Alabama at Birmingham

4:40 P.M. **Intermountain Healthcare Clinical Genetics Services (U.S.)**

Steven Bleyl
Co-Director, Clinical Genetics Services
Intermountain Healthcare

4:50 P.M. **National Human Genome Research Institute (U.S.)**

Teri Manolio
Director, Division of Genomic Medicine
National Human Genome Research Institute
National Institutes of Health

5:00 P.M. **Genome Canada**

Cindy Bell
Interim President and CEO
Genome Canada

Global Initiatives

5:10 P.M. **Genomic Medicine Alliance**

George P. Patrinos
Associate Professor
Department of Pharmacy
University of Patras

5:20 P.M. **Global Alliance for Genomics and Health**

Peter Goodhand
Executive Director
Global Alliance for Genomics and Health

5:30 P.M. Moderated Panel Discussion



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6:00 P.M.

Closing Remarks for Day 1

Geoffrey Ginsburg, *G2MC Co-Chair*

Director, Duke Center for Applied Genomics & Precision Medicine;
Professor of Medicine and of Pathology and Biomedical Engineering,
Duke University Medical Center

Robyn Ward, *G2MC Co-chair*

Deputy Vice Chancellor, University of Queensland, Australia
Chair of Medical Services Advisory Committee, Australia

John E. L. Wong, *Meeting Host*

Isabel Chan Professor in Medical Sciences
Chief Executive, National University Health System
Senior Vice President (Health Affairs), National University of Singapore

7:00 P.M.

Dinner for Invited Guests



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Deputy Vice Chancellor, University of Queensland, Australia
Chair of Medical Services Advisory Committee, Australia

KEYNOTE ADDRESS

8:40 A.M. Introduction: John E. L. Wong, National University Health System

8:45 A.M. Ching Yee Tan
Permanent Secretary (Health)
Singapore



SESSION IV: GLOBAL POLICY AND REGULATION

Moderator: Robyn Ward, University of Queensland (Australia)

- 9:15 A.M. Introduction and Setting the Scene
- 9:25 A.M. **Research Sector: Misaligned or Uninformed?**
Warwick Anderson
Secretary-General, Human Frontier Science Program, Cedex, France
- 9:40 A.M. **Impact of Genomic Medicine on the Future of Health Care: A Regulator's Perspective**
May Ling Choong
CEO, Health Sciences Authority, Singapore
- 9:55 A.M. **The Drivers of Clinical Practice in the Omics Era**
Russell L. Gruen
Professor of Surgery, Lee Kong Chian School of Medicine, Singapore
Director, Nanyang Institute of Technology in Health and Medicine, Nanyang Technological University, Singapore
- 10:10 A.M. **Break**
- 10:25 A.M. **Getting Omics into Health Care: What's For Sale and Why Aren't Governments Buying?**
Robyn Ward, *G2MC Co-chair*
Deputy Vice Chancellor, University of Queensland, Australia
Chair of Medical Services Advisory Committee, Australia
- 10:40 A.M. **Pull, Plant and Embed: The Full Picture Policy Framework**
Anne Kolbe
Chair, National Health Committee, New Zealand
Associate Professor, University of Auckland, New Zealand
- 10:55 A.M. **Discussion on Topics (led by Peter Goodhand, Global Alliance for Genomics and Health and Bruce Burnett, Director of Regulatory Affairs and Quality, Duke Translational Institute, Duke University)**



11:45 A.M.

Lunch Break

(Steering Group will meet in Video Conference Room, Matrix level 3)

SESSION V: TECHNOLOGY AND DATA SOLUTIONS FOR IMPLEMENTATION

Session Questions:

- **What problem is your company's technology trying to solve?**
- **What challenges need to be addressed in order to fully implement solutions into clinical medicine?**
- **What solutions does your organization offer?**
- **Who are your key partners?**
- **Are there any international considerations?**

Moderator: Geoffrey Ginsburg, Duke University (U.S.)

12:45 P.M.

Introduction

Sequencing and Informatics Stakeholder Talks

12:50 P.M.

Erkki Leego
IT Advisor
Estonian Genome Center, University of Tartu

1:00 P.M.

David Bentley
Vice President and Chief Scientist
Illumina, Inc.

1:10 P.M.

Jeyaseelan Jeyaraj
Director, Health Sciences, Asia Pacific
Oracle

1:20 P.M.

Scott Moss
Research Informatics Development Lead
Epic

1:30 P.M.

Sam Shekar
Chief Medical Officer
Northrop Grumman Health Information Systems

1:40 P.M.

Ketan Paranjape
General Manager, Life Sciences and Analytics
Intel



1:50 P.M. Discussion

2:20 P.M. **Break**

SESSION VI: WORKING GROUP BREAK-OUT SESSIONS

Session Questions:

- **Who are the participants and countries represented in your group?**
- **What are the major ongoing projects in your working group?**
- **What are your top priorities for enabling genomic medicine implementation?**
- **Are there opportunities for collaboration?**
- **What are your next steps?**

2:35 P.M. **Working Groups Meet**

Policy (Video Conference Room, Matrix level 3)

Facilitators: Anne Kolbe and Robyn Ward

Note taker: Geraldine Cheng, MOH

Pharmacogenomics (Meeting room 1, Matrix level 3)

Facilitators: Wasun Chantratita and George Patrinos

Note taker: Grace Tan, MOH

IT/Bioinformatics (Cistrion meeting room, Matrix level 5)

Facilitators: Steve Bleyle and Erkki Leego

Note taker: Melissa Guan, BMS IPO

Education (Meeting room 2, Matrix level 3)

Facilitators: Bruce Korf and Vajira Dissanayake

Note taker: Angie Lim, NUS

Evidence (Meeting room 3, Matrix level 3)

Facilitators: Fahd Al-Mulla and Marc Abramowicz

Note taker: Deborah Kee, BMS IPO

Sequencing Projects (Codon meeting room, Matrix level 5)

Facilitator: Alan Shuldiner

Note taker: Seet Qihui, BMS IPO

4:00 P.M. **Break**



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4:10 P.M.

Working Groups Report Out

Policy

Anne Kolbe and Robyn Ward

Pharmacogenomics

Wasun Chantratita and George Patrinos

IT/Bioinformatics

Steve Bleyl and Erkki Leego

Education

Bruce Korf and Vajira Dissanayake

Evidence

Fahd Al-Mulla and Marc Abramowicz

Sequencing Projects

Alan Shuldiner

SESSION VII: STRATEGIC PLANNING

5:10 P.M.

Future Priorities and Efforts Going Forward

SESSION VIII: ADJOURN

5:40 P.M.

Summary of Action Items and Final Words

Geoffrey Ginsburg, *G2MC Co-Chair*

Director, Duke Center for Applied Genomics & Precision Medicine;
Professor of Medicine and of Pathology and Biomedical Engineering,
Duke University Medical Center

Robyn Ward, *G2MC Co-chair*

Deputy Vice Chancellor, University of Queensland, Australia
Chair of Medical Services Advisory Committee, Australia

6:00 P.M.

Closing Remarks for Meeting



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John E. L. Wong, *Meeting Host*
Isabel Chan Professor in Medical Sciences
Chief Executive, National University Health System
Senior Vice President (Health Affairs), National University of Singapore

6:10 P.M.

Adjourn