



Global Genomic  
Medicine Collaborative

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

November 6 and 7, 2015

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

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### **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**

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### **WELCOME AND OVERVIEW**

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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



## Global Genomic Medicine Collaborative

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

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### KEYNOTE ADDRESS

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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

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### SESSION I: COUNTRY UPDATES, PART I

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#### 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.	<b>Division of Human Genetics, University of Cape Town (South Africa)</b> 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**



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## SESSION II: LARGE-SCALE SEQUENCING PROJECTS

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### 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**

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### SESSION III: COUNTRY UPDATES, PART II

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#### 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





## Global Genomic Medicine Collaborative

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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Medicine Collaborative

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

**November 6 and 7, 2015**

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

**November 7, 2015**

**7:45 A.M.      Working Breakfast**

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**WELCOME AND OVERVIEW**

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**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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**KEYNOTE ADDRESS**

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

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



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SESSION IV: GLOBAL POLICY AND REGULATION

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**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)

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**SESSION V: TECHNOLOGY AND DATA SOLUTIONS FOR IMPLEMENTATION**

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**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**

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**SESSION VI: WORKING GROUP BREAK-OUT SESSIONS**

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**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** (Cistron meeting room, Matrix level 5)

Facilitators: Steve Bleyl 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**



## Global Genomic Medicine Collaborative

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

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## **SESSION VII: STRATEGIC PLANNING**

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5:10 P.M.

Future Priorities and Efforts Going Forward

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## **SESSION VIII: ADJOURN**

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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**



## Global Genomic Medicine Collaborative

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**