

Meeting report series

Report of the 16th Meeting of the Diagnostics Scientific Committee (DSC)

Teleconference
November 04 2019

Participants

Gareth Baynam, WA Department of Health, Australia (DSC Chair)
Sarah Bowdin, Addenbrooke's Hospital, Cambridge, UK (DSC Vice Chair)
Clara D.M. van Karnebeek, Emma Children's Hospital, Amsterdam NL
Mengchun Gong, National Rare Disease Registry System of China
Kenjiro Kosaki, Center for Medical Genetics Keio University School of Medicine, Tokyo, Japan
Ratna Puri, Sir Ganga Ram Hospital, New Delhi, India
Jürgen Reichardt, James Cook university, Australia
Ruty Shai, Sheba Medical Center, Israel
Francois Van Der Westhuizen, North-West University, Potchefstroom, South Africa

Carla D'Angelo, IRDiRC Scientific Secretariat, France

Apologies

Anthony Brookes, Leicester University, UK
Ann Nordgren, Karolinska Institute, Sweden
David Adams, MGB/NHGRI, UDP/NIH, Maryland, USA
Feng Zhang, SeekIn, Inc., USA
Fowzan Sami Alkuraya, King Faisal Specialist Hospital and Research Center, Kingdom of Saudi Arabia

REPORT

DSC Activities

Ongoing activities

Indigenous Population Task force

- ▶ Update
 - The group had its kick-off meeting on September 25.
- ▶ TF composition
 - External experts
 - Alicia Bauskis, Western Australian Department of Health, Australia
 - Melissa Haendel, Oregon State University, USA
 - Kelly du Plessis, Rare Diseases South Africa (PACC member)
 - Laura Arbour, University of Victoria, Canada
 - Simon Easteal, National Centre for Indigenous Genomics, Australian National University
 - Xavier Estivill, qGenomics, Barcelona, Catalonia, Spain
 - Maui Hudson, Canadian Silent Genomes Project, New Zealand
 - DSC Members
 - Gareth Baynam, Western Australian Department of Health – Chair
 - Mengchun Gong, National Rare Disease Registry System of China
 - Jurgen Reichardt, Australian Institute of Tropical Health and Medicine, Queensland, Australia
 - Francois Van der Westhuizen, School of Physical and Chemical Sciences, South Africa
 - Recent additions
 - Yarlalu Thomas, Faculty of Māori and Indigenous Studies, New Zealand
 - Dr James Chipeta, University of Zambia, Africa
 - Elissa Prichep, Project Lead Precision Medicine, World Economic Forum
- ▶ A central repository to gather available resources around inclusiveness and indigenous aspects has been created, the objective being to develop the state of play document by the end of the year. DSC members can share resources they might have come across at the link below:
<https://drive.google.com/drive/folders/1dfG9avtGGSKa6mzi2wm9Ku4FPt-uE8U5>

- ▶ The face-to-face meeting of the TF will take place on March 10 back-to-back the RE(ACT) Congress and IRDiRC Conference 2020 in Berlin.

Planned activities

Following the discussion that took place during the last face-to-face meeting of the Consortium Assembly and Scientific Committees in May in Leiden, Netherlands, the DSC has put forward two proposals for the IRDiRC Roadmap 2020:

- ▶ Action 1: New Technologies and integrative OMICs (Task Force)
- ▶ Action 2: Primary Care (Task Force)

The Consortium will validate the roadmap for next year at the upcoming meeting in Paris, November 21 & 22. New Technologies and integrative OMICs should be run before Primary Care.

Task Force proposal needs to be re-scoped in order to take into account the changes deemed necessary, as determined by the CA:

New Technologies and integrative OMICs

Original objective is to identify new technologies in development or in experimental use which are likely to increase the diagnostic rate for patients with rare diseases, and to identify opportunities to enable the safe, widespread clinical adoption of the most effective technologies in a meaningful timeline.

- ▶ CA feedback
 - The proposal requires a more focused scope and must consider the translation of new and emerging technologies into the patient care
- ▶ DSC feedback
 - (Gareth B.) DSC Chair suggests narrowing down the scope of the activity by concentrating on few technologies (e.g. metabolomics technologies) or by choosing a domain (e.g., intersection of RD and cancer)
 - (Sarah B.) DSC VC suggests exploring the potential of different new technologies to impact diagnostics in the horizon of the next couple of years and find out which of

these tools are most likely to be used in a systematic way and how clinical services consider incorporating such tool(s) into a diagnostic pathway for RD.

- (Gareth B.) an alternative suggestion by DSC Chair is to propose the TF as a continuation of the previous DSC TF ‘Solving the Unsolved,’ which was focused on the underlying molecular mechanisms not detectable by existing approaches that needed to be addressed to improve diagnostics of rare disease patients, such as methylation and deep sequencing; the integration of metabolomics with genomics was not addressed.
 - (Francois VD W.) the proposal could focus on a couple of diseases (e.g., rare metabolic diseases – several hundred RDs (inborn errors of metabolism) recognized but only a few tested at birth) where new technologies (e.g. integration of genomics and metabolomics) have already proven helpful in the diagnosis and for which there are proofs-of-concept studies.
 - (Sarah B.) when does a physician consider metabolomics as a diagnostic tool? Who would benefit from the test? Requires integrated analysis of metabolomic profiling and sequencing data in a high-yield patient population
 - (Clara VK) a project about to start in Netherlands will analyze metabolomics and sequencing data of 500 patients with metabolic phenotype.
- ▶ Conclusion
- The overall objective of the task force will be to explore the current best evidence in combining metabolomic with other OMICs technologies such as genomics and transcriptomics / proteomics to advance diagnostics for rare diseases patients, and to identify the challenges and opportunities for clinical adoption on the horizon (where are we now and where do we go)
 - Output: state of play document and future horizon output
- ▶ Decisions to be taken
- DSC VC will submit revised proposal by Friday
 - Clara VK to identify 2-3 experts besides herself to be part of the TF

Post-meeting notes:

(Jurgen R) I would recommend focusing on whole genome sequencing and metabolomics. I might suggest using the decades-long experience with newborn screening.

(Francois) I agree with Juergen. One aspect that we did not cover in the meeting (which is mentioned on the document) is the tools to process such data into a user-friendly outcome.

Perhaps the experience of those involved with RD-Connect, PhenoTips and REDCap (as is used by UCL) could be of value.

(Ruty S) I was wondering if you would like to add RNA seq from liquid biopsies to whole genome sequencing and metabolomics. I think that this could be novel and could add a great value to the metabolomics. Extracellular vesicles (EVs) exhibit a number of properties that make them attractive as a rich source of biomarkers for disease diagnosis, treatment monitoring, and therapeutics, including their abundance in a wide breadth of bodily fluids, nucleic acid and protein content.

Primary Care

It's a multi-committee action that emanated from the DSC, with the general objective of identifying priority research areas in primary care that need to be addressed to deliver against the IRDiRC goals.

- ▶ CA feedback
 - Scope is too broad and not enough focused on a research problem

- ▶ DSC feedback
 - (Sarah B) early identification plays a key role in primary care pathway: to get primary care physicians to consider/recognize a RD as a possible diagnosis early on.
 - (Gareth B) the global commission to end the diagnostic odyssey has a focus on primary care including early identification
 - (Gareth B) another interesting topic to look at are issues around data sharing between care practitioners
 - (Sarah B) important to know the opinion of primary care professionals: maybe the global commission has data on that?

- ▶ Conclusion
 - The proposal will focus on early identification of RD in primary care and referral to specialist care
 - Next steps:
 - Interact with the other committees, and specially ISC
 - Establish collaboration with the global commission

Main deliverables

- The Indigenous Population TF had its first teleconference and defined the location and date of the face-to-face meeting next year
- The DSC has put forward two proposals for the IRDiRC Roadmap 2020. The proposals must be re-scoped in order to take into account the changes deemed necessary by the CA

Document history

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