The International Rare Diseases Research Consortium (IRDiRC)

Christopher P. Austin, M.D.
ICORD RareX 2016
Cape Town, SA
21 October 2016
International Rare Diseases Research Consortium (IRDiRC)

- Global coordination and cooperation to stimulate and maximize output of rare disease research efforts
  - Members from Europe, North America, Asia, Australia, Middle East
  - (Need members from Africa and Latin America!)
  - Each funder supports its own research

- Initial focus on developing common scientific and policy frameworks

- 2011-2016 objectives:
  - 200 new therapies for rare diseases by 2020
  - Means to diagnose most rare diseases by 2020
  - Will be largely achieved by 2017 → new objectives being formulated
IRDiRC History

- **2009** – Idea (Draghia-Akli, Collins)
- **October 2010** – IRDiRC announced
- **April 2011** – IRDiRC established
- **April 2013** – First IRDiRC Conference, Dublin
- **November 2014** – Second IRDiRC Conference, Shenzhen
- **February 2017** – Third IRDiRC Conference, Paris

**Chairs**
- **April 2011** – Dr. Ruxandra Draghia-Akli (European Commission)
- **January 2013** – Dr. Paul Lasko (Canadian Inst. of Health Research)
- **February 2016** – Dr. Chris Austin (NIH/NCATS)
IRDiRC Structure

Consortium Assembly

Scientific Secretariat

Operating Committee

Constituent Committees:
- Funders
- Companies
- Patient Advocacy

Scientific Committees:
- Diagnostics
- Interdisciplinary
- Therapeutics

Task Forces
IRDiRC Constituency Committees

- (1) Funders; (2) Industry; (3) Patient Advocacy

Goals:

- To identify,
  - Overlap and gaps of priorities within constituency space
  - Common roadblocks across constituency space worldwide
  - Other people within the constituency space who would benefit the committee

- Use this information to
  - Determine next goals for IRDiRC
  - Identify how the constituency will contribute to the new set of goals
IRDiRC Scientific Committees

- (1) Diagnostic; (2) Interdisciplinary; (3) Therapeutic

- Goals:
  - Advising the Consortium Assembly on research priorities, progress, and emerging issues
  - Encouraging exchange of protocols and best practices
  - Agreeing on standard operating procedures, quality standards, roadmap to reach IRDiRC goals in their scientific area
  - Identifying projects and contribute to their implementation

- Balanced representation of constituencies
# Diagnostics Scientific Committee (DSC)

<table>
<thead>
<tr>
<th>Name</th>
<th>Position/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kym Boycott (chair)</strong></td>
<td>Children's Hospital Eastern Ontario (Canada)</td>
</tr>
<tr>
<td>Michael Bamshad</td>
<td>King Faisal Specialist Hospital (Saudi Arabia)</td>
</tr>
<tr>
<td>Michael Bamshad</td>
<td>Seattle Children's Hospital (USA)</td>
</tr>
<tr>
<td><strong>Gareth Baynam (co-chair)</strong></td>
<td>Western Australia Department of Health (Australia)</td>
</tr>
<tr>
<td>Anthony Brookes</td>
<td>Leicester University (UK)</td>
</tr>
<tr>
<td>Han Brunner</td>
<td>Nijmegen University Hospital (The Netherlands)</td>
</tr>
<tr>
<td>Johan Den Dunnen</td>
<td>Center for Human and Clinical Genetics (The Netherlands)</td>
</tr>
<tr>
<td>Xavier Estivill</td>
<td>Genomic Regulation Centre (Spain)</td>
</tr>
<tr>
<td>Milan Macek</td>
<td>Charles University Prague (Czech Republic)</td>
</tr>
<tr>
<td>Gert Matthijs</td>
<td>University Hospital Leuven (Belgium)</td>
</tr>
<tr>
<td>Woong-Yang Park</td>
<td>Samsung Genome Institute (Korea)</td>
</tr>
<tr>
<td>Pak-Chung Sham</td>
<td>Chinese Rare Disease Research Consortium (China)</td>
</tr>
<tr>
<td>Jun Wang</td>
<td>BGI (China)</td>
</tr>
<tr>
<td>Hendrik Stunnenberg</td>
<td>Radboud University (The Netherlands)</td>
</tr>
<tr>
<td>Feng Zhang</td>
<td>WuXi AppTec (China)</td>
</tr>
</tbody>
</table>
### Interdisciplinary Scientific Committee (ISC)

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution/University</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hanns Lochmüller (chair)</td>
<td>University Newcastle upon Tyne (UK)</td>
<td>UK</td>
</tr>
<tr>
<td>Bartha Maria Knoppers</td>
<td>McGill University (Canada)</td>
<td>Canada</td>
</tr>
<tr>
<td>Angel Carracedo</td>
<td>University of Santiago de Compostela (Spain)</td>
<td>Spain</td>
</tr>
<tr>
<td>Jeffrey Krischer</td>
<td>University of South Florida (USA)</td>
<td>USA</td>
</tr>
<tr>
<td>Gema Chicano</td>
<td>EURORDIS, AADE (Spain)</td>
<td>Spain</td>
</tr>
<tr>
<td>Samantha Parker</td>
<td>Lysogene (France)</td>
<td>France</td>
</tr>
<tr>
<td>Jack Goldblatt</td>
<td>Genetic Services and the Familial Cancer Program of Western Australia (Australia)</td>
<td>Australia</td>
</tr>
<tr>
<td>Rumen Stefanov</td>
<td>Medical University of Plovdiv (Bulgaria)</td>
<td>Bulgaria</td>
</tr>
<tr>
<td>Steven Groft</td>
<td>NCATS/ORDR, NIH (USA)</td>
<td>USA</td>
</tr>
<tr>
<td>Domenica Taruscio</td>
<td>Italian National Centre for Rare Diseases (Italy)</td>
<td>Italy</td>
</tr>
<tr>
<td>Petra Kaufmann (co-chair)</td>
<td>NCATS/ORDR, NIH (USA)</td>
<td>USA</td>
</tr>
<tr>
<td>Name</td>
<td>Institution</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Yann Le Cam (chair)</td>
<td>EURORDIS (France)</td>
<td></td>
</tr>
<tr>
<td>Diego Ardigo (co-chair)</td>
<td>Chiesi Farmaceutici S.p.A. (Italy)</td>
<td></td>
</tr>
<tr>
<td>Seng H. Cheng</td>
<td>Genzyme (USA)</td>
<td></td>
</tr>
<tr>
<td>Robin Conwit</td>
<td>NIH (USA)</td>
<td></td>
</tr>
<tr>
<td>Shuling Guo</td>
<td>Ionis Pharmaceuticals (USA)</td>
<td></td>
</tr>
<tr>
<td>Adam Heathfield</td>
<td>Pfizer (UK)</td>
<td></td>
</tr>
<tr>
<td>Virginie Hivert</td>
<td>EURORDIS (France)</td>
<td></td>
</tr>
<tr>
<td>Sandrine Marreaud</td>
<td>EORTC (Belgium)</td>
<td></td>
</tr>
<tr>
<td>Akifumi Matsuyama</td>
<td>NIBIOHN (Japan)</td>
<td></td>
</tr>
<tr>
<td>Asla Pitkänen</td>
<td>University of Eastern Finland (Finland)</td>
<td></td>
</tr>
<tr>
<td>Karin Rademaker</td>
<td>University Medical Centre (Netherlands)</td>
<td></td>
</tr>
<tr>
<td>Josep Torrent i Farnell</td>
<td>Spanish Medicines Agency (Spain)</td>
<td></td>
</tr>
<tr>
<td>Gert-Jan Van Ommen</td>
<td>Leiden University Medical Centre (Netherlands)</td>
<td></td>
</tr>
<tr>
<td>Anne Zajicek</td>
<td>NICHD (USA)</td>
<td></td>
</tr>
</tbody>
</table>
IRDiRC Task Forces

- Diagnostics Scientific Committee (DSC)
  - Matchmaker Exchange (joint effort with GA4GH)

- Interdisciplinary Scientific Committee (ISC)
  - Automatable Access and Discovery (joint effort with GA4GH)
  - Participant Unique Identifiers (joint effort with GA4GH)

- Therapies Scientific Committee (TSC)
  - Patient Centred Outcome Measures
  - Small Population Clinical Trials
  - Data Mining/Repurposing
DSC: Matchmaker Exchange TF

Goals

- Provides data sharing tools for clinical geneticists to match unsolved genome/exome sequence cases
- Ensures optimal collaboration between projects contributing to the interpretation of variants and of matching phenotypes and variants

Joint IRDiRC-GA4GH collaboration

Updates

- Publication in Human Mutation in Oct 2015
- Work ongoing
www.matchmakerexchange.org
ISC: Automatable Access and Discovery TF

 Goals

- Associate clinical data with the scope of consent given by a patient
- Develop standardized and computer-readable data use types in consent forms
- Aligning a user’s permission against permitted data use type

 Joint IRDiRC-GA4GH collaboration, led by GA4GH

 Updates

- ADA-Matrix in beta-testing phase, paper in writing
ISC: Participant Unique Identifiers TF

► Goals

▷ Development of participant unique identifiers for research data sharing across multiple projects and institutions

▷ Guidelines on the technical and ethical-legal requirements of patient identifiers in Rare Disease Research
  - Recommendations for the most practical, streamlined and minimalistic approach that maximises uptake whilst complying with relevant legal regulations.

► Joint IRDiRC-GA4GH collaboration

► Updates

▷ Workshop will be held on 8-9 Dec 2016 in Paris
Goals
- Boost the development and adoption of patient-centered outcome measures with PCORI, ISPOR, COMET, MAPI, ICHOM, FDA, EMA, IMI
- Explore to whether, how and to what extent these initiatives can be expanded to target RD research in order to improve feasibility and quality of trials

Updates
- Report and recommendations on IRDiRC website
- Publication in process
Goals

Contribute consensus about non-conventional statistical methods used for small population clinical trials
Contribute to the acceptability of new statistical methods and coordinate with the agencies and consortia; EMA, FDA, industry, IDEAL, INSPIRE, ASTERIX

Update:

Report and recommendations available on IRDIRC website
Publication in process
TSC: Data Mining/Repurposing TF

- Goals
  - Leverage on developments in Computational Linguistics and Graph Theory to build a representation of knowledge which is automatically analyzed to discover hidden relations between any drug and diseases
  - Opportunities for collaborators to exploit data mining tools
  - Identify new therapeutic targets and repurpose drugs
  - Increase speed of new drugs available for rare disease patients
  - Gather the expertise and identify opportunities for collaborations to speed up the exploitation of these new tools

- Update:
  - Workshop will be held 16 Nov 2016 in Barcelona
Label highlighting resources which contribute to IRDiRC objectives and accelerate research-clinic translation

- Generally useful resources for RD research that have received recognition by researchers in the RD community

- Peer-reviewed process
  - Including internal Sci Comm members and independent researchers
  - Criteria based on IRDiRC Policies and Guidelines
IRDiRC Recognized Resources

- International Charter of Principles for sharing Bio-Specimens and Data
- Orphanet
- PhenomeCentral
- Orphanet Rare Disease Ontology (ORDO)
- DECIPHER
- Guidelines for the informed consent process in international collaborative RD research
- TREAT-NMD Advisory Committee for Therapeutics
- GA4GH Framework for Responsible Sharing
- HPO
- ICHPT
- TREAT-NMD Patient Registries
- TREAT-NMD Standard Operating Procedures
- Framework for Responsible Sharing of Genomic and Health-Related Data
Five year anniversary of IRDiRC celebration

Celebrate achievements in the field, identify future milestones and goals, and work toward bringing diagnoses and therapies to all RD patients

All RD stakeholders invited – investigators, policy makers, opinion leaders, critical thinkers, young investigators, patient advocates

Registration open: www.irdirc.org/conference-2017