IRDiRC
INTERNATIONAL RARE DISEASES RESEARCH CONSORTIUM

Meeting report series

Report of the 3rd DSC Working Group on Model Systems teleconference

10 March 2014

Organization

Organized by: IRDiRC Scientific Secretariat
Teleconference

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Agenda

- Brief introduction – Need for proposals for May IRDiRC meeting
- Model System WG Mission document
- Other topics
- Next steps

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REPORT

Brief introduction – Need for proposals for May IRDiRC meeting

The purpose of this teleconference was to review and discuss:

- The mission statement of the WG
- The general issue of funding calls and action points: what can we put forward? Proposition for funding calls should focus on content, limited to core elements. There are 2 types of calls possible: by individual members (most of them) and collaborative (E-rare for example).

Model System WG Mission document

The members of the WG decided to work on the version of the document edited by Annette Schenck.
The document was reorganized in 5 different parts: bullets-points with goals, a background statement and the 3 goals of this WG. The last 4 parts are divided in two sections: a content statement (more or less statics) and action points (to evolve with time). The document should be limited to 2-3 pages.

Aims of the WG

Presented in bullets-point, this paragraph read well and captures what the WG member wish to accomplish.

Development

The purpose of this new section is to explain what members of the WG think is crucially missing in the field and should be developed. This can be methodology, resources, what should be done in the model system field to foster development and translation into health care, etc.
Needs in the field:

- Community standards. Harmonization is necessary. Both experimental standards (what constitute burden of proof; what constitute a controlled experiment in particular context; positive control; etc.) and translational standards (which model system to use to test variant; same specie or trans-species rescue for gene; approaches for each models such as advantages/inconvenient) are needed.
- Parallel phenotyping
- Gene tools/development of algorithms

Education (Engaging the model organism communities, promoting connections)

Ideas and aims of this WG should be disseminated to the organism communities though meeting such as:

- Annual meetings of the different models organisms.
- Any other sub-meeting
- The allied genetics conference, Orlando, FL, USA, 2016 (meeting of the different model organism communities)

- The International Genetics Federation (iGF) meeting, Vancouver, Canada, 2018

For this purpose, communication materials should be prepared for use in meetings:

- PowerPoint deck for a 10-minutes talk
- Abstract and poster

Other mean of communication:

- Dedicated journal issue on model systems, including one chapter per model organism (strength, weakness, techniques available, timescale, cost, etc.) and an overview perspective by IRDiRC or the WG on the topic. There is a possibility for an issue of the American Society for Human Genetics (ASHG) journal in the fall but the timeframe may be too short. It would be necessary to identify one person per model organism to work on it. An editorial for ASHG could be prepared instead if lack of time.
- Targeting the genetic societies by sending them useful information (link to the market place for example).

Connections between fundamental and clinical research(ers)

Developing the idea of a "market place" and information resource

The purpose of the market place is to provide a platform to enable researchers to find expertise they need or to discover existing expertise.
There are two possibilities for the market place:

- **Expertise repository model**. This is the simplest and less onerous model where researchers interested in collaboration post a paragraph about their expertise, their interest in collaboration and provide an email address.
  Data repository. This more complex model would be more efficient but will require resources for implementation and sustainability. Researchers will deposit either genes/alleles in need of modeling or genes/alleles with existing animal models. This model will require a system of membership and a charter to avoid problems of authorship/IP of unpublished data. Publication of only a small number of genes will be allowed to avoid the problem of patient confidentiality. The challenge will be conflict resolution at international level, particularly if money is involved. The presence of a reporting tool will limit inappropriate behaviors.

The members of the WG agreed that the data repository is the best model to be implemented. It should be centered on genes. Some funding should be associated with it (reagents, etc.), ideally from a collaborative fund.
Information to enter:

- Gene in need of modeling: name of genes, phenotypes and candidate direction of interest (gain or loss of function)
- For animal model: name of gene, gain/loss of function, allele that was engineered, etc.

Development of parallel phenotyping resources

The crucial points are:

- Importance of raising awareness on the strength of the different animal models.
- Necessity for funding calls for research on parallel phenotyping, either for individual projects or consortium.

The document entitled 'Improving Inter-species phenotyping and comparison to facilitate model organism research into rare genetic disorders' will be updated and circulated for comments.
Ontologies should be included in the topic.

Recommendations for allocation of resources

Funding is necessary for:

- Implementation and sustainability of the market place
- Development of parallel phenotyping
- To organize meetings between the different communities to increase the awareness on the power of multiple animal models. Organization could be done through the International Mouse Phenotyping Consortium (IMPC)?
- To facilitate drug screening in model organisms

Other topic

- Discussion on how to integrate the output of this to both the Diagnostics SC and Therapies SC will be discussed soon.
- An expert of iPS cell could be invited in the WG.