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The Species Translation Challenge

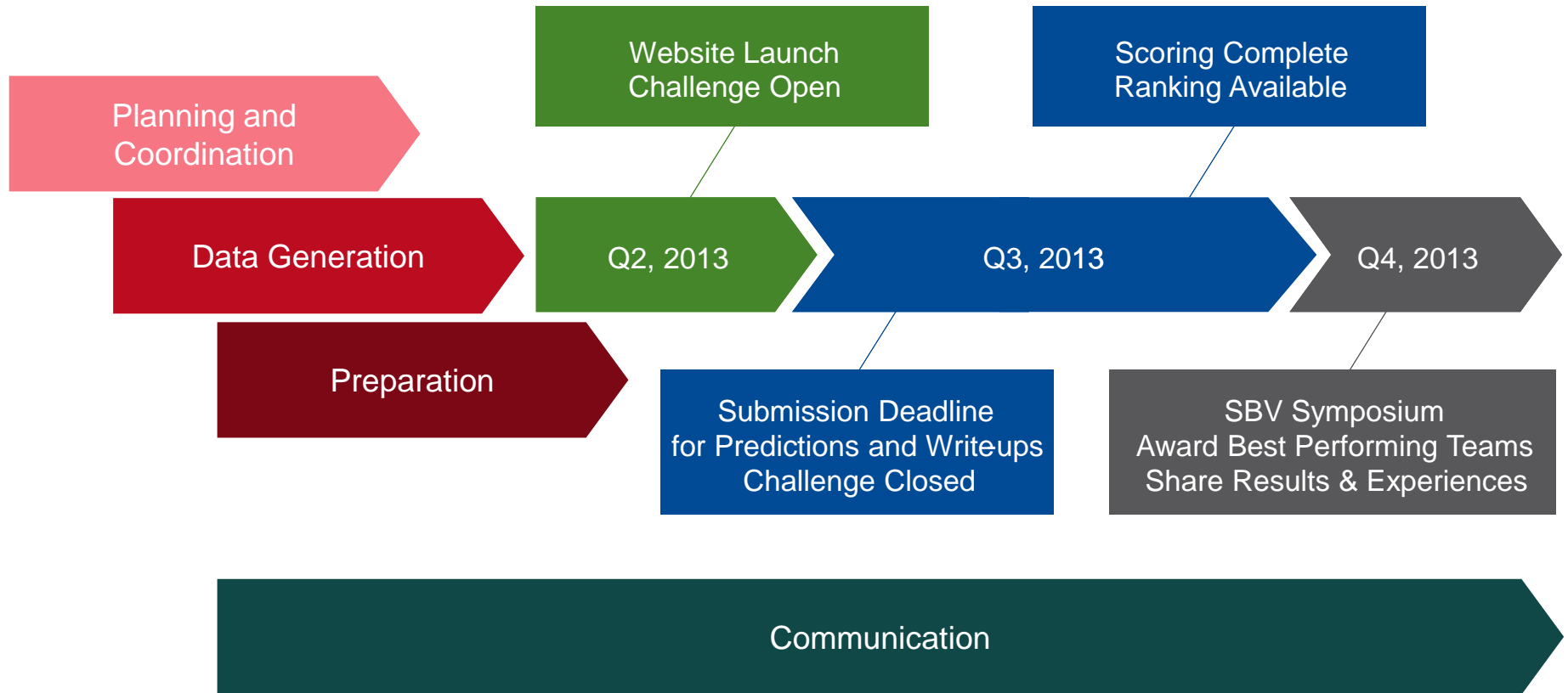
Jean Binder
Philip Morris International R&D

Jeremy Rice, Ph.D.
Computational Biology Center
IBM Research

29 October 2013



Anatomy of the Challenge



Your feedback is appreciated

Communication

Advertisements

Conferences (Booth, Presentations, Posters, Flyers)

Website

Symposium

Publications

Communication

Advertisements

- e-mail announcements (over 5,000 candidate stakeholders)
- On-line adverts in Nature, Molecular Systems Biology and Bioinformatics (120,000 views)



The Crowdsourcing based Approach:
Find out more and participate!



Communication

Conferences (Booth, Presentations, Posters, Flyers)

Symposium

- 15 Venues in 2013
 - Molecular Med Tri-Con
 - Proteomics Forum
 - IWBBIO
 - RECOMB
 - Biocuration
 - Systems Toxicology
 - All SystemsX.ch Day
 - The Next NGS Challenge Conference
 - SBHD
 - ISMB/ECCB
 - LCSB
 - AMMCS
 - EUSAAT
 - PRECISION MEDICINE
 - **sbv IMPROVER Symposium**



The Visible Part of the Project

Communication

Website



Communication

Best performer announcement and publications



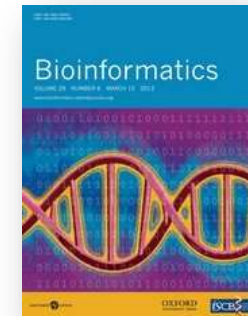
IMPROVER
Method



Announcement
of best performers



Special Edition
(10 articles)



Best performer
paper



Network
Verification
Challenge

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Acknowledgements to a Global Team

OrangeBus

ProtAtOnce

Bertrand Bonvin	PMI
Carine Poussin	PMI
Carole Mathis	PMI
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Kahn Rhrissorrakra	IBM
Pablo Meyer	IBM
Raquel Norel	IBM
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Acknowledgements to all of you

Species Translation Challenge

50 submissions

28 teams

14 countries

Symposium

103 registrations from 14 countries

15 Best performers

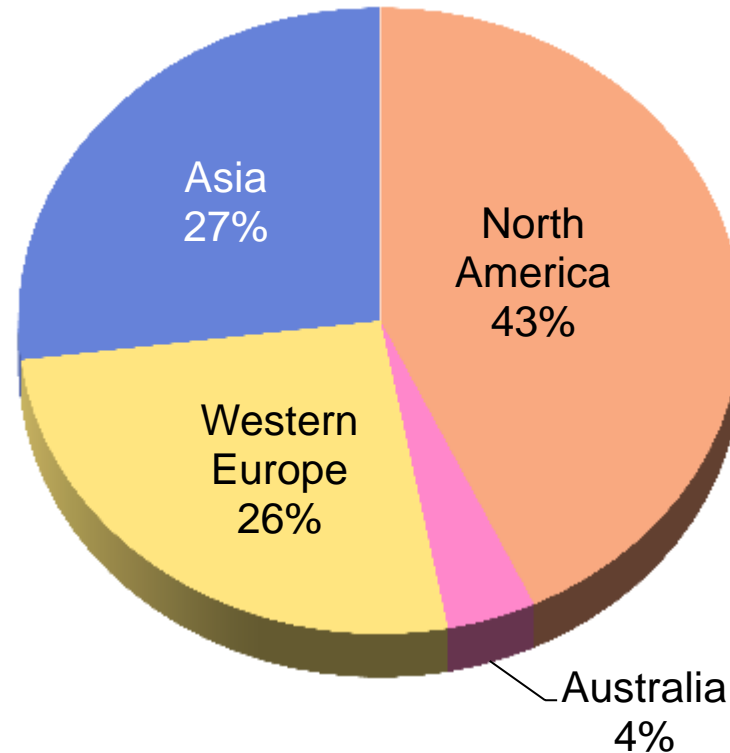




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Lessons Learned- Overview of Participation

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Computational Biology Center
IBM Research



51 Participants from 14 Countries:

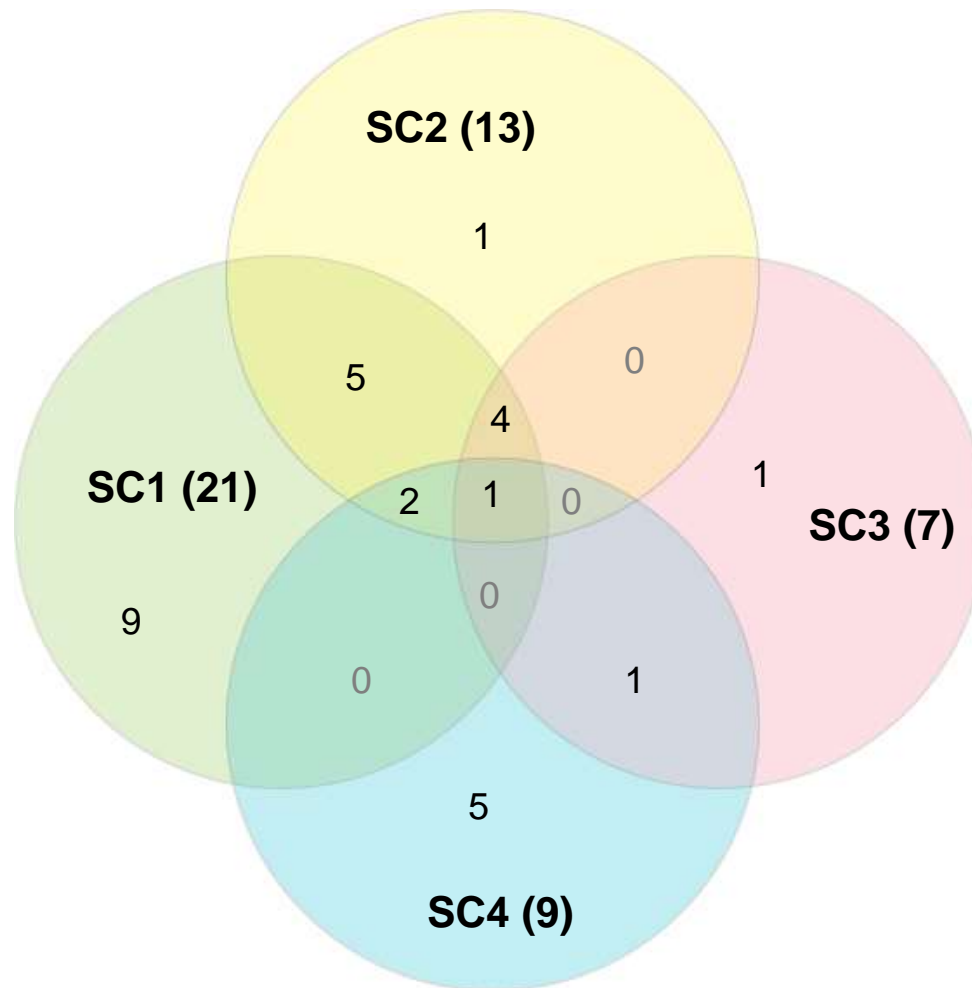
USA (21), Japan (6), India (4), Switzerland (3), Greece (3), China (3), Australia (2), France (2), Netherlands (2), Belgium (1), Canada (1), Germany (1), Italy (1) and Taiwan (1)

Number of participating teams in sub-challenges

	Participating teams	Statistically significant submissions in at least one metric	Statistically significant submissions in all the metrics
Sub-challenge 1	21	14	10
Sub-challenge 2	13	11	6
Sub-challenge 3	7	6	4
Sub-challenge 4	9		

- Total of 28 teams submitted to at least one sub-challenge
- 3 out of 4 teams had statistically significant submissions in at least one metric
- Roughly half of teams had statistically significant submissions in all metrics

Participation of teams across sub-challenges



SC1: Intra-Species Protein Phosphorylation Prediction

SC2: Inter-Species Protein Phosphorylation Prediction

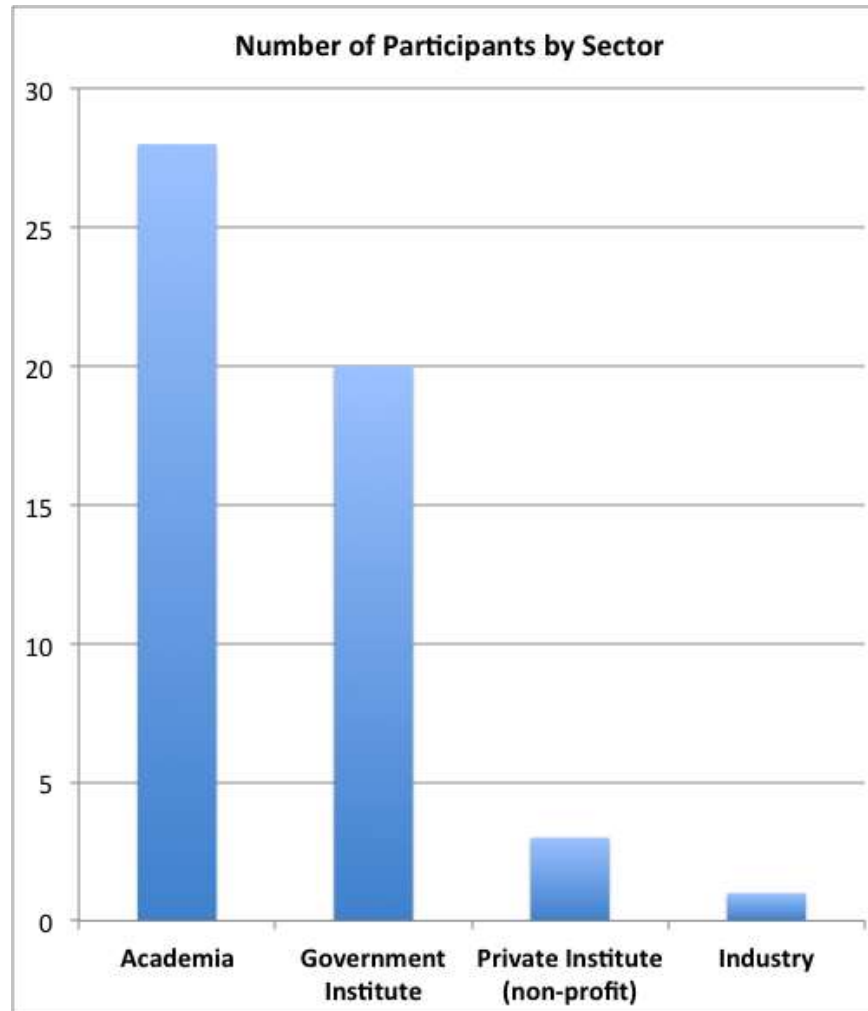
SC3: Inter-Species Pathway Perturbation Prediction

SC4: Species Specific Network Inference

*(total number of participants for the respective sub-challenge)

Participants were not required to participate in all sub-challenges

Participation across different sectors



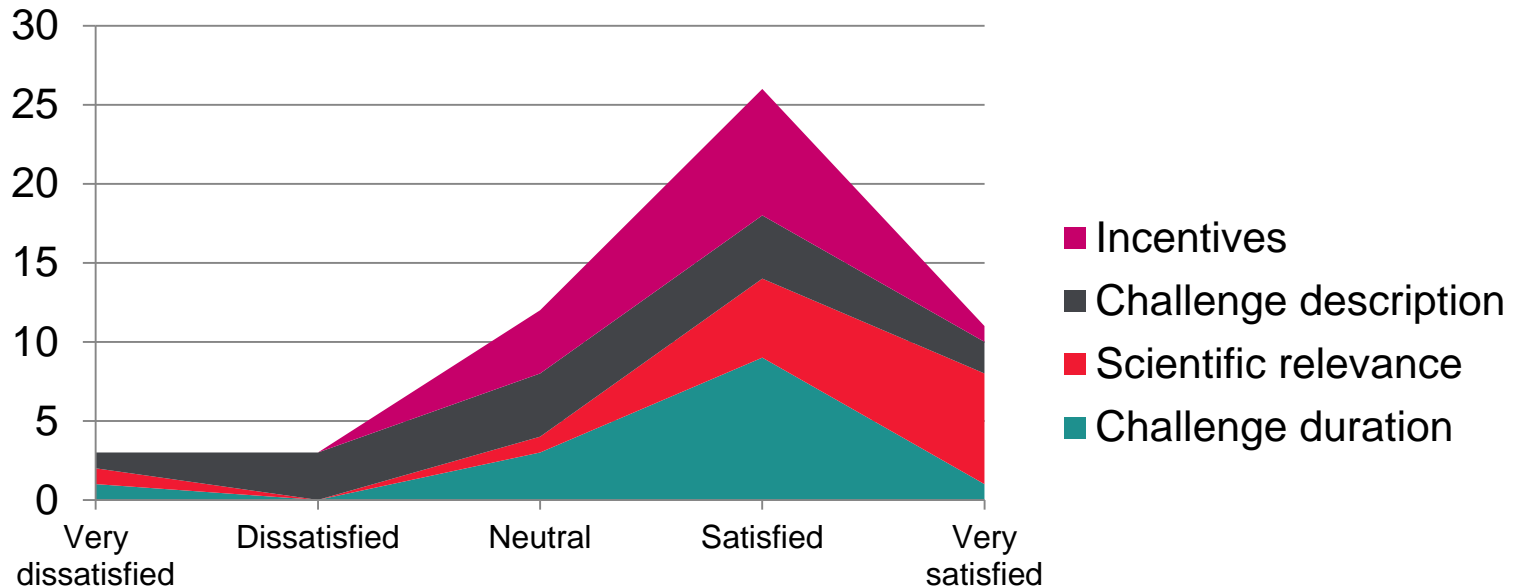
- 3 teams spanned different sectors
- Academic teams were smaller and mixed
- Government Institutes teams were larger and more homogenous

Feedback from post-challenge survey

- Online survey (13 Sept – 30 Sept) of 15 participants and 5 non-participants
- For non-participants, the cited reason for not submitting:
 - insufficient time (4 responses)
 - hearing about challenge too late (4 responses)
- Participants provided the following feedback:
 - Most found the sub-challenges complex (21 responses) versus too complex (5 responses) or neutral (6 responses)
 - Most submitting participants were satisfied with the design with respect to duration, incentives and description and very satisfied with scientific relevance
 - Mix of factors caused the participants to not submit to all sub-challenges

Satisfaction of Participants with Submission

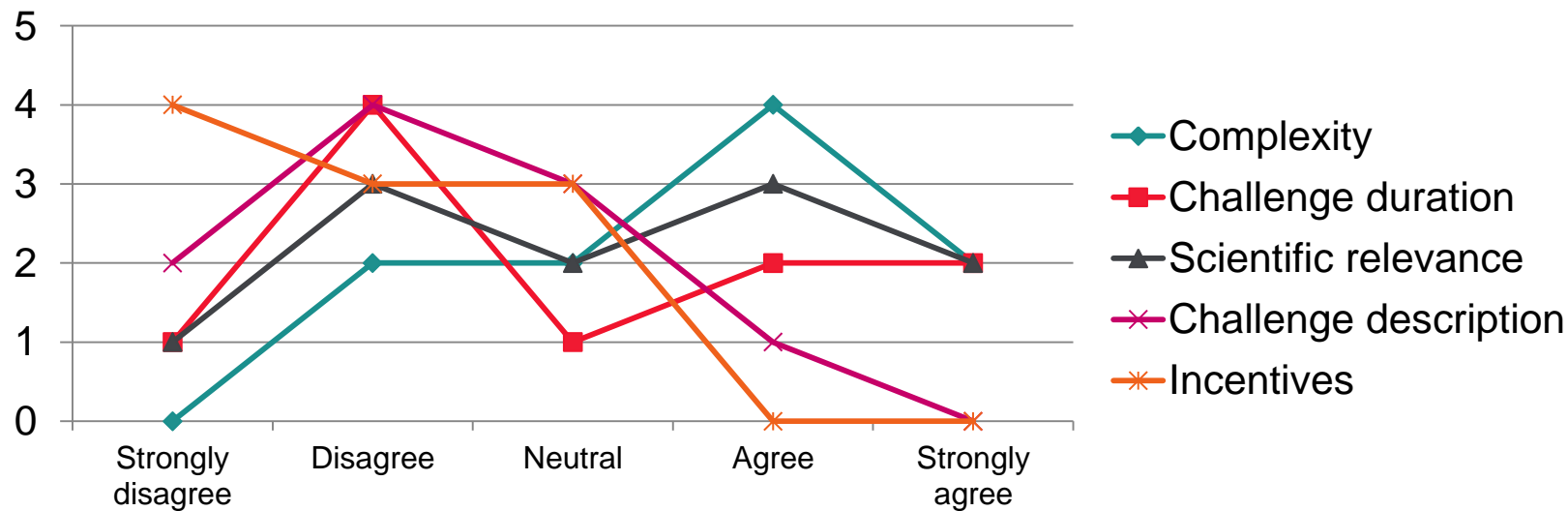
Responses



- Participants were satisfied with the design with respect to challenge incentives, description and duration and **very satisfied with scientific relevance**.

Reasons for participants to *not* participate in *all* sub-challenges

Responses



- Challenge complexity and scientific relevance were most cited, duration was mixed and challenge description and incentives were least cited

Thank you for your attention

The sbv IMPROVER project and www.sbvimprover.com are part of a collaboration designed to enable scientists to learn about and contribute to the development of a new crowd sourcing method for verification of scientific data and results. The project team includes scientists from Philip Morris International's (PMI) Research and Development department and IBM's Thomas J. Watson Research Center. The project is funded by PMI.