



## sbv IMPROVER at a Glance

sbv IMPROVER stands for systems biology verification and Industrial Methodology for Process Verification in Research. It is a robust methodology that verifies systems biology approaches using double-blind performance assessment and applies the wisdom of crowds to solve scientific challenges [1] [2].

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.

## What constitutes a sbv IMPROVER Challenge?

- a scientific problem presented to the community
- often comes with a "Gold Standard" or a solution to the challenge, to which each prediction is compared

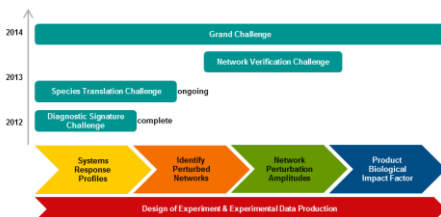


Approach to Challenge Design

## The Approach has the following Advantages

- nucleates a community around a given scientific problem
- allows for unbiased benchmarking
- establishes state-of-the-art technology and knowledge in a field
- complements the classical peer-review process

## The sbv IMPROVER Context



Real world Challenges mapped against the Research Vision

## The first sbv IMPROVER Challenge: Diagnostic Signature

The goal of the Diagnostic Signature Challenge was to assess and verify computational approaches that classify clinical samples based on transcriptomics data. It was successfully closed at the end of 2012 after 54 scientific teams from across the world had participated. The best performing teams were announced at the Symposium 2012 in Boston, USA.

## The second sbv IMPROVER Challenge: Species Translation

Closing soon

The aim of the Species Translation Challenge is to:

- identify rules which map measurements derived from systematic perturbations in one species to another species
- quantify the translatability between species
- understand the limitation of species translatability

The Species Translation Challenge addresses the translatability of findings between rat and human model systems. The four Sub Challenges address different aspects of this problem:



Species Translation Challenge Roadmap

## sbv IMPROVER Symposium 2013



sbv IMPROVER Symposium 2013  
29 - 31 October 2013

The Species Translation Challenge: Understanding the Limits of Rodent Models for Human Biology

Join us at the Grand Resort Lagonissi Athens, Greece for:

- Species Translation Challenge Results
- Presentation of Awards
- Renowned Keynote Speakers
- Workshop for Network Verification
- Poster Session

To register and find more information visit:  
[www.sbvimprover.com/symposium2013](http://www.sbvimprover.com/symposium2013)

## The third sbv IMPROVER Challenge: Biological Network Verification

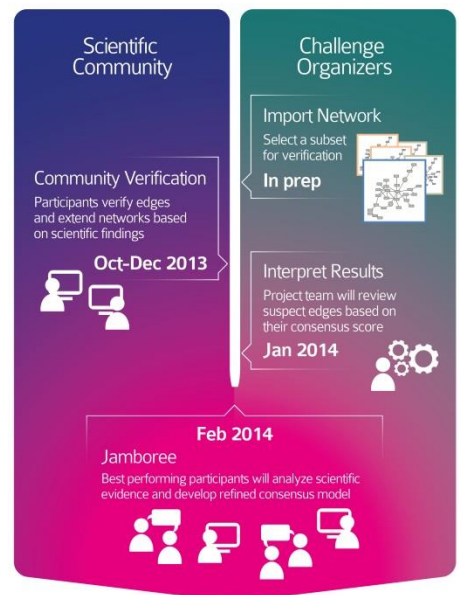
Opening October

Biological network perturbations play a fundamental role in today's systems-based biology, pharmacology and toxicology:

- networks link experimental measurements and a priori knowledge<sup>[3]</sup>
- network models consist of qualitative causal relationships between biological entities to represent current scientific knowledge

The purpose of the Network Verification Challenge is to:

- engage the scientific community in the review of networks
- improve the representation of fundamental biological processes involved in respiratory disease



Network Verification Challenge at a Glance

## Call for Action

- join the sbv IMPROVER community
- register for the Species Translation Challenge Symposium in Athens, Greece
- participate in the Network Verification Challenge when it opens in October 2013

## References

- [1] Meyer, P., et al. (2011), Verification of systems biology research in the age of collaborative competition, *Nature Biotechnology*, 29, 811-815.
- [2] Meyer, P., et al. (2012), Industrial Methodology for Process Verification in Research (IMPROVER): Towards Systems Biology Verification, *Bioinformatics*, 28, 1193-1201.
- [3] Hoeng, J., et al. (2012), A network-based approach to quantifying the impact of biologically active substances, *Drug Discov Today*, 17, 413-418.