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Verification of systems biology research in the age of collaborative-competition

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Sbv IMPROVER is a challenge-based program with a specific focus on the verification of industrial research processes related to systems biology.

The first challenge (Diagnostic Signature) was designed to determine to what extent transcriptomic data can be used for phenotype prediction and to identify best-performing computational methods.

The second challenge (Species Translation) was designed to address the extent to which biological effects of stimulus-induced perturbations in one species translate to those in another species.

In the third challenge we provide the community with network models of molecular events contributing to Chronic Obstructive Pulmonary Disease (COPD). These models of key biological processes include access to underlying scientific literature citations that have been expertly curated to provide mechanistic substantiation for each molecular relationship present in the network model. The scientific community will be encouraged in the review of the relationships between molecular entities and to make improvements on the represented biology covering fundamental processes involved in respiratory disease. Our fourth challenge (Grand Challenge) aims to discover molecular biomarkers for early stage COPD leveraging the learning from the previous challenges. This work resulted from a scientific collaboration between Philip Morris International (PMI) and IBM's Thomas J. Watson Research Center on a project funded by PMI.

Biography

Iskandar Anita is a cell-signaling scientist at Philip Morris International (PMI) R&D in the Systems Toxicology team that focuses on product testing using *in vitro*/*in vivo* models and systems biology approaches. She received her Bachelor's degree from Boston University in Biochemistry and Molecular Biology and a PhD in Biochemical and Molecular Nutrition from Tufts University, Boston, MA. She proceeded with postdoctoral training at the USDA Human Nutrition Research Center on Aging at Tufts University. At PMI R&D, she contributed to the construction of biological network models that were part of the Network Verification Challenge (NVC) of the sbvIMPROVER (system biology verification: Industrial Methodology for PROcessVERification in Research; www.sbvimprover.com), a project led and funded by PMI R&D. The sbv IMPOVER is a collaborative project designed to enable scientists to learn about and contribute to the development of crowd-sourcing methods for verification of scientific data and results. It is a challenge-based program that aims to provide a measure of quality control in industrial research and development by verifying the methods used.

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