

Preface

International Conference on Biological Ontology (ICBO 2018)

Ontologies for Health, Food, Nutrition and Environment: A Partnership with BIG-Data and Analytics

Conference website: <http://icbo2018.cgrb.oregonstate.edu>

Oregon State University hosted the 9th International Conference on Biological Ontology (<http://icbo2018.cgrb.oregonstate.edu>) ICBO 2018. The theme of ICBO 2018 was “Ontologies for Health, Food, Nutrition and Environment: A Partnership with BIG-Data and Analytics. ICBO 2018 was a marquee event celebrating the 150th anniversary of the founding of Oregon State University (<https://oregonstate.edu/150>).

ICBO 2018 provided a venue for presenting and discussing research, development and the usefulness of biomedical ontologies from a wide range of disciplines, including human health and diseases, vectors, drugs, bio-chemicals, biodiversity, plants, agriculture, food, and the environment. The conference was attended by over 130 participants from 10 countries representing significant areas of biology, medicine, ecology, computer science, mathematics, text-mining, data analytics, and software and tool development. ICBO 2018 was chaired by Dr. Pankaj Jaiswal (Oregon State University), along with conference program co-chairs Dr. Christopher Mungall (Lawrence Berkeley National Laboratory) and Dr. Melissa Haendel (Oregon State University) who organized the [conference program](#), with help from the Program Committee members. The scientific presentations were organized into 13 [workshops](#), 29 [plenary talks](#) and 29 [posters and software demonstrations](#). The 29 plenary talks and posters were selected after peer-review of more than 60 scientific articles. The ICBO 2018 conference abstracts are available online (<http://icbo2018.cgrb.oregonstate.edu/abstracts>). Open access articles published online are presented in this conference proceedings.

Three thought-provoking Keynote talks were presented. Dr. Kwan Liu-Ma (University of California, Davis, USA) on “[Visualization: A Powerful Tool for Data Exploration and Storytelling](#)”, Josh Clark (Big Medium Inc., USA) on “*The Care and Feeding of Algorithms*” for design, analytics and user engagement, and Dr. Parag Chitnis (National Institute of Food and Agriculture, USA) on “*Changing Face of Agriculture: Data-driven opportunities for nutrition and health*”.

Four invited talks were presented by Niklaus Grunwald (USDA-ARS) on “*Taxa, metacoder, poppr, and vcfR: Four packages for parsing, visualization, and manipulation of genetic, genomic and metagenomic data in R*”; David LeBauer (TerraRef project) on “*Vocabularies, Ontologies, APIs, and Formats for Heterogeneous High Throughput Crop Phenotyping Data*”; Carolyn Lawrence (Iowa State University, USA) on “*GO-MAP Implements CAFA Tools: Improved Automated Gene Function Annotation for Plants*”; and Matthew Lange (University of California, Davis, USA) on “*Designing and Building the IC-FOODS Foundry: Community, Technology, and Standards for a Semantic Web of Food*”.

Thirteen [workshops](#) were held at the venue of ICBO 2018, including pre- and post-conference events. Each workshop session included talks, demonstrations, hands-on exercises and discussion forums relevant to their theme. The pre-conference [POTATO](#) (Phenotype Ontologies Traversing All The Organisms) Workshop was aimed at aligning phenotype ontologies using design patterns. Participants discussed data standards and phenotype annotation tools for pattern-based ontology development (Dead Simple Ontology Design Patterns; DOSDP) and the Ontology Development Kit (ODK) were discussed. The two-day post-conference workshop “Deep Learning in the Life Sciences” was an introductory, hands-on workshop on machine learning to train students and researchers working on various biological datasets. The workshop was co-organized with the Center for Genome Research and Biocomputing (<https://cgrb.oregonstate.edu/>) and instruction was provided by experts from IBM.

The [Gramene Pathway Curation Jamboree](#), which ran over four days of the conference, was organized by Sushma Naithani (Oregon State University; [Gramene database](#)). In the Jamboree, participants learned about the biocuration process, literature and data mining, pathway analysis, and biocuration tools with particular emphasis on plant pathways using the Reactome Curator Tool. The curation of plant pathways is an ongoing work of the Plant Reactome database. The Pathway Jamboree report is available from [Gramene News](#).

The 2nd International Workshop on Oncology and Ontology ([ONCONTO](#)) was focused on advancing the ontological representation of cancer and related entities to support both broader research in the domain and personalized treatment approaches.

The workshop “Data Standards and Knowledge Sharing in Biodiversity: Tools and Applications” focused on cutting-edge work in the area of biodiversity data representation and semantics, including ontology-driven text-mining analysis and normalization of free-text specimen descriptions.

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Environment and Molecular Toxicology, College of Engineering, and the Sponsored Research Office at Oregon State University, and industry partners, Illumina Inc., Sanmita Inc, and Sensiplicity LLC. The conference was partially supported by the grants to Pankaj Jaiswal for the [Gramene database](#) (IPGA: Gramene - Exploring Function through Comparative Genomics and Network Analysis; NSF-PGRP Award 1127112) and the [Planteome project](#) (cROP: Common Reference Ontologies and Applications for Plant Biology; NSF-PGRP Award 1340112), and an NIH conference grant to Melissa Haendel and Peter Robinson (Forums for Integrative phenomics; NIH award 1U13CA221044).

ICBO 2018 concluded with a vote of thanks, and the announcement of [ICBO 2019](#) to be held at University at Buffalo, New York, USA.

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