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Half Day ICBO 2014 Workshop on Vaccines and Drug Ontology Studies (VDOS-2014)
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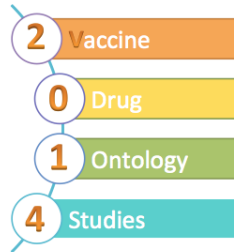
Houston, TX, USA
October 6th or 7th, 2014

Organized as part of 5th International Conference on Biomedical Ontologies (ICBO 2014)
http://icbo14.com/

Submission Deadline: July 15, 2014

Workshop Theme and Topics

Drugs and vaccines have contributed to dramatic improvements in public health worldwide. Over the last decade, there have been efforts in the biomedical ontology community that represent various areas associated with drugs including vaccines that extend existing health and clinical terminology systems (e.g., SNOMED, RxNorm, NDF- RT, and MedDRA) and their applications to research and clinical data. This workshop will provide a platform for discussing innovative solutions as well as the challenges in the development and application of biomedical ontologies to representing and analyzing drugs and vaccines, their administration, immune responses induced, adverse events, and similar topics. The workshop will cover two main areas: (i) ontology representation of drugs (including vaccines), and (ii) applications of the ontologies in real world situations – administration, adverse events, etc. Examples of biomedical subject matter in the scope of this workshop: drug components (e.g., drug active ingredients, vaccine antigens, and adjuvants), administration details (e.g., dosage, administration route, and frequency), gene immune responses and pathways, drug-drug or drug-food interactions, and adverse events. Both research and clinical subjects will be covered. We will also focus on computational methods used to study these, for example, literature mining of vaccine/drug-gene interaction networks, meta-analysis of host immune responses, and time event analysis of the pharmacological effects.

Drugs and vaccines have been critical to prevent and treat human and animal diseases. Work in both (drugs and vaccines) areas is closely related - from preclinical research and development to manufacturing, clinical trials, government approval and regulation, and post-licensure usage surveillance and monitoring. In a broader scope, vaccine is a special type of drug, there are overlaps in their mechanisms of action. However, there are many differences between the two - for example, in case of vaccines, dose, time, route, and frequency of administration are generally

known quite precisely. But this is not always the case in drugs. Since vaccines are often administered to healthy people to prevent disease, attribution of an adverse event following vaccination is less likely to be confounded by signs or symptoms of underlying disease. However, separation of manifestation of disease from manifestation of drug effect is often very challenging. In the U.S.A, vaccines are regulated under different laws by the Center for Biologics (CBER) at FDA, while drugs are regulated under the Food Drug and Cosmetic Act by the Center for Drugs (CDER) at FDA. Safety surveillance for vaccines is for the most part carried out by the Center for Disease Control (CDC) in Atlanta, while for drugs it is carried out by the FDA. Due to these similarities and differences between vaccines and chemical drugs, a closer communication between these two areas is important to create effective ontological frameworks around which we can build comparative and predictive systems for both vaccines and drugs.

Although several related ontologies have been initiated with much progress made in the recent years, we still face many challenges in order to fully and logically represent drugs and vaccines, and efficiently use the ontologies. In the case of ontology representation, no consensuses have been achieved on how to ontologically represent many relevant areas, for example: (i) administration dose, route, and frequency, (ii) how to accurately represent adverse events, (iii) drug-drug interactions, drug-food interactions, etc (iv) experimental testing and analysis of vaccine/drug-induced immune responses, and (v) the complexity of time constraints for clinical events post vaccination or medication. Meanwhile, it is also a challenge to efficiently apply biomedical ontologies to solve research and clinical problems. For example, is there any advantage in applying ontologies for advanced literature mining in order to discover gene interaction networks underlying protective immunity or adverse events? How to apply ontologies for personalized medicine? How to use ontologies to improve the performance of complex vaccine/drug research and clinical data analysis? This workshop aims to bring together a diverse group of individuals from clinical, research and pharma-biotech areas to identify, propose, and discuss solutions for important research problems in the ontological representation of vaccine and drug information covering development and preparation, administration, mechanisms of action including induced host immune responses, adverse events, etc. This workshop is expected to support the deeper understanding of vaccine and drug mechanisms and effects. More specific topics will be selected based on attendees' submissions and interests.

Submission Guidelines

For the paper submission, we will allow three submission formats:

- full research papers (6 pages) format
- work in progress / late breaking results (2-3 pages), and
- a statement of interest (one page) for podium presentation.

The paper format will be the same as the format used in ICBO, *i.e.*, IEEE conference proceedings US Letter format:
http://www.ieee.org/publications_standards/publications/conferences/2014_04_msw_usltr_format.doc

Papers should be submitted electronically as a PDF file via the Easychair system at Scientific paper: https://www.easychair.org/conferences/?conf=vdos2014

After the full length proceeding papers are accepted, we will work with the *Journal of Biomedical Semantics* (JBMS) editors and reviewers to decide which papers will be formally invited for extension to be included in a thematic series in the JBMS journal. All full-length (6 pages) and short-length (2-3 pages) submissions will go through peer reviews by at least two reviewers. The one-page statement-of-interest submissions will be reviewed by the workshop organizers.

Important Dates

- Individual Workshop Papers Due: July 15, 2014
- Notification of Acceptance: Aug 15, 2014
- Camera Ready: Sep 15, 2014
- First Revision due to JBMS: Dec 15, 2013
- VDOS workshop: morning or afternoon, October 6th or 7th, 2014.

Organizers

- Cui Tao, PhD School of Biomedical Informatics, University of Texas, Health Science Center at Houston
- Yongqun "Oliver" He, DVM, PhD Department of Microbiology and Immunology Unit for Laboratory Animal Medicine Center for Computational Medicine and Bioinformatics University of Michigan Medical School
- Sivaram Arabandi, MD, MS Ontopro LLC Houston, TX

Related Web Links:

- http://icbo14.com/schedule#workshops
- https://sites.google.com/site/vdosworkshop/

Contact

If you have any questions or wish to inquire about the workshop, please contact:

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