Ontologies have been used to find synergies across articles within the bibleome [18]. Marker Discovery databases indexed by ontologies such as GO and SNOMED CT have been used to try and identify the basic mechanism of Oncogenesis [1,13]. Ontologies have great promise as methods for identifying common meaning across the many ways researchers might represent a unit of knowledge.

Researchers are also using ontologies as curated knowledge to provide guidance for their studies. In studying LSD1’s contribution to carcinogenesis through chromatin regulation, the authors of [19] used categories of biological processes specified in GO in performing signal pathways analysis. Terms from the PO have also been used for pathway analysis, in the study of heretosis in Arabidopsis thaliana [20].

In the future, as adoption of ontologies grows, the advantages to the research community will also continue to grow. For example, with OBI, research studies may be modeled directly on ontology (see Example Use 3 in [11]). As this becomes prevalent, we will be able to organize and find studies with specific sets of properties very quickly. This will allow us to easily identify studies which use the best practices and techniques, separating them from lesser work.

The robust ecosystem of ontologies in biomedicine already may be used to help researchers in conducting their individual research, but when combined with other technologies may be used as the basis of vast knowledge bases derived from the work of the entire community. Using natural language processing based techniques (e.g., [21]); one can understand the content of articles and build ontology-based indexes. These indexes might reveal new research questions. For example, should studies on several subtypes of a metabolite reveal a certain property, and then it may be the case that the parent metabolite has this property as well. Reasoning systems such as those based on description logics or other subsumption or hybrid reasoners (e.g., [22,23]) may be able to identify these new research questions automatically. As ontologies become more engrained in our research, it is the belief of the authors that there will be an incredible growth in understanding and the movement toward systems biology.

References


*Corresponding author: Elkin PL, Department of Biomedical Informatics, University at Buffalo, Buffalo, New York, USA, Tel: 716 888 4854; E-mail: elking@buffalo.edu

Received June 24, 2015; Accepted June 28, 2015; Published June 30, 2015

Citation: Schlegel DR, Ruttenberg A, Elkin PL (2015) Ontologies in Metabolomics. Metabolomics 5: e137. doi:10.4172/2153-0769.1000e137

Copyright: © 2015 Schlegel DR et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.


