

Conference Abstract

Anatomy Knowledge Graphs: Toward FAIR morphological data

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Abstract

Most morphological data are still published as unstructured texts. This has far-reaching consequences for the Findability, Accessibility, Interoperability and Reusability of morphological data and thus for their FAIRness (Wilkinson et al. 2016). The lack of FAIR morphological data significantly affects their general usability within the life sciences. With the advent of the Semantic Web and an increasing amount of publicly accessible anatomy ontologies, technically feasible solutions to this linguistic problem of morphology have become available. After a brief introduction to the distinction between instance anatomy (anatomical data pertaining to instances, i.e. individuals) and canonical anatomy (generalized anatomical knowledge), between assertional statements (i.e., ABox expressions, statements about instances) and universal statements (i.e., TBox expressions, statements about kinds or classes), and between knowledge bases and ontologies, I compare two different approaches of representing anatomy through Resource Description Framework (RDF) based graphs (see Fig. 1): i) *Semantic Phenotypes*, which are class-based graphs that document anatomy purely as TBox expressions and ii) *Semantic Instance Anatomy Knowledge Graphs* (short: *Anatomy Knowledge Graphs*), which are instance-based graphs that document anatomy as a combination of ABox and TBox expressions, thereby limiting the portion of TBox expressions to a minimum. While both approaches provide solutions to the linguistic problem of morphology, they differ not only conceptually but also in their technical details. Because *Anatomy Knowledge Graphs* include ABox expressions, they allow the identification of any individually described part or property within the description through the part's or property's particular URI. This detail

Keywords

Anatomy Knowledge Graph, semantic phenotype, FAIR data principle, anatomy, morphological description, semantic graph, knowledge graph, ontology

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