

The Plant Ontology facilitates comparative studies from bryophytes to angiosperms

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The Plant Ontology (PO: <http://plantontology.org>) is a structured vocabulary consisting of terms, attributes, and relationships that describe the anatomy, morphology, and development stages of green plants. As of April 2012, the PO database provides access to 2,175,694 annotations for 110,950 unique genes, proteins, germplasm sources, etc. associated to 1454 ontology terms. Data come from 17 plant species, including 81,875 annotations for *Physcomitrella patens*. The PO includes many terms specific to bryophytes, such as thallus (PO:0030027), seta (PO:0030032), and protonema stage (PO:0030006), plus many terms that apply across plants, such as gametophyte development stage (PO:0028003). The PO facilitates computational reasoning, based on ontological relationships, and can be used to assess the similarity of expression of genes of inter- or intra-specific origin or to explore developmental homologies among anatomical structures. Researchers can use PO association data to compare the expression patterns of orthologous genes in the same structure in different species or to determine if similar phenotypes in different structures are linked to orthologous genes. Linking bryophyte genomic and phenomic data to the PO will expand the horizons for comparative analyses across land plants and allow researchers to more fully explore the possibilities created by the availability of bryophyte genomes.