Phylogenetic diversity can result in inconsistency in nomenclature:

Instances of leaf: (PO:0025034)

- maple leaf
- pine needle
- palm frond

*Different names are used for the same structure*

The PO provides consistent terminology for annotation of plant structures and growth and developmental stages.

Goals of the Plant Ontology:

**Encompass all plants:** include terms and annotations for flowering and non-flowering plants (angiosperms, gymnosperms, lycopods, ferns, and bryophytes)

- Facilitate comparative genomics across diverse plant species
- Create mappings (links) to other ontologies such as the Gene Ontology
- Create logical (*genus-differentia*) definitions and follow OBO Foundry principles

**Participants and Collaborators:**

[Logos of various institutions]

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What is the Plant Ontology?

A structured vocabulary for all plants that covers:
- plant anatomy and morphology
- plant growth and development

A source for:
- standard definitions reviewed by experts
- links to annotations from plant genome databases

A web-based interface that allows users to:
- browse the ontology
- search for terms and annotations
- summarize annotations

A teaching tool for plant anatomy and genomics

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Navigating the Plant Ontology website:

**Basic Search Page:**
- Search terms using names or ID numbers
- Browse the ontology in tree view
- Advanced search using multiple criteria

**Annotations:**
- Annotations may be created based on microarray, EST, QTL, protein, germplasm, phenotype or other data sets, or whole genome sequencing projects.

Example microarray data set with PO and GO annotations:
- reproductive shoot system
- inflorescence (PO:0009049)
- shoot axis (PO:0025029)
- whole plant in the seedling stage (PO:0000003)


**Request New Terms:**
- The “Request PO Terms” tab takes you to our Source Forge tracker.
- Be sure to register and sign in before submitting requests.

**Using the Plant Ontology:**
- Hierarchical structure allows for taxon-specific annotation and comparisons across taxa.

You can ask questions such as:
- What genes are expressed in the reproductive shoot system of various plants?
- In Arabidopsis thaliana, is the gene GLZ1 expressed in other structures?
- Are there GLZ1 mutants available?

**Relations in the Plant Ontology:**
- is_a and part_of are the backbone of all anatomy ontologies
- develops_from describes shared developmental pathways across all taxa
- has_part allows the PO to describe structural variation among taxa
- Annotations are carried up to parents through is_a and part_of but not develops_from relations