



PHGD: an integrative and user-friendly database for plant hormone-related genes

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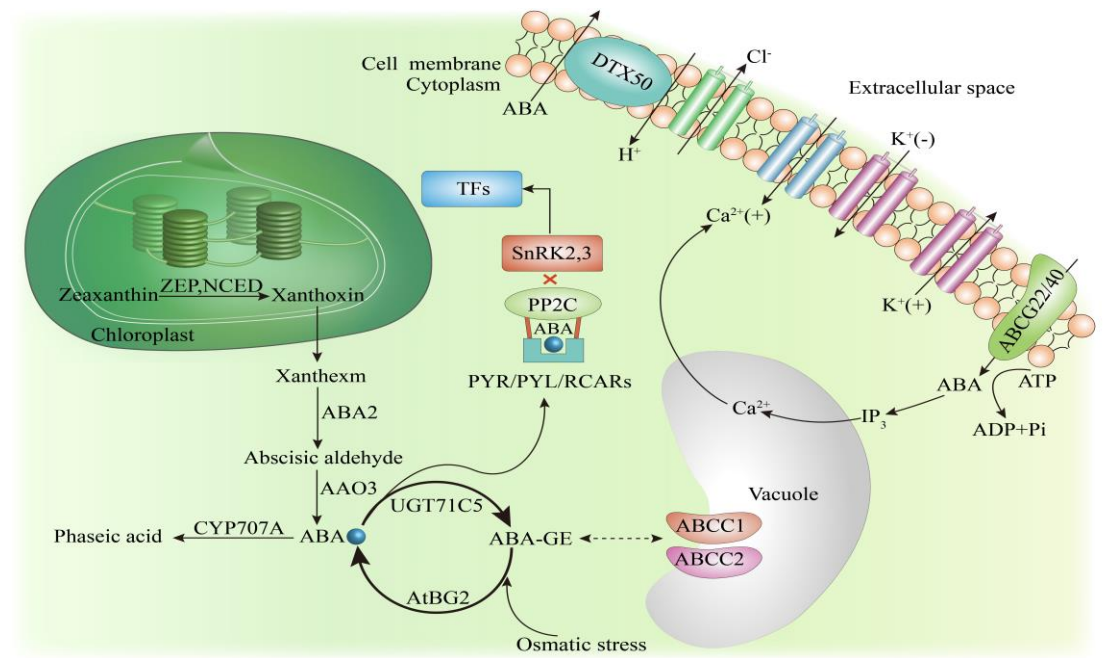
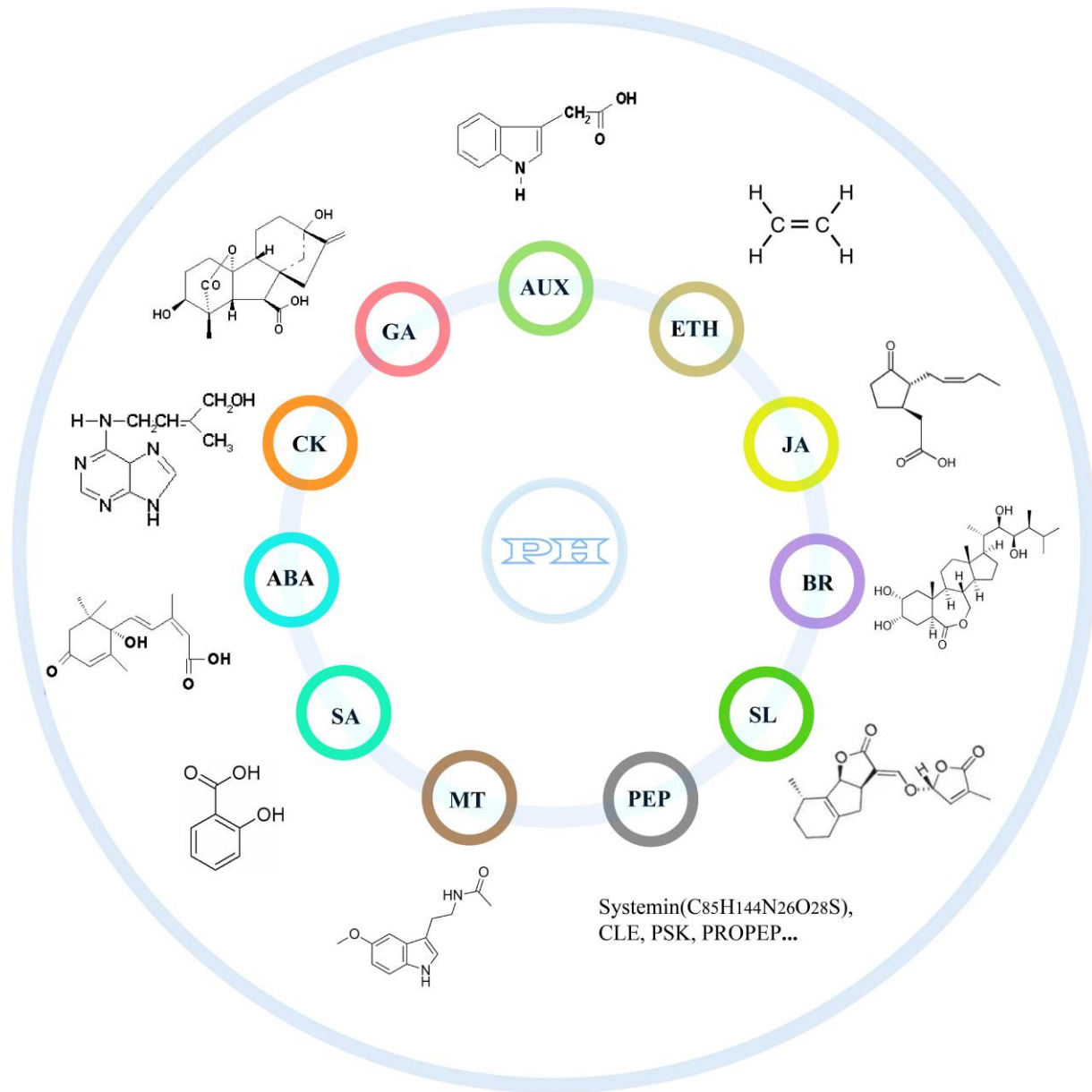
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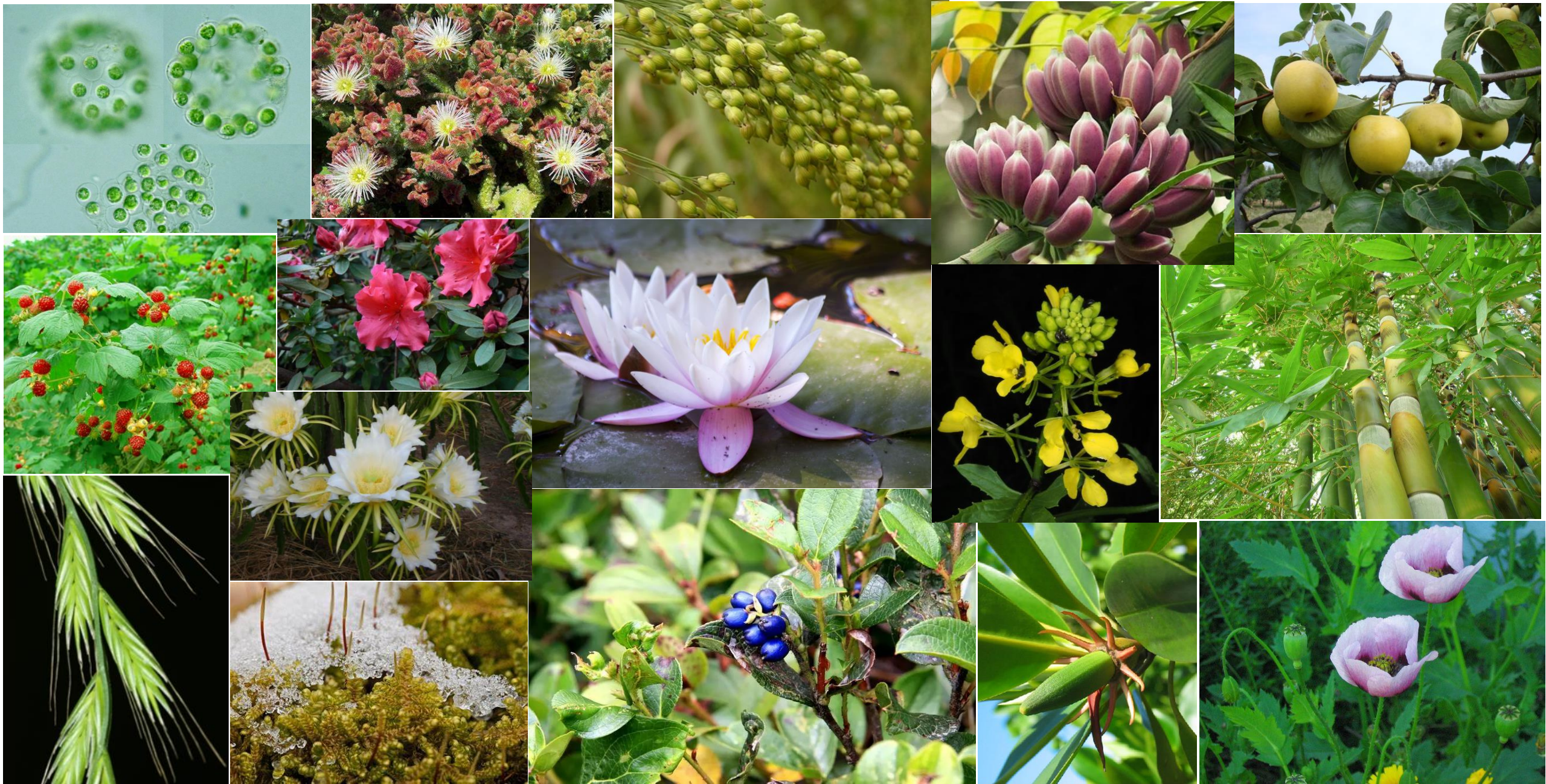
Introduction



- Plant hormones are small amounts of organic compounds produced by plants, which can promote or inhibit diverse physiological processes.

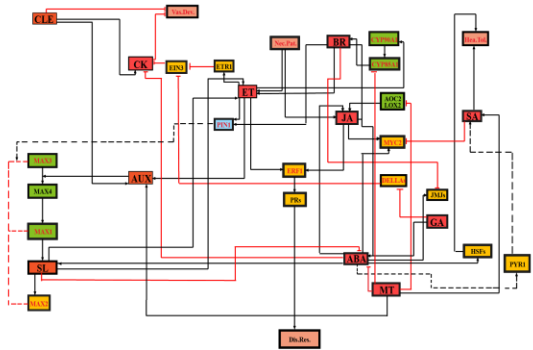


Introduction

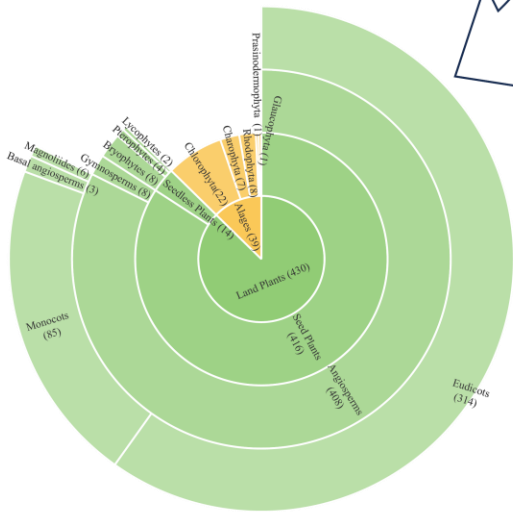


Pipeline

→ Activation — Inhibition — • Activation from experiments — Inhibition from experiments
■ Phytohormones ■ Synthetic/metabolic components ■ Transport components ■ Signal transduction components ■ Biological effects

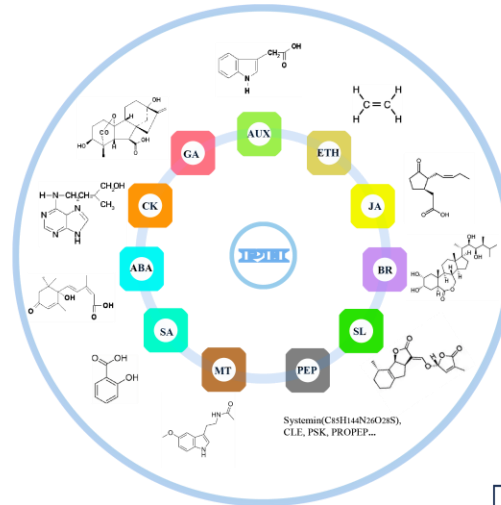


Data collection

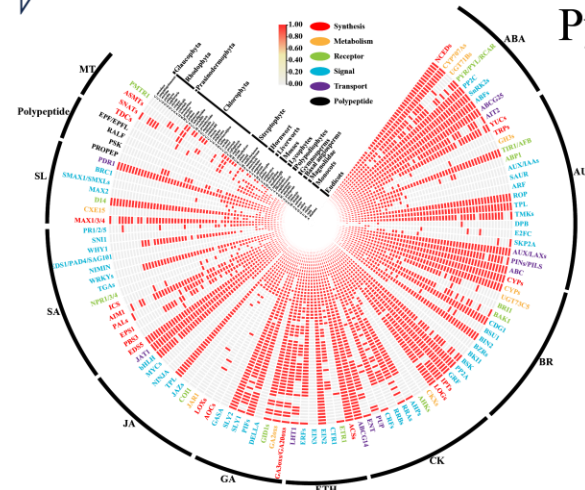


High quality plant genomes

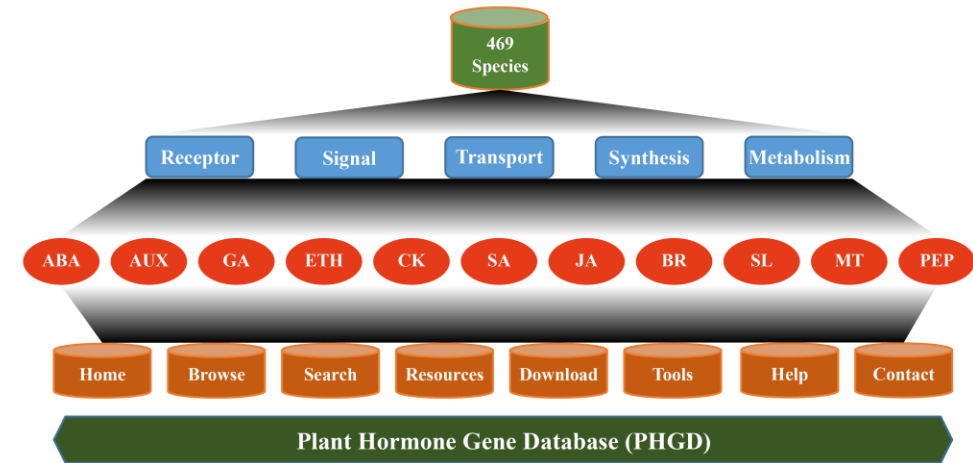
Blastp
Pfam



MySQL
Python

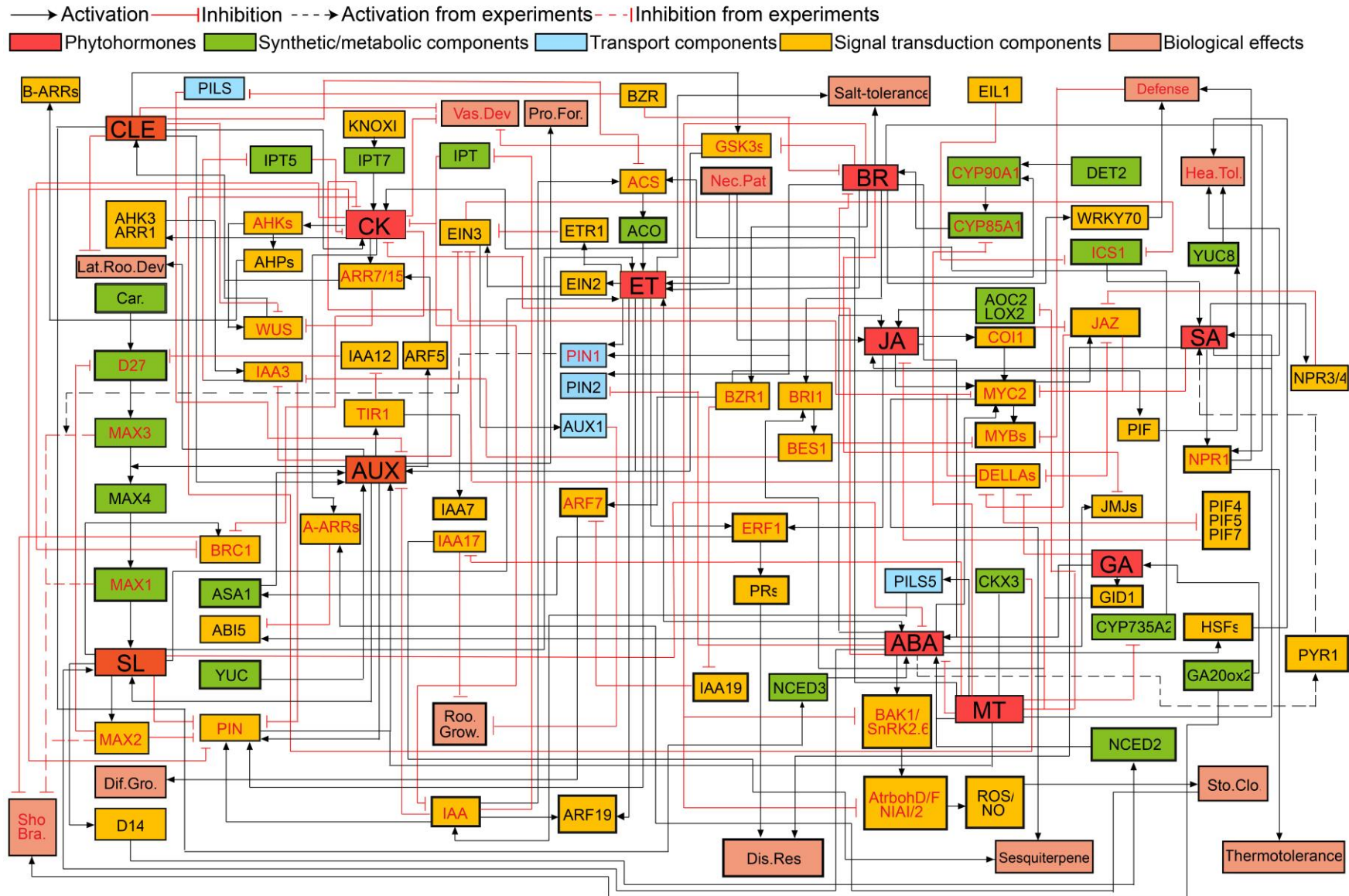


Plant hormone genes



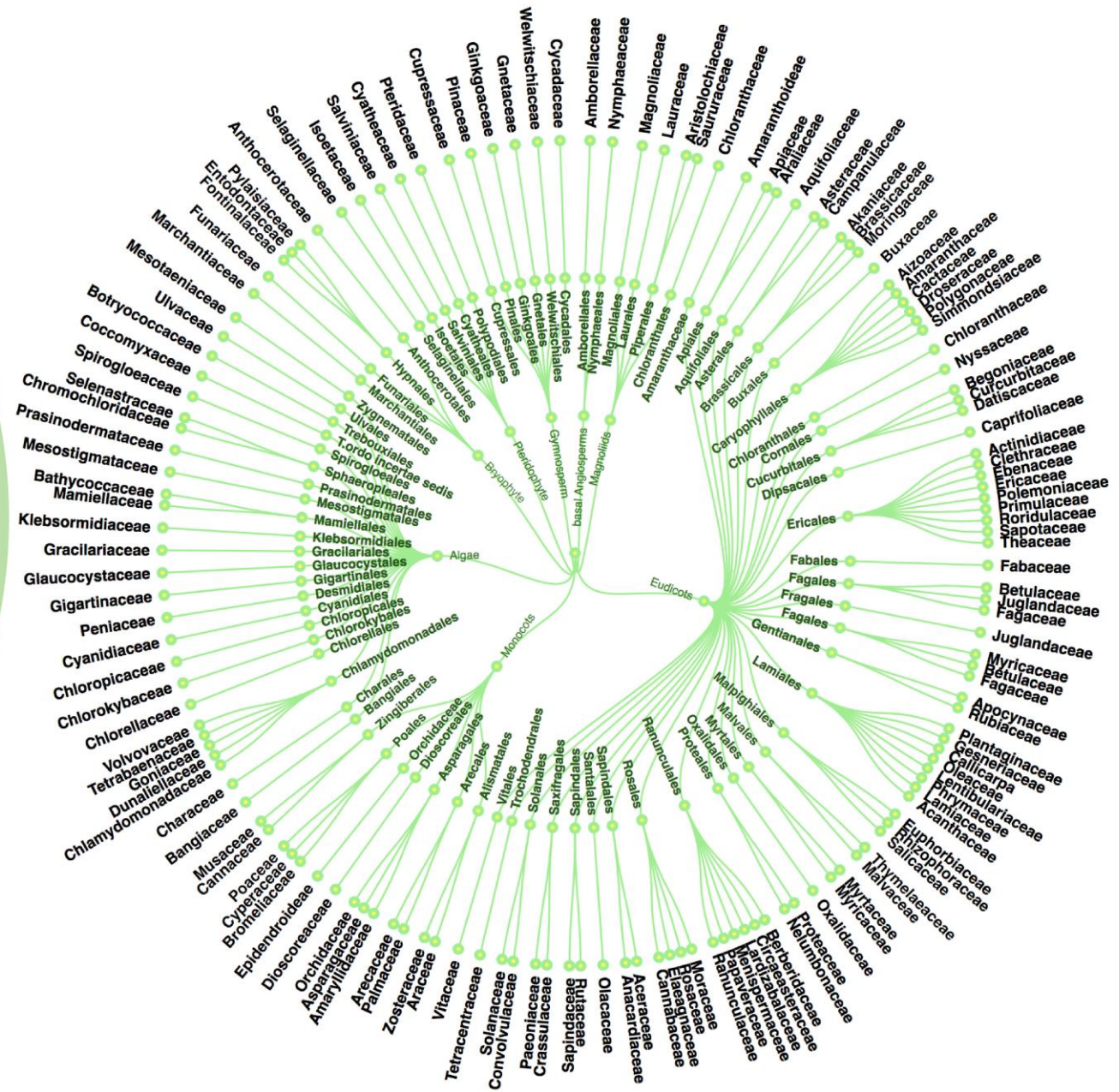
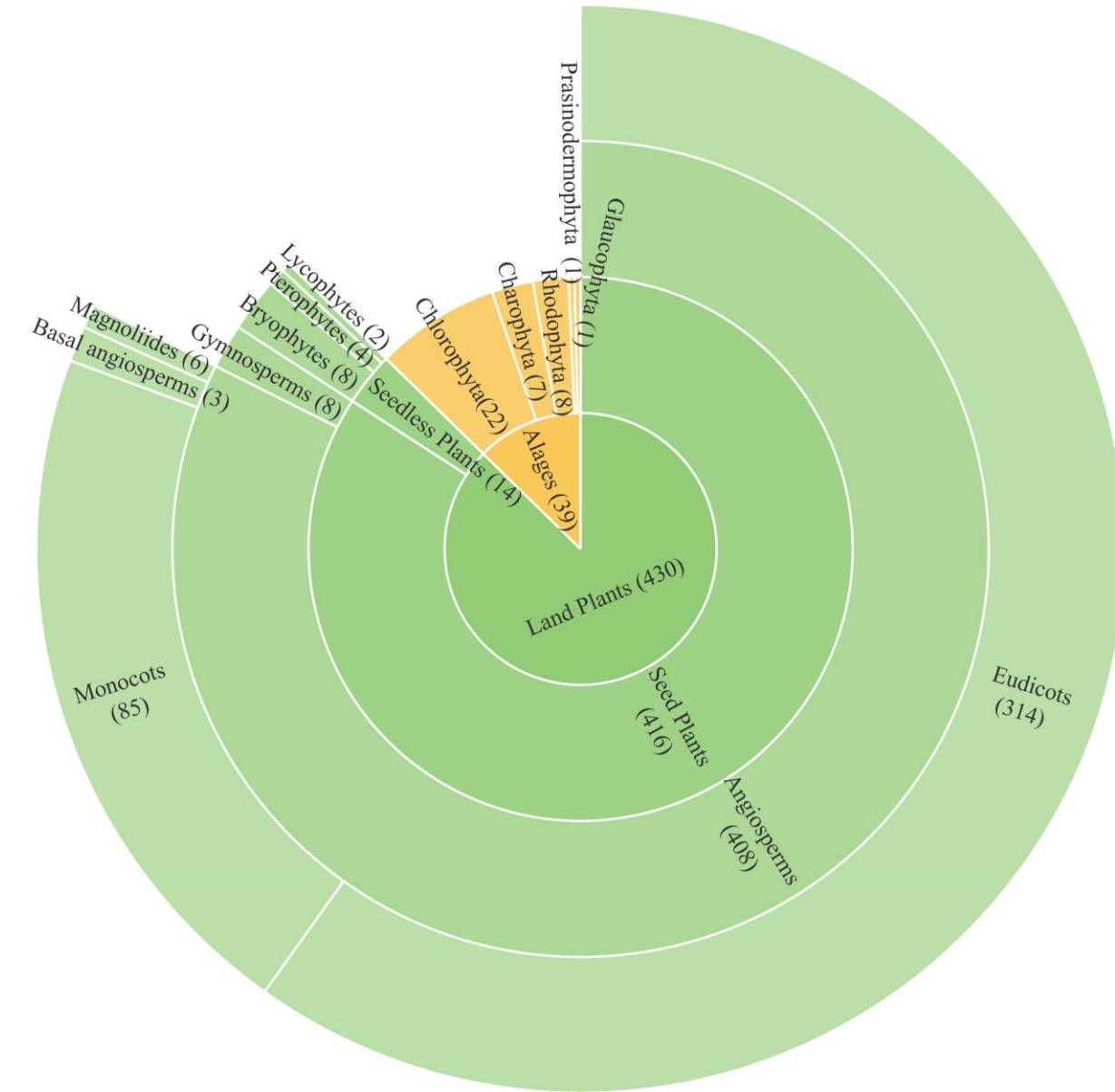
Database construction

Results



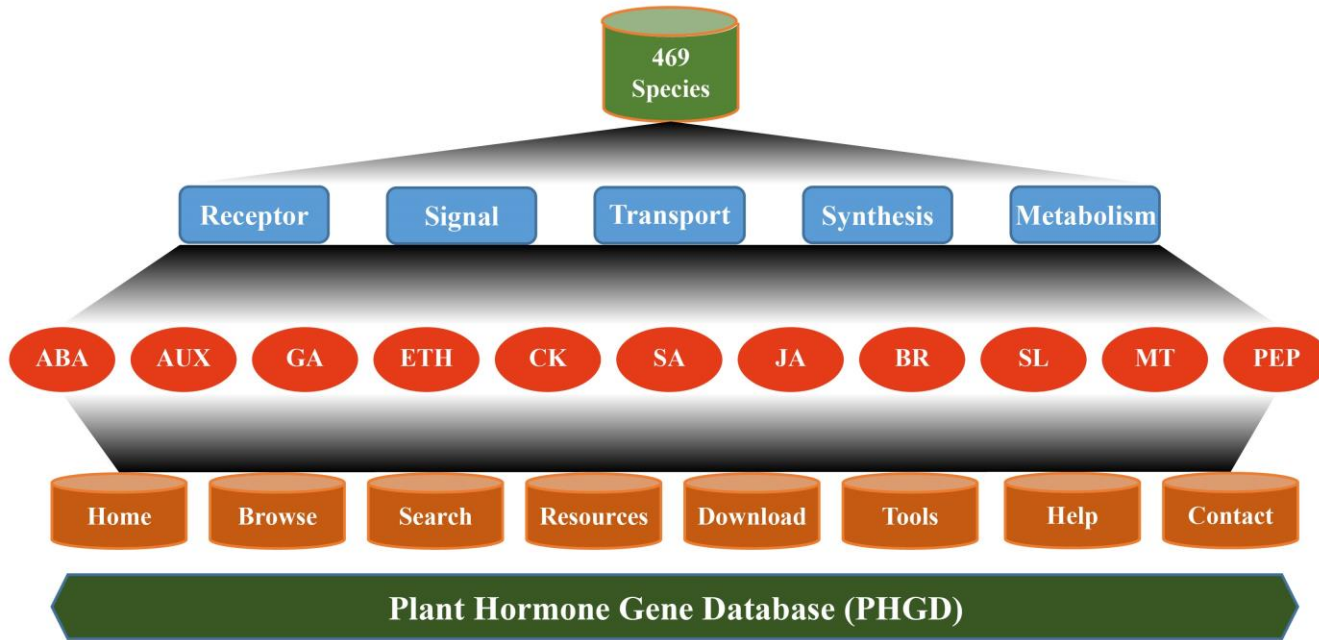
- A total of 104 nodes were found in the crosstalk network. Among these, 49 crucial nodes with three lines connected play an infinitely important role in hormone interactions.

Results



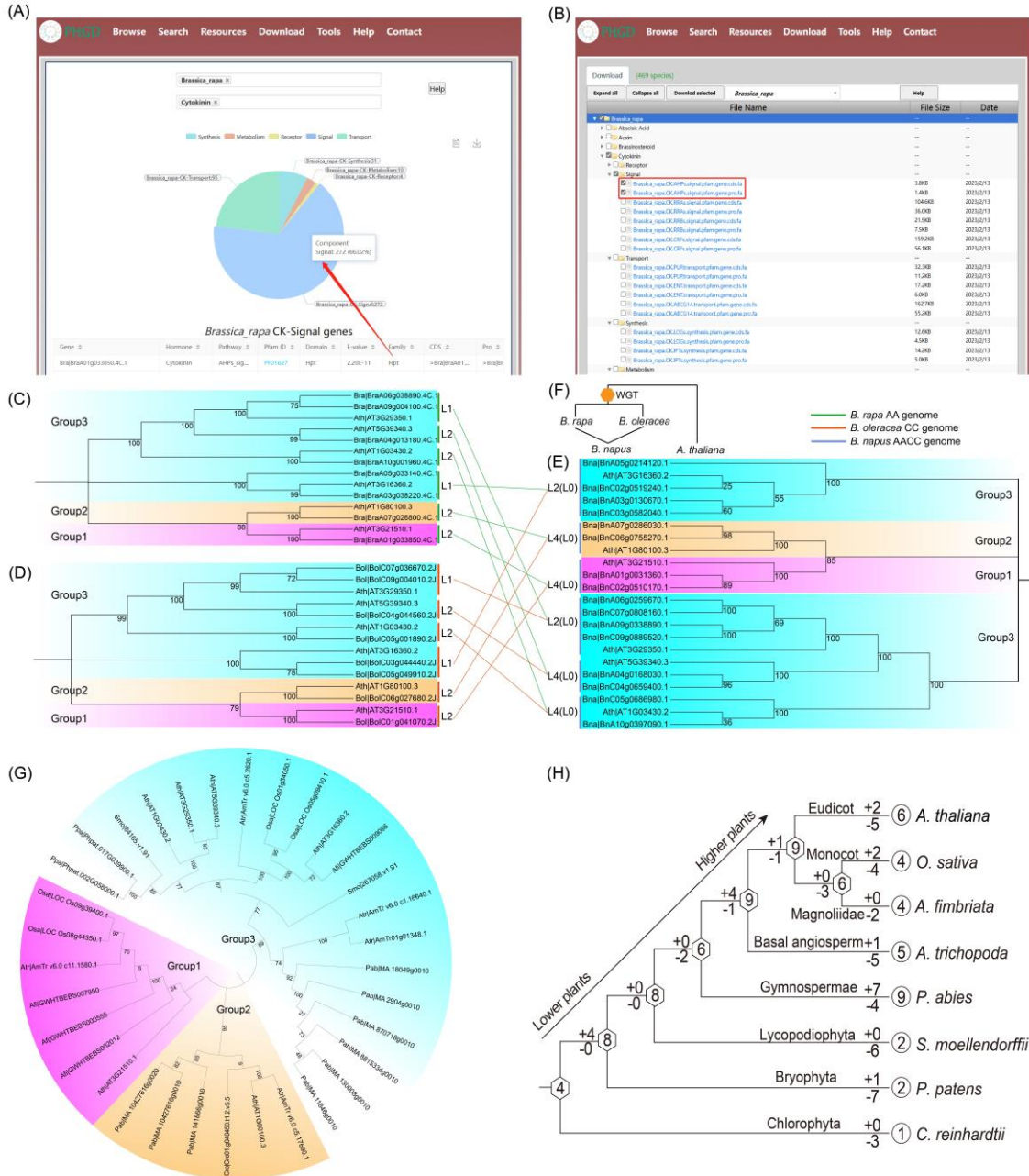
● 469 species with high-quality gene annotation

Results



- PHGD includes 11 types of plant hormones from 469 species.
- PHGD contains 104 components of synthesis, metabolism, receptor, signal, and transport pathways of each plant hormone.
- PHGD integrates the functions and interaction networks of 11 plant hormones.
- PHGD is divided into 8 modules, namely Home, Browse, Search, Resources, Download, Tools, Help, and Contact.

Results



- Search for target species and pathways on the search page, view relevant information, and identify target genes of interest (*AHP* genes). Then select and download the sequence file of the target species *AHP* gene directly on the download page.
- The expansion of *AHP* family in *B. napus* was indirect expansion caused by hybridization, while that in Chinese cabbage and *B. oleracea* was direct expansion caused by genome duplication.
- From the number of the *AHP* family members in lower plants to higher plants, it exhibits an expansion and evolutionary pattern.



Summary

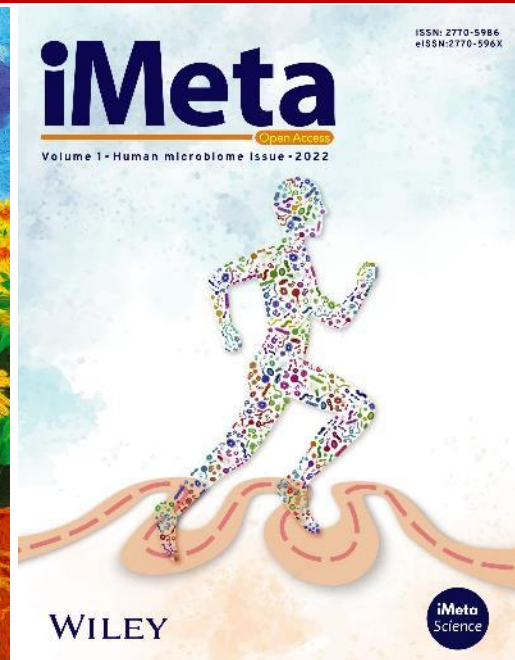


PHGD

- The construction of the complex interaction network among 11 kinds of hormones provides the core node and the overall picture for the study of hormone regulation of plant growth and development.
- A total of 104 key components of each plant hormone pathway were identified in 469 species, which initially revealed the origin node of each plant hormone pathway.
- The first user-friendly database of 11 plant hormones was built to provide an important data platform for the study of plant hormone-related genes.

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