

Precursors	Amino acids				Isoprenoids	Lipids
	arginine	methionine	phenylalanine	tryptophan	IPP	α -linolenic acid
Phytohormone classes	polyamines	ethylene	salicylic acid	auxins	abscisic acid	jasmونات
				melatonin	brassinosteroids	
					cytokinins	
					gibberellins	
					strigolactones	

Metabolic map of the central carbon metabolism of *Arabidopsis thaliana*.

Legend:

- 1 citrate synthase
- 2 aconitase
- 3 isocitrate dehydrogenase
- 4 α-ketoglutarate dehydrogenase
- 5 succinyl CoA synthetase
- 6 succinate dehydrogenase
- 7 fumarase
- 8 malate dehydrogenase

Key Pathways and Intermediates:

- Glycolysis and Gluconeogenesis:** Glucose ↔ Fructose 1,6-bisphosphate ↔ Glucose-6-phosphate ↔ Pyruvate ↔ Acetyl-CoA.
- Citric Acid Cycle (Krebs cycle):** Acetyl-CoA + Oxaloacetate → Citrate → Isocitrate → α-ketoglutarate → Succinyl-CoA → Succinate → Fumarate → Malate → Oxaloacetate.
- Methionine cycle (Yang cycle):** 5-methyl-thioribose-1-phosphate → 5-methyl-thioadenosine (MTA) → 5-adenosyl-L-methionine (SAM) → Decarboxylated SAM → Putrescine.
- Biosynthesis of Secondary Metabolites:**
 - Auxins:** Indole-3-pyruvic acid → Indole-3-acetic acid ↔ Indole-3-butyric acid ↔ Indole-3-acetaldehyde ↔ Indole-3-ethanol ↔ Indole-3-acetonitrile ↔ Indole-3-acetamide ↔ Indole-3-acetaldoxime.
 - Flavonoids:** Anthranilate → Anthranilate derivatives → Anthranilate derivatives.
 - Other Compounds:** Glutamate → Arginine → Ornithine → Putrescine → Spermidine → Spermine → Thermospermine.

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graph TD
    A[α-linolenic acid] -- 13-lipoxygenase --> B["(13S)-hydroperoxyoctadecatrienoic acid"]
    B -- allene oxide synthase --> C["12(13S)-epoxy-9Z,11,15Z-octadecatrienoic acid"]
    C -- allene oxide cyclase --> D["cis-(+)-12-oxophytodienoic acid [cis-(+)-OPDA]"]
    D -- OPDA reductase --> E["3-oxo-2-[2'-(2'-pentenyl)-cyclopentan-1-oxo]acetic acid (OPC 8:0)"]
    E -- β-oxidation --> F["OPC-6"]
    F -- "two cycles of β-oxidation" --> G["(+)-7-iso-jasmonic acid"]
    G -- " " --> H["(-)-jasmonic acid"]
    
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Figure S1: Network of plant hormones' biosynthetic pathways (all-in-one).

The diagram illustrates the biosynthetic pathways for various plant hormones, categorized into five main groups: Steroids, Cytokinins, Gibberellins (GAs), Strigolactones (SLs), and Brassinosteroids (BRs). The pathways are color-coded: red for C₂₀-BRs, green for C₂₄-BRs, orange for C₂₆-BRs, and blue for C₂₈-BRs. Key precursors like D-glucose, acetyl-CoA, and mevalonate are shown at the top. The diagram details the conversion of these precursors into intermediates like isopentenyl pyrophosphate (IPP), dimethylallyl pyrophosphate (DMAPP), and geranyl pyrophosphate, which then lead to the final hormone products. Enzymes involved in each step are labeled, and multistep reactions are indicated by dashed arrows. The pathways for Cytokinins, Gibberellins, and Strigolactones are shown on the right, while Steroids and Brassinosteroids are on the left. The diagram is a detailed map of the molecular biology of plant hormone biosynthesis.

Legend:

- Multistep reaction (in different colors)
- C₂₀-BRs
- C₂₄-BRs
- C₂₆-BRs
- C₂₈-BRs

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