**Vascular Cambium:**

The **vascular cambium** is the main growth [tissue](https://en.wikipedia.org/wiki/Tissue_(biology)) in the stems and roots of many plants, specifically in [dicots](https://en.wikipedia.org/wiki/Dicot) such as buttercups and oak trees, [gymnosperms](https://en.wikipedia.org/wiki/Gymnosperm) such as pine trees, as well as in certain [vascular plants](https://en.wikipedia.org/wiki/Vascular_plant). It produces secondary [xylem](https://en.wikipedia.org/wiki/Xylem) inwards, towards the [pith](https://en.wikipedia.org/wiki/Pith), and secondary phloem outwards, towards the [bark](https://en.wikipedia.org/wiki/Bark_(botany)). In herbaceous plants, it occurs in the vascular bundles which are often arranged like beads on a necklace forming an interrupted ring inside the stem. In woody plants, it forms a cylinder of unspecialized [meristem](https://en.wikipedia.org/wiki/Meristem#Secondary_meristems) cells, as a continuous ring from which the new tissues are grown. Unlike the xylem and phloem, it does not transport water, minerals or food through the plant. Other names for the vascular [cambium](https://en.wikipedia.org/wiki/Cambium) are the **main cambium**, **wood cambium**, or **bifacial cambium**.

Vascular cambia are found in [dicots](https://en.wikipedia.org/wiki/Dicot) and [gymnosperms](https://en.wikipedia.org/wiki/Gymnosperm) but not [monocots](https://en.wikipedia.org/wiki/Monocot), which usually lack secondary growth. A few leaf types also have a vascular cambium, In dicot and gymnosperm [trees](https://en.wikipedia.org/wiki/Tree), the vascular cambium is the obvious line separating the bark and wood; they also have a [cork cambium](https://en.wikipedia.org/wiki/Cork_cambium). For successful [grafting](https://en.wikipedia.org/wiki/Grafting), the vascular cambia of the rootstock and scion must be aligned so they can grow together.

Structure and function

The cambium present between primary xylem and primary phloem is called the *intrafascicular* cambium (within vascular bundles). During secondary growth, cells of medullary rays, in a line (as seen in section; in three dimensions, it is a sheet) between neighbouring vascular bundles, become [meristematic](https://en.wikipedia.org/wiki/Meristem" \o "Meristem) and form new *interfascicular* cambium (between vascular bundles). The intrafascicular and interfascicular cambia thus join up to form a ring (in three dimensions, a tube) which separates the primary xylem and primary phloem, the *cambium ring*. The vascular cambium produces secondary xylem on the inside of the ring, and secondary phloem on the outside, pushing the primary xylem and phloem apart.

The vascular cambium usually consists of two types of cells:

* Fusiform initials (tall, axially oriented)
* Ray initials (smaller and round to angular in shape)

**Maintenance of cambial meristem**

The vascular cambium is maintained by a network of interacting signal feedback loops. Currently, both hormones and short peptides have been identified as information carriers in these systems. While similar regulation occurs in other plant [meristems](https://en.wikipedia.org/wiki/Meristem), the cambial meristem receives signals from both the xylem and phloem sides for the meristem. Signals received from outside the meristem act to down regulate internal factors, which promotes cell proliferation and differentiation.[[5]](https://en.wikipedia.org/wiki/Vascular_cambium#cite_note-5)