MEDIA RELEASE

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ATTENTION: Chiefs of Staff, News Directors

Secret behind world domination of flowering plants revealed

A UTAS scientist has discovered an evolutionary trigger that helped flowering plants become earth's dominant plant group.

The study by UTAS School of Plant Science research fellow Dr Tim Brodribb and University of Tennessee's Dr Taylor Field, used plant physiology to reveal how flowering plants, including crops, were able to dominate land by evolving more efficient hydraulics, or 'leaf plumbing', to increase rates of photosynthesis.

The study, which was published this week, in the latest edition of the prestigious international science journal, *Ecology Letters*, has revealed how flowering plants gained a major competitive advantage over rival land plant species by evolving a superior method for supplying water to the leaves for photosynthesis .

Flowering plants (angiosperms) replaced conifers (gymnosperms) as the dominant trees on the planet only around 60-70 million years ago.

"Flowering plants are the most abundant and ecologically successful group of plants on earth," Dr Brodribb said.

"One reason for this dominance is the relatively high photosynthetic capacity of their leaves, but when and how this increased photosynthetic capacity evolved has been a mystery."

Using measurements of leaf vein density and a linked hydraulic-photosynthesis model, Dr Brodribb and Dr Field reconstructed the evolution of leaf hydraulic capacity in flowering plants.

The evolution of dense leaf venation in flowering plants, around 140-100 million years ago, allowed leaf photosynthesis to double.

"So it is significant to note that without this evolutionary step land plants would not have the physical capacity to drive the high productivity that underpins modern terrestrial biology and human civilisation," Dr Brodribb said.

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