

Endless research possibilities for remarkable native plant

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Peter Waterhouse at Eagle Rock, Western Australia, where the *Nicotiana benthamiana* plant grows.

(Medical Xpress) -- The exceptional research potential of a native Australian plant has been accelerated by the release of both its DNA and RNA sequence by University of Sydney researchers and their partners.

Nicotiana benthamiana is a distant relative of commercial tobacco and is only found in remote areas of Western Australia, the Northern Territory and Queensland.

"This plant is already used in research laboratories around the world by biologists and biotechnologists but just as determining the sequence of the [human genome](#) has been an incalculable aid to medical research, providing this [genome sequence](#) will be a major help to agricultural and particularly biotechnological research," said Professor Peter Waterhouse

from the School of [Molecular Bioscience](#), who leads the University's researchers.

"Having the RNA in addition to the DNA information will give researchers extra options and approaches to designing their genetic experiments. This achievement will speed up the development of new crops required for food, fibres, biofuels and personalised medicines."

The release of the sequence is the result of a collaborative effort between the University of Sydney, CSIRO Plant Industry and New Zealand's Plant and [Food Research](#).

Nicotiana benthamiana has been embraced by the scientific community for its ease of use as a [model plant](#) just as the mouse has been used to study humans.

Finding out what each gene in a plant produces is a key step in [agricultural sciences](#). "We used to wait six months for this type of information but using the unique properties of 'benth', as we sometimes call it, we can have results in less than a week," said Professor Waterhouse.

"You can simply squirt genetic material into a leaf and have it produce your target product in a matter of days. Our results will make this process even faster and more accurate."

A [new University of Sydney website](#) has been launched in collaboration with the partner organizations which provides the genome sequence and a wealth of other material on the plant.

"At this stage benth is a much exploited but little understood plant and this resource will change that completely," said Dr. Craig Wood, a co-investigator from the CSIRO Plant Industry.

Plant genomics is still frontier territory and we have pushed the boundaries with this project," said Dr. Roger Hellens, from New Zealand's Plant and Food Research.

"This plant has increased the speed at which we can investigate the molecular controls of important horticultural traits. It allows us to identify genes involved in pest and disease resistance, the metabolic pathways that produce compounds known to be good for human health, or to understand how a plant develops. We can use this knowledge to identify the corresponding genes in horticultural plants of interest and develop molecular markers to speed up the breeding of new varieties with these traits."

Provided by University of Sydney

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