



BGCI
Plants for the Planet

[What We Do](#)

[Enabling Botanic Gardens](#)

[Securing Plant Diversity](#)

[Influencing Policy](#)

Search all BGCI sites:



- BGCI Global -

[BGCI Home](#)

[Search this Site](#)

[Join BGCI](#)

[News, Events & Jobs](#)

[Publications & Communications](#)

[Useful Links](#)

[Shop](#)

[Donate](#)

SIGN UP NOW

for Cultivate,
BGCI's free email
newsletter:

MAKE A DONATION

[Help us create a world in which plants are valued](#)

[Print this Page](#)

[Worldwide](#) > [News](#) > DNA 'Barcode' Found in Plants

DNA 'Barcode' Found in Plants

GLOBAL

5th February 2008

A 'barcode' gene that can be used to distinguish between the majority of plant species on Earth has been identified by scientists who publish their findings in the Proceedings of the National Academy of Sciences journal today (4 February 2008).



Scientists from the research team examine orchid samples in Costa Rica

This gene, which can be used to identify plants using a small sample, could lead to new ways of easily cataloguing different types of plants in species-rich areas like rainforests. It could also lead to accurate methods for identifying plant ingredients in powdered substances, such as in traditional Chinese medicines, and could help to monitor and prevent the illegal transportation of endangered plant species.

The team behind the discovery found that DNA sequences of the gene 'matK' differ among plant species, but are nearly identical in plants of the same species. This means that the matK gene can provide scientists with an easy way of distinguishing between different plants, even closely related species that may look the same to the human eye.

The researchers made this discovery by analysing the DNA from different plant species. They found that when one plant species was closely related to another, differences were usually detected in the matK DNA.

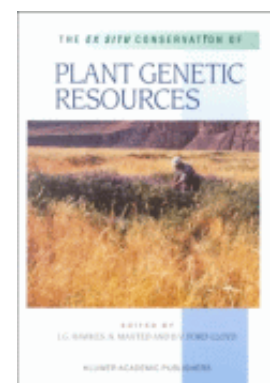
The researchers, led by [Dr Vincent Savolainen](#), dual appointee at Imperial College London's Department of Life Sciences and the Royal Botanic Gardens, Kew, carried out two large-scale field studies: one on the exceptionally diverse species of orchids found in the tropical forests of Costa Rica, and the other on the trees and shrubs of the Kruger National Park in South Africa. Dr Savolainen and his colleagues in the UK worked alongside collaborators from the Universities of Johannesburg and Costa Rica who played a key role in this new discovery.

Related Gardens

[Royal Botanic Gardens, Kew](#)

United Kingdom - Surrey - Richmond

[The Ex Situ Conservation of Plant Genetic Resources \(Hawkes et al, 2000\)](#)



Valuable reading for professional plant conservationists and postgraduate students of plant genetics, conservation and cell biology.

[Home Gardens and In Situ Conservation of Plant Genetic Resources in Farming Systems \(2002\)](#)



This 184 page report was published by IPGRI in 2002, and edited by JW Watson and PB Eyzaguirre.

Using specimens collected from Costa Rica, Dr Savolainen and colleagues were able to use the matK gene to identify 1,600 species of orchid. In the course of this work, they discovered that what was previously assumed to be one species of orchid was actually two distinct species that live on different slopes of the mountains and have differently shaped flowers adapted for different pollinating insects.

In South Africa the team was able to use the matK gene to identify the trees and shrubs of the Kruger National Park, also well known for its big game animals.

Dr Savolainen explains that in the long run the aim is to build on the genetic information his team gathered from Costa Rica and South Africa to create a genetic database of the matK DNA of as many plant species as possible, so that samples can be compared to this database and different species accurately identified.

"In the future we'd like to see this idea of reading plants' genetic barcodes translated into a portable device that can be taken into any environment, which can quickly and easily analyse any plant sample's matK DNA and compare it to a vast database of information, allowing almost instantaneous identification," he says.

Although Dr Savolainen concedes that such technological applications may be some years away from realisation, he says the potential uses of the matK gene are substantial: "There are so many circumstances in which traditional taxonomic identification of plant species is not practical – whether it be at ports and airports to check if species are being transported illegally, or places like Costa Rica where the sheer richness of one group of plants, like orchids, makes accurate cataloguing difficult."

The matK gene may not, however, be able to be used to identify every plant species on Earth. In a few groups of species, additional genetic information may be required for species-level identification because hybridization – where species cross-breed and genetic material is rearranged - may confuse the information provided by matK.

This research was funded by the Defra Darwin Initiative, the Universities of Johannesburg and Costa Rica, the South African National Research Foundation, the Royal Botanic Gardens, Kew, and the Royal Society.

Joan Ruddock, Minister for Climate Change and Biodiversity said: "This is a great breakthrough that could save many endangered plants. The Defra-funded Darwin Initiative has a reputation for producing real and lasting results and I congratulate everyone involved in this project which could have huge benefits for plant identification and conservation in the future."

Find Out More

[Proceedings of the National Academy](#)

PNAS is one of the world's most-cited multidisciplinary scientific serials. Since its establishment in 1914, it continues to publish cutting-edge research reports, commentaries, reviews, perspectives, colloquium papers, and actions of the Academy.

[Consortium for the Barcode of Life \(CBOL\)](#)

The Consortium for the Barcode of Life (CBOL) is an

More Securing
Plant Diversity
News

[9-Metre Sculpture
of Wild Rice
Arrives at FAO
headquarters](#)
3rd April 2008

[BGJournal:
Conserving Forest
Diversity](#)
19th March 2008

[Bringing Ecology
Home - Quite
Literally](#)
27th November 2007

[Bananas Bloom
Outdoors in Wales](#)
2nd October 2007

[2007 Red List:
Extinction Crisis
Deepening](#)
12th September 2007

international initiative devoted to developing DNA barcoding as a global standard for the identification of biological species.

[DNA Barcoding](#)

DNA barcoding is the use of a short DNA sequence or sequences from a standardized locus (or loci) as a species identification tool. Kew is a member of the Consortium for the Barcode of Life (CBOL), an international barcoding initiative, and an active participant in the CBOL Plant Working Group.

[Back to Archive](#)

[Contact BGC!](#) [Jobs at Botanic Gardens](#) [Accessibility](#) [Translate This Page](#) [Media Centre](#) [Help](#) [Legal Notices](#) [Report Errors](#)
[Send to Friend](#) [Print this Page](#)