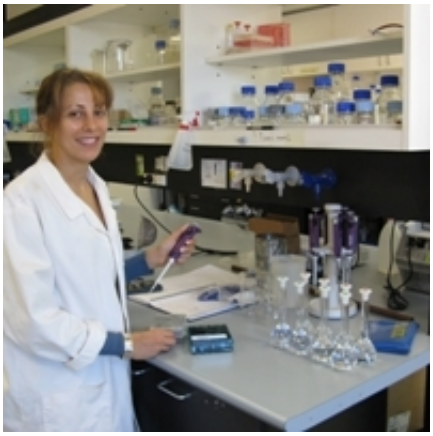
Breakthrough discovery could result in fragrant golden harvest

September 19 2013



Sandalwood oil - the 'golden harvest' - is one of the world's most valuable essential oils, but increased demand has caused natural populations of sandalwood trees to diminish over the past century through harvesting, grazing animals and disease.

Plantations of several sandalwood (Santalum) species provide a more sustainable alternative to traditional wild harvesting but the long maturation requirement for heartwood to be produced within a tree hampers oil productivity.

A solution - with significant implications for the Australian sandalwood industry and for conservation of wild Australian sandalwood - has been

found through gene discovery.

Key genes that produce sandalwood oil have been discovered by an international research team from The University of Western Australia and the University of British Columbia (UBC) in Canada. These newly discovered genes, together with previous gene discoveries, produce some of the final constituents of the oil found in Indian sandalwood trees.

"These results - published in *PLOS ONE* today - provide a foundation for the production of sandalwood oil by means of metabolic engineering," said UWA's Dr Liz Barbour, one of the co-authors of the paper.

"Presently sandalwood oil, extracted from the heartwood in tree stems and roots, is highly sought after by the fragrance and perfume industry. This discovery will open new nutraceutical and medicinal markets," she said.

Another UWA co-author is PhD student Jessie Moniodis who travelled to the UBC Michael Smith Laboratories in Canada to work with Professor Joerg Bohlmann and Dr Maria Diaz-Chavez (the lead author of the new study) on characterisation of the discovered sandalwood genes. Associate Professors Emilio Ghisalberti, Professor Julie Plummer and Dr Christopher Jones from UWA were also involved. The research was partly funded by the Western Australian Forest Products Commission, the Natural Sciences and Engineering Research Council of Canada, and an industrial partner.

Historically, the harvest and export of Western Australia's native sandalwood, S. spicatum was vital to the State's early economy. It is suggested that the Wheatbelt was settled faster because of revenue generated by local sandalwood harvesting.

Today, the industry is reviving as farmers replant native sandalwood as a

land restoration strategy while exploring the possibility of benefitting from 'the golden harvest'. This discovery will add novel value streams to the industry and provide the supply security needed to attract long-term markets.

Provided by University of Western Australia