DNA barcoding of all trees in Africa (TreeBOL Africa)

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WIDESPREAD deforestation and destruction of flora is having a catastrophic impact on many of the world's ecosystems, but UJ has joined the fight to preserve species that will be vital in the future if the processes are to be reversed and replanting to take place. First it is essential to gather and organize data in an easily retrievable format. Recent advances in barcode technology and genome mapping have come together in a serendipitous way to enable scientists from various disciplines across the world to collaborate on a campaign to reverse some of the harm their predecessors have wittingly, or unwittingly done to the world.

The Tree-BOL (Barcode of Life) initiative is an ambitious undertaking that aims to create a reference database of trees by establishing DNA barcodes of all species in the world. Tree-BOL forms part of a larger principal organization, The Consortium of the Barcode of Life (CBOL), and is sponsored by the Alfred P. Sloan Foundation, with headquarters in the New York Botanical Gardens. The campaign comprises nine regional working groups, which represent the entire world. UJ is playing a leading role in Africa as the continent's representative, under the direction of Dr Michelle van der Bank, Olivier Maurin (Department of Botany and Plant Biotechnology, UJ) and Prof Adeniyi Jaeola (University of Ibadan, Nigeria).

The aim is to facilitate the transfer of precise and reliable information between the continent's tree collections and the rest of the world, and also to build capacity in Africa. By initiating and leading the African campaign, UJ will bring together scientists from all over Africa, and play a major role in helping to build scientific capacity in Africa. This will be achieved by training young scientists from selected institutions in molecular techniques at UJ. The goal is to establish a network of African scientists and institutes working in the field of DNA barcoding.

The South African national Biodiversity Institute (SANBI) is the first organization to commit and join the African campaign. With its preserved plant specimen records kept in its three Herbaria (Pretoria, Cape Town and Durban) totaling nearly 2 million, the Institute is in a good position to pinpoint the occurrence of trees in their natural habitat, and to re-collect material from precise localities if required. Researchers from SANBI will therefore assist in the collection of the estimated 1700 trees native to southern Africa. These samples will be deposited in the DNA Bank at UJ to facilitate their curation, linking them to herbarium voucher specimens deposited at both JRAU and SANBI (PRE). The project will also assist SANBI to improve its electronic information base on South and southern African trees, and facilitate the expansion of its National Plant Collecting Programme. The project will also enable the transfer of laboratory and other barcoding skills to participating staff members.

Together with African colleagues, and under the umbrella of the International Convention of Biological Diversity's targets of decreasing the rate of biodiversity loss by 2010, it is hoped to demonstrate that evolutionary studies are the key to better understanding and sustainable use of Africa's unique biodiversity.

The first Tree-BOL workshop took place on the 9 and 10 October 2008 at the University of Johannesburg, with representatives from South Africa, Namibia, Zimbabwe, Mozambique, Kenya, Nigeria, Ethiopia, Mauritius and Benin. Key species to target based on their conservation and trade status were identified and partnerships set up between the different institutions. ■