

Biotechnology Research Paves the Road for the Trees of the Future

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The recent sequencing of the poplar tree genome is creating immense possibilities for forest tree research. Scientific tools are now available to unravel the genetic mechanisms underlying important traits in commercial forestry such as wood quality, disease resistance, abiotic stress and reproductive biology. Such knowledge will form the basis of modern tree breeding that will produce the trees of the future. Genomic sequencing of forest trees will, however, not only pave the road for a new era in practical forestry, but it also puts basic research on forest trees in the frontline of plant science.



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SCIENTIFIC COMMITTEE

The IUFRO Working Party 2.04.06 organizes biennial international meetings on the genomics, molecular biology and biotechnology of forest trees. The most recent IUFRO Tree Biotechnology meeting held in Pretoria, South Africa was the first in the post-genomic era of forest trees. Presentations on the poplar genome and research enabled by this tremendous new resource were obvious highlights of the meeting.

With the genome data in hand, it is now possible to investigate the detailed evolution of a forest tree genome and its relationship to other plant

genomes. Such comparisons allow us to ask “*What genes make a tree?*” and will greatly accelerate our journey towards a more complete understanding of the genes that underlie important traits in forest trees. One outcome of the post-genomic era is large-scale biology and the creation of huge databases of genes, proteins and metabolites. The organization, bioinformatics and sharing of such data were a central discussion theme of the meeting. The sequencing of other tree genomes such as that of *Eucalyptus* species was also discussed.

The heart of the meeting remained, however, presentations on experimental research providing knowledge about the general principles behind tree growth and development, and their biotechnological applications. Many excellent presentations provided information on genes involved in central developmental processes such as seasonality, shoot and wood development, insect and disease resistance, wood production and lignin, cellulose and hemicellulose biosynthesis. The scientific excellence of the meeting was also demonstrated by the fact that many leading non-tree scientists came to present their research in other model systems. The industrial importance of the field was devoted a specific session where leading forest biotech companies presented their views on the impact of economic, scientific and societal value chains on the future application of forest biotechnology. The participation of several major pulp and paper companies in the meeting reinforced the great economic potential of this research.

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The IUFRO Tree Biotechnology 2005 meeting was hosted by the Forestry and Agricultural Biotechnology Institute (FABI) at the University of Pretoria in Pretoria, South Africa. Major sponsors of the meeting included Sappi, Mondi Business Paper South Africa and SweTree Technologies. The meeting attracted more than 200 delegates representing 26 countries, 45 universities and 44 forest research institutions or biotech companies. More information and abstracts from the meeting can be found at www.iufro.up.ac.za.