The same genes control flowering and the growing season

Description

Looking for mechanisms to counteract climate change

Professor Ove Nilsson received The Marcus Wallenberg Prize in 2007 after having revealed the molecular mechanisms regulating the flowering time of trees. Here he writes about how his research group tries to find the genes controlling seasonal changes, since it can be vital for understanding how breeding can counteract negative effects of poor climate adaptation.

â??Receiving the Marcus Wallenberg Prize has certainly helped to open many doors within the forest industry where the award is widely recognized. As such it has greatly facilitated many new joint research projects between our academic environment in UmeÃ¥ and forest industries, both nationally and internationally. We have for instance been able to develop one of the largest Swedish forestry-related research programs ever. The Berzelii Centre for Forest Biotechnology at UmeÃ¥ Plant Science Center, UPSC, is jointly financed 2007-2016 by VetenskapsrÃ¥det, the Swedish research council, and Vinnova, the Swedish government agency that administers state funding for research and development. The idea is to develop a world-leading scientific environment where cutting edge basic research is translated into new innovations for the forest industry. UPSC in collaboration with six forest industrial partners have already been able to develop new techniques for forest and nursery fertilization. We concentrate on direct seeding of pine and methods for large-scale deployment of clonally propagated families of genetically enhanced spruce through a process called somatic embryogenesis. The innovations have already been commercially introduced, or will be so during the next five years.

My group is continuing our work on the genes that are controlling flowering time in trees. However, since our discovery that the same genes that are controlling flowering also control the length of the growing season in trees, our focus is more and more on understanding the regulation of seasonal phenology. What genes control bud break in the spring, growth during summer and bud set in the fall, and how is the regulation of bud dormancy during winter controlled? This knowledge will be central for a deeper understanding of how climate change will influence the growth of our forests and how we can direct breeding to counteract negative effects of poor climate adaptation.â?•

Ove Nilsson

Professor Ove Nilsson and his group at UPSC have the ambition to develop a world-leading scientific environment where cutting edge basic research is translated into new innovations for the forest industry.

Marcus Wallenberg Prize 2007

Laureate: Ove Nilsson, professor in Plant Reproductive Biology

Institution: UmeÃ¥ Plant Science Center, Swedish University of Agricultural Sciences, UmeÃ¥, Sweden

Research field: The molecular genetic basis for the regulation of flowering and phenology in trees.