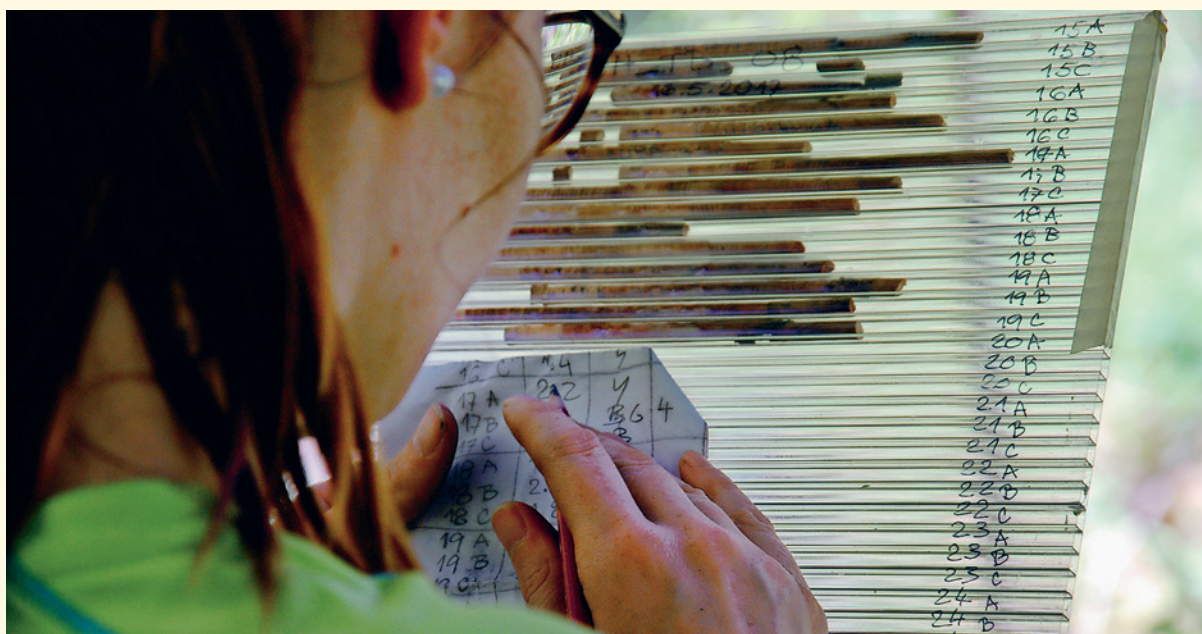


FOREST Which genes make trees fit for climate change? Annual rings provide a key



The annual rings visible in the wood cores reveal not only a great deal about past climates, but also, in combination with genetic data, how individual trees react to climate change on the basis of their genetic material.

Every tree is an individual, shaped by its environment and its genes – just like us humans. Trees differ in how they cope with environmental changes and extremes: one spruce survives a dry period better than another, and a European beech recovers more slowly from a late frost than its neighbour. What role do different genes play here? This is what Patrick Fonti and Christian Rellstab are interested in.

Trees document their own life and growth in their annual rings. This is a stroke of luck for the two researchers as Patrick, an expert on annual rings, explains: “If you statistically ‘filter out’ the average influence of the climate from the course of growth, the annual rings still differ from tree to tree. They reveal not only which individuals are able to deal with challenges such as drought or late frost, but also how well they

do so, based on their genetic make-up.” The researchers are studying seven different species with a total of 3577 trees whose annual rings and genome have both been characterised. Christian, a biologist, is now using a great deal of computer power to search for correlations between the growth features in the annual rings and genetic patterns.

Currently their work can be considered basic research. But if Patrick and Christian succeed in finding which genes and gene networks play an important role in how tree species adapt to climate change, this could be relevant for forest management. For example, seeds from trees with suitable genetic material could be used specifically for regeneration. (bio)

The data set comes from the EU Horizon2020 project GenTree, www.gentree-h2020.eu