The Fir Tree Remembers Warmth

International research team including a researcher from Siberian Federal University has found out that spruces sprouted in the south from seeds of northern populations and then planted in northern regions within reforestation event, “recalls” warmth and reveal specific features of its southern childhood, i.e. they bloom early and hibernate later. The researchers have suggested that this pattern is caused by stable epigenetic modifications acquired during some period of life that regulate these processes. The study was published in the Christmas issue of Scientific Reports journal.

To check this hypothesis, the researchers from Norway, Great Britain, Poland, Germany and Russia first studied this process at the genome-wide level using reversed-phase high-performance liquid chromatography (HPLC) method in combination with highly sensitive mass-spectrometry and immunohistochemistry.

‘We have studied the global level of methylation of the spruce genome — the main mechanism for regulating gene activity in animals and plants. For the first time, it has become possible to obtain an experimental evidence of the presence of specific non-canonical modified DNA bases in the genomes of conifers that presumably play an important role in the development, adaptation, and homeostasis of plants. It has allowed us to shed new light on a Christmas beauty-tree that has seemed so familiar until now. We hope that this Christmas-spirit-finding fascinates not only research fellows but also every person celebrating the winter holidays,’ said Prof **Konstantin Krutovsky**, head of the laboratory of forest genomics of Siberian Federal University, a leading researcher at N.I. Vavilov Institute of General Genetics of the Russian Academy of Sciences, professor at the University of Gottingen (Germany) and Texas A&M University (USA).

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