

Jana Krajnakova received her PhD in Molecular Biology and Genetics at Comenius University in Bratislava (Slovakia) in 1994. In 2007 she became an associate professor at the Mendel University in Brno (Czech Republic). She has been working as a researcher and lecturer at the Forest Research Institute (Slovakia), University of Udine in Italy, Mendel University in Brno (Czech Republic) and the University of Oulu (Finland). In the present moment she works as a Research leader at Scion, New Zealand. She has long-term experience with micropropagation of forest trees. Her current interests are focused on somatic embryogenesis of coniferous species with special emphasis on bioenergetics.

### **Cellular levels of ATP, are they important for the success of somatic embryogenesis?**

ATP, as a main product of respiration, represents the universal energy currency of living cells. ATP and other nucleoside triphosphates not only drive energy-dependent reactions inside a cell, but can also function in the extracellular matrix, where they function as antagonists that can induce diverse physiological responses without being hydrolyzed. The energetic metabolism occurring during somatic embryogenesis of cell cultures has been neglected for quite a long time, although it can be crucial for the correct development of somatic embryos where life and death processes co-exist. An overview of our research activities focused on bioenergetic aspects of somatic embryogenesis and cryopreservation will be given, with the special emphasis on the correlation between ATP cellular levels and developmental changes occurring during the maturation phase. The role of alternative oxidase (AOX), an enzyme of the alternative respiration pathway, during the proliferation and maturation phases of somatic embryogenesis in Norway spruce (*Picea abies* L. Karst.) will be also discussed.