# Session Women in Science

## Lectures

## L.WS.1

### Osteoarthritis: role of the endocannabinoid system and its overlap with cognitive functions

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Almost half of the chronic pain patients have been reported to suffer from co-morbid depression. Oonly few studies have examined the pain-depression link in osteoarthritis (OA) - the most common form of arthritis. OA pain is a combination of inflammatory, nociceptive, and neuropathic pain, each requiring specific analgesics. The body's innate endocannabinoid system (ECS) has been shown to ameliorate all of these pain types, linking pain transmission and affective processes.
The mutual involvement of brain structures (the frontal cortex, striatum and nucleus accumbens) in the affective processing of pain is poorly understood. Therefore, we evaluated the development of affective symptoms and the underlying neurotransmission. As depressive-like behavior and cognitive impairment co-occur with decreased survival of newly generated cells in the dentate gyrus of the hippocampus we also assessed the contribution of ECS on the alteration in LTP and monoamine levels in the lateral entorhinal cortex-dentate gyrus pathway. Network analysis revealed noradrenaline (NA) and serotonin (5-HT) neurotransmission in the nucleus accumbens as the key structures affected by chronic pain. We also demonstrated the role of ECS in restoring maladaptive neuroplasticity at the level of LEC-DG pathway and restoring physiological levels of DA and 5-HT in the CA3 hippocampus, respectively.

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## L.WS.2

### Between the cytokinin translocation and legume-*Rhizobium* symbiosis - unravelling the role of ABCG transporter

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Cytokinins (CKs) are ubiquitous plant hormones and signalling molecules. As phytohormones crucial for legume-*Rhizobium* associations, CKs play a role at early and later nodulation stages. In the root cortex, activation of the cytokinin signalling pathway and, thus, their accumulation triggers cell division and the formation of root nodules. Interestingly, rhizodermal cytokinins are suspected to act as a mobile signal joining outer and inner root tissue responses. However, dedicated transporters, mediating cytokinin translocation between rhizodermis and root cortex and within cortical cell layers, remained elusive.
We discovered that a full-size ATP-binding cassette (ABC) transporter, namely ABCG56, plays an important role in the early stages of nodulation and cytokinin distribution. The *ABCG56* is expressed in roots and nodules of the model legume plant *Medicago truncatula*. Its mRNA accumulates within the rhizodermis and root cortex upon contact with symbiotic bacteria, Nod factor, and cytokinins. The MtABCG56 is a plasma membrane protein that translocates bioactive cytokinins in an ATP-dependent manner. Disruption of this transporter affects cytokinin signalling and results in nodulation impairment. In light of acquired data, the new role of ABCG-driven CK transport for nitrogen-fixing symbiosis can be postulated.

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# L.WS.3

## The importance of the gender dimension in research and innovation

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This presentation delves into the significance of the gender dimension as a crucial factor within the excellence criterion of Research and Innovation (R&I) projects. When crafting proposals, the gender aspect often poses numerous queries. Thus, this presentation aims to provide valuable insights on effectively integrating the gender dimension into Horizon Europe (HE) proposals, addressing it as a key award criterion. By incorporating the sex/gender dimension, both biological and social differences are taken into account, influencing research and teaching. Under HE guidelines, it is mandatory to outline how the gender dimension will be integrated into the R&I project or provide a clear justification if it will not be. This presentation primarily covers the following key aspects:- distinguishing between the gender dimension and gender balance in research,- highlighting the significance and benefits of integrating the gender dimension in research,- introduction to Gender Based Analysis+ as a fundamental tool,- exploring potential outcomes resulting from the gender dimension analysis.Moreover, this presentation showcases compelling case studies across diverse fields of research and innovation, including AI & robotics, climate change, energy, transport, and more. These case studies effectively illustrate the successful integration of the gender dimension in various R&I projects.

# L.WS.4

## Why is it risky NOT to build diverse, inclusive and gender equal culture within academia?

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Gender equality as one of the manifestations of effective diversity management has in recent decades become widely accepted as an important goal for many academic and research institutions. Scholars and practitioners agree that gender equality is important not only because it is morally appropriate to ensure equal opportunities across genders, but also because it yields a broad variety of positive consequences for individuals, groups, and societies. In institutions that promote inclusion and gender equality, lower job turnover and higher job satisfaction are evident, while teams are more productive and innovative. This also applies to scientific teams and groups – effective diversity and inclusive management in academia can translate into more innovation and higher performance of researchers - reaching gender equality is one of the tools for seizing the profits from diversity and inclusion. In my presentation I will enlist seven reasons why it is worthwhile to invest time in building inclusive and gender equality oriented working environments in academia and I will share seven lessons learnt from my experience as both scholar and practitioner supporting academic institutions in implementing gender equality plans.