

# BIG seminar

**Biology and integrative genetics**

**Monday,  
June 6th  
17h**

**Auditorium Bâtiment Biophore  
Unil-Sorge at Dorigny**

**Olivier Voinnet**  
ETH-Zürich



**“A credible molecular framework for small RNA-based transgenerational effects in plants “**

We have recently demonstrated that endogenous and exogenous small RNAs move from cell-to-cell and over long distances in plants. Hundreds of small RNA-generating loci are found in the Arabidopsis genome, and we have shown that their expression, processing and activity may be influenced by specific stresses and may also vary extensively from one plant ecotype to another. Because a significant fraction of mobile small RNAs has the potential to induce DNA methylation and chromatin modification at homologous loci, a model emerges whereby somatic integration of environmental cues might be converted into large bulks of mobile genetic information that could ultimately pattern gene expression into the meristems, the new growth and, possibly, gametophytes. This process may have long-term trans-generational consequences owing to the action of plant maintenance DNA methylases and the absence of resetting in these organisms. It may also explain the formation of ‘spontaneous’ epialleles arising under specific environmental conditions. I will present a series of molecular data and striking observations, which, collectively, provide a credible framework for such small RNA-based transgenerational effects in plants.

BIG is an initiative of the Faculty of Biology and Medicine, University of Lausanne, and is organized by Uta Paszkowski, Laurent Keller, Henrik Kaessmann and Jan Roelof van der Meer.

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