

Press Release

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Research Institute of
Molecular Pathology

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Neuroscientist Winfried Denk to give Max Birnstiel Lecture at the IMP

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The IMP - Research Institute of Molecular Pathology cordially invites you to attend the talk

“Towards a Connectome of the Whole Mouse Brain”

By Winfried Denk, Max Planck Institute for Neurobiology, Martinsried

Date: Wednesday, 8 February 2017, 11.00 a.m.

Venue: New IMP Lecture Hall, Campus-Vienna-Biocenter 1, 1030 Vienna



Winfried Denk is director at the Max Planck Institute for Neurobiology and a leading figure in developing and applying advanced imaging methods for dynamics and architecture of the brain.

Exploring the brain is as fascinating as it is difficult. The brain's complexity requires advanced methods to map dynamics (neuronal activity patterns) and wiring diagrams (connectomes), the hard- and software that make up brain function and ultimately our mind. Winfried Denk realized that exploring the complex patterns of neuronal activity ultimately requires advanced imaging methods beyond basic microscopy. He therefore developed 2-photon microscopy for the live sciences (Denk et al. 1990) which allows to image reasonable size brain volumes non-invasively, at good time resolution and over long periods in vivo. This technology that has since revolutionized imaging in and beyond the neurosciences. It allowed to record neuronal activity at large scales to explore how patterns of neuronal activity generate brain function.

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In order to understand how such functional activity patterns emerge from the underlying structural network architecture, his laboratory developed serial block scanning electron for connectomic reconstruction of brain volumes (Briggman et al. 2011). He combined automated data acquisition with crowd-sourced annotation to trace the wiring diagram of the mouse retina (Helmstaedter et al. 2013) – a first step towards connectomes of complex brains. In his lecture, he will now share his vision on how to scale these approaches towards mapping architectures of whole brains, a task that seemed to be completely out of reach a few years ago, given the billions of neurons and trillions of synapses in the mammalian brain.

About the Max Birnstiel Lectures

The Max Birnstiel Lectures are a special series of seminars at the Research Institute of Molecular Pathology (IMP) in Vienna and represent the highest award that the IMP can give to outside scientists. They are named after the founding director of the institute, Max L. Birnstiel, who passed away in 2014. Each year, five to six scientists are invited to deliver one of these lectures, among them a number of Nobel Prize laureates. The Max Birnstiel Lectures attract considerable attention on campus and within the wider scientific community and invariably draw a large audience to the IMP.

Programme of the Max Birnstiel Lectures:

www.imp.ac.at/seminars/max-birnstiel-lecture-series

About the IMP

The Research Institute of Molecular Pathology (IMP) in Vienna is a basic biomedical research institute largely sponsored by Boehringer Ingelheim. With over 200 scientists from nearly 40 nations, the IMP is committed to scientific discovery of fundamental molecular and cellular mechanisms underlying complex biological phenomena. In particular, research at the IMP addresses topics in molecular and cellular biology; gene expression and chromosome biology; stem cell biology and development; immunology and cancer; and neuroscience. The IMP is located at the Vienna Biocenter.

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