

Vienna, 16 June 2014

IMBA director Josef Penninger receives Wittgenstein Award 2014

The geneticist has been honored for his scientific achievements in the fields of biomedicine and disease pattern research

The Austrian federal government has named Josef Penninger, the scientific director at the IMBA - Institute of Molecular Biotechnology at the Austrian Academy of Sciences, the recipient of this year's Wittgenstein Award. At 1.5 million euros, it is the most prestigious and highly endowed prize awarded to scientists in Austria.

Research achievements of Josef Penninger

Over his long and extraordinary research career, the passionate researcher has already achieved a number of breakthroughs. His most outstanding accomplishments include the discovery that the RANKL protein is the primary regulator for osteoporosis. He was also able to identify the link between RANKL and the drastically increased risk of breast cancer associated with taking synthetic sex hormones, for example during hormone replacement therapy.

Under his direction, scientists on his team have also made exceptionally valuable contributions to the treatment of acute respiratory failure and of the viral infection SARS. They discovered that these diseases block the ACE2 enzyme and its ability to prevent water from entering the lung, causing the organ to "drown". The researchers were able to reproduce ACE2 genetically, and thus prevent acute respiratory failure in mice. Clinical studies are currently being conducted on humans, with results expected by the end of 2014.

In 2011 Penninger made waves in the scientific community with a true sensation. His team had developed a method to breed stem cells with only one chromosome set (haploid stem cells). That allows genetic changes to be studied more closely because a second chromosome set is not "in the way" to falsify results. This new method will revolutionize modern genetics and has a vast range of potential uses, for example to study the impact of chemotherapeutics used in cancer therapy.

Early this year Penninger's team introduced a "pill against metastases". The researchers proved that a protein named Cbl-b acts as a molecular brake for immunity cells. If this brake is released, so-called natural killer cells become highly effective in fighting tumor metastases. Clinical studies are scheduled to start this year. Other areas Penninger's laboratory researches are immunology and cardiac regeneration.

Josef Penninger is very pleased about the Wittgenstein Award. "This award would not have been possible without the fantastic work of my team. I'd like to thank everyone in my group for their creative ideas and their outstanding commitment! We also owe this success to the generous support of the Austrian Academy of Sciences and the excellent collaboration with our partners at the Vienna Biocenter, especially our partner IMP."

Within the next few weeks Penninger will decide how the award money is to be used. "The wonderful thing about the Wittgenstein Award is that it is not restricted to a particular project," said Penninger. That means the researchers have utmost freedom and flexibility to advance their scientific work. "Of course it would be logical



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to continue work on ongoing projects that are highly promising, for example our new haploid stem cell technology. But I also have some ideas for other bold projects that are highly fascinating, but for which there is no guarantee of success. One of my heartfelt wishes is to assemble and mentor a team of young, highly talented researchers.”

Josef Penninger is the third researcher at IMBA to win the Wittgenstein Award. In 2005 the coveted prize went to neurobiologist Barry Dickson. And in 2009, molecular biologist and IMBA deputy scientific director Jürgen Knoblich received the award for his trailblazing findings in the field of stem cell biology.

About Josef Penninger

Josef Penninger was born in Gurten, Upper Austria, in 1964. He moved to Canada in 1990 after receiving his doctoral degree in medicine from the University of Innsbruck. There he worked as a post-doctoral researcher at the Ontario Cancer Institute at Princess Margaret Hospital before becoming an assistant professor, and later a full professor, at the University of Toronto. In 2002 he answered the call of the Austrian Academy of Sciences to come to Vienna to establish the IMBA – Institute of Molecular Biotechnology. The IMBA started operations in 2003. The aim of the research institute is to conduct basic research in the fields of molecular biology and medicine, shed light on molecular processes in cells and organisms, and identify underlying causes of various illnesses. Twelve research groups address issues in the fields of RNA biology, cell biology, stem cells, cancer, and infectious diseases.

The Wittgenstein Award is the latest in a remarkable list of other highly endowed awards and grants Penninger has received for his achievements. He is one of the very few scientists who has twice received the prestigious ERC Advanced Grant, an EU research grant of several million euros. He is also the first Austrian to have received the Innovator Award from the US Department of Defense (7.4 million dollars) for his achievements in the field of breast cancer research. Other awards he has received include the Ernst Jung Medical Award, the EU Descartes Award, the Carus Medal from the Leopoldina National Academy of Sciences in Germany, and the ASMR Medal from the Australian Society for Medical Research. Josef Penninger has been a full member of the Austrian Academy of Sciences since 2007, and an honorary member of the renowned AAAS (American Association for the Advancement of Science) since 2012.

Photos of Josef Penninger are available for download at:

<http://de.imba.oeaw.ac.at/presse-news/informationmaterial-zum-imba/fotos-logos/>

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