



CURRICULUM VITAE

Josef Martin Penninger

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Date and Place of Birth September 5, 1964; Gurten, Austria

Nationality Austrian

Current Position Scientific Director, IMBA, Institute for Molecular Biotechnology of the Austrian Academy of Sciences, Vienna. Austria

Education

1970-1974 Primary School, Gurten, Austria
1974-1982 Humanistic Gymnasium in Ried i. I., Boarding School, Austria
1982-1988 University of Innsbruck, Medical School, Austria
1985-1990 University of Innsbruck, History of Arts and Spanish
1986-1990 Doctoral Thesis in Immunology: "Phenotypical and functional analysis of intra-thymic nurse (TNC)-lymphocytes." Institute for General and

Experimental Pathology (Prof. Dr. G. Wick), University of Innsbruck, Medical School.

1987-1989 Teaching Assistant, University of Innsbruck

1990 Graduation from Medical School, University of Innsbruck, Austria

2008 Leadership course, Harvard Kennedy School of Government, Boston, USA

Postgraduate training and employment history

1990-1994 Postdoctoral fellow. The Ontario Cancer Institute, Princess Margaret Hospital.

1994-2002 Principal Investigator, Amgen Institute, 620 University Avenue, Toronto

1994-2003 Associate Scientist, The Ontario Cancer Institute, Dept. of Molecular and Cellular Biology, Princess Margaret Hospital, Toronto

1994-1999 Assistant Professor, Departments of Immunology and Medical Biophysics, University of Toronto, Canada.

since 1998 Associate Professor (Dozent), Department of Experimental and General Pathology, University of Innsbruck, Austria.

since 1998 Full Member; School of Graduate Studies, University of Toronto.

1999-2002 Associate Professor, Departments of Immunology and Medical Biophysics, University of Toronto, Canada.

2002-2004 Full Professor, Departments of Immunology and Medical Biophysics University of Toronto, Canada.

since 2002 Scientific and Founding Director, IMBA, Institute for Molecular Biotechnology of the Austrian Academy of Sciences, Vienna. Austria

since 2004 Adjunct Full Professor, Departments of Immunology and Medical Biophysics, University of Toronto, Canada

since 2004 Professor of Genetics, University of Vienna, Austria

since 2004 Honorary Professor of Peking Union Medical College/Chinese Academy of Medical Sciences, Beijing, China

since 2010 Affiliate Scientist, Keenan Research Centre, Li Ka Shing Knowledge Institute of St. Michael's Hospital, Toronto

since 2011 Guest Professor of the Medical University Vienna, Austria

since 2011 Vice-President of ERI-ICP (European Research Institute on Intracellular Pathology), Paris.

Awards

- 1987 Special fellowship from the Austrian Ministry for Arts and Science.
- 1988 Scholarship from the European Federation of Immunological Societies.
- 1990 "Highest talented" Award from the Rotary Club Innsbruck.
- 1991 "Anton von Eiselsberg" price for best medical related scientific work in Austria (awarded for data from my thesis).
- 1990-1992 "Erwin Schroedinger" Fellowship from the Austrian Fonds zur Foerderung der Wissenschaftlichen Forschung.
- 1993 "Austrotransplant-Biotest" price from the Austrian Society of Transplantation, Transfusion and Genetics.
- 1994 Talentefoerderpraemie (talent price for science and culture) from the province of Upper Austria.
- 1994 National Medal of Technology – awarded by the US President (as member of Amgen)
- 1999 “The William E. Rawls Prize” (for outstanding contribution to cancer research) from the National Cancer Institute of Canada
- 2000 Included in the “Celebration of Canadian Healthcare Research” of leading historical and contemporary medical scientists in Canada during the 20th century selected by The Association of Canadian Medical Colleges, The Association of Canadian Teaching Hospitals, The Alumni and Friends of the Medical Research Council and Partners in Research
- 2000 Selected as a “Young leader in Medicine in Canada” by the Globe and Mail (a total of 4 “leaders” were selected) to commemorate 133 years of Canada in the new millennium University of Toronto
- 2000 Top 10 list of the “hottest” scientists in 1998 and 1999 in the world (according to ISI and based on most paper citations)
- 2000 Canadian Research Chair in Cell Biology
- 2001 Top 10 list of the “hottest” scientists in 1999 and 2000 in the world (according to ISI and based on most paper citations)
- 2001 Named One of Canada’s Top 40 under 40
- 2001 Honorary member of the Golden Key Society
- 2002 Young Canadian Explorer Award (from CIAR)

- 2002 Listed among the 10 most promising scientists in all fields in the world by Esquire magazine
- 2002 Elected to the Austrian Academy of Sciences as Corresponding member
- 2003 Landeskulturpreis fuer Wissenschaft von Oberoesterreich (Culture Prize for Science from the province of Upper Austria)
- 2003 International Research Prize in Bone Research
- 2003 Austrian Scientist of the Year Award
- 2003 Recipient o an EU Excellence grant
- 2004 Elected to the Deutsche Akademie der Naturforscher Leopoldina
- 2004 Austrian'04 award
- 2005-2010 Young Global Leaders 2005 (elected from The Forum of Young Global Leaders/World Economic Forum)
- 2006 Descartes Prize for Research by the European Commission (€ 50.000)
- 2007 Ernst Jung-Prize for Medicine (€ 125.000)
- 2007 Elected as the youngest full member to the Austrian Academy of Sciences
- 2007 Wellenreiterprize by the Austrian Management Club (received for the promotion of science and central Europe integration)
- 2007 Carus-Medal of the Deutsche Akademie der Naturforscher Leopoldina (received for cancer research and cardiovascular diseases)
- 2008 Carus-Prize of the City of Schweinfurt (€ 10.000)
- 2008 Included to list of 1000 most important Austrian immigrant/emigrants in politics, arts, sports, philosophy, business, or music, from 1900-2008.
- 2008 Karl Landsteiner prize of the Austrian Society of Immunology and Allergology
- 2008 Elected as EMBO member
- 2008 Recipient of the first ERC Advanced grants.
- 2009 ESCI Award by the European Society for Clinical Investigation
- 2009 Medal of the Australian Society for Medical Research (ASMR)
- 2009 Elected to the Academy of Europe (Academia Europaea)
- 2009 Elected member - European Research Institute for Integrated Cellular Pathology (ERI-ICP).
- 2010 Elected member - European Academy for Tumor Immunology (EATI)
- 2011 Elected member-American Association for the Advancement of Science (AAAS)

Support

I have been holding competitive grants since 1995 in Canada and since 2003 in Austria and the European Union including Candia research Chair, EU Excellence grant, or an ERC Advanced grant.

Most significant scientific contributions:

Our basic approach is to genetically manipulate and change genes in mice and to determine the effects of these mutations in development of the whole organism and in diseases. From these mutations we are trying to establish basic principles of development and basic mechanisms of disease pathogenesis. On all the listed contributions below I am the principal investigator who coordinated the research and came up with the ideas. I have published 418 articles (351 listed on Pubmed), gave 489 public talks on science, and was listed twice top 10 in world for most cited scientists in all fields of science (ISI). H-index: 74 (ISI); 87 (Google Scholar).

(1995) Identification of a cell population in our body that spontaneously kills tumor cells as a proof of immunosurveillance in vivo [Penninger et al. Nature]

(1997) Identification of the genetic principle how cells can sense stress [Nishina et al. Nature].

(1998) Identification of a molecular motor (Vav1) that allows cells to cluster the antigen receptor [Fischer et al. Curr. Biol. 1998; Kong et al. J. Exp. Med. 1998; Penninger and Crabtree, Cell 1999].

(1999) First genetic proof that OPGL (RANKL) is the critical regulator for osteoclasts that controls bone loss in old age osteoporosis, cancer metastases, tooth loss, or arthritis [Kong et al. Nature].

(1999) First molecular explanation why children with acute leukemias, and patients suffering from people with leukemias, melanomas, breast cancers or prostate cancers, asthma, chronic infections (AIDS, hepatitis, tuberculosis), diabetes or multiple sclerosis suffer bone loss. We also identified the molecular

principle of bone loss and cartilage loss in arthritis. Inhibition of the osteoporosis gene OPGL (RANKL) completely prevents bone loss associated with these diseases in animal models and completely prevents clinical symptoms and crippling in arthritis. Based on these findings, drugs are being developed to block bone loss in all of these diseases. These drugs act like insulin for diabetes, but in this case for all types of bone loss. [Kong et al, Nature].

(1999) Identification of a causal link between bacterial infections and heart disease. [Bachmaier et al. Science].

(2000) Identification of (Cbl-b) as the first E3 ligase that controls T cell activation and T cell tolerance. [Bachmaier et al. Nature 2000; Krawczyk et al. Immunity, 2000]

(2000) Elucidation of the role of PI3K in T cell and neutrophil functions [Sasaki et al. Science].

(2000) First molecular and evolutionary explanation for gender bias and sex hormone regulation of bone loss in females [Fata et al. Cell].

(2000) First paper to show that OPGL (RANKL) regulates tooth loss and that system functions in human immune cells [Teng et al. J. Clin. Invest.].

(2001) Genetic identification of a mitochondrial-regulated, caspase-independent pathway that controls cell death [Susin et al. Nature 1999; Joza et al. Nature 2001].

(2002) Identification of the central role of the DREAM gene in pain perception and a novel paradigm in pain research [Cheng et al. Cell].

(2002) Identification of ACE2 as a novel heart failure gene [Crackower et al. Nature].

(2002) Elucidation of two distinct PI3K signaling pathways that control heart muscle cell size and heart muscle function [Crackower et al. Cell].

(2003) Identification of Carma1/CRD11 as essential molecule in T cell activation and antigen receptor induced NfKB activation [Hara et al. Immunity]

(2003) Identification of a gene that regulates male specific fertility and is required for chromosomes in sperm cells to find their right partners [Crackower et al. Science].

(2003) Elucidation of cooperation between adaptive and innate immunity that is required by dendritic cell-induced autoimmune heart failure [Eriksson et al. Nature Medicine].

(2004) Identification of the important role of Stress Kinase MKK7 in G2/M cell-cycle progression and cellular senescence [Wada et al. Nature Cell Biol.].

(2004) Identification of the essential role of the E3 ubiquitin ligase Cbl-b in T cell anergy induction [Jeon et al. Immunity.].

(2004) Elucidation of dexras1 potentiates photic and suppresses non-photic responses of the circadian clock. [Cheng et al. Neuron].

(2005) Identification of the molecular scaffold Gab2 as a crucial component of RANK signaling and osteoclastogenesis [Wada et al. Nature Medicine].

(2005) Identification of the SARS-coronavirus receptor ACE2 as a crucial factor in SARS pathogenesis [Kuba et al. Nature Medicine].

(2005) ACE2 protects from Severe Acute Lung Failure [Imai et al. Nature].

(2006) Identification of a novel soil factor, RANKL/RANK, that could explain selective cancer metastases to bones [Jones et al. Nature.].

(2006) First identification of genes that control electricity regulated wound healing [Zhao et al. Nature].

(2006) Identification of a novel amino acid transport molecule in the kidney with direct connection to diabetes [Danilczyk et al. Nature].

(2007) Identification of HACE1 as a novel tumor suppressor involved in multiple cancers [Zhang et al. Nature Medicine].

(2007) Identification of the E3 ligase Cbl-b as a key molecule involved in tumor rejection [Loeser et al. J. Exp. Med.].

(2007) First description that primary genetic defects in mitochondrial OxPhos can protect from diabetes and obesity [Pospisilik et al. Cell].

(2008) Identification of a common lung injury pathway in bird flu, SARS, or anthrax [Imai et al. Cell].

(2009) First *in vivo* whole fly genome screen on innate immunity [Cronin et al. Science].

(2009) Identification of RANKL/RANK as central regulators of fever and female body temperature [Hanada et al. Nature].

(2010) Whole genome *in vivo* screen on obesity in *Drosophila* and identification of a novel regulator for white and brown fat development in mammals [Pospisilik et al. Cell].

(2010) First whole genome *in vivo* screen on heart failure in *Drosophila* and identification of CCR4/Not as regulator of heart failure in mice and sudden cardiac death in humans [Neely et al. Cell].

(2010) Identification of RANKL/RANK as a key regulator of progesterin-driven breast cancer [Schramek et al. Nature].

(2010) Establishment of the first animal model for synesthesia derived from a first whole genome behavioral scan on thermal nociception [Neely et al. Cell].

(2011) MKK7/JNK signaling link oncogenic stress to p53 stability and lung cancer and breast cancer development [Schramek et al. Nature Genetics].

(2011) Development of first haploid ES cells that break a paradigm in biology and allow to combine yeast genetics with stem cell biology. [Elling et al. Cell Stem Cell].