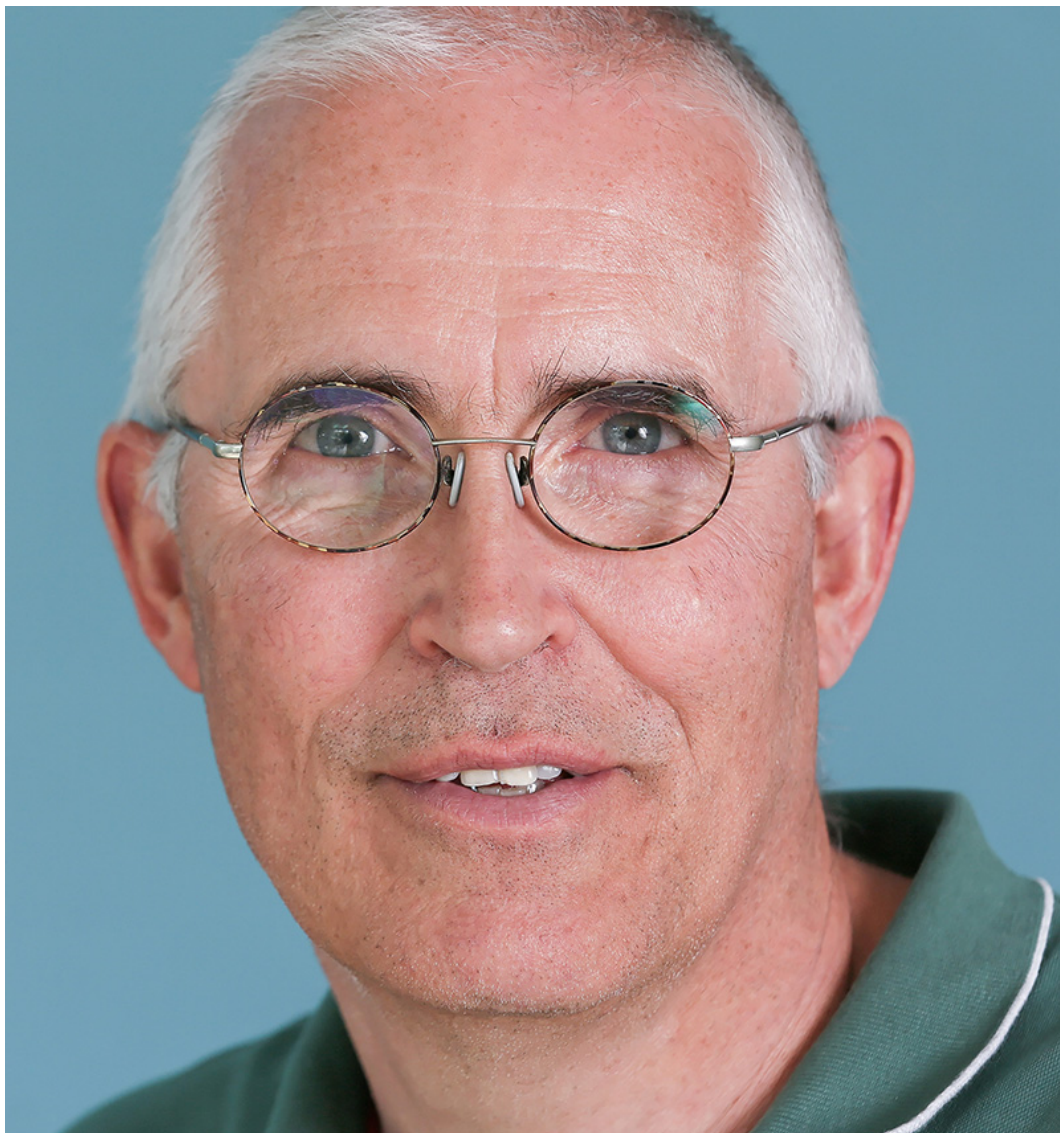




Professor Johan Auwerx
Full Professor
Laboratory of Integrative Systems Physiology
Ecole Polytechnique Federale de Lausanne (EPFL)
Switzerland

World Cultural Council
"Albert Einstein" World Award of Science
Case Postale 373
CH - 1630 Bulle 2

January 24th, 2024

Letter of Nomination "Albert Einstein" World Award of Science

Dear Members of the Selection Committee,

It is with great pleasure and enthusiasm that I propose Dr Johan Auwerx for the "Albert Einstein" World Award of Science. I am nominating him for his landmark contributions to the understanding of mitochondrial function and metabolic homeostasis and how they govern organismal health, disease and aging.

Before outlining the specific contributions that make him a remarkable candidate for this award, I would like to stress one facet of his style of research that I find truly impressive - his ability to recognize and exploit new approaches and different research paradigms. Much of his initial work in the 1990s exploited genetically modified lines of mice (transgenic and knockout lines), but he was one of very few hard-core molecular biologists to take the risky step into the world of quantitative genetics (QTL mapping) and systems genetics. He did this jumping in with both feet in about 2002 - right at a point when quantitative genetics had fallen into comparative disrepute among most molecular biologists. He was not only looking for new biological mechanisms, but wanted to do so in the context of highly diverse genotypes that would model human genetic complexity. He intentionally went against the reductionist grain. To improve the efficiency of this joint work that combines classic mechanistic methods with a systems genetics and genomics approach he has progressively expanded his pallet with significant efforts exploiting *C. elegans*, *Drosophila*, mouse and human GWAS cohorts. In every case, resources were adopted in a highly focused way to validate and translate molecular mechanisms related to metabolism, and mitochondrial function and to make sure mechanisms are robust and generalizable.

Now into the gritty details of his contribution. Johan's initial work established many aspects of the antegrade (nucleus→mitochondria) control of mitochondrial activity. He showed that

transcription factors and cofactors act as sensors that capture changes in cellular energy status and translate this information into altered nuclear gene expression patterns affecting mitochondrial function. He unraveled the wide-ranging implications of nuclear receptors (PPARalpha, PPARgamma, LXR-1 and RXR) in metabolic control. His discovery of the association between the PPARgamma Pro12Ala gene variant with type 2 diabetes and obesity, long before the era of genome-wide association studies, was the first identification of a gene tied to a common complex disease.

The discovery by his team of bile acids as endocrine regulators of energy expenditure, glucose homeostasis, and inflammation, through the activation of the membrane bile acid receptor, TGR5, sparked a paradigm shift that transformed bile acids from simple lipid solubilizers in the gut to versatile endocrine signals that impact almost every aspect of metabolism. More recently, his team discovered that inhibition of SREBP1C, which limits the accumulation of long and toxic ceramides, has reparative effects in the neuromuscular system in part through improving mitochondrial activity.

He furthermore established that a yin-yang relationship between transcriptional corepressors and coactivators fine-tunes mitochondrial metabolism coherent with the cellular energy status. He established that cofactor networks convert signals associated with cellular energy status, such as changes NAD⁺ levels, into altered transcriptional activity to govern mitochondrial function. He was also the first to obtain proof-of-concept of the therapeutic efficacy of NAD⁺ modulation in animal models of muscular dystrophy, type 2 diabetes, non-alcoholic fatty liver, Alzheimer's and kidney disease. His discoveries on NAD⁺ metabolism initiated a renaissance in NAD⁺ biology and incited the development of NAD⁺ modulators as therapies for age-related diseases that are typified by mitochondrial dysfunction.

More recently, he elucidated retrograde (mitochondria→nucleus) signaling pathways that emanate from mitochondria to influence nuclear function. Retrograde signaling is an adaptive response triggered by mitochondrial stress and which aims to synchronize mitochondrial function to cellular needs. Retrograde signaling or mitochondrial stress response pathways can be activated by genetic (mutations and variation in expression of the mitochondrial ribosomal proteins), physiological (exercise, inflammation) or pharmacological (doxycycline and chloramphenicol) signals, that cause a proteostatic imbalance between mitochondrial proteins encoded in the nDNA and mtDNA, stimulate mitochondrial biogenesis, and activate mitophagy. Retrograde signaling not only preserves and restores mitochondrial function, but also improves organismal health, as demonstrated by its capacity to enhance muscle, cardio-metabolic and cognitive function, induce tolerance to infections, and increase lifespan. Together these studies laid the cornerstones of the field of "mitonuclear communication" in vertebrates.

Johan's contributions to the better understanding of mitochondrial function and metabolic homeostasis are not only core achievements, but his work is now having translational impact. In view of demographic shifts in mean population age and the increased prevalence of chronic metabolic diseases associated with aging, the clinical and biomedical value of his discoveries will, I believe, be enormous. His research will be paving the way for new ways to manage some of these common and pervasive diseases.

Given all these aspects, I strongly support Dr Auwerx for the "Albert Einstein" World Award of Science with the highest level of well-founded enthusiasm.

Sincerely yours,



Prof. Andrew Oates
Dean



JODI NUNNARI

Principal Investigator

Altos Labs - Bay Area Institute of Science

Distinguished Professor Emeritus

University of California, Davis

Department of Molecular and Cellular Biology

jnunnari@altoslab.com

27 November 2023

Dear Selection Committee:

This letter is to give my strongest support to Dr. Johan Auwerx for the “Albert Einstein” World Award of Science. I have had the pleasure of having Johan as a colleague in my field for many years and have also collaborated with him. In addition, I served with Johan on the Scientific Advisory Board of Mitobridge, Inc. from when the company was founded in 2012 until earlier this year. As such, I have followed his work closely and have interacted with him on a professional and personal level extensively.

My laboratory is focused on understanding the molecular basis of mitochondrial behavior. As one of the founding members of the mitochondrial dynamics field, our work has helped to revolutionize the way biologists think about mitochondria and their interactions with other endomembrane systems, such as the endoplasmic reticulum. I serve as Editor-In-Chief at *The Journal of Cell Biology*, where I recruited Johan to the Editorial Board to broaden our expertise in metabolism. In addition to Mitobridge, Inc., I have served on the SABs of international organizations, such as the Max Planck Institute of Ageing in Cologne and the United Mitochondrial Disease Foundation. I was also President of the American Society of Cell Biology in 2018. Given my scientific expertise and experience, I feel qualified to judge Johan’s scientific contributions to the field of mitochondrial biology and, more broadly, to our understanding of human biology and physiology.

Johan is a transformative thinker and experimentalist. He has addressed truly fundamental and outstanding biological questions regarding eukaryotic metabolism and stress responses and consequently has produced a body of scientific work that is seminal – a fact supported by his publication record. A majority of his work has focused on discovering signaling networks that impact and emanate from mitochondria the metabolic hearts of cells. Within this area, he has contributed extensively to our basic understanding of how cellular metabolism is controlled. He has identified and deciphered the mechanism of action of key metabolic signaling molecules, such as NAD⁺, ADP, and bile acids, and their respective sensors, and the pathways that transduce these metabolic signals, such as the transcriptional PPAR regulators, which ultimately tune mitochondrial metabolism as a response to meet cellular metabolic needs.

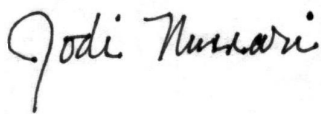
He has also been a pioneer in uncovering and characterizing a mitochondrial-centric stress pathway, which functions in vertebrates to signal in a retrograde fashion to the nucleus of cells whose mitochondria have imbalanced contributions of mitochondrial and nuclear mitochondrial biogenesis genes. The discovery of this so-called mitochondrial unfolded response pathway propelled and rejuvenated the interest and efforts of many biologists in how these two key cellular

compartments that house genetic material -mitochondria and nuclei – communicate, greatly impacting our understanding of cell biology. In this area, his work revealed that the retrograde mitochondrial unfolded response pathway in human cells converges with the integrated stress response pathway. The link between the two is currently not understood, which I am sure is a focus of Johan's current interests. Understanding this link and in general the mechanistic aspects of this pathway will have far reaching impact, particularly on human neurodegenerative diseases. Indeed, his work has shown that activation of this pathway is a signature of diseases involving amyloid proteotoxicity, such as Alzheimer's. He has demonstrated that activation of this pathway mitigates Alzheimer's disease onset – an exciting new potential therapeutic avenue for treating this devastating disease.

Johan tackles biological questions in entirely unique ways. He is a pioneer in using and developing powerful unbiased system-based approaches to interrogate the basis of metabolic and stress regulation and its role in aging-related diseases. Most notable, he has used the powerful and unique BXD mouse colony, which is a large clan of recombinant inbred mice, to effectively map genes involved in metabolism. In work published in *Science*, he used this colony to address the causal link gap between genetic and disease phenotypes through deep metabolic, transcriptomic and proteomic analyses of liver across the mouse colony. Beyond obtaining a deeper understanding of the basis of metabolic diseases, this transformative work has clear and direct implications on how to more effectively analyze human complex trait diseases and implement personalized medicine. In this context, Johan is deeply committed to improving the human condition, which is evident by the fact that a considerable amount of his work is genuinely translatable to human disease. Indeed, his training and expertise as a physician scientist is clearly evident in his work and his commitment to drug discovery.

Beyond his own laboratory, Johan is incredibly generous with his time and expertise and is a true leader in the general scientific enterprise as he serves in leadership positions on a number of influential SABs and grant panels. I have first hand knowledge of the fact that he is an outstanding collaborator. He is one of the top of the scientists I have interacted with in my career, in the same category of former winners of this prize. I recommend him without reservation.

Sincerely,

A handwritten signature in black ink that reads "Jodi Nunnari". The signature is written in a cursive, flowing style.

Jodi Nunnari, PhD.

Institute Director & Founding Principal Investigator

Altos Labs - Bay Area Institute of Science

November 26, 2023

To whom it may concern:

Re: Albert Einstein World Award of Sciences – Prof. Johan Auwerx nomination

I am providing this letter in strong support of Professor Johan Auwerx's nomination for the Albert Einstein World Award of Sciences.

I have known Professor Auwerx for more than two decades and in the strongest possible terms support his nomination as a physician scientist. Johan is one of the true leaders in the field of molecular physiology and organismal metabolism. He is a remarkable scientist, an exceptional collaborator, generous with ideas and reagents, an enthusiastic speaker, and an effective mentor. He has an impeccable track record of originality, an instinct for the future and is a pioneer in opening up whole new branches of thinking such as the extraordinary and truly unexpected link between mitochondrial metabolism and longevity. He enjoys my unalloyed and enthusiastic support as a nominee for the Einstein prize.

Dr. Auwerx is known as an expert in nuclear receptor signaling with an early- and long time-focus on the metabolic programs controlled by the PPARalpha and gamma, two of the most important sensors and regulators of fatty acid storage and metabolism. These receptors play critical roles in the etiology of metabolic syndrome (obesity, insulin resistance, heart disease, hyperlipidemia and hypertension) as well as in its treatment. Auwerx has been a leader in the development of this field as well as extending the links of these receptors to inflammation and cancer.

Much of his work has a hardcore molecular genetic component focusing on gene control mechanisms, particularly chromatin remodeling by transcriptional co-factors with a powerful emphasis on genomics, computational analysis and bio-statistics. At the same time he has become one of the most accomplished animal physiologists in the field using knockout and sophisticated functional genomics and complex technology known as the collaborative cross that employs quantitative trait locus (QTL) to understand disease progression and treatment in the living organism. Indeed, his lab is has become known for its sophisticated systems approach to map signaling networks that govern mitochondrial function, uncovering the central role of these organelles in body wide not simply in energy generation but rather in whole body physiology.



Ronald M. Evans
Professor
Gene Expression Laboratory

Salk Institute for Biological Studies
10010 N Torrey Pines Rd
La Jolla, California 92037

PH (858) 453-4100 x1302
FX (858) 455-1349

www.salk.edu

Johan has achieved a great deal due to his focus, ambition and willingness to tackle large problems on a large scale. For this reason he is a high demand speaker at all the most important national and international meetings.

He has been able to marshal effective collaborations while also managing a diverse group of scientists, technicians and administrators. Johan is highly competitive, but never in a harsh way and he always brings a positive attitude to the work at hand. There are very few scientists who are capable of matching the depth and breadth of Johan's achievements and thus I am delighted to offer my enthusiastic support. I urge you to give him your strongest consideration.

Sincerely,

Ronald M. Evans, Ph.D.
Professor, The Salk Institute for Biological Studies
March of Dimes Chair in Molecular and Developmental Biology

Johan Auwerx pioneered systems genetics approaches to map the signaling networks that control mitochondrial function and as such regulate organismal metabolism through the coordinated expression of nuclear and mitochondrial genomes, and which govern organismal health, disease and aging.

Johan Auwerx been at the forefront of **systems, integrative, and multi-layered genetic and genomic approaches** to map the signaling networks and pathways that govern metabolism. His team has pioneered a unique and powerful cross-species genetic and multi-layered 'omics gene discovery pipeline using cellular models, *C.elegans*, genetically engineered mouse models (GEMMs), mouse genetic reference populations (GRPs, such as the BXD strains), and human population cohorts. This approach provided new and effective ways to identify and validate candidate genes and pathways involved in metabolic control with high clinical translational value.

His initial work established many aspects of the **antegrade (nucleus→mitochondria) control of mitochondrial activity**. He showed that transcription factors and cofactors act as sensors that capture changes in cellular energy status and that translate this information into altered nuclear gene expression patterns affecting mitochondrial function. He unraveled the wide-ranging implications of the nuclear receptors—PPARalpha and PPARgamma—as well as of the enterohepatic nuclear receptors—LRH-1 and SHP—in metabolic control. His discovery of the association between the PPARgamma Pro12Ala gene variant with type 2 diabetes and obesity, long before the era of genome-wide association studies, was the first identification of a gene tied with common complex diseases. The discovery by his team of bile acids as endocrine regulators of energy expenditure, glucose homeostasis, inflammation, and atherosclerosis, through the activation of the membrane bile acid receptor, TGR5, sparked a paradigm shift that transformed bile acids from lipid solubilizers in the gut to versatile endocrine signals that impact almost every aspect of metabolism. More recently, his team discovered that the inhibition of SPTLC1, which limits the accumulation of long and toxic ceramides, has rejuvenating and reparative effects in the neuromuscular system in part through improving mitochondrial activity.

He furthermore established that a yin-yang between transcriptional corepressors and coactivators fine-tunes mitochondrial metabolism coherent with the cellular energy status. He established that these cofactor networks convert signals associated with cellular energy status, such as changes NAD⁺ levels, into altered transcriptional activity, to govern mitochondrial function and metabolism. Importantly, he was the first to obtain proof-of-concept of the therapeutic efficacy of NAD⁺ modulation in animal models of muscular dystrophy, non-alcoholic fatty liver disease, type 2 diabetes, Alzheimer's disease, and kidney disease. His discoveries on NAD⁺ metabolism sparked not only a renaissance in NAD⁺ biology, but also incited the development of NAD⁺ modulators as therapies for many age-related diseases that are typified by mitochondrial dysfunction.

More recently, he elucidated several **retrograde (mitochondria→nucleus) signaling pathways that emanate from the mitochondria** to influence nuclear function. Retrograde signaling is an adaptive response triggered by mitochondrial stress and which aims to synchronize mitochondrial function to cellular needs. Retrograde signaling or mitochondrial stress response (MSR) pathways can be activated by genetic (mutations and variation in expression of the mitochondrial ribosomal proteins), physiological (exercise, inflammation) or pharmacological (doxycycline and chloramphenicol) signals, that (1) cause a proteostatic imbalance between mitochondrial proteins encoded in the nDNA and mtDNA, also known as a mitonuclear protein imbalance; (2) stimulate mitochondrial biogenesis; and (3) activate mitophagy. Of note, retrograde signaling not only preserves and restores mitochondrial function, but also improves organismal health, as demonstrated by its remarkable capacity to protect from amyloid beta disease, enhance muscle, cardio-metabolic and cognitive function, induce tolerance to infections, and increases lifespan. Together this ensemble of studies laid the cornerstones of the field of "*mitonuclear communication*" in vertebrates.

The translational value of his work is testified by the fact that several drugs targeting processes and pathways, which he elucidated are currently used in the clinic.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: **Johan AUWERX, M.D., Ph.D.**

eRA COMMONS USER NAME (credential, e.g., agency login): **AUWERX**

POSITION TITLE: **Professor** at the Ecole Polytechnique Fédérale Lausanne (EPFL), Switzerland

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	COMPLETION DATE	FIELD OF STUDY
Catholic University of Leuven, Leuven, Belgium	B.S.	1979	Biochemistry & Genetics
Catholic University of Leuven, Leuven, Belgium	M.D.	1982	Medicine
Catholic University of Leuven, Leuven, Belgium	Resident	1982-1986	Intern. Med/Endocrinology
Catholic University of Leuven, Leuven, Belgium	Ph.D.	1990	Molecular Endocrinology
University of Washington, Seattle, WA	Post-doc	1986-1988	Molecular Endocrinology
ECFMG / VQE	M.D.	1982	

A. Personal Statement

I am trained as a physician scientist and have extensive research expertise and experience in cellular and molecular physiology, metabolism, and genetics developed in *C. elegans*, mice, and humans. I have been using systems approaches to map the signaling networks that coordinate the communication between the nucleus and the mitochondria and as such regulate organismal metabolism in health, aging, and disease. Although my research has addressed basic biomedical questions, my medical background facilitated the translation of his research into novel preventive and therapeutic strategies for common age-related diseases, such as type 2 diabetes, obesity, atherosclerosis, and frailty, as well as for rare inherited mitochondrial diseases. The translational value of my work is testified by the fact that several drugs targeting processes and pathways, which I elucidated are currently used in the clinic.

B. Positions and Honors**POSITIONS AND EMPLOYMENT:**

1986-1988 Research Fellow, Div. of Metabolism and Med. Genetics, University of Washington, Seattle, WA.
 1988-1991 Research Associate of the National Fund for Scientific Research, University of Leuven, Belgium.
 1991-2003 Research Director CNRS (DR1; ~ to Full Professor), since 1999 at the IGBMC, Illkirch, France.
 2003-2008 Professor of Medicine (PU-PH), Université Louis Pasteur (ULP), Strasbourg, France
 2006-2008 Director, Institut Clinique de la Souris, Illkirch, France
 2008- Professor, Ecole Polytechnique Fédérale, Lausanne, Switzerland

HONORS AND AWARDS:

Horlait-Dapsens Prize for Medical Research, Belgium, 1985; Fullbright Award, USA, 1986; J.Fogarty International Research Fellowship (NIH), USA, 1987-88; ILSI award, USA, 1989; F. De Waele Prize for Cancer Research, Belgium, 1989; Morgagni Young Investigator Award, Italy, 1989; Boehringer Prize for Atherosclerosis, Belgium, 1989; Belgian Endocrine Society Award, Belgium, 1992; Prix Danone "Santé et Nutrition", France, 1992; Prix de la Fondation pour la Recherche Médicale, France, 1998; Minkowski Prize, European Association for the Study of Diabetes, EU, 1998; Spa Prize for Nutrition, Belgium, 1998; EMBO member 2003; Morgagni Gold Medal, Italy, 2004; Jean Valade Prize of the Fondation de France, France, 2005; Josiah Brown Lecture Award, CA, 2006; Ruysch Lecture, AMC Amsterdam, Netherlands, 2008; Danone International Prize for Nutrition, France, 2009; Hans Popper Lecture Award of the American Association for the Study of Liver Disease, USA, 2010; Adolf Windaus Prize, Falk Foundation, Germany, 2010; Jacobus Lecture Award, Nordic countries, 2011; Paul F. Glenn Lecture, Massachusetts Institute of Technology, USA, 2013; Umesono Memorial Lecture, The Salk Institute, USA, 2013; Ruth Okey Lecture, UC Berkeley, CA; USA, 2013; Nutrition & Sante Prize, France, 2013; The Biomedicum Helsinki Lecture, Finland, 2013; Doctor Honoris

Causa, Université Blaise Pascal, Clermont-Ferrand; France, 2013; The Marcel Benoist Prize, Switzerland, 2016; The Journal of Lipid Research lecture, Duel Conference, Monterrey, CA, USA, 2017; 5th Helmholtz-Nature Medicine Diabetes Lecture, Munchen, Germany, 2017; Bennet Cohen Award Lecture, University of Michigan, Ann Arbor, USA, 2022; Mary Sue and Kenneth Coleman Lecture, University of Michigan, Ann Arbor, USA, 2023.

BOARD AND SOCIETY MEMBERSHIPS:

- Elected Member of the European Molecular Biology Organization in 2003.
- Founding member of the Academy of Healthspan and Lifespan Research in 2018
- Editorial Boards: Annals of Medicine (2001-), Journal of Clinical Endocrinology Metabolism (2002-05), Molecular Endocrinology (2003-07), Endocrine Reviews (2008-11), Cell Metabolism (2004-), The EMBO Journal (2008-20), EMBO reports (2008-12), Cell (2008-2020), Mammalian Genome (2011-), Science (2011-21), Aging Cell (2013-18), Molecular Systems Biology (2014-), and Journal of Cell Biology (2015-).
- Scientific Advisory Board - academic: European Research Institute for the Biology of Aging (ERIBA), Groningen, NL (2011-); Novo-Nordisk Foundation Center for Basic Metabolic Research, Copenhagen, DK (2012-17); The Morgridge Institute, University of Wisconsin, Madison, WI (2013-14); Center for Epigenetics and Metabolism, University of California, Irvine, CA (2012-20); Weizmann Institute of Science, Rehovot, IL (2022-); Institut Pasteur de Lille, FR (2022-).
- Scientific Advisory Board, Founder, and/or consultancy - private: Ligand Pharmaceuticals, San Diego, CA (1995-2001); CareX, Illkirch, FR (2001-04); Sirtris, Waltham, MA (2004-08); PhytoDia, Illkirch, FR (2006-); Intercept, NY, NY (2007-10); Amazentis, Lausanne, CH (2009-); Merck Research Laboratories, Rahway, NJ (2009-13); Mitobridge - Astellas, Cambridge, MA (2013-); TES Pharma, Corciano, IT (2016-); Janssen Pharmaceuticals, Springhouse, PA (2017-); Metro Biotech, Worcester, MA (2018-); NOV Metapharma, Seoul, KR (2019-); Rejuvenate Biomed, Hasselt, BE (2020-); OrsoBio, Stanford, CA (2020-); Vandria, Ecublens, CH (2021-); Mitopower, Stanford, CA (2022-);.
- Chairman ERC Advanced Grants Life Sciences Panel 4 – cancer, physiology, and endocrinology (2009-15).
- Member of the EMBO Membership/Nomination Committee (2015-18).

C. Contributions to Science

My work has been focused on the mapping of signaling networks and pathways that govern mitochondrial function and as such regulate organismal metabolism. My research has allowed the development of new methodologies and scientific approaches (see under #1), but also contributed to improved understanding of how the communication between the mitochondria and nucleus controls mitochondrial function and metabolism (see under #2-5), leading to the development of new treatments for metabolic dysfunction.

My work is highly cited (<https://hcr.clarivate.com/#freeText%3Dauwerx>) and my current h-index (Clarivate - Web of Science) is 158 (total number of citations is >92'000 with ~123 citations / article). A full list of publication is at: <http://www.ncbi.nlm.nih.gov/pubmed/?term=auwerx>

(#1) I have been at the forefront of **systems, integrative, and multi-layered approaches** to map the signaling networks and pathways that govern metabolism. My team has pioneered a unique and powerful cross-species genetic and multi-layered 'omics gene discovery pipeline using cellular models, *C.elegans*, genetically engineered mouse models (GEMMs), mouse genetic reference populations (GRPs, such as the BXD strains), and human cohorts. This approach provided new and effective ways to identify and validate candidate genes and pathways involved in metabolic control with high clinical translational value.

(#2) My work was instrumental to establish that many **membrane and nuclear receptors, as well as enzymes**, act as sensors that capture changes in the cellular energy status and that translate this information into altered nuclear gene expression patterns affecting mitochondrial function and metabolism. These pathways constitute an essential aspect of the antegrade control of mitochondrial activity, i.e. nucleus→mitochondria. I was amongst the pioneers to unravel the wide-ranging implications of the **PPARs** (α , β/δ , and γ) and the enterohepatic nuclear receptors—LRH-1 and SHP—in metabolic control. My discovery of the association between the PPAR γ Pro12Ala gene variant with type 2 diabetes and obesity, long before the era of genome-wide association studies, was the first identification of a gene tied with common complex diseases. Our discovery that bile acids act as endocrine regulators of energy expenditure, glucose

homeostasis, inflammation, and atherosclerosis, through the activation of the membrane bile acid receptor, **TGR5**, sparked a paradigm shift that transformed bile acids from lipid solubilizers in the gut to versatile endocrine signals that impact almost every aspect of metabolism. More recently, we discovered the importance of sphingolipid metabolism in homeostasis in multiple tissues. Inhibition of **SPTLC1**, which limits the accumulation of long and toxic ceramides, was shown to have rejuvenating and reparative effects in the neuromuscular system in part through improving mitochondrial activity.

(#3) Later we showed that not only transcription factors but also several **transcriptional coregulators** were important in the antegrade control of mitochondrial function. In fact, we established that a yin-yang between transcriptional corepressors—NCoR1 and the sirtuin deacetylases (see also below in point #4)—and coactivators—PGC-1 α , GCN5, and the steroid receptor coactivators—fine-tunes oxidative metabolism.

(#4) Our team was involved in the discovery that many transcriptional coregulator networks, in particular that governed by the sirtuins, convert signals associated with cellular energy status—such as **NAD⁺** and ATP levels—into altered transcriptional output to govern mitochondrial function and metabolism. This discovery not only attributes an important signaling role to the sirtuin coregulator family, but more importantly transforms NAD⁺ from its classic function as a cofactor for redox reactions into an active signaling factor. This work also indicated that replenishing cellular NAD⁺ stores is an effective strategy to treat diseases that are characterized by defective NAD⁺ homeostasis and to enhance health- and lifespan (see also under #5).

(#5) We were amongst the first to establish in vertebrates the importance of **retrograde signaling pathways**—mitochondria→nucleus—as a mechanism to synchronize nuclear activity with mitochondrial function. Retrograde signaling should be considered an adaptive response, that is triggered by mitochondrial stress, such as seen upon activation of the mitochondrial unfolded protein response (UPR^{mt}), mitochondrial biogenesis, dynamics, and mitophagy. *First*, we showed that a proteostatic imbalance between mitochondrial proteins encoded in the nDNA and mtDNA—aka as mitonuclear protein imbalance—either through genetic (variation in expression of the mitochondrial ribosomal proteins) or pharmacological strategies (doxycycline) activates the UPR^{mt}. *Second*, we discovered that activation of mitochondrial biogenesis, by a variety of compounds such as rapamycin, resveratrol, as well as NAD⁺ boosters, also induces a mitonuclear imbalance and a similar retrograde response. *Finally*, we demonstrated that mitophagy can also elicit a similar retrograde stress pathway. Of note, activating retrograde signaling—by mitochondrial biogenesis, mitonuclear proteostatic imbalance, and mitophagy—has not only beneficial effects on mitochondrial function, but also improved organismal health as demonstrated by its remarkable capacity to protect from amyloid beta disease (e.g. Alzheimer disease), enhance muscle and kidney function, induce tolerance to infection, and increase lifespan. Together this ensemble of studies laid the cornerstones of the field of “*mitonuclear communication*” in vertebrates.

Curriculum Vitae & Publication list

Johan Auwerx, MD, PhD

Date assembled – October, 2023

PART 1: General information

Name: Johan (first), Henri (middle) AUWERX

Personal information:

Born on October 4th, 1958 in Diepenbeek, Belgium
Belgian Nationality
Married to Kristina Schoonjans (Professor at the EPFL)
Two children, Chiara (1996) and Hannah (1999)

Office Address: Ecole Polytechnique Fédérale de Lausanne (EPFL)
Interfaculty Institute of Bioengineering
CH-1015 Lausanne
Switzerland

Home Address: 8 Rue Roger de Lessert
CH-1164 Buchillon
Switzerland

Work E-mail: johan.auwerx@epfl.ch (personal) and admin.auwerx@epfl.ch (admin assistant)

Work phone: +41-21 693 95 22 (admin assistant – Valerie Stengel)
+41-21 693 09 51 (direct)

Work fax: +41-21 693 96 00

URL/webpage: <http://auwerx-lab.epfl.ch/>

Twitter: [@Auwerx_Lab](https://twitter.com/Auwerx_Lab)

Education:

<i>Year</i>	<i>Degree</i>	<i>Institution</i>
1967-1975	College (Summa cum laude)	St-Jozefscollege, Hasselt, Belgium
1975-1978	Bachelor Medical Sciences (Magna cum laude)	Katholieke Universiteit Leuven, Belgium
1978-1982	Medical Doctor (M.D.; Summa cum laude)	Katholieke Universiteit Leuven, Belgium
1986-1990	Doctor of Philosophy (Ph.D.) Dissertation: <i>Regulation of genes involved in lipid metabolism in the macrophage</i>	Katholieke Universiteit Leuven, Belgium

Post-doctoral training:

<i>Year</i>	<i>Title</i>	<i>Specialty/Discipline</i>	<i>Place of Training</i>
1986	Research Fellow	Molecular Endocrinology	Katholieke Universiteit Leuven, Belgium
1986-1989	Research Fellow	Molecular Endocrinology	University of Washington, Seattle, WA

1989	EMBO Fellow	Molecular Biology	Laboratoire de Génétique Moléculaire des Eucaryotes, Strasbourg, France
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Licensure and Certification:

<i>Year</i>	<i>Type of License or Certificate</i>
1982	License as Medical Doctor, Belgium
1982	ECFMG (Educational Commission for Foreign Medical Graduates) certificate on basis of the VISA qualifying examination (certificate # 352-705-8)
1987	License as Specialist in Internal Medicine, Belgium
1991	License as Medical Doctor, France
2009	License as Medical Doctor, Switzerland

Academic Appointments:

<i>Year</i>	<i>Academic Title</i>	<i>Institution</i>
1988-1991	Research Associate	NFWO, Katholieke Universiteit Leuven, Belgium
1991-1999	Research Director (~ Full Professor)	CNRS, Institut Pasteur de Lille, France
1999-2003	Research Director (~ Full Professor)	CNRS, Institut de Génétique et Biologie Moléculaire et Cellulaire, Illkirch, France
2003-2008	Professor of Medicine	Université Louis Pasteur, Strasbourg, France
2007	Visiting Professor	Harvard Medical School, Boston, MA
2008-	Full Professor	Ecole Polytechnique Fédérale Lausanne, Switzerland
2017-	Adjunct Professor	Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea

Hospital or Affiliated Institution Appointments:

<i>Year</i>	<i>Title</i>	<i>Hospital or Affiliated Institution</i>
1982-1985	Resident in Medicine	University Hospital, Leuven, Belgium
1985-1986	Fellow in Endocrinology & Metabolism	University Hospital, Leuven, Belgium
1986-1988	Fellow in Endocrinology & Metabolism	University of Washington, Seattle, USA
1988-1991	Consultant Endocrinology & Metab.	University Hospital, Leuven, Belgium

Other Professional Positions and Major Visiting Appointments:

<i>Year</i>	<i>Position/Title</i>	<i>Institution</i>
2002-2006	Co-Director	Institut Clinique de la Souris, Illkirch, France
2006-2008	Director	Institut Clinique de la Souris, Illkirch, France

Hospital and Health Care Organization Service Responsibilities:

None

Major Administrative Responsibilities:

<i>Year</i>	<i>Title</i>	<i>Institution</i>
2002-2006	Co-Director	Institut Clinique de la Souris, Illkirch, France
2006-2008	Director	Institut Clinique de la Souris, Illkirch, France
2012-2015	Life Science Faculty Direction	Member, EPFL-SV, Lausanne, Switzerland
2015-	Academic Promotion Committee	Member, EPFL-SV, Lausanne, Switzerland
2018-	Scientific Prize Committee	Head, EPFL-SV, Lausanne, Switzerland
2018-	Biobank development	Member, EPFL-SV, Lausanne, Switzerland

Major Committee Assignments:

<i>Year</i>	<i>Name</i>	<i>Role, Institution</i>
1998-2000	Study section #25	Member, CNRS, Paris, France
2004-2005	Study section 6 th FP EU	Member, EU RTD, Brussels, Belgium
2009-2012	Study section ERC (LS4)	Member, EU RTD, Brussels, Belgium
2010-2015	Study section ERC (LS4)	Panel chair, EU RTD, Brussels, Belgium
2015-2019	EMBO nomination committee	Member, EMBO, Heidelberg, Germany

Professional Societies:

<i>Year</i>	<i>Society</i>	<i>Role</i>
2003-	EMBO	Elected Member in 2003

Community Services Related to Professional Work:

<i>Year</i>	<i>Position/Title</i>	<i>Role</i>	<i>Institution</i>
1995-2001	SAB Member	Advisory	Ligand Pharmaceuticals, San Diego, CA
2001-2004	Founder & SAB member	Advisory	Carex S.A., Strasbourg, France
2004-2006	Scientific advisor	Advisory	SK Bio-Pharmaceuticals, Fairfield, NJ
2004-2008	SAB Member	Advisory	Sirtris Pharmaceuticals. Boston. MA
2005-2006	Ad hoc advisor	Advisory	Keystone Symposia, Keystone, CA
2006-2010	Scientific advisor	Advisory	Intercept Pharmaceuticals, NY, NY
2006-	Founder & SAB member	Advisory	PhytoDia, Strasbourg, France
2009-	SAB member	Advisory	Amazentis, Ecublens, Switzerland
2009-2011	SAB member	Advisory	Lombard-Odier Private bankers, Geneva, CH
2009-2013	Ad hoc consultant	Advisory	Merck Research Laboratories, Rahway, NJ
2011-	SAB member	Advisory	European Research Institute for the Biology of Aging (ERIBA), U of Groningen, The Netherlands
2012-2018	SAB member	Advisory	Center for Epigenetics & Metabolism, UC Irvine, CA
2012-	Founder & SAB Member	Advisory	Mitobridge, Cambridge, MA (now Astellas)
2012-2018	SAB member	Advisory	Novo Nordisk Foundation Center for Basic Metabolic Research, U of Copenhagen, Denmark
2013-2014	Ad hoc advisor	Advisory	Morgridge Institute, U of Wisconsin, Madison, WI
2016-2020	Ad hoc advisor	Advisory	TES pharma, Corciano, IT
2017-2019	Consultant	Advisory	Janssen Pharmaceuticals, Spring House, PA
2018-	SAB member	Advisory	Nagi Biosciences, Lausanne, CH
2018-	SAB member	Advisory	Metro Biotech, Worcester, MA
2019-	BoD member	Executive	NOV MetaPharma, Seoul, KR
2020-	SAB Member	Advisory	OrsoBio, Stanford, CA
2021-	SAB Member	Advisory	Mitopower, Stanford, CA
2021-	Founder & SAB Chair	Advisory	Vandria, Ecublens, Switzerland
2022-	SAAC Member	Advisory	Weizmann Institute, Rehovot, Israel
2022-	SAB Member	Advisory	Institut Pasteur de Lille, France

Editorial Boards:

<i>Year</i>	<i>Role</i>	<i>Name</i>
2001-	Editorial board member	Annals of Medicine
2003-2005	Editorial board member	Journal of Clinical Endocrinology and Metabolism
2004-2007	Editorial board member	Molecular Endocrinology
2004-2009	Editorial board member	Drug Discovery Today

2004-2008	Editorial board member	BioMed Central Molecular Biology
2004-	Editorial board member	Cell Metabolism
2007-2011	Editorial board member	Endocrine reviews
2008-2020	Editorial board member	EMBO Journal
2008-2012	Editorial board member	EMBO Reports
2008-2020	Editorial board member	Cell
2010-2018	Editorial board member	Current Protocols in Mouse Biology
2011-	Editorial board member	Mammalian Genome
2011-2021	Editorial board member	Science
2013-2018	Editorial board member	Aging Cell
2014-	Editorial board member	Molecular Systems Biology
2015-	Editorial board member	Journal of Cell Biology

Awards and Honors:

<i>Year</i>	<i>Name of the Award</i>
1985	Horlait-Dapsens prize for medical research; Belgium
1986	NATO travel grant; NATO countries Fellowship Belgian American Educational Foundation; USA/Belgium Fullbright award; USA Travel award Belgian National Foundation for Research; Belgium
1987	J.Fogarty international research fellowship (NIH); USA
1989	F. De Waele prize for cancer research; Belgium Morgagni Young Investigator Award on Metabolism; Italy Boehringer-Mannheim prize for Atherosclerosis; Belgium
1992	Belgian Endocrine Society Award; Belgium
1993	Prix Danone "Santé et Nutrition"; France
1998	Prix de la Fondation pour la Recherche Médicale; France Minkowski Prize, European Association for the Study of Diabetes; Europe Spa Prize for Nutrition; Belgium
2001	6 th Dalan Boyd Pritchett Award Lecture, University of Pennsylvania, PA; USA
2003	EMBO member
2004	Morgagni Gold Medal for Metabolism; Italy
2005	Prix Jean Valade de la Fondation de France; France
2006	Josiah Brown Lecture Award, UCLA, CA; USA
2008	Ruysch Lecture Award, University of Amsterdam; The Netherlands
2009	Danone International Nutrition Award; France
2010	Windaus Prize, Falk Foundation, Freiburg; Germany Hans Popper Lecture Award, American Association for the Study of Liver Disease, Boston; USA Presidential lecture, Experimental Biology 2010, American Society of Nutrition, Anaheim; USA
2011	Jacobeus Lecture Award, NovoNordisk Foundation; Scandinavian Countries
2013	Paul F. Glenn Lecture, MIT, Cambridge, MA; USA Umesono Memorial Lecture, The Salk Institute, San Diego, CA; USA Ruth Okey Lecture, UC Berkeley, CA; USA Nutrition & Sante Prize, European Association for the Study of Obesity (EASO), Liverpool; UK The Biomedicum Helsinki Lecture, Helsinki; Finland Doctor Honoris Causa, University Blaise Pascal, Clermont Ferrand; France
2016	Keynote lecture, Am. Physiol. Society meeting "Integrative Biology of Exercise VII", Phoenix; USA The Marcel Benoist Prize, Bern; Switzerland
2017	The Journal of Lipid Research lecture, Deuel Conference, Monterrey; USA Keynote lecture, Keystone Symposium "Mitochondria communication", Taos; USA Keynote lecture, Keystone Symposium "Bile Acid Receptors as signal integrators", Monterrey; USA Keynote lecture, Keystone Symposium "Aging and aging-related disease", Yokohama; Japan 5 th Helmholtz-Nature Medicine Diabetes Lecture, Munchen; Germany

- 2018 Keynote lecture, 1st ENABLE Symposium, Barcelona; Spain
Keynote lecture, 6th Seoul International Congress of Endocrinology and Metabolism, Seoul; Korea
Founding member of the Academy of Healthspan and Lifespan Research
Highly cited researcher 2018→2024, Clarivate
- 2019 Founding member of the Academy of Health and Lifespan Research (AHLR), USA
- 2022 Bennet Cohen Award Lecture, University of Michigan, Ann Arbor; USA
- 2023 Alan Saltiel Lecture, University of Michigan, Ann Arbor, USA

PART 2: Research, teaching, clinical and translational contributions

A. Narrative report of my research, teaching, and administrative achievements

My research (~70 % of my time) uses systems approaches—developed in *C. elegans*, mice, and humans—to map the signaling networks that govern mitochondrial function and as such regulate organismal metabolism. Mitochondria are derived from endo-symbiotic α -proteobacteria that contain multiple copies of their own circular DNA (mtDNA), vestiges of bacterial DNA. Over 99% of the ~1,500 mitochondrial proteins, however, are encoded in the nuclear DNA (nDNA) and these proteins are after their translation in the cytoplasm, imported, processed, and assembled with the 13 proteins encoded by mtDNA. Assembly of the complexes of the mitochondrial electron transport chain (ETC), responsible for energy harvesting, hence relies on a perfect synchrony between proteins encoded by nDNA and mtDNA through the convergence and coordinated expression of these two genomes.

Our initial work was instrumental to establish that many transcription factors and their associated transcriptional cofactors act as sensors that capture changes in the cellular energy status and that translate this information into altered nuclear gene expression patterns affecting mitochondrial function and metabolism. These pathways constitute the **antegrade control of mitochondrial activity**, i.e. nucleus→mitochondria. We were amongst the pioneers to unravel the wide-ranging implications of the 3 PPARs—PPAR α , PPAR β/δ , and PPAR γ —and the enterohepatic nuclear receptors—LRH-1 and SHP—in metabolic control. My discovery of an association between the PPAR γ Pro12Ala gene variant with type 2 diabetes and obesity, long before the era of genome-wide association studies, was the first identification of a gene tied with common complex diseases. The identification by my team of bile acids as endocrine regulators of energy expenditure, glucose homeostasis, inflammation, and atherosclerosis, through the activation of the membrane bile acid receptor, TGR5, sparked a paradigm shift that transformed bile acids from lipid solubilizers in the gut to versatile endocrine signals that impact almost any aspect of physiology. Perhaps most important was our discovery that a yin-yang between transcriptional corepressors—NCoR1 and the sirtuin deacetylases—and coactivators—the PPAR γ coactivator 1 α (PGC-1 α) and the steroid receptor coactivators 2 and 3—fine-tunes oxidative metabolism. These cofactor networks convert signals associated with cellular energy status, such as NAD⁺ and ATP levels, into altered chromatin states (e.g. histone modifications) and changes of transcriptional activity (e.g. FOXO1, PGC-1 α), to govern mitochondrial function and metabolism.

In more recent studies, we elucidated a novel **retrograde signaling pathway** that emanates from the mitochondria to influence nuclear function, i.e. mitochondria→nucleus. We showed that interference with mitochondrial translation—either through genetic (mutations of the mitochondrial ribosomal proteins) or pharmacological strategies (doxycycline and chloramphenicol)—reduces the production of mtDNA encoded ETC components, resulting into a mitonuclear imbalance between mtDNA and nDNA encoded ETC proteins, which subsequently activates the mitochondrial unfolded protein response (UPR^{mt}). UPR^{mt} is an adaptive response that restores mitochondrial function, which in the worm is linked with the extension of lifespan. Interestingly, exposing worms and cells to compounds, which activate mitochondrial biogenesis, such as well-known longevity compounds rapamycin and resveratrol, as well as nicotinamide riboside and PARP inhibitors that boost NAD⁺ levels, also induces UPR^{mt}. This indicates that UPR^{mt} is triggered both during mitochondrial biogenesis and mitonuclear proteostatic imbalance, and in each case has beneficial effects on mitochondrial function and organismal health. Targeting UPR^{mt} may hence improve mitochondrial function and favorably impact on healthspan.

I spend ~15% of my time on **teaching**. Currently, I team-teach part of the **Biology** course to first year Life Science students at EPFL. My course covers bioenergetics, metabolism, photosynthesis and cell communication and uses Campbell's Biology as a textbook. I am also responsible for teaching the course **Translational Research - Drug Discovery** to 3rd and 4th year students at the EPFL Life Science faculty. In addition, I supervise master/graduate students and post-doctoral fellows in my laboratory at the EPFL (see section C - Report on teaching). Previously, I lectured on **Biochemistry**, covering metabolic pathways, mitochondria and the pathophysiology of metabolic disease, for 2nd and 3rd year medical students at the Université Louis Pasteur in Strasbourg, France.

The remaining 15 % of my time is spent on **administrative duties**. Of note, I have directed the Mouse Clinical Institute in Strasbourg, France. This institute employed a staff of 120 people (~30 Ph.D. level scientists and 90 support staff) and was responsible for the generation and phenotyping of ~200 KO mouse models/year, within the context of various large EU and International programs (Eumorphia and EUMODIC). Prime achievements during my term as director of the Mouse Clinical Institute were: (1) the generation of a collection of cKO mouse models for most the 49 nuclear receptors and a significant number of transcriptional co-regulators, including the sirtuin family, HDACs, NCoRs, and GCN5 / PCAF; and (2) the creation of a Web-based gene expression atlas of nuclear receptors and their coregulators in the brain using ISH and qRT-PCR (<http://www.ics-mci.fr/mousepat/>).

B. Funding Information

Non-exhaustive summary of major external grants that were awarded to support our research activities.

<i>Years Covered</i>	<i>Funding Source</i>	<i>PI/Co-PI</i>	<i>Grant Title</i>
1992-1998	Inserm, France	PI	Functional characterization of PPAR γ
1998-2002	ARC (#9943)	PI	Regulation of PPAR γ transcriptional activity
1998-2006	CNRS/Inserm, France	PI	Orphan Nuclear Receptors: structure and function
1999-2001	JDRF	PI	The role of the PPAR γ NH2 terminus
1999-2002	HFSP	PI	Characterization of nuclear orphan receptors
2000-2004	EU 5 th framework, RTD	Co-PI	Functional genomics of type 2 diabetes (Eugene)
2001-2002	ARERS	PI	PPAR γ and insulin sensitization
2001-2006	NIH (P01 DK59820)	Co-PI	Genetic and metabolic fingerprints of SRC coactivators
2002-2005	EU 5 th framework, RTD	Co-PI	Mouse functional genomics (Eumorphia)
2003-2004	ARC (#5800)	PI	Regulation of PPAR γ transcriptional activity (#2)
2003-2006	French Research Ministry	PI	Mouse models for the nuclear receptor LRH-1
2004-2006	French Research Ministry	PI	A mouse model with muscle-specific SIRT1 deficiency
2004-2008	EU 6 th framework, RTD	Co-PI	Functional genomics of type 2 diabetes (Eugene2)
2004-2010	Merck Research Laborat.	PI	Generation & analysis of mouse models for metabolism
2005-2007	AFM	Co-PI	Mouse model with CNS-specific LRH-1 deficiency
2005-2010	NIH (R01 DK67320)	PI	Phenogenomics of human PPAR γ mutations
2005-2007	ARC (#3660)	Co-PI	LRH-1 & SHP in of colon cancer
2005-2007	ARC (#3689)	PI	The cofactor SRC-3 in lymphoma development
2005-2008	EU 6 th framework, RTD	Co-PI	Systematic mouse mutagenesis program (EUCOMM)
2006-2008	French Research Ministry	Co-PI	The role of LRH-1 in the enterohepatic axis
2006-2011	NIH (P01 DK59820)	Co-PI	Genetic and metabolic fingerprints of SRC coactivators
2007-2011	EU 6 th framework, RTD	Co-PI	Mouse disease clinics (EUMODIC)
2009-2014	ERC Advanced Grant	PI	The phenogenomics of the sirtuin gene family (Sirtuins)
2009-2012	Swiss SNF	PI	GEMMs to understand sirtuins
2009-2012	Swiss SNF	Co-PI	Characterization of TGR5 signaling
2010-2013	Velux Stiftung	PI	Mitochondria – a window on aging
2011-2014	Swiss SNF – Sinergia	Co-PI	Characterization of novel aging genes in the BXD GRP

2011-2015	NIH (R01 HL106511)	Co-PI	Skeletal Muscle basis of improved exercise endurance in AC5 KO mice
2012-2018	Swiss SNF	PI	Transcriptional cofactor networks and metabolism
2013-2015	Swiss CTI	PI	Active ingredients for age-associated muscle disorders
2013-2018	NIH (R01 AG043930)	Co-PI	Translational systems genetics of mitochondrial function metabolism, and aging
2014-2018	Swiss SystemsX	Co-PI	AgingX
2014-2016	Swiss Cancer League	PI	The implication of the sirtuins in colorectal cancer
2016-2018	Velux Stiftung	PI	Stressing mitochondria for healthy aging
2017-2023	NRF of Korea (GRL)	Co-PI	Mitochondrial proteostasis in health & disease
2018-2020	Swiss Muscle Foundation	PI	Inducing mitophagy to treat muscular dystrophy
2018-2020	Gerhart Jebsen Foundation	PI	Dietary and genetic regulators of heart failure
2018-2023	ERC Advanced Grant	PI	The mitochondrial unfolded protein response (UPR ^{mt})
2019-2023	Swiss SNF	PI	Genetic control of NAD ⁺ metabolism
2019-2023	EU Horizon 2020 – ITN	Co-PI	Lifespan regulation in health and disease (HealthAge)
2019-2021	Janssen Pharmaceuticals	PI	Drug target identification through mouse genetics
2019-2021	ETH Board – SDSC	Co-PI	Systems Genetics (SysGen)
2020-2021	NovMetaPharma	PI	Cyclo(His-Pro) mechanism of action
2021-2023	Swiss Muscle Foundation	PI	Inhibiting sphingolipid synthesis to treat DMD
2021-2024	Swiss SNF – Sinergia	Co-PI	Targeting cellular senescence
2021-2024	EU CHIST-ERA – SNF	Co-PI	Graph Neural Networks for Explainable Artificial Intelligence (GraphNEx)
2022-2025	SNF-ANR grant	Co-PI	Mitochondrial function in chronic inflammation and aging
2022-2026	Sino-Swiss grant – SNF	Co-PI	Mitochondrial signaling and epigenetic programming

C. Report on Teaching

C.1. Local Contributions

C.1.a. Medical students: School of Medicine at the Université Louis Pasteur, Strasbourg, France

Years taught: 2002, 2003, 2004, 2005, 2006, 2007, 2008

Name of the course: Metabolism and metabolic control

Description of teaching role: lecturer

Type and average number of students: ~500 2nd year medical students

Amount of preparation and contact time involved: 10 hr preparation time; ~20 hr course

Years taught: 2003, 2004, 2005, 2006, 2007, 2008

Name of the course: Pathophysiology of metabolic disease (atherosclerosis, obesity and type 2 diabetes)

Description of teaching role: lecturer

Type and average number of students: ~100 3rd year medical students and ~50 Pharmacy students

Amount of preparation and contact time involved: 2 hr preparation time; 4 hr course

C.1.b. Undergraduate Courses: Ecole Polytechnique Fédérale de Lausanne, Switzerland

Years taught: 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018

Name of the course: Translating research in biomedicine – drug discovery

Description of teaching role: lecturer and supervisor of small thematic groups

Type and average number of students: ~25 3rd and 4th year undergraduate bioengineering students

Amount of preparation and contact time involved: 24 hr preparation time; 80 hr course/office hours (8 credits)

Years taught: 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017

Name of the course: Biology

Description of teaching role: lecturer

Type and average number of students: ~280 1st year undergraduate bioengineering students

Amount of preparation and contact time involved: 8 hr preparation time; 16 hr course (2 credits)

C.1.c. Names of advisees or trainees:

The following scientists spent significant amount of time in my laboratory either during their Master of Science (M.Sc) program (1-2 years), during their Ph.D. training (3-4 years), or performed a post-doctoral fellowship in my laboratory.

<i>Duration of training</i>	<i>Name</i>	<i>Degree obtained</i>	<i>Current Position</i>
1988-1991	Bart Staels	Ph.D.	Institut Pasteur, Lille, France
1991-1991	Julia Peinado	Ph.D.	U. of Barcelona, Spain
1992-1993	Christel Aperlo	M.Sc.	CNRS, Nice, France
1992-1993	Roser Busca, Ph.D.	Post-Doc	CNRS, Nice, France
1992-1996	Jean-Pierre Bossu	Ph.D.	Fischer, Illkirch, France
1992-1996	Regis Saladin	Ph.D.	Phytodia, Illkirch, France
1993	Anne-Catherine Robert	M.Sc.	Lyon, France
1994-1998	Anne-Marie Lefebvre	Ph.D.	Sanofi-Aventis, Paris, France
1994-1998	Genevieve Martin	Ph.D.	Genfit, Lille, France
1995	Laurence Suaud	M.Sc.	Genfit, Lille, France
1995-1996	Yvonne Anderson, Ph.D.	Post-Doc	Umea University, Sweden
1995-1996	Philippe Gervois	M.Sc.	Institut Pasteur, Lille, France
1995-1996	Yannick Delplace	M.Sc.	Genfit, Lille, France
1995-1997	Piet Devos, Ph.D.	Post-Doc	PGS, Ghent, Belgium
1995-1998	Eric Raspe, Ph.D.	Post-Doc	Genfit, Lille, France
1995-1999	Nathalie Hennuyer	Ph.D.	Institut Pasteur, Lille, France
1995-2001	Lluís Fajas, Ph.D.	Post-Doc	INSERM, Montpellier
1996-1997	Corinne Ballaster	M.Sc.	INSERM, Marseille, France
1996-1997	Thierry Claudel	M.Sc.	Institut Pasteur, Lille, France
1996-2000	Laurent Gelman	Ph.D.	FMI, Basel, Switzerland
1997-1998	Hilde Sundvold, Ph.D.	Post-Doc	U. of Oslo, Norway
1998-1999	Celine Talon	M.Sc.	Institut Pasteur, Lille, France
1998-1999	Laurent Dubuquois	M.Sc.	INSERM, Lille, France
1998-1999	Mathilde Dubois	M.Sc.	INSERM, Lille, France
1998-2001	Stephane Rocchi, Ph.D.	Post-Doc	INSERM, Nice, France
1998-2002	Carole Brendel	Ph.D.	Amylin, San Diego, CA
1998-2002	Oronzina Botrugno	Ph.D.	U. of Milano, Italy
1999-2000	Karen Van Herck	M.Sc.	CNRS, Lyon, France
1999-2000	Gordon Francis, M.D.	Visiting Prof.	U. of British Columbia, Canada
1999-2000	Raphael Knouff, M.D.	Post-Doc	GlaxoSmithKline, USA
1999-2001	Frederic Picard, Ph.D.	Post-Doc	Université de Laval, Canada
1999-2001	Viviane Egler	M.Sc.	FMI, Basel, Switzerland
1999-2003	Céline Haby	Ph.D.	INSERM Lyon, France
2000-2003	Svetlana Morozowa	Ph.D.	Solvay, Brussels, Belgium
2000-2004	Marie-Bernard Debril	Ph.D.	U. of Lausanne, Switzerland
2001-2002	Rima El Takesh	M.Sc.	ULP, Strasbourg, France
2001-2002	Stine Ulven, Ph.D.	Post-Doc	U. of Oslo, Norway
2001-2003	Terrie-Ann Cock, Ph.D.	Post-Doc	GlaxoSmithKline, UK
2001-2004	Elisabeth Fayard	Ph.D.	FMI, Basel, Switzerland

2001-2004	Jean-Sebastien Annicotte	Ph.D.	INSERM Montpellier, France
2001-2004	Mitsuhiro Watanabe	Ph.D.	Keio University, Tokyo, Japan
2003-2004	Taoufiq El-Harach	M.Sc.	Nestle, Vevey, Switzerland
2003-2006	Carmen Argmann, Ph.D.	Post-Doc	Mount Sinai Medical Center, NY
2003-2006	Sander Houten, Ph.D.	Post-Doc	Mount Sinai Medical Center, NY
2003-2006	Carole Mette	Ph.D.	Roche, Basel, Switzerland
2003-2006	Sebastien Goetz	Ph.D.	ULP, Strasbourg, France
2003-2007	Sebastien Froehlich	Ph.D.	ULP, Strasbourg, France
2003-2007	Nassim Dali-Youcef	Ph.D.	ULP, Strasbourg, France
2003-2007	Agnes Coste	Ph.D.	Université de Toulouse, France
2004-2007	David Volle	Ph.D.	INSERM Clermont-Ferand, France
2004-2007	Romain Barnouin	Ph.D.	PhytoDia, Illkirch, France
2004-2007	Benjamin Magnier	Ph.D.	Sanofi-Aventis, Montpellier, France
2004-2008	Raj Dugavatti, D.V.M.	Post-Doc	U. of Montreal, Canada
2004-2008	Chikage Matak, Ph.D.	Post-Doc	U. of Tokyo, Japan
2005-2008	Sami Heikkinnen, Ph.D.	Post-Doc	U. of Kuopio, Finland
2005-2008	Hiroyasu Yamamoto, M.D.	Post-Doc	EPFL, Lausanne, Switzerland
2005-2008	Hiroyuki Sato	Ph.D.	U. of Osaka, Japan
2005-2008	Marie Lagouge	Ph.D.	MPI Cologne, Germany
2006-2008	Charles Thomas, Ph.D.	Post-Doc	Amazentis, Ecublens, Switzerland
2006-2006	Jerome Feige, Ph.D.	Post-Doc	Nestle, Lausanne, Switzerland
2007-2011	Carles Canto, Ph.D.	Post-Doc	Nestle, Lausanne, Switzerland
2007-2010	Lilia Noriega, Ph.D.	Post-Doc	CONACYT, Mexico
2008-2010	JiuJiu Yu, Ph.D.	Post-Doc	Harvard Medical School, Boston, MA
2007-2009	Axelle Strehle	Ph.D.	PhytoDia, Illkirch, France
2009-2011	Richardus Houtkooper, Ph.D.	Post-Doc	AMC, Amsterdam, The Netherlands
2009-2011	Ellen Jeninga, Ph.D.	Post-Doc	VU, Amsterdam, The Netherlands
2009-2012	Thijs Pols, Ph.D.	Post-Doc	AMC, Amsterdam, The Netherlands
2009-2011	Rafaele Teperino, Ph.D.	Post-Doc	MPI Freiburg, Germany
2009-2013	Mitsunori Nomura	Ph.D.	NIH, Bethesda, MD, USA
2009-2013	Penelope Andreux	Ph.D.	Amazentis, Ecublens, Switzerland
2010-2015	Evan Williams	Ph.D.	ETHZ, Zurich, Switzerland
2010-2012	Maike Oosterveer, Ph.D.	Post-Doc	U. of Groningen, The Netherlands
2010-2011	Pablo Fernandez-Marcos, Ph.D.	Post-Doc	CNIO, Madrid, Spain
2010-2017	Dongryeol Ryu, Ph.D.	Post-Doc	U of Busan, South Korea
2010-2017	Laurent Mouchiroud, Ph.D.	Post-Doc	Nagi Bio, Ecublens, Switzerland
2010-2013	Eija Pirinen, Ph.D.	Post-Doc	Biomedicum, U. of Helsinki, Finland
2010-2014	Giuseppe LoSasso, Ph.D.	Post-Doc	WHO, Geneva, Switzerland
2011-2013	Adriano Maida, Ph.D.	Post-Doc	U. of Frankfurt, Germany
2011-2017	Elena Katsyuba	Ph.D.	Nagi Bio, Ecublens, Switzerland
2011-2016	Adrienne Mottis	M.Sc./Ph.D	Staff scientist LISP, Labmanager
2012-2012	Michael Hottinger, Ph.D.	Visiting Prof.	U. of Zurich, Switzerland
2012-2013	Geraldine Canny, Ph.D.	Post-Doc	EPFL, Lausanne, Switzerland
2012-2017	Hongbo Zhang	Ph.D.	U of Guangzhou, China
2012-2013	Dennis Dahlman	Ph.D.	U. of Maastricht, The Netherlands
2012-2016	Virginija Jovaisaite	Ph.D.	U. of Geneva, Switzerland
2012-2014	Yongsuk Jo, Ph.D.	Visiting Prof.	Yonsei University, Seoul, Korea
2013-2014	Amandine Nicolet	M.Sc.	Merck (MSD), Luzern, Switzerland
2013-2015	Keir Menzies, Ph.D.	Post-Doc	University of Ottawa, Canada
2013-2017	Xu Wang, Ph.D.	Post-Doc	JiaoTong University, Shanghai, China
2014-2014	Tiffany Amariuta	M.Sc.	Harvard, Cambridge, MA, USA
2014-2017	Gariani Karim, M.D.	Ph.D.	Imperial College, London, UK
2014-2017	Olli Matilainen, Ph.D.	Post-Doc	University of Helsinki, Finland
2014-2017	Pedro Moral-Quiros, Ph.D.	Post-Doc	University of Cambridge, UK

2014-2016	Vincenzo Sorrentino, Ph.D.	Post-Doc	Nestle, Lausanne, Switzerland
2015-2019	Maroun Bou-Sleiman	Post-Doc	Staff scientist LISP, Switzerland
2014-2016	Pooja Jha, Ph.D.	Post-Doc	Nature Metabolism
2014-2016	Virginie Peter	M.Sc.	U. of Lausanne, Switzerland
2014-2017	Davide D'Amico, Ph.D.	Post-Doc	Amazentis, Ecublens, Switzerland
2015-2021	Maroun Bou-Sleiman	Post-Doc	Staff scientist LISP, Switzerland
2015-2015	Gopal Krishnamani	M.Sc.	Stratas partners, Basel, Switzerland
2015-2020	Hao Li	Ph.D.	Max Delbruck, Berlin, Germany
2016-2019	Adrienne Mottis	Post-Doc	Staff scientist LISP, Switzerland
2016-2016	Solene Rietsch	M.Sc.	U de Montreal, Canada
2016-2016	Lisa Vrijens	M.Sc.	K.U. Leuven, Belgium
2016-2017	Tao Lin	M.Sc.	EPFL PhD student
2016-2016	Sophie You	M.Sc.	UC Berkeley, USA
2016-2016	Ashima Goyal	M.Sc.	Indian Institute of Technology, Dehli
2016-2019	Jun-Young Kim	M.Sc.	University of Cologne, Germany
2016-2020	Peiling Luan	Ph.D.	
2017-2021	Alexis Bachman	Ph.D.	SophiaGenetics, Switzerland
2017-2021	Mario Romani	Ph.D.	CHUV, Lausanne
2017-2017	Naveed Ziari	M.Sc.	UC Berkeley, USA
2017-2020	Dohyun Park, Ph.D.	Post-Doc	South Korea
2017-2022	Yang Li, Ph.D.	Post-Doc	Fudan Univ., Shanghai, China
2017-2022	Arwen Gao, Ph.D.	Post-Doc	AMC, Amsterdam, Netherlands
2017-2020	Changmyung Oh, Ph.D.	Post-Doc	GIST, Gwangju, South Korea
2018-2019	Martin Wohlwend	Ph.D.	MIT, Cambridge, MA, USA
2018-2019	Kevin Hof	M.Sc.	
2018-2019	Dina Hofer, Ph.D.	Post-Doc	ThermoFisher, Zug, Switzerland
2018-2023	Giorgia Benigiamo, Ph.D.	Post-Doc	
2019-2020	Sebastien Herzig, Ph.D.	Post-Doc	Nestle, Lausanne, Switzerland
2019-2023	Jean-David Morel, Ph.D.	Post-Doc	
2019-2022	Ludger Goeminne, Ph.D.	Post-Doc	Harvard, Boston, MA, USA
2019-2023	Xiaoxu Li	Ph.D.	
2019-2023	Alessia DeMasi	Ph.D.	CHUV, Lausanne
2019-2023	Amelia Lalou	Ph.D.	
2021-2024	Qi Wang	Post-Doc	
2021-2024	Yasmine Liu	Post-Doc	
2021-2024	Maxime Nashit	Post-Doc	HepaVue, Lausanne
2022-2025	Gaby El-Alam	M.Sc.	HepaVue, Lausanne
2022-2025	Giacomo VonAlvensleben	Ph.D.	
2022-2024	Sandra Rodriguez	Post-Doc	
2022-2024	Feng Gao	Post-Doc	UC San Fransisco, CA, USA
2022-2024	Johanne Poisson	Post-Doc	Sorbonne, Paris, France

C.2. Regional, National, or international contributions

C.2.a. Invited presentations

1991

- Invited speaker; Meeting of the Arcol, Paris, France
- Invited speaker; Milano International Meeting on Diabetes, Milano, Italy
- Poster presentation; UCLA Symposium on Steroid Hormone Receptors, Steamboat Springs, USA
- Invited Speaker; Gene Expression during Liver Differentiation and Disease, Sorrento, Italy
- Oral presentation; American Heart Association, Anaheim, USA

1992

- Invited speaker; European Atherosclerosis Society Meeting, Nice, France
- Invited speaker; Symposium on Atherosclerosis and its cardiovascular complications, New Brunswick, USA
- Invited speaker; First Fournier Workshop on Molecular Biology of Atherosclerosis, Meribel, France
- Invited speaker; Belgian Endocrine Society Lecture, Brussels, Belgium
- Invited speaker; Lipids, lipoproteins and Atherosclerosis, Helsinki, Finland

1993

- Invited speaker; Colloque de la Société de Biologie Cellulaire de France, Lyon, France
- Invited speaker; European Atherosclerosis meeting, Jerusalem, Israel
- Poster presentation; American Heart Association, Atlanta, USA
- Invited speaker; FEBS meeting on peroxisomes, Dijon, France
- Invited speaker; ARCOL meeting, Paris, France
- Invited speaker; Meeting on Peroxisomal Disorders, Amsterdam, Holland

1994

- Invited speaker; British Endocrine Society, Bornemouth, UK (invited speaker).
- Invited speaker; International Atherosclerosis Society, Montreal, Canada
- Invited speaker; International Symposium "Therapeutic Strategies in Dyslipidemia", Monte-Carlo
- Invited speaker and session chairman; Bioavenir Symposium, Marne-LaVallée, France
- Poster presentation; American Heart Association meetings, Dallas, USA

1995

- Invited speaker; American Association for Cancer Research meeting on Steroid Receptors, Whistler, Canada
- Oral presentation; American Heart Association meetings, Anaheim, CA, USA
- Invited speaker; Deuel Conference on Lipids, Monterey, CA, USA
- Invited speaker; First Gencell meeting on Gene therapy, Philadelphia, PA, USA
- Invited speaker; Association Franco-Autrichien pour la recherche sur les Lipides, Nice, France
- Invited speaker and chairman; Biotechnology Symposium: "Nuclear Orphan Receptors, Stockholm, Sweden
- Invited speaker; 2nd Japan Europe Forum on Atherosclerosis, Nice, France
- Invited speaker; ILSI workshop on Peroxisome Proliferation, Washington, DC, USA

1996

- Invited speaker; Japanese Atherosclerosis Society, Osaka, Japon
- Invited speaker; Durnsteiner Atherosclerose Tagen, Durnstein, Autriche
- Invited speaker; European Atherosclerosis Society, Firenze, Italie
- Invited speaker; Dyslipidemies familiales (jubilé du Prof. J-L De Gennes), Paris, France
- Invited speaker; Euroconferences de L'Institut Pasteur, Paris, France
- Invited speaker; Xème Journée de Nutrition et de Thérapeutique, Bordeaux, France
- Invited speaker; XIVème Congres de la Société Française d'Endocrinologie, Angers, France
- Invited speaker; Keystone Symposium "Steroid/thyroid/retinoic acid gene family", Lake Tahoe, CA, USA
- Invited speaker; March Atherosclerosis Forum (MAF), Megève, France
- Invited speaker; European Atherosclerosis society, Munich, Germany
- Invited speaker; European Workshop on Cytokines in Diabetes, Dusseldorf, Germany
- Invited speaker; Japanese-US forum on nutrition, Shirahama, Japan
- Invited speaker; Fondation Léon Frédérique, Liège, Belgique

1997

- Invited speaker; Marabou symposium on Nutrition, Oslo, Norway
- Invited speaker; Hawai Insulin Resistance meeting, Hawai, USA
- Invited speaker; Deuel Lipid meeting, Skamania, USA
- Invited speaker; American Chemical Society meeting, San Fransisco, USA
- Invited speaker; European Atherosclerosis Society, Brugge, Belgium
- Invited speaker; Endocrine Society, Minneapolis, USA

- Invited speaker; Aspen Lipid symposium, Aspen, USA
- Invited speaker; International Atherosclerosis Society, Paris, France
- Invited speaker; Biotechnology Symposium: "Nuclear Orphan Receptors, Stockholm, Sweden
- Invited speaker; COSTB5 Symposium on Insulin Resistance, Leiden, Netherlands
- Invited speaker; XI Italian Atherosclerosis Congres, Vibo Valentia, Italia

1998

- Invited speaker; Genetics of NIDDM, Tampere, Finland
- Invited speaker; European Atherosclerosis meeting, Helsinki, Finland
- Invited speaker; Best and Banting Diabetes Center Study day, Toronto
- Invited speaker; The Mediteranean meeting of Biochemistry and Molecular Biology, Marseille, France
- Invited speaker; 69th European Atherosclerosis Society, Helsinki, Finland
- Invited speaker; VIIth International Symposium on Insulin Receptors & Insulin Action, Jerusalem, Israel
- Invited speaker; American Diabetes Association Meeting, Chicago, USA
- Invited speaker; FASEB meeting "Behavioural and Metabolic Sub-phenotypes of Obesities", Snowmass, USA
- Invited speaker; 34th European Association for the Study of Diabetes annual meeting, Barcelona, Spain
- Invited speaker; VIIth European Symposium on Metabolism, Padova, Italy
- Invited speaker; 21st European Lipoprotein Club, Tutzing, Germany
- Invited speaker; 5th IUBMB Conference on the Biochemistry of Health and Diseases, Jerusalem, Israel

1999

- Invited speaker; Xth meeting of the Italian Diabetes Society, Milano, Italy
- Keynote lecturer; Winter meeting of the Finnish Society of Internal Medicine, Helsinki, Finland
- Keynote lecturer; BASO/NASO meeting Maastricht, Holland
- Invited speaker; 5th meeting on Lipoproteins, Enzymes, and Receptors, Hamburg, Germany (invited speaker)
- Invited speaker; Keystone meeting on PPARs, Keystone, USA
- Invited speaker; Endocrine Society meeting, San Diego, USA
- Invited speaker; American Diabetes Association Meeting, San Diego, USA
- Keynote lecturer; Meeting of the German Diabetes Society, Frankfurt, Germany
- Invited speaker; 70th European Atherosclerosis Society meeting, Athens, Greece
- Invited speaker; 9th European Congres on Obesity, Milano, Italy
- Invited speaker; COSTB5 meeting on Signal Transduction, Nice, France
- Invited speaker; Umehara Symposium on Common Diseases, Tokyo, Japan
- Invited speaker; Retinoids 99, Strasbourg, France
- Keynote lecturer; French Endocrine Society, Bordeaux, France
- Invited speaker; Shizuoka Symposium on aging, Shizuoka, Japan
- Keynote address; Japanese Atherosclerosis Society, Osaka, Japan

2000

- Invited speaker; Laragh conference of the American Society of Hypertension, Fort Lauderdale, USA
- Invited speaker; Risk and Prevention, Paris, France
- Invited speaker; German Society of Toxicology, Mainz, Germany
- Invited speaker; 10th European Congress on Obesity, Antwerpen, Belgium
- Keynote lecture; International Atherosclerosis Society, Stockholm, Sweden
- Invited speaker; FEBS lecture course on Transcriptional Regulation, Spetses, Greece
- Invited speaker; 1st meeting on the Clinical Implications of PPARg, Boston, USA
- Keynote lecture; International Diabetes Federation, Mexico City, Mexico
- Invited speaker; Biotechnology Symposium "Nuclear receptors in Health and Disease", Stockholm, Sweden

2001

- Invited speaker; Keystone meeting "The PPARs", Keystone, USA
- Prize lecture; 6th Annual Dolan Boyd Pritchett Memorial Lecture, University of Pennsylvania School of Medicine, Philadelphia, USA
- Invited speaker; Diabetes Dialogue, symposium on Insulin Resistance, Geneva, Switzerland

- Invited speaker; 5th European Congress of Endocrinology , Torino, Italy
- Invited speaker; 4th International meeting on Platelets and Vascular Biology, Capri, Italy
- Invited speaker; International Conference on the Biochemistry of Lipids, Bergen, Norway
- Invited speaker; Focus on Diabetes, Erice, Italy
- Keynote lecturer: 12th Meeting of the Argentine Endocrine Society, Buenos Aires, Argentina

2002

- Invited speaker; Keystone meeting "Nuclear receptors", Snowbird, USA
- Invited speaker; Experimental Biology FASEB meeting "Translating the Genome", New Orleans, USA
- Invited speaker and chairman; American Society of Biological Psychiatry et Société Française de Psychiatrie Biologique. "Genomics and mental disease". Paris, France

2003

- Invited speaker; EMBO meeting "Biology of nuclear receptors", Villefranche, France
- Invited speaker; International Atherosclerosis Society, Kyoto, Japan
- Invited speaker; 19th Klenk Symposium "transcriptional regulation of lipid homeostasis", Cologne Germany
- Invited speaker; Nuclear Receptors in Munich, Germany
- Invited speaker; CBATEG symposium on mouse functional genomics, Barcelona, Spain
- Invited speaker; Nobel Conference "Transcriptional control of lipid homeostasis", Stockholm, Sweden
- Invited speaker; Spetsai Summer school "From transcription to physiology" Spetses, Greece
- Organizer and speaker; Stock Conference of the IASO "Adipose tissue; new targets", Lisbon, Portugal
- Invited speaker; Basic research meeting AASLD "NR regulation of hepatobiliary function", Washington, USA

2004

- Organizer and speaker; Keystone meeting "Nuclear receptors; orphan brothers", Keystone, USA
- Invited speaker and chairman; Keystone meeting "Control of Adipogenesis and obesity", Banff, Canada
- EMBO membership lecture; EMBO "Frontiers in Molecular Biology", Vienna, Austria
- Invited speaker; ENDO 2004, New Orleans, USA
- Invited speaker; Mouse mutagenesis meeting, London, UK
- Invited speaker; Code meeting on the metabolic syndrome, Miami, USA
- Invited speaker; 3rd International Nuclear Receptor symposium, Osaka, Japan
- Invited speaker; 6th Insulin action meeting, Kyoto, Japan
- Invited speaker; Days of Molecular Medicine " Integrative physiology and human disease", Cambridge, UK
- Invited speaker; Macophages in inflammation, Toulouse, France
- Morgagni Gold medal Award lecture; Morgagni Symposium, Padova, Italy

2005

- Invited Speaker; Baylor College of Medicine, Houston, USA
- Invited Speaker; Columbia University, New York, USA
- Invited speaker; Cologne Spring Symposium on Molecular Biology, Cologne, Germany
- Invited speaker and chairman; EMBO meeting "Nuclear receptors", Gardone, Italy
- Invited speaker; Osaka, Japan, Japan Adiposcience Meeting
- Organizer; Eumorphia Summer School, Sept 17-23, 2005, Bischberg, France

2006

- Invited speaker; Deuel Lipid conference, Monterey, USA
- Invited speaker; Keystone meeting "Nuclear receptors; Orphan brothers", Banff, Canada
- Keynote lecture; Japanese Association for the study of Obesity, Kobe, Japan
- Josiah Brown Award Lecture; Josiah Brown Diabetes symposium, UCLA, USA
- Invited lecture; Genomics of Hyperglycemia Symposium, Elsinore, Denmark
- Invited lecture; Cantoblanco Workshop " Molecular biology of obesity and bone remodeling", Madrid, Spain

2007

- Invited speaker; Nature, Salk, IPSEN symposium on "Diseases of Transcription", La Jolla, USA

- Invited speaker; 3rd International Summit on "Cardiometabolic risk", LA, USA
- Invited speaker; 3rd Symposium on aging and caloric restriction, Verbier, Switzerland
- Invited speaker; EPFL, Lausanne, Switzerland
- Keynote lecture; 10th meeting on the "Biology of the NR family", Atlanta, USA
- Invited speaker; Keystone meeting "Nuclear receptors", Steamboat Springs, USA
- Invited speaker; EMBO meeting "Nuclear receptors", Gardone, Italy
- Invited speaker; 1st Bertinoro Systems Biology Workshop, Bertinoro, Italy
- Invited speaker; NIDDK meeting "Nuclear Receptors in Liver and Digestive", Bethesda, USA
- Invited speaker; Brigham and Women's Hospital Cardiovascular and Metabolism seminar series, Boston, USA

2008

- Co-organizer and chairman; EUMODIC annual meeting on "Mouse phenotyping", Bischofsberg, France
- Keynote lecture; Baylor College of Medicine, Cell Biology Special Seminar, Houston, USA
- Invited speaker; Keystone meeting "Insulin sensitivity and Diabetes", Breckenridge, USA
- Invited speaker; Frontiers in Biology lecture of the Stanford Genetics Department, Palo Alto, USA
- Keynote lecture; European Association for the Study of the Liver (EASL), Milano, Italy
- Keynote lecture; European Congress of Endocrinology (ECE), Berlin, Germany
- Invited speaker; New York Academy of Science, NY, USA
- Keynote lecture; Shizuoka Symposium on Aging, Shizuoka, Japan
- Invited speaker; CNIO, Madrid, Spain
- Ruysch lecture; Academic Medical Center, Amsterdam, The Netherlands

2009

- Invited lecture; EASL-AASLD meeting "Nuclear receptors and liver disease", Vienna, Austria
- Invited lecture; Banbury meeting on "Sirtuins", Banbury, USA
- Keynote lecture; 17th European Congress of Obesity, Amsterdam, The Netherlands
- Invited speaker; Kern Aspen Lipid meeting, Aspen, USA
- Danone International Prize in Nutrition lecture; International Society of Nutrition, Bangkok, Thailand
- Invited lecture and chairman; ISICS Sirtuins meeting, Barcelona, Spain
- Invited lecture and chairman; Energy of Cancer meeting, CNIO, Madrid, Spain

2010

- Invited speaker; DSM advisory board "Enhancing exercise", Basel, Switzerland
- Keynote lecture; 44th European Society of Clinical Investigation, Bari, Italy
- Invited speaker; Keystone Symposium "Nuclear receptors", Keystone, USA
- Invited speaker; Keystone Symposium "Diabetes", Whistler, Canada
- Presidential lecture; Experimental Biology 2010, American Society of Nutrition, Anaheim, USA
- Invited speaker; CSHL Symposium on Nuclear Receptors and Disease, Cold Spring Harbor, USA
- Invited speaker and chairman; EMBO annual meeting, Barcelona, Spain
- Invited lecture; FASEB AMPK meeting, Kyoto, Japan
- Keynote lecture; Japanese Association for the Study of Obesity, Maebashi, Japan
- Hans Popper Award lecture; American Association for the Study of Liver Disease, Boston, USA
- Wiendaus Prize lecture; The Dr. Falk Foundation, Freiburg, Germany

2011

- Invited speaker; Experimental Biology 2011, ASBMB, Washington, USA
- Invited speaker; NY Academy of Science Symposium on Aging, NY, USA
- Invited speaker; American Chemical Society, Anaheim, USA
- Invited lecture; University of California at Irvine, USA
- Invited lecture; National Institutes of Health, Bethesda, USA
- Invited speaker; 76th Symposium on Metabolism & Disease, Cold Spring Harbor Laboratories, USA
- Invited lecture; Katholieke Universiteit Leuven, Belgium
- Invited speaker and chairman; 36th FEBS annual meeting, Torino, Italy
- Invited lecture; University of Kuopio, Finland

- Invited speaker; Meeting on Muscle Wasting Diseases, Ascona, Switzerland
- Invited speaker; Ernst Klenk Symposium on Lipid metabolism, Cologne, Germany
- Invited speaker; American Liver Foundation, Boston, USA
- Jacobeus Lecture Award, Novo Nordisk Foundation, Helsinki, Finland
- Invited lecture; University of Utrecht and Hubrecht laboratory, The Netherlands

2012

- Invited lecture; Charite, Cardiovascular Research Center, Berlin, Germany
- Dahlem lecture; Max Planck Institute for Genetics and Molecular Biology, Berlin, Germany
- Invited lecture; German Society of Cell Biology, Dresden, Germany
- Invited lecture; CIG Symposium, Lausanne, Switzerland
- Invited lecture; Groningen Symposium on Aging, Groningen, Holland
- Invited lecture; DKFZ & ZMBH Alliance Symposium on Metabolism, Heidelberg, Germany
- Invited lecture; European Association for the Study of Diabetes (EASD), Berlin, Germany
- Invited lecture; Center for Excellence in Cellular Stress and Aging related Diseases, Cologne, Germany
- Invited lecture; Swiss Laboratory Animal Science Association, Zurich, Switzerland
- Invited lecture; Biozentrum, Basel, Switzerland

2013

- Paul F. Glenn lecture; Massachusetts Institute of Technology, Cambridge, USA
- Umesono Lecture Award; The Salk Institute, San Diego, USA
- Ruth Okey Memorial lecture; University of California, Berkeley, USA
- Invited lecture; Keystone Symposium on "Mitochondria and Heart Function", Keystone, USA
- Nutrition & Santé Prize lecture; European Association for the Study of Obesity (EASO), Liverpool, UK
- Invited lecture; Paul F. Glenn symposium, Santa Barbara, USA
- Invited lecture; FASEB meeting on Mitochondria in Disease and Aging, Big Sky, USA
- Invited lecture; 54th International Conference on the Biosciences of Lipids, Bari, Italy
- Invited lecture; 1st Helmholtz-Nature Medicine Diabetes Conference, Munich, Germany
- Distinguished lecture; 34th Japan Society for the Study of Obesity, Tokyo, Japan
- The 2013 Biomedicum Lecture, Helsinki, Finland

2014

- Invited speaker; Keystone Symposium on "Nuclear receptors", Taos, USA
- Invited speaker; Keystone Symposium on "Aging – Pushing the limits of cellular quality control", Steamboat Springs, USA
- Invited speaker; 5th International Graz Symposium on Lipid and Membrane Biology, Graz, Austria
- Invited speaker; Morgridge Symposium on Metabolism, Madison, USA
- Invited speaker; Euromit, Turku, Finland
- Invited speaker; CSHL Symposium on the Molecular Genetics of Aging, Cold Spring Harbor, USA
- Invited speaker; 13th HUPO world congress, Madrid, Spain
- Invited speaker; CNIC Conference "Energy Homeostasis and Metabolic Disease", Madrid, Spain
- Organizer and speaker; EMBO Symposium "Frontiers in Metabolism", Heidelberg, Germany

2015

- Invited speaker; Keystone Symposium "Mitochondria, metabolism and Heart Failure", Santa Fe, USA
- Invited lecture; Duke University, Raleigh-Durham, USA
- Invited lecture; University of Newcastle, UK
- Organizer and speaker; Keystone Symposium "Mitochondria and the Metabolic Syndrome", Whistler, Canada
- Invited lecture; University of Groningen, ERIBA
- Invited speaker; Banbury Symposium on "Cancer Metabolism", Banbury, USA
- Invited lecture; Calico, South San Francisco, USA
- Invited speaker; 6th Symposium on "Exercise in Medicine", Trondheim, Norway

2016

- Invited lecture; 23andMe, Mountain View, USA
- Invited lecture; Dept of Cell Biology, Harvard University, Boston, USA
- Invited lecture; Cell Symposium on "Aging and Metabolism", Sitges, Spain
- Invited lecture; Chinese Academy of Sciences, Shanghai, China
- Invited lecture; KAIST Symposium on Obesity, Diabetes and Energy Metabolism, Daejeon, Korea
- Keynote lecture; International Conference on Diabetes and Metabolism, Seoul, Korea
- Keynote lecture; "Integrative Biology of Exercise VII" meeting - American Physiological Society, Phoenix, USA
- Invited lecture; Cytokines, South San Francisco, USA

2017

- Keynote lecture; Keystone Symposium "Mitochondria communication", Taos, USA
- Keynote lecture; Keystone Symposium "Bile Acid Receptors as signal integrators in liver and metabolism", Monterey, USA
- Keynote lecture; Keystone Symposium "Aging and mechanisms of aging-related disease", Yokohama, Japan
- The Journal of Lipid Research lecture; Deuel Conference on Lipids, Monterey, USA
- Invited lecture; FASEB meeting on "NAD⁺", New Orleans, USA
- Invited lecture; Dept of Biology, ETH Zurich, Switzerland
- 5th Helmholtz-Nature Medicine Diabetes Lecture; Munchen, Germany
- Keynote lecture; 1st ENABLE Symposium, Barcelona, Spain

2018

- Invited lecture; Weizmann Institute of Science "Emerging concepts in mitochondria biology", Rehovot, Israel
- Invited lecture; Dept. of Pharmacology, UTSWMC, Dallas, TX
- Keynote lecture; 6th Seoul International Congress of Endocrinology and Metabolism (SICEM), Seoul, Korea
- Invited lecture; Cell Symposium "Multifaceted mitochondria", San Diego, CA
- Invited lecture; Frontiers in Metabolism – Mechanism of metabolic disease, Madison, WI
- Basic Science Keynote lecture; Australia New-Zealand Obesity Society meeting, Melbourne, Australia
- Invited lecture; Geroscience and the Hallmarks of Aging, Gerontological Society of America, Boston, MA
- Invited lecture; VIB Center for Biotechnology, Gent, Belgium
- Invited lecture; Oncology seminar series, University of Frankfurt, Germany

2019

- Invited lecture; Keystone Symposium "Mitochondria in Aging and age-related disease", Keystone, CO
- Invited lecture; Keystone Symposium "Integrated pathways of disease in ASH and NAFLD", Santa Fe, NM
- Invited lecture; Fusion Conference "Mitochondria—from basic biology to mechanisms of disease", Nassau, Bahamas
- Keynote lecture; Annual meeting of the Korean Society of Biochemistry and Molecular Biology, Jeju, Korea
- Invited lecture; Frontiers in Metabolism – Mechanism of metabolic disease, Madison, WI
- Invited lecture; ITMAT19 - Institute for Translational Medicine and Therapeutics, Philadelphia, PA
- Keynote lecture; Annual Retreat of the Jackson Laboratory, Portland, ME

2020

- Invited lecture; Frontiers in Aging lecture, Stanford University, Palo Alto, CA
- Organizer and speaker; Keystone Symposium "Intra- and intercellular mechanisms of aging", Vancouver, BC, Canada

2021

- Keynote lecture; Dutch Translational Metabolism Meeting, AMC, Amsterdam, NL
- Invited lecture; Department of Genetics and Genomic sciences, Icahn School of Medicine at Mount Sinai, New York, NY
- Keynote lecture; 15th Annual meeting of the Korean Society of Mitochondrial Research, Pusan, Korea
- Invited lecture; Helmholtz Center, Munchen, Germany
- Invited lecture; Dept of Molecular & Cellular Biology, Baylor College of Medicine, Houston, TX

2022

- Invited lecture; Institute of Molecular Biology, Mainz, Germany
- Invited lecture; USDA Human Nutrition Research Center on Aging, Tufts University, Boston, MA
- Invited lecture; Chinese Society of Metabolic Biology, Nanjing, China
- Organizer and speaker; Cell Symposium on “Metabolites in Signaling and Disease”, Lisbon, Portugal
- Invited lecture and Chairman; CSHL Symposium on “Protein Homeostasis”, Cold Spring Harbor, NY
- Invited lecture; 9th Aging Research Drug Discovery (ARDD) Meeting, Copenhagen, Denmark
- Invited lecture; Swiss Physiology meeting 2022, Bern, Switzerland
- Keynote lecture; Korean Society of Molecular and Cellular Biology, Jeju, Korea
- Invited lecture; Weizmann Institute of Science Symposium on Cell Biology, Rehovot, Israel
- Invited lecture; US National Academy of Science workshop on diet in chronic disease, Washington, DC

2023

- Alan Saltiel Keynote lecture; University of Michigan Symposium on Aging, Ann Arbor, MI
- Invited lecture; Gordon Research Conference on “Metabolomics and Human Health”, Il Ciocco, IT
- Invited lecture; Australasian Diabetes Congress 2023, Adelaide, AUS
- Keynote Lecture: FEBS special meeting on Sphingolipid Biology, Funchal, PT
- Invited Lecture: Monday Muscle Seminar Series, Sorbonne, Paris, FR
- Keynote lecture: 7th European Genomics Institute for Diabetes (EGID) Symposium, Lille, FR
- Invited Lecture, Novartis, Basel, CH

2024

- Panelist; 4th Annual Meeting of the Academy of Healthspan and Lifespan Research (AHLR), Palm Beach, FL
- Keynote Lecture: Prime meeting, Osaka, JP

C.2.b. Professional and Educational leadership roles**2003**

- Organizer Stock Conference of the International Association for the Study of Obesity “Adipose tissue; new targets”, Lisbon, Portugal

2004

- Co-organizer of the Keystone Symposium “Nuclear receptors; orphan brothers”, Keystone, USA

2005

- Organizer EMBO lecture course and Eumorphia Summerschool “Mouse Models for Human Disease”, Bischofsberg, France

2008

- Co-organizer of the EUMODIC annual meeting on “Mouse phenotyping”, Bischofsberg, France

2009

- Organizer of the 1st EPFL/Merck Research Laboratories Symposium on “Insulin resistance”, Saas Fee, Switzerland

2010

- Organizer of the Presidential Symposium at the American Society of Nutrition meeting during the Experimental Biology convention, Anaheim, CA
- Organizer of the Symposium on metabolomics of the EMBO annual meeting, Barcelona, Spain

2011

- Organizer of a Symposium on Diabetes at the 36th FEBS annual meeting, Torino, Italy

2014

- Co-organizer of the meeting “Frontiers in Metabolism – From Molecular physiology to Systems Medicine” EMBO Symposium, Heidelberg, Germany
- Organizer of the LIMNA Symposium “Systems genetics of Metabolism”, Lausanne, Switzerland

2015

- Co-organizer of the Keystone Symposium on “The metabolic syndrome”, Whistler, Canada

2016

- Organizer of the LIMNA Symposium “Metabolomics”, Lausanne, Switzerland
- Co-organizer Latsis Symposium on “Microfluidics for whole animal biology”, Lausanne, Switzerland

2017

- Co-organizer of the EPFL: Life Science Symposium – EMBO Press meeting “Frontiers in Metabolism – From Systems physiology to Precision Medicine”, Lausanne, Switzerland

2020

- Co-organizer of the Keystone Symposium on “Intra- and intercellular mechanisms of aging”, Vancouver, BC, Canada

2022

- Co-organizer of the Cell Symposium on “Metabolites in Signaling and Disease”, Lisbon, Portugal

C.3. Teaching awards

None

C.4. Major curriculum offerings

None

D. Report on Clinical activities (between 1988 and 1991)**D.1. Description of clinical practice:**

Field: Endocrinology and Metabolism

Areas of major focus: Intermediary metabolism: lipid & lipoprotein abnormalities, type 2 diabetes, obesity

Sites of practice: - University Hospital Gasthuisberg, Katholieke Universiteit Leuven, Belgium

- University Hospital, University of Washington, Seattle, USA.

D.2. Patient Load:

- Two large outpatient consultations per week ~ 160-200 patients total/week. Patients are mainly secondary and tertiary referral cases with obesity, diabetes, and lipid disorders.

- One small outpatient consultation ~ 10 patients/week. Preventive counseling for family members of patients with metabolic and cardiovascular disease.

- Responsible of 10 beds in a University (tertiary) Hospital occupied mainly with diabetes patients, with complications.

D.3. Clinical contributions:

Development of a clinical outpatient unit that counsels life style changes to subjects of families predisposed to metabolic and cardiovascular disease.

E. Report on Translational activities

From a **translational** point of view, my research paved the way for novel preventive and therapeutic strategies to manage common diseases, such as type 2 diabetes, obesity and atherosclerosis, as well as rare genetic diseases, such as muscular dystrophy. The translational value of our discoveries is testified by the fact that several drugs targeting processes and pathways, which we elucidated are clinically used. Examples of such drugs include the fibrates (that target PPAR α), thiazolidinediones (PPAR γ), PPAR β/δ agonists, bile acids and bile acid derivatives (that target both the TGR5 and FXR), AMPK agonists, such as resveratrol (which activates SIRT1), NAD⁺ boosters, such as nicotinamide riboside and PARP inhibitors, urolithin A, a mitophagy inducers, and most recently certain mitochondrial translation inhibitors, which activates UPR^{mt}.

Although my research involves the elucidation of fundamental biological mechanisms, I was always preoccupied with the **clinical relevance** of my work. This clinical inspiration certainly motivated me to participate at the highest level (as co-director and thereafter director) in the *Institut Clinique de la Souris* (ICS, Illkirch), a state-of-the-art mouse functional genomics institute devoted to the generation and phenotypic analysis of mouse disease models and employing 120 people. Our laboratory has a track record of successful collaborations with **major pharmaceutical companies**, such as the Merck Research Laboratories (Rahway, NJ) and Jansen Pharmaceuticals (Springhouse, PA), which we helped to identify and validate novel disease targets. In total, I negotiated >20.0M US\$ in industry collaborations for my academic laboratory, which includes the Jansen contract, the largest industry collaboration with a single laboratory at EPFL.

Likewise, my drive to translate my ideas from the bench to the bedside, made me actively involved, either as scientific co-founder or advisor, in the **start-up of biotech companies** that develop therapeutics and/or nutraceuticals to be used in metabolic and cardiovascular diseases. Companies in which I was involved include Ligand (LGND; <https://www.ligand.com/>), Intercept (ICPT; <https://www.interceptpharma.com/>), Sirtris, PhytoDia (<http://phytodia.com/>), Amazentis (<https://www.amazentis.com/>), Mitobridge (<https://www.mitobridge.com/>), TES pharma (<https://www.tespharma.com/>), Nagi Biosciences (<https://nagibio.ch/>), NOVmetapharma (<http://www.novmeta.com/>), OrsoBio (<https://orsobio.com/>), Vandria (<https://vandria.com/>), Mitopower, and most recently Kharis Health, which is actually raising VC money. I act as member of the board of directors of NOVmetapharma in Seoul, KR. The market capitalization of the companies that I co-founded or guided as a SAB member is currently well >7.0 B US\$. I was involved in 3 Initial Public Offering (IPOs) on NASDAQ (Ligand, Intercept, Sirtris) and 2 Mergers and Acquisitions (M&As) (Sirtris/GSK and Mitobridge/Astellas). Well over a 2 dozen of my students and post-doctoral fellows are employed in biotech, pharma and food companies, with currently seven working in companies in Lausanne.

PART 3: Bibliography

A full list of publications is at: <http://www.ncbi.nlm.nih.gov/pubmed/?term=auwerx>

Clarivate Web of Science 01.12.23: H-index: 158 Total citations:>92'000 Number of citations/paper: >123

Highly cited researcher 2018-23: <https://recognition.webofscience.com/awards/highly-cited/2020/>

Original peer-reviewed articles

1. J. Auwerx, H. Ector and M. Demedts. Sarcoidosis of the heart: a study of 5 patients. Acta Clin. Belg. 1983, 38, 302-308.
2. R. Bouillon, J. Auwerx, L. Dekeyser, W. Lissens and P. De Moor. Serum vitamin D metabolites and their binding proteins in patients with liver cirrhosis. J. Clin. Endocr. Metab. 1984, 59, 86-89.
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Reviews, Chapters, and Editorials

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