CURRICULUM VITAE

NAME: Nef Serge
BIRTH: 29 May 1968, Geneva (Switzerland)
PRIVATE ADDRESS: Chemin de Pinchat 3c, 1227 Carouge (Switzerland)
WORK ADDRESS: Dept of Genetic Medicine & Development, Faculty of Medicine
CMU, 1 rue Michel Servet, 1206 Geneva, Switzerland
E-MAIL: serge.nef@unige.ch
WEB SITE: https://www.unige.ch/medecine/nef/
OrcID: https://orcid.org/0000-0001-5462-0676
ResearchID: AAV-6445-2020

CURRENT INTERESTS and RESEARCH AREAS

1. Sex determination and identification of new factors implicated in disorders of sexual development
2. Testis development, testicular functions, and testicular endocrinology
3. Repro-toxicology and male reproductive health

EDUCATION

2008 **Privat Docent,** University of Geneva (Switzerland), Faculty of medicine
1996 **Ph.D.** University of Geneva (Switzerland)
1992 **M.Sc.** in biochemistry, University of Geneva (Switzerland)
1991 **B.Sc.** in biochemistry, University of Geneva (Switzerland)

CURRENT POSITION and EMPLOYMENT HISTORY

Since 2019 **Professor**, Dept of Genetic Medicine & Development, University of Geneva (Switzerland)
2012 - 2019 **Associate Professor**, Dept of Genetic Medicine & Development, University of Geneva (Switzerland)
2005 - 2012 **MER**, Dept of Genetic Medicine & Development, University of Geneva (Switzerland)
2002 - 2005 **Maître Assistant**, Dept of Genetic Medicine & Development, University of Geneva (Switzerland)
2001 - 2002 **Junior Associate**, McKinsey and Company (Switzerland)
1996 - 2001 **Postdoctoral fellow** and **Instructor**, UTSW Medical Center at Dallas (Texas, USA). Prof. Luis F. Parada
1992 - 1996 **Ph.D. thesis** in biochemistry, University of Geneva (Switzerland)

INSTITUTIONAL ACTIVITIES

Since 2022 **Member** of the Commission Cantonale d'experimentation animale (CCEA)
2017-2021 **Director,** Dept of Genetic Medicine & Development, Faculty of Medicine, University of Geneva
Since 2017 **Member** of the *Buildings Committee* (Commission des bâtiments). Faculty of Medicine, University of Geneva
Since 2014 **Research Group Leader** / Swiss Centre for Applied Human Toxicology (SCAHT)
2012-2018 **Chairman** of the *Animal Facility Committee* (>20.000 animals, > 39 FTE, >90 research laboratories). Faculty of Medicine, University of Geneva
2008-2012 **Member** of the *Animal Facility Committee.* Faculty of Medicine, University of Geneva

ACADEMIC ACTIVITIES

2010 – 2015 **Head** of the "Reproduction unit" on human reproduction, genetics and developmental biology for 2nd year medical students (University of Geneva). 100 hours equivalent/year.
Since 2008 **Lecturer** on the *human reproductive system*, 1st-year medical students (University of Geneva). 7 hours/year.
2007-2020 **Examiner** for the Swiss federal medicine exams (1st and 2nd years, histology)
Since 2006 **Lecturer** and **former head** (2006-2010) of the "Molecular endocrinology" class for 2nd-year medical students and 3rd-year biologists and biochemists (Faculty of Sciences, University of Geneva). 10 hours/year.
Since 2003 **Tutor**, human reproductive biology, Genetics and Developmental Biology, 2nd-year medical students (University of Geneva). 32 hours per year.
Since 2003 **Teacher** for the module of developmental biology. 1st year Ph.D. program, University of Geneva Medical School. 2-4 hours/year.
2004-2013 **Teacher** for the module "Mammalian stem cells and differentiation". 1st year Ph.D. program NCCR *Frontiers in Genetics* (University of Geneva). 4 hours/year.

EDITORIAL BOARDS and SCIENTIFIC COMMITTEES

Since 2021 **Associate editor** for the journal *Frontiers in Cell and Developmental Biology*
2012 - 2020 **Editorial board member** for the journal *Molecular and Cellular Endocrinology*

Since 2012	**Associate editor** for the journal *Basic & Clinical Andrology (BaCA)*
Since 2006	**Editorial board member** for the journal *Sexual Development*
2017	**Invited editor** for *Mol. Cell. Endocrinology* special issue on "The impact of new technologies in our understanding of testis formation and function"
2014	**President** of the evaluation committee of the EA3694, Toulouse (AERES, France)
2014	**Member** of the evaluation committee CE21 Toxicology (ANR, France)
2012 - 2013	**President** of the evaluation committee of the research unit UMR-S 747, INSERM-University Paris-Descartes (AERES, France)
Since 2012	**Permanent scientific board** of the European Testis Workshop
2010 - 2012	**Swiss committee member** to COST action FA0702 "Maternal interaction with gametes and embryos"
2010	**Member of the scientific advisory board** of IRSET (http://www.irset.org), a large French institute studying the interaction between environment and human health (>10 research teams)
2009	**Invited editor** for *Mol. Cell. Endocrinology* special issue on the "Role of endocrine disruptors from the environment in the etiology of obesity and diabetes"
2004-present	**Referee** for funding authorities of different countries and scientific journals (*Nature*, *Genes* & *Dev*, *PNAS*, *Development*,…)

SPIN-OFF COMPANY

Since 2007	**Founding member** with P. Aebischer (former EPFL president), A. Hoffmann (member of the Board of Roche Holding Ltd.) and P. Landolt (member of the Board of Directors of Novartis AG and Syngenta AG) of **Amazentis SA (**https://www.amazentis.com/), a company based in Ecublens (canton de Vaud) dedicated to develop, produce and distribute natural therapeutic compounds. In 2020, Amazentis has announces new clinical findings and launched its first consumer product with Mitopure (proprietary highly pure Urolithin A) in the USA. Urolithin A is a molecule recently reported to reverse age-related muscle decline by improving the activity of mitochondria.

MEMBERSHIP OF ACADEMIC ORGANISATIONS

Since 2017	Society for the Study of Reproduction (SSR), #018079
Since 2013	The Endocrine Society
Since 2010	European Society of Endocrinology (ESE)
Since 2003	Société Académique de Genève
Since 1994	Swiss Society of Biochemistry.
Since 1994	Life Sciences Switzerland (LS2).

Achievements –S. Nef

S. Nef is Professor at the Faculty of Medicine, UniGe. He is also a member of the Swiss Center for Applied Human Toxicology (SCAHT). He investigates the molecular mechanisms regulating gonadal differentiation and testicular function in mammals. His laboratory uses molecular, cellular and mouse functional genomics as well as human genetics to investigate the complex gene networks that regulate primary sex determination, testis development, and function. He has authored 116 peer-reviewed articles (46 in the past 5 years), which have received more than 10,000 citations so far (*h* index: 54).

Over the years, he has made major contributions to the field of sex determination, testis development and reproductive endocrinology. This includes the identification of the 3rd testicular hormone required for male sexual differentiation as being Insulin-like 3 (INSL3) (Nef & Parada, *Nat. Genet*. 1999) and the elucidation of the role of xenoestrogens in affecting *Insl3* expression and testicular descent (Nef et al, *Dev Biol* 2000). He also discovered the essential role played by the growth factors of the insulin/IGF family in mediating sex determination, testis development and ovarian differentiation (Nef et al *Nature* 2003, Pitetti et al *PLoS Genet.* 2013, Pitetti et al. *Mol Endo*. 2013, Neirijnck et al *FASEB J*, 2018, Neirijnck et al *Endo J*, 2019). He also characterized the ovarian and testicular genetic programs mediating sex determination in mammals (Nef et al, *Dev. Biol.* 2005 and Stévant et al. *Cell Reports*, 2018, Stévant et al. *Cell Reports*, 2019) and the roles of miRNAs in mediating testis development and spermatogenesis (Papaioannou et al *Dev. Biol.* 2009 and *Mol. Cell Prot*. 2011, Romero et al, *PLoS One*, 2011). Using aCGH and exome sequencing on a cohort of unresolved cases of 46,XY DSD with gonadal dysgenesis, his laboratory provided the first clinical evidence of the essential role played by lipid modification of Hedgehog proteins in human testicular organogenesis and embryonic development (Cailler et al, *PLoS Genet.* 2014). Lately his laboratory combined scRNA-seq and inducible cell lineage tracing experiments and identified Wnt5a+ steroidogenic progenitors as *bona fide* Leydig

cell progenitors and give rise to the majority of fetal and adult Leydig cells the major androgen-producing cells in the testes (Ademi et al. *BioRxiv* 2020). He also recently characterized the gene expression dynamics in the germ cell lineage during the process of sex determination (Mayere et al. *FASEB*, 2021).

In recent years, his laboratory invested a significant amount of time and financial resources to gain expertise is developing cutting-edge techniques in transcriptomics (e.g. single cell RNA sequencing) and combining it with transgenic mouse models for *in vivo* lineage tracing to investigate the complex mechanisms of gonadal differentiation. In particular, the attention is driven toward resolving how cell-fate decisions are made during testicular and ovarian differentiation. A significant emphasis has been be put on the supporting cell lineage since the specification of supporting progenitors into Sertoli or granulosa cells is the crucial first event in mammalian sex determination (Stévant et al. *Cell Reports*, 2018, Stévant et al. *Cell Reports* 2019). He plan now to provide an extended characterization of fate and (trans)differentiation of the supporting cell lineage during embryonic development and adulthood in both humans and mice. Finally, he is investigate the specification, sex-specific differentiation and functions of a novel, uncharacterized population of supporting-like cells, likely forming the rete testis and rete ovarii.