

Dr. Laurent SACHS, Ph.D.

Curriculum Vitae

French,

Date of birth: May 26th, 1969

Position title:

Senior scientist, CNRS Research Director class 2, Section 24: Physiology, aging and Tumorigenesis
Director UMR 7221 CNRS - Museum National d'Histoires Naturelles, Molecular Physiology and adaptation

Work Address:

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Education:

- 2001 HDR of Medical University PARIS XI, Le Kremlin Bicêtre.
- 1997 Ph.D. of University PARIS XI, Laboratory Training: Physiology, CNRS URA 90, MNHN
- 1992 D.E.A. Endocrinology, University PARIS XI, Laboratory Training: Physiology, CNRS URA 90, MNHN
- 1991 M.Sc. Cellular Biology, University of PARIS VI
- 1990 B.Sc. Physiology and Cellular Biology, University of PARIS VI

Work Experience:

- 1993-94 Laboratoire d'Endocrinologie Moléculaire, U. INSERM 344, Hopital Necker Enfant Malade, Paris, France.
- 1997-99 Postdoctoral fellow at Laboratory of Molecular Embryology, National Institute of Child Health and Human Development, National Institute of Health, Bethesda, USA.
- Since 2000 Senior scientist at Laboratory of Physiology, MNHN, CNRS UMR 8572, Paris, France.
- Since 2007 Group leader at CNRS UMR 7221, MNHN, Paris, France. Group "Cellular and Molecular Responses to Environmental Challenges".
- 2011-15 Work package leader in the European integrated project «Ideal»: Integrated research on **DE**velopmental determinants of **A**ging and **L**ongevity.
- 2014-16 Coordinator of the CNRS PICS "MethylDev" with U of Michigan, Ann Arbor, USA.
- 2015-16 Coordinator of the CNRS PEPS Exotic Model, "Triton".
- 2017-2020 Expert in the endocrine disruptor working group at ANSES (French national agency for the health and environment safety).
- 2019-2023 Partner in the H2020 European project ERGO "Breaking down the wall between human health and environmental testing of endocrine disruptors: EndoCRine Guideline Optimisation".

Honors:

- 1988-1992 Fellowship awarded by the French government.
- 1992 Bronze Medal of national defense (Military service, health division)
- 1993-1996 Graduate Student Fellowship from the Ministère de la recherche et de la Technologie.
- 1996 Travel Award European Society of Comparative Endocrinology
- 1996-1997 Graduate Student Fellowship from the Ligue Nationale contre le Cancer.
- 1997-1999 Fellowship from the Fogarty International Center, National Institute of Health.
- 2003 Travel Award to attend the 3rd International Congress of Comparative Physiology and Biochemistry. Mt Buller, Australia.
- 2009-2011 ANR Young researcher program.

Scientific Society:

- 1996 Member of the European Society of Comparative Endocrinology.
- 1998-1999 Member of the American Society for Cell Biology.
- 1998-1999 Associate member of the Endocrine Society.
- 2000-2005 and since 2011 Member of the Endocrine Society.

Synergistic activities:

- **Professional development of graduate students and postdoctoral fellows:** The training environment that I provide for graduate students and postdoctoral fellows is significant in that it provides a dual expertise in biology (molecular endocrinology) and bioinformatics on conventional and non-conventional models.
- **Community outreach:** Improving the scientific literacy of the public are important aspects. Scientific outreach activities have included workshops in kindergarten, high schools and at the annual science festival (diffusion to schools and the public) on thyroid hormones, amphibian metamorphosis and aging.
- **Service:** At University ParisXI: Thyroid function training program, master of endocrinology. At MNHN: Genomes and transcriptomes: NGS Approaches.
- **Editorial:** member of the editorial board of *Endocrinology* 2014 to 2017, reviewer for over 20 scientific journals. National and International: Critical review of the draft report "Science and Technology" of the Academy of Sciences entitled "Cell / Developmental Biology Biology". Examination on behalf of the Scientific Council of the University of Science and Technology of Lille, France. Examination for H. Curien Partnership proposal between France and Spain and France and Italy. Evaluation for NIH to promote visiting research fellow to staff scientist. Four years on the Muséum National d'Histoire Naturelle committee for assistant professor recruitment. Two years' service in panel for University Paris XI Lecturer recruitment. Annual meeting scientific committee for nuclear receptor French community (I co-create the meeting).
- **Collaborators:** A. Aranda, U Autonoma de Madrid, Spain; O. Bronchain, U Paris-Sud, France; D. Buchholz*, U Cincinnati; B. Demeneix, MNHN, Paris, France; M. Denoël*, U Liege, Belgium; R. Denver*, U Michigan, USA; H. Escriva, U Paris VI, France; P. Joly, U Lyon1, France; V. Laudet, Banyuls marine biology center, France; S. Marcellini*, U Concepcion, Chile; E. Slagboom, LUMC, Leiden, The Netherlands; N. Pollet, U Paris-Sud, France; D. Rokhsar*, U Berkeley, USA; Y. Ruan* and E. Liu, The Jackson Laboratory, U Connecticut, USA; Y.-B. Shi, NIH, USA; A. Orozco, UMAM, Queretaro, Mexico. (* ongoing)
- **Graduate Advisors and Postdoctoral Sponsors:** B. Demeneix, PhD Advisor, Muséum National d'Histoire Naturelle, Paris, France; A. de Luze, PhD Advisor, Muséum National d'Histoire Naturelle, Paris, France, Y.-B. Shi, Postdoctoral Advisor, NIH; A. Wolffe, Postdoctoral Advisor, NIH (deceased).
- **Thesis Advisor and Postgraduate-Scholar Sponsor :** (2 Master student, 3 graduate students, 2 postdoctoral scientists trained) A. Grimaldi (PhD 2014; Now Postdoc Max Plank institute); P. Bilesimo (PhD 2010, CIFRE with the SME "Watchfrog", Now consultant Airport Medical School of Brown University); E. Havis (MS 2001; PhD 2005, Now assistant professor U Paris VI); V. Jonchère (Now postdoc INSERM); G. Kerdivel (Now post-doc INSERM); M. Scharwatt (MS 2016).

List of selected publications

1. URNOV, F.D.; YEE, J.; **SACHS, L.**; COLLINGWOOD, T.N.; BAUER, A.; BEUG, H.; SHI, Y.-B. and WOLFFE, A.P. (2000)- Targeting of N-CoR and histone deacetylase 3 by the oncoprotein v-ErbA yields a chromatin infrastructure-dependent transcriptional repression pathway. *EMBO J.*, **19**: 4074-4090.
2. **SACHS, L.M.** and SHI, Y.-B. (2000)- Targeted chromatin binding and histone acetylation in vivo by thyroid hormone receptor during amphibian development. *Proc. Natl. Acad. Sci. USA*, **97**: 13138-13143.

3. JONES, P. L.; **SACHS, L. M.**; ROUSE, N.; WADE, P. A. and SHI, Y.-B. (2001)- Multiple N-CoR complexes contain distinct histone deacetylases. *J. Biol. Chem.*, **276**: 8807-8811.
4. **SACHS, L.M.**; AMANO, T. ; ROUSE, N. and SHI, Y.-B. (2001)- Requirement of histone deacetylase at two distinct steps in thyroid hormone receptor mediated gene regulation during amphibian development. *Dev. Dyn.*, **222**: 280-291.
5. **SACHS, L.M.**; JONES, P.L.; HAVIS, E.; ROUSE, N.; DEMENEIX, B.A. and SHI, Y.-B. (2002)- Nuclear receptor corepressor recruitment by unliganded thyroid hormone receptor in gene repression during *Xenopus laevis* development. *Mol. Cell. Biol.*, **22**: 8527-8538.
6. HUANG, Z.-Q.; LI, J.; **SACHS, L.M.**; COLE, P.A. and WONG, J. (2003)- A role for cofactor-cofactor and -histone interactions in targeting p300, SWI/SNF and Mediator for transcription. *EMBO J.*, **22**: 2146-2155.
7. HAVIS, E.; **SACHS, L.M.** and DEMENEIX, B.A. (2003)- Metamorphic T3 response genes have specific coregulator requirements. *EMBO Reports*, **4**: 883-888. (HE and SLM are co-first author).
8. **SACHS, L.M.** (2004)- Corepressors requirement and thyroid hormone receptor function during *Xenopus* development. From Vitamins and Hormones, Vol. 68: Nuclear receptor coregulators, Edited by: G. Litwack, Elsevier Academic Press, San Diego, CA, USA, pp: 209-230.
9. HAVIS, E.; LE MEVEL, S.; MORVAN-DUBOIS, G.; SHI, D.-L.; SCANLAN, T.S.; DEMENEIX, B.A. and **SACHS, L.M.** (2006)- Unliganded thyroid hormone receptor is essential for *Xenopus laevis* eye development. *EMBO J.*, **20**: 4943-4951.
10. BERTRAND, S.; THISSE, B.; TAVARES, R.; **SACHS, L.M.**; CHAUMOT, A.; BARDET, P.-L.; ESCRIVA, H.; DUFFRAISSE, M.; MARCHAND, O.; SAFI, R.; THISSE, C. and LAUDET, V. (2007)- Unexpected novel relational links uncovered by extensive developmental profiling of nuclear receptor expression. *PLOS Genetics*, **3**: 1-15.
11. BAGAMASBAD, P.; HOWDESHELL, K.L.; **SACHS, L.M.**; DEMENEIX, B.A. and DENVER, R.J. (2008)- A role for basic transcription element binding protein 1 (BTEB1) in the autoinduction of thyroid hormone receptor beta. *J. Biol. Chem.*, **283**: 2275-2285.
12. MORVAN-DUBOIS, G.; DEMENEIX, B.A. and **SACHS, L.M.** (2008)- *Xenopus laevis* as a model for studying thyroid hormone signalling: From development to metamorphosis. *Mol. Cell. Endocrinol.*, **293**(1-2): 71-79.
13. BUISINE, N. and **SACHS, L.M.** (2009)- Impact of genome assembly status on ChIP-Seq and ChIP-PET data mapping. *BMC Research Notes*, **2**: 257.
14. BILESIMO, P.; JOLIVET, P.; ALFAMA, G.; LE MEVEL, S.; HAVIS, E.; DEMENEIX, B.A. and **SACHS, L.M.** (2011)- Variations in histone methylation patterns are associated with different direct T₃ responses. *Mol. Endoc.*, **25** (2): 225-237.
15. GRIMALDI, A.; BUISINE, N.; MILLER, T.; SHI, Y.-B. and **SACHS, L.M.** (2013)- Mechanisms of thyroid hormone receptor action during development : Lessons from amphibian studies. *Biochimica et Biophysica Acta*, **1830**(7): 3882-3892.
16. GRIMALDI, A.; BUISINE, N.; BILESIMO, P. and **SACHS, L.M.** (2013)- High throughput sequencing will metamorphose analysis of thyroid hormone receptor during amphibian development. *Current Topics in Developmental Biology*, **103**: 277-303.
17. ZAMBRANO, A.; GARCIA-CARPISO, V.; GALLARDO M.E.; VILLAMUERA, R.; GOMEZ-FERRERIA M.A.; PASCUAL A.; BUISINE N.; **SACHS L.M.**; GARESSE R. and ARANDA, A. (2014)- The thyroid hormone receptor β induces DNA damage and premature senescence. *J. of Cell Biology*, **204**(1): 129-146.
18. **SACHS, L.M.** (2015)- Unliganded Thyroid Hormone Receptor Function: Amphibian Metamorphosis Got TALENs. *Endocrinology*, **156** (2): 409-410.
19. BAGAMASBAD, P.D.; BONETT, R.M.; **SACHS, L.M.**; BUISINE, N.; RAJ, S.; KNOEDLER, J.R.; KYONO, Y.; RUAN, Y.; RUAN, X. and DENVER, R.J. (2015)- Deciphering the regulatory logic of an ancient, ultraconserved nuclear receptor enhancer module. *Mol. Endo.* **29**(6): 856-872.

20. BUISINE, N.; RUAN, X.; BILESIMO, P.; GRIMALDI, A.; ALFAMA, G.; ARIYARATNE, P.; MULAWADI, F.; CHEN, J.; SUNG, W.K.; LIU, E.; DEMENEIX, B.A.; RUAN, Y. and **SACHS, L.M.** (2015)- *Xenopus tropicalis* genome re-scaffolding and re-annotation reach the resolution required for *in vivo* ChIA-PET analysis. *Plos ONE* 10(9): e0137526.
21. TANG, Z.; LUO, O.J.; LI, X.; ZHENG, M.; ZHU, J.J.; SZALAJ, P.; TRZASKOMA, P.; MAGALSKA, A.; WLODARCZYK, J.; RUSZCZYCKI, B.; MICHALSKI, P.; PIEUCH, E.; WANG, P.; WANG, D.; TIAN, S.Z.; PENRAD-MOBAYED, M.; **SACHS, L.M.**; RUAN, X.; WEI, C.-L.; LIU, E.T.; WILCZYNSKI, G.M.; PLEWCZYNSKI, D.; LI, G. and RUAN, Y. (2015)- CTCF-Mediated Human 3D Genome Architecture Reveals Chromatin Topology for Transcription. *Cell* 163(7): 1611-1627.
22. BRONCHAIN, O.J.; CHESNEAU, A.; MONSORO-BURQ, A.H.; JOLIVET, P.; PAILLARD, E.; SCANLAN, T.S.; DEMENEIX, B.A.; **SACHS L.M.** and POLLET, N. (2017)- Implication of thyroid hormone signaling in neural crest cells migration: Evidence from thyroid hormone receptor beta knockdown and NH3 antagonist studies. *Mol. Cell. Endocrinol* 439:233-246. (SLM and NP are co-last author).
23. KYONO, Y.; BILESIMO, P.; WEN, L.; **SACHS L.M.** and DENVER, R.J. (2016)- Implication of Developmental and thyroid hormone regulation of the DNA methyltransferase 3a gene in *Xenopus* tadpoles. *Endocrinology* 157(12):4961-4972.
24. **SACHS, L.M.** and BUCHHOLZ, D. (2017)- Frogs model man : *in vivo* thyroid hormone signaling during development. *Genesis* 55 (1-2) : e23000.
25. CLERGET-FROIDEVAUX, M.-S. and **SACHS, L.M.** (2017)- High fat diet and pregnancy: are you ready to take risks for your offspring? *Endocrinology* 158(9): 2716-2718.
26. OLVERA, A.; MARTYNIUK, C.J.; BUISINE, N.; JIMENEZ-JACINTO, V.; SANCHEZ-FLORES, A.; **SACHS, L.M.** and OROZCO, A. (2017)- Differential transcriptome regulation by 3,5-T2 and 3',3,5-T3 in brain and liver uncovers novel roles for thyroid hormones in tilapia. *Scientific Reports* 7(1):15043.
27. BUISINE, N.; RUAN, X.; RUAN, Y. and **SACHS, L.M.** (2018)- Chromatin Immunoprecipitation for Chromatin Interaction Analysis using Paired-End-Tag (ChIA-PET) sequencing in tadpole tissues. *Cold Spring Harbor Protocols* 2018(8): pdb.prot097725. doi: 10.1101/pdb.prot097725.
28. BUISINE, N.; RUAN, X.; RUAN, Y. and **SACHS, L.M.** (2018)- Chromatin Interaction Analysis using Paired-End-Tag (ChIA-PET) Sequencing in Tadpole Tissues. *Cold Spring Harbor Protocols* 2018(8): pdb.prot104620. doi: 10.1101/pdb.prot104620.
29. BUISINE, N.; KERDIVEL, G. and **SACHS, L.M.** (2018)- de novo Transcriptomic approach to study thyroid hormone receptor action in non-mammalian models. *Method in Molecular Biology* 1801: 265-285. doi: 10.1007/978-1-4939-7902-8_21.
30. KERDIVEL, G.; BLUGEON, C.; FUND, C.; RIGOLET, M.; **SACHS, L.M.** and BUISINE, N. (2019)- Opposite response of ACTG1-FOS subnetwork differentiate tailfin fate in *Xenopus* tadpole and post-hatching Axolotl. *Frontiers in Endocrinology* 10: 194. doi: 10.3389/fendo.2019.00194.
31. **SACHS, L.M.** and BUCHHOLZ, D.R. (2019)- Insufficiency of thyroid hormone in frog metamorphosis and the role of glucocorticoids. *Frontiers in Endocrinology (in press)*.