

Frédéric Silvestre, Ph.D., Prof.

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 <https://www.evolution-physiology.be>



Current position

2014 – ...  **Professor**, University of Namur (Belgium).

Employment History

2010 – 2014  **Lecturer (*chargé de cours*)**. University of Namur (Belgium).

2007 – 2010  **Post-doctoral researcher**. FNRS (Belgium).


2004 – 2007  **Researcher**. BELSPO - UNamur (Belgium).

1998 – 2004  **Teaching Assistant**. University of Namur (Belgium).

Management and direction positions

2020 – ...  Chair of the Department of Biology - UNamur

2021 – ...  President of the Royal Belgian Zoological Society

2013 – 2020  Manager of the Master in Organism Biology and Ecology - UNamur and UCLouvain

2010 –  Head of the Laboratory of Evolutionary and Adaptive Physiology (LEAP)

Education

1998 – 2005  **Ph.D. in Biology, University of Namur.**

Thesis title: *Stress response to cadmium in an euryhaline crustacean, Eriocheir sinensis. An integrative approach including analysis of the proteome.*


Supervisor: Prof. Pierre Devos

1997 – 1998  **Master degree in Environmental Management, Free University of Brussels ULB**

Thesis title: *Ecotourism in Antarctica : a tool for sustainable development ?*

Supervisors: Prof. M.-F. Godart (ULB) and C. DeBroyer (IRSNB)


Grade: High Distinction

1994 – 1996  **Licence in Zoology, University of Liège**

Thesis title: *Heavy metals in *Sarpa salpa* (L. 1758). Relations with feeding.*

Supervisor: Prof. J.-M. Bouqueneau








Grade: The Highest Distinction

1992 – 1994  **Bachelor in Biology, University of Liège**










Grade: High Distinction

1986 – 1992  **High school at the Royal Athenee “Air Pur” in Seraing**






Certificates

- 2022  **Online certificate: Case studies in functional genomics.** Harvard University - PH525.6x (edX).
- 2020  **Online certificate in Data Science: Foundation using R.** University Johns Hopkins (Coursera).
-  **Online certificate: Introduction to Bioconductor.** Harvard University - PH525.5x (edX).
- 2010  **From Research to Business.** 6 days training for technology start-up company management – Louvain School of Management; HEC Liège; Solvay Brussels Business School.
- 2009  **Good Laboratory Practices.** Training BioWin, The Health Cluster of Wallonia – Cefochim – Seneffe, Belgium – 7 and 8th of May 2009.
- 2008  **Green Technology Entrepreneurship Academy.** One week training for green technology start-up company management - University of California Davis school of entrepreneurship (USA) ; July 7 – 11, 2008.
- 2001  **Advanced methods in protein chemistry and mass spectrometry.** Training at the University of Odense (Denmark). Pr. Ole N. Jensen, Protein Research Group ; November 5 – 18, 2001


Bibliometric indices

- Peer-reviewed  Total number: 60
-  H index (Google Scholar; Scopus): 33; 29
-  Number of citations: 2832; 2079
- Invited speaker  7 international conferences
- International conferences  >40
- Links  Full updated list: <https://www.evolution-physiology.be/publications/>
-  UNamur research portal: <https://researchportal.unamur.be/en/persons/frédéric-silvestre>
-  Researchgate profile: https://www.researchgate.net/profile/Frederic_Silvestre
-  Google Scholar profile: <https://scholar.google.com/citations?user=VoJq79AAAAAJ&hl=en>

Honors and awards

- 2020  **FNRS research grant**, for 6 months sabbatical leave at UC Davis.
- 2008  **Fulbright Advanced Research Grantee**, for post-doctoral researches at UC Davis.
- 2008 – 2010  **FNRS traveling grants**, for post-doctoral researches at UC Davis and University of Louisiana.
- 2004  **Fonds Adrien Bauchau**, travel grant.
-  Co-author of 3 best poster awards and 2 best oral communication at SETAC Europe annual meeting, PRIMO conference, and Benelux Congress of Zoology.

Funded research projects

- 2020 –  **AQUA: aquatic platform for experiments on freshwater fish** Total budget of 792 600 euros funded by the Walloon Region FPW. Spokesman for UNamur.

Funded research projects (continued)

- 2020 – 2023 ■ The epigenetic origin of behavioral traits variability in a self-fertilizing fish : the mangrove rivulus ». Project FNRS CDR. Leading promoter. Total budget of 60 000 euros.
- 2016 – 2018 ■ Effects of environmental stress on developmental plasticity of behavioral traits in the mangrove rivulus. Anchoring the phenotype with the methylome, proteome and transcriptome in brain and gonads. Project FNRS CDR. Leading promoter. Total budget of 55 241 euros.
- 2014 – 2018 ■ Phenotypic plasticity without genetic diversity in vertebrates: an epigenetic perspective in the self-fertilizing mangrove rivulus, *Kryptolebias marmoratus*." Project FNRS PDR. Leading promoter. Total budget of 339 318 euros.
- 2011 – 2015 ■ Transgenerational impacts of xenobiotics in aquatic vertebrates. Epigenetic, proteomic, endocrine and structural physico-chemical combined approaches." Project FNRS FRFC. Leading promoter. Total budget of 195 300 euros.

International Experience

- 2020 ■ Scientific mission of 6 months at the University of California Davis (UC Davis – USA) during a sabbatical leave – Dr. Richard Connon – School of Veterinary Medicine.
- 2019 ■ Field work in Belize mangroves to sample the mangrove rivulus and to carry out field behavioural assays (3 weeks in May 2019).
- 2018 – 2019 ■ Field work in Florida mangroves to sample the mangrove rivulus. (One week in January 2018 and 3 weeks in July 2019).
- 2012 ■ Institutional mission for the University of Namur in Benin (University of Cotonou and Parakou). Research projects in biology and sustainable development setup. (10 days in 2012).
- 2008/2010 ■ Post-doctoral researcher at the University of California Davis (USA) – Pr. D. Küeltz – Department of Animal Science. "Analysis of stress proteomes in aquatic species exposed to environmental stressors". (6 weeks in 2010 and 7 months in 2008).
- 2007/2009 ■ Post-doctoral researcher at the University of Louisiana Lafayette (USA) – Pr. P. Klerks – Department of Biology. "Mechanisms of acclimation to cadmium in the least killifish *Heterandria formosa*". (2 months in 2009 and 3 months in 2007).
- 2005/2006 ■ Scientific mission in Vietnam within a scientific collaboration project between Vietnam and Belgium (1 month in 2006 and 1 month in 2005) : international meeting in Ho Chi Minh City ; teaching in CanTho University and Hanoi University; research work and improvement of a biochemistry laboratory in CanTho University ; sampling.

Expertise

- Reviewing ■ Reviewer for the following scientific journals : Applied Genomics and Proteomics, Aquatic Biology, Aquatic Toxicology, Chemosphere, Comparative Biochemistry and Physiology, Ecotoxicology, Environmental Research, Environmental Toxicology, Environmental Toxicology and Chemistry, Fish Physiology and Biochemistry, Journal of Experimental Marine Biology and Ecology, Journal of Proteome Research, Journal of Proteomics, Molecular and Cellular Proteomics, Proteomics, Environmental Pollution, Frontiers in Marine Sciences, journal of Experimental Zoology, Nature Scientific Reports, Oxford University Press, Nature Communications

Expertise (continued)

Editorial	Scientific editor of a special issue of Epigenomes: "Environmental Epigenomes" https://www.mdpi.com/journal/epigenomes/special_issues/environmental_epigenomes
Committee jury	<ul style="list-style-type: none">FRIA grants jury member, FNRS (commission Zoology; 2011-2018, 2022-***), BelgiumANR, the National Research Agency (member of the final Jury CE34 in 2019, 2021 and 2022, Contaminants, Environnement, Santé), FranceARES, Académie de Recherche et d'Enseignement Supérieur, BelgiumINRA, Institut National de la Recherche Agronomique, FranceANSES, Agency for Food, Environmental and Occupational Health and Safety, FranceFonds de Recherche Nature et Technologies, Quebec, CanadaINICIATIVA CIENTÍFICA MILENIO, ChileBrittany Region – Regional policy for the strengthening of research, FranceFCT, Foundation for Science and Technology (FCT), PortugalNSERC, Natural Sciences and Engineering Research Council, CanadaTWAS, The World Academy of SciencesNational Centre of Science and Technology Evaluation, Kazakhstan
PhD jury	PhD jury member of 35 thesis. 22 in Belgium and 13 international.
Recruitment committee	Member of the recruitment committee for academic or permanent researcher positions at UNamur (6 juries) or at other Universities or research centers (ULiège, UMon, Brest, Metz, INRA).

Events organisation

2023	Member of the organizing committee and the scientific committee of the 5th Nothobranchius symposium at KULeuven (May 2023) - https://notho-2023.be/
2022	<ul style="list-style-type: none">President of the organizing committee and the scientific committee of the 17th annual conference Ecobim in aquatic ecotoxicology at UNamur (11-13th of May 2022). > 80 attendees - https://ecobim2022.unamur.be/Member of the organizing committee and the scientific committee of the annual Benelux Congress of Zoology at KULeuven Kortrijk (September 2022)
2017	Member of the organizing committee of the SETAC annual meeting in Brussels (May 2017)

Teaching (total in 2022-23: 201h)

Animal Biology	1st Bachelor Veterinary ; 35h (since 2010-11)
Animal Diversity and Evolution	1st Bachelor Biology ; 36h (since 2020-21)
Animal Physiology	2nd and 3rd Bachelor Biology and Veterinary ; 25h (between 2012-13 and 2020-21)
Comparative Physiology	3rd Bachelor Biology ; 16h (since 2014-15)

Teaching (total in 2022-23: 201h) (continued)

Ecophysiology	■ 3rd Bachelor Biology (optional) ; 15h (between 2012-13 and 2020-21)
Current topics in Biology	■ 2nd Bachelor Biology ; 10h (since 2015-16)
Introduction to Ecotoxicology	■ 3rd Bachelor Biology, Master MICA and Aquaculture ; 7.5h (since 2015-16; substitute since 2020-21)
Ecotoxicology	■ Master in Organism Biology and Ecology (optional) ; 12h (since 2012-13; substitute since 2020-21)
Applied Ecotoxicology	■ Master in Organism Biology and Ecology (optional) ; 8h (since 2015-16; substitute since 2020-21)
Ecological Proteomics and Epigenetics	■ Master in Organism Biology and Ecology (optional) ; 30h (since 2010-11)
Evolutionary Physiology	■ Master in Organism Biology and Ecology (optional) ; 18h (between 2010-11 and 2017-18)
Data analysis	■ A case study in behavioral ecology (Linear Mixed Models) - Master in Organism Biology and Ecology ; 4h (since 2021-22)
Evolution	■ Master in Biochemistry and Molecular Biology; 7.5h (since 2012-13)
Anatomy of fish, molluscs and crustaceans	■ Master in Aquaculture ; 7.5h (between 2012-13 and 2021-22)
Professional internships	■ Master in Biochemistry and Molecular Biology; management and evaluation (since 2021-22)
Observational internships	■ Bachelor in Biology (optional) ; management and evaluation (since 2021-22)
Field Trip in Marine Biology	■ 2nd Bachelor Biology ; 5 days (since 2013-14)
Multidisciplinary Field Trip	■ All Bachelor in Sciences (optional) ; 7 days (since 2017-18)
Biodiversity	■ Continuous program in sustainable development at UNAmur ; 2h (since 2020-21)

Post-doc, PhD, MSc and BSc students supervision as promoter

Dr Anthony Mathiron	■ Aggressivity trait in a fish: study of the hormonal and molecular mechanisms that underlie personality traits in the mangrove rivulus <i>Kryptolebias marmoratus</i> . Fondation Fyssen. Post-doc researcher between 2020 and 2022.
Dr Sonia Gaaied	■ Étude écotoxicologique des effets de la neurotoxine beta-N-méthylamino-Lalanine (BMAA) durant le développement précoce du poisson Killifish turquoise (<i>Nothobranchius furzeri</i>); réponses physiologiques, comportementales et moléculaires. Wallonie - Bruxelles International grant. 3 months in 2019.
Dr Victoria Suarez-Ulloa	■ Phenotypic plasticity without genetic diversity in vertebrates: an epigenetic perspective in the self-fertilizing mangrove rivulus, <i>Kryptolebias marmoratus</i> . Post-doc researcher FNRS 2017-2018.
Dr Alexandre Fellous	■ Phenotypic plasticity without genetic diversity in vertebrates: an epigenetic perspective in the self-fertilizing mangrove rivulus, <i>Kryptolebias marmoratus</i> . Post-doc researcher FNRS 2014-2017.
Justine Belik	■ How DNA methylation levels change over time in the naturally isogenic mangrove rivulus ? PhD student and teaching Assistant since 2022.

Post-doc, PhD, MSc and BSc students supervision as promoter (continued)

Céline Chevalier	■ Etude des modifications phénotypiques, physiologiques et moléculaires survenant au cours des premières générations chez le poisson zèbre ; compréhension des mécanismes évolutifs déclenchés au cours d'un processus de domestication. Co-promotion with the University of Lorraine, France. Since 2021.
Yves Blanco	■ The evolutionary enigma of high male-ratio populations in a self-fertilizing vertebrate, <i>Kryptolebias marmoratus</i> . PhD student FRIA since 2019.
Valentine Chapelle	■ The epigenetic origin of behavioral traits variability in a self-fertilizing fish : the mangrove rivulus. PhD student FRIA 2018-2022. To be graduated in March 2023.
Antoine Wittorski	■ Epigenetic mechanisms in the Turquoise killifish, <i>Nothobranchius firzeri</i> . Ecological and evolutionary implications. PhD student and teaching Assistant 2016-2022. Was not graduated.
Alessandra Carion	■ Developmental plasticity of behavioral traits in the self-fertilizing fish <i>Kryptolebias marmoratus</i> : an integrative approach. PhD student FNRS 2015-2019. Graduated in 2020.
Anne-Sophie Voisin	■ The cellular phenotypic response of the mangrove rivulus <i>Kryptolebias marmoratus</i> to endocrine disrupting chemicals and its regulation by DNA methylation. PhD student FNRS 2013-2018. Graduated in 2019.
Elodie Falisse	■ Delayed effects of pollutants on aquatic organisms. PhD student and teaching Assistant 2011-2018. Graduated in 2019.
MSc and BSc thesis	■ Supervision of 39 Master thesis and > 40 Bachelor thesis since 2010.




Skills

Languages	■ French and English
Laboratory	■ Proteomics workflow, mass spectrometry, epigenetic workflow, pyrosequencing, biochemical, physiological and behavioral analyses, field studies in mangroves
Bioinformatics	■ Data analysis using R (exploratory, LMM, GLMM); transcriptome and methylome analysis using R and Bioconductor ; quality control, genome alignment and DNA methylation calling (FASQC, Samtools, Bismark, Trim Galore!,...)
Web Dev	■ Using WordPress, R Blogdown and Github Webmaster of three professional websites: https://www.stage-scientifique-ete.be/ , https://www.masterboe.be/ , http://www.evolution-physiology.be/ Webmaster of two private websites: https://fsilvestrephoto.smugmug.com/ , https://fsilvestreblog.netlify.app/
Human ressources management	■ As chair of the department of Biology and head of LEAP
Miscellaneous	■ Nature and travel photography/videography; sport (tennis, crossfit, running, hiking, diving 1*)

Scientific popularization

2012-... ■ On my Twitter account - @fsilvestrelab

Scientific popularization (continued)

- 2022  Radio show and podcast "Les éclaireurs" at RTBF about global water pollution <https://auvio.rtbef.be/media/les-eclaireurs-pollution-chimique-aucune-eau-nest-epargnee-2944256>
A page on RTBF website summarizes my curriculum <https://www.rtbef.be/article/pollution-chimique-aucune-eau-nest-epargnee-11070196>
-  Active participation to the podcast "Hector (3 and 4) from Céline Rase <https://open.spotify.com/show/04zjp5tnkukaBcfE32uJTP>
- since 2020  Youtube channel of my laboratory <https://www.youtube.com/channel/UCIzazNaHvHwkgtriUzZLKFA>