

Alexa Sadier, PhD

Karen Sears lab - 4117

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CURRENT POSITION

2017-present Postdoctoral research associate
University of California, Los Angeles
Advisor: Karen Sears

EDUCATION AND RESEARCH POSITIONS

- 2015-2017 Postdoctoral research associate**
University of Illinois at Urbana-Champaign, Illinois, Advisor: Pr. Karen Sears
- 2014 Postdoctoral scholar short-term**
Ecole Normale Supérieure de Lyon, IGFL, Postdoctoral research position, 4 months
- 2009-2013 PhD in Evolutionary and Developmental Biology – Molecular Zoology group**
Ecole Normale Supérieure de Lyon, IGFL, France
Thesis: “Evo-devo of the *Eda* pathway, from the evolution of signaling to the establishment of shape”. Advisors: Pr. Vincent Laudet and Dr. Sophie Pantalacci
Highest honors and felicitations from the committee
- 2008-2009 Master “research” Biosciences**
2006-2007 Ecole normale supérieure de Lyon, IGFL Master 1 and 2 - **With honors**
Theses: “Alternative isoforms of the *Edaradd* gene in evolution” and “The cryptic species diversity of the genus *Proasellus*”. Advisors: Sophie Pantalacci and Vincent Laudet (2008-2009) and Christophe Douady (2006-2007)
- 2007-2008 Master 2 “high school and higher education”/Préparation à l’agrégation**
Ecole Normale Supérieure de Lyon, France, highest educational degree for highschool and undergrad education in Biology and Geology. Major: A, Molecular Biology
Agrégation: admissible; CAPES: admitted, position offered, **national ranking 4/3393**
- 2006-2007 Licence in Molecular and Cellular Biology**
Ecole normale supérieure de Lyon, France – EU equivalent of Bachelor, 2 months lab experience – published research (see MBE 2008)
Supervisor: Sophie Pantalacci

AWARDS AND GRANTS

- 2018 NSF IOS proposal in collaboration with PIs Karen Sears (UCLA), Sharlene Santana (UW) and Paul François (Mc Gill)**
Ranked **high priority** - ranking 2 excellent, 2 very good, 1 good – **resubmission Nov 2019**
- 2017 PanAmEvoDevo travel grant**
- 2017 MBI workshop grant – 600\$**
- 2012 Grant ARC (Research against Cancer Association) Foundation**
Awarded a project on the role of EDAR in cancer – One year of full support ~20k €
- 2009 Teaching fellowship – “monitorat”**
Extra salary for teaching activities including: TA, full lectures and full courses teaching and conception – 80h/year ~
- 2009 MRT PhD fellowship**
Supporting 3 years of salary for research - Ranked 3/50 (15/50 were awarded) ~12.25k €

PUBLICATIONS

*: equal contributions

Sadier, A., Jackman, W.R., Laudet, V and Gibert, Y. Vertebrate tooth type: is it signaled by a single organizing tooth? *In review, BioEssays*

Vial, J., Royet, A., Cassier, P., Tortereau, A., Dinvaut, S., Maillet, D., Gratadou-Hupon, L., Creveaux, M., **Sadier, A.**, Tondeur, G., et al. (2019). The Ectodysplasin receptor EDAR acts as a tumor suppressor in melanoma by conditionally inducing cell death. *Cell Death Differ* 26, 443–454.

Sadier, A., Twarogowska, M., Steklikova, K., Hayden, L., Lambert, A., Schneider, P., Laudet, V., Hovorakova, M., Calvez, V., and Pantalacci, S. (2019). Modeling Edar expression reveals the hidden dynamics of tooth signaling center patterning. *PLoS Biol* 17, e3000064.

Sadier*, A., Davies*, K.T., Yohe, L.R., Yun, K., Donat, P., Hedrick, B.P., Dumont, E.R., Davalos, L.M., Rossiter, S.J., and Sears, K.E. (2018). Multifactorial processes underlie parallel opsin loss in neotropical bats. *Elife* 7.

Hedrick, B.P., Yohe, L., Vander Linden, A., Davalos, L.M., Sears, K., **Sadier, A.**, Rossiter, S.J., Davies, K.T.J., and Dumont, E. (2018). Assessing Soft-Tissue Shrinkage Estimates in Museum Specimens Imaged With Diffusible Iodine-Based Contrast-Enhanced Computed Tomography (diceCT). *Microsc Microanal* 24, 284–291.

Sears, K., Maier, J.A., **Sadier, A.**, Sorensen, D., and Urban, D.J. (2018). Timing the developmental origins of mammalian limb diversity. *Genesis* 56.

Urban, D.J., Anthwal, N., Luo, Z.-X., Maier, J.A., **Sadier, A.**, Tucker, A.S., and Sears, K.E. (2017). A new developmental mechanism for the separation of the mammalian middle ear ossicles from the jaw. *Proc Biol Sci* 284.

Gibert, Y., Samarut, E., Pasco-Viel, E., Bernard, L., Borday-Birraux, V., **Sadier, A.**, Labbe, C., Viriot, L., and Laudet, V. (2015). Altered retinoic acid signalling underpins dentition evolution. *Proc Biol Sci* 282.

Sadier, A., Lambert, E., Chevret, P., Decimo, D., Semon, M., Tohme, M., Ruggiero, F., Ohlmann, T., Pantalacci, S., and Laudet, V. (2015). Tinkering signaling pathways by gain and loss of protein isoforms: the case of the EDA pathway regulator EDARADD. *BMC Evol Biol* 15, 129.

Sadier, A., Viriot, L., Pantalacci, S., and Laudet, V. (2014). The ectodysplasin pathway: from diseases to adaptations. *Trends Genet* 30, 24–31.

Pantalacci, S., Chaumot, A., Benoit, G., **Sadier, A.**, Delsuc, F., Douzery, E.J.P., and Laudet, V. (2008). Conserved features and evolutionary shifts of the EDA signaling pathway involved in vertebrate skin appendage development. *Mol Biol Evol* 25, 912–928.

BOOK CHAPTERS

Sadier, A. (2019). How Do Gene Networks Promote Morphological Evolution. In *Old Questions and Young Approaches to Animal Evolution*, J.M. Martín-Durán, and B.C. Vellutini, eds. (Cham: Springer International Publishing), pp. 209–234.

Sadier, A.A. (2016). Regulatory and Coding Changes in Developmental Evolution, Roles of. In *Encyclopedia of Evolutionary Biology*, R.M. Kliman, ed. (Oxford: Academic Press), pp. 433–440.

CONFERENCE PRESENTATIONS

SICB 2020 – oral communication – invited speaker: Sadier Alexa, Krause Andrew, Dessalles Renaud, Nieves Natalie, Santana Sharlene and Karen Sears Finding new rules for the patterning of post-canine teeth in mammals

TMD 2019 – oral communication: Sadier Alexa, Dessalles Renaud, Nieves Natalie, Santana Sharlene and Karen Sears Finding new rules for the patterning of post-canine teeth in mammals: insights from Noctilionoid bats

- ICVM 2019 – oral communication – invited speaker:** Sadier Alexa, Dessalles Renaud, Nieves Natalie, Santana Sharlene and Karen Sears Finding new rules for the patterning of post-canine teeth in mammals: insights from Noctilionoid bats
- NASBR 2018 – oral communication:** Sadier Alexa, Dessalles Renaud, Nieves Natalie, Santana Sharlene and Karen Sears Finding new rules for the patterning of post-canine teeth in mammals: insights from Noctilionoid bats
- NASBR 2018 – poster:** Sadier, Alexa; Sears, Karen New developmental constrained for the establishment of the molar row in Noctilionoid bats Deciphering genomic and developmental mechanisms that underlie vision adaptations in noctilionoid bats
- EuroEvoDevo 2018 – oral communication:** Sadier Alexa, Dessalles Renaud, Nieves Natalie, Santana Sharlene and Karen Sears Finding new rules for the patterning of post-canine teeth in mammals: insights from Noctilionoid bats
- LASDB 2017 – oral communication:** Sadier Alexa, Santana Sharlene and Karen Sears Establishing dental patterning in noctilionoid bats
- PanAmEvoDevo 2017 - oral communication:** Sadier, Alexa; Davalos, Liliana; Dumont, Elizabeth; Rossiter, Stephen; Sears, Karen Deciphering genomic and developmental mechanisms that underlie vision adaptations in noctilionoid bats
- PanAmEvoDevo 2017 - poster:** Sadier, Alexa; Sears, Karen New developmental constrained for the establishment of the molar row in Noctilionoid bats Deciphering genomic and developmental mechanisms that underlie vision adaptations in noctilionoid bats
- Morphogenesis workshop MBI 2017 - poster:** Sadier, Alexa; Santana Sharlene, Sears, Karen Modeling the developmental foundations of adaptive radiation
- EuroEvoEvo 2016 - oral communication:** Sadier, Alexa; Davalos, Liliana; Dumont, Elizabeth; Rossiter, Stephen; Sears, Karen Deciphering genomic and developmental mechanisms that underlie vision adaptations in noctilionoid bats
- PanAmEvoEvo 2015 - poster:** Sadier A, Lambert E, Chevret P, Décimo D, Semon M, Tohmé M, Ruggiero F, Ohlman T, Pantalacci S, Laudet V. Tinkering signaling pathways by gain and loss of protein isoforms: the case of the EDA pathway regulator EDARADD.
- SMBE 2013 - oral communication:** Sadier A, Pantalacci S, Besson M, Ohlmann T, Pantalacci S and Lauvet V How conserved signaling pathways drive diversification: lessons from a phylogenetic-functional approach
- TMD Tooth morphogenesis and differentiation 2013 - poster:** Sadier A, Lambert A, Peltier M, Laudet V and Pantalacci S Edar highlights the dynamics of molar row patterning
- Doctoral school meeting 2012 - oral communication:** Sadier A, Besson M, Chevret P, Ohlmann T, Pantalacci S and Laudet V Mosaic evolution through gain/loss of protein isoforms: the case of EDARADD involved in epithelial appendages development
- Euro Evo Devo 2012 - poster:** Sadier A, Besson M, Chevret P, Ohlmann T, Pantalacci S and Laudet V Mosaic evolution through gain/loss of protein isoforms: the case of EDARADD involved in epithelial appendages development
- 2nd Joint Meeting of the British and French Societies for Developmental Biology 2011 - poster:** Sadier A, Lambert A, Laudet V and Pantalacci S Edar as a positive regulator of tooth patterning.
- Euro Evo Devo 2010 - poster:** Sadier A, Chevret P, Lambert A, Pantalacci S and Laudet V Evolution through gain/loss of protein isoforms: the case of EDARADD involved in epithelial appendages development

INVITED SEMINARS

- 2019** Deciphering the rules that underlie species diversity: insight from African bats, **CBI, Yaoundé, Cameroon**
- 2019** Deciphering the rules that underlie species diversity: insight from Trinidadian bats, **University of St Augustine, Trinidad**
- 2016** Deciphering genomic and developmental mechanisms that underlie adaptive evolution in noctilionoid bats - **Indiana State University**
- 2013** Evo-devo of the Eda pathway, from the evolution of signaling to the establishment of shape - **University of Utah**

TEACHING EXPERIENCE AND MENTORING

Teaching

- 2019** UCLA - Fiat Lux Class invited lecture – how to be a field scientist
2016 UIUC – IB202 Anatomy and Physiology class
2013 COMENIUS project - Visiting researcher in high school for the European project COMENIUS http://ec.europa.eu/education/lifelong-learning-programme/comenius_en.htm
2009-2012 ENS Lyon, France – Teaching fellowship “monitorat”
*Full lecture – Next generation sequencing, applications and evolution – master level
*Full lecture – Genomic techniques and GMO
*In-class activity: hormone and pathology, evolution of nuclear receptors,
*Development and supervision of a whole teaching course for Bachelor and Master
*Lab activities: 2/3 weeks lab session full time
*Med school teaching - TA
Total hours of teaching: 232 hours

Mentoring

- 2018-2019** UCLA – **undergrad and grad student mentoring**
Undergrad – Michael Koger, training on morphometrics, molecular biology, project development for an honor thesis, full mentoring.
2015-2017 UIUC – **undergrad mentoring**
Supervision and co-supervision of 10 undergrads in the lab.
Full supervision of two undergrads, Kun Yun who co-authored a lab paper (Sadier et al. 2019), now PhD student, and Elliot Berger who will co-author a paper, now in med school.
2011 ENS LYON
Mentoring and supervision of a Master 1 student, Marc Besson (now PhD). Project writing, experimental design, experimental training.

OUTREACH

- 2019** Co-host of the French science podcast: Podcast Science <https://www.podcastscience.fm/>
(~10k listeners per episode, 50k per month)
2019 Interviewed by Podcast Science about bats and bat research (in French):
<https://www.podcastscience.fm/emission/2019/04/15/podcast-science-370-chauve-souris/>
2019 Interviewed by the podcast The Naked Scientists about our eLife manuscript (see publications)
<https://www.thenakedscientists.com/articles/interviews/evolution-through-bats-eyes>
2017 TEDx speaker at TEDx Chamonix - <https://www.youtube.com/watch?v=kFctP0vKL-4>
2017 Urbana Library Bats, these fascinating animals
2015-2017 IGB genome day - Animation and creation of an outreach module
2009-2013 Fête de la science – annual outreach science festival, Lyon, France

Twitter collaborative account

- 2017** La bio au labo @laBioauLabo (French equivalent of @realscientist)
2016 En direct du labo (French equivalent of @biotweeps)

Public lectures

- 2007 and 2009** General scientific popularization seminar at the Réserve Naturelle des Aiguilles Rouges, Chamonix

FIELDWORK

- 2019** Cameroon – trip co-organizer, field co-coordinator, responsible for exporting the samples, translator (French), bat capture, experiments, local reciprocal knowledge sharing and support
2019 Trinidad – trip organizer, including permit requests, exporting the samples, establishing local contact, support and reciprocal knowledge sharing

2019 Dominican Republic – trip organizer, including permit requests, exporting the samples, local contact, support and collaboration

2018 Dominican Republic and Trinidad – trip organizer, including permit requests, exporting the samples, local contact, support and collaboration

2017 Puerto Rico, Dominican Republic and Trinidad – field research, experiment, co-organizer

2017 Belize – field research in Lamanai, organized by Dr. Brock Felton and Dr. Nancy Simmons

2016 Puerto Rico and Belize

MUSEUM COLLECTIONS WORK

2018 Field museum, Chicago

2016 American Museum of Natural History – New York City

ACADEMIC ACTIVITIES AND SERVICE

2019 to present: The Company of Biologists Prelighter, part of the @preLights community - See my prelights here: <https://prelights.biologists.com/profiles/aigverte/>

Society member: EuroEvoDevo, PanAmEvoDevo, NASBR societies and BCI (Bat Conservation International)

Symposium and conference organizer

2020 EuroEvoDevo – symposium proposal "Developmental bias and evolution"

2018 Evolution - S-24 Evolution and development in deep time, merging insights from paleontology and developmental biology **Montpellier, France**

2013 – TMD - Organizing committee

Reviewer for academic journals –eLife, BMC Evolutionary Biology, Proceeding of the Royal Society B, Evolution, Plos One,

Representative of the PhD students (elected) for the doctoral school Integrative Molecular and Cellular Biology (including meeting organisation (2009-2013))

COLLABORATORS

Sharlene Santana (UW), Elizabeth Dumont (UC Merced), Vincent Laudet (OIST), Sophie Pantalacci (LBMC, ENS Lyon), Yann Gibert (UMC), Liliana Davalos (Stony Brook University), Paul François (Mc Gill), Andrew Krause (University of Oxford Mathematical Institute), Shane Campbell-Staton (UCLA), Neal Anthwal (King's college London)

LANGUAGES

French (native), English (fluent)

REFERENCES

Pr. Karen Sears – UCLA Department of Ecology and Evolutionary Biology; ksears@ucla.edu

Pr. Vincent Laudet – OIST; vincent.laudet@obs-banyuls.fr

Pr. Sharlene Santana – University of Washington; ssantana@uw.edu