

Alexa Sadier, PhD

Karen Sears lab - 4117
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CURRENT POSITION

University of California, Los Angeles
Postdoctoral research associate

Los Angeles, CA
September 2017-present

EDUCATION

Ecole Normale Supérieure de Lyon, IGLF

PhD, Evolutionary and Developmental Biology

Dissertation: “Evolution of the *Eda* pathway: the case of *Edar* and *Edaradd* implicated in skin appendages development” under the supervision of Vincent Laudet and Sophie Pantalacci

With highest honors and felicitations

Lyon, France
2009-2013

Ecole Normale Supérieure de Lyon, IGLF

Master 2 research degree: Master Bioscience
with honors

Lyon, France
2009

Ecole Normale Supérieure de Lyon, IGLF

Master 2 teaching degree: Highest educational degree for highschool and undergrad education in Biology and Geology
Agregation: admissible
CAPES: national ranking 4/3393

Lyon, France
2008

Ecole Normale Supérieure de Lyon, IGLF

Master 1 degree: Master Bioscience
with honors

Lyon, France
2007

Ecole Normale Supérieure de Lyon, IGLF

Bachelor degree: Molecular and Cellular Biology Licence

Lyon, France
2007

GRANTS AND AWARDS

NSF IOS pre-proposal in collaboration with PI Sears and Sharlene Santana (UW)

Invited for full – ranking 2 excellent, 2 very good, 1 good

2017

Grant ARC (Research again Cancer Association) Foundation

Awarded a project on EDAR in relationship to my PhD dissertation - One year of fellowship

2012

Travel grant PanAmEvoDevo 2017

2017

MBI workshop grant - 600\$ 2009

MRT PhD fellowship for 3 years

Ranking: 3 over 45 providing full research salary

Teaching fellowship for 3 years – “monitorat”

2009

Additional salary for 64 hours of teaching per year

For this program, I was rate as “top 10%” teachers by the students

RESEARCH EXPERIENCE

UIUC, Illinois

2015-2017

Postdoctoral research associated – Supervisor Karen Sears:

Discovering genomic and developmental mechanisms that underlie sensory innovations critical to adaptive diversification using noctilionoid bats.

*I developed specific protocols for IHC, *ISH*, PCR and ImageJ/R modules suitable to detect photoreceptors in various non-model species of bats

*I developed precise precision skills to study the development of cochlea and echolocation in various species

*I developed my own project studying the evolution of bat teeth and associated developmental modules

*I participate at in other projects on the lab such as limb development in mammals and middle ear development in marsupials. These projects involved cell culture, enhancer cloning, primary cell culture on spermatogonial opossum stem cells

*I develop skill in taking care of non-model animals such as various species of bats and opossums

Ecole Normale Supérieure de Lyon, IGLF

2014 – 4 months

Prepostdoctoral position, Evolutionary and Developmental Biology

*First postdoctoral experience in order to revise PhD experiment prior publication.

*Investigate the role of EDAR in cancer research

Ecole Normale Supérieure de Lyon, IGLF

2009-2013

PhD, Evolutionary and Developmental Biology

Dissertation: “Evolution of the *Eda* pathway: the case of *Edar* and *Edaradd* implicated in skin appendages development” under the supervision of Vincent Laudet and Sophie Pantalacci

*I developed skill in molecular evolution, PCR, degenerated PCR, Ka/Ks, sequence alignment, databases.

*I development strong developmental skills such as *ISH*, in vitro organ culture using teeth,

*I used cell culture skills, western blotting, promoter assay

*I developed a transgenic mice to follow *Edar* expression during molar development

Previous lab experiences

2006-2007-2009

ENS Lyon –IGFL Supervision: Sophie Pantalacci

4 months experience – research assistant on the evolution of the EDA pathway

Université de Lyon – Supervision: Christophe Douady

4 months experience – research assistant on the evolution of criptic species of *Proasellus cavaticus*

ENS Lyon – LBMC Supervision: Vincent Laudet

2 months experience – research assistant on finding EDARADD isoforms

TEACHING EXPERIENCE AND MENTORING

UIUC

IB202 Anatomy and Physiology class Spring 2016

UIUC - lab mentoring

2015-2017

Supervision of 10 undergrads, each having a separate dedicated project in the lab.

ENS Lyon, France

2013

Visiting researcher in high school for the European project COMENIUS

http://ec.europa.eu/education/lifelong-learning-programme/comenius_en.htm

ENS Lyon, France – Lab Mentoring

2011

Mentoring of a Master 1 student in the lab – project design

ENS Lyon, France – Teaching fellowship “monitorat”

2009-2012

Course list:

*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: 3 weeks lab session full time

Total hours of teaching: **232 hours**

OUTREACH

TEDx speaker at TEDx Chamonix 2017

2017

<http://www.tedxchamonix.com/speakers/>

Twitter

2017

La bio au labo (French equivalent of @realscientist)

Twitter

2016

En direct du labo (French equivalent of @biotweeps)

Urbana Library

2017

Bat as fascinating animals

IGB genome day - Animation and creation of an outreach module

2015-2017

Fête de la science – annual outreach science festival, Lyon, France

2009-2013

Public lectures

2007, 2009

General scientific popularization seminar at the Réserve Naturelle des Aiguilles Rouges, Chamonix

OTHER SCIENTIFIC ACTIVITIES

Symposium organization – Evolution 2018 Montpellier, France

2018

Part of the organizing committee of the TMD

2013

(Tooth Morphogenesis and Differentiation) congress

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

Member of: EED, AAA, PanAmEvoDevo societies

PUBLICATION LIST

- ***Alexa Sadier**, View ORCID ProfileMonika Twarogowska, Klara Steklikova, Luke Hayden, Anne Lambert, Pascal Schneider, Vincent Laudet, Maria Hovorakova, Vincent Calvez, Sophie Pantalacci. **Modeling Edar expression reveals the hidden dynamics of tooth signaling center patterning** *In review Plos Biol* <https://www.biorxiv.org/content/early/2018/10/25/453258>
- ***Sadier A.** “Old questions, new approaches” 10. How do gene networks promote morphological evolution? **Springer** – book chapter invitation, *in press*
- ***Sadier A**, Davies K, Yohe L; Yun K; Donat P; Hedrick B; Dumont E; Davalos L; Rossiter S and Sears K. **Evidence for multifactorial processes underlying phenotypic variation in bat visual opsins** *In press eLife* <https://www.biorxiv.org/content/early/2018/04/12/300301>
- * Vial, J., Royet, A., Cassier, P., Tortereau, A., Dinvaux, S., Maillet, D., Gratadou-Hupon, L., Creveaux, M., **Sadier, A.**, Tondeur, G., et al. (2018). The Ectodysplasin receptor EDAR acts as a tumor suppressor in melanoma by conditionally inducing cell death. *Cell Death & Differentiation* 1.
- *Sears K., Maier J, **Sadier A.** Sorensen D, Urban D. "Timing the developmental origins of mammalian limb diversity" *Genesis*. 2018
- *Brandon P. Hedrick*, Laurel Yohe, Abby Vander Linden, Liliana M. Davalos, Karen Sears, **Alexa Sadier**, Stephen J. Rossiter, Kalina T. J. Davies, and Elizabeth Dumont Shrinkage in Museum Specimens Using Diffusible Iodine-based Contrast Enhanced Computed Tomography Microscopy and Microanalysis. 2018
- *Daniel J. Urban, Neal Anthwal, Zhe-Xi Luo, Jennifer A. Maier, **Alexa Sadier**, Abigail S. Tucker, Karen E. Sears, A new developmental mechanism for the separation of the mammalian middle ear ossicles from the jaw. **Proc Roy Soc B**. 2017 DOI: 10.1098/rspb.2016.2416
- ***Sadier A.** Roles of regulatory and coding changes in developmental evolution, *Encyclopedia of Evolutionary Biology*, **Elsevier**
- ***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. **BMC Evol Biol**. 2015 Jul 2;15:129. doi: 10.1186/s12862-015-0395-0.
- *Gibert Y, Samarut E, Pasco-Viel E, Bernard L, Borday-Birraux V, **Sadier A**, Schulte-Merker S, Labbé C, Viriot L, Laudet V. Altered Retinoic Acid signalling underpins dentition evolution. **Proc Roy Soc B**. 2015 Mar 7;282(1802). pii: 20142764. doi: 10.1098/rspb.2014.2764
- ***Sadier A**, Viriot L, Pantalacci S, Laudet V (2014): The ectodysplasin pathway: from diseases to adaptations. **Trends in Genetics**, 30(1):24-31.
- *Pantalacci S, Chaumot A, Benoit G, **Sadier A**, Delsuc F, Douzery EJ, Laudet V (2008): Conserved features and evolutionary shifts of the EDA signaling pathway involved in vertebrate skin appendage development. **Molecular Biology and Evolution** 2008, 25(5):912-928.

CONFERENCE PRESENTATIONS

***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 Laudet 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

REFERENCES

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Dr. Sharlene Santana

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Curator of Mammals - Burke Museum of Natural History and Culture
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Pr. Vincent Laudet

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