

## EDUCATION

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| <b>Ph.D in Evolutionary Biology</b>               | <b>Max Planck Institute for Evolutionary Biology</b> (Plön, Germany) (Jan. 2021 – Jan. 2026)<br>Evolutionary Developmental Dynamics research group<br>International Max Planck Research School program (IMPRS)<br>Thesis: Bridging the phylogenetic gap: the small-spotted catshark as a key model organism in Evolutionary Developmental Biology |
| <b>M.S. in Biomolecules and cell Dynamics</b>     | <b>Universidad Autónoma de Madrid</b> (Madrid, Spain) (Sep. 2019 – Jul. 2020)<br>Centro de Biología Molecular Severo Ochoa (CBMSO)<br>Awarded the Ramón Areces Foundation scholarship for postgraduate students (2019-2020)<br>Thesis: The role of primary cilia and mechanical forces in eye development and disease                             |
| <b>B.S. in Basic and Experimental Biomedicine</b> | <b>Universidad de Sevilla</b> (Sevilla, Spain) (Sep. 2015 – Jun. 2019)<br>Instituto de Biomedicina de Sevilla (IBiS)<br>Thesis: Influence of replicative age of the cells on the progression of the cell cycle                                                                                                                                    |

## RESEARCH EXPERIENCE

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- **Postdoctoral researcher at Collège de France** (Paris, France) (Feb. 2026 – Present)  
Centre interdisciplinaire de recherche en biologie (CIRB)  
Formation and Evolution of Skin Patterns research group
- **Ph.D. student at Max Planck Institute for Evolutionary Biology** (Plön, Germany) (Jan. 2021 – Jan. 2026)
- **Erasmus+ internship at University of Cambridge** (Cambridge, UK) (Jul. 2019 – Aug. 2019)  
School of the Biological Sciences, Department of Zoology  
Awarded the Erasmus+ grant for high education students  
Project: Establishment and optimization of HCR *in situ* hybridization in cichlid embryos
- **Erasmus+ internship at Cardiff University** (Cardiff, UK) (Jul. 2018 – Sep. 2018)  
MRC Centre for Neuropsychiatric Genetics and Genomics  
Awarded the Erasmus+ grant for high education students  
Project: Cell culture strategies for the study of Huntington's Disease

## PUBLICATIONS

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- **Escamilla-Vega E**, Seton LWG, Kyomen S, Murillo-Rincón AP, Petersen J, Tautz D, Kaucká M. (2025) Evolution of the essential gene *MN1* during the macroevolutionary transition toward patterning the vertebrate hindbrain. *Proc Natl Acad Sci U S A*. 122:e2416061122. <https://doi.org/10.1073/pnas.2416061122>
- **Escamilla-Vega E**, Murillo-Rincón AP, Seton LWG, Koch A-K, Kyomen S, Fortmann-Grote C, Hammel JU, Moritz T, Kaucká M. (2026) Developmental dynamics of catshark cranial neural crest cells provide insights into gnathostome facial evolution. *Development*. 153:dev205258. <https://doi.org/10.1242/dev.205258>
- **Escamilla-Vega E**, Koch A-K, Seton LWG, Murillo-Rincón AP, Kyomen S, Hammel JU, Moritz T, Kaucká M. (2026) Synchrotron radiation micro-computed tomography of the small-spotted catshark embryonic development (Chondrichthyes: *Scyliorhinus canicula*). *Gigascience*. 15:giag054. <https://doi.org/10.1093/gigascience/giag054>
- Murillo-Rincón AP, Seton LWG, **Escamilla-Vega E**, Damatac A, Fuß J, Fortmann-Grote C, Kaucká M. (2025) Positional programs in early murine facial development and their role in human facial shape variability. *Nat Commun*. 16:10112. <https://doi.org/10.1038/s41467-025-66017-y>
- Kyomen S, Seton LWG, Cook LE, **Escamilla-Vega E**, Murillo-Rincón AP, Jacobsen A, Damatac A, Fortmann-Grote C, Fuß J, Visel A, Kaucká M. (2026) Cis-regulatory evolution shapes facial diversity in birds and mammals. *Sci Adv*. 12:eaec2511. <https://doi.org/10.1126/sciadv.aec2511>

## CONFERENCES

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- **Developmental regulation: from molecular to ecological niches** (Roscoff, France) (May 2026)  
Poster: Spatiotemporal profiling and molecular characterization of cranial neural crest cells in the small-spotted catshark
- **Concepts in Evolutionary Biology** workshop (Plön, Germany) (Feb. 2025)  
Poster: Spatiotemporal profiling and molecular characterization of cranial neural crest cells in the small-spotted catshark
- **6th Morphology Meeting** (Kiel, Germany) (Feb. 2025)  
Talk: Spatiotemporal profiling and molecular characterization of cranial neural crest cells in the small-spotted catshark
- **Aquavit 2024** (MPI for Evolutionary Biology internal symposium) (Jul. 2024)  
Poster: Unveiling the role of *MN1* in retinoic acid-mediated brain patterning (best poster award)
- **Euro Evo Devo 2024** (Helsinki, Finland) (Jun. 2024)  
Poster: Evolution of *MN1* and its role in retinoic acid-mediated brain patterning
- **Unconventional and emerging experimental organisms in cell and developmental biology** (Surrey, UK) (Sep. 2023)  
Poster: Embryonic development of the small-spotted catshark in 3D and high resolution
- **Aquavit 2023** (MPI for Evolutionary Biology internal symposium) (Jun. 2023)  
Talk: Shark attack. Chondrichthyes as model organisms in evolutionary biology (best talk award)
- **19th International Congress of Developmental Biology** (Salgados, Portugal) (Oct. 2022)  
Poster: *MN1* gene in the evolution and development of the bony skull.

## SKILLS

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- **Languages.** English (fluent), Spanish (native)
- **Wet lab.**
  - Major experience with mouse, chicken, zebrafish and small-spotted catshark embryology. Minor experience with rats and cichlid fishes. Including experience with writing ethical permits, primarily for mice experiments.
  - Experimental embryology and fate-mapping techniques.
  - Imaging techniques. Fluorescence microscopy, confocal microscopy, micro-computed tomography and synchrotron radiation micro-computed tomography. Including whole-mount scanning, sectioning techniques, clearing methods for large samples and contrasting methods for X-ray-based techniques. Immunofluorescence and HCR *in situ* hybridization.
  - Phylogenetics analyses. Multiple sequence alignment, phylogenetic tree reconstruction, synteny analysis, protein 3D visualization, search of major databases.
  - Molecular biology. PCR, qPCR, extraction of DNA, RNA and proteins, plasmid preparation and cloning, gel electrophoresis, Western blot.
  - Cell culture (adherent and suspension).
  - Omics. Bulk RNA-seq, single-cell omics (RNA-seq and ATAC-seq). Performing all wet lab methodology (dissections, tissue dissociation, nuclei extraction - 10X Genomics pipeline) and basic bioinformatic analyses in Python scRNA-seq and in R for bulk RNA-seq.

## OTHERS

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- Successful proposal (collaborator) for the use of the **beamline P05 at PETRA III**, synchrotron radiation facility of DESY (Deutsches Elektronen-Synchrotron) a research centre of the Helmholtz Association. Proposal I-20240871: Evolution of vertebrate face morphogenesis (Apr. 2024)
- Successful proposal (main applicant) for the use of the **beamline P05 at PETRA III**, synchrotron radiation facility of DESY (Deutsches Elektronen-Synchrotron) a research centre of the Helmholtz Association. Proposal I-20230087: Sharks in the spotlight of morphological evolution (Dec. 2023)
- “**The Node** postcard competition” finalist (Jun. 2023). Nervous system of the catshark embryo
- **Teaching experience:**
  - Biol 131: Fundamentals of developmental biology. Christian-Albrechts-Universität (Kiel, Germany) (Jan. 2025)
  - Biol 253: Evolutionary Genetics. Christian-Albrechts-Universität (Kiel, Germany) (Jun. 2023/2024)
  - Short teaching sessions for high-school students 2-3 times per year (2021 – 2025)