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**EDUCATION/TRAINING**

Universidad Nacional de Misiones, Argentina  
B.S. Major in Genetics

Universidad de Buenos Aires, Argentina  
Ph.D. in Biochemistry

Harvard University, Department of Genetics, Boston, USA  
Postdoctoral Fellow

**PROFESSIONAL EXPERIENCE**

- 2022 - Associate Professor of Biology, University of Virginia
- 2015 - Member of the Cardiovascular Research Center, University of Virginia
- 2015 - Affiliated Faculty in Cell Biology, School of Medicine, University of Virginia
- 2014 - Affiliated Member Broad Institute of MIT and Harvard
- 2014 - 2022 Assistant Professor of Biology, University of Virginia
- 2010 - 2013 Assistant in (Instructor), Dept. Molecular Biology, Massachusetts General Hospital

**HONORS & AWARDS**

- 2019 & 2022 University of Virginia, Undergraduate Research Mentor Award
- 2019 Jeffress Trust Awardee in Interdisciplinary Research
- 2018 University of Virginia, Undergraduate Research Mentor Award
- 2017 University of Virginia, Undergraduate Research Mentor Award
- 2016 W. M. Keck Foundation Biomedical Research Award
- 2016 PEW Charitable Trust Biomedical Scholar
- 2016 Fellow of the American Federation for Aging Research
- 2015 Janssen Young Investigator Award, International Society of Bioimaging and Bioinformatics
- 2015 University of Virginia Excellence in Diversity Fellowship
- 2012 NIH - Earl Stadtman Investigator (finalist)
- 2011 Gordon Research Conference on Molecular and Cellular Biology of Lipids: Junior Investigator Award.
- 2010 Pathway to Independence Award, NIH.

- 2005
- i. Human Frontiers Science Program, Postdoctoral Fellowship.
  - ii. Damon Runyon Cancer Research Foundation, Postdoctoral Fellowship (declined).
  - iii. PEW Latin American Fellows Program in the Biomedical Sciences, Postdoctoral Fellowship (declined).
- 2002
- “Fundación Antorchas” fellowship (Argentina) for international research in the Dept. of Biol. Chemistry and Molecular Pharmacology, Harvard U., Boston.
- 2001
- National Agency for the Promotion of Science and Technology (CONICET), Argentina. Graduate student fellowship.
- 2000
- i. Universidad de Buenos Aires, Argentina, Graduate student fellowship
  - ii. "Centre International des Etudiants et Stagiaires", Commissariat à l'Energie Atomique, France. International visitor-scientist fellowship.
  - iii. Fundacion Campomar, Award to Outstanding PhD program candidates.
- 1999
- Honorary Diploma (GPA based). Universidad Nacional de Misiones, Misiones, Argentina.

## PUBLICATIONS

(# = graduate trainee, • = postdoctoral trainee, ‡ = technician, ° = undergraduate trainee, \* = equal contribution, @ co-corresponding authors)

28. A. Ghaddar#, E. Armingol, C. Huynh, N. Lewis, R. Waterston, E.J. O'Rourke. “Whole-body gene expression atlas of an adult metazoan”. **Science Advances**, **2023**, doi: 10.1126/sciadv.adg0506.

27. A. Ghaddar#\*, V. K. Mony\*, S. Mishra, S. Berhanu°, J. C. Johnson, E. Enriquez-Hesles, E. Harrison°, A. Patel, M. K. Horak#, J. S. Smith, and E. J. O'Rourke. Increased Alcohol Dehydrogenase 1 activity promotes longevity. **Current Biology**, **2023**, 33(6):1036-1046.

26. A. Ghaddar#, W. Ke#, E. J. O'Rourke. Immunostaining intact *C. elegans* using polyacrylamide gel embedding. **STAR Protocols** (2023) doi: [10.1016/j.xpro.2022.101956](https://doi.org/10.1016/j.xpro.2022.101956)

25. E. Armingol, A. Ghaddar#, C. J. Joshi•, H. Baghdassarian, I. Shamie, J. Chan, H. L. Her, S. Berhanu°, A. Dar°, F. Rodriguez-Armstrong°, O. Yang°, E. J. O'Rourke@, N. E. Lewis@. Inferring a spatial code of cell-cell interactions across a whole animal body. 2022. **PLoS Computational Biology**. 18(11):e1010715.

24. C. J. Joshi•, W. Ke W#, A. Drangowska-Way#, E. J. O'Rourke@, N. E. Lewis@. What are housekeeping genes? 2022. **PLoS Computational Biology**, 18 (7), e1010295.

23. V. K. Mony•, A. Drangowska -Way#, R. Albert, E. Harrison°, and E. J. O'Rourke. Context-specific regulation of lysosomal lipolysis through network-level diverting of transcription factor interactions. 2021. **Proceedings of the National Academy of Sciences**, Oct 12;118(41), e2104832118. doi: 10.1073/pnas.2104832.

22. W. Ke#, J. N. Reed, C. Yang°, N. Higgason°, L. Rayyan°, C. Wählby, A. E. Carpenter, M. Civelek, and E. J. O'Rourke. 2021. Human obesity loci identified as causal obesity genes in *C. elegans*. **PLoS Genetics**, Sep 7;17(9):e1009736. doi: 10.1371/journal.pgen.1009736.

21. D. Klionsky et al [et al is a consortium that includes postdoc V. K. Mony• and E. J. O'Rourke]. 2021. Guidelines for the use and Interpretation of assays for monitoring autophagy (4th edition). **Autophagy**, Jan;17(1):1-382.
20. W. Ke#, J. Saba‡, C. Yao, A. Way#, C. J. Joshi••, S. Zhang, V. K. Mony•, J. Liu, J. Locasale, G. Patty, N. E. Lewis@, and E. J. O'Rourke@. 2020. Dietary serine-microbiota interaction enhances chemotherapeutic toxicity without altering drug conversion. **Nature Communications**, 11, 2587 [https://doi.org/10.1038/s41467-020-16220-w].
19. C. J. Joshi•, S. M. Schinn, A. Richelle, I. Shamie, E. J. O'Rourke@, N. E. Lewis@. 2020. StanDep: capturing transcriptomic variability improves context-specific metabolic models. **PLoS Computational Biology**, 16 (5), e1007764.
18. W. Ke#, A. Drangowska-Way#, D. Katz°, K. Siller, and E. J. O'Rourke. 2018. The ancient genetic networks of obesity: Whole-animal automated screening for conserved fat regulators. **Methods in Molecular Biology**, 1787:129–146.
17. V. K. Mony•\*, S. Benjamin#\*, E. J. O'Rourke. 2016. A lysosome-centered view of energy homeostasis. **Autophagy**, Apr;12(4):619-31.
16. D. Klionsky and the Guidelines Consortium (which includes E. J. O'Rourke). 2016. Guidelines for monitoring autophagy. 3rd Edition. **Autophagy**, Jan 2;12(1):1-222.
15. H. Zhang, J.T. Chang, B. Guo, M. Hansen, K. Jia, A.L. Kovács, C. Kumsta, L.R. Lapierre, R. Legouis, L. Lin, Q. Lu, A. Meléndez, E. J. O'Rourke, K. Sato, M. Sato, X. Wang, F. Wu. 2015. Guidelines for monitoring autophagy in *Caenorhabditis elegans*. **Autophagy**, 2;11(1):9-27.
14. C. Wählby, A. Lee-Conery, M. A. Bray, L. Kametsky, J. Larkins-Ford, K. Sokolnicki, M. Veneskey, K. Michaels#, A. E. Carpenter, and E. J. O'Rourke. 2014. High and low throughput quantitative analysis of lipid metabolism in *C. elegans*. **Methods**, 68(3):492-9.
13. E. J. O'Rourke, P. Kuballa, R. Xavier, and G. Ruvkun. 2014. Omega-polyunsaturated fatty acids increase lifespan through the activation of autophagy, **Genes and Development**, 27(4):429-40.
12. E. J. O'Rourke and G. Ruvkun. 2014. MXL-3 and HLH-30 transcriptionally link lipolysis and autophagy to nutrient availability. **Nature Cell Biology**, 15(6):668-76.
11. C. Wahlby, L. Kametsky, Z. Hans Liu, T. Riklin-Raviv, A. Lee Conery, E. J. O'Rourke, K. L. Madden, O. Visvikis, V. Ljosa, J. E. Irazoqui, P. Golland, G. Ruvkun, F. M. Ausubel, and A. E. Carpenter. 2012. An image analysis toolbox for high-throughput *C. elegans* assays. **Nature Methods**, (7):714-6.
10. E. J. O'Rourke@, A. Lee Conery and T. I. Moy. 2009. Whole animal high-throughput screens: the *C. elegans* model. **Methods in Molecular Biology**, 486:57-75. [@ Corresponding author]
9. E. J. O'Rourke\*, A. A. Soukas\*, C. E. Carr, G. Ruvkun. 2009. *C. elegans* major fats are stored in vesicles distinct from lysosome-related organelles. **Cell Metabolism**, 10(5):430-5.
8. M. C. Wang, E. J. O'Rourke, G. Ruvkun. 2008. Fat metabolism links germline stem cells and longevity in *C. elegans*. **Science**, 322(5903):957-960.
7. N. Kim, C.M. Dempsey, C.J. Kuan, J.V. Zoval, E. J. O'Rourke, G. Ruvkun, M.J. Madou, J.Y. Sze. 2007. Gravity force transduced by the MEC-4/MEC-10 DEG/ENaC channel modulates DAF-16/FoxO activity in *Caenorhabditis elegans*. **Genetics**, 177(2):835-45.

6. A. Mathieu\*, E. J. O'Rourke\*, and J. P. Radicella. 2006. *Helicobacter pylori* genes involved in avoidance of 8-oxoguanine-induced mutations. **J. Bacteriology**, 188(21):7464-9.
5. E. J. O'Rourke, A.V. Pinto, E.A. Petroni, M.E. Tolmasky, L. Ielpi. 2004. Evidence for the active role of a novel nuclease from *Helicobacter pylori* in the horizontal transfer of genetic information. **J. Bacteriology**, 186(9):2586-93.
4. B. F. Eichman, E. J. O'Rourke, J. P. Radicella and T. Ellenberger. 2003. Crystal structures of a 3-Methyladenine DNA Glycosylase, MagIII, and the recognition of alkylation-damaged bases. **EMBO Journal**, 22(19):1-12.
3. E. J. O'Rourke, C. Chevalier, A.V. Pinto, J.M. Thieberge, A. Labigne, L. Ielpi, and J. P. Radicella. 2003. Pathogen DNA as target for host-generated oxidative stress: role for repair of bacterial DNA damage in *Helicobacter pylori* colonization. **Proceedings of the National Academy of Sciences**, 100(5):2789-94.
2. E. J. O'Rourke, A. Mathieu, L. Ielpi, A. Labigne, and J. P. Radicella. 2003. Genetic variability and DNA repair: base excision repair activities in *Helicobacter pylori*. **Genome Letters**, 2(2):47-53.
1. E. J. O'Rourke, C. Chevalier, S. Boiteux, A. Labigne, L. Ielpi, and J. P. Radicella. 2000. A novel 3-Methyladenine DNA glycosylase from *Helicobacter pylori* defines a new class within the endonuclease III family of base excision repair glycosylases. **Journal of Biological Chemistry**, 275(26):20077-20083.

## PROFESSIONAL SERVICES/ACTIVITIES

### Open-source Tools

- 2023 [www.wormseq.org](http://www.wormseq.org). Searchable database of the transcriptome of every cell type, cell-specific transcription factors, and molecules mediating cell-cell interactions in the adult *Caenorhabditis elegans*.
- 2022 Whole-body single-cell RNAseq of the adult *C. elegans* (<https://zenodo.org/record/7958249>)
- 2021 Cell2Cell (<https://github.com/earmingol/cell2cell>)
- 2020 StanDep (<https://github.com/LewisLabUCSD/StanDep>)
- 2014 Wormtool Box ([www.cellprofiler.org/wormtoolbox](http://www.cellprofiler.org/wormtoolbox)).

### Other Activities

Ad-hoc reviewer NIH CMAD study section

Reviewer European Research Council Consolidator Grant (ERC-CoG Program).

Chair of the Aging and Stress Section at the 20<sup>th</sup> International *C. elegans* Conference, LA, CA.

Manuscript reviewer for: Aging Cell, Autophagy, BMC Biology, BMC Cell Biology, BMC Research Notes, Cell Metabolism, Cell Reports, Cell Systems, Current Biology, G3, Genetics, eLife, EMBO Journal, Journal of Lipid Research, PLoS Genetics, PLoS Biology, Nature Aging, Nature Communications, Proceedings of the National Academy of Sciences (PNAS), Science, and Worm.

## PUBLIC SERVICE

- 2021-2022 K-3 presentation: “Different kinds of worms” (hands-on intro to Nematodes, Platyhelminthes, and other worms).
- 2015-2022 Co-organizer of "Middle Schoolers Meet the Scientists Day". Between 80 and 120 7<sup>th</sup> graders from the middle school system of Harrisonburg, VA (~65% minority & low-income students) visit the Department of Biology, UVA, for a day to perform small experiments and have a fun learning experiences in our labs.

## DEI ACTIVITIES

- 2023 Co-PI NIH T34- Maximizing Access to Research Careers (MARC) Award.
- 2023 Worskshop (6h): Equitable & Inclusive STEM Teaching, UVA.
- 2019 - Mentor at the Summer Diabetes Research Internship Program funded by NIH-NIDDK. SRIPD targets minority undergraduate students in their junior and senior college years, aiming to expose them to clinical and basic research in the field of Diabetes.
- 2017 - Mentor at the “Mentoring Institute program”. A university-wide program aimed at supporting minority students from admission to completion of graduate school.
- 2016 - Mentor at the Summer Research Internship Program (SRIP). SRIP targets minority undergraduate students in their junior and senior college years, aiming to expose them to laboratory research and familiarize them with the types of careers within biomedical sciences.
- 2015 - Participate in “Minority Recruitment Day”. Students from predominantly minority colleges visit the University of Virginia to get familiarized with the graduate student programs we offer.
- 2021 Co-Chair of the “Diversity, Equity, and Inclusion in Science” workshop held at the 23<sup>rd</sup> International *C. elegans* Conference (organized by the Genetics Society of America).
- 2020 Co-signatory of the open letter “Systemic racism in higher education” published in *Science*, 2020, Vol. 369, Issue 6510, pg. 1440-1.
- 2019 - 2020 & 2022 Invited speaker at the workshop series organized by the LatinX Graduate Student Alliance of the University of Virginia.
- 2019 Invited panelist at the workshop organized by the Black Graduate Student Organization of the University of Virginia.
- 2018 Mentor at “HoosFirst” initiative, an effort to bring together a first-generation community of students, faculty, and staff to guide and promote first generation and minority undergraduate students.
- 2016 Co-organized a program to recruit graduate students from Brazil to perform 6-month research internships at UVA financed through the Brazilian FAPESP Program. The first call for applications was announced in 2017.