**Nathalie OULHEN**
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## Education and Appointments

2018-… **Assistant Professor (Research) at Brown University, Providence, RI, USA**
Post-transcriptional regulation during echinoderm development (Gary Wessel lab)

2022 **Adjunct Professor (Teaching) at Providence College, Providence, RI, USA**
Bio320-Developmental Biology (Lectures and Labs for the fall semester: 4 credits)

2014-2017 **Investigator at Brown University, Providence, RI, USA**
Post-transcriptional regulation during echinoderm development (Gary Wessel lab)

2009-2014 **Post-doctoral position at Brown University, Providence, RI, USA**
Post-transcriptional regulation during echinoderm development (Gary Wessel lab)

2005-2008 **PhD student at the Station Biologique de Roscoff, Rennes University, France**
with honors "Tres Honorable"
Cap dependent translation initiation and cell cycle regulations after sea urchin fertilization and during early development (Patrick Cormier lab, Station Biologique de Roscoff, France)

2004-2005 **Pre-doctoral position (Master 2) : Functional Genomic and Health,**
with honors "Bien", at the West Brittany university (Brest, France)
Options: Cell communication, receptology and signal transduction
Lab experience: Cap dependent translation initiation and cell cycle regulations after sea urchin fertilization and during early development (6 months in Patrick Cormier lab, Station Biologique de Roscoff, France)

2003-2004 **Master of sciences (M.S., Master 1) : Cell biology and physiology,**
with honors "Très bien", at the West Brittany university (Brest, France),
Option: Molecular and Cell biology, Marine organisms
Lab experience: Specific Inhibitors research against phosphatase-1 and phosphatase-1Ic: Application in ischemia and Parkinson disease (3 months in Hugh Hemmings lab, Weill Medical College of Cornell University, New York, USA)

2000-2003 **Bachelor of sciences (B.S.) : Cell biology and physiology**
with honors "Très bien", at the West Brittany university (Brest, France),
Lab experience: Yeast polarized growth (3 months in Domenico Libri lab, CNRS Gif-sur-Yvette, France)

## Educational articles

1. Onorato T.M., **Oulhen N**, Reyes G, Foster S, Pieplow C, Rollins J, Brashears J.A., Davis C., Alberts I., and Veras I.D., Wessel G.M. A pandemic-resilient CURE enhances a paradigm shift of community college students from knowledge consumers to authentic knowledge producers. Journal of College Science Teaching, 2022.

## Research articles

37. Morita S*, **Oulhen N.***, Foster S., Wessel G.M. Elements of divergence in germline determination in closely related sea urchin species. iScience, 2023, in press (* co first authors).

36. Yao H, Wallace J, Peterson AL, Scaffa A, Rizal S, Hegarty K, Maeda H, Chang JL, **Oulhen N**, Kreiling JA, Huntington KE, De Paepe ME, Barbosa G, Dennery PA. Timing and cell specificity of senescence drives postnatal lung development and injury. Nat Comm, 2023, 14(1):273.

35. **Oulhen N**, Morita S., Warner J., Wessel GM. CRISPR/Cas9 knockin methodology for the sea urchin embryo. MRD, 2023, 90(2):69-72.

34. Jonusaite S., **Oulhen N**, Izumi Y., Furuse M., Wessel GM, Heyland A. Identification of the genes encoding septate junction components expressed during early development of the sea urchin, *Strongylocentrotus purpuratus*, and evidence of a role for Mesh in the formation of the gut barrier. Dev Biol, 2023, 495:21-34.

33. Spurrell M, **Oulhen N,** Perillo M, Foster S, Wessel G. Gene regulatory divergence amongst echinoderms underlies appearance of pigment cells in sea urchin development. Dev Biol, 2023; 494:13-25.

32. Foster S., **Oulhen N.**, Fresques T., Zaki H., Wessel G. Single cell RNA sequencing analysis of early sea star development. Development, 2022, 149(22): dev200982.

31. Scaffa A., Tollefson G., Yao H., Rizal S., Wallace J., **Oulhen N**., Uzun A., and Dennery P.A. Identification of Heme Oxygenase-1 as a DNA-binding protein. Antioxidants, 2022, 11(11):2135.

30. **Oulhen N.**, Pieplow C., Perillo M., Gergory P., Wessel GM. Optimizing Cas9-based manipulation in echinoderms. Dev Biol, 2022, Oct;490:117-124.

29. Satoh N, Hisata K, Tominaga H, Morita S, **Oulhen N**, Foster S, Wessel G. A single-cell RNA-seq analysis of Brachyury-expressing cell clusters suggests a morphogenesis-associated signal center of oral ectoderm in sea urchin embryos. Developmental Biology, 2022, Jan 14;483:128-142.

28. Scaffa A*, Yao H*, **Oulhen N***, Wallace J, Peterson A.L., Ragavendran A., Wessel G., De Paepe M, Dennery P.A. Single-cell transcriptomics reveals persistent changes of lung cellular landscape in later life after neonatal hyperoxia (* co first authors), 2021, Redox Biology, Dec;48:102091.

27. Pieplow A, Dastaw M, Sakuma T, Sakamoto N, Yamamoto T, Yajima M, **Oulhen N** and Wessel M. CRISPR-Cas9 editing of non-coding genomic loci as a means of controlling gene expression in the sea urchin. Developmental Biology, 2021, Jan 19, 472:85-97.

26. Foster S, **Oulhen N**, Wessel G.M. A single cell RNA-seq resource for early sea urchin development. Development, 2020, Sep 11;147(17): dev191528.

25. Perillo M, **Oulhen N**, Foster S, Spurrell M, Calestani C, Wessel GM. Regulation of dynamic pigment cell states at single-cell resolution. eLife, 2020, Aug 19;9: e60388.

24. Foster S., Teo Y.V., Neretti N., **Oulhen N***. Wessel G.M. Single cell RNA-seq in the sea urchin embryo shows marked cell-type specificity in the Notch/Delta pathway. Molecular Reproduction and Development, 2019, 86(8):931-934. (* co-corresponding author)

23. **Oulhen N**, Swartz SZ., Wang L., Wikramanayake A., Wessel G.M. Distinct transcriptional

regulation of Nanos in the germ line and soma by the Wnt and Delta/Notch pathways. Developmental biology, 2019, 452(1):34-42.

22. Clark H, Knapik LO, Zhang Z, Wu X, Naik MT, **Oulhen N**, Wessel GM, Brayboy LM. Dysfunctional MDR-1 disrupts mitochondrial homeostasis in the oocyte and ovary. Science Reports, 2019, 9(1):9616.

21. **Oulhen N.**, Swartz SZ, Laird J., Mascaro A., Wessel G.M. Transient translational quiescence in the germline. Development, 2017, 144(7):1201-1210.

20. Brayboy L., **Oulhen N.**, Long S., Veight N., Raker C., Wessel GM. Multidrug Resistant Transporter-1 and Breast Cancer Resistance Protein protect against gonadotoxicity, and are essential in ovarian physiology. Reproductive toxicology, 2017, 69:121-131.

19. **Oulhen N**, Wessel GM. Albinism as a visual, in vivo guide for CRISPR/Cas9 functionality in the sea urchin embryo. Molecular Reproduction and Development, 2016, 83(12):1046-1047.

18. **Oulhen N.**, Wessel GM. Differential Nanos 2 protein stability results in selective germ cell accumulation in the sea urchin. Developmental biology, 2016, 418(1):146-56.

17. **Oulhen A.N.**, Heyland A., Zazueta V., Carrier T., Fresques T., Laird J., Onorato T., Janies D., Wessel, G. Regeneration in bipinnaria larvae of the bat star Patiria miniata induces rapid and broad new gene expression. Mechanisms of Development, 2016, S0925-4773 (16)30042-9.

16. Zazueta-Novoa V., Onorato T.M., Reyes G., **Oulhen N.**, Wessel G.M. Differential expression of vitellogenin 1, vitellogenin 2, Major Yolk Protein and a putative Vitellogenin receptor during oocyte development and early embryogenesis in the sea star, Patiria miniata. The Biological Bulletin, 2016, 230(3):209-19.

15. Angione S., **Oulhen N.,** Brayboy L., Wessel GM, Tripathy A. Simultaneous Perfusion Apparatus (SPA) for Oocyte Manipulation and Tracking, Fertility and Sterility, 2015, 103(1):281-90.

14. **Oulhen N**, Xu Dongdong, Wessel GM. Conservation of sequence and function in fertilization of the cortical granule serine protease in echinoderms. Biochemical and Biophysical Research Communications, 2014, 450(3):1135-41.

13. Swartz S.Z., Reich A.M., **Oulhen N.,** Raz T., Milos P.M., Campanale J.P., Hamdoun A., Wessel G.M. CNOT6 repression protects inherited mRNAs in primordial germ cells. Development, 2014, 141(16):3134-42.

12. Campanale J.P., Gökirmak T., Espinoza J.A., **Oulhen N.**, Wessel G.M., Hamdoun A. Migration of sea urchin primordial germ cells. Developmental Dynamics, 2014, 243(7):917-27.

11. **Oulhen N**., Ramos I, Onorato TM., Wessel GM. Dysferlin is essential for endocytosis in the sea star oocyte. Developmental Biology, 2014, 1;388(1):94-102.

10. Brayboy LM., **Oulhen N.**, Robins J., Witmyer J., Wessel GM, Carson S. Multidrug resistant transport activity and susceptibility to chemotherapeutic agent changes with oocyte maturational stage. Fertility and Sterility, 2013, 100(5):1428-1435.

9. **Oulhen N**., Wessel GM. Retention of exogenous mRNAs selectively in the germ cells of the sea urchin requires only a 5'-cap and a 3'UTR. Molecular Reproduction and Development, 2013, 80(7):561-9.

8. **Oulhen N.**, Yoshida T., Yajima M., Song J., Sakamoto N., Yamamoto T., Wessel GM. The 3'UTR of Nanos2 directs selective protein enrichment in the germ cell lineage of the sea urchin. Developmental Biology, 2013, 377 (1): 275-83.

7. **Oulhen N.**, Reich A., Wong JL., Ramos I., Wessel GM. Diversity in the fertilization envelopes of echinoderms. Evolution and Development, 2013, 15 (1): 28-40.

6. Musnier A., Leon K., Morales J., Reiter E., Boulo T., Costache V., Vourch'h P., Heitzler D., **Oulhen N**., Poupon A., Boulben S., Cormier P., Crepieux P. mRNA-selective translation induced by FSH in primary Sertoli cells. Molecular Endocrinoly, 2012, 26(4):669-80

5. Gosselin P., **Oulhen N**., Jam M., Ronzca J., Cormier P., Czjzek M., Cosson B. The translational repressor 4E-BP called to order by eIF4E: new structural insights by SAXS. Nucleic Acids Research, 2011, 39(8): 3496-503

4. **Oulhen N**., Mulner-Lorillon O., Cormier P. eIF4E-Binding Proteins Are Differentially Modified After Ammonia Versus Intracellular Calcium Activation of Sea Urchin Unfertilized Eggs. Molecular Reproduction and Development, 2010, 77(1):83-91.

3. **Oulhen N**, Boulben S, Cormier P and Cosson B. A Variant Mimicking Hyperphosphorylated 4E-BP Inhibits Protein Synthesis in a Sea Urchin Cell-Free, Cap-Dependent Translation System. PlosOne, 2009, 4(3):e5070.

2. Lapasset L, Pradet-Balade B., Vergé V., Lozano JC., **Oulhen N**, Cormier P., Peaucellier G. Cyclin B synthesis and rapamycin-sensitive regulation of protein synthesis during starfish oocyte meiotic divisions. Molecular Reproduction and Development, 2008, 75(11):1617-26.

1. **Oulhen N**., Salaün P., Cosson B., Cormier P., Morales J. After fertilization of sea urchin eggs, eIF4G is post-translationally modified and associates with the cap binding protein, eIF4E. Journal of Cell Science, 2007, 120(3): 425-34.

## Book chapters and Reviews (peer-reviewed)

14. **Oulhen N**, Byrne M, Duffin P, Gomez-Chiarri M, Hewson I, Hodin J, Konar B, Lipp EK, Miner BG, Newton AL, Schiebelhut LM, Smolowitz R, Wahltinez SJ, Wessel GM, Work TM, Zaki HA, Wares JP. How the biology of sea stars informs the etiology of Sea Star Wasting. Bio Bull, 2022; 243(1):50-75.

13. **Oulhen N**, Morita S, Wessel G. Post-transcriptional regulation of factors important for the germ line. Current Topics in Developmental Biology, 2022; 146:49-78.

12. Wessel G, Morita S, **Oulhen N**. Somatic cell conversion to a germ cell lineage - a violation or a revelation. JEZ Part B: Molecular and Developmental Evolution, 2021; 336(8):666-679.

11. Lin CY, **Oulhen N**, Wessel G, Su YH. CRISPR/Cas9-mediated genome editing in sea urchins. Methods Cell Biol. 2019; 151:305-321.

10. Roux-Osovitz MM, Foltz KR, **Oulhen N**, Wessel G. Trapping, tagging and tracking: Tools for the study of proteins during early development of the sea urchin. Methods Cell Biol. 2019; 151:283304.

9. **Oulhen N**, Foster S, Wray G, Wessel G. Identifying gene expression from single cells to single genes. Methods Cell Biol. 2019; 151:127-158.

8. Campanale JP, Hamdoun A, Wessel GM, Su YH, **Oulhen N.** Methods to label, isolate, and image sea urchin small micromeres, the primordial germ cells (PGCs). Methods Cell Biol. 2019; 150:269-292

7. **Oulhen N**., Wessel GM. A quiet space during rush hour: Quiescence in primordial germ cells. Stem Cell Res, 2017, 25:296-299.

6. **Oulhen N.**, Barbara Shulz, Carrier T. English translation of Heinrich Anton de Bary's 1878 speech, "De La Symbiose". Symbiosis, 2016, 69 (3):131-39.

5. Wessel GM., Brayboy L., Fresques T., Gustafson EA., **Oulhen N**., Ramos I., Reich A., Swartz SZ., Yajima M., Zazueta V. The Biology of the Germ-line Lineages in Echinoderms. Molecular Reproduction and Development, 2014, 81(8):679-711.

4. **Oulhen N.**, Wessel GM. Every which way – nanos gene regulation in echinoderms. Genesis, 2014, 52(3):279-86.

3. **Oulhen N.**, Mori M., Dumollard R. Meeting report - Oocyte maturation and fertilization: Lessons from canonical and emerging models. Journal of Cell Science, 2013, 126(Pt19):4321-4.

2. **Oulhen N**., Morales J., Cosson B., Mulner-Lorillon O., Bellé R., Cormier P. Gene expression regulation at the translational level: contribution of marine organisms. J. Soc. Biol., 2007, 201(3):297-306.

1. **Oulhen N**., Cormier P. eIF4E and developmental decisions: when translation drives the development. Med Sci (Paris), 2006, 22(5): 507-13.

## Conferences and workshops attended (invited speaker)

17. Developmental Biology of the Sea Urchin and other marine invertebrates XXVI; Marine Biological Laboratories, Woods Hole (MA), USA, 2022.
**Crispr gene editing workshop, co-leader**.
**Session chair**: Plenary 3, Cell Biology of Early Embryos and Germ cells

16. Quiescence in primordial germ cells. NESDB (North East Regional Meeting of the Society for Developmental Biology) online, USA, April 2021.

15. Quiescence in primordial germ cells. Echinoclub, online, USA, March 2021.

14. Quiescence in primordial germ cells. Germ cells meeting; Cold Spring Harbor Laboratory (NY), online, USA, 2020.

13. Workshop on Sea star wasting disease, online, May 2020, 34 participants
**Discussion leader** of the workshop for the organismal/integrative project

12. Quiescence is super important, second only to Nanos. Developmental Biology of the Sea Urchin XXV; Marine Biological Laboratories, Woods Hole (MA), USA, 2018.

11. Nanos is super important and very cool. Developmental Biology of the Sea Urchin XXIV; Marine Biological Laboratories, Woods Hole (MA), USA, 2017.
**Session chair**: Specifying primordial germ cells and stem cells.

10. Transient translational quiescence in the germline. Germ cells meeting; Cold Spring Harbor Laboratory (NY), USA, 2016.

9. Transient Translational Quiescence in the PGCs. Developmental Biology of the Sea Urchin XXIII; Marine Biological Laboratories, Woods Hole (MA), USA, 2015.

8. Nanos protein is specifically retained in the small micromeres. Developmental Biology of the Sea Urchin XXII; Marine Biological Laboratories, Woods Hole (MA), USA, 2014.

7. Different levels of regulation are involved in nanos selective expression in the sea urchin small micromere lineage. Oocyte maturation and fertilization: Lessons from canonical and Emerging models. EMBO workshop, Banyuls sur mer, France, 2013.

6. Nanos is extra cool. Developmental Biology of the Sea Urchin XXI; Marine Biological Laboratories, Woods Hole (MA), USA, 2012.

5. Different levels of regulation are involved in nanos selective expression in the sea urchin small micromere lineage. Developmental Biology of the Sea Urchin XX; Marine Biological Laboratories, Woods Hole (MA), USA, 2011.

4. Translational factors are modified after sea urchin egg artificial activation, leading to protein synthesis increase and Cyclin B synthesis. Developmental Biology of the Sea Urchin XVIII; Marine Biological Laboratories, Woods Hole (MA), USA, 2008.

3. Cap dependent translation initiation regulation following fertilization of sea urchin eggsMarine Genomics: An Ocean of Techniques; Orthodox Academy of Crete, Greece, 2007

2. Gene expression regulation at the translational level: contribution of marine organisms. Journée de la Société de Biologie, Roscoff, France, 2007.

1. Following fertilization of sea urchin eggs, eIF4G is post translationally modified and associated with the cap binding protein, eIF4E. Developmental Biology of the Sea Urchin XVII; Marine Biological Laboratories, Woods Hole (MA), USA, 2006.

Posters: Co-author of 31 posters presented at multiples international conferences

## Invited Seminars

3. Quiescence in primordial germ cells.
Undergraduate Colloquium at College of Mount Saint Vincent (NY), USA, 2019.

2. A quiet space during rush hour: Quiescence in primordial germ cells.
Departemental Data club at Brown University (RI), USA, 2017.

1. Transient translational quiescence in the primordial germ cells.
Departmental seminar at University of Louisiana at Lafayette (LA), USA, 2017.

## Memberships

Society for Developmental Biology 2020, 2021

The American Society for Cell Biology ASCB 2020, 2021

## Career development

5. **Career coach**: **life coach certification** (accredited by internationally recognized Continuing Professional Development Standards Agency), Udemy online certificate. Many students struggle to find their career path. This certificate helped me to become a better mentor and to pay more attention to the student's needs, December 2022.

4. **Career development trainings:**
NIGMS weekly webinar training community, summer 2020:
-Starting Your Own Lab (Dr. Olivia Rissland, and Dr. Prachee Avasthi)
-Moving Away from the Scientific Pack in Your Research (Dr. Alejandro Sánchez Alvarado)
-Virtual Teaching and Learning (Dr. Erin L. Dolan)
-Research and Teaching at Primarily Undergraduate Institutions (PUI) (Dr Kathleen Howard and Dr Mark Bardgett)
-Developing the Right Skills for Your Scientific Career (Dr. Cynthia Fuhrmann.and Dr. Ann M. Stock)
-Leadership and Management as a Scientist (Dr Guy Padbury and Dr Shirley Tilghman)

The Postdoc Academy: Succeeding as a Postdoc. Online course organized by Boston University, Available on the edx website, June 2020

Inaugural Virtual Professional Development Conference organized by Offices of Women in Medicine and Science (OWIMS) on Women's Leadership in June 2020: Overcoming Obstacles, Preparing for Opportunities, and Being Yourself Along the Way

Workshop: "Write winning grant proposals" (Brown University), 2016

Novartis tour / meeting with scientists (Cambridge, USA), organized by Brown University, 2010

3. **Art classes** to strenghten my presentation, teaching, communication and outreach skills.
2D animation directed by Pr Alan Barnes (Johnson University, TN), Online course (6 lectures) in July 2020.

Continuing education at RISD (Rhode Island School of Design):
-Children's book illustration: introduction (online class), with Carol Schwartz, 18 hours, 2021
-Adobe Illustrator (online class), with Anne-Marie Byrd, 18 hours, 2020
-Japanese woodblock printing, with Kate Aitchison, 18 hours, 2018
-Water color painting: Introduction, with Michael Lyons, 18 hours, 2017
-Writing for Children's Books: Introduction, with Marlo Garnsworthy, 18 hours, 2017
-Member of the SCBWI: Society of Children's Book Writers and Illustrators, 2017
-Animation: Introduction, with Carissa Abitabilo, 12 hours, 2017

2. **Teaching certificates**
Sheridan Center Certificate IV: Teaching Consultant (Brown University), 2017
Intensive cross-disciplinary certificate: discussions about teaching methods with peer teachers from multiple fields, leading the workshops for students taking the certificate I, teaching observations to provide evaluations and feedbacks to students (recording students on camera, giving them the opportunity to watch themselves, writing observation reports and meeting with students in person to reflect together on their teaching skills)

Sheridan Center Certificate I: Reflective Teaching (Brown University), 2016
Intensive cross-disciplinary certificate: classes on critical thinking, inclusive classroom, public speaking, active learning, and student evaluation

1. **Science communication**
Science communication conference, Key note speaker: Cornelia Dean (Brown University), 2016
Workshop on Science communication, Instructor: Cornelia Dean (Brown University), 2016.

## Additional services to empower minorities in STEM

4. **Envision by WiSTEM** (Women in STEM): To Empower and encourage high school girls to be a part of the movement to increase female representation in STEM. Invited to be a judge for the Envision Research Competitions (a semester long proposal writing competition wherein Women in STEM members must work in teams of four or less to write a research proposal), 2021-2023.

3. **Letters to a Pre-Scientist Program**: Pen Pal Program that connects middle school students to STEM professionals through snail mail to broaden their awareness of what STEM professionals look like and do at work and inspire all students to explore a future in STEM. Letters to a Pre-Scientist is committed to supporting all aspects of diversity in STEM and ensuring an inclusive environment that is welcoming to everyone who interacts with our programs. This includes, but is not limited to, treating pen pals from different races, ethnicities, cultures, languages, religions, socioeconomic backgrounds, genders, sexual orientations, and abilities with respect, 2021-2023.

2. **Creation of WISP** (Women in Science Positive Mentoring Group): Co-founder with Dr. Tara Fresques, Monthly zoom meetings with the members, discussions on research projects, grants, careers, mental health, teaching, outreach, communication, and science in general with women around the world, since 2021.

1. **SACNAS** (Society for Advancement of Chicanos and Native Americans in Science): Inclusive organization that provides Chicanos/Hispanics and Native americans opportunities to become leaders in STEM. Travel scholarship Reviewer and Research presentation Reviewer for the 2017 SACNAS national conference (Reviewer in May and August 2017)

## Teaching

21. Adjunct professor at Providence College, Developmental Biology / Bio-320 (Lectures and research-based labs including single cell RNA seq analysis, qPCR, cryosection, Immunofluorescence and more), Fall 2022

20. Guest speaker: Molecular and Cellular Engineering BIOL453 (for undergraduate, master and graduate students, University of Louisiana at Lafayette, Louisiana). Two lectures: CRISPR Cas9 followed by Single cell RNA sequencing, online, April 2022.

19. Guest speaker: Bard Biology Seminar Series for undegraduate students at Bard College, NY, invited by Pr Cathy Collins. Quiescence in primordial germ cells, online, February 2022.

18. Guest speaker: Lecture on Sea star wasting at Dickinson College, PA, invited by Pr. John Henson, online, October 2021.

17. STEM Research Academy (STEM RA) program (6 week summer program for high school students): I gave two lectures on Regulation of gene expression, and co-mentored two high school on their research projects, online, summer 2021.

16. Creation of a single cell RNA seq online class for undergraduate students in collaboration with Pr Thomas Onorato (Laguardia Community College, NY) and Pr Gary Wessel (Brown University), we took advantages of our recent and unpublished sea star ovary single cell RNA seq dataset obtained at Brown to create a class for the undergraduate students at Laguardia. I taught lectures and labs for more than 50 students, I taught them how to understand and analyze single cell RNA seq data, how to identify the cell clusters, how to write scripts in R to make figures, 2020-2021.

15. Guest speaker: Bio Society Club (for undergraduate and graduate students, University of Louisiana at Lafayette, Louisiana), invited by Dr. Sophie Plouviez, Quiescence in the primordial germ cells followed by a discussion on CRISPR and Single cell RNA seq, online, November 2020

14. Guest speaker: Molecular and Cellular Engineering BIOL453 (for undergraduate, master and graduate students, University of Louisiana at Lafayette, Louisiana). Two lectures: CRISPR Cas9 and Single cell RNA sequencing, April 2019.

13. Skype seminar and discussions about career paths in biology (for first year undergraduate students at Laguardia Community College, NY), invited by Pr. Thomas Onorato, December 2018.

12. Skype seminar and discussions about career paths in biology (for first year undergraduate students at Laguardia Community College, NY), invited by Pr. Thomas Onorato. 2017

11. Guest speaker: Molecular and Cellular Engineering BIOL453 (for undergraduate, master and graduate students, University of Louisiana at Lafayette, Louisiana): CRISPR Cas9, April 2017.

10. Guest speaker at the Volker Schmid training course: Experimental Developmental Biology of Marine Invertebrates (for european master and graduate students, in Roscoff, France): Transient translational quiescence in the germline, 2017

9. Workshop discussion leader: teaching to students taking the Sheridan certificate I (Brown University), 2016

8. Guest speaker to explain networking to undergraduate students from the Leadership Alliance (Brown University), 2016

7. Teaching assistant: developmental biology lab class on Echinoderns (for undergraduate students, Brown University), once a year, 2011-2023

6. Guest speaker: Biology of Reproduction, Biol 1330 (for undergraduate students at Brown University), Nanos function and regulation, 2014

5. Guest speaker: Biology of Reproduction, Biol 1330 (for undergraduate students at Brown University), Nanos function and regulation, 2012

4. Guest speaker and teaching assistant: Workshop on Early development in multicellulars and metazoans (for international graduate students, ESTeam project, in Roscoff, France), 2008

3. Guest speaker and teaching assistant: Experimental Developmental Biology of Marine Invertebrates (for international graduate students, in Roscoff, France), 2 weeks per year, 2005-08

2. Guest speaker and teaching assistant: Food toxicity (for undergraduate students in Roscoff, France), one week per year, lecture on GMO and toxicity, 2006-2008.

1. Teaching assistant: Gene expression, translational regulation and cell cycle (for master students in Roscoff, France), 2006.

## Outreach Activities

17. STEM Outreach at Francis J Varieur Elementary School (Brown Junior Researchers Program): I organized 1 session on Echinoderms, 2020

16. Laboratory experience for Rising 9th and 10th Graders (Brown University STEM program), 2019

15. STEM Outreach at Hennessey Elementary School, 1st Grade Students (Brown Junior Researchers Program): I organized 2 sessions on Echinoderms, 2018

14. Interviewed by the American Society for Cell Biology: Three steps for scientists in the pursuit of happiness, 2018. https://www.ascb.org/careers/three-steps-scientists-pursuit-happiness/

13. Writing scientific bed time stories for kids (5 to 7 year old). A professional illustrator in Boston is currently illustrating the first book and we expect to publish it soon. I followed a class on "Writing for Children's Books: Introduction' taught by Marlo Garnsworthy at Rhode Island School of Design, (18 hours) and I am a member of the SCBWI: Society of Children's Book Writers and Illustrators.

12. Laboratory experience for local high school science classes (Classical high school), 2017

11. Laboratory experience for local primary school science classes (Montesory school 5th grade), 2017

10. Travelled to Montesory School in Providence, to teach the frog anatomy to 5th grade, 2017.

9. STEM Outreach at Hennessey Elementary School, 1st Grade Students (Brown Junior Researchers Program ; weekly classes organized by volunteer grad students and post docs : Science class, experimental design, T shirt design for the kids, family nights to meet the parents, fundraisings for the school) – 5 months, 2016-17

8. Laboratory experience for local high school science classes (Hope High school 9th grade), 2016

7. Laboratory experience for local Providence community, 250th anniversary of Brown University, 2014

6. Laboratory experience for local middle school science classes each semester (LaSalle Pegasus program 7th grade ; San Miguel 6th grade), 2010-2015

5. Guest speaker at the South County French Speaking Union (SCFSU) to talk about the current research in Marine Biology and to introduce few model organisms, 2010

4. Guest speaker at the International house of Providence, to talk about the current research in Marine Biology and to introduce few model organisms, 2010

3. I was interviewed and I showed experiments for the movie entitled "When science goes to the beach", movie played few times on French television (with Patrick Cormier in France), 2008

2. Laboratory experience for the French community during the event called Breizh touch, organized in Paris (France), to help non-scientists understand what we do in the lab, 2007

1. Laboratory experience and lecture for local schools and non-scientists, event called "fete de la science" in french, organized by the marine station in Roscoff (France), 2005-08