

# CIARÁN A. SHAUGHNESSY, Ph.D.

[ciarán.shaughnessy@okstate.edu](mailto:ciarán.shaughnessy@okstate.edu) // [www.ShaughnessyLab.com](http://www.ShaughnessyLab.com) // [Google Scholar Profile](#)

Pronouns: he, him // Hometown: Portland, Maine

## CURRENT APPOINTMENT AND ADDRESS

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### Assistant Professor of Integrative Physiology

Department of Integrative Biology, Oklahoma State University, 501 Life Sciences West, Stillwater, OK 74078

## EDUCATION AND POSTDOCTORAL TRAINING

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2021 – 2023    **NSF Postdoctoral Fellowship**, Department of Biological Sciences, University of Denver, Denver, CO  
2020 – 2021    **NIH Postdoctoral Fellowship**, Department of Pediatrics, National Jewish Health, Denver, CO  
2020            **Ph.D.**, Organismic and Evolutionary Biology, University of Massachusetts, Amherst, MA  
2015            **M.S.**, Biological Sciences, DePaul University, Chicago, IL  
2012            **B.S.**, Chemistry, Illinois Institute of Technology, Chicago, IL

## PROFESSIONAL EMPLOYMENT AND APPOINTMENTS

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2023 –            Assistant Professor, Department of Integrative Biology, Oklahoma State University, Stillwater, OK  
2022 – 2023    Adjunct Professor, Department of Biological Sciences, University of Denver, Denver, CO  
2021 – 2023    Postdoctoral Fellow, Department of Biological Sciences, University of Denver, Denver, CO  
2020 – 2021    Postdoctoral Fellow, Department of Pediatrics, National Jewish Health, Denver, CO  
  
2018 – 2019    Instructor, College of Natural Sciences, University of Massachusetts, Amherst, MA  
2014 – 2020    Research Affiliate, S.O. Conte Anadromous Research Laboratory, USGS, Turners Falls, MA  
2014 – 2020    Research Assistant, Department of Biology, University of Massachusetts, Amherst, MA  
2014 – 2018    Teaching Assistant, Department of Biology, University of Massachusetts, Amherst, MA  
2015            Biological Contractor (Atlantic Salmon Research), U.S. Fish & Wildlife Service, Essex Junction, VT  
2012 – 2014    Graduate Assistant, Department of Biological Sciences, DePaul University, Chicago, IL

## RESEARCH OVERVIEW

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My research takes a broad approach to studying epithelial ion transport, osmoregulation, and stress physiology, as well as neuroendocrine programs and pharmacological interventions which control or modulate these physiological processes. I integrate investigations at the molecular, cellular, organ, and organismal levels to gain mechanistic insights into physiological function. My research is applied in evolutionary, ecological, and biomedical contexts.

## PUBLICATIONS

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### Publications Submitted, In Review, or In Revision

Submitted    **Shaughnessy CA**, Yadav S, Zeitlin PL, Bratcher PE. Contrasting responses to CFTR modulators between different epithelial cell culture models.  
Submitted    **Shaughnessy CA**, Yadav S, Thornell IM, Zeitlin PL, Bratcher PE. A CFTR-specific voltage-dependent current is absent in the F508del-CFTR mutation.  
Submitted    Barany A, Caderno-Peña A, Simó-Mirabet P, **Shaughnessy CA**, Martos-Sitcha JA, Mancera JM, McCormick SD. Freshwater and low body mass reduce heat tolerance in the euryhaline mummichog (*Fundulus heteroclitus*).  
In Review    **Shaughnessy CA**, Breves JP. Salt-secreting ionocytes in marine fishes: new dimensions to a fundamental model. *J Exp Biol*.  
In Review    Norstog JL, Ferriera-Martins D, Hall DJ, **Shaughnessy CA**, McCormick SD. Functional characterization of sodium:chloride cotransporter (NCC) in the gill of sea lamprey, *Petromyzon marinus*. *Am J Physiol Regul Integr Comp Physiol*.

### Peer-Reviewed Publications

underline = undergraduate co-author under my supervision // \* = equal contribution

- 31 **Shaughnessy CA**, Myhre VD, McCormick SD, Dorés RM. 2025. Functionally divergent melanocortin receptor subtypes and the HPI axis in sea lamprey. *J Mol Endocrinol*. 75: e240126 ([link](#))
- 30 **Shaughnessy CA**, Hall DJ, Norstog JL, Ferreira-Martins D, Barany A, Regish AM, Breves JP, Komoroske LM, McCormick SD. 2025. A Cftr-independent, Ano1-rich seawater-adaptive ionocyte in sea lamprey gills. *J Exp Biol*. 7:jeb250110 ([link](#))
- 29 Edwards OM, Reichert MS, Ozmen L, **Shaughnessy CA**, Zhai L, Zhang B. 2025. Physiological and morphological traits affect contemporary range expansion and implications for species distribution modeling in an amphibian species. *J Anim Ecol*. 94: 195-209 ([link](#))
- 28 Breves JP, Posada M, Tao Y, **Shaughnessy CA**. 2024. Salinity and prolactin regulate *anoctamin 1* in the model teleost, *Fundulus heteroclitus*. *Am J Physiol Regul Integr Comp Physiol*. 327:R479-485 ([link](#))
- 27 Breves JP, **Shaughnessy CA**. 2024. Endocrine control of gill ionocyte function in euryhaline fishes. *J Comp Physiol B*. 94:663–684 ([link](#))
- 26 **Shaughnessy CA**, Le K, Myhre VD, Dorés RM. 2023. Functional characterization of melanocortin 2 receptor (Mc2r) from a lobe-finned fish (*Protopterus annectens*) and insights into the molecular evolution of melanocortin receptors. *Gen Comp Endocrinol*. 343:114356 ([link](#))
- 25 Bouyoucos IA, **Shaughnessy CA**, Anderson WG, Dorés RM. 2023. Molecular and pharmacological analysis of the melanocortin-2 receptor and its accessory proteins Mrap1 and Mrap2 in a Squalomorph shark, the Pacific spiny dogfish. *Gen Comp Endocrinol*. 342:114342 ([link](#))
- 24 **Shaughnessy CA**, Myhre VD, Hall DJ, McCormick SD, Dorés RM. 2023. Hypothalamus-pituitary-interrenal (HPI) axis signaling in Atlantic sturgeon (*Acipenser oxyrinchus*) and sterlet (*Acipenser ruthenus*). *Gen Comp Endocrinol*. 339:114290 ([link](#))
- 23 Hoglin BE, Miner MV, ~~Erdenebayar U~~, **Shaughnessy CA**, Dorés RM. 2023. Trends in the evolution of the elasmobranch melanocortin-2 receptor: insights from structure/function studies on the activation of whale shark Mc2r. *Gen Comp Endocrinol*. 338:114278 ([link](#))
- 22 **Shaughnessy CA**, McCormick SD. 2023. Juvenile sea lamprey (*Petromyzon marinus*) have a wide window of elevated salinity tolerance that is eventually limited during springtime warming. *Can J Fish Aquat Sci*. 80:105–114 ([link](#))
- 21 Dorés RM, ~~McKinley G~~, ~~Meyers A~~, ~~Martin M~~, **Shaughnessy CA**. 2022. Structure/function studies on the activation motif of two non-mammalian Mrap1 orthologs, and observations on the phylogeny of Mrap1, including a novel characterization of an Mrap1 from the chondrosteian fish, *Polyodon spathula*. *Biomolecules*. 12: 1681. ([link](#))
- 20 Davis PV, **Shaughnessy CA**, Dorés RM. 2022. Human melanocortin-2 receptor: identifying a role for residues in the TM4, EC2, and TM5 domains in activation and trafficking as a result of co-expression with the accessory protein, Mrap1 in Chinese hamster ovary cells. *Biomolecules*. 12:1422 ([link](#))
- 19 **Shaughnessy CA**, ~~Jensen MF~~, Dorés RM. 2022. A basal actinopterygian melanocortin receptor: molecular and functional characterization of an Mc2r ortholog from the Senegal bichir (*Polypterus senegalus*). *Gen Comp Endocrinol*. 328:114105 ([link](#))
- 18 Kotas ME, Moore C, Gurrola II JG, Pletcher S, Goldberg AN, Alvarez R, Yamato S, Bratcher PE, **Shaughnessy CA**, Zeitlin PL, Zhang I, Li Y, Montgomery MT, Lee K, Cope E, Locksley RM, Seibold MA, Gordon ED. 2022. IL-13-programmed airway tuft cells produce PGE2, which promotes CFTR-dependent mucociliary function. *JCI Insight*. 7:e159832 ([link](#))
- 17 **Shaughnessy CA**, Balfry SK, Bystriansky JS. 2022. The isosmotic point as critical salinity limit for growth and osmoregulation, but not survival, in the wolf eel *Anarrhichthys ocellatus*. *Fish Physiol Biochem*. 48:471-480 ([link](#))
- 16 **Shaughnessy CA**, Zeitlin PL, Bratcher PE. 2022. Net benefit of ivacaftor during prolonged tezacaftor/alexacaftor exposure *in vitro*. *J Cyst Fibros*. 21:637-643 ([link](#))
- 15 **Shaughnessy CA**, Yadav S, Bratcher PE, Zeitlin PL. 2022. Receptor-mediated activation of CFTR via prostaglandin signaling pathways in the airway. *Am J Physiol Lung Cell Mol Physiol*. 322:L305–L314 ([link](#))
- 14 Barany A, **Shaughnessy CA**, Pelis RM, Fuentes J, Mancera JM, McCormick SD. 2021. Tissue and salinity specific Na<sup>+</sup>/Cl<sup>-</sup> cotransporter (NCC) orthologues involved in the adaptive osmoregulation of sea lamprey (*Petromyzon marinus*). *Sci Rep*. 11:22698 ([link](#))
- 13 **Shaughnessy CA**, Zeitlin PL, Bratcher PE. 2021. Elexacaftor is a CFTR potentiator and acts synergistically with ivacaftor during acute and chronic treatment. *Sci Rep*. 11:19810 ([link](#))
- 12 **Shaughnessy CA**, McCormick SD. 2021. 11-Deoxycortisol is a stress responsive and gluconeogenic hormone in a jawless vertebrate, the sea lamprey (*Petromyzon marinus*). *J Exp Biol*. 224:jeb241943 ([link](#))
- 11 Barany A\*, **Shaughnessy CA\***, McCormick SD. 2021. Corticosteroid control of Na<sup>+</sup>/K<sup>+</sup>-ATPase in the intestine of the sea lamprey (*Petromyzon marinus*). *Gen Comp Endocrinol*. 307:113756. ([link](#))

- 10 Yadav S\*, **Shaughnessy CA\***, Zeitlin PL, Bratcher PE. 2021. Down-regulation of the epithelial sodium channel (ENaC) in human airway epithelia in response to low temperature incubation. *BMJ Open Respir Res.* 8:e000861. ([link](#))
- 9 **Shaughnessy CA**, Breves JP. 2021. Molecular mechanisms of Cl<sup>-</sup> transport in fishes: new insights and their evolutionary context. *J Exp Zool A.* 335:207-216 ([link](#))
- 8 Bratcher PE, Yadav S, **Shaughnessy CA**, Thornell IM, Zeitlin PL. 2020. Effect of apical chloride concentration on the measurement of responses to CFTR modulation in airway epithelia cultured from nasal brushings. *Physiological Reports.* 8:e14603. ([link](#))
- 7 **Shaughnessy CA**, Barany A, McCormick SD. 2020. 11-Deoxycortisol controls hydromineral balance in the most basal osmoregulating vertebrate, sea lamprey (*Petromyzon marinus*). *Sci Rep.* 10:12148. ([link](#))
- 6 Barany A, **Shaughnessy CA**, Fuentes J, Mancera JM, McCormick SD. 2020. Osmoregulatory role of the intestine in the sea lamprey (*Petromyzon marinus*). *Am J Physiol Regul Integr Comp Physiol.* 318:R410–R417. ([link](#))
- 5 **Shaughnessy CA**, McCormick SD. 2020. Functional characterization and osmoregulatory role of gill Na<sup>+</sup>/K<sup>+</sup>/2Cl<sup>-</sup> cotransporter (NKCC1) in sea lamprey (*Petromyzon marinus*), a basal vertebrate. *Am J Physiol Regul Integr Comp Physiol.* 318:R17–R29. ([link](#))
- 4 Bayse S\*, **Shaughnessy CA\***, Regish A, McCormick SD. 2020. Upper thermal tolerance and heat shock protein response of juvenile American shad (*Alosa sapidissima*). *Estuaries Coasts.* 43:182–188 ([link](#))
- 3 **Shaughnessy CA**, McCormick SD. 2018. Reduced thermal tolerance during salinity acclimation in brook trout (*Salvelinus fontinalis*) can be rescued by prior treatment with cortisol. *J Exp Biol.* 2018:jeb.169557. ([link](#))
- 2 **Shaughnessy CA**, Anderson EC, Kasparian M, LaMontagne JM, Bystriansky JS. 2017. Survival and osmoregulation of the purple marsh crab (*Sesarma reticulatum*) at varying salinity and pH. *Can J Zool.* 95: 985-989 ([link](#))
- 1 **Shaughnessy CA**, Baker DW, Brauner CJ, Morgan JD, Bystriansky JS. 2015. Interaction of osmoregulatory and acid-base compensation in white sturgeon (*Acipenser transmontanus*) during exposure to aquatic hypercarbia and elevated salinity. *J Exp Biol.* 218:2712–2719. ([link](#))

#### Book Chapters

- Shaughnessy CA**, Bystriansky JS. 2024. “Ion Regulation in Anadromous Fishes”. In *Encyclopedia of Fish Physiology* (2<sup>nd</sup> ed.). pp. 872-882. Alderman SL, Gillis TE (Eds.). Academic Press. ([link](#))
- Shaughnessy CA**, Hall DJ. 2020. “Fishes of the Presumpscot River: To the Sea and Back”. In *Voices of the Presumpscot River*. Sanford RM, Plumley W (Eds.). North Country Press: Unity, ME. pp. 188–230. ([link](#))

#### Theses

- Shaughnessy CA**. 2019. “Physiology of a Basal Vertebrate, the Sea Lamprey (*Petromyzon marinus*): Osmoregulation and Corticosteroid Action”. Doctoral Dissertation. University of Massachusetts Amherst. ([link](#))
- Shaughnessy CA**. 2015. “Physiological Effects of Aquatic Hypercarbia on Seawater Acclimation in the White Sturgeon (*Acipenser transmontanus*)”. MSc Thesis. DePaul University. ([link](#))

### **EXTRAMURAL RESEARCH GRANTS AND FELLOWSHIPS**

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- 2025 ODWC, Fisheries Division. “Evaluating the Thermal Tolerances of Endemic Neosho Bass (*Micropterus velox*) Relative to Smallmouth Bass (*Micropterus dolomieu*) and Known Hybrids in the Tributaries of Tenkiller Reservoir”. PIs: **Shaughnessy CA**, Long JM. 10/2025 – 9/2026. Total Award: **\$94,122**.
- 2022 NSF Postdoctoral Research Fellowship in Biology (PRFB). “Resolving the evolution of stress axis signaling in vertebrates”. 11/2021 – 10/2024. Total Award: **\$207,000**. ([NSF Award Search](#)) [terminated after 2 years to accept Asst Prof position]
- 2021 NIH NHLBI Ruth L. Kirschstein National Research Service Award (NRSA) Postdoctoral Fellowship (F32). “Prostones as novel receptor-mediated activators of CFTR in the airway”. 06/2021 – 05/2024. **\$205,000**. ([NIH RePORTER](#)) [terminated after 1 year to accept NSF PRFB]
- 2021 Cystic Fibrosis Foundation Postdoctoral Research Fellowship. “Lubiprostone as a novel, receptor-mediated activator of CFTR”. 06/2021 – 05/2023. **\$130,000**. [declined award to accept NIH F32]

### **SELECTED HONORS, AWARDS, AND FELLOWSHIPS**

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- 2024 Academic Summer Research Award, College of Arts and Sciences. Oklahoma State University (\$10,112)

2023	Company of Biologists Travelling Fellowship (£3,000)
2020	Eugene F. & Easton M. Crawford Charitable Lead Unitrust Fellowship, National Jewish Health (\$30,000)
2019	Company of Biologists Travel Award (£350)
2018	College of Natural Sciences Teaching Fellowship, University of Massachusetts (\$3,000)
2018	International Congress on the Biology of Fishes Student Travel Award (\$800)
2017	Louis Guillette Award (Best Student Presentation), North American Society for Comparative Endocrinology (\$500)
2014	Sigma Xi Grants-In-Aid of Research Award (\$900)
2014	International Congress on the Biology of Fishes Student Travel Award (£300)
2014	EPCOR Water Ltd. Student Travel Award, Canadian Society of Zoologists (\$500)
2014	William S. Hoar Award Finalist (Best Student Presentation), Canadian Society of Zoologists (\$500)
2014	DePaul University Graduate Research Fund Travel Award (\$500)
2013	Company of Biologists Travelling Fellowship (£2,500)
2013	Canadian Society of Zoologists Student Travel Award (\$175)
2013	DePaul University Graduate Research Fund Travel Award (\$500)
2011	Undergraduate Research Funding, Illinois Institute of Technology (\$24,000)
2007	Marvin Camras Scholarship (merit-based; full tuition), Illinois Institute of Technology (5 Years; \$150,000)

## RESEARCH MENTORSHIP, SUPERVISION, AND COMMITTEE MEMBERSHIP

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### Graduate Students

2025 – Present	Madison Merideth, M.S., Integrative Biology, Okla St Univ
2025 – Present	Ava Cannizzaro, M.S., Integrative Biology, Okla St Univ
2024 – Present	Dillon Flowers, Ph.D., Integrative Biology, Okla St Univ
2024 – Present	Allison DeLoache, Ph.D., Integrative Biology, Okla St Univ
2024 – Present	Kristi Dillon, D.V.M. (research credit only, VMED 7510), Okla St Univ

### Graduate Student Committee Participation

2024 – Present	Loshitha Bokumburegedara, Ph.D., Integrative Biology, Okla St Univ
2024 – Present	Genesis Alarcon, M.S., Integrative Biology, Okla St Univ
2023 – Present	Yago Santos, Ph.D., Integrative Biology, Okla St Univ

### Undergraduate Researchers

2025 – Present	Connor Brown, Okla State Univ, Research Credit	
2024 – Present	Mady Hurst, Okla State Univ, Research Credit	
2024 – Present	Samantha Kennedy, Okla State Univ, Research Credit	Summer Research Assistant
2024 – Present	Kristine Branch, Okla State Univ, Research Credit	
2024 – Present	Grace Phelps, Okla State Univ, Research Credit	
2024 – Present	Savannah Caldwell, Okla State Univ, Research Credit	Wentz Scholarship
2024	Jackson Grimes, Okla State Univ, Research Credit	Summer Research Assistant
2023 – 2024	Liam Doherty, Univ of Denver, Honors Thesis	
2022 – 2024	Valorie Myhre, Univ of Denver, Honors Thesis	Summer Research Fellow
2019	Hadley Kerr, UMass, Honors Thesis	
2018 – 2019	Fredrick Meyer, UMass, Coastal & Marine Sciences Certificate	MS, UMass Boston
2017 – 2018	Alex Daigle, UMass, Honors Thesis	
2016	Sarah Martin, UMass, Coastal & Marine Sciences Certificate	
2014 – 2015	Emily Sgarlat, UMass, Coastal & Marine Sciences Certificate	
2013 – 2014	Emily Whitmore, DePaul Univ, Research Credit	DVM, University of Illinois, 2020
2013 – 2014	Nicole Gianni, DePaul Univ, Research Credit	DVM, University of Illinois, 2019
2013 – 2014	Bazla Sukhera, DePaul Univ, Research Credit	OD, Illinois College of Optometry, 2021
2012 – 2014	Kim Marie Dam, DePaul Univ, Research Credit	PhD, CalTech, 2023

## TEACHING

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### Instructor of Record

Oklahoma State University

Continuous BIOL 3700 “Readings and Special Studies in Integrative Biology”, Oklahoma State University  
Continuous BIOL 4700 “Undergraduate Research Problems”, Oklahoma State University  
Continuous BIOL 5000 “Research for Master’s Thesis”, Oklahoma State University  
Continuous BIOL 6000 “Research for PhD Dissertation”, Oklahoma State University

2025, Spring BIOL 3204 “Physiology”, Oklahoma State University  
2024, Fall BIOL 3204 “Physiology”, Oklahoma State University  
2024, Spring BIOL 3204 “Physiology”, Oklahoma State University

#### University of Denver

2023, Spring BIOL 1010 “Physiological Systems”, University of Denver  
2022, Spring BIOL 1010 “Physiological Systems”, University of Denver  
2022, Winter BIOL 3650 “Endocrinology”, University of Denver (Co-Instructor)

#### University of Massachusetts

2018, Fall NATSCI 191 “First-Year Seminar (Animal Physiology)”, University of Massachusetts

#### Teaching Assistant

2017, Spring BIO 153 “General Biology”, University of Massachusetts  
2017, Autumn BIO 153 “General Biology”, University of Massachusetts  
2016, Autumn BIO 153 “General Biology”, University of Massachusetts  
2015, Autumn BIO 494 “Careers in Biology”, University of Massachusetts  
2014, Autumn BIO 494 “Careers in Biology”, University of Massachusetts  
2014, Spring BIO 193 “General Biology 3”, DePaul University  
2014, Winter BIO 310 “Vertebrate Physiology”, DePaul University  
2013, Autumn BIO 191 “General Biology 1”, DePaul University  
2013, Spring BIO 193 “General Biology 3”, DePaul University  
2013, Winter BIO 192 “General Biology 2”, DePaul University  
2012, Autumn BIO 191 “General Biology 1”, DePaul University  
2011, Spring CHEM 122 “General Chemistry 2”, Illinois Institute of Technology

### PROFESSIONAL SERVICE

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#### Society Leadership

2022 – Officer (Treasurer), **Physiology Section of the American Fisheries Society** ([website](#))  
2022 – Member of the International Committee (Governing Body), **International Society for Fish Endocrinology** ([website](#))

#### Editorial Service

2025 Guest Editor, *General and Comparative Endocrinology*. Special Issue “A Tribute to Bob Dores: Explorations and Contributions in Comparative Molecular Neuroendocrinology”

#### Grant Review Service

2025 Panelist, NSF BIO Integrative Organismal Systems  
2025 External Reviewer, NSERC Discovery Grant

#### Peer-Review Service

**31 Reviews** across **24 Journals** (listed alphabetically)

*Am J Physiol Regul Integr Comp Physiol, Aquaculture, Aquac Res, Biochem Biophys Res Commun, Biol Environ, Comp Biochem Physiol, eBioMedicine, Estuar Coast, Fish Fish, Fish Physiol Biochem, Fishes, Front Endocrinol, Front Physiol, Gen Comp Endocrinol, J Cell Physiol, J Comp Physiol, J Endocrinol, J Exp Biol, J Exp Mar Biol Ecol, J Fish Biol, J Great Lakes Res, Mol Ecol, Proc Biol Sci, Sci Rep*



### Professional Memberships

- Current:** American Fisheries Society, International Society for Fish Endocrinology, North American Society for Comparative Endocrinology
- Past:** American Physiological Society, Canadian Society of Zoologists, Crustacean Society, Cystic Fibrosis Foundation, Endocrine Society, Sigma Xi: The Scientific Research Society, Society of Experimental Biology, Society for Integrative and Comparative Biology

## PUBLIC OUTREACH AND COMMUNITY SERVICE

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### Invited Seminars and Public Lectures

- 2024 “Enhancing CFTR Function in an Era of Highly Effective CFTR Modulators”. Oklahoma Center for Respiratory and Infectious Diseases. Stillwater, OK.
- 2022 “Epithelial Ion Transport in Sea Lamprey and Cystic Fibrosis”. Department of Biological Sciences, University of Denver. Denver, CO.
- 2021 “Elexacaftor as a CFTR Potentiator: Implications for New Combination Drug Therapies for Cystic Fibrosis”. Colorado Cystic Fibrosis Research Seminar Series. Children’s Hospital Colorado. Denver, CO.
- 2021 “Lubiprostone as a Novel, Receptor-Mediated Activator of CFTR in the Airway”. National Jewish Health Research Retreat. Denver, CO.
- 2021 “To the Sea and Back: How a Freshwater Fish Journeyed to the Sea and Found Its Way Back Home”. Public Lecture Series. Friends of the Presumpscot River. Portland, ME.
- 2019 “To the Sea and Back: How a Freshwater Fish Journeyed to the Sea and Found Its Way Back Home”. Public Lecture Series. Friends of the Presumpscot River. Portland, ME.
- 2016 “To the Sea and Back: How a Freshwater Fish Journeyed to the Sea and Found Its Way Back Home”. Public Lecture Series. Friends of the Presumpscot River. Portland, ME.

### Coverage of Published Works

- 2025 “Early Career Spotlight – Ciaran Shaughnessy”. *Journal of Experimental Biology* ([link](#))
- 2025 “Range Shifts as Drivers of Niche Breadth and Dispersal Ability in Wild Populations”. *Journal of Animal Ecology* ([link](#))
- 2021 “‘Fight or Flight’ Dates Back to Ancient Ancestors”. *Inside JEB* ([link](#))
- 2021 “‘River Voices’: In a new volume of essays, the Presumpscot gets its due”. *Portland Press Herald* ([link](#))
- 2021 “‘River Voices’ pays tribute to the Presumpscot”. *American Journal* ([link](#))
- 2021 “National Invasive Species Awareness Week”. Eastern Ecological Science Center ([link](#))
- 2013 “Lab Notes”. *Scientia Magazine* ([link](#))
- 2012 “There Must Be Something in The Water”. *IIT Magazine* ([link](#))

### Various Community Service Activities

- 2023 – 2025 Coach, Men’s Ultimate, Oklahoma State University (Stillwater, OK)
- 2014 – 2025 Board of Advisors, Friends of the Presumpscot River (Portland, ME)
- 2020 – 2021 Science Fair Judge, Denver Metro Regional Science & Engineering Fair (Denver, CO)
- 2016 – 2019 Union Steward, Graduate Employees Union, UAW 2322 (Amherst, MA)
- 2018 – 2019 Coach, Men’s Ultimate, University of Massachusetts Amherst (Amherst, MA)
- 2017 – 2018 Coach, Boy’s Ultimate, Amherst Regional High School (Amherst, MA)
- 2016 – 2017 Mentor, UMass STEM Ambassador Program (Amherst, MA)
- 2015 – 2017 Founding Editor and Contributing Author, *That’s Life [Science] Blog* (Amherst, MA)
- 2013 – 2014 Conference Judge, Chicago Area Undergraduate Research Symposium (Chicago, IL)
- 2011 – 2012 Founder and President, *Undergraduate Research Journal of the Illinois Institute of Technology* (Chicago, IL)

## CONFERENCE PARTICIPATION

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### Conference Participation

**Meetings Regularly Attended:** International Congress on the Biology of Fish (ICBF), International Congress of Comparative Endocrinology (ICCE), North American Society for Comparative Endocrinology (NASCE), International Symposium on Fish Endocrinology (ISFE).

**Meetings Periodically Attended:** American Fisheries Society (AFS), Canadian Society of Zoologists (CSZ), Conference of European Comparative Endocrinologists (CECE), North American Cystic Fibrosis Conference (NACFC), Society of Experimental Biology (SEB), Society for Integrative and Comparative Biology (SICB).

#### Conference Organization and Leadership

- 2025 **Session Chair.** Symposium on *Stress Axis I: From Origins to Implications of Actions*. 19<sup>th</sup> ICCE. Sendai, Japan
- 2025 **Session Chair.** Symposium on *Stress Axis II: New Insights into Molecular and Cellular Aspects*. 19<sup>th</sup> ICCE. Sendai, Japan
- 2024 **Session Chair.** Symposium on *Control of Ion Balance and Osmoregulation*. 10<sup>th</sup> ISFE. Baltimore, MD.
- 2024 **Conference Planning Committee.** 15<sup>th</sup> ICBF. Ann Arbor, MI.
- 2022 **Session Chair.** Symposium on *Ions and Osmoregulation*. CSZ. Virtual.

#### Invited Conference Presentations (see below for full citation of presentation)

- 2025 **Invited ‘State-of-the-Art’ Speaker.** Symposium on *Stress Axis I: From Origins to Implications of Actions*. 19<sup>th</sup> ICCE. Sendai, Japan
- 2024 **Invited Speaker.** Symposium on *Control of Ion Balance and Osmoregulation*. 10<sup>th</sup> ISFE. Baltimore, MD.
- 2023 **Invited ‘State-of-the-Art’ Speaker.** Symposium on *Trends in the Evolution of Hormone Receptors*. NASCE. Queretaro, Mexico.
- 2022 **Invited ‘State-of-the-Art’ Speaker.** Symposium on *Stress Axis: Molecular and Cellular Regulation of the HPI/HPA Axis*. Joint Meeting of the 30<sup>th</sup> CECE and the 9<sup>th</sup> ISFE. Faro, Portugal.
- 2022 **Award Finalist and Invited Speaker.** Symposium for the *Presidents’ Award* (Best Presentation by a Postdoctoral Researcher). CSZ. Virtual.
- 2021 **Invited Speaker.** Workshop session on *Difficult to Treat CFTR Mutations and Novel Modulator and RNA Editing Technologies to Fix CFTR*. NACFC 2021. Virtual.
- 2021 **Invited speaker.** On behalf of the Departments of Pediatrics and Immunology & Genomic Medicine. National Jewish Health Research Retreat. Virtual.
- 2017 **Award Recipient and Invited Speaker.** Symposium for the *Luis Guillette Award*. 18<sup>th</sup> ICCE. Lake Louise, Alberta
- 2014 **Award Finalist and Invited Speaker.** Symposium for *William S. Hoar Award* (Best Presentation by a Student). CSZ. Montreal, Ontario.

#### Complete List of Attributed Presentations and Posters

solid underline = presenter | dashed underline = student presenter | dotted underline = undergraduate or graduate student under my direct supervision

- 2025 Poster Merideth M. Dillon K. Caldwell SM, Shaughnessy CA. GPCR-mediated pathways of CFTR activation in model airway cell lines. 12<sup>th</sup> Annual Research Symposium of the Oklahoma Center for Respiratory and Infectious Diseases. Stillwater, OK.
- 2025 Poster Caldwell SM, Shaughnessy CA. Exploring GPCR Activation of CFTR in Model Human Airway Cell Lines. Oklahoma Research Day. Tahlequah, OK.
- 2024 Oral DeLoache A, Shaughnessy CA. Keeping cool under pressure: assessing thermal stress responses in Sea Lamprey (*Petromyzon marinus*). Midsouth Regional SICB. Tulsa, OK.
- 2024 Oral Flowers D, Phelps G, Shaughnessy CA. Ebb and Flow of Osmoregulation: Dynamics of Intestinal Transport During Seawater Acclimation in Atlantic Sturgeon. Midsouth Regional SICB. Tulsa, OK.
- 2024 Oral Shaughnessy CA, Bouyoucos IA, Anderson WG, Dores RM. A novel ‘promelanocortin’ and the neuroendocrinology of stress in lamprey and hagfish. 9<sup>th</sup> ISFE. Baltimore, MD.
- 2024 Oral Shaughnessy CA, Hall DJ, Regish AM, McCormick SD, Dores RM. Regulation of cortisol and glucose in Atlantic sturgeon (*Acipenser oxyrinchus*) during salinity acclimation. 9<sup>th</sup> ISFE. Baltimore, MD.

- 2024 Poster Dores RM, Shaughnessy CA. Melanocortin-2 receptor and Mrap1 co-evolution of the lungfish, *Protopterus annectens*, and the bichir, *Polypertus senegalus*. 15<sup>th</sup> ICBF. Ann Arbor, MI.
- 2024 Oral Breves JP, Posada MA Tao YT, Shaughnessy CA. Anoctamin 1 supports seawater acclimation in *Fundulus heteroclitus*. 15<sup>th</sup> ICBF Ann Arbor, MI.
- 2024 Oral Shaughnessy CA, Hall DJ, Norstog JL, Ferreira-Martins D, Barany A, Regish AM, Breves JP, Komoroske LM, McCormick SD. A Cftr-independent, seawater-adaptive ionocyte in sea lamprey gills. 15<sup>th</sup> ICBF. Ann Arbor, MI.
- 2023 Poster Doherty L, Shaughnessy CA, Dores RM. Investigating the regulation of the hypothalamic-pituitary-interrenal axis in Atlantic sturgeon (*Acipenser oxyrinchus*) following an acute stressor. Honors Thesis Presentation, University of Denver. Denver, CO.
- 2023 Poster Myhre VD, Shaughnessy CA, Dores RM. The hypothalamus-pituitary-interrenal axis in two basal vertebrates, Atlantic sturgeon (*Acipenser oxyrinchus*) and sea lamprey (*Petromyzon marinus*). Honors Thesis Presentation, University of Denver. Denver, CO.
- 2023 Poster Le K, Shaughnessy CA, Dores RM. Insights on the evolution of the melanocortin-2 receptor: pharmacological studies on the melanocortin-2 receptor of the African lungfish, *Protopterus annectens*. Honors Thesis Presentation, University of Denver. Denver, CO.
- 2023 Poster Myhre VD, Shaughnessy CA, Dores RM. The hypothalamus-pituitary-interrenal axis in two basal vertebrates, Atlantic sturgeon (*Acipenser oxyrinchus*) and sea lamprey (*Petromyzon marinus*). Undergraduate Research Symposium, University of Denver. Denver, CO.
- 2023 Oral Barany A, Shaughnessy CA, Mancera JM, Regish A, McCormick SD, Dores RM. Characterizing the peptidergic [Arg<sup>8</sup>]vasotocin system in the sea lamprey (*Petromyzon marinus*). XIV Congress of the Iberian Association of Comparative Endocrinology. Bilbao, Spain.
- 2023 Oral Shaughnessy CA, Dores RM. Applying ancestral sequence reconstruction to resolve the functional evolution of melanocortin 2 receptor (Mc2r). NASCE. Queretaro, Mexico.
- 2023 Oral Shaughnessy CA, Bouyoucos IA, Dores RM. Re-evaluation the evolution of the POMC gene: a study on melanocortin peptides and melanocortin receptors of the hagfish, *Eptatretus stoutii*. NASCE. Queretaro, Mexico.
- 2023 Oral Shaughnessy CA, Myhre VD, Doherty LD, Regish A, Hall DJ, McCormick SD, Dores RM. Regulation of the hypothalamus-pituitary-interrenal (HPI) axis in Atlantic sturgeon (*Acipenser oxyrinchus*) during salinity acclimation and acute stress. NASCE. Queretaro, Mexico.
- 2023 Oral Barany A, Shaughnessy CA, Regish A, Mancera JM, McCormick SD, Dores RM. *In vitro* and *in vivo* studies on the function and osmoregulatory action of neurohypophysial hormones and receptors in the sea lamprey (*Petromyzon marinus*). NASCE. Queretaro, Mexico.
- 2023 Poster Bouyoucos IA, Shaughnessy CA, Dores RM. Trends in the evolution of elasmobranch melanocortin-2 receptors (Mc2rs): insights from an analysis of the Pacific spiny dogfish Mc2r. NASCE. Queretaro, Mexico.
- 2022 Oral Shaughnessy CA, Myhre VD, Dores RM. Evolution of ligand selectivity for the melanocortin-2 receptor: implication for the HPA/HPI axis of vertebrates. 30<sup>th</sup> CECE and the 9<sup>th</sup> ISFE. Faro, Portugal.
- 2022 Oral Dores RM, Erdenebayar U, Hoglin B, McKinley G, Meyers A, Shaughnessy CA. Trends in the evolution of the melanocortin-2 accessory protein, MRAP1. 30<sup>th</sup> CECE and the 9<sup>th</sup> ISFE. Faro, Portugal.
- 2022 Poster Shaughnessy CA, Nick HJ, Zeitlin PL, Bratcher PE. Potentiation of constitutively active CFTR in primary human airway epithelial cultures – Implications for in vitro CFTR modulator testing and in vivo therapies. NACFC. Virtual.
- 2022 Oral Shaughnessy CA, Hall DJ, Ferreira-Martins D, Norstog J, McCormick SD. The chloride-secreting ionocyte in the gills of seawater-acclimated sea lamprey (*Petromyzon marinus*) expresses Ano1, not Cftr, as the apical chloride channel. Canadian Society of Zoology. Virtual.
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- 2020 Poster Shaughnessy CA, Yadav S, Zeitlin PL, Bratcher PE. Lubiprostone as a novel, receptor-mediated activator of CFTR in the airway: *in vitro* evidence for treatment of F508del and other CFTR mutations. In *Pediatric Pulmonology*. 55: S205-S206. NASCE 2020. Virtual.
- 2019 Oral Shaughnessy CA, McCormick SD. Development and corticosteroid control of ionoregulation in sea lamprey (*Petromyzon marinus*). SEB. Seville, Spain.



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- 2018 Oral **Shaughnessy CA**, Barany-Ruiz A, Ferreira-Martins D, McCormick SD. Ionoregulatory mechanisms in the gill of a basal vertebrate, the sea lamprey (*Petromyzon marinus*). 13<sup>th</sup> ICBF. Calgary, Canada.
- 2018 Poster Barany-Ruiz A, **Shaughnessy CA**, Fuentes J, Mancera JM, McCormick SD. Osmoregulatory mechanisms in the gut of sea lamprey (*Petromyzon marinus*) during metamorphosis and seawater exposure. 13<sup>th</sup> ICBF. Calgary, Canada.
- 2017 Oral **Shaughnessy CA**, Barany-Ruiz A, McCormick SD. 11-Deoxycortisol promotes seawater tolerance in metamorphosing sea lamprey (*Petromyzon marinus*). 18<sup>th</sup> ICCE. Lake Louise, Canada.
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- 2017 Oral **Shaughnessy CA**, McCormick SD. Reduced thermal tolerance during salinity acclimation in brook trout (*Salvelinus fontinalis*) can be rescued by prior treatment with cortisol. Life Sciences Graduate Research Symposium. Amherst, MA.
- 2016 Oral **Shaughnessy CA**, McCormick SD. Cortisol influences thermal tolerance in Brook Trout (*Salvelinus fontinalis*) during seawater acclimation. 12<sup>th</sup> ICBF. San Marcos, TX.
- 2016 Poster Martin S, **Shaughnessy CA**, McCormick SD. Salinity tolerance and osmoregulation in larval sea lamprey (*Petromyzon marinus*). Five College Coastal and Marine Sciences Program Symposium. Amherst, MA.
- 2015 Poster **Shaughnessy CA**, McCormick SD. Cortisol influences thermal tolerance in Brook Trout (*Salvelinus fontinalis*) during seawater acclimation. 15<sup>th</sup> Symposium of the Center for Neuroendocrine Studies. Amherst, MA.
- 2015 Poster Bystriansky JS, **Shaughnessy CA**. Kinetics and pH optima of gill Na<sup>+</sup>/K<sup>+</sup>-ATPase from white sturgeon (*Acipenser transmontanus*) following exposure to elevated salinity and aquatic hypercarbia. 9<sup>th</sup> International Congress of Comparative Physiology and Biochemistry. Kraków, Poland.
- 2015 Poster **Shaughnessy CA**, McCormick SD. Cortisol influences thermal tolerance in Brook Trout (*Salvelinus fontinalis*) during seawater acclimation. North American Society for Comparative Endocrinology. Ottawa, Canada.
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- 2013 Oral **Shaughnessy CA**, Anderson EC, Kasparian M, LaMontagne JM, Bystriansky JS. Identification and physiology of crabs from the ACE Basin acclimated to different pH and salinity levels. Midwest Ecology and Evolution Conference. South Bend, IN.
- 2013 Poster **Shaughnessy CA**, Radloff J, Bystriansky JS, Balfry SK. Osmoregulation in wolf eel (*Anarrhichthys ocellatus*) during acclimation to dilute seawater. SICB. San Francisco, CA.
- 2012 Poster **Shaughnessy CA**, Kuitse M, Schmid M, Terschak JA. Chemically-mediated giant Pacific octopus avoidance by Eastern Pacific green crabs. Chicago Area Undergraduate Research Symposium. Chicago, IL.