

Arne K Christensen, Ph.D.  
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School of Professional Studies  
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### Current Position

**Associate Professor of Biology** with tenure, July 2018  
Anna Maria College, Paxton, MA  
Research areas: Osmoregulatory physiology, cytoskeleton, pedagogy

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### Education

**Ph.D. in Molecular and Cellular Biology**, 2008  
University of Massachusetts Amherst, Amherst, MA  
Dissertation: Functional analysis of Moe (EPB4.1L5) in zebrafish development and the identification of novel EPB4.1L5 binding proteins.  
Research area: Vertebrate retinal development

**B.S. in Biology**, 2000  
University of Massachusetts Amherst, Amherst, MA

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### Professional Academic or Research Experience

**Assistant Professor of Biology**, Fall 2012 - Spring 2018  
Anna Maria College, Paxton, MA  
Research areas: Osmoregulatory physiology, cytoskeleton, pedagogy

**Assistant Professor of Biology**, Spring 2011 - Spring 2012  
York College / City University of New York, Jamaica, NY  
Research area: Osmoregulatory physiology

**Research Scientist**, McCormick Lab, Summer 2011  
**Postdoctoral Fellow**, McCormick Lab, 2008 - 2010  
U.S. Geological Survey  
Conte Anadromous Fish Research Center, Turners Falls, MA  
Research area: Osmoregulatory physiology

**Adjunct Professor**, Human Anatomy and Physiology, Fall 2006  
Springfield Technical Community College  
Springfield, MA

**Research Associate**, 2001 - 2002  
ImmunoGen, Inc., Cambridge, MA  
Project Emphasis: Cancer antibody-drug conjugates

**Research Technician**, 2000 - 2001  
Dana-Farber Cancer Institute, Silver Lab, Harvard Medical School, Boston, MA  
Project Emphasis: Mechanisms of endocytosis

## Teaching Experience

### Associate Professor, Anna Maria College

Fall 2018

- Anatomy and Physiology I, lecture and lab (3 sections)
- Anatomy and Physiology II, lecture and lab
- Advanced Methods in Biology

### Assistant Professor, Anna Maria College

Spring 2018

- Anatomy and Physiology II, lecture (2 sections) and lab (2 sections)
- Cell Biology, lecture and lab
- Advanced Methods in Biology

Fall 2017

- Anatomy and Physiology I, lecture and lab (2 sections)
- Anatomy and Physiology II lecture
- Advanced Methods in Biology

Spring 2017

- Anatomy and Physiology I, lecture (2 sections) and lab (2 sections)
- Advanced Methods in Biology

Fall 2016

- Anatomy and Physiology I, lecture (3 sections) and lab (2 sections)
- Advanced Methods in Biology

Spring 2016 (Andrew T. McCarthy Award for Dedication to College, Community, and Students)

- Anatomy and Physiology II, lecture (2 sections) and lab (1 section)
- Cell Biology lecture and lab
- Advanced Methods in Biology

Fall 2015

- Anatomy and Physiology I, lecture (2 sections) and lab (4 sections)
- Advanced Methods in Biology

Spring 2015

- Anatomy and Physiology II, lecture (2 sections) and lab (3 sections)
- Advanced Methods in Biology

Fall 2014

- Anatomy and Physiology I, lecture (2 sections) and lab (3 sections)
- Advanced Methods in Biology

Spring 2014

- Anatomy and Physiology II, lecture (3 sections) and lab (4 sections)
- Environmental Chemistry I lecture

Fall 2013

- Anatomy and Physiology I, lecture (2 sections) and lab (4 sections)
- General Biology I lab

Spring 2013

- General Biology II, lecture and lab
- Anatomy and Physiology I, lecture and lab
- Genetics
- Microbiology lab (3 sections)

Fall 2012

- General Biology I lecture and lab
- Environmental Chemistry I lecture and lab

**Assistant Professor**, York College / City University of New York

Spring 2012

- Cell Biology lecture and lab

Fall 2011

- Developmental Biology lecture and lab
- Principles of Biology lab

Spring 2011

- Cell Biology lecture and lab
- Principles of Biology lab

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### Peer-reviewed Research Publications

Christensen AK, Regish AM, McCormick SD. Shifts in the relationship between mRNA and protein abundance of gill ion-transporters during smolt development and seawater acclimation in Atlantic salmon (*Salmo salar*). *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology* 2018 **221**: 63-73.

Christensen AK, Owusu N\*, Jean-Louis D\*. Carapace epithelia are rich in large filamentous actin bundles in *Daphnia magna*, *Daphnia pulex* and *Sida crystallina* (Crustacea: Cladocera). *Invertebrate Biology* 2018 **137**: 49-59.

- Selected for cover image  
\* undergraduate students

McCormick SD, Regish A, Christensen AK, and Bjornsson TB. Differential regulation of sodium-potassium pump isoforms during smolt development and seawater exposure of Atlantic salmon. *Journal of Experimental Biology* 2013 **216**: 1142-1151.

Christensen AK, Hiroi J, Schultz ET and McCormick SD. Branchial ionocyte organization and ion transport protein expression in juvenile alewives acclimated to freshwater or seawater. *Journal of Experimental Biology* 2012 **215**:642-652.

McCormick SD, Regish A, Christensen AK. Distinct freshwater and seawater isoforms of Na<sup>+</sup>/K<sup>+</sup>-ATPase in gill chloride cells of Atlantic salmon. *Journal of Experimental Biology* 2009 **212**: 3994-4001.

Christensen AK and Jensen AM. Tissue-specific requirements for specific domains within Moe/Epb4.115 during early zebrafish development. *BMC Developmental Biology* 2008 **8**:3.

- Awarded image of the month

Hsu YC, Willoughby JJ, Christensen AK, Jensen AM. Mosaic Eyes is a novel component of the Crumbs complex and negatively regulates photoreceptor apical size. *Development* 2006 **133**:4849-59.

Newmyer SL, Christensen A, Sever S. Auxilin-dynamin interactions link the uncoating ATPase chaperone machinery with vesicle formation. *Developmental Cell* 2003 **4**:929-40.

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### Peer-reviewed Pedagogy Publication

Christensen AK and Gow J-B. Rhabdomyolysis: A Workout Breakdown. *National Center for Case Study Teaching in Science*. In review 2018.

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### STEM Media Content (Not Peer-reviewed)

Author of lab exercises, Visible Body virtual anatomy software

- Cells. 2018. Visible Body Anatomy and Physiology Lab manual. In Press.
- Cell Life Cycle. 2018. Visible Body Anatomy and Physiology Lab Manual. In Press.

Ad hoc consultant for Visible Body virtual anatomy application content

- Histology. 2018.

Biology videos created, available on <https://www.youtube.com/user/arkchristensenBIO>

- Instructional videos (17) for anatomy and physiology courses
- Biology time-lapse videos (17) for biology community

Script writer for educational video series by the *Journal of Visualized Experiments*

- Cell Biology. 2015. JoVE Science Education Database. An Introduction to Cell Division. JoVE, Cambridge, MA, (2018).
- Genetics. 2014. Cytogenetics. JoVE Science Education Database. JoVE, Cambridge, MA, (2018).
- Tissue Regeneration with Somatic Stem Cells. 2014. JoVE Science Education Database. Developmental Biology. JoVE, Cambridge, MA, (2018).

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### Selected Presentations (Invited or with Submitted Abstracts)

Christensen AK. The Anatomy of a team-based learning method for topics in physiology. *Anna Maria College Academic Symposium*. Anna Maria College, Paxton, MA 2017

Breen MK\*, Haggerty E\*, Hardy R\*, Christensen AK. Establishment of a *Daphnia* research model system at Anna Maria College. *Meeting of the AMC Board of Trustees*. Anna Maria College, Paxton, MA 2015.

\*student research collaborators

Christensen AK, Regish AM, McCormick SD. A freshwater and seawater isoform of the Na<sup>+</sup>, K<sup>+</sup>-ATPase (NKA) in Atlantic salmon. Keene State College. Keene, NH 2010.

Christensen AK. Fluorescence microscopy: Methods and applications. Keene State College. Keene, NH 2010.

Christensen AK, Neilson TO, McCormick SD. Effects of smolting and seawater acclimation on Na<sup>+</sup>/K<sup>+</sup>/Cl<sup>-</sup> Cotransporter (NKCC) isoforms in the gill and kidney of Atlantic salmon. 8<sup>th</sup> *International Workshop on Smoltification*. Corvallis, Newport, Asea, Sunriver, OR 2009.

Christensen AK, Hsu YC, Willoughby JJ, Jensen AM. Mosaic eyes (Moe) forms a complex with Crumbs proteins and has a role in photoreceptor maintenance. *Connecticut Valley Zebrafish Meeting*. University of Massachusetts Worcester Medical School, Worcester, MA 2006.

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#### **Selected Posters with Published Abstracts**

**Christensen AK**. Collaborative undergraduate research at a small college. *New England Faculty Development Consortium 2018*. Newton, MA 2018.

**Christensen AK, Regish A, McCormick SD**. Gill ion transporter transcript and protein abundance during developmental increases in salinity tolerance of Atlantic salmon smolts. *Experimental Biology 2015*. Boston, MA 2015.

**McCormick SD, Christensen AK, Regish A**. Presence of a freshwater and a seawater isoform of Na<sup>+</sup>,K<sup>+</sup>-ATPase in the gills of a teleost fish. *Society for Integrative and Comparative Biology Annual Meeting*. Boston, MA 2009.

**Christensen AK, Hsu YC, Willoughby JJ, Jensen AM**. Regulation of zebrafish Mosaic Eyes by Calmodulin. *7th Conference on Zebrafish Development and Genetics*. Madison, WI 2006.

**Christensen AK, Willoughby JJ, Hsu YC, Jensen AM**. Regulation of Mosaic Eyes by Calmodulin and photoperiod in zebrafish photoreceptors. *American Society for Cell Biology Annual Meeting*. San Francisco, CA 2005.

**Jensen AM, Hsu YC, Willoughby JJ, Christensen AK**. Mosaic Eyes protein forms a complex and colocalizes with homologues of Crumbs and Pals1, and aPKC *American Society for Cell Biology Annual Meeting*. San Francisco, CA 2005.

**Christensen AK and Kunkel J**. Calmodulin during early zebrafish development. *American Society for Cell Biology Annual Meeting*. San Francisco, CA 2003.

## Grants (> \$2,000)

### **AMC Internal Capital Grant (2014)**

Equipment grant resulting for a proposal to develop a research program in the life sciences at Anna Maria College. (\$27,000): Used to purchase a Nikon epifluorescence microscope.

### **PSC-CUNY 43 Research Award (2012)**

Impacts of fluoxetine on the osmoregulatory physiology of the three-spined stickleback (*Gasterosteus aculeatus*). (\$3,500): Used to purchase a Nikon Eclipse SMZ1500 Stereo Zoom Fluorescence Microscope and Laboratory consumables.

### **Graduate Research and Technology Initiative (2011)**

Equipment grant in support of studies of the developmental physiology of euryhaline fishes. (\$70,000): Used to purchase general lab hardware (microscopes, fish aquaculture systems, etc.), microscopy reagents, and lab consumables.

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## Service:

### Service to the Institution

#### **2018/2019 (Anna Maria College)**

Chair, Faculty (Officer of the faculty assembly)  
Chair, two committees for Faculty Promotion or Tenure  
Member, Committee for Faculty Promotion or Tenure  
Member, Academic Symposium Committee  
Member, Study Abroad Advisor Board  
Mentor for 7 undergraduate research collaborators

#### **2017/2018 (Anna Maria College)**

Chair, Curriculum Committee  
Member, Academic Symposium Committee  
Member, Study Abroad Advisor Board  
Mentor for 7 undergraduate research collaborators

#### **2016/2017 (Anna Maria College)**

Officer of the Faculty Assembly, Recorder  
Chair, Curriculum Committee  
Member, Academic Symposium Committee  
Member, Study Abroad Advisor Board  
Mentor for 4 undergraduate research collaborators

#### **2015/2016 (Anna Maria College)**

Recorder, Faculty (Officer of the faculty assembly)  
Member/Recorder, Curriculum Committee  
Member, Academic Symposium Committee  
Member, Study Abroad Advisor Board  
Member (alternate), Hearing Committee  
Mentor for 3 undergraduate research collaborators

**2014/2015 (Anna Maria College)**

Officer of the Faculty Assembly, Recorder  
Member, Academic Symposium Committee  
Member/Recorder, Curriculum Committee  
Member, Study Abroad Advisor Board  
Member (alternate), Hearing Committee  
Mentor for 3 undergraduate research collaborators

**2013/2014 (Anna Maria College)**

Member, Curriculum Committee  
Member, Study Abroad Advisor Board  
Member (alternate), Hearing Committee  
Mentor for 2 undergraduate research collaborators

**2012/2013 (Anna Maria College)**

Member, Hiring Committee  
Proposal for fluorescence microscope to establish cross-disciplinary research program

**2012/2013 (York College)**

Co-chair, Natural Science Seminar Series  
Member, College Library Committee  
Mentor, Best and Brightest Program  
Judge, New York Metro Junior Science High School Symposium  
Academic Program Review sub-committee (Faculty Scholarship and Instruction)

**2011/2012 (York College)**

Co-chair, Natural Science Seminar Series  
Member, College Library Committee  
Mentor, Best and Brightest Program  
Judge, New York Metro Junior Science High School Symposium

**Service to the Discipline**

***Ad Hoc Peer Review Referee (recent reviews with date):***

<i>BMC Genomics</i> (2018)	<i>General and Comparative Endocrinology</i>
<i>Aquatic Toxicology</i> (2016)	<i>AIMS Molecular Science</i>
Internal USGS reviewer (2016)	<i>Aquaculture</i>
<i>Journal of Comparative Physiology</i> (2014)	<i>Italian Journal of Zoology</i>
	<i>Journal of Experimental Zoology</i>

**Community Service and Outreach**

**Microscope Presentations (2015-2018):** Four Corners Elementary School, Greenfield, MA  
**Volunteer,** Poet's Seat Health Care Center (Assisted Living Facility), 2016  
**T-ball coach,** Greenfield, MA, 2016  
**Member Parent Teacher Organization (2014-2015):** Four Corners Elementary School  
**Co-director Student Art Gallery Show:** "Pulling Back the Veil: The Art of Microscopy"  
York College / CUNY 2012