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Catherine McCusker

EDUCATION

2009- Present
Postdoctoral scholar
University of California, Irvine, CA
Department of Developmental and Cell Biology
Laboratory of Dr. Susan Bryant and Dr. David Gardiner

2004 – 2009
Ph.D. Candidate
University of Massachusetts, Amherst, MA
Molecular and Cellular Biology program
Dept. Vet. and Animal Sciences
Laboratory of Dr. Dominique Alfandari.

1996 – 2000
Undergraduate
Bridgewater State College, Bridgewater, MA
B.S in Chemistry
Biochemistry Concentration
Chemistry Undergraduate in the Laboratory of
Dr. Edward Brush

PROFESSIONAL TRAINING

2011 (October 2-8)
Student
Marine Biological Laboratories, Woods Hole, MA
Frontiers in Stem Cells and Regeneration course

2011 (June6-9)
University of California, Irvine, CA
FloCyte Comprehensive Flow Course

2007 (June 9 –July 22)
Student
Marine Biological Laboratories, Woods Hole, MA
Embryology Course: Concepts and Techniques
in Modern Developmental Biology

PREVIOUS POSITIONS

2002 – 2004
Research assistant
University of Massachusetts, Amherst, MA
Molecular and Cellular Biology Program
Dept. of Chemistry
Laboratory of Dr. Vincent Rotello

2000 – 2002
Head research Technician
Massachusetts General Hospital, Boston, MA
Department of Radiology
Division of Nuclear Medicine
Laboratory of Allan Fischman MD. PhD.
and Dr. Edward Carter.

1998 – 2000
Research Internship
UCB Pharma Inc., Cambridge, MA
Department of Pharmacology
Laboratory of Dr. Paul Higgins

AWARDS & HONORS

2012 Postdoctoral Fellowship awarded from the American Cancer Society

2011 Scholarship from the Marine Biological laboratory in Woods Hole, Ma to attend the Frontiers In Stem Cells & Regeneration class.

2011 “Best postdoctoral presentation” at the UCI Dev. Cell Retreat

2011 “Best Talk” Prize at Regional SDB meeting (\$1000 award)
2011 Travel Award from SDB (for participation at the West Coast Regional SDB meeting)
2009 Travel award from SDB (for participation to National SDB meeting)
2009 Graduate School Travel Award (for participation to National SDB meeting)
2008 “Best poster” award at UMass MCB program Annual retreat
2007 Scholarship from the Society for Developmental Biology (for participation at MBL)
2007 Ruth Sager Memorial Scholarship
2007 “Best Poster” award New England Society of Developmental Biology
1998 - 1999 Deans List
1996 Judith A. Riordan Community Service Scholarship
1996 Lucius Alden Trust Scholarship

REVIEWER FOR THE FOLLOWING JOURNALS

Development

The international Journal of Developmental Biology

MEMBERSHIPS

- American Association for the Advancement of the Sciences
- Society for Developmental Biology

TEACHING EXPERIENCE

2011 Invited lecture at Biotechnology mini-class on Stem cell Biology, UCI, Irvine, Ca.
2010 Invited lecture at Biotechnology mini-class on Amphibian Regeneration, UCI, Irvine, Ca.
2010 Laboratory training of 2 visiting International Students, UCI, Irvine, Ca.
2006 Teaching Assistant, Animal Cell and Molecular Biology, UMASS, Amherst, MA.
2005 Teaching Assistant, Biotechnology, UMASS, Amherst, MA.
2003-2007 Laboratory Training of 4 Undergraduate Students, UMASS, Amherst, MA.
2004 Teaching Assistant, Genetics, UMASS, Amherst, MA.
2003 Teaching Assistant, Introductory Animal Biology, UMASS, Amherst, MA.
2002 Teaching assistant, Biochemistry Laboratory, UMASS, Amherst, MA

MEETINGS

2011 Society of Developmental Biology –National Meeting, Chicago, Il.
2011 Society of Developmental Biology –West Coast Regional Meeting, Waikiki, Hi.
2009 DARPA meeting on Regenerative Medicine, Phoenix, Az.
2009 Society of Developmental Biology - National Meeting, San Francisco, Ca.
2008 Society of Developmental Biology – National Meeting, Philadelphia, Pa.
2005-2009 Society of Developmental Biology – North East Regional Meeting, MBL, Woods Hole, Ma.
2000 American Chemical Society –National Meeting, Boston, Ma.

SEMINARS

McCusker C, Gardiner D, Insights into the establishment of positional information during Axolotl limb regeneration. UCI Developmental and Cellular Biology Retreat, Dana Point, Ca (USA) November 3, 2011.

McCusker C, Gardiner D, Insights into the establishment of positional information during Axolotl limb regeneration. West Coast Regional Developmental Biology Meeting, Waikiki, Hi (USA) April 14-16, 2011.

McCusker C, Cousin H, Alfandari D. Maintaining the balance: Regulation of Cadherin-11 by ADAM13 during Cranial Neural Crest Migration in Xenopus Laevis. Northeast Regional Developmental Biology, Woods Hole, Ma (USA) April 27, 2008.

McCusker C, Cousin H, Alfandari D. Maintaining the balance: Regulation of Cadherin-11 by ADAM13 during Cranial Neural Crest Migration in *Xenopus Laevis*. **Molecular and Cellular Biology Colloquia, Spring Series**. Amherst, Ma (USA) February 25, 2008.

McCusker C, Cousin H, Alfandari D. The role of ADAM13 and Cadherin-11 in Cranial Neural Crest Migration. **1st Annual Veterinary and Animal Science Retreat**, Hadley, Ma (USA) May 26, 2006.

PUBLICATIONS

DEVELOPMENTAL BIOLOGY

McCusker CD, Gadriner D, (2012) Positional commitment is established in the proximal to distal regions of the late limb blastema in the Mexican Axolotl. (*in preparation*)

Cousin H, Abbruzzese G, **McCusker CD**, Alfandari D. (2012) ADAM13 function is required in the 3 dimensional context of the embryo during cranial neural crest cell migration. (*submitted*)

McCusker CD, Gardiner DM. (2011) The axolotl Model for Regeneration and Aging Research: A Mini-review. *Gerontology*. Mar 2.

McCusker CD, (2010) Beyond cell adhesion: exploring the role of cadherin-11 extracellular processing by ADAM metalloproteases in cranial neural crest migration (Ph.D. Dissertation). Amherst, Mass.: University of Massachusetts Amherst.

McCusker C, Alfandari D. (2009) Life after proteolysis: Exploring the signaling capabilities of classical cadherin cleavage fragments. *Communicative and Integrative Biology*. March/April; 2(2).

McCusker C, Cousin H, Neuner R, Alfandari D. (2009) Extracellular Cleavage of Cadherin-11 by ADAM metalloproteases is essential for Cranial Neural Crest Migration in *Xenopus Laevis*. *MBC*. Jan;20(1):78-89. Epub 2008 Oct 22.

Alfandari D., **McCusker C**, Cousin H. (2008) ADAM Function in Embryogenesis. *Seminars in Cell and Developmental Biology*. Sep 30. [Epub ahead of print]

Neuner R, Cousin H, **McCusker C**, Coyne M, Alfandari D. (2008) *Xenopus* ADAM19 is involved in neural, neural crest and muscle development. *Mech Dev*. Nov 6. [Epub ahead of print]

CHEMISTRY

McCusker C, Carroll JB, Rotello VM. (2005) Cationic polyhedral oligomeric silsesquioxane (POSS) units as carriers for drug delivery processes. *ChemComm*. Feb 28;(8):996-8.

Yurkovetskiy A, Choi S, Hiller A, Yin M, **McCusker C**, Syed S, Fischman A.J, and Papisov M.I. (2005) Fully Degradable Hydrophilic Polyals for Protein Modification. *Biomacromolecules*, **6**, 5, 2648 – 2658.

Goodman CM, **McCusker CD**, Yilmaz T, Rotello VM. (2004) Toxicity of gold nanoparticles functionalized with cationic and anionic side chains. *Bioconjugate Chemistry*. 15(4):897-900.

ABSTRACTS

DEVELOPMENTAL BIOLOGY

- **McCusker C**, Gardiner D, Insights into the establishment of positional information during Axolotl limb regeneration. **National Society of Developmental Biology Meeting**, Chicago, Il (USA) July 2011

- **McCusker C**, McCusker J.R., Neuner R., Kerdavid E., Cousin H., Alfandari D. Random vs. Directed: Does cadherin-11's extracellular cleavage fragment act as a chemoattractant to cranial neural crest cells? **National Society of Developmental Biology Meeting**, San Francisco, Ca (USA) July, 2009
- **McCusker C**, McCusker J.R., Neuner R., Kerdavid E., Cousin H., Alfandari D. Random vs. Directed: Does cadherin-11's extracellular cleavage fragment act as a chemoattractant to cranial neural crest cells? **Northeast Regional Developmental Biology**, Woods Hole, Ma (USA) April 24-26, 2009.
- **McCusker C.**, Cousin H., Alfandari D. Maintaining the balance: Regulation of Cadherin-11 by ADAM13 during Cranial Neural Crest Migration in *Xenopus Laevis*. **National Society of Developmental Biology Meeting**, Philadelphia, Pa (USA) July 27, 2008.
- Alfandari, D. R.; Cousin, H. **McCusker, C.**; Neuner, R. ADAM metalloprotease control of cell specification and cell migration during early embryogenesis. **National Society of Developmental Biology Meeting**, Philadelphia, Pa (USA) July 27, 2008.
- Neuner, R.; Cousin, H.; **McCusker, C.**; Coyne, M.; Alfandari, D. *Xenopus* ADAM19 is critical for neural and muscle development. **National Society of Developmental Biology Meeting**, Philadelphia, Pa (USA) July 27, 2008.
- Cousin, H; **McCusker, C.**, Alfandari, D. Role of ADAM metalloproteases in cranial neural crest cell migration. **Northeast Regional Developmental Biology**, Woods Hole, Ma (USA) April 27, 2008.
- **McCusker C**, Cousin H, Alfandari D. Maintaining the balance: Regulation of Cadherin-11 by ADAM13 during Cranial Neural Crest Migration in *Xenopus Laevis*. **Northeast Regional Developmental Biology**, Woods Hole, Ma (USA) April 27-29, 2007. (**poster prize winner**)
- **McCusker C**, Cousin H, Alfandari D. ADAM13 Proteolysis of Cadherin-11 and its possible role in Cranial Neural Crest migration. **Northeast Regional Developmental Biology**, Woods Hole, Ma (USA) April 28-30, 2006.
- Cousin H, **McCusker C**, Alfandari D. Control of *Xenopus* Cranial neural crest cell migration: *probing the pathway*. **Northeast Regional Developmental Biology**. Woods Hole, Ma. (USA) April 22-24, 2005.

CHEMISTRY

- Carter, E. A.; **McCusker, C.**; Syed, S.; Tompkins, R. G.; Fischman, A. J. Effect of prolonged fasting and refeeding on hepatic apoptosis in rats evaluated with radiolabeled annexin V. May 2002
- Hamblin MR, Tawakol A, Ahmadi A, Zahra T, Stern J, Syed S, **McCusker C**, Ortel B, Fischman AJ, and Muller JE. Intravascular fluorescence detection of vulnerable atherosclerotic plaque by macrophage-targeted fluorophores. **Saratov International Workshop on Biophotonics - SIWB02**, Saratov, Russia, 2002.
- Carter EA, **McCusker C**, Syed S, Tompkins RG, Fischman AJ. Comparison of 18FLT with 18FDG for differentiation between tumor and focal sites of infection in rats. **The 49th Annual SNM meeting**, Los Angeles, Ca. (USA). June 2002.
- Yatin M, Burker M, **McCusker C**, Hillier S, Syed S, Carter EA, Fischman AJ. Synthesis and pharmacokinetic evaluation of a novel iodine-125 spermine analog as a potential tracer for infection imaging. **The 49th Annual SNM meeting**, Los Angeles, Ca. (USA). June 2002.
- Babich JW, Burker M, **McCusker C**, Fischman AJ. Infection imaging with novel chemotactic peptide antagonists. **The SNM 48th Annual meeting**, Toronto, Canada. June 2001.
- Barrow, S. A.; Burker, M.; **McCusker, C. D.**; Carter, E. A.; Fischman, A. J. Effect of intra-gastric polyethylene glycol-electrolyte solution (GoLYTELY) on gastrointestinal distribution of 18FDG in rats. Aug 2001
- Maresca, K. P.; Kronauge, J. F.; Babich, J. W.; Burker, M. A.; **McCusker, C. D.**; Fischman, A. J. Infection imaging with novel chemotactic peptide antagonists. May 2001

- Yatin M, Burker M, **McCusker C**, Hillier S, Carter EA, Fischman AJ. Polyamine involvement in Escherichia coli infected rats. **The 2001 Polyamine Gordon Research Conference**. Connecticut College, New London, Connecticut (USA). 2001.