Radhika P. Atit

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Education

Ph.D. **Dept. of Molecular Developmental Biology**, University of Cincinnati, Cincinnati, OH
Graduated May 1999
Dissertation: "Skin Wound Healing Paradigms in Neurofibromatosis Type I Mutant Mice."
Mentor: Dr. Nancy Ratner

B.S. **Biology** , Muhlenberg College, Allentown, PA
Graduated 1993, *Summa Cum Laude*

Professional Positions

June 2017 – present:	Professor, Dept. of Biology, Case Western Reserve University.
June 2012 – 2017:	Associate Professor, Dept. of Biology, Case Western Reserve University.
June 2012 – present:	Associate Professor, Dept. of Dermatology, Case Western Reserve University.
June 2016 – present:	Associate Professor, Dept. of Genetics, Case Western Reserve University.
January 2009 – 2012:	Warren. E. Rupp Assistant Professor, Dept. of Biology, Case Western Reserve University, Cleveland, Ohio. (Endowed Professorship 2009-2012)
June 2007 – 2012	Assistant Professor, Secondary Appointment, Dept. of Dermatology, Case Western Reserve University, Cleveland, Ohio.
January 2006 – present	Assistant Professor, Secondary Appointment, Dept. of Genetics, Case Western Reserve University, Cleveland, Ohio (*Promotion to Associate in 2016 in Progress*).
January 2005 – May 2012	Assistant Professor, Dept. of Biology, Case Western Reserve University, Cleveland, Ohio.
January 2002 – Dec 2004	Post-doctoral fellow, in the lab of Ron Conlon, Dept. of Genetics, Case Western Reserve University, Cleveland, OH.
June 1999 – Dec. 2001	Post-doctoral fellow, in the lab of Lee Niswander, Sloan-Kettering Cancer Institute, New York, NY.
July 1993 – May 1999	Graduate Student, in the lab of Nancy Ratner, Molecular Developmental Biology Program, Cincinnati Children's Hospital, University of Cincinnati, Cincinnati, OH.
Summer 1992, 1993	Summer Research Intern, Project focused on sympathetic pathway mediated pain in type II diabetic neuropathy, Diabetes Research Institute, Eastern Virginia Medical School, Norfolk, VA.
Summer 1991, 1990	Pew Fellow 1990 Summer Research Intern, Howard Hughes 1991 Summer Research Intern, Molecular Biology, Bucknell University, Lewisburg, PA.

Honors and Awards

- Jackson Award Nominee for Outstanding Undergraduate Mentoring, 2007, 2009, 2016.

- Diekhoff Award Nominee for Excellence in Graduate Teaching and Mentoring, 2014
- Wittke Award Nominee for Excellence in Undergraduate Teaching, 2009.
- Warren E. Rupp Assistant Professor, 1/2009 – 2012
- Basil O'Connor Junior Investigator Award, 2007, March of Dimes Foundation
- Presidential Research Initiative Award: 2005, Case Western Reserve University
- NIH NRSA Postdoctoral Research Fellowship: F32 HD08670-01 Specificity of Notch signaling in feather development, 2000-2003.
- Dean's Distinguished Dissertation Award, 1998 – 1999
- Sigma Chi, inducted in 1998
- Phi Beta Kappa, inducted in 1993
- Omicron Delta Kappa, inducted in 1992
- Psi Chi, inducted in 1992
- "Tutor of the Year," May 1993
- Graduate Student Assistantship 1993 – 1999
- NIH Research Fellowship, Summer 1992
- PEW Research Fellowship, Summer 1990

Membership in Professional Societies

2000 – Present	Member of Society of Developmental Biology, Session chair at Regional meetings, Poster judge at national meeting.
2006 – Present	Member of American Association for the Advancement of Science (AAAS)
2014 – Present	Member of Society of Craniofacial Genetics and Developmental Biology.

Professional Services

Peer Reviewer for Journals

2000 – present *Development, Developmental Biology, PLOS Genetics, Arthritis and Rheumatism, Mechanisms of Development, and Journal of Investigative Dermatology, Nature, Cell Reports* (Reviewed 48 manuscripts out of 60 invitations).

National courses

2012 – present Invited Lecturer to the Annual American Academy of Dermatology Meeting Structure and Function of Skin course.

Study Section/ Grant Review Committees

2010	Ad hoc Reviewer, ACTS Study Section, National Institute for Arthritis, Musculoskeletal, and Skin (NIAMS), National Institutes of Health (NIH).
2012	Ad-hoc Reviewer, National Institute for General Medical Sciences (NIGMS), NIH.
2014	Study Section member for NIH-FACE-BASE consortium, National Institutes of Craniofacial and Dental Research (NIDCR), NIH.
2015	Ad hoc Reviewer, Wellcome Trust, United Kingdom
2016	Ad hoc Reviewer for DSR Study Section, NIDCR, NIH.
2017	Ad hoc Reviewer for DSR Study Section, NIDCR, NIH.

Clinical Trial

2014 – present Participant on the Scientific Team, Phase I Clinical trial by PRISM Pharma, Japan

Ongoing Grants and Proposal Activity

Active:

R06-DE18470 from the National Institutes of Health "Genetic mechanisms of craniofacial dermal development." (Principal Investigator, 04/1/2014 – 03/31/2019, $1,960,629, 25% effort).
Goals: Determine the mechanism of lineage restriction of Wnt/β-catenin signaling in the cranial dermis and source of Wnt signals for cranial dermal development.

Peer-Reviewed Publications

Thulabandu V, Chen D, Atit RP. Dermal fibroblast in cutaneous development and healing. Wiley Interdiscip Rev Dev Biol. 2017 Dec 15. doi: 10.1002/wdev.307.

Mullin NK, Mallipeddi NV, Hamburg-Shields E, Ibarra B, Khalil AM, Atit RP. (2017) Wnt/β-catenin Signaling Pathway Regulates Specific lncRNAs That Impact Dermal Fibroblasts and Skin Fibrosis. Front Genet. 2017 Nov 21;8:183.

Ferguson J, Devarajan M, DiNuoscio G, Saiakhova A, Liu CF, Lefebvre V, Scacheri P, Atit RP. (2017) G3 (Bethesda). PRC2 is Dispensable *in Vivo* for β-Catenin-Mediated Repression of Chondrogenesis in Mouse Embryonic Cranial Mesenchyme. Dec 9. pii: g3.300311.2017.

Budnick I, Hamburg-Shields E, Chen, D., Torre, E, Jarrell A., Akhtar-Zaidi B, Cordovan O, Spitale RC, Scacheri PC, **Atit RP.** (2016). Defining the identity of mouse embryonic dermal fibroblasts. *genesis: Journal of Genetics and Development* (*In Press*).

Xiao Y, Thoresen DT, Williams JS, **Atit RP**, Wong SY, Brownell I. (2016). Sonic hedgehog signaling is essential for touch dome Merkel cell development. *PLoS Genetics*, 12 (7):e1006150.

Goodnough LH, DiNuoscio GJ, **Atit RP**. (2016). Twist1 contributes to cranial bone initiation and dermal condensation by maintaining wnt signaling responsiveness. *Developmental Dyn*amics 245, p144-56.

Vithayathil J, Pucilowska J, Goodnough LH, **Atit RP,** Landreth GE. (2015) Dentate Gyrus Development Requires ERK Activity to Maintain Progenitor Population and MAPK Pathway Feedback Regulation. *Journal of Neuroscience* Apr 29; 35(17):6836-48.

Hamburg-Shields E, DiNuoscio GJ, Mullin NK, Lafyatis R, **Atit RP**. (2015) Sustained β-catenin activity in dermal fibroblasts promotes fibrosis by up-regulating expression of extracellular matrix protein-coding genes. *Journal of Pathology*; 235(5):686-97. (Dr. Lafayatis provided human scleroderma samples)

Goodnough, L.H. DiNuoscio, G, Ferguson, J.W., Williams T., Lang R.A., and **Atit, RP**. (2014). Distinct requirements for cranial ectoderm and mesenchyme-derived Wnts in specification and differentiation of osteoblast and dermal progenitors. *PLoS Genetics,* 10, e1004152.

Goodnough, LH., Chang, A.T., Treloar, C., Yang, J., Scacheri, P., **Atit, RP**. (2012). Twist1 mediates repression of chondrogenesis by beta-catenin to promote cranial bone progenitor specification. *Development*, 139, 4428-38.

Myung, P.S., Takeo M., Ito, M. and **Atit R.P.** (2012) Epithelial wnt ligand Secretion is required for adult hair follicle growth and regeneration. *Journal of Investigative Dermatology*, 133, p31-41. (Dr.Ito and lab assisted with marker analysis).

Hamburg, E. and **Atit, R.P.** (2012), Sustained beta-catenin activity in dermal fibroblasts is sufficient for skin fibrosis. *Journal of Investigative Dermatology*, 132, 1522-33.

Chen, D., Jarrell, A., Guo, C., Lang, R., **Atit, R.** (2012) Dermal beta-catenin activity in response to ectodermal Wnt ligands are required for fibroblast proliferation and hair follicle initiation *Development* 139, 1522-33. (Dr. Lang provided a mouse line).

Bader, H.L., Wang, L.W., Ho, J.C., Tran, T., Holden, P., Fitzgerald, J., **Atit, R.P.**, Reinhardt, D.P., Apte, S.S. (2012). A disintegrin-like and metalloprotease domain containing thrombospondin type 1 motif-like 5

(ADAMTSL5) is a novel fibrillin-1-, fibrillin-2-, and heparin-binding member of the ADAMTS superfamily containing a netrin-like module. *Matrix Biology,* E-published Sept. 23.

Wei J., Fang, F., Lam A.P., Sargent J.L., Hamburg, E., Hinchcliff, M.E., Gottardi, C.J., **Atit, R.,** Whitfield, M.L., Varga, J. (2012). Wnt/beta-catenin signaling is hyperactivated in systemic sclerosis and induces smad-dependent fibrotic responses in mesenchymal cells. *Arthritis and Rheumatism*, 64, 2734-45.

Tran T., Jarrell, A., Zentner, G.E., Welsh, A., Brownell, I., Scacheri, P.C., **Atit, R.** (2010). Role of canonical Wnt signaling/beta-catenin via *Dermo1* in cranial dermal cells. *Development* 137 pp. 3973-3984. (Dr. Scacheri provided guidance and intellectual support on ChiP-qPCR technique).

Knothe Tate, M.L., Falls, T., Mishra, S., **Atit, R.** (2010). Engineering an Ecosystem: Taking Cues from Nature's Paradigm to Build Tissue in the Lab and the Body, *Fields Institute of Communications,* vol 57.

Mani, P., Jarrell, A., Myers, J., **Atit, R.** (2010). Visualizing canonical Wnt signaling during craniofacial development of the mouse embryo. *Developmental Dynamics* 239 pp. 354-63.

Ohtola, J., Myers, J., Zuzindlak, D., Sandesara, P., Yeh, K., Mackem, S. **Atit R.** (2008) Beta-catenin has sequential roles in survival and specification of ventral dermis. *Development* 135 pp. 2321-2329.

Knothe Tate, M.L., Fall, T.D., McBride, S.H., **Atit, R.,** Knothe, U.R. (2008). Mechanical Modulation of osteochondroprogenitor cell fate. *International J Biochem Cell Biol.* 40(12) pp. 2720-38. (Invited Review)

Liu F, Chu EY, Watt B, Zhang Y, Gallant NM, Andl T, Yang SH, Lu MM, Piccolo S, Schmidt-Ullrich R, Taketo MM, Morrisey EE, **Atit R**, Dlugosz AA, Millar SE. (2008). Wnt/beta-catenin signaling directs multiple stages of tooth morphogenesis. *Developmental Biology* 313 pp. 210-24.

#Atit, R., Sgaier, S. Mohammed, O., Taketo, M., Dufort, D., Joyner, A., Niswander, L., Conlon, R. (2006). Beta-catenin activity is necessary and sufficient for dorsal dermal fate specification in mouse. *Developmental Biology* 296 pp. 164-176. (#corresponding author, #50% contribution after my appointment at CWRU).

Atit, R., Conlon, R, and Niswander, L. (2003). EGFR signaling patterns the feather array by promoting interbud fate. *Developmental Cell* 4 pp. 231-40.

Rizvi, T.A, Ling, B., Huang, Y., Sidani, A., **Atit, R.**, Largaespada, D.A., Boissy, R.E., and Ratner, N. (2002). A novel cytokine pathway suppresses glial cell melanogenesis after injury to adult nerve. *J. Neuroscience* 22 pp. 9831-40.

Sherman, LS., **Atit, R.**, Rosenbaum, T., Cox, A.D., Ratner, N. (2000). Single cell Ras-GTP analysis reveals altered Ras activity in a subpopulation of neurofibroma Schwann cells but not fibroblasts. *J Biol Chem.,* 275 pp. 30740-5.

Atit, R., Mitchell, K., Nguyen, L., Warshawksy, D., Ratner, N. (2000). The neurofibromatosis type 1 (*Nf1*) tumor suppressor is a modifier of carcinogen-induced pigmentation and papilloma formation in C57Bl/6 mice. Accepted at *J. Invest. Dermatology,* 114 pp. 1093-1100.

Atit, R., Crowe, M., Wenstrup, R., Greenhalgh, D., and Ratner, N. (1999). The *Nf1*, tumor suppressor gene is required for normal skin wound healing, fibroblast proliferation, and collagen deposition. *J. Invest. Dermatology*, 112 pp. 835-842.

Publications in Progress

Wendy Lee, Qi Sun, Mokoto Takeo, Chae Ho Lim, Peggy Myung, **Radhika P. Atit**, Mark M. Taketo, Emi Nishimura, and Mayumi Ito. Melanocyte Stem Cells produce melanoma controlled by epithelial Wnt signaling. Submitted in April 2016 to *Nature Cell Biology*, Under review.

Published Abstracts

Goodnough LH, DiNuoscio GJ, **Atit RP** (2015). A feed-forward loop between Wnt/beta-catenin signaling and Twist1 contributes to cranial bone agenesis and dermal hypoplasia, *Amercian Journal of Human Genetics*, 167, 1461.

Anyangwe, O., Myers, J., **Atit, R.** (2007). Wnt signaling and ventral dermis develoment. *Developmental Biology.*

Atit, R. and Niswander L. (2001). Mechanism of Epidermal Growth Factor in avian skin patterning. *Developmental Biology.*

Ratner, N. **Atit, R.**, Sherman, L.S., Crowe, M., Cox, A.D., and Wenstrup, R. (1999). Evidence in support of Ras-GTP dependent and independent abnormalities in NF1-mutant cells revealed by a new *in situ* Ras activation assay and by skin wounding. Medizinische Genetik.

Ratner, N., **Atit, R.**, Kim, H.A., Ling, B., DeClue, J.A., Crowe, M., and Rizvi, T.A. (1998). Neurofibromatosis type 1: Genetic and cellular mechanisms of peripheral nerve tumor formation. *J. Cancer Res. Clin. Oncol.*

Ratner N., **Atit**, **R**., Wenstrup R., Crowe, M. (1997) Increased matrix deposition by *Nf1*-deficient fibroblasts: evidence for a Ras-independent phenotype. *Society of Neuroscience Abstracts* **23** (1): 68.

Atit, R., Crowe, M., Wenstrup, R., Greenhalgh, D., Ratner, N. (1997) Increased matrix deposition by *Nf1*-deficient fibroblasts: Evidence for a Ras-independent phenotype. *Molecular Biology of the Cell* **8**: 281a.

Invited International Talks

2014: Unilever, Bangalore, India. "Role of dermal Wnt signaling in hair follicle development."

2014: India Institute of Science, Bangalore, India. "Distinct role of ectodermal and mesenchymal Wnts in cranial bone and dermal development."

2014: National Center for Biological Sciences (NCBS), Bangalore India. "Distinct role of ectodermal and mesenchymal Wnts in cranial bone and dermal development."

2014: Xavier University, Ahmedabad, India. "Role of dermal Wnt signaling in skin development."

2013: Gordon Conference on Epithelial Cell Biology, in Il Ciocco, Italy. "Sequential role of ectodermal and mesenchymal Wnts in dermal development" (**Session Chair**)

2010: Great Lakes Mammalian Developmental Biology Meeting, in Toronto, Canada. "Wnt signaling function in dermal precursors."

2009: Gordon Conference on Epithelial Cell Biology. in Switzerland, **Speaker and Section Co-Chair** of "Arising Issues"

2008: Gordon Conference on Craniofacial Development, in Il Ciocco, Italy. "Craniofacial dermal development and Wnt signaling."

Invited National Talks

2017: American Academy of Dermatology, in San Diego, USA, "Embryonic Development of Epidermis and Dermis" (**Invited Podium Presentation**).

2017: Cleveland State University, Cleveland, OH. Dept of Cell biology. "Wnt signaling in craniofacial development."

2017: Case Western Reserve University, Cleveland, OH, Dept. of Dermatology. "Wnt signaling in skin development and disease."

2017: Society of Developmental Biology regional meeting, University of Michigan. "Wnt signaling in cranial lineage decisions. (**Invited Podium Presentation**)."

2016: Case Western Reserve University, Connective Tissue and Tissue Engineering course, Dept. of Biology, Role of Wnt signaling in dermal development and fibrosis.

2016: University of Colorado, Denver, CO. Dept. of Cell and Developmental Biology. Tissue-tissue interactions in cranial dermis and bone lineage selection.

2015: Regeneron Industries, White Plains, NY. Role of Wnt signaling in skin development and disease.

2015: Desmoid Tumor Research Conference, Philadelphia, PA. Role of β-catenin dermal fibrosis.

2015: Case Western Reserve University, Dept. of Orthopedics. Role Wnt signaling craniofacial lineage decisions.

2015: Cleveland Clinic Foundation, Dept. of Cell biology. Tissue-tissue interactions in cranial development.

2014: George Washington University, Dept. of Anatomy and Regenerative Medicine. Role of Wnt signaling in craniofacial lineage decisions.

2014: University of Maryland, College Park. Dept. of Biology. Wnt signaling in craniofacial dermal and bone development.

2014: Society of Craniofacial Genetics and Developmental Biology, San Diego, CA. A Feed-forward loop between Wnt/β-catenin signaling and Twist1 contributes to cranial bone agenesis and dermal hypoplasia. (**Invited Podium Presentation**).

2013: John Hopkins University. "Distinct role of ectodermal and mesenchymal Wnts in cranial bone and dermal development."

2013: Case Alumni Association, Cleveland, USA. "Role of Wnt signaling in skin development and disease."

2012: Metro Health Center, Cleveland, USA. "Role of Wnt signaling in dermal fibrosis."

2012: Case Western Reserve University, USA, Dept. of Pathology. "Role of Wnt signaling in skin development and disease."

2012: Society of Investigative Dermatology, Raleigh, USA. "β-catenin signaling in hair follicle initiation."

2012: American Academy of Dermatology, in San Diego, USA, "Embryonic Development of Epidermis and Dermis"

2012: Scleroderma Research Foundation Workshop, in San Francisco, USA. "Sustained Activation of Wnt signaling contributes to fibrosis."

2011: International Scleroderma Workshop, in Cambridge, England. "Dermal Wnt signaling activation: a genetic model for Scleroderma."

2011: American Academy of Dermatology, in New Orleans, USA. "Skin Embryo and Morphogenesis." (Invited Talk)

2010: Scleroderma Research Foundation Workshop, in San Francisco, USA. "Forced Activation of Wnt signaling: Genetic model for scleroderma."

2009: Wooster College, Wooster, USA. "Making more skin cells."

2009: Montagna Symposium on Skin Development and Disease, Lincoln City, USA. "Dermal cells and Skin diseases." **Speaker and Section Co-Chair**.

2009: Case Western Reserve University, Dept. of Orthopedics. "Bone out of Necessity: Role of Wnt signaling in cranial bone development."

2008: Children's Hospital Research Foundation and University of Cincinnati. "Skin Deep: Origin of dermal cells."

2008: Ashland University, Ashland. USA. "Origin and differentiation of Dermal cells in the skin."

2008: Cleveland Clinic Foundation, Cleveland, USA. "Dermis and tissue engineering of skin"

2008: National Institutes of Health, NIAMS, Bethesda, USA. "Wnt signaling in Belly-side ventral dermal development."

2008: Stanford University, Dept. of Dermatology, Palo Alto, USA. "Origin and differentiation of Dermal Cells"

2007: University of Pennsylvania, Dept. of Dermatology, Philadelphia, USA. "What is Wnt signaling doing in the dermis."

2007: Columbia University, Dept. of Dermatology and Skin Disease Research Center, New York, New York. "Role of Wnt signaling in dermal development."

2006: Muhlenberg College, Allentown, USA. "Origin of dermal cells of the skin."

2005: Oberlin College, Oberlin, USA. "Orgin of Skin Cells"

2005: Case Western Reserve University, Department of Genetics, Cleveland, Ohio "Origin of Dorsal Dermal Cells."

2002: Great Lakes Developmental Biology Meeting, Toronto, Canada. "To Bud or Not to Bud: Role of Epidermal Growth Factor in avian skin patterning." (Podium Presentation)

2002: Developmental Biology Retreat, "To Bud or Not to Bud," Case Western Reserve University, (Podium Presentation).

Poster Presentations

2016: Gordon Conference on Craniofacial Development, Ventura, CA, Role of meningeal Wnts in cranial development.

2012: Gordon Conference in Craniofacial Biology Development, Ventura, USA. "*Twist1* mediates repression of chondrogenesis by β-catenin to promote cranial bone progenitor specification" and "Role of Twist family members in craniofacial dermal development." (2 posters).

2011: Gordon Conference on Epithelial Cell Biology, in Vermont, USA. "Dermal Wnt signaling beta-catenin is required for hair follicle initiation and dermal proliferation." (Poster and **Session Chair**)

2010: Gordon Conference on Craniofacial Development, in Ill Ciocco, Italy. "Genetic mechanisms of Wnt signaling in cranial bone development." "Role of Wnt signaling in cranial dermal development."

2008: Society of Developmental Biology, Philadelphia, USA. "Sequential roles of Wnt signaling in ventral dermal development.

2007: Wnt Meeting: Role of Wnts in Signaling and Disease in Berlin, Germany. "Wnt signaling/β-catenin in craniofacial dermal development."

2006: Great Lakes Mammalian Developmental Biology Meeting, Toronto, Canada. "Role of Wnts in ventral dermal development."

2006: Keystone Symposia on Wnt signaling, Snow Bird, USA, "Role of Wnts in dermal specification."

2004: International Wnt meeting, Role of Wnt signaling in dermal development, Ann Arbor, USA.

2004: Society of Differentiation Conference, Honolulu, USA. "Wnt signaling and dermal development."

2003: Developmental Biology Gordon Conference, Andover, USA. "Role of BMPs and Wnts in patterning the dermamyotome."

1998: International Neurofibromatosis Consortium Meeting, Aspen, USA. "Abnormalities in neurofibromin-deficient fibroblasts"

Teaching

Fall 2014 – present:	**Course director** of BIOL 495: "Introduction to graduate school in the biological sciences." The course will introduce students to the resources and skills needed to succeed in graduate school. (Contact time is 2 hrs/week).
Fall 2011 – present	**Co-instructor:** BIOL 216 "Organisms and Ecosystems." This is a 200 level introductory, large enrollment lecture and lab course. I am in charge of the developmental biology module. In addition to the interactive lecture format and the sea urchin development labs, I conduct a live demo in each class to introduce them to different animal models used in developmental biology research, convene a science café section to highlight current publications related to the lecture topic of the day, and coordinate a research seminar that complements the lecture material. (Contact time 8-10 hours/week for 3 weeks).
2007 – present	**Course Director**: BIOL 599 and BIOL 601. I have conducted independent readings with graduate students in these two classes, helping them to write a review and defend it orally.
Spring 2006 – present	**Course Director**: BIOL 365/465 "Evo-Devo: Evol. Of the Animal Body Plan." A new 300 level Evolutionary Developmental Biology class in the Biology Dept. at Case Western

	Reserve University which can fulfill the SAGES departmental seminar requirement. The class examines developmental genetics evidence for evolution theory and focuses on the principles of modularity as a principal for macroevolution. Focused on developing skill sets necessary in the communication of science. (Contact time 5-10 hours/week).
Spring 2005 – present	**Undergraduate Research Mentor**: BIOL 388S/388/390**.** I have maintained 2-4 undergraduate research students in my laboratory during the academic year and full time during the summer. All my undergraduate research students in the lab follow a sequence of courses with me. They first undertake independent reading with me (BIOL 390), after which they get involved at the bench in an ongoing research project (BIOL 388), finally developing an independent research project for their Senior SAGES Capstone (BIOL 388S) and contributing to the productivity of my research program. (Contact time 4-6 hours/week)
Fall 2012 – 2013:	**Course Co-Director** of BIOL 216 Lab: "Development and Physiology." The developmental biology lab is used to introduce students to events in early development using the sea urchin embryo as a model system. (Contact time 15 hours/week for 4 weeks).
Fall 2006 – 2008	**Course Director**: BIOL 366: "Genes, Embryos, and Fossils." This is a new 300 level Evolutionary Developmental Biology class in the Biology Dept. at Case Western Reserve University. This course is also a departmental seminar for the SAGES curriculum at Case. The seminar-based class requires the student to identify, make a critical reading, and present primary literature at the intersection of Evolution, Developmental Biology, and Genetics. This course focuses on teaching students how to read primary literature critically, to identify and develop novel hypotheses, and to generate short grant proposals designed to test their ideas. (Contact time 5-10 hours/week)
Fall 2005	**Keynote Speaker**: 17th Annual Howard Hughes Lecture for Junior and Senior High School students at CWRU-Biology. "Stem Cells: Hype and the Hope" (Attendance: 420 students)
Fall 2003 and -04	**Small Group Leader** for the Genetics module in the First Year medical school curriculum, CWRU (contact time 1-2 hours/week)
Spring 2003 and -04	**Guest Lecturer** for 2 lectures in BIOL 362, Development Biology Class at CWRU.
Spring 2001	**Guest Lecturer** for 4 lectures in the Graduate level Developmental Biology class at Hunter College, City University of New York, NY. (Total time approx. 20hours)
Fall 2000:	**Adjunct Faculty** at Hunter College. I developed and team-taught an undergraduate 300 level Developmental Biology class to a group of 30 students. (Total time approx. 15 hours/week)

Departmental Service

Committee Service

2006 – present	Chair of the Case Biology departmental seminar series committee.
2017 – present	Chair of the Bio[box] management team.
2017 – present	Member of Undergraduate Curriculum committee.
2017	Chair of Faculty search committee in Biology for molecular and cell biologist, successfully yielded a candidate.
2015 – 2017	Member of Committee for Graduate Affairs.

Recruitment

2010 – present	Give lab tours for admitted and prospective undergraduates (4-6 times/year)
2008, 2009, 2012, 2014, 2017:	Member of the Faculty Search committee in Biology

Proposal Development

2015, 2011	Member of the Graduate Assistantship in Areas of National Need proposal committee (Funded).

Communication Development

2006 – present	Design and produce the annual 8-page departmental newsletter to establish connections and spearhead departmental fundraising efforts from alumni.
2008 – present	Design of a publicity poster to highlight faculty and student activities.
2009 – 2014	Supervise the web master for the Biology dept website.

University Service

Committee Service

2016 – 2017	Member of the Arts & Science (A&S) Executive Committee (Elected by faculty).
Fall 2016	Chairs Council Representative from the A&S Executive committee.
2016 – present	Member of Advisory Board for SOURCE program of undergraduate research.

Student Training Grant Committees

2012	Member of the NIH Genetics Training Grant renewal committee
2016-present	Steering committee member of the NIH Orthopedics Training Grant
2016, 2017	Member of the Orthopedics Training Grant renewal committee

Alumni Interaction

2013	Invited Lecture to Case Alumni Association, Shaker Country Club.

Community Service

2012 – present	DNA-day participant with Department of Genetics for outreach in local area high schools.
2012 – present	Volunteer at the Oberlin Community Services.
2017- present	Lorain County Rising activist group.

Graduate Student Training

Anna Jussilla	Doctoral	(07/2016 – present)	Research Mentor
Beatriz Ibarra	Doctoral	(07/2015 – present)	Research Mentor
V. Saikumar Thulabandu	M.S. Plan A	(08/2015 – present)	Research Mentor
James Ferguson	Doctoral	(08/2012 – present)	Research Mentor
Justine Ngo	Doctoral	(08/2015 – present)	Committee Member
Henry Goodnough	Doctoral	(8/2008 – 5/2013)	Research Mentor
Demeng Chen	Doctoral	(1/2008 – 11/2013)	Research Mentor
Emily Hamburg	Doctoral	(6/2010 – 08/2014)	Research Mentor
Thu Tran	Doctoral	(1/2007 – 2010)	Research Mentor
Danielle McKay	Doctoral	(3/2005 – 12/2008)	Committee Member
Ghunwa Nakuozi	Doctoral	(5/2006 – 5/2009)	Committee Member
Gabrielle Nickel	Doctoral	(5/2007 – 8/2008)	Committee Member
Ramil Noche	Doctoral	(3/2006 – 5/2008)	Committee Member
Yi Wei	Doctoral	(8/2007 – 6/2010)	Committee Member

Po-Nien Lu	Doctoral	(5/2008 – present)	Committee Member
Jiajun Sun	Masters, Plan A	(9/2008 – 2011)	Advisor
Douglas Emancipator	Masters, Plan A	(1/2005 – 5/2008)	Committee Member
Brett Hoover	Masters Plan A	(8/2010 – 12/2010)	Committee Member
Nicholas Kerns	Masters, Plan B	(1/2006 – 5/2007)	Advisor
Kristopher Kramp	Masters, Plan B	(1/2006 – 5/2007)	Advisor
Brian Fishman	Master, Plan B	(1/2007 – 6/2008)	Committee Member

Undergraduate Student Training

Timothy Nehila	(08/2017 – present)	Canting Guo	(8/2008 – 5/2010)
Samhitha Cinthala	(01/2017 – present)		
Sam Pan	(01/2017 – present)		
James Lee	(04/2016 – 2017)	Pooja Sandesara	(8/2006 – 5/2009)
Nikhil Mallipedi	(12/2014 – 5/2017)	Adrienne Welsh	(4/2007 – 5/2009)
Mahima Devarajan	(03/2015 –5/2017)	Charles Treloar	(3/2008 – 12/2009)
Miarassa Steele	(08/2012 – 5/2016)	Preethi Mani ’08	(3/2005 – 5/2008)
Nathaniel Mullin	(10/2013 – 5/2016)	Hillary Mitchel’09	(2/2007 – 8/2007)
Isadore Budnick	(03/2011 – 5/2013)	Jennifer Ohtola ’07	(8/2005 – 12/2007)
Karan Munshani	(08/2009 – 5/2010)	Batool Zaidi ’07	(3/2005 – 5/2006)
Daniel Gleiser	(8/2008 – 5/2010)	Karen Yeh ’06	(5/2005 – 5/2006)
Samhitha Cinthala	(4/2017- present)		