ADI D. DUBASH

Furman University, Department of Biology Townes South 171F 3300 Poinsett Hwy, Greenville, SC 29613 adi.dubash@furman.edu (864) 294-3580 https://www.furman.edu/people/adi-dubash/

EDUCATION & EMPLOYMENT

Henry Keith and Ellen Hard Townes Assistant Professor of Biology Furman University, Department of Biology	2021 - current
Assistant Professor Furman University, Department of Biology	2017 - 2020
Visiting Faculty Furman University, Department of Biology	2015 - 2017
Post-doctoral Fellow Northwestern University Feinberg School of Medicine, Department of Pathology	2009 - 2015
Ph.D., Cell and Developmental Biology University of North Carolina at Chapel Hill, School of Medicine	2003 - 2009
B.S., Cell and Molecular Biology University of Texas at Austin, College of Natural Sciences	1999 - 2003

PEER-REVIEWED PUBLICATIONS

Blue underlined manuscript titles are hyperlinked:

Shelton WT*, Thomas SM*, Alexander HR*, Thomes CE*, Conway DE, Dubash AD.
 Desmoglein-2 harnesses a PDZ-GEF2/Rap1 signaling axis to control spreading and focal adhesions independent of cell-cell adhesion.

Scientific Reports, 2021; 11:13295

- (* = Furman undergraduate co-authors)
- 2. Bendrick JL*, Eldredge LA*, Williams El*, Haight NB*, **Dubash AD**.

 <u>Desmoplakin harnesses Rho GTPase and p38 MAPK signaling to coordinate cellular migration</u>. *Journal of Investigative Dermatology*, **2019**; 139(6): 1227-1236.

 (* = Furman undergraduate co-authors)
- Kam CY, Dubash AD, Magistrati E, Polo S, Satchell KJF, Sheikh F, Lampe P, Green KJ.
 Desmoplakin maintains gap junctions by inhibiting Ras/MAPK and lysosomal degradation of connexin-43.
 - Journal of Cell Biology, 2018; 217(9):3219-3235.
- 4. **Dubash AD**[#], Kam CY[#], Aguado, BA, Patel DM, Delmar M, Shea LD, Green KJ. (*co-first authors) Plakophilin-2 loss promotes TGF-β1/p38 MAPK-dependent fibrotic gene expression in cardiomyocytes.

Journal of Cell Biology, 2016; 212(4):425-38.

5. Moy I, Todorović V, **Dubash AD**, Coon JS, Parker JB, Buranapramest M, Huang CC, Zhao H, Green KJ, Bulun SE.

<u>Estrogen-dependent sushi domain containing 3 regulates cytoskeleton organization and migration in</u> breast cancer cells.

Oncogene, 2015; 34(3):323-33.

6. Patel DM, Dubash AD, Kreitzer G, Green KJ.

<u>Disease mutations in desmoplakin inhibit Cx43 membrane targeting mediated by desmoplakin-EB1 interactions.</u>

Journal of Cell Biology, 2014; 206(6):779-97.

- 7. **Dubash AD**, Koetsier JL, Harmon RH, Najor NA, Amargo EA, Green KJ. <u>The GEF Bcr activates Rho/MAL signaling to promote keratinocyte differentiation via desmoglein-1</u>. *Journal of Cell Biology*, **2013**; 202(4):653-66.
- 8. Harmon RM, Simpson CL, Johnson JL, Koetsier JL, **Dubash AD**, Najor NA, Sarig O, Sprecher E, Green KJ.

<u>Desmoglein-1/Erbin interaction suppresses ERK activation to support epidermal differentiation.</u> *Journal of Clinical Investigation*, **2013**; 123(4):1556-70.

- 9. Guilluy C*, **Dubash AD***, García-Mata R. (*co-first authors)

 <u>Analysis of RhoA and Rho GEF activity in whole cells and the cell nucleus.</u> *Nature Protocols*, **2011**; 6(12):2050-60.
- 10. Dubash AD, Green KJ.

Desmosomes.

Current Biology, 2011; 21(14):R529-31.

- 11. **Dubash AD***, Guilluy C*, Srougi MC, Boulter E, Burridge K, García-Mata R. (*co-first authors)

 <u>The small GTPase RhoA localizes to the nucleus and is activated by Net1 and DNA damage signals.</u> *PLoS One*, **2011**; 6(2):e17380
- 12. Todorović V, Desai BV, Patterson MJ, Amargo EV, **Dubash AD**, Yin T, Jones JC, Green KJ. <u>Plakoglobin regulates cell motility through Rho- and fibronectin-dependent Src signaling.</u> *Journal of Cell Science*, **2010**; 123(20):3576-86.
- 13. Medlin MD, Staus DP, **Dubash AD**, Taylor JM, Mack CP.

 <u>Sphingosine-1-phosphate receptor 2 signals through leukemia-associated RhoGEF (LARG) to promote smooth muscle cell differentiation.</u> *Arteriosclerosis, Thrombosis & Vascular Biology*, **2010**; 30(9):1779-86.
- Godsel LM, Dubash AD, Bass-Zubek AE, Amargo EV, Hobbs RP, Green KJ.
 Plakophilin 2 Couples Actomyosin Remodeling to Desmosomal Plaque Assembly via RhoA.
 Molecular Biology of the Cell, 2010; 21(16):2844-59.
- Boulter E, García-Mata R, Guilluy C, Dubash A, Rossi G, Brennwald PJ, Burridge K. Regulation of Rho GTPase crosstalk, degradation and activity by Rho GDI1. Nature Cell Biology, 2010; 12:477-83.

- 16. **Dubash AD**, Menold MM, Samson T, García-Mata R, Boulter E, Doughman R, Burridge K. Focal Adhesions: New angles on an old structure.

 International Reviews in Cell and Molecular Biology, 2009; 277:1-65.
- 17. García-Mata R, **Dubash AD**, Sharek L, Carr HS, Frost JA, Burridge K.

 <u>The nuclear RhoA exchange factor Net1 interacts with proteins of the Dlg family, affects their localization, and influences their tumor suppressor activity.</u> *Molecular and Cellular Biology*, **2007**; 27(24):8683-97.
- Dubash AD, Wennerberg K, García-Mata R, Menold MM, Arthur WT, Burridge K.
 A novel role for Lsc/p115 RhoGEF and LARG in regulating RhoA activity downstream of adhesion to fibronectin.

 Journal of Cell Science, 2007; 120(Pt 22):3989-98. [Best Paper of the Year Award]

INVITED BOOK CHAPTER

The Cadherin Superfamily – Key Regulators of Animal Development and Physiology.

Chapter 14: Cadherins in Cancer, Albrecht LV, Green KJ, Dubash AD.

Springer 2016, ISBN: 978-4-431-56031-9.

RESEARCH GRANTS

INBRE/COBRE Supplement Award, Co-Pls: Dubash AD & Richardson WJ 2019-20 (2020-21 NCE)
IDeA Networks of Biomedical Research Excellence (INBRE), NIH NIGMS
Regulation of Fibrosis via Cardiomyocyte-Fibroblast interactions and desmosomal signaling

Developmental Research Project Program, Pl: Dubash AD 2017-20 (2020-21 NCE) South Carolina IDeA Networks of Biomedical Research Excellence (SC INBRE), NIH NIGMS Desmoplakin Harnesses Rho GTPase and p38 MAPK signaling to coordinate cell migration

Major Research Instrumentation Program, PI: Buchmueller K, Co-PIs: Dubash AD, Wheeler J 2018-21 National Science Foundation (NSF)

Acquisition of an Amersham Typhoon RGB Imager

Research and Professional Growth (RPG) Awards, PI: Dubash AD

Furman University

arrian Ornvorsity		
Role of desmosome proteins in breast cancer cell migration	2016	
Role of desmosome protein mutations in heart disease	2017	
Cellular signals involved in growth and structure of the skin	2018	
Analysis of desmosomal mutations which cause cardiac disease	2019	

INBRE Faculty Fellows Summer Research Grants, PI: Dubash AD Furman University

Regulation of Breast Cancer Cell Migration by Desmosomal Armadillo Proteins	2016
Coordination of Cancer Cell Migration by the Desmosomal Protein Desmoplakin	2017
Inhibition of Cardiac Fibrosis via Rap1A signaling	2021
CBC Postdoctoral Award, Chicago Biomedical Consortium	2014-15
Post-doctoral Fellowship, American Heart Association	2011-13
Pre-doctoral Traineeship Award, Breast Cancer Research Program, DOD	2006-09

TEACHING EXPERIENCE

Undergraduate Courses taught at Furman University (in order of frequency):

2015-current

- Cell Biology (Bio 300)
- Human Physiology (Bio 322)
- Principles of Biology (Bio 101)
- Human Genetics (Bio 212)
- Genetics (Bio 221)
- Molecular Genetics (Bio 302)
- Seminar in Biology (Bio 075)

Courses and teaching responsibilities at prior institutions:

•	Sole Instructor for Physiology (Biol Sci 217-CN), NU School of Professional Studies (SPS)	2015
•	Sole Instructor for Biological Investigations (Bio 151), North Central College	2014
•	Co-instructor for Molecular mechanisms of Carcinogenesis, NU School of Medicine	2014-15
•	Co-Instructor for Cell Biology and Physiology (Biol Sci 210-C), NU SPS	2014
•	Guest Lecturer, Dermatology Resident Basic Science Didactic Sessions, NU	2013-14
•	Teaching Assistant, Introductory Biology Lab (Bio 101L), University of North Carolina	2007-08

NATIONAL AND REGIONAL CONFERENCE POSTERS & TALKS

Furman undergraduate students I mentored are <u>underlined and italicized</u>; presenters are in **bold**.

A. American Society for Biochemistry and Molecular Biology (ASBMB) Annual Conference posters:

<u>Shelton WT</u> , <u>Thomes CE</u> , <u>Thomas SM</u> , Conway DE, Dubash AD Desmoglein-2 and Desmoplakin modulate Cell Spreading Dynamics via PDZ-GEF2 and Rap1 Signaling	2022
<u>Mateo B</u> , <u>Johnson B</u> , <u>Thomas SM</u> , <u>Rudman L</u> , Conway DE, Dubash AD Regulation of Extracellular Matrix Gene Expression by Desmosomal Cadherins	2022

<u>McLeod MR</u>, Heywood JG, <u>Thomas SM</u>, Richardson WJ, Dubash AD

Control of Fibrotic Gene Expression in Cardiac Myocytes and Fibroblasts via the Rap1 GTPase

B. American Society for Cell Biology (ASCB) Annual Conference posters:

Thomas SM, Alexander HR, Godwin AK, Conway DE, Dubash AD (virtual presentation) 2020

C.

independent of cell-cell adhesion.

Loss of desmosomal cadherins enhances expression of extracellular matrix proteins.	
Shelton WT, Thomes CE, Conway DE, Dubash AD (virtual presentation*) Desmoglein-2 modulates cell spreading and focal adhesion dynamics via Rap1 and TGFβ signaling.	2020
Alexander HR, Shelton WT, Godwin AK, Conway DE, Dubash AD Regulation of extracellular matrix gene expression by desmosomal cadherins.	2019
<u>Shelton WT</u> , <u>Alexander HR</u> , Conway DE, Dubash AD Desmoglein-2 controls Rap1-mediated cell spreading independent of cell-cell adhesion.	2019
<u>Bendrick J</u> , <u>Eldredge L</u> , <u>Williams El</u> , <u>Haight NB</u> , Dubash AD Desmoplakin promotes cell migration via coordinated control of p38 MAPK and Rho GTPase signaling.	2018
Eldredge L, Decker J, Dubash AD The MAL/SRF pathway regulates desmosome protein expression and localization in cancer cells.	2018
Kohrt S, Dubash AD The dual Rho GEF/Rac GAP protein Bcr regulates p38 MAPK signaling and cell proliferation.	2017
Eldredge L, Decker J, Dubash AD The MAL/SRF pathway regulates desmosome protein expression and localization in cancer cells.	2017
Bendrick J, Haight NB, Dubash AD Desmoplakin promotes cell migration via control of p38 MAPK and Rho GTPase signaling.	2017
Eldredge L, Decker J, Dubash AD Transcriptional control of desmosome gene expression in breast and skin cancer cells.	2016
Kohrt S, Dubash AD The dual Rho GEF/Rac GAP protein Bcr regulates p38 MAPK signaling and cancer cell growth	2016 ı.
<u>Williams EI</u> , Dubash AD Loss of Desmoplakin controls p38 MAPK-regulated breast and skin cancer cell migration.	2016
. South Carolina IDeA Networks of Biomedical Research Excellence (SC INBRE) Symposium po	osters:
<u>Alexander HR</u> , <u>Godwin AK</u> , Conway DE, Dubash AD Regulation of extracellular matrix gene expression by desmosomal cadherins.	2020
Shelton WT, Conway DE, Dubash AD The desmosomal cadherin Desmoglein-2 controls Rap1 GTPase-mediated cell spreading	2020

	Eldredge L, Dubash AD The MAL/SRF pathway regulates desmosome protein expression in cancer cells.	2018
	Bendrick J , Eldredge L, Williams El, Haight NB, Dubash AD Desmoplakin promotes cell migration via coordinated control of p38 MAPK and Rho GTPase signaling.	2018
	<u>Eldredge L.</u> <u>Decker J.</u> Dubash AD The MAL/SRF pathway regulates desmosome protein expression and localization in cancer cells.	2018
D.	National IDeA Symposium of Biomedical Research Excellence (NISBRE) Conference posters:	
	Bendrick J, Dubash AD. Desmoplakin promotes cell migration via control of p38 MAPK and Rho GTPase signaling	2018
	<u>Eldredge L</u> , Dubash AD. The MAL/SRF pathway regulates desmosome gene expression and localization.	2018
E.	South Carolina Independent Colleges and Universities (SCICU) Symposium posters:	
	Franklin M., Trammell C., Perling S., Hay C., Dubash AD Regulation of desmosomes by Plakophilin-2 mutations in arrhythmogenic cardiomyopathy.	2019
	<u>Churt M</u> , <u>Alexander H</u> , <u>Eldredge L</u> , Dubash AD Regulation of desmosomal gene expression by Rho GTPase signaling.	2019
	<u>Hay C</u> , Dubash AD Regulation of desmosomal cell adhesion and apoptosis by Plakophilin-2 mutations.	2018
	Bendrick J , <u>Haight N</u> , Dubash AD Desmoplakin promotes cell migration via coordinated control of p38 MAPK and Rho GTPase signaling.	2018
F.	Oral presentations/talks:	
	Dubash AD Regulation of cardiac fibrosis by Rap1A. Southeast Regional IDeA Conference	2021
	Dubash AD Control of cell spreading via Desmoglein-2 mediated Rap1 signaling. South Carolina IDeA Networks of Biomedical Research Excellence (SC INBRE) Symposium	2020
	Dubash AD Desmoplakin harnesses Rho GTPase and p38 MAPK signaling to coordinate cell migration. South Carolina IDeA Networks of Biomedical Research Excellence (SC INBRE) Symposium	2018

	<u>Williams EI</u> , Dubash AD Desmoplakin controls p38 MAPK-mediated cancer cell migration. EE Just Scientific Symposium	2017
	<u>Decker J</u> , <u>Eldredge L</u> , <u>Williams El</u> , Dubash AD Regulation of desmosome gene expression and localization in cancer cells. American Society for Cell Biology Conference	2016
G.	Other select conference presentations (abridged list):	
	Terry A*, Nguyen K*, Conway DE, Dubash AD (*equal contribution). Control of gene expression by desmosomal cadherins in skin cancer cells. Summer Program for Research Interns (SPRI) poster session, Clemson University	2019
	Harmon KA , Kavolus M, Muccitelli J, Roman S, Dubash AD, Goodwin RL, Arce SA, Fanning S. Towards a patient-specific model of multiple myeloma. <i>Greenville Health System Health Science Center (HSC) Research Showcase</i>	2019
 Cell Contact and Adhesion Gordon Research Conference Dubash AD, Patel D, Green KJ. Regulation of fibrotic signaling by desmosomal armadillo proteins in cardiac tissue American Heart Association Basic Cardiovascular Sciences Dubash AD, Koetsier JL, Amargo EA, Najor NA, Harmon RH, Green KJ. The GEF Bcr regulates Rho/MAL signaling in keratinocytes and differentiation via Cell Contact and Adhesion Gordon Research Conference Dubash AD, Koetsier JL, Harmon RH, Najor NA, Amargo EA, Green KJ. 	Loss of Plakophilin-2 triggers TGF-β1/p38 MAPK-induced fibrotic signaling in cardiac cells.	2015
	Regulation of fibrotic signaling by desmosomal armadillo proteins in cardiac tissue.	2014
	The GEF Bcr regulates Rho/MAL signaling in keratinocytes and differentiation via Desmoglein-1	2013
	The GEF Bcr regulates Rho/MAL signaling in keratinocytes and differentiation via Desmoglein-1	2012
	Dubash AD , Wennerberg K, Garcia-Mata R, Menold M, Burridge K. A novel role for Lsc/p115 RhoGEF and LARG in FN-induced RhoA activation. <i>American Society for Cell Biology Annual Meeting</i>	2008
ΙΝ	vited Seminars & Other Talks	
	smoplakin harnesses Rho GTPase and p38 MAPK signaling to coordinate cell migration Western Carolina University , Cullowhee NC. Host: Dr. Indrani Bose, Department of Biology	2019
	nual Research Mentors Appreciation Luncheon Talk Furman University, Greenville SC. Host: Dr. Erik Ching, Director of Undergraduate Research	2019

All D Dibasii Currellan Vitae	
Desmoplakin coordinates cancer cell migration Emory University, Atlanta GA. Host: Dr. Andrew Kowalczyk, Department of Cell Biology	2018
Desmosomal adhesion and signaling during cancer cell migration Converse College, Spartanburg SC. Host: Dr. Neval Erturk, Department of Biology	2018
Cardiac disease gene regulation by cell-cell contacts Davidson College, Davidson NC. Host: Dr. Malcolm Campbell, Department of Biology	2016
Molecular Mechanisms of Arrhythmogenic Cardiomyopathy Northwestern University, Chicago IL. Host: Dr. Hossein Ardehali, Cardiovascular Institute	2015
Roles for desmosome armadillo proteins in cardiac disease North Central College, Naperville IL. Host: Dr. Jonathan Visick, Chair, Department of Biology	2014
Desmosome signaling during epidermal morphogenesis and cancer University of Chicago, Chicago IL. Host: Dr. Tanguy Seiwert, Department of Medicine	2014
Awards & Honors	
 Endowed professorship, Henry Keith and Ellen Hard Townes Assistant Professorship 	2021-23

•	Endowed professorship, Henry Keith and Ellen Hard Townes Assistant Professorship	2021-23
•	Faculty Travel Award, American Society for Cell Biology	2016
•	Faculty Teaching Development Grant, Furman University	2016
•	Associate Chair, Cell Contact & Adhesion Gordon Research Seminar	2015
•	Katten Muchin Rosenman Travel Award, Feinberg Cancer Center, Northwestern University	2012
•	Post-doctoral Travel Award, American Society for Cell Biology	2012
•	Best Paper of the Year Award for Dubash et al.,120:3989, Journal of Cell Science	2007
•	Best Departmental Seminar, Cell & Dev. Bio., UNC Chapel Hill	2006-07
•	University Merit Assistantship, University of North Carolina at Chapel Hill	2003-04
•	Burrows Welcome Fund Award, University of North Carolina at Chapel Hill	2003
•	George Mitchell Undergraduate Student Award for Academic Excellence, UT Austin	2003
•	Student Commencement Speaker, School of Biology, UT Austin	2003
•	Deans Honored Graduate, School of Biology, UT Austin	2003
•	Eva Woods Stevenson Unrestricted Endowed Presidential Scholarship, UT Austin	2002-03
•	Natural Sciences Foundation Scholarship, UT Austin	2000
•	Member of the Dean Scholar's Program, UT Austin	2000-03

DEI Initiatives & Community Outreach

Furman STEM Scholars Program, Furman University

2021

Research lab shadowing opportunities for incoming Pell-eligible students interested in science.

BIPOC Peer Mentor Circle Leader, Furman University

2021

Guidance and mentorship to first year BIPOC faculty as they integrate into the Furman community.

Safe Space Training, Furman University

2018-19

Completed and received certification for Gender & Sexuality 101 and Visible Ally 201.

Bridges to a Brighter Future, Furman University

2016-19

Introduction to Cell Biology talks to high school students underrepresented in the sciences.

Science on Tap, Greenville SC

2018

"Sticky Business – How cells attach to each other and why it matters", talk at Coffee Underground to enhance Biology literacy among local Greenville community members.

Best Practices in High School Biology Teaching, Furman University

2017

"Cell Adhesion and Cancer Metastasis", talk to develop biology lab practices for teachers at different high schools in Greenville.

LGBTQ and Women in STEM discussion panel, Furman University

2017

Served on an informational panel to discuss experiences, progress and issues concerning LGBTQ students interested in STEM.

Junior Science Club Mentor, Northwestern University & Boys and Girls Club of Chicago Engaged fourth and fifth grade students in scientific activities with an aim to teach basic concepts and foster an early interest in science 2013

DEI GRANTS

Buckman Teaching Innovation Grant, Faculty Development Center, Furman University *Enhancing classroom engagement and inclusion through use of Turning Point clickers.*

2020

Diversity and Inclusion mini-grant, Diversity & Inclusion Committee, Furman University Enhancing LGBTQ support and inclusion at Furman via assessment of LGBTQ policy and programming at comparable regional universities.

2019

ACADEMIC ACTIVITIES, UNIVERSITY SERVICE & LEADERSHIP

Furman University Committee Service

Diversity & Inclusion LGBTQ Affairs sub-committee Research and Professional Growth (RPG) committee

2018-current 2019-current

Associate Vice President for Human Resources hiring committee	2019
SCICU Research Evaluation Team Reviewed and scored proposals for the SCICU Student/Faculty Research Program	2020
SC INBRE External Reviewer Reviewed and scored proposals for two different grant mechanisms in the SC INBRE Program – Developmental Research Project (DRP) grants and Bioinformatics Pilot Proj (BIPP) grants	2020 iect
Student Organization Faculty Advisor TriBeta Biological Honor Society, Furman chapter	2018-current
Journal Manuscript Reviewer Journal of Investigative Dermatology Journal of Cell Science PLoS One Journal of Cell Biology Cardiovascular Research Nature Cell Biology Experimental Cell Research	2019-20 2015-17 2010-18 2009-17 2015 2013 2010-11
Associate Chair, Gordon Research Seminar Cell Contact & Adhesion: Collective Behaviors and Mechanics in Health and Disease	2015
Discussion Leader, Gordon-Merck Research Seminar Cell Contact & Adhesion: Intercellular Interactions in Development and Disease	2013
American Heart Association 2010-19 Faculty of 1000 Biology, Associate Member, Cell Adhesion Section Leducq Foundation Transatlantic Network, Junior Member	2006-current 2018-current 5; 2021-current 2010-15 2010-14
President, Science Undergraduate Research Group (SURGe), UT Austin	2000-03
Pedagogical Training	
Furman STEM Equity Fellows Program HHMI Inclusive Excellence Program & Faculty Development Center, Furman University 6-week virtual course titled "The Inclusive STEM Teaching Project", focused on providi concrete tools, resources, and evidence-based practice to re-structure STEM courses enhance equity and inclusion for underrepresented students	0
Entering Mentoring Workshop Furman University 2-day workshop on strategies for inclusive mentoring and teaching in research	2020

Inclusive Pedagogy Workshop Associated Colleges of the South (ACS), University of Richmond 3-day workshop centered on effective strategies to use in preparation of teaching materials and enhancement of teaching methods to better serve and support minority and underrepresented students.	2019
Longitudinal Study of Early-Career Faculty Teaching Dr. Diane Ebert-May, Michigan State University Contributed to 3-year longitudinal study via yearly surveys, providing syllabi/course materials for Cell Biology course, and 2 videotaped lectures per semester.	2016-19
Creating innovative learning experiences in higher education Lilly conference on designing effective teaching, Asheville NC Designing flipped classrooms, assessing student participation, improving written feedback, and understanding how students learn.	2016
Junior Faculty Career Development Workshop Minorities Affairs Committee, American Society for Cell Biology, Chapel Hill NC Discussion of Tenure and promotion, NIH and NSF grant opportunities, performing research at teaching-intensive institutions, and mentoring diverse students.	2016
The College Classroom, CIRTL Fellow Center for the Integration of Research, Teaching and Learning, Northwestern University Quarter-long course discussing evidence-based practices for student-centered instruction, teaching a diverse student body and teaching as research.	2015
Mentored Discussions of Teaching, CIRTL Fellow Center for the Integration of Research, Teaching and Learning at Northwestern University Quarter-long course which included development of teaching skills under the advisement of a faculty mentor, classroom visits and group discussions to analyze pedagogical readings on critical thinking and cultural competence.	2013
Teaching excellence workshops Searle Center for Advancing Learning and Teaching, Northwestern University Promoting Critical Thinking in Your Students, and Connecting with the Crowd: Lecturing Effectively in Large Classes	2013-14
College Teaching Certificate Series Center for Teaching and Learning, UNC Chapel Hill Extensive course that provided training in course design and construction, resources for effective teaching, and teaching with technology	2007