

## CURRICULUM VITAE

### Celeste M. Nelson, Ph.D.

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Department of Molecular Biology  
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### Biographical Information

Birth date: August 21, 1976  
Birthplace: Colorado Springs, CO

### Education and Training

- 2007            *Woods Hole Marine Biological Laboratory*  
Embryology Course
- 2003-2007     *Lawrence Berkeley National Laboratory*  
Postdoctoral Fellow in the Life Sciences Division  
Mentor: Mina J. Bissell, Ph.D.
- 1998-2003     *Johns Hopkins University School of Medicine*  
Ph.D. in Biomedical Engineering (with high distinction)  
Thesis advisor: Christopher S. Chen, M.D., Ph.D.
- 1994-1998     *Massachusetts Institute of Technology*  
S.B. in Chemical Engineering  
S.B. in Biology

### Professional Positions

#### *Princeton University*

- 2020-present    Wilke Family Professor in Bioengineering  
Professor of Chemical & Biological Engineering  
Preceptor, Academy of Mentors, NJ Alliance for Clinical and Translational Research (ACTS)
- 2007-present    Associated Faculty, Department of Molecular Biology  
Member, Rutgers Cancer Institute of New Jersey, Breast Cancer Research and Cancer  
Metabolism and Growth Programs
- 2020             Pomeroy and Betty Perry Smith Professor of Chemical & Biological Engineering
- 2016-2020       Professor
- 2012-2016       Associate Professor
- 2007-2012       Assistant Professor

## Research Activities

Quantitative cell and developmental biology: Effects of geometry and boundary conditions on development of branching organs; microscale tissue engineering; engineered models of tissue morphogenesis; mechanobiology; mechanical and biochemical gradients; real-time analysis of cellular dynamics and matrix mechanics; mechanical signaling in epithelial-mesenchymal transition and fibrosis; moving boundary problems in morphogenesis.

## Honors, Awards, and Named Lectures

2021	Council on Science and Technology (CST) Community of Practice Fellow
2020, 2021	Princeton Engineering Commendation for Outstanding Teaching
2019	Biomedical Engineering Society (BMES) Mid-Career Award
2018, 2019	Princeton Engineering Commendation for Outstanding Teaching
2017, 2018	Blavatnik National Award Finalist for Young Scientists in Life Sciences
2016	Howard Hughes Medical Institute (HHMI) Faculty Scholar
2016	President's Award for Distinguished Teaching (Princeton University)
2016	American Institute for Medical & Biological Engineering (AIMBE) College of Fellows
2014	Thiele Lectureship, University of Notre Dame
2014	Princeton School of Engineering and Applied Science (SEAS) Distinguished Teacher Award
2013	E. Llewellyn-Thomas Distinguished Lecture, University of Toronto
2012	Camille Dreyfus Teacher-Scholar Award
2011	Allan P. Colburn Award, American Institute of Chemical Engineers (AIChE)
2010	Technology Review TR35 Young Innovator
2010	Alfred P. Sloan Research Fellow in Molecular Biology
2009, 2010	Princeton Engineering Commendation for Outstanding Teaching
2009	E. Lawrence Keyes, Jr./Emerson Electric Co. Faculty Advancement Award
2008	David & Lucile Packard Fellow
2007	Burroughs Wellcome Fund Career Award at the Scientific Interface
2007	Lawrence Berkeley National Laboratory Outstanding Performance Award
2004-2007	DOD Breast Cancer Research Program Postdoctoral Fellowship
2004	NIH National Research Service Award Postdoctoral Fellowship (declined)
2003	Keystone Symposia Student Scholarship, Signaling via cell-cell interactions
1999-2003	Whitaker Foundation Graduate Fellowship
1999	National Science Foundation Graduate Fellowship (declined)
1998	Phi Beta Kappa Graduate
1998	MIT Biotechnology Process Engineering Center Research Grant
1997	Tau Beta Pi Engineering Honor Society
1997	James E. Cunningham Memorial Fellowship
1997	Amoco Foundation Scholarship
1995-1998	Edward Abdun-Nur Memorial Scholarship
1994	Colorado School of Mines Engineers' Days Award

## Membership in Professional Societies

American Association for the Advancement of Science (AAAS)  
American Association for Cancer Research (AACR)  
American Institute of Chemical Engineers (AIChE; Senior Member)  
American Institute for Medical & Biological Engineering (AIMBE; College of Fellows)  
American Society for Cell Biology (ASCB)  
American Society for Matrix Biology (ASMB)

American Physical Society (APS)  
Biomedical Engineering Society (BMES)  
Biophysical Society (BPS)  
New York Academy of Sciences (NYAS)  
Society for Biological Engineers (SBE)  
Society for Developmental Biology (SDB)  
The EMT International Association (TEMTIA)

### **Editorial Services to Scholarly Publications**

Co-editor (with Lance Davidson), *Current Topics in Developmental Biology*, themed issue on mechanics in vertebrate development (2024)

Editorial board, *Current Biology* (2022-present)

F1000Prime Faculty member, Biological Physics of Cell Populations & Multicellular Systems (2020-present)

Editor, *Tissue Morphogenesis volume II, Methods in Molecular Biology* series (2022)

Co-editor (with Niamh Nowlan and Philippa Francis-West), *Philosophical Transactions of the Royal Society*, themed issue on tissue mechanics (2018)

Section editor (with Franck Perez), *Current Opinion in Cell Biology*, section on “Cellular Architecture” (2018)

Editorial board, “Systems Biophysics”, *Biophysical Journal* (2016-present)

Editorial advisory board, *Journal of Cell Science* (2016-present)

Guest editor, *Seminars in Cell and Developmental Biology*, themed issue on tissue morphodynamics (2016)

Co-editor (with Jeremy Green and Yanlan Mao), *Philosophical Transactions of the Royal Society*, themed issue on morphogenesis (2016)

Review editorial board, *Frontiers in Biomechanics* (2013-present)

Guest editor (with Ulrich Schwarz and Pascal Silberzan), *Soft Matter*, themed issue on patterning for biology (2014)

Editor, *Tissue Morphogenesis, Methods in Molecular Biology* series (2014)

Guest editor, *Organogenesis*, special issue on mechanics in development (2012)

*Referee for the following journals (since 2007):* Acta Biomaterialia; Advanced Materials; Biomacromolecules; Biomaterials; Biophysical Journal; Biomechanics and Modeling in Mechanobiology; BioTechniques; BMC Developmental Biology; Breast Cancer Research; Cancer Research; Cell; Cell Biochemistry & Biophysics; Cell Reports; Cellular and Molecular Bioengineering; Development; Developmental Cell; Developmental Dynamics; eLife; EMBO Journal; Encyclopedia of Life Sciences; FASEB Journal; In Vitro Cellular and Developmental Biology; Integrative Biology; Journal of Biological Chemistry; Journal of Cell Biology; Journal of Cell Science; Journal of Clinical Investigation; Journal of Pathology; Journal of Theoretical Biology; Journal of Visualized Experiments; Lab on a Chip; Laboratory Investigation; Langmuir; Matrix Biology; Mechanisms of Development; Molecular Biology of the Cell; Nano Letters;

Nanomedicine; Nature; Nature Cell Biology; Nature Communications; Nature Materials; Nature Methods; Nature Reviews Cancer; Nature Reviews Molecular Cell Biology; Organogenesis; Physical Biology; PLOS Biology; PLOS Computational Biology; PLOS ONE; Proceedings of the American Thoracic Society; Proceedings of the National Academy of Sciences; Proceedings of the Royal Academy Interface; Science; Scientific Reports; Soft Matter; Tissue Engineering; Trends in Biotechnology; WIREs Systems Biology & Medicine

## Professional Activities

*Ad hoc referee for proposals submitted to:* National Institutes of Health (NIH: NIBIB Special Emphasis Panels; NCI Tumor Progression & Metastasis Study Section; NHLBI Basic Research in Calcific Aortic Valve Disease Study Section; CSR Biophysical and Biomechanical Aspects of Embryonic Development Study Section; NCI Cancer Biology-2 Study Section; NCI Provocative Questions Study Section; Intercell; CSR Cell Biology Integrated Review Group); National Science Foundation (NSF); Netherlands Organisation for Scientific Research; Human Frontier Science Program (Research Grant Awards); Howard Hughes Medical Institute (International Predoctoral Fellowships); American Heart Association (AHA); Agency Nationale de la Recherche (ANR); Chan Zuckerberg Human Cell Atlas Initiative

2023 Packard Fellowships Advisory Panel

Co-organizer (with Andrej Kosmrlj and Jared Toettcher), PCTS workshop on biophysics of organoids, Princeton, NJ

2022 Packard Fellowships Advisory Panel

HHMI Janelia 4D Cellular Physiology (4DCP) Advisory board

IQ Biology Advisory Board, University of Colorado, Boulder

BMES Mid-Career Award Selection Committee

2021 Ad Hoc review committee, Board of Scientific Counselors (BSC), National Institute of Dental and Craniofacial Research (NIDCR), NIH

Session chair, “Emergence, Cell Population Behavior, and Governance amidst Uncertainty”, M-CELS virtual meeting

HHMI Janelia 4D Cellular Physiology (4DCP) Advisory board

2020 Co-organizer (with Ned Wingreen and Daniel Cohen), PCTS workshop on collective cell migration, Princeton, NJ

Co-chair, Cancer Technologies track, Biomedical Engineering Society Annual meeting (virtual)

Specialty review subcommittee, Cell and Tissue Biomechanics, AIMBE College of Fellows

2019 Co-organizer (with Francois Nedelec, Ulrich Schwarz, Xavier Trepast, and Kinnert Keren), Symposium on “Physics of Cells and Tissues – Modelling meets Experiment”, EMBO/EMBL, Heidelberg, Germany

Organizing committee (with Honggang Cui and Denis Wirtz), SBE’s 8th International Conference on Bioengineering and Nanotechnology (ICBN), Baltimore, MD

- Specialty review subcommittee, Cell and Tissue Biomechanics, AIMBE College of Fellows
- 2018 Co-organizer (with Orion Weiner, Darren Gilmour, and Takashi Hiiragi), Symposium on “Tissue self-organization: challenging the systems”, EMBO/EMBL, Heidelberg, Germany
- Co-organizer (with Andrej Kosmrlj, Stas Shvartsman, and Lisa Manning), PCTS workshop on mechanics in morphogenesis, Princeton, NJ
- Scientific program committee, International Conference for Systems Biology (ICSB), Lyon, France
- International Organizing Committee (with Roger Kamm, Bob Nerem, and Rashid Bashir), 2<sup>nd</sup> Workshop on Integrated Cellular Systems
- ASCB Taskforce on Organoids (chaired by Ruth Lehman)
- Scientific Advisory Board, Epithelial Dynamics Across Scales (DARCY) consortium  
Scientific Advisory Board, NCCR Logic of Life initiative (Switzerland)
- External review committee (with John Ekerdt), Department of Chemical & Biomolecular Engineering, University of Colorado, Boulder
- Specialty review subcommittee, Cell and Tissue Biomechanics, AIMBE College of Fellows
- 2017 Co-chair (with Niamh Nowlan and Philippa Francis-West), Royal Scientific Meeting on “Mechanics of Development”, Chicheley Hall, UK
- Standing Member, Mentored Transition to Independence (MTI) study section, NHLBI
- 2016 International Organizing Committee (with Roger Kamm, Bob Nerem, and Rashid Bashir), Workshop on Integrated Cellular Systems
- Co-theme leader, Organs, Morphogenesis, and Development track, Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C)
- Faculty Committee Member, Student Affairs Committee, Biomedical Engineering Society (BMES)
- Standing Member, Mentored Transition to Independence (MTI) study section, NHLBI
- 2015 Co-organizer (with Becky Burdine and Danelle Devenport), Mid-Atlantic Society for Developmental Biology (SDB) meeting
- Co-organizer (with Stas Shvartsman), inaugural Bioengineering Day symposium
- Co-theme leader, Development and Morphogenesis track, Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C)
- Co-chair, Multicellular Interactions, Tissues, and Development minisymposium, American Society for Cell Biology (ASCB) Annual Meeting
- Faculty Committee Member, Student Affairs Committee, Biomedical Engineering Society (BMES)

Standing Member, Mentored Transition to Independence (MTI) study section, NHLBI

External Member, Advisory Board, “Interdisciplinary training in mechanobiology from nm to cm” T32 training program, Washington University in Saint Louis

2014 Session chair, Integrating ECM and Cell Biomechanics, American Society for Matrix Biology conference

Session co-chair, Mechanics of Tissue and Organ Development III: Multiscale Measurements and Modeling, World Congress of Biomechanics

Faculty Committee Member, Student Affairs Committee, Biomedical Engineering Society (BMES)

Reviewer, Biomedical Engineering Society (BMES) Annual Meeting

Reviewer, faculty committee for Innovation proposals

Member, External Advisory Committee, Mathematical, Computational and Systems Biology graduate program, University of California, Irvine

Standing Member, Mentored Transition to Independence (MTI) study section, NHLBI

2013 Advisory committee member, Lorentz workshop on “Mechanobiology of Somitogenesis”, Leiden, The Netherlands

Faculty Committee Member, Student Affairs Committee, Biomedical Engineering Society (BMES)

2012 Co-chair, Symposium on “Bioengineering of regenerative medicine”, Experimental Biology Annual Meeting

Invited participant, “Biomaterials Workshop *Important Areas for Future Investment*”, National Science Foundation

2011 Co-chair, Minisymposium on “Bioengineering and mechanobiology”, American Society for Cell Biology (ASCB) Annual Meeting

Featured Guest in Episode 90 of “Futures in Biotech with Marc Pelletier” on TWiT TV (<http://twit.tv/show/futures-in-biotech/90>)

2010 Co-chair, Plenary session on “Tissue engineering microenvironment”, American Institute of Chemical Engineers (AIChE) Annual Meeting

Area chair, Plenary session on “Cell systems and mammalian tissue morphogenesis”, Bioinformatics and Bioengineering Conference

Invited participant, “Gradients and flow of soluble factors in the tumor microenvironment workshop”, National Cancer Institute

Invited participant, “Tissue engineering and regenerative medicine: the next 20 years”, workshop at University of Sydney, Australia

Reviewer, Biomedical Engineering Society (BMES) Annual Meeting

- Reviewer, Annual Biomedical Research Conference for Minority Students
- 2009 Chair, plenary session on “Disease mechanisms”, American Institute of Chemical Engineers (AIChE) Annual Meeting
- Reviewer, Princeton Undergraduate Research Symposium (PURS)
- Reviewer, Essig-Enright and Pyne Funds for Innovation in Engineering and Neuroscience Research
- 2008 Panel member, Princeton Program in Integrative Information, Computer, and Application Sciences (PICASso) mini-course career workshop
- Reviewer, Princeton Undergraduate Research Symposium (PURS)
- Reviewer, Annual Biomedical Research Conference for Minority Students
- Reviewer, Santa Cruz Developmental Biology Meeting
- 2007 Co-chair, poster session for Engineering Cell Biology II Conference, MIT

### **Patent Applications**

*Non-catalytic domain targets in matrix metalloproteinase proteins for cancer therapies*, U.S. Patent 20,150,079,071, 2015. M.J. Bissell, C.M. Nelson, H. Mori, A.L. Correia, E. Chen.

*MMP14 hemopexin domain directs cell migration and invasion*, Provisional U.S. Patent Application 61/732,231 (filed 11/30/2012) C.M. Nelson, H. Mori, M.J. Bissell.

*Microfluidic platform for the dynamic regulation of mechanical forces on embryonic organs*, Provisional U.S. Patent Application 61/888,249 (filed 10/8/2013) J.P. Gleghorn, C.M. Nelson.

*Identification of RAC1B as a marker and mediator of MMP-induced malignancy*, U.S. Patent Application 20090191543 (in process) D.C. Radisky, C.M. Nelson, M.J. Bissell.

## List of Publications

(\* , \*\* , \*\*\* , and † denote those with  $\geq 25$ , 50, 100, and 250 ISI citations, respectively)  
[ISI total citations = 12281; Average citations per paper = 83; H-index = 51]  
[Google scholar total citations = 18601; i10-index = 112; H-index = 57]

### Submitted

159. Seibel A.J., Kelly O.M., Dance Y.W., **Nelson C.M.**, Tien J. Role of lymphatic endothelium in vascular escape of engineered human breast microtumors, *Cell. Mol. Bioeng.*, in review (submitted 6/17/2022).
158. Goodwin K., Lemma B., Boukind A., **Nelson C.M.** Plasticity in airway smooth muscle differentiation during mouse lung development, *Dev Cell*, in review (submitted 5/27/2022).
157. Siedlik M.J., Farahani P.E., Pang M.-F., Sundaresan S., **Nelson C.M.** 3D nuclear rotations prior to mitosis in epithelial tissues, *Biophys. J.*, in revision.

### 2022

156. Goodwin K., Jaslove J.M., Tao H., Zhu M., Hopyan S., **Nelson C.M.** Patterning the embryonic pulmonary mesenchyme, *iScience*, in press (2022). *bioRxiv*, 2020, DOI: <https://doi.org/10.1101/2020.08.20.259101>
155. **Nelson C.M.** Mechanical control of cell differentiation: insights from the early embryo, *Annu. Rev. Biomed. Eng.*, in press (2022).
154. Jaslove J.M., Goodwin K., Sundarakrishnan A., Spurlin J.W. III, Mao S., Kosmrlj A., **Nelson C.M.** Transmural pressure signals through retinoic acid to regulate lung branching, *Development*, 149: dev199726 (2022).  
**Selected commentary on this manuscript:** chosen by editorial board for *Research Highlight*
153. Farahani P.E., **Nelson C.M.** Revealing epithelial morphogenetic mechanisms through live imaging, *Curr. Opin. Genet. Dev.*, 72: 61-68 (2022).
152. Leggett S.E., **Nelson C.M.** Tissue architecture in cancer initiation and progression. In *Biomarkers of the Tumor Microenvironment: Basic Studies and Practical Applications*, (eds. Akslen R.A. and Watnick R.S.), in press (2022).
151. Brennan M.C., **Nelson C.M.** Cell patterning to mimic tumor anatomy. In *Biomaterial based approaches to study the tumor microenvironment*, (eds. Winter J.O. and Rao S.), in press (2022).
150. Nerger B.A., **Nelson C.M.** Bioprinting cell-laden hydrogels for studies of epithelial tissue morphogenesis. In *Tissue Morphogenesis (Methods on Molecular Biology)*, (ed. Nelson C.M.), in press (2022).
149. Dance Y.W., Meshulam T., Seibel A.J., Obenreder M.C., Layne M.D., **Nelson C.M.**, Tien J. Adipose stroma accelerates the invasion and escape of human breast cancer cells from an engineered microtumor, *Cell. Mol. Bioeng.*, 15: 15-29 (2022).  
*featured on cover of journal issue*

### 2021



148. Farahani P.E., Lemke S.B., Dine E., Uribe G., Toettcher J.E., **Nelson C.M.** Substratum stiffness regulates Erk signaling dynamics through receptor-level control, *Cell Reports*, 37: 110181 (2021).
147. Palmer M.A., Nerger B.A., Goodwin K., Sudhakar A., Lemke S.B., Ravindran P., Toettcher J.E., Kosmrlj A., **Nelson C.M.** Stress ball morphogenesis: how the lizard builds its lung, *Science Adv.*, 7: eabk0161 (2021).
146. Stanton A.E., Goodwin K., Sundarakrishnan A., Jaslove J.M., Gleghorn J.P., Pavlovich A.L., **Nelson C.M.** Negative transpulmonary pressure suppresses airway morphogenesis by inhibiting Fgf10, *Frontiers in Cell Dev. Biol.*, 9: 725785 (2021).
145. Lemke S.B., **Nelson C.M.** Dynamic changes in epithelial cell packing during tissue morphogenesis, *Curr. Biol.*, 31: R1098-R1110 (2021).
144. Silver B.B., Zhang S.X., Rabie E.M., **Nelson C.M.** Substratum stiffness tunes membrane voltage in mammary epithelial cells, *J. Cell Sci.*, 134: jcs256313 (2021).
143. **Nelson C.M.** Mechanobiology: the mechanics of crypt morphogenesis, *Nat. Cell Biol.*, 23: 678-679 (2021).
142. Rabie E.M., Zhang S.X., Dunn C.E., **Nelson C.M.** Substratum stiffness signals through integrin-linked kinase and  $\beta$ 1-integrin to regulate midbody proteins and abscission during EMT, *Mol. Biol. Cell*, 32: 1664-1676 (2021).
141. Nerger B.A., Jaslove J.M., Elashal H., Mao S., Kosmrlj A., Link A.J., **Nelson C.M.** Local accumulation of extracellular matrix regulates global morphogenetic patterning in the developing mammary gland, *Curr. Biol.*, 31: 1903-1917 (2021).
140. Leggett S.E., **Nelson C.M.** Where is the EMT? Computer vision at the frontline of precision medicine, *Trends Cancer*, 7: 272 (2021).
139. Rabie E., Zhang S.X., Kourouklis A., Kilinc A.N., Simi A.K., Radisky D.C., Tien J., **Nelson C.M.** Matrix degradation and proliferation are coupled to promote invasion and escape from an engineered human breast microtumor, *Integr. Biol.*, 13: 17-29 (2021).  
*featured on cover of journal issue*
138. Kilinc A.N., Han S., Barrett L.A., Anandasivam N., **Nelson C.M.** Integrin-linked kinase tunes cell-cell and cell-matrix adhesions to regulate the switch between apoptosis and EMT downstream of TGF $\beta$ 1, *Mol. Biol. Cell*, 32: 402-412 (2021).
137. Goodwin K., **Nelson C.M.** Mechanics of development, *Dev. Cell*, 20: 30934-5 (2021) doi: 10.1016/j.devcel.2020.11.025.
136. Goodwin K., **Nelson C.M.** Uncovering cellular networks in branching morphogenesis using single-cell transcriptomics, *Curr. Topics Dev. Biol.*, 143: 239-280 (2021).  
<https://doi.org/10.1016/bs.ctdb.2020.09.004>
135. Tien J., Dance Y.W., Ghani U., Siebel A.J., **Nelson C.M.** Interstitial hypertension suppresses escape of human breast tumor cells via convection of interstitial fluid, *Cell. Mol. Bioeng.*, 14: 147-159 (2021).  
<https://doi.org/10.1007/s12195-020-00661-w>  
*featured on cover of journal issue*

## **2020**

134. Tien J., Ghani U., Dance Y.W., Seibel A.J., Karakan M.C., Ekinici K.L., **Nelson C.M.** Matrix pore size governs escape of human breast cancer cells from a microtumor to an empty cavity, *iScience*, 23: 101673 (2020).
133. Anlas A.A., **Nelson C.M.** Living under strain: how epithelia protect their genomes from repeated stretching, *Biochemistry*, 4: 2761-2763 (2020).
132. Anlas A.A., **Nelson C.M.** Soft microenvironments induce chemoresistance by increasing autophagy downstream of integrin-linked kinase, *Cancer Res.*, 80: 4103-4113 (2020).
131. Silver B.B., Wolf A.E., Lee J., Pang M.-F., **Nelson C.M.** Epithelial tissue geometry directs emergence of bioelectric field and pattern of proliferation, *Mol. Biol. Cell*, 31: 1691-1702 (2020).  
*featured on cover of journal issue*
130. Palmer M.A., **Nelson C.M.** Fusion of airways during avian lung development constitutes a novel mechanism for the formation of continuous lumina in multicellular epithelia, *Dev. Dyn.*, 249: 1318-1333 (2020).
129. Nerger B.A., Brun P.-T., **Nelson C.M.** Marangoni flows drive the alignment of fibrillar cell-laden hydrogels, *Science Adv.*, 6: eazz7748 (2020).
128. Goodwin K., **Nelson C.M.** Branching morphogenesis, *Development*, 147: dev184499 (2020).
127. Nerger B.A., **Nelson C.M.** Engineered extracellular matrices: emerging strategies for decoupling structural and molecular signals that regulate epithelial branching morphogenesis, *Curr. Opin. Biomed. Eng.*, 13: 103-112 (2020).

## **2019**

126. Goodwin K., Mao S., Guyomar T., Miller E., Radisky D.C., Kosmrlj A., **Nelson C.M.** Smooth muscle differentiation shapes domain branches during mouse lung development, *Development*, 146: dev182188 (2019).  
**Selected commentary on this manuscript:** chosen by editorial board for *Research Highlight*
125. Spurlin J.W., Siedlik M.J., Nerger B.A., Pang M.F., Jayaraman S., Zhang R., **Nelson C.M.** Mesenchymal proteases and tissue fluidity remodel the extracellular matrix during airway epithelial branching in the embryonic avian lung, *Development*, 146: dev175257 (2019).
124. Nerger B.A., Brun P.-T., **Nelson C.M.** Microextrusion printing cell-laden networks of type I collagen with patterned anisotropy and geometry, *Soft Matter*, 15: 5728-5738 (2019). *bioRxiv*, 2019, DOI: <https://doi.org/10.1101/509265>
123. Lehmann R., Lee C.M., Shugart E.C., Benedetti M., Charo R.A., Gartner Z., Hogan B., Knoblich J., **Nelson C.M.**, Wilson K.M. Human organoids: A new dimension in cell biology, *Mol. Biol. Cell*, 30: 1129-1137 (2019).
122. Nerger B.A., **Nelson C.M.** 3D culture models for studying branching morphogenesis in the mammary gland and mammalian lung, *Biomaterials*, 198: 135-145 (2019).

## **2018**

121. Goodwin K., **Nelson C.M.** Myoepithelial crowd control of cancer cells, *J. Cell Biol.*, 217: 3319-3321 (2018).
120. **Nelson C.M.** Epithelial packing: Even the best of friends must part, *Curr. Biol.*, 28: R1190-R1211 (2018).
119. Jaslove J.M., **Nelson C.M.** Smooth muscle: a stiff sculptor of epithelial shapes, *Phil. Trans. R. Soc. B*, 373: 20170318 (2018).
118. Anlas A.A., **Nelson C.M.** Tissue mechanics regulates form, function, and dysfunction, *Curr. Opin. Cell Biol.*, 54: 98-105 (2018).
117. Kourouklis A.P., **Nelson C.M.** Modeling branching morphogenesis using materials with programmable mechanical instabilities, *Curr. Opin. Biomed. Eng.*, 6: 66-73 (2018).
116. Palmer M.A., **Nelson C.M.** Epithelial tube fusion as a mechanism for the development of complex lumen-containing organs, *Trends Dev. Biol.*, 10: 57-69 (2018).
115. Han S., Pang M.F., **Nelson C.M.** Substratum stiffness tunes proliferation downstream of Wnt3a in part by regulating integrin-linked kinase and frizzled-1, *J. Cell Sci.*, 131, jcs210476 (2018).  
**Selected commentary on this manuscript:** chosen by editorial board for *Research Highlights*; featured in *First person* section of journal
114. Simi A.K., Anlas A.A., Stallings-Mann M., Zhang S., Hsia T., Cichon M., Radisky D.C., **Nelson C.M.** A soft microenvironment protects from failure of midbody abscission and multinucleation downstream of the EMT-promoting transcription factor Snail, *Cancer Res.*, 78: 2277-2289 (2018).  
*featured on cover of journal issue*
113. Silver B.B., **Nelson C.M.** The bioelectric code: reprogramming cancer and aging from the interface of mechanical and chemical microenvironments, *Frontiers Cell Dev. Biol.*, 6: 21 (2018).
112. Simi A.K., Pang M.F., **Nelson C.M.** Extracellular matrix exists in a feedback loop that drives tumor progression, in *Biomechanics in Oncology (Advances in Experimental Medicine and Biology)*, (eds. Dong C., Zahir N., and Konstantopoulos K.), 57-67 (2018).

## **2017**

- 111\*. **Nelson C.M.**, Gleghorn J.P., Pang M.F., Jaslove J., Goodwin K., Varner V.D., Miller E., Radisky D.C., Stone H.A. Microfluidic chest cavities reveal that transmural pressure controls the rate of lung development, *Development*, 144: 4328-4335 (2017).
110. Piotrowski-Daspit A.S., Nerger B.A., Wolf A.E., Sundaresan S., **Nelson C.M.** Dynamics of tissue-induced alignment of fibrous extracellular matrix, *Biophys. J.*, 113: 702-713 (2017).  
*featured on cover of journal issue*
109. Siedlik M.J., Manivannan S., Kevrekidis I.G., **Nelson C.M.** Cell division induces and switches coherent angular motion within bounded cellular collectives, *Biophys. J.*, 112: 2419-2427 (2017).
108. Goodwin K., **Nelson C.M.** Generating tissue topology through remodeling of cell-cell adhesions, *Exp. Cell Res.*, 358: 45-51 (2017).

107. **Nelson C.M.** From static to animated: measuring mechanical forces in tissues, *J. Cell Biol.*, 216: 29- 30 (2017).
106. Nerger B.A., Siedlik M.J., **Nelson C.M.** Microfabricated tissues for investigating traction forces involved in cell migration and morphogenesis, *Cell. Mol. Life Sci.*, 74: 1819-1834 (2017).
105. Spurlin J.W., **Nelson C.M.** Building branched tissue structures: From single cell guidance to collective construction, *Phil. Trans. R. Soc. B*, 372: 20150527 (2017).
104. Piotrowski A.S., Simi A.K., Pang M.F., Tien J., **Nelson C.M.** A three-dimensional culture model to study how fluid pressure and flow affect the behavior of aggregates of epithelial cells. In *Mammary Gland Development (Methods in Molecular Biology)*, (eds. Martin F. and Stein T.), 1501: 245-257 (2017).
103. Varner V.D., **Nelson C.M.** Computational models of airway branching morphogenesis, *Semin. Cell Dev. Biol.*, 67: 170-176 (2017).

## **2016**

- 102\*\* . Pang M.F., Siedlik M.J., Han S., Stallings-Mann M., Radisky D.C., **Nelson C.M.** Tissue stiffness and hypoxia modulate the integrin-linked kinase ILK to control breast cancer stem-like cells, *Cancer Res.*, 76: 1-11 (2016).  
**Selected commentary on this manuscript:** Highlighted in *India Times; Nigerian Pilot*
101. Tzou D., Spurlin J.W., Pavlovich A.L., Stewart C.R., Gleghorn J.P., **Nelson C.M.** Morphogenesis and morphometric scaling of lung airway development follows phylogeny in chicken, quail, and duck embryos, *EvoDevo*, 7: 12 (2016).
100. **Nelson C.M.** Collective migration in tissues, *Mol. Biol. Cell*, 27: 877 (2016).
- 99\*\* . Piotrowski-Daspit A.S., Tien J., **Nelson C.M.** Interstitial fluid pressure regulates collective invasion in engineered human breast tumors via Snail, vimentin, and E-cadherin, *Integr. Biol.*, 8: 319-331 (2016).
98. Navis A., **Nelson C.M.** Pulling together: Tissue-generated forces that drive lumen morphogenesis, *Semin. Cell Dev. Biol.*, 55: 139-147 (2016).
97. Piotrowski-Daspit A.S., **Nelson C.M.** Engineering three-dimensional epithelial tissues embedded within extracellular matrix, *JoVE*, 113: e54283 (2016).
- 96\* . **Nelson C.M.** On buckling morphogenesis, *J. Biomech. Eng.*, 138: 021005 (2016).
95. Siedlik M.J., Varner V.D., **Nelson C.M.** Pushing, pulling, and squeezing our way to understanding mechanotransduction, *Methods*, 94: 4-12 (2016).
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## **Seminars and Papers Presented**

### ***I. Invited seminars and lectures***

#### **Scheduled**

201. Stress ball morphogenesis: developmental lessons from reptiles. Synthetic embryology workshop, Casa Matematica Oaxaca, Mexico, TBD, 2024.
200. Department of Chemical and Biomolecular Engineering seminar, Case Western Reserve University, Cleveland, OH, TBD.
199. Mechanics and tumor dormancy. Massachusetts General Hospital (MGH), Center for Cancer Research seminar, TBD.
198. FASEB Summer Research Conference on Gastrointestinal Epithelial Biology, Steamboat Springs, CO, TBD, 2023.
197. Inaugural Boulder Frontiers Symposium, Boulder, CO, TBD.
196. BBS-CBD-GGD seminar series, University of California at Berkeley, Berkeley, CA, TBD.
195. Building pulmonary trees: insights from the embryo. Keystone Symposia on Heart Failure: All Cells Considered / Pulmonary Hypertension: State of the Art and Therapeutic Opportunities. Santa Fe, NM, June 25-29, 2023.
194. Matrix remodeling during lung development. Fibronectin, integrins, and related molecules Gordon Research Conference, Ventura, CA, February 5-10, 2023.
193. Department of Chemical & Biomolecular Engineering seminar series, Johns Hopkins University, Baltimore, MD, October 27, 2022.
192. The coupling between matrix dynamics, cell fate, and tissue form. Signal Transduction by Engineered Extracellular Matrices (STEEM) Gordon Conference, Southern New Hampshire University, Manchester, NH, July 24-29, 2022.
191. Tissue engineering strategies inspired by evolution. Pan3DP Symposium on Engineering Multicellular Tissues, London, UK, July 19-20, 2022.
190. Mechanobiology and lung development. “Biomechanics to Understand Differences from Development to Adulthood” session, “Cardiorespiratory 2: Clinical Applications” Track, World Congress on Biomechanics, Taipei, Taiwan, July 10-14, 2022.

189. What can transcriptomics teach us about mechanobiology? Plenary speaker, World Congress on Biomechanics, Taipei, Taiwan, July 10-14, 2022.

## **2022**

188. What sculpts tissue form? Journeys in morphogenesis. Marine Biological Laboratory Physiology Course, Woods Hole, MA, June 29, 2022.

187. How to fold a tube: lessons from different critters. Southeast Regional Society for Developmental Biology (SDB) Meeting, Chapel Hill, NC, June 2, 2022.

186. Whence comes form? Journeys in morphogenesis. Mina J. Bissell Symposium, Weill Cornell Medical College, Cornell University, May 13, 2022.

185. How the lung folds itself: biophysical insights from evolution. Experimental Biology Annual Meeting, Philadelphia, PA, April 5, 2022.

184. Tissue engineering strategies inspired by evolution. Terasaki Institute seminar series, March 30, 2022.

183. Mechanical forces and lung development. Physiology and Biomedical Engineering Seminar Series, Mayo Clinic, Rochester, MN, February 25, 2022.

182. Mimicking the microenvironment using microfluidic engineered tumor models. Cancer Metabolism and Growth Research Meeting, Cancer Institute of New Jersey (CINJ), February 16, 2022.

181. Mechanical forces and morphogenesis of the airway epithelium. Penn-CHOP Lung Biology Seminar Series, January 13, 2022.

180. The mechanical microenvironment and cancer cell phenotype. Rutgers Cancer Institute / Princeton Annual Research Symposium, January 11, 2022.

## **2021**

179. How to build a lung: biophysical insights from evolution. NHLBI workshop on “How can we use bioengineering approaches to (re)build a lung?” December 16-17, 2021.

178. Mechanical Microenvironment, Cytokinesis Failure, and Multinucleation. Subgroup on “Genetic Changes: Physical Causes & Consequences”, Cell Bio Virtual 2021, December 6, 2021.

177. Evolutionary insights into tissue morphogenesis and tissue engineering. Biotech seminar series, University of Trento, November 23, 2021.

176. Highways or tunnels: Pathfinding during tissue development. Phase behavior in soft living matter workshop, Princeton, NJ, November 19, 2021.

175. Mechanical forces and epithelial morphogenesis. ‘Integrative developmental biology – build, measure, model’ workshop, Lorentz Center, Leiden, The Netherlands, November 10, 2021.

174. Forces and flows during vascular morphogenesis in the developing lung. NAVBO Workshop on Vascular Matrix Biology and Bioengineering, Pacific Grove, CA, October 26, 2021.

173. How fluid pressure regulates branching morphogenesis. Cell and Tissue Hydraulics Minisymposium, Mechanobiology Institute, National University of Singapore, October 21, 2021.
174. Towards a biophysical understanding of biodiversity. 4D Cellular Physiology Workshop on the Evolution of Multicellularity, Janelia Farm, October 20, 2021.
173. Mechanical forces and the mammary gland. Physical Sciences – Oncology Development Seminar Series, University of Pennsylvania, October 18, 2021.
172. Biophysics of branching. Quantitative Biosciences Munich Virtual Symposium, October 14, 2021.
171. Forces, fate, and form: how mechanics couples differentiation to morphogenesis. HHMI Science Meeting on Cell and Developmental Biology, September 28-29, 2021.
170. What can evolution teach us about engineering tissues? Next Generation Tissue Engineering Symposium, September 22-23, 2021.
169. Mechanical forces, septins, and multinucleation. EMBO workshop on the Molecular and Cell Biology of Septins, Berlin, Germany, September 12-15, 2021.
168. Multinucleation and the mechanical microenvironment. Mechano-Genomics Seminar Series, ETH Zurich, Switzerland, July 15, 2021.
167. Many ways to build a tree: lessons in branching morphogenesis. Symmetries in Morphogenesis Seminar Series, Kavli Institute for Theoretical Physics (KITP), UC Santa Barbara, July 14, 2021.
166. The biophysics of tissue folding. Physics & Biological Systems Conference (PhysBio2021), Ecole Polytechnique, Paris, France, June 23, 2021.
165. Mechanical forces in the developing lung. Quantitative Biology Program (QBP) Virtual Symposium on Multiscale Force Sensing and Transduction in Biology, University of Warwick, Warwick, UK, June 18, 2021.
164. Mechanical forces and epithelial folding. Plenary speaker, Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C), Virtual Meeting, June 14, 2021.
163. Physical forces and branching morphogenesis. UCL Institute for the Physics of Living Systems (IPLS) Seminar Series, June 9, 2021.
162. Uncoupling tissue morphogenesis and differentiation. Distinguished speaker, Stem Cells in Regenerative Medicine (SCiRM) 5th Stem Cell Virtual Symposium, University at Buffalo, State University of New York, May 21, 2021.
161. The mechanics of folding tubes into lungs. Interdisciplinary Center for Quantitative Modeling in Biology (ICQMB) Seminar Series, University of California, Riverside, April 20, 2021.
160. Developmental bioengineering: implementing evolution's strategies to build tissues. Tissue Talks seminar series, Columbia University, April 14, 2021.
159. Mechanics and migration during epithelial morphogenesis. Cell Migration Seminar series, Harvard University, March 30, 2021.

- 158. Lessons in tissue engineering from evolution. Distinguished Lecture in Biomedical Engineering, Worcester Polytechnic Institute, March 15, 2021.
- 157. How to build an epithelial tree. Mechanobiology subgroup symposium, Biophysical Society Annual Meeting, February 22, 2021.
- 156. Lessons from evolution: how to fold a tube into a lung. Cell and Developmental Biology seminar series, Max Planck Institute for Biophysical Chemistry, Gottingen, Germany, February 11, 2021.
- 155. Mechanical forces in epithelial morphogenesis. Congress of the Brazilian Society for Cell Biology, Sao Paulo, Brazil, January 28, 2021.
- 154. Mechanics, multinucleation, and EMT. AACR Virtual Special Conference on the Evolving Tumor Microenvironment during Tumor Progression, January 12, 2021.

## **2020**

- 153. Matrix mechanics and dynamics during branching morphogenesis. Special Interest Subgroup on Cell-Matrix and Cell-Cell Interactions in 3D Environments, American Society for Cell Biology (ASCB) | EMBO Cell Bio Annual Meeting, December 11, 2020.
- 152. Engineering epithelial development. Symposium on Regenerative Engineering and Synthetic Biology, Materials Research Society (MRS) Fall Meeting, Boston, MA, December 3, 2020.
- 151. Tissue bioengineering: inspiration from evolution. Bioengineering symposium, Princeton University, November 20, 2020.
- 150. 3D-printed models of organ development. Organotypic models of tissue development and dysregulation session, AIChE Annual Meeting, San Francisco, CA, November 19, 2020.
- 149. Lessons from evolution: how to build a lung. Keynote talk, Cell biology, development, and stem cells program virtual retreat, University of Colorado, Anschutz Medical Campus, October 16, 2020.
- 148. Engineering the tumor microenvironment. Physical Sciences Oncology session, Biomedical Engineering Society (BMES) Virtual Annual Meeting, October 15, 2020.
- 147. How to fold a tube into a lung. Cell and Developmental Biology Subgroup, Society of Mathematical Biology (SMB) Virtual Meeting, August 19, 2020.
- 146. Differentiation and morphogenesis of the pulmonary mesenchyme. American Thoracic Society (ATS) 2020 International Conference Virtual Session, August 5, 2020.
- 145. Building organs: insights from evolution. Bioengineering Department seminar, University of Washington, April 9, 2020.
- 144. Mechanical regulation of airway morphogenesis. Distinguished lecture, Cell and Developmental Biology seminar series, National Heart, Lung and Blood Institute, NIH, March 18, 2020.
- 143. Tissue crosstalk during collective migration in developing organs. Physics of collective cell migration, PCTS workshop, January 15, 2020.

## **2019**

142. Mechanical regulation of epithelial branching morphogenesis. Subgroup on epithelia and their stem cells, American Society for Cell Biology (ASCB)/EMBO Meeting, Washington DC, December 7, 2019.
141. Mechanics, morphogenesis, and tissue origami, Mid-Career Award Lecture, Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, October 19, 2019.
140. Biomechanics of branching morphogenesis. Department of Cell, Developmental, and Regenerative Biology seminar series, Icahn School of Medicine at Mount Sinai, New York, NY, October 17, 2019.
139. Biomechanics of epithelial morphogenesis. Developmental & Regenerative Biology seminar series, Northwestern University, Chicago, IL, October 11, 2019.
138. Lessons on invasion and escape by engineered tumors. Cancer Pharmacology Program Meeting, Rutgers Cancer Institute of New Jersey, August 14, 2019.
137. Summer Research Colloquium, Princeton University, July 9, 2019.
136. Mechanical forces and epithelial morphogenesis. Keynote Session, Developmental Biology Gordon Research Conference, Mt. Holyoke College, MA, June 16, 2019.
135. Mesenchymal fluidity, matrix transport, and tissue morphogenesis. 17th Annual Northeastern Granular Materials Workshop, New York University, June 14, 2019.
134. How epithelial trees fold themselves. International Conference on Bioengineering and Nanotechnology (ICBN), Baltimore, MD, May 30, 2019.
133. Mechanics of airway morphogenesis. Developmental Biology research seminar series, Memorial Sloan Kettering, New York, NY, May 23, 2019.
132. Mechanics, midbodies, and multinucleation. Markey Cancer Center Seminar, University of Kentucky, Lexington, KY, April 24, 2019.
131. Evolutionary insights into tissue engineering. Emerging Challenges in Tissue Engineering and Regenerative Medicine for the Next 15 Years, New Jersey Center for Biomaterials, Somerset, NJ, March 20, 2019.
130. The art and science of building tissues. Women in STEM speaker, Randolph High School, Randolph, NJ, March 13, 2019.
129. Mechanics, midbodies, and EMT. Keynote Session, Physical Science of Cancer Gordon Research Conference, Galveston, TX, February 10, 2019.

## **2018**

128. Tissue architecture, mechanics, and cellular plasticity. Department of Biomedical Engineering seminar series, Brown University, Providence, RI, November 8, 2018.
127. Why would you want to engineer a tumor? Present Day Club, Princeton, NJ, October 3, 2018.
126. Active folding, viscoelastic buckling, and tissue development. Department of Chemical & Biomolecular Engineering, Lehigh University, September 19, 2018.



125. Mechanical forces, airway smooth muscle, and epithelial branching. Summer FASEB meeting “The lung epithelium in health and disease”, St. Bonaventure University, NY, July 30, 2018.
124. Mechanical forces in epithelial morphogenesis. Presidential Keynote Symposium, Society for Developmental Biology (SDB) Annual Meeting, Portland, OR, July 20, 2018.
123. Summer Research Colloquium, Princeton, NJ, July 19, 2018.
122. The physical and cellular basis of branching morphogenesis. Signaling by Adhesion Receptors Gordon Research Conference, Biddeford, ME, June 27, 2018.
121. Passive and active forces in branching morphogenesis. The Conceptual Legacy of “On Growth and Form” Workshop, University of St. Andrews, Scotland, June 16, 2018.
120. Establishing complex tissue architecture by integrating mechanical and chemical cues. Keynote, Mammary Gland Biology Gordon Research Conference, Tuscany Il Ciocco, Italy, May 27, 2018.
119. Keynote, Young Women’s Conference on STEM, Princeton Plasma Physics Laboratory, May 21, 2018.
118. Tissue origami: How different species build their lungs. Institute of Biomaterials and Biomedical Engineering, University of Toronto, April 20, 2018.
117. Tissue mechanics, EMT, and genomic instability. Tumor Microenvironment (TME) Town Hall: Interdisciplinary Approaches to the Tumor Microenvironment, American Association for Cancer Research (AACR) Annual Meeting, Chicago, IL, April 15, 2018.
116. How to build a tissue: inspiration from evolution. Department of Chemical Engineering seminar, MIT, March 23, 2018.
115. Uncovering nature’s design rules for building gas exchangers. Department of Chemical & Biomolecular Engineering seminar, University of Houston, January 26, 2018.
114. Forced understanding of tissue morphogenesis, Annual BMES Cell and Molecular Bioengineering (CMBE) Conference, Ocean Reef Club, Key Largo, FL, January 2-6, 2018.

## **2017**

113. Building tissue complexity: lessons from the tree of life. EBICS Distinguished Lecture, Georgia Institute of Technology, December 1, 2017.
112. Engineering tissues: inspiration from evolution. Keynote Speaker, Annual McNulty Seminar, Saint Joseph’s University, Philadelphia, PA, October 18, 2017.
111. Airway smooth muscle and the mechanics of lung development. Pennsylvania Muscle Institute, University of Pennsylvania, October 9, 2017.
110. Choreographing tissue morphogenesis, Blavatnik Science Symposium, New York, NY, July 18, 2017.
109. The revolution in bioengineering IdeasLab. Annual Meeting of the New Champions, World Economic Forum, Dalian, China, June 28, 2017.

108. Mechanics, EMT, and genomic instability. Cancer Metabolism and Growth Research (CMG) meeting, Rutgers Cancer Institute of New Jersey, June 15, 2017.
107. Tissue origami: The mechanics and genomics of organ development. Department of Biological Engineering, MIT, May 11, 2017.
106. Mechanics, organ development, and disease. Science on Saturday series, Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ, March 18, 2017.
105. Buckling and folding in lung development. Mechanics in Morphogenesis symposium, American Physical Society (APS) meeting, New Orleans, LA, March 16, 2017.
104. Mechanics of epithelial morphogenesis. Modelling of Tissue Growth and Form workshop, Mathematical Biosciences Institute, Ohio State University, March 9, 2017.

## **2016**

103. Engineering tissues. Society of Women Engineers' High School Colloquium, Princeton University, November 19, 2016.
102. Building organs through buckling. Department of Chemical and Biomolecular Engineering, Cornell University, August 29, 2016.
101. Folding epithelial tissues. University of Colorado BioFrontiers Institute, August 12, 2016.
100. Folding multicellular tissues. Summer Undergraduate Research Program, Molecular Biology and Quantitative and Computational Biology, Princeton University, July 19, 2016.
99. Matrix dynamics and epithelial morphogenesis. Gordon Research Conference, Signal Transduction by Engineered Extracellular Matrices (STEEM), Biddeford, ME, June 27, 2016.
98. Interstitial fluid pressure, matrix compliance, and tumor phenotype. Plenary talk, AACR Special Conference on Engineering and Physical Sciences in Oncology, Boston, MA, June 26, 2016.
97. Adhesions and forces in tissue origami. Gordon Research Conference, Signaling by Adhesion Receptors, Bates College, ME, June 22, 2016.
96. Folding epithelial tissues. Mechanobiology T32 Advisory Committee retreat, Washington University at St. Louis, June 3, 2016.
95. Mechanical instabilities and tissue development. Department of Biomedical Engineering, Yale University, May 27, 2016.
94. Epithelial origami: The science and art of tissue folding. Third International Mammalian Synthetic Biology Workshop (mSBW 3.0), MIT, May 21-22, 2016.
93. Viscoelastic instabilities and tissue development. Department of Chemical Engineering, Texas Tech University, April 29, 2016.
92. Buckling morphogenesis. Aspen Center for Physics Winter Conference "Physics of Development and Disease", Aspen, CO, March 27 – April 1, 2016.

- 91. Complexity and the mechanics of folding in developing tissues. Theory lunch, Department of Systems Biology, Harvard University, March 18, 2016.
- 90. Tissue morphodynamics. Guest lecture, Center for Complex Biological Systems, University of California, Irvine, January 29, 2016.

**2015**

- 89. Mechanical force dynamics during 3D collective migration. Multicellular interactions, Tissues, and Development minisymposium, American Society for Cell Biology (ASCB) Annual Meeting, San Diego, CA, December 13, 2015.
- 88. Cytoskeletal contraction and tissue morphogenesis. Quantitative Cell Biology Workshop on Cytoskeletal Mechanics. University of Chicago, October 22-24, 2015.
- 87. Dynamics of cell-generated forces during 3D collective migration. Workshop on “Collective cell migration”, Heidelberg, Germany, July 15, 2015.
- 86. Tissue folding via cell-matrix viscoelastic instability. Integrative study on cell-matrix interactions minisymposium, Society for Mathematical Biology Meeting, Atlanta, GA, July 2, 2015.
- 85. Physical forces and development of the lung. Plenary speaker, 41st Northeast Bioengineering Conference (NEBEC), Rensselaer Polytechnic Institute, April 18, 2015.
- 84. Physical forces and tumor cell behavior. Rutgers Cancer Institute of New Jersey, New Brunswick, NJ, April 8, 2015.
- 83. The forces that fold branched tissues. Biomedical Engineering seminar series, University of Minnesota, March 9, 2015.
- 82. Mechanics of tissue morphogenesis. Distinguished guest lecture, Center for Complex Biological Systems, University of California, Irvine, January 23, 2015.

**2014**

- 81. The signals and forces that branch epithelial tubes. Cell Biology of Morphogenesis: Reshaping cells *in vivo*, special interest subgroup, American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, December 6, 2014.
- 80. Building and branching epithelial tubes. Danish Stem Cell Center (DanStem) seminar series, University of Copenhagen, Denmark, August 27, 2014.
- 79. Tumor microenvironment: mechanics, and misregulated behaviors, Cancer Institute of New Jersey (CINJ) Mini-retreat: Tumor microenvironment and progression. Princeton, NJ, August 23, 2014.
- 78. ECM mechanics and phenotypic switching. Mechanics of Cell-Biomaterial Interface symposium, World Congress of Biomechanics, Boston, MA, July 9, 2014.
- 77. Bending and folding tissues under pressure. Mechanics of Tissue and Organ Development symposium, World Congress of Biomechanics, Boston, MA, July 8, 2014.
- 76. How to make a branch. Development, Regeneration, and Stem Cell Biology program seminar series,

University of Chicago, June 17, 2014.

75. The forces of epithelial folding. Frontiers in Quantitative Biology seminar series, Stanford University, May 8, 2014.
74. Matrix-mediated mechanical regulation of tissue morphogenesis. Plenary Session – Biology of Matrix Function in Development and Diseases; Signaling by natural and engineered extracellular matrix mini-meeting. Experimental Biology Annual Meeting, San Diego, CA, April 27, 2014.
73. Bending and folding tissues. Bioengineering seminar series, Pratt School of Engineering, Duke University, April 24, 2014.
72. On tissues and engineering. Society of Women Engineers' High School Colloquium, Princeton University, April 19, 2014.
71. Mechanics, epithelial folding, and branching morphogenesis. Developmental Biology Colloquium series, Duke University, March 19, 2014.
70. Folding native and engineered epithelial tissues. Center for BioEngineering seminar series, University of California, Santa Barbara, March 13, 2014.
69. Mechanics and tissue development. Distinguished guest lecture, Center for Complex Biological Systems, University of California, Irvine, January 18, 2014.
68. Mechanics and tissue morphodynamics. Biomedical Engineering Society-Cell and Molecular Bioengineering (BMES-CMBE) Conference, La Jolla, CA, January 8, 2014.

### **2013**

67. Biomedical Engineering Ph.D. program retreat, Johns Hopkins University, Baltimore, MD, November 24, 2013.
66. Molecular Biology Faculty Research seminar, Princeton University, October 8, 2013.
65. Forcing tissues to build themselves. Chemical & Biomolecular Engineering seminar series, Ohio State University, August 29, 2013.
64. Engineering Tissues. Joint PCCM/MIRTHE REU seminar series, Princeton University, June 26, 2013.
63. Role of biomechanics in tissue growth. Presidential Symposium (Opening Keynote Session), International Congress of Developmental Biology, Cancun, Mexico, June 16-22, 2013.
62. Folding under pressure: Mechanical forces in development of native and engineered tissues. Institute for Medicine and Engineering (IME) seminar series, University of Pennsylvania, May 28, 2013.
61. Folding under pressure: Mechanical forces in development of native and engineered tissues. Chemical Engineering seminar series, California Institute of Technology, May 23, 2013.
60. Epithelial origami: Folding native and engineered tissues. 2013 E. Llewellyn-Thomas Distinguished Lecture, University of Toronto, May 3, 2013.
59. Microscale tissues: Tissue engineering meets developmental biology, Keynote presentation, 7th

International Conference on Microtechnologies and Biology (MMB 2013 Conference), Marina del Rey, CA, April 10-12, 2013.

58. Department of Chemical & Biological Engineering faculty research seminar, Princeton University, April 5, 2013.
57. Folding under pressure: Mechanical forces in development of native and engineered tissues. Chemical Engineering seminar series, MIT, March 22, 2013.
56. Physical control of tissue morphogenesis. UCSF CCB/iPQB Seminar Series, San Francisco, CA, March 14, 2013.
55. Splitting tubes: Mechanics of branching morphogenesis. Applied Mechanics Colloquium, Harvard University, March 13, 2013.
54. Tissue morphodynamics. Distinguished guest lecture, Center for Complex Biological Systems, University of California, Irvine, January 18, 2013.
53. Sculpting airways and ducts – the physical forces of tissue morphogenesis. SBE's 4th International Conference on Biomolecular Engineering (ICBE), Ft. Lauderdale, FL, January 14, 2013.

## **2012**

52. Engineering tissues by sculpting mechanical cues. Chemical & Biomolecular Engineering seminar series, University of Delaware, September 28, 2012.
51. Interstitial hypertension and the phenotype of engineered human breast tumors. Princeton Physical Sciences-Oncology Center webinar, August 22, 2012.
50. Microfabricated tissues. Joint PCCM/MIRTHE REU seminar series, Princeton University, July 25, 2012.
49. Teeny tiny tissues: Using fabrication to understand and manipulate organ development. 35th Anniversary Celebration of the Cornell Nanofabrication Facility, Cornell University, July 19, 2012.
48. Building epithelial trees. Cell, molecular, and developmental biology seminar series, Tufts University School of Medicine, May 17, 2012. (Invited by the graduate students)
47. Sculpting organs: the mechanics and dynamics of tissue development. Chemical & Biological Engineering seminar series, Tufts University, March 8, 2012.
46. Sculpting organs: the mechanics and dynamics of tissue development. Bioengineering seminar series, University of Illinois, Urbana-Champaign, February 23, 2012.
45. Sculpting organs: the mechanics and dynamics of tissue development. Biomedical Engineering seminar series, Carnegie-Mellon University, February 16, 2012.
44. Sculpting organs: the mechanics and dynamics of tissue development. Chemical & Biological Engineering seminar series, University of Colorado, February 2, 2012.

## **2011**

43. Matrix compliance regulates epithelial-mesenchymal transition. American Society for Cell Biology

(ASCB) Annual Meeting, Denver, CO, December 5, 2011.

42. Sculpting organs: the mechanics and dynamics of tissue development. Chemical & Biological Engineering seminar series, Princeton University, November 9, 2011.
41. Mechanical stress, cellular dynamics, and tissue morphogenesis. Biosystems Science and Engineering seminar series, ETH Zurich, Basel, Switzerland, October 25, 2011.
40. Substratum mechanics and tissue development. Polymer Science and Engineering seminar series, University of Massachusetts, Amherst, September 9, 2011.
39. Mechanotransduction and morphodynamics of engineered tissues. Complex Systems in Biology seminar series, Rice University, Houston, TX, September 6, 2011.
38. Multicellular dynamics in engineered tissues. Biomaterials & Tissue Engineering Gordon Research Conference, Holderness School, Plymouth, NH, August 1, 2011.
37. Mechanical stress and the initiation of epithelial branches. Mechanics of Development Symposium, 3rd Frontiers in Biomechanics Meeting, United States National Committee on Biomechanics (USNCB), Farmington, PA, June 21, 2011.
36. Building an epithelial tree branch by branch. Institute of Bioengineering and Nanotechnology (IBN), Singapore, May 18, 2011.
35. How to engineer an epithelial tree. Chemical Engineering seminar series, Columbia University, New York, NY, April 19, 2011.
34. Morphogenesis of engineered epithelial trees. Biomedical Engineering seminar series, Rutgers University, New Brunswick, NJ, April 4, 2011.

## **2010**

33. Microscale engineered tissue morphogenesis. Tissue engineering and regenerative medicine: the next 20 years, University of Sydney, Australia, November 8, 2010.
32. Morphogenesis of engineered epithelial trees. Genetics and Development seminar series, Columbia University Medical Center, New York, NY, October 26, 2010.
31. Chemical and mechanical gradients in tissue development. GI Research seminar series, University of Pennsylvania, Philadelphia, PA, October 14, 2010.
30. Development of engineered tissues. 22nd Annual Packard Fellows Meeting, Monterey, CA, September 9, 2010.
29. Mechanical patterning of epithelial trees. EPFL Life Science Symposium, EPFL, Lausanne, Switzerland, September 2, 2010.
28. Patterning of epithelial tissues. Signal Transduction by Engineered Extracellular Matrices (STEEM) Gordon Research Conference, University of New England, Biddeford, ME, July 1, 2010.
27. Endogenous (tissue-generated) mechanical and chemical gradients. "Gradients and flow of soluble factors

in the tumor microenvironment workshop”, Tumor Microenvironment Network, National Cancer Institute, Bethesda, MD, May 27, 2010.

26. Dynamics of normal and tumorigenic development of model tissues. Computational Biology seminar series, Memorial Sloan Kettering Cancer Center, New York, NY, May 20, 2010.
25. How to build an epithelial tree. Cancer, complexity and the microenvironment: A scientific symposium and celebration in honor of Mina J. Bissell, Lawrence Berkeley National Laboratory, Berkeley, CA, May 8, 2010.
24. Tissue geometry and epithelial-mesenchymal transition. 2nd International Conference on Stem Cell Engineering, Boston, MA, May 5, 2010.
23. Morphogenesis of microscale tissues. Topics in Bioengineering seminar series, Harvard University, Cambridge, MA, March 2, 2010.
22. Quantitative analysis of morphogenesis of engineered tissues. Rensselaer Polytechnic Institute, Troy, NY, February 19, 2010.
21. Morphogenesis of engineered tissues. Steele Laboratory, Harvard University, Cambridge, MA, February 12, 2010.

## **2009**

20. Development of microscale tissues. Nanobiotechnology Symposium, Cornell University, Ithaca, NY, October 19, 2009.
19. Morphogenesis of model tissues. Society for Developmental Biology (SDB) Annual Meeting, San Francisco, CA, July 23, 2009.
18. Mechanisms of pattern formation in model tissues. Biomedical Engineering seminar series, New Jersey Institute of Technology, Newark, NJ, April 3, 2009.
17. Organ development: Insights from engineered tissues and numerical models. Program in Integrative Information, Computer, and Application Sciences (PICASso) Interdisciplinary Computational seminar series, Princeton University, Princeton, NJ, February 23, 2009.

## **2008**

16. Cellular dynamics in tissue patterning and development. Carolina Biophysics Symposium, Chapel Hill, NC, November 21, 2008.
15. Pattern formation in microfabricated tissues. Institute for Medicine and Engineering seminar series, University of Pennsylvania, Philadelphia, PA, October 14, 2008.
14. Pattern formation in engineered tissues. Biomedical Engineering seminar series, Carnegie Mellon University, Pittsburgh, PA, September 29, 2008.
13. Control of tissue architecture and dynamics. Signal Transduction by Engineered Extracellular Matrices (STEEM) Gordon Research Conference, Bates College, ME, July 8, 2008.
12. Mammary gland development. Santa Cruz Developmental Biology Meeting, Santa Cruz, CA, June 29,

2008.

11. Emergence of patterns during tissue morphogenesis. Society for Industrial and Applied Mathematics (SIAM) Conference on Mathematical Aspects of Materials Science, Philadelphia, PA, May 13, 2008.
10. Understanding the emergence of patterns during tissue morphogenesis. Biomedical Engineering seminar series, University of California, Irvine, April 24, 2008.
9. Quantitative models of mammary gland development and disease. Cancer Center Grand Rounds seminar series, The Cancer Institute of New Jersey, New Brunswick, NJ, January 16, 2008.

## **2007**

8. Patterning and dynamics during branching morphogenesis. Biomolecular seminar series, Boston University, Boston, MA, December 10, 2007.
7. Emergence of patterns during morphogenesis of microscale tissues. Biophysics seminar series, Princeton, November 26, 2007.
6. Engineering models of mammary gland development and disease. Mayo Clinic Cancer Center, Jacksonville, FL, November 2, 2007.
5. Department of Molecular Biology faculty research seminar, Princeton, October 30, 2007.
4. Competition, cooperation, and emergence during tissue morphogenesis. Engineering Cell Biology II Conference, MIT, August 6, 2007.
3. Branching from engineered tubes. Engineering Vascular Cell Function Using Nanoscale Cues Symposium, Experimental Biology 2007, Washington DC, April 30, 2007.
2. Engineering culture models for quantitative analysis of tissue morphogenesis. New Directions in Quantitative Biology Symposium, Harvard University, April 21, 2007.

## **2006**

1. An engineered tissue model of mammary epithelial branching morphogenesis. UCSF Mouse Genetics 2nd Annual Symposium, UCSF, May 19, 2006.

## ***II. Contributed talks***

16. Nelson C.M., Ghani U., Dance Y.W., Tien J. Interstitial fluid pressure controls invasion and escape of metastatic human breast cancer cells, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.
15. Nelson C.M., Tien J. Mechanisms of escape from engineered human breast tumors, podium presentation at the Cancer Tissue Engineering Collaborative Inaugural Investigators Meeting, Boston, MA, 2019.
14. Zhu W., Nelson C.M. Patterning branched tissues: Molecular insights from engineered tissue models, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, 2012.
13. Manivannan S., Gleghorn J.P., Nestor J.M., Nelson C.M. Living clocks: emergence of periodic rotation during collective cell migration, podium presentation at the Biomedical Engineering Society (BMES)



Annual Meeting, Atlanta, GA, 2012.

12. Tien J., Truslow J.G., Nelson C.M. Interstitial hypertension and the phenotype of engineered human breast tumors, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, 2012.
11. Nelson C.M. Normal and diseased development of model tissues, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Austin, TX, 2010.
10. Gjorevski N., Nelson C.M. Mechanical regulation of tissue morphogenesis, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Austin, TX, 2010.
9. Nelson C.M. Cell motility in 3D engineered tissues, podium presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Salt Lake City, UT, 2007.
8. Nelson C.M. Cellular dynamics in three-dimensional engineered tissues, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Los Angeles, CA, 2007.
7. Nelson C.M., van Duijn M., Inman J.L., Fletcher D.A, Bissell M.J. Tissue architecture sculpts inhibitory gradient(s) to determine sites of mammary branching morphogenesis, podium presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Diego, CA, 2006.
6. Nelson C.M., van Duijn M., Inman J.L., Fletcher D.A, Bissell M.J. An engineered tissue model to determine position-specific behavior during mammary epithelial branching morphogenesis, podium presentation at the International Symposium on Epithelial Organization and Tissue Development, Berlin, Germany, 2006.
5. Nelson C.M., Bissell M.J. Cytoskeletal control of mammary epithelial morphogenesis and tumorigenesis, podium presentation at the Department of Defense (DoD) Era of Hope Meeting, Philadelphia, PA, 2005.
4. Nelson C.M., Chen C.S. Emergent properties of cell populations, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Nashville, TN, 2003.
3. Nelson C.M., Tan J.L., Pirone D.M., Chen C.S. VE-cadherin, focal adhesions, and mechanotransduction, podium presentation at the Signaling via cell-cell interactions Keystone Symposium, Keystone, CO, 2003.
2. Nelson C.M., Lim E.A., Chen C.S. Two to tango: micropatterned substrates to control cell-cell interactions, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Houston, TX, 2002.
1. Nelson C.M., Chin W., Chen C.S. How to put cells to sleep, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Raleigh, NC, 2001.

### ***III. Abstracts at scholarly conferences (through 2022)***

299. Goodwin K., Nelson C.M. On fate and form: branching morphogenesis instructs spatial patterns of epithelial differentiation in the developing lung, poster presentation at the Santa Cruz Developmental Biology (SCDB) Meeting, 2022.

298. Lemma B., Goodwin K., Nelson C.M. Mitochondrial patterning during epithelial branching morphogenesis in the embryonic chicken lung, poster presentation at the Edinburgh Gallus Genomics and Embryonic Development (EGGED) Workshop, 2022.
297. Dance Y.W., Obenreder M.C., Seibel A.J., Meshulam T., Ogony J.W., Lahiri N., Radisky D.C., Layne M.D., Nelson C.M., Tien J. An engineered 3D microfluidic model to assess how adipocyte hypertrophy alter breast cancer cell escape, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, 2022.
296. Leggett S.E., Brennan M.C., Martinez S., Tien J., Nelson C.M. Reverse engineering of intratumoral heterogeneity reveals how diverse clonal cell subpopulations cooperate to enhance breast cancer progression, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, 2022.
295. Seibel A.J., Kelly O.M., Dance Y.W., Nelson C.M. Tien J. Tumor cells ablate lymphatic endothelium during vascular escape of engineered breast microtumors, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, 2022.
294. Seibel A.J., Kelly O.M., Dance Y.W., Nelson C.M., Tien J. Lymphatic endothelium slows invasion and vascular escape of engineered human breast microtumors, poster presentation at the NCI Tumor Engineering Collaborative meeting, 2022.
293. Leggett S.E., Brennan M.C., Tien J., Nelson C.M. Cell-level heterogeneity promotes invasion and escape of breast cancer cells, poster presentation at the NCI Tumor Engineering Collaborative meeting, 2022.
292. Paramore S.V., Sharan R., Goodwin K., Devenport D., Nelson C.M. Vangl functions outside of the PCP pathway to regulate lung morphogenesis, poster presentation at the Gordon Research Conference on Cell Polarity Signaling, 2022.
291. Brennan M.C., Leggett S.E., Martinez S., Nelson C.M. The effects of intratumoral heterogeneity on metastasis of triple-negative breast cancer cells, poster presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, 2022.
290. Paramore S.V., Sharan R., Goodwin K., Devenport D., Nelson C.M. Mesenchymal Vangl2 drives sacculation in the embryonic mouse lung, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, 2022.
289. Goodwin K., Nelson C.M. An evolutionary toolbox for sculpting the vertebrate airways, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, 2022.
288. Goodwin K., Nelson C.M. An evolutionary toolbox for sculpting the vertebrate airways, poster presentation at the Mid-Atlantic Regional Meeting of the Society for Developmental Biology (MASDB), 2022.
287. Brennan M.C., Leggett S.E., Nelson C.M. Using B1 Repeats to Measure Intravasation and Metastasis of Murine Cancer Cells in the Chick Chorioallantoic Membrane Assay, poster presentation at the Cancer Institute of New Jersey (CINJ) Annual Retreat, 2022.
286. Seibel A.J., Kelly O.M., Dance Y.W., Nelson C.M., Tien J. Role of lymphatic endothelium in vascular escape of engineered human breast microtumors, poster presentation at the Northeast Bioengineering Conference (NEBEC), 2022.

285. Dance Y.W., Obenreder M.C., Seibel A.J., Meshulam T., Ogony J.W., Radisky D.C., Layne M.D., Nelson C.M., Tien J. Escape of Human Breast Cancer Cells Through a 3D Adipose Stroma Derived from Lean or Obese Donors, poster presentation at the Northeast Bioengineering Conference (NEBEC), 2022.
284. Goodwin K., Nelson C.M. Plasticity in airway smooth muscle differentiation during mouse lung development, podium presentation at the 2<sup>nd</sup> Epithelial Mesenchymal Interactions in Lung Development and Fibrosis Conference, Cancun, Mexico, 2022.
283. Paramore S., Sharan R., Goodwin K., Devenport D., Nelson C.M. Mesenchymal Vangl1/2 drives sacculation in the embryonic mouse lung, podium presentation at the 2<sup>nd</sup> Epithelial Mesenchymal Interactions in Lung Development and Fibrosis Conference, Cancun, Mexico, 2022.
282. Trenado C., Leggett S.E., Zhang S., Nelson C.M. The effects of cell-cell cooperation in 3D breast cancer spheroids, poster presentation at the Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C), Cambridge, MD, 2022.
281. Brennan M., Leggett S.E., Nelson C.M. PCR-based approach to measure intravasation and metastasis of mouse cancer cells in the chick chorioallantoic membrane assay, poster presentation at the Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C), Cambridge, MD, 2022.
280. Goodwin K., Nelson C.M. On fate and form: branching morphogenesis instructs spatial patterns of epithelial differentiation in the developing lung, podium presentation at the Keystone Conference on Engineering Multi-Cellular Living Systems, Keystone, CO, 2022.
279. Goodwin K., Nelson C.M. External constraint drives differentiation in the pressurized embryonic lung epithelium, poster presentation at the Cell & Tissue Hydraulics Minisymposium, MBI Singapore, 2021.
278. Brennan M.C., Leggett S.E., Nelson C.M. Using B1 repeats to detect metastatic murine cancer cells in the chick chorioallantoic membrane assay, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, 2021.
277. Goodwin K., Nelson C.M. Branching in the airway epithelium drives differentiation in the developing lung, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, 2021.
276. Brennan M., Leggett S.E., Nelson C.M. The effects of intratumoral heterogeneity on metastasis of triple-negative breast cancer, poster presentation at the NJCCR Annual Cancer Research Symposium, 2021.
275. Brennan M., Leggett S.E., Nelson C.M. PCR-based approach to detect metastatic murine cancer cells, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, 2021.
274. Seibel A.J., Kelly O.M., Dance Y.W., Nelson C.M., Tien J. Lymphovascular escape of engineered human breast microtumors, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, 2021.
273. Farahani P.E., Lemke S.B., Dine E., Uribe G., Nelson C.M., Toettcher J.E. Substratum stiffness regulates Erk signaling dynamics through receptor-level control, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, 2021.
272. Dance Y.W., Obenreder M.C., Seibel A.J., Ogony J.W., Meshulam T., Radisky D.C., Nelson C.M., Tien J. How obesity affects breast cancer cell invasion and escape in a 3D microfluidic model, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, 2021.

271. Leggett S.E., Brennan M.C., Martinez S., Nelson C.M. Cell-level heterogeneity promotes invasion and dissemination of breast cancer cells, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, 2021.
270. Goodwin K., Nelson C.M. On fate and form: how branching morphogenesis patterns differentiation of the airway epithelium, poster presentation at the Annual Meeting of the Society for Developmental Biology (SDB), 2021.
269. Palmer M.A., Goodwin K., Nelson C.M. A cascade of mechanical forces underlies morphogenesis of the developing lizard lung, poster presentation at the Annual Meeting of the Society for Developmental Biology (SDB), 2021.
268. Paramore S.V., Sharan R., Goodwin K., Devenport D., Nelson C.M. A mesenchymal function for planar cell polarity during lung morphogenesis, poster presentation at the Annual Meeting of the Society for Developmental Biology (SDB), 2021.
267. Paramore S.V., Sharan R., Goodwin K., Devenport D., Nelson C.M. A non-epithelial function for planar cell polarity during lung morphogenesis, podium presentation at the Mid-Atlantic Regional Meeting of the Society for Developmental Biology (MASDB), 2021.
266. Farahani P.E., Lemke S.B., Dine E., Uribe G., Toettcher J.E., Nelson C.M. Substratum stiffness regulates Erk signaling dynamics through receptor-level control, podium presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, 2021.
265. Seibel A.J., Dance Y.W., Kelly O.M., Nelson C.M., Tien J. Lymphovascular escape of human breast microtumors, poster presentation at the Northeast Bioengineering Conference (NEBEC), 2021.
264. Dance Y.W., Meshulam T., Seibel A.J., Obenreder M.C., Layne M.D., Nelson C.M., Tien J. Invasion and escape of human breast cancer cells through an adipose stroma, poster presentation at the Northeast Bioengineering Conference (NEBEC), 2021.
263. Leggett S.E., Brennan M.C., Nelson C.M. Cell-level heterogeneity promotes invasion and dissemination of breast cancer cells, podium presentation at the Princeton University-Cancer Institute of New Jersey Cancer Research Symposium, 2020.
262. Nerger B.A., Elashal H.E., Link A.J., Nelson C.M. Local mechanical forces regulate global morphogenetic patterning in the developing mouse mammary gland, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, 2020.
261. Paramore S.V., Sharan R., Goodwin K., Devenport D., Nelson C.M. A non-epithelial function for planar cell polarity in lung morphogenesis, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, 2020.
260. Tien J., Nelson C.M., Radisky D.C., Ekinici K.L., Nassar A. Engineering invasive human breast tumors with integrated capillaries and lymphatics, Physical Sciences – Oncology Network (PS-ON) Annual Investigators Meeting, 2020.
259. Dance Y.W., Meshalum T., Ghani U., Parikh N., Nelson C.M., Tien J. A 3D microfluidic model of human breast tumor invasion and escape through adipose stroma, Physical Sciences – Oncology Network (PS-ON) Annual Investigators Meeting, 2020.
258. Goodwin K., Nelson C.M. Patterning the embryonic pulmonary mesenchyme, podium presentation at the

SRC Early Career Symposium on Developmental Cell Biology, Virtual Session, 2020.

257. Palmer M.A., Nelson C.M. Cell-level analysis of airway fusion during avian lung development, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, Chicago, IL, 2020.
256. Goodwin K., Nelson C.M. Patterning the embryonic pulmonary mesenchyme, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, Chicago, IL, 2020.
255. Barrett L.A., Nelson C.M. Quantifying the effects of elevated hydrostatic pressure on the barrier function of mammary epithelial cells, podium presentation at the American Institute of Chemical Engineers (AIChE) Virtual Annual Meeting, 2020.
254. Dance Y.W., Meshalum T., Ghani U., Parikh N., Nelson C.M., Tien J. A 3D microfluidic model of breast tumor invasion and escape through fibrofatty stroma, podium presentation at the Biomedical Engineering Society (BMES) Virtual Annual Meeting, 2020.
253. Nerger B.A., Nelson C.M. Using a 3D-printed model of the developing mouse mammary gland to study morphogenetic patterning, poster at the Biomedical Engineering Society (BMES) Virtual Annual Meeting, 2020.
252. Rabie E.M., Zhang S.X., Kilinc A.N., Simi A.K., Tien J., Nelson C.M. Kinetic analysis of invasion and escape from an engineered human breast microtumor, Annual Retreat on Cancer Research in New Jersey, Rutgers University, 2020.
251. Barrett L.A., Nelson C.M. Quantifying the effects of pressure on the leakiness of mammary gland cells, poster presentation at the Princeton Research Day, Princeton, NJ, 2020.
250. Nelson C.M. The biophysics of tissue folding – inspiration from evolution, HHMI Science Meeting, Chevy Chase, MD, 2020.
249. Goodwin K., Nelson C.M. Origin and differentiation of airway smooth muscle during branching morphogenesis in the embryonic mouse lung, Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C), Vail, CO, 2020.
248. Leggett S.E., Nelson C.M. The effect of cell-level heterogeneity on the dynamics of cancer cell invasion, poster presentation at the American Association for Cancer Research (AACR) Annual meeting, San Diego, CA, 2020.
247. Paramore S.V., Goodwin K., Devenport D., Nelson C.M. A potential role for Vangl2 in the embryonic lung mesenchyme, poster presentation at The Allied Genetics Conference (TAGC) 2020, Washington DC, 2020.
246. Goodwin K., Nelson C.M. Mesenchymal cell heterogeneity and differentiation during mouse lung branching morphogenesis, poster presentation at The Allied Genetics Conference (TAGC) 2020, Washington DC, 2020.
245. Spurlin J.W., Zhang R., Nelson C.M. The branched architecture of the airway epithelium is physically shaped by the extracellular matrix and contractile smooth muscle during lung development, invited podium presentation at the American Physical Society (APS) March Meeting, Denver, CO, 2020.
244. Goodwin K., Nelson C.M. Cell identities and rearrangements in the embryonic pulmonary mesenchyme,

- poster presentation at the PCTS workshop on the Physics of collective cell migration, Princeton, NJ, 2020.
243. Nerger B.A., Nelson C.M. Mapping collagen fiber alignment in the developing mouse mammary gland, poster presentation at the PCTS workshop on the Physics of collective cell migration, Princeton, NJ, 2020.
242. Silver B.B., Nelson C.M. Epithelial tissue geometry directs emergence of the bioelectric field and patterns of growth, poster presentation at the American Society for Cell Biology (ASCB) annual meeting, Washington DC, 2019.
241. Anlas A.A., Nelson C.M. Breast cancer autophagy and chemoresistance are regulated by substratum stiffness, poster presentation at the American Society for Cell Biology (ASCB) annual meeting, Washington DC, 2019.
240. Goodwin K., Jaslove J.M., Nelson C.M. Cell identity and differentiation in the embryonic pulmonary mesenchyme, poster presentation at the American Society for Cell Biology (ASCB) annual meeting, Washington DC, 2019.
239. Rabie E., Zhang S., Nelson C.M. Microenvironmental stiffness promotes multinucleation upon induction of epithelial-mesenchymal transition, poster presentation at the American Society for Cell Biology (ASCB) annual meeting, Washington DC, 2019.
238. Farahani P.E., Toettcher J.E., Nelson C.M. Substratum stiffness regulates Erk signaling dynamics in mammary epithelial cells, poster presentation at the American Society for Cell Biology (ASCB) annual meeting, Washington DC, 2019.
237. Ghani U., Dance Y.W., Nelson C.M., Tien J. Matrix concentration affects the rate at which breast cancer cells escape from an engineered microtumor into a cavity, poster presentation at the NCI Cancer TEC Meeting, Koch Institute for Integrative Cancer Research, MIT, 2019.
236. Rabie E., Zhang S.X., Kourouklis A., Kilinc A.N., Tien J., Nelson C.M. Matrix remodeling is required for invasion and escape from an engineered human breast microtumor, poster presentation at the NCI Cancer TEC Meeting, Koch Institute for Integrative Cancer Research, MIT, 2019.
235. Tien J., Ghani U., Dance Y.W., Nelson C.M. Interstitial hypertension suppresses escape in human breast tumors, poster presentation at the NCI Cancer TEC Meeting, Koch Institute for Integrative Cancer Research, MIT, 2019.
234. Anlas A.A., Nelson C.M. Soft microenvironments induce breast cancer autophagy and chemoresistance, *Biology of Cancer: Microenvironment and Metastasis*, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, 2019.
233. Jaslove J.M., Nelson C.M. Transmural pressure signals through retinoic acid to control airway smooth muscle development, poster presentation at the Summer FASEB meeting “The smooth muscle conference”, West Palm Beach, FL, 2019.
232. Kosmrlj A., Goodwin K., Mao S., Guyomar T., Nelson C.M. Mechanical model of branching morphogenesis during lung development, podium presentation at the Society of Engineering Science Technical Meeting, Washington University, St. Louis, MO, 2019.
231. Tien J., Nelson C.M., Radisky D.C., Ekinici K.L., Nassar A. Engineering invasive human breast tumors

with integrated capillaries and lymphatics. PS-ON Annual Investigators Meeting, University of Minnesota, September 18-20, 2019.

230. Palmer M.A., Nelson C.M. Mechanical wrapping by smooth muscle directs epithelial morphogenesis in the lungs, podium presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Orlando, FL, 2019.
229. Goodwin K., Jaslove J.M., Nelson C.M. Mechanical and molecular control of patterned smooth muscle differentiation in the embryonic mouse lung, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, Boston, MA, 2019.
228. Spurlin J.W., Siedlik M.J., Nerger B.A., Zhang R., Nelson C.M. Airway epithelial morphogenesis is associated with cellular unjamming, mesenchymal flow, and matrix transport in the developing lung, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, Boston, MA, 2019.
227. Palmer M.A., Nelson C.M. A conserved role for smooth muscle in lung morphogenesis across amniotes, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, Boston, MA, 2019.
226. Mechanical forces, the microenvironment, and metastasis of 3D microtumors. Podium presentation in the joint session on “Mechanobiology to materials” and “Interfacing bio/nano materials with cancer and the immune system”, Materials Research Society Fall Meeting, Boston, MA, 2019.
225. Nerger B.A, Brun P.T., Nelson C.M. Marangoni flows drive the alignment of cell-laden collagen hydrogels during self-assembly, poster presentation at the Materials Research Society (MRS) Fall Meeting, Boston, MA, 2019.
224. Zhang R., Spurlin J.W., Nelson C.M. Tenascin-C is advected into the mesenchyme during lung branching morphogenesis, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.
223. Rabie E., Zhang S., Nelson C.M. Substratum stiffness regulates multinucleation during epithelial-mesenchymal transition, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.
222. Anandasivam N., Han S., Nelson C.M. Activating epithelial-mesenchymal transition enhances cell migration even when integrin signaling is disrupted, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.
221. Paramore S.V., Goodwin K., Devenport D., Nelson C.M. Planar cell polarity and tissue folding during lung development, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.
220. Farahani P.E., Siedlik M.J., Pang M.F., Nelson C.M. Nuclei rotate in 3D prior to mitosis in epithelial tissues, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.
219. Anlas A.A., Nelson C.M. Substratum stiffness regulates tumor dormancy and autophagy, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.
218. Jaslove J.M., Nelson C.M. Transmural fluid pressure signals through retinoic acid to control lung development, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.

217. Goodwin K., Nelson C.M. Integrating physical and biochemical cues to pattern smooth muscle differentiation in the embryonic mouse lung, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.
216. Spurlin J.W., Siedlik M.J., Nerger B.A., Zhang R., Nelson C.M. Airway epithelial morphogenesis is associated with cellular unjamming, mesenchymal flow, and matrix transport in the developing lung, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.
215. Ghani U., Dance Y.W., Nelson C.M., Tien J. Effect of matrix concentration on breast cancer cell escape from a microtumor into an empty cavity, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.
214. Dance Y.W., Nelson C.M., Tien J. A 3D breast tumor-on-a-chip for analysis of tumor cell escape under flow, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.
213. Palmer M.A., Nelson C.M. Smooth muscle wrapping sculpts epithelial morphogenesis in the lung, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.
212. Silver B.B., Nelson C.M. Epithelial tissue geometry directs Piezo1 expression and ion flow, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.
211. Nerger B.A, Brun P.T., Nelson C.M. Marangoni flows drive the alignment of cell-laden type I collagen hydrogels, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.
210. Paramore S.V., Devenport D., Nelson C.M. Understanding the role of Vangl2 in murine lung development, poster presentation at Mid-Atlantic Regional Meeting of the Society for Developmental Biology (SDB), Pennsylvania State University, 2019.
209. Nerger B.A, Nelson C.M. Mapping collagen fiber alignment in the developing mouse mammary gland, poster presentation at Mid-Atlantic Regional Meeting of the Society for Developmental Biology (SDB), Pennsylvania State University, 2019.
208. Paramore S., Devenport D., Nelson C.M. Understanding the role of Vangl2 in murine lung development, poster presentation at the Princeton Research Day, Princeton, NJ, 2019.
207. Anandasivam N., Han S., Nelson C.M. Investigating how integrin-linked kinase affects cell migration during wound healing, poster presentation at the Princeton Research Day, Princeton, NJ, 2019.
206. Silver B.B., Nelson C.M. Bioelectric gradients emerge downstream of mechanical forces in epithelial tissues, poster presentation at the Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C), Seven Springs, PA, 2019.
205. Goodwin K., Kosmrlj A., Nelson C.M. Smooth muscle differentiation actively patterns the airway epithelium during branching morphogenesis, poster presentation at the Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C), Seven Springs, PA, 2019.
204. Kourouklis A.P., Ghani U., Han S., Dance Y., Tien J., Nelson C.M. Tumor invasion and escape from an engineered solid-like aggregate of human breast cancer cells into a cavity, podium presentation at the



American Association for Cancer Research (AACR) Annual Meeting, Atlanta, GA, 2019.

203. Goodwin K., Kosmrlj A., Nelson C.M. Smooth muscle: constraining growth to direct epithelial branching, poster presentation at the Epithelial-Mesenchymal Interactions in Lung Development and Fibrosis Conference, Nassau, Bahamas, 2019.
202. Goodwin K., Kosmrlj A., Nelson C.M. Patterned smooth muscle constrains and constricts the airway epithelium during branching morphogenesis, podium presentation at the American Physical Society (APS) March meeting, Boston, MA, 2019.
201. Palmer M.A., Nelson C.M. Smooth muscle mechanically sculpts the airway epithelium in birds and reptiles, podium presentation at the American Physical Society (APS) March meeting, Boston, MA, 2019.
200. Goodwin K., Kosmrlj A., Nelson C.M. Smooth muscle differentiation physically sculpts emerging branches during mouse lung development, podium presentation at the American Society for Cell Biology (ASCB) annual meeting, San Diego, CA, 2018.
199. Nerger B.A., Brun P.T., Nelson C.M. Patterning type I collagen fiber alignment and geometry using 3D printing, poster presentation at the Materials Research Society (MRS) fall meeting, Boston, MA, 2018.
198. Kourouklis A.P., Han S., Simi A.K., Tien J., Nelson C.M. Interstitial fluid pressure signals through YAP to direct invasion of engineered human breast tumors, poster presentation at the Physical Sciences-Oncology Network (PS-ON) & Cancer Systems Biology Consortium (CSBC) Annual Investigators Meeting, Bethesda, MD, 2018.
197. Tien J., Nelson C.M., Radisky D.C., Ekinici K.L., Nassar A. Engineering invasive human breast tumors with integrated capillaries and lymphatics, poster presentation at the Physical Sciences-Oncology Network (PS-ON) & Cancer Systems Biology Consortium (CSBC) Annual Investigators Meeting, Bethesda, MD, 2018.
196. Ghani U., Simi A.K., Kourouklis A.P., Han S., Margolis E.A., Nelson C.M., Tien J. A model of invasion and intravasation from a solid breast tumor into a micro-lymphatic vessel, poster presentation at the Physical Sciences-Oncology Network (PS-ON) & Cancer Systems Biology Consortium (CSBC) Annual Investigators Meeting, Bethesda, MD, 2018.
195. Wolf A.E., Nelson C.M. Dynamics and mechanics of rotational collective cell movements, poster presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Pittsburgh, PA, 2018.
194. Spurlin J.W., Siedlik M.J., Pang M.F., Jayaraman S., Nelson C.M. ECM remodeling and focal adhesion kinase activation direct airway epithelial branching morphogenesis, poster presentation at the American Society for Matrix Biology (ASMB) Biennial Meeting, Las Vegas, NV, 2018.
193. Nerger B.A., Brun P.T., Nelson C.M. 3D printing networks of type I collagen with tunable fiber alignment and geometry, poster presentation at the American Society for Matrix Biology (ASMB) Biennial Meeting, Las Vegas, NV, 2018.
192. Jaslove J.M., Nelson C.M. Mechanical signals drive airway smooth muscle differentiation in the developing mouse lung, podium presentation at Princeton Research Day, 2018.
191. Palmer M.A., Nelson C.M. How to build a bird lung: the role of smooth muscle, podium presentation at Princeton Research Day, 2018.

190. Silver B.B., Nelson C.M. Epithelial tissue geometry directs emergence of bioelectric field and pattern of growth, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, 2018.
189. Ghani U., Simi A.K., Kourouklis A.P., Han S., Margolis E.A., Nelson C.M., Tien J. In vitro model of invasion and intravasation from a solid breast tumor into a micro-lymphatic vessel, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, 2018.
188. Anlas A.A., Nelson C.M. Substratum stiffness regulates cancer cell dormancy and autophagy, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, 2018.
187. Nerger B.A., Brun P.T., Nelson C.M. 3D printing anisotropic networks of type I collagen, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, 2018.
186. Spurlin J.W., Siedlik M.J., Pang M.-F., Jayaraman S., Nelson C.M. Extracellular matrix remodeling and activation of focal adhesion kinase direct airway epithelial branching morphogenesis, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, Portland, OR, 2018.
185. Goodwin K., Kosmrlj A., Nelson C.M. Smooth muscle differentiation sculpts domain branches in the developing mouse lung, podium presentation at the Society for Developmental Biology (SDB) Annual Meeting, Portland, OR, 2018.
184. Goodwin K., Nelson C.M. How to fold a tube. Keynote talk, “Mechanobiology and embryogenesis” session 1, Cell Biomechanics track, 8th World Congress of Biomechanics, Dublin, Ireland, 2018.
183. Goodwin K., Nelson C.M. Tissue engineering strategies inspired by evolution. Keynote talk, “Mechanobiology and tissue engineering of the respiratory track”, 8th World Congress of Biomechanics, Dublin, Ireland, 2018.
182. Goodwin K., Nelson C.M. Smooth muscle differentiation shapes domain branches during mouse lung development, poster presentation at the 8th World Congress of Biomechanics, Dublin, Ireland, 2018.
181. Jaslove J.M., Nelson C.M. Mechanical signals drive airway smooth muscle differentiation in the embryonic mouse lung, poster presentation at the Mid-Atlantic Regional Meeting of the Society for Developmental Biology (SDB), University of Virginia, 2018.
180. Palmer M.A., Nelson C.M. Role of smooth muscle in shaping airway epithelium prior to fusion in developing chicken lung, podium presentation at the Mid-Atlantic Regional Meeting of the Society for Developmental Biology (SDB), University of Virginia, 2018.
179. Goodwin K., Nelson C.M. Smooth muscle differentiation shapes domain branches during mouse lung development, poster presentation at the Mechanics in Morphogenesis workshop, Princeton University, 2018.
178. Palmer M.A., Nelson C.M. Branching in airway epithelium drives fusion in avian lung, poster presentation at the Mechanics in Morphogenesis workshop, Princeton University, 2018.
177. Jaslove J., Nelson C.M. Mechanical signals promote airway smooth muscle differentiation in the developing mouse lung, poster presentation at the Mechanics in Morphogenesis workshop, Princeton University, 2018.

176. Simi A.K., Tien J., Nelson C.M. The role of pressure-driven flow in invasion, escape, and chemoresistance of cancer cells in an engineered breast cancer model, poster presentation at the American Association for Cancer Research (AACR) meeting, Chicago, IL, 2018.
175. Kourouklis A.P., Simi A.K., Piotrowski-Daspit A.S., Tien J., Nelson C.M. The relationship between interstitial fluid pressure, collective invasion, and YAP activation in engineered human breast tumors, poster presentation at the American Association for Cancer Research (AACR) meeting, Chicago, IL, 2018.
174. Kosmrlj A., Guyomar T., Goodwin K., Nelson C.M. Morphogenesis of growing tubes, podium presentation at the American Physical Society (APS) meeting, Los Angeles, CA, 2018.
173. Goodwin K., Nelson C.M. Smooth muscle differentiation physically sculpts domain branches during mouse lung development, podium presentation at the American Physical Society (APS) meeting, Los Angeles, CA, 2018.
172. Tien J., Nelson C.M., Radisky D.C, Ekinici K., Nassar A. Engineering invasive human breast tumors with integrated capillaries and lymphatics, poster at the NIH Physical Sciences-Oncology Center (PS-OC) Conference, Boston, MA, 2017.
171. Simi A.K., Anlas A.A., Zhang S., Hsia T., Radisky D.C., Nelson C.M. Stiff microenvironments promote multinucleation via failure of midbody abscission downstream of EMT initiators, poster presentation at the Tumor Microenvironment and Metastasis Meeting, Cold Spring Harbor Laboratory (CSHL), 2017.
170. Siedlik M.J., Pang M.F., Nelson C.M. Nuclei spin prior to mitosis in epithelial tissues, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, 2017.
169. Silver B.B., Nelson C.M. Tissue geometry directs patterns of bioelectric field and growth, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, 2017.
168. Spurlin J.W., Siedlik M.J., Pang M.F., Jayaraman S., Nelson C.M. Extracellular matrix remodeling and activation of focal adhesion kinase direct airway epithelial branching morphogenesis, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, 2017.
167. Simi A.K., Anlas A.A., Zhang S., Hsia T., Radisky D.C., Nelson C.M. Stiff microenvironments promote multinucleation via a failure of midbody abscission downstream of Snail, podium presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, 2017.
165. Han S., Pang M.F., Nelson C.M. Substratum stiffness modulates proliferation downstream of Wnt3a by regulating integrin-linked kinase and frizzled-1, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, 2017.
164. Goodwin K., Nelson C.M. Smooth muscle differentiation guides domain branching in the embryonic mouse lung, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, 2017.
163. Anlas A.A., Nelson C.M. Substratum stiffness and tumor dormancy, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, 2017.
162. Nerger B.A., Piotrowski-Daspit A.S., Wolf A.E., Sundaresan S., Nelson C.M. Quantifying the dynamics of tissue-induced alignment of collagen fibers, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, 2017.

161. Pang M.F., Siedlik M.J., Han S., Stallings-Mann M., Radisky D.C., Nelson C.M. The breast cancer stem cell niche is regulated by tissue stiffness, hypoxia, and integrin-linked kinase, Regeneron Medical Forum, Tarrytown, NY, 2017.
160. Anlas A.A., Nelson C.M. Substratum stiffness and cancer cell dormancy, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Phoenix, AZ, 2017.
159. Siedlik M.J., Manivannan S., Kevrekidis I.G., Nelson C.M. Cell division induces and switches coherent angular motion within bounded cellular collectives, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Phoenix, AZ, 2017.
158. Simi A.K., Anlas A.A., Zhang S., Hsia T., Radisky D.C., Nelson C.M. A soft microenvironment protects from failure of midbody abscission and multinucleation downstream of EMT initiators, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Phoenix, AZ, 2017.
157. Han S., Pang M.F., Nelson C.M. Substratum stiffness modulates proliferation downstream of Wnt3a by regulating integrin-linked kinase and frizzled-1, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Phoenix, AZ, 2017.
156. Nerger B.A., Piotrowski-Daspt A.S., Wolf A.E., Sundaresan S., Nelson C.M. Quantifying tissue-induced collagen fiber alignment in 3D microfabricated tissues, podium presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Minneapolis, MN, 2017.
155. Goodwin K., Nelson C.M. Smooth muscle differentiation shapes domain branches in the developing mouse lung, poster presentation at the Society for Developmental Biology (SDB) annual meeting, Minneapolis, MN, 2017.
154. Goodwin K., Spurlin J.W., Nelson C.M. Buckling during morphogenesis of the lung, podium presentation at the Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C), Tucson, AZ, 2017.
153. Goodwin K., Nelson C.M. Smooth muscle differentiation shapes domain branches in the developing mouse lung, podium presentation at the Mid-Atlantic Regional Meeting of the Society for Developmental Biology (SDB), University of Maryland at Baltimore County, 2017.
152. Pang M.F., Siedlik M.J., Han S., Stallings-Mann M., Radisky D.C., Nelson C.M. Interplay between tissue stiffness, hypoxia, and integrin-linked kinase in the regulation of the breast cancer stem cell niche, poster presentation at the Rutgers: Revolution in Cancer Treatment symposium, Rutgers University, 2017.
151. Simi A.K., Anlas A.A., Zhang S., Hsia T., Radisky D.C., Nelson C.M. A soft microenvironment protects from failure of midbody abscission and multinucleation downstream of EMT initiators, poster presentation at the Mammary Gland Gordon Research Conference, Italy, 2017.
150. Pang M.F., Radisky D.C., Nelson C.M. Role of tissue stiffness and oxygen tension in promoting breast cancer stem cells, poster presentation at the American Association for Cancer Research (AACR) Annual Meeting, Washington, DC, 2017.
149. Simi A.K., Anlas A.A., Zhang S., Hsia T., Radisky D.C., Nelson C.M. A soft microenvironment protects from failure of midbody abscission and multinucleation downstream of EMT initiators, poster presentation at the American Association for Cancer Research (AACR) Annual Meeting, Washington, DC, 2017.

148. Anlas A.A., Nelson C.M. Host tissue stiffness regulates chemotherapy-induced cancer cell dormancy, poster presentation at the American Association for Cancer Research (AACR) Annual Meeting, Washington, DC, 2017.
147. Nelson C.M. Buckling under pressure: new routes to morphogenesis in the lung, poster presentation at the HHMI Faculty Scholars meeting, Bethesda, MD, 2016.
146. Pang M.F., Siedlik M.J., Han S., Stallings-Mann M., Radisky D.C., Nelson C.M. Tissue stiffness and oxygen tension promote the formation of breast cancer stem cells through ILK, poster presentation at the Molecular Biology departmental retreat, Princeton, NJ, 2016.
145. Han S., Nelson C.M. Substratum stiffness and Wnt3a synergistically regulate cell proliferation via YAP/TAZ, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Francisco, CA, 2016.
144. Pang M.F., Siedlik M.J., Han S., Stallings-Mann M., Radisky D.C., Nelson C.M. Tissue stiffness and hypoxia regulate breast cancer stem cells through ILK, podium presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Francisco, CA, 2016.
143. Spurlin J.W., Nelson C.M. Extracellular matrix composition directs airway epithelial branching through focal adhesion kinase, podium presentation at the International Conference on New Advances in Probing Cell-Extracellular Matrix Interactions (CellMatrix), Berlin, Germany, 2016.
142. Anlas A.A., Nelson C.M. Tumor microenvironment and cancer cell dormancy, podium presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, San Francisco, CA, 2016.
141. Spurlin J.W., Nelson C.M. Dynamic changes to extracellular matrix composition direct airway epithelial branching through focal adhesion kinase, podium presentation at the Society for Developmental Biology (SDB) Annual Meeting, Boston, MA, 2016.
140. Spurlin J.W., Tzou D., Pavlovich A.L., Stewart C.R., Gleghorn J.P., Nelson C.M. Airway morphogenesis and morphometric scaling are conserved in chicken, quail, and duck embryos, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, Boston, MA, 2016.
139. Anlas A.A., Nelson C.M. Substratum stiffness regulates drug-induced tumor dormancy, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, MN, 2016.
138. Nerger B., Piotrowski-Daspit A.S., Nelson C.M. Cell-induced alignment of fibrous extracellular matrix in 3D microfabricated tissues, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, MN, 2016.
137. Siedlik M.J., Manivannan S., Kevrekidis Y.G., Nelson C.M. Cell division dictates patterns of emergent collective angular rotation in multicellular tissues, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, MN, 2016.
136. Simi A.K., Hsia T., Radisky D.C., Nelson C.M. A stiff microenvironment induces multinucleation downstream of MMP3, Snail, and cell-cell fusion, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, MN, 2016.
135. Varner V.D., Nelson C.M. The role of cell contractility in epithelial morphogenesis, invited podium presentation at the Experimental Biology Meeting, San Diego, CA, 2016.

134. Pang M.F., Stallings-Mann M., Siedlik M.J., Varner V.D., Han S., Radisky D.C., Nelson C.M. ILK as a signaling nexus for induction of breast cancer stem cells in response to tissue stiffness and hypoxia, poster presentation at the European Association for Cancer Research (EACR) Biennial Congress, Manchester, UK, 2016.
133. Han S., Nelson C.M. Hippo pathway effectors YAP/TAZ integrate tissue mechanics and Wnt signaling to regulate microRNA biogenesis, poster presentation at the American Association for Cancer Research (AACR) Annual Meeting, New Orleans, LA, 2016.
132. Simi A.K., Radisky D.C., Nelson C.M. Stiffness of the tumor microenvironment regulates multinucleation in mammary epithelial cells, poster presentation at the American Association for Cancer Research (AACR) Annual Meeting, New Orleans, LA, 2016.
131. Pang M.F., Stallings-Mann M., Siedlik M.J., Varner V.D., Han S., Radisky D.C., Nelson C.M. Tissue stiffness and hypoxia regulate breast cancer stem cells through ILK, podium presentation at the American Association for Cancer Research (AACR) Annual Meeting, New Orleans, LA, 2016.
130. Piotrowski-Daspit A.S., Tien J., Nelson C.M. Interstitial fluid pressure alters cell motility and collective invasion via EMT marker expression in an engineered model of a human breast tumor, poster presentation at the American Association for Cancer Research (AACR) Annual Meeting, New Orleans, LA, 2016.
129. Varner V.D., Nelson C.M. Mechanics of tissue folding and collective invasion, podium presentation at the Biophysical Society Annual Meeting, Los Angeles, CA, 2016.
128. Navis A., Nelson C.M. Transmural pressure regulates gene expression in the developing mouse lung, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Diego, CA, 2015.
127. Piotrowski A.S., Gjorevski N., Varner V.D., Nelson C.M. Dynamic tensile forces drive collective migration through three-dimensional extracellular matrices, podium presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Salt Lake City, UT, 2015.
126. Siedlik M.J., Nelson C.M. Intercellular forces regulate mitosis and migration within epithelial tissues, podium presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Salt Lake City, UT, 2015.
125. Varner V.D., Nelson C.M. Mechanical instability specifies branch locations during airway branching morphogenesis, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Tampa, FL, 2015.
124. Simi A.K., Cichon M.A., Radisky D.C., Nelson C.M. Matrix compliance regulates tetraploidy in mammary epithelial cells, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Tampa, FL, 2015.
123. Spar B., Nelson C.M. Spatiotemporal kinetic modeling of the myocardin-related transcription factor-A regulatory axis, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Tampa, FL, 2015.
122. Siedlik M.J., Nelson C.M. Locally modulating actomyosin contractility regulates cell proliferation within epithelial tissues, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Tampa, FL, 2015.

121. Piotrowski A.S., Tien J., Nelson C.M. Interstitial fluid pressure drives collective invasion via expression of epithelial-mesenchymal transition (EMT) markers in an engineered model of a human breast tumor, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Tampa, FL, 2015.
120. Anojulu C.P., Varner V.D., Nelson C.M. Quantifying spatial patterns of cell proliferation during monopodial branching in the developing chicken lung, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, Snowbird, UT, 2015.
119. Varner V.D., Nelson C.M. Mechanical control of airway branching morphogenesis, podium presentation at the Society for Developmental Biology (SDB) Annual Meeting, Snowbird, UT, 2015.
118. Varner V.D., Nelson C.M. Mechanical control of airway branching morphogenesis in the developing mouse lung, podium presentation at the Society for Developmental Biology (SDB) Mid-Atlantic Regional Meeting, Princeton, NJ, 2015.
117. Simi A.K., Cichon M.A., Radisky D.C., Nelson C.M. Matrix compliance regulates tetraploidy in mammary epithelial cells, poster presentation at the Society for Developmental Biology (SDB) Mid-Atlantic Regional Meeting, Princeton, NJ, 2015.
116. Piotrowski A.S., Gjorevski N., Varner V.D., Nelson C.M. Dynamic tensile forces drive collective migration through three-dimensional extracellular matrices, poster presentation at the Society for Developmental Biology (SDB) Mid-Atlantic Regional Meeting, Princeton, NJ, 2015.
115. Simi A.K., Cichon M.A., Radisky D.C., Nelson C.M. Matrix compliance regulates tetraploidy in mammary epithelial cells, podium presentation at the CSHL Biology of Cancer meeting, Cold Spring Harbor, NY, 2015.
114. Piotrowski A.S., Tien J., Nelson C.M. Interstitial fluid pressure regulates collective invasion via Snail1, vimentin, and E-cadherin in an engineered human breast tumor model, poster presentation at the CSHL Biology of Cancer meeting, Cold Spring Harbor, NY, 2015.
113. Varner V.D., Gleghorn J.P., Nelson C.M. Viscoelastic folding instability controls airway branching morphogenesis, podium presentation at the Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C), Snowbird, UT, 2015.
112. Nelson C.M. Kinematics of tissue development, poster presentation at the Research Frontiers in the Chemical Sciences Dreyfus Teacher-Scholar Symposium, New York, NY, 2014.
111. Spar B., Nelson C.M. Spatiotemporal mathematical modeling of myocardin-related transcription factor-A signaling, poster presentation at the American Society for Cell Biology (ASCB) annual meeting, Philadelphia, PA, 2014.
110. Simi A., Radisky D.C., Nelson C.M. Matrix compliance regulates tetraploidy in mammary epithelial cells, poster presentation at the American Society for Cell Biology (ASCB) annual meeting, Philadelphia, PA, 2014.
109. Oravsky D., Nelson C.M. Defining how the mechanical and molecular properties of the microenvironment control autophagy in breast cancer cells, poster presentation at the American Society for Cell Biology (ASCB) annual meeting, Philadelphia, PA, 2014.
108. Piotrowski A., Gjorevski N., Varner V.D., Nelson C.M. Dynamic tensile forces drive collective migration through three-dimensional extracellular matrices, poster presentation at the American Society for Cell

Biology (ASCB) annual meeting, Philadelphia, PA, 2014.

107. Lane V., Piotrowski A., Tien J., Nelson C.M. Interstitial fluid pressure influences gene expression and the invasive phenotype of engineered breast tumors, poster presentation at the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCChE) Conference, New Orleans, LA, 2014.
106. Pang M., Radisky D.C., Nelson C.M. Interplay between matrix stiffness, integrin-linked kinase, and hypoxia in the regulation of the breast cancer stem cell niche, poster presentation at the Cancer Institute of New Jersey (CINJ) Mini-retreat: Tumor microenvironment and progression, Princeton, NJ, 2014.
105. Simi A., Radisky D.C., Nelson C.M. Substratum compliance regulates tetraploidy in breast cancer cells, poster presentation at the Cancer Institute of New Jersey (CINJ) Mini-retreat: Tumor microenvironment and progression, Princeton, NJ, 2014.
104. Simi A., Radisky D.C., Nelson C.M. Matrix compliance regulates tetraploidy in breast cancer cells, podium presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Atlanta, GA, 2014.
103. Varner V.D., Gleghorn J.P., Nelson C.M. Mechanical control of airway branching morphogenesis, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX, 2014.
102. Simi A., Radisky D.C., Nelson C.M. Substratum compliance regulates tetraploidy in breast cancer cells, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX, 2014.
101. Varner V.D., Gleghorn J.P., Nelson C.M. Mesenchyme-free airway branching driven by a growth-induced mechanical instability, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, Seattle, WA, 2014.
100. Anojulu C.P., Varner V.D., Nelson C.M. Reconstructing cell proliferation patterns during monopodial branching in the developing chicken lung, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, Seattle, WA, 2014.
99. Varner V.D., Nelson C.M. Airway branching morphogenesis driven by a growth-induced mechanical instability, podium presentation at the American Society of Mechanical Engineers (ASME) 2014 International Mechanical Engineering Congress and Exposition, Montreal, Canada, 2014.
98. Halpern S., Nelson C.M. Oxygen tension and Rac1b localization, poster presentation at the Northeast Bioengineering Conference (NEBEC), Boston, MA, 2014.
97. Varner V.D., Gleghorn J.P., Nelson C.M. Mechanical feedback drives airway branching morphogenesis during mesenchyme-free culture, poster presentation at the World Congress of Biomechanics meeting, Boston, MA, 2014.
96. Gleghorn J.P., Varner V.D., Miller E., Radisky D.C., Nelson C.M. Pressure-dependent airway smooth muscle contractions regulate lung branching morphogenesis, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, New Orleans, LA, 2013.
95. Piotrowski A., Tien J., Nelson C.M. Engineering the host and tumor microenvironment. Synthetic tools for understanding biological phenomena and Multi-scale materials in the study and treatment of cancer



joint symposium, Materials Research Society (MRS) 2013 Fall National Meeting, Boston, MA, 2013.

94. Piotrowski A., Tien J., Nelson C.M. Interstitial fluid pressure modulates gene expression in engineered models of breast tumors, podium presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, San Francisco, CA, 2013.
93. Spar B., Chen Q.K., Nelson C.M. A kinetic model for subcellular distribution of myocardin-related transcription factor A and actin, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Seattle, WA, 2013.
92. Siedlik M.J., Gjorevski N., Piotrowski A., Varner V.D., Nelson C.M. Tensile forces drive collective cell migration through three-dimensional extracellular matrices, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Seattle, WA, 2013.
91. Piotrowski A., Tien J., Nelson C.M. Interstitial fluid pressure modulates gene expression in engineered breast tumors, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Seattle, WA, 2013.
90. Varner V.D., Gleghorn J.P., Nelson C.M. 3D traction force microscopy reveals branching mechanics in the developing mouse lung, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Seattle, WA, 2013.
89. Stanton A., Nelson C.M. The role of mechanical stresses in regulation of FGF10 signaling in embryonic mouse lung development, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Seattle, WA, 2013.
88. Kim H.Y., Miller E., Radisky D.C., Nelson C.M. Shaping the airway epithelium during branching morphogenesis of the lung: A role for stereotyped smooth muscle differentiation, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Seattle, WA, 2013.
87. Kim H.Y., Radisky D.C., Nelson C.M. Localized smooth muscle wrapping is required for bifurcation during branching morphogenesis of the lung, poster presentation at the Keystone Symposium on Lung Development, Cancer, and Disease, Taos, NM, 2013.
86. Manivannan S., Gleghorn J.P., Nestor J.M., Kevrekidis Y.G., Nelson C.M. Self-propelled particle motion of cells in tissues, podium presentation at the Biophysical Society Annual Meeting, Philadelphia, PA, 2013.
85. Piotrowski A.S., Tien J., Nelson C.M. Modulation of the invasive phenotype of engineered breast tumors by the physical and cellular microenvironment, poster presentation at the Biophysical Society Annual Meeting, Philadelphia, PA, 2013.
84. Mori H., Ghajar C.M., Alcaraz J., Nelson C.M., Seiki M., Bissell M.J. Non-catalytic domains of membrane type I matrix metalloproteinase (MMP14) are involved in mammary branching morphogenesis, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Francisco, CA, 2012.
83. Varner V.D., Kim H.Y., Nelson C.M. Apical constriction initiates budding morphogenesis in the embryonic chicken lung: insights from computational modeling, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Francisco, CA, 2012.
82. Manivannan S., Gleghorn J.P., Nestor J.M., Kevrekidis Y.G., Nelson C.M. Spontaneous oscillatory

rotational behavior during collective cell migration, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Francisco, CA, 2012.

81. Gleghorn J.P., Varner V.D., Radisky D.C., Stone H.A., Nelson C.M. Regulation of lung branching morphogenesis by dynamic fluid flows, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Francisco, CA, 2012.
80. Boghaert E., Gleghorn J.P., Lee K., Radisky D.C., Nelson C.M. Engineered microenvironments to parse host-tumor cell interactions, podium presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Pittsburgh, PA, 2012.
79. Gleghorn J.P., Varner V.D., Stone H.A., Nelson C.M. Lung development on a chip: Luminal fluid flows regulate airway architecture, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, 2012.
78. Mori H., Ghajar C.M., Alcaraz J., Nelson C.M., Seiki M., Bissell M.J. Multiple functional domains of membrane type-1 matrix metalloproteinase (Mmp14) are involved in mammary gland branching morphogenesis, poster presentation at the Signaling by Adhesion Receptors Gordon Research Conference, Colby College, ME, 2012.
77. Kim H.Y., Nelson C.M. Apical contraction of the actomyosin network initiates branching morphogenesis of the embryonic chicken lung, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, Montreal, Canada, 2012.
76. Gjorevski N., Pavlovich A.L., Manivannan S., Lee K., Nelson C.M. Three-dimensional organotypic tissue arrays for quantitative analysis of morphogenesis, podium presentation at the Materials Research Society (MRS) Annual Meeting, San Francisco, CA, 2012.
75. Gjorevski N., Nelson C.M. Mapping mechanical stresses during morphogenesis of three-dimensional epithelial tissues, podium presentation at the Materials Research Society (MRS) Annual Meeting, San Francisco, CA, 2012.
74. Manivannan S., Nelson C.M. Tissue geometry regulates collective cell motility, poster presentation at the Biophysical Society Annual Meeting, San Diego, CA, 2012.
73. Chung J.W., Lee K., Neikirk C., Zhang C., Nelson C.M., Priestley R.D. Photo-responsive stable polymeric nanoparticles, platform presentation at the 2nd US-Mexico Symposium on Advances in Polymer Science, Riviera Maya, Mexico, 2011.
72. Lee K., Gjorevski N., Nelson C.M. Tissue tension controls spatially patterned invasion of mammary epithelial tissue by regulating EMT, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Denver, CO, 2011.
71. Manivannan S., Gleghorn J.P., Nestor J., Nelson C.M. Tissue geometry regulates collective cell motility, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Denver, CO, 2011.
70. Gleghorn J.P., Nelson C.M. Tissue geometry regulates the axis of cell division in epithelial tissues, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Denver, CO, 2011.
69. Gjorevski N., Nelson C.M. Mapping mechanical stresses reveals their role in morphogenesis of three-dimensional epithelial tissues, poster presentation at the American Society for Cell Biology (ASCB)

Annual Meeting, Denver, CO, 2011.

68. Chen Q.K., Lee K., Lui C., Radisky D.C., Nelson C.M. Mechanical properties of the microenvironment regulate epithelial-mesenchymal transition, podium presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Minneapolis, MN, 2011.
67. Gleghorn J.P., Nelson C.M. Tissue geometry controls the axis of cell division, poster presentation at the 4th European Cell Mechanics Meeting, Amsterdam, the Netherlands, 2011.
66. Lee K., Nelson C.M. EMT-related transcription factors promote branching morphogenesis of mammary epithelial tissues, poster presentation at the EMT International Association (TEMTIA) Meeting, Singapore, 2011.
65. Lee K., Nelson C.M. Matrix compliance regulates epithelial mesenchymal transition, poster presentation at the EMT International Association (TEMTIA) Meeting, Singapore, 2011.
64. Lui C., Nelson C.M. Mechanical regulation of mammary progenitor cell differentiation, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Hartford, CT, 2011.
63. Tien J., Lee K., Nelson C.M. A microfluidic device to control interstitial pressures within solid tumors, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Hartford, CT, 2011.
62. Lee K., Chen Q.K., Lui C., Gomez E.W., Radisky D.C., Nelson C.M. Matrix compliance regulates epithelial-mesenchymal transition, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Hartford, CT, 2011.
61. Chen Q.K., Lee K., Lui C., Radisky D.C., Nelson C.M. Cooperative signaling in the induction of epithelial-mesenchymal transition, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Hartford, CT, 2011.
60. Gjorevski N., Nelson C.M. Mapping of mechanical stresses within three-dimensional epithelial tissues, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Hartford, CT, 2011.
59. Gleghorn J., Kwak J., Pavlovich A.L., Nelson C.M. Computational modeling of inhibitory gradients in lung development, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Hartford, CT, 2011.
58. Boghaert E., Radisky D.C., Nelson C.M. Host epithelial geometry regulates breast cancer cell invasiveness, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Hartford, CT, 2011.
57. Tien J., Nelson C.M. Effect of interstitial pressure on epithelial invasion from human mammary ducts, poster presentation at the Department of Defense (DoD) Breast Cancer Research Program (BCRP) Era of Hope Meeting, Orlando, FL, 2011.
56. Gleghorn J., Kwak J., Pavlovich A.L., Nelson C.M. Role of TGF $\beta$  inhibitory morphogen gradients in chick lung development, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, Chicago, IL, 2011.
55. Nelson C.M. Building an epithelial tree branch by branch, poster session at the Burroughs Wellcome Fund Career Award at the Scientific Interface meeting, Raleigh, NC, 2011.

54. Boghaert E., Radisky D.C., Nelson C.M. Host epithelial geometry regulates breast cancer cell invasiveness, podium presentation at the Mammary Gland Biology Gordon Research Conference, Newport, RI, 2011.
53. Lee K., Chen Q.K., Lui C., Gomez E.W., Radisky D.C., Nelson C.M. Regulation of epithelial-mesenchymal transition by mechanical signals from the microenvironment, poster presentation at The biology of cancer: microenvironment, metastasis & therapeutics, Cold Spring Harbor Laboratory, NY, 2011.
52. Gjorevski N., Nelson C.M. Cellular branching programs in native and engineered tissues, podium presentation at the Keystone Symposium on Lung Development and Repair, Santa Fe, NM, 2011.
51. Chen Q.K., Gomez E.W., Radisky D.C., Nelson C.M. The role of biophysical and biochemical signals in epithelial-mesenchymal transition, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, 2010.
50. Lui C., Nelson C.M. Stem cell differentiation and the mechanical microenvironment, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, 2010.
49. Boghaert E., Nelson C.M. Spatial regulation of host-tumor cell interactions, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, 2010.
48. Manivannan S., Pavlovich A.L., Nelson C.M. Adipose stroma induces branching morphogenesis of mammary epithelial tubules, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, 2010.
47. Gjorevski N., Nelson C.M. Mapping of mechanical stresses over three-dimensional epithelial tissues, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, 2010.
46. Lee K., Nelson C.M. EMT-related transcription factors promote branching morphogenesis of mammary epithelial tissues, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Philadelphia, PA, 2010.
45. Manivannan S., Pavlovich A.L., Nelson C.M. Engineered adipose stroma for investigating branching morphogenesis, podium presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Salt Lake City, UT, 2010.
44. Manivannan S., Pavlovich A.L., Nelson C.M. Engineering epithelial/stromal interactions to study branching morphogenesis, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Austin, TX, 2010.
43. Chen Q.K., Gomez E.W., Radisky D.C., Nelson C.M. The role of biophysical and biochemical signals in epithelial-mesenchymal transition, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Austin, TX, 2010.
42. Lee K., Nelson C.M. Defining the gene expression changes required for morphogenesis of engineered tissues, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Austin, TX, 2010.
41. Boghaert E., Nelson C.M. Spatial regulation of host-tumor cell interactions, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Austin, TX, 2010.

40. Lee K., Nelson C.M. EMT-related transcription factors promote spatially patterned invasion of mammary epithelial tissues, poster presentation at the MRS-AACR Joint Conference on Metastasis and the Tumor Microenvironment, Philadelphia, PA, 2010.
39. Gjorevski N., Nelson C.M. Endogenous patterns of mechanical stress regulate branching morphogenesis, poster presentation at the Gordon Research Conference on Signal Transduction by Engineered Extracellular Matrices (STEEM), University of New England, Biddeford, ME, 2010.
38. Gjorevski N., Nelson C.M. Endogenous patterns of mechanical stress regulate mammary branching morphogenesis, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Diego, CA, 2009.
37. Gomez E.W., Radisky D.C., Nelson C.M. Effect of environmental mechanical signals on epithelial-mesenchymal transition, podium presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Nashville, TN, 2009.
36. Gjorevski N., Nelson C.M. Differential cell motility self-organizes engineered tissues, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Pittsburgh, PA, 2009.
35. Kwak J., Nelson C.M. Role of inhibitory morphogen gradients in embryonic lung development, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Pittsburgh, PA, 2009.
34. Gomez E.W., Radisky D.C., Nelson C.M. Regulation of epithelial-mesenchymal transition by mechanical signals from the microenvironment, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Pittsburgh, PA, 2009.
33. Pavlovich A., Manivannan S., Nelson C.M. Engineering epithelial/stromal interactions that mimic development and disease progression, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Pittsburgh, PA, 2009.
32. Boghaert E., Pavlovich A., Nelson C.M. Uncoupling morphogen concentration from gradient in tissue development, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Pittsburgh, PA, 2009.
31. Gjorevski N., Nelson C.M. Endogenous patterns of mechanical stress regulate branching morphogenesis, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Pittsburgh, PA, 2009.
30. Chen Q.K., Radisky D.C., Nelson C.M. Basement membrane regulates orthogonal cell fate decisions by controlling cell morphology, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, Pittsburgh, PA, 2009.
29. Gjorevski N., Nelson C.M. Endogenous patterns of mechanical stress regulate mammary branching morphogenesis, poster presentation at the EMBO Conference on Morphogenesis and Dynamics of Multicellular Systems, Heidelberg, Germany, 2009.
28. Gomez E.W., Radisky D.C., Nelson C.M. Effect of environmental mechanical signals on epithelial-mesenchymal transition, podium presentation at the Engineered Cell Biology III meeting, Chaminade Resort, CA, 2009.
27. LaBarge M.A., Nelson C.M., Villadsen R., Ruth J., Stampfer M.A., Petersen O.W., Bissell M.J. Human

mammary progenitor cell fate decisions are products of interactions with combinatorial microenvironments, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Francisco, CA, 2008.

26. Nelson C.M., Khauv D., Bissell M.J., Radisky D.C. Change in cell shape is required for matrix metalloproteinase-induced epithelial-mesenchymal transition of mammary epithelial cells, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Francisco, CA, 2008.
25. Gomez E.W., Radisky D.C., Nelson C.M. Regulation of epithelial-mesenchymal transition and fibrogenesis by mechanical signals from the microenvironment, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Francisco, CA, 2008.
24. Gomez E.W., Radisky D.C., Nelson C.M. Epithelial-mesenchymal transition is regulated by cell shape and matrix compliance, poster presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Philadelphia, PA, 2008.
23. Chen Q.K., Radisky D.C., Nelson C.M. The role of biochemical and mechanical signals in epithelial-mesenchymal transition, poster presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Philadelphia, PA, 2008.
22. Gjorevski N., Nelson C.M. Tissue development is regulated by endogenous patterns of mechanical stress, podium presentation at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Philadelphia, PA, 2008.
21. Nelson C.M. Cellular dynamics during engineered tissue development, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, St. Louis, MO, 2008.
20. Gjorevski N., Nelson C.M. Tissue development is regulated by endogenous patterns of mechanical stress, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, St. Louis, MO, 2008.
19. Chen Q.K., Radisky D.C., Nelson C.M. The role of biochemical and mechanical signals in epithelial-mesenchymal transition, podium presentation at the Biomedical Engineering Society (BMES) Annual Meeting, St. Louis, MO, 2008.
18. Gomez E.W., Radisky D.C., Nelson C.M. Epithelial-mesenchymal transition is regulated by cell shape and matrix compliance, poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting, St. Louis, MO, 2008.
17. Nelson C.M., Inman J.L., Mori H., Bissell M.J. Cell motility during mammary epithelial branching is MMP-dependent but proteolysis-independent, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Washington DC, 2007.
16. Xu R., LeBeyec J., Moonlee S.-Y., Nelson C.M., Rizki A., Bissell M.J. Cell rounding induced global histone deacetylation in mammary epithelial cells, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Diego, CA, 2006.
15. Alcaraz J., Nelson C.M., Spencer V., Xu R., Mori H., Bustamante C., Bissell M.J. Probing the role of extracellular matrix composition and tensional homeostasis in single mammary epithelial cells by atomic force microscopy, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Diego, CA, 2006.

14. Nelson C.M., van Duijn M., Inman J.L., Fletcher D.A., Bissell M.J. Engineering tissue architecture and morphogenesis in three dimensions, poster presentation at the Signal Transduction by Engineered Extracellular Matrices (STEEM) Gordon Research Conference, New London, CT, 2006.
13. Nelson C.M., van Duijn M., Inman J.L., Fletcher D.A., Bissell M.J. An engineered tissue model to determine position-specific behavior during mammary epithelial branching morphogenesis, poster presentation at the Society for Developmental Biology (SDB) Annual Meeting, Ann Arbor, MI, 2006.
12. Mori H., Alcaraz J., Nelson C.M., Bissell M.J. Membrane type 1 matrix metalloproteinase (MT1-MMP) is a path-generating collagenase in mammary gland branching morphogenesis, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Francisco, CA, 2005.
11. Nelson C.M., van Duijn M., Inman J.L., Fletcher D.A., Bissell M.J. Identification of the key control mechanisms of mammary epithelial branching morphogenesis, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Francisco, CA, 2005.
10. Nelson C.M., Raghavan S., Lim E.A., Chen C.S. A novel quantitative angiogenesis assay for rapid screening, poster presentation at the American Association for Cancer Research (AACR) Annual Meeting, Toronto, Canada, 2003.
9. Nelson C.M., Tan J.L., Pirone D.M., Chen C.S. Mechanotransduction by VE-cadherin crosstalks with focal adhesion signaling pathways to regulate cytoskeletal tension and proliferation, poster presentation at the Signaling via cell-cell interactions Keystone Symposium, Keystone, CO, 2003.
8. Nelson C.M., Raghavan S., Tan J.L., Chen C.S. Cadherins, integrins, and cell shape cooperatively regulate tension and the actin cytoskeleton, poster presentation at the Cell migration and invasion Keystone Symposium, Breckenridge, CO, 2003.
7. Nelson C.M., Chen C.S. Mechanotransduction by VE-cadherin controls endothelial cell proliferation, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Francisco, CA, 2002.
6. Nelson C.M., Chen C.S. Micropatterned substrates to control cell-cell interactions, poster presentation at the Whitaker Foundation Biomedical Engineering Research Conference, San Diego, CA, 2002.
5. Nelson C.M., Chen C.S. Cell-cell signaling by direct contact increases cell proliferation via a PI3K-dependent mechanism, poster presentation at the Signaling by Adhesion Receptors Gordon Research Conference, New London, CT, 2002.
4. Nelson C.M., Chen C.S. Engagement of VE-cadherin controls endothelial cell proliferation, poster presentation at the Cancer Center Fellow Research Day, Baltimore, MD, 2002.
3. Nelson C.M., Chen C.S. Intercellular signaling by direct cell-cell contact increases cellular proliferation via a PI3K-dependent signal, poster presentation at the American Association for Cancer Research (AACR) Annual Meeting, San Francisco, CA, 2002.
2. Nelson C.M., Chen C.S. Control of proliferation by cell-cell interactions, poster presentation at the American Society for Cell Biology (ASCB) Annual Meeting, Washington DC, 2001.
1. Nelson C.M., Tien J., Tan J.L., Chen C.S. Control of proliferation by cell-cell interactions, poster

presentation at the American Society for Cell Biology (ASCB) Annual Meeting, San Francisco, CA, 2000.



## Administrative Service

- AY22-23      Chair, CBE Awards Committee  
CBE Target of Opportunity/Senior Faculty Search Committee  
Ludwig Institute Faculty Search Committee  
Director, Graduate Certificate Program in Bioengineering  
Director, Undergraduate Certificate Program in Engineering Biology  
Director, Hoyt Shared Equipment Laboratory  
Executive Committee, Princeton Writing Program  
Institutional Biosafety Committee (IBC)  
Faculty advisor for the Princeton student chapter of the Biomedical Engineering Society  
First-year (class of 2026) advising for SEAS  
Class of 2024 advising
- AY21-22      Chair, CBE Awards Committee  
CBE Target of Opportunity/Senior Faculty Search Committee  
Director, Graduate Certificate Program in Bioengineering  
Director, Undergraduate Certificate Program in Engineering Biology  
Director, Hoyt Shared Equipment Laboratory  
Institutional Biosafety Committee (IBC)  
Faculty advisor for the Princeton student chapter of the Biomedical Engineering Society  
Executive committee, Quantitative and Computational Biology (QCB) graduate program  
T32 Recruitment Committee, NJ Center for Biomaterials (Rutgers University)  
First-year (class of 2025) advising for SEAS  
Class of 2024 advising
- AY20-21      CBE Awards Committee  
CBE Faculty Search Committee  
Director, Graduate Certificate Program in Bioengineering  
Director, Undergraduate Certificate Program in Engineering Biology  
Director, Hoyt Shared Equipment Laboratory  
Institutional Biosafety Committee (IBC)  
Faculty advisor for the Princeton student chapter of the Biomedical Engineering Society  
Executive committee, Quantitative and Computational Biology (QCB) graduate program  
T32 Recruitment Committee, NJ Center for Biomaterials (Rutgers University)  
First-year (class of 2024) advising for SEAS (fall)
- AY19-20      CBE Awards Committee  
Chair, CBE Target of Opportunity/Senior Faculty Search Committee  
Director, Graduate Certificate Program in Bioengineering  
Director, Undergraduate Certificate Program in Engineering Biology  
Director, Hoyt Shared Equipment Laboratory  
Office of Technology Licensing (OTL) proposal review committee  
ES/SEAS University Commons workshop committee  
Faculty advisor for the Princeton student chapter of the Biomedical Engineering Society  
Executive committee, Quantitative and Computational Biology (QCB) graduate program  
T32 Recruitment Committee, NJ Center for Biomaterials (Rutgers University)  
First-year (class of 2023) advising for SEAS
- AY18-19      CBE seminar series coordinator (spring)  
CBE Awards Committee  
CBE Target of Opportunity/Senior Faculty Search Committee

Director, Graduate Certificate Program in Bioengineering  
Director, Undergraduate Certificate Program in Engineering Biology  
Director, Hoyt Shared Equipment Laboratory  
SEAS Classroom User Group  
Faculty advisor for the Princeton student chapter of the Biomedical Engineering Society  
Executive committee, Quantitative and Computational Biology (QCB) graduate program  
T32 Recruitment Committee, NJ Center for Biomaterials (Rutgers University)  
Laboratory Animal Resources (LAR) Staff Veterinarian search interviewer  
Recruiter for the Office of Admission, Dean of the College  
Class of 2019 advising

AY17-18 CBE Awards Committee  
Director, Graduate Certificate Program in Bioengineering  
Director, Undergraduate Certificate Program in Engineering Biology  
Director, Hoyt Shared Equipment Laboratory  
Faculty advisor for the Princeton student chapter of the Biomedical Engineering Society  
Kuggie Vallee Distinguished Lecture committee  
Executive committee, Quantitative and Computational Biology (QCB) graduate program  
Class of 2019 advising

AY 16-17 CBE Director of Graduate Studies  
Chair, CBE graduate affairs and admissions committee  
Director, Graduate Certificate Program in Bioengineering  
Director, Undergraduate Certificate Program in Engineering Biology  
Director, Hoyt Shared Equipment Laboratory  
Co-chair, Faculty retreat on the future of bioengineering (SEAS)  
Chair, Bioengineering working group  
Faculty advisor for the Princeton student chapter of the Biomedical Engineering Society  
Faculty advisory board, Princeton Undergraduate Research Journal (PURJ)  
Policy subcommittee, Faculty Committee on the Graduate School  
Freshman year committee, School of Engineering and Applied Science (SEAS)  
Graduate affairs committee, School of Engineering and Applied Science (SEAS)  
Executive committee, Quantitative and Computational Biology (QCB) graduate program  
Executive committee, Women in STEM working group  
Class of 2019 advising

AY 15-16 CBE Director of Graduate Studies  
Chair, CBE graduate affairs and admissions committee  
Director, Graduate Certificate Program in Bioengineering  
Director, Undergraduate Certificate Program in Engineering Biology  
Director, Hoyt Shared Equipment Laboratory  
Faculty advisor for the Princeton student chapter of the Biomedical Engineering Society  
Search committee, Dean of the School of Engineering and Applied Science (SEAS)  
Fellowship subcommittee, Faculty Committee on the Graduate School  
Executive committee, Quantitative and Computational Biology (QCB) graduate program  
Executive committee, Women in STEM working group  
Member, University Center of Exemplary Mentoring (UCEM) Committee  
Class of 2016 advising

AY 14-15 CBE Director of Graduate Studies  
Chair, CBE graduate affairs and admissions committee  
Director, Graduate Certificate Program in Bioengineering

Director, Undergraduate Certificate Program in Engineering Biology  
 Director, Hoyt Shared Equipment Laboratory  
 Faculty advisor for the Princeton student chapter of the Biomedical Engineering Society  
 Policy subcommittee, Faculty Committee on the Graduate School  
 Academic Working Group, Task Force on the Future of the Graduate School  
 Executive committee, Quantitative and Computational Biology (QCB) graduate program  
 Executive committee, Women in STEM working group  
 Member, University Center of Exemplary Mentoring (UCEM) Committee  
 Class of 2016 advising

AY 13-14      CBE graduate affairs and admissions committee  
 Faculty advisor for the Princeton student chapter of the Biomedical Engineering Society  
 Chair, faculty committee for “Old School” proposals  
 Director, Graduate Certificate Program in Bioengineering  
 Committee on the Course of Study (spring)  
 Committee for the President’s Award for Distinguished Teaching  
 Executive committee, Women in STEM working group  
 Class of 2016 advising

AY 12-13      Faculty advisor for the Princeton student chapter of the Biomedical Engineering Society  
 Class of 2013 advising

AY 11-12      Princeton School of Engineering and Applied Science freshman advising  
 Faculty advisor for the Princeton student chapter of the Biomedical Engineering Society  
 Committee on the Course of Study  
 Class of 2013 advising

AY 10-11      CBE graduate affairs and admissions committee  
 CBE seminar series coordinator (spring)  
 Faculty advisor for the Princeton student chapter of the Biomedical Engineering Society  
 Committee on the Course of Study  
 Committee for the President’s Award for Distinguished Teaching  
 Class of 2011 advising

AY 09-10      CHE graduate affairs and admissions committee  
 CHE faculty search committee  
 Class of 2011 advising

AY 08-09      CHE graduate affairs and admissions committee  
 Class of 2009 advising

AY 07-08      CHE graduate affairs and admissions committee  
 Class of 2009 advising

**Courses Taught**

*Princeton University*

2023	CBE 440/GHP 450/MOL 440	Physical Basis of Human Disease	<i>to be taught</i>
2022	CBE 341	Mass, Momentum, and Energy Transport	<i>33 students, to be taught</i>

	CBE 440/GHP 450/MOL 440	Physical Basis of Human Disease (CST funding for course development)	46 students (4.7 rating)
2021	CBE 262/EGR 263	Fundamentals of Bioengineering* (Keller Center and CST funding for course development) (* Commendation for Outstanding Teaching)	22 students (5.0 rating)
2020	CBE 341	Mass, Momentum, and Energy Transport* (250th Anniversary Funding for course development) (* Excellence in Teaching Award, Engineering Council)	32 students (4.4 rating)
	CBE 439	Quantitative Physiology* (* Commendation for Outstanding Teaching)	15 students (4.5 rating)
2019	CBE 341	Mass, Momentum, and Energy Transport (Keller Center funding for course development)	23 students (4.4 rating)
	CBE 440/GHP 450	Physical Basis of Human Disease* (* Commendation for Outstanding Teaching)	40 students (4.7 rating)
2018	CBE 262/EGR 263	Fundamentals of Bioengineering	23 students (4.1 rating)
2017	CBE 262/EGR 263	Fundamentals of Bioengineering* (* Commendation for Outstanding Teaching)	13 students (4.6 rating)
	CBE 440/GHP 450	Physical Basis of Human Disease	61 students (4.2 rating)
2016	CBE 262/EGR 263	Fundamentals of Bioengineering (250th Anniversary Funding for course development)	27 students (4.3 rating)
	CBE 507	Research topics in CBE	37 students (3.7 rating)
2015	MOL/EEB/CBE 215	Quant. Principles in Cell and Mol. Biol.	41 students (3.9 rating)
	CBE 507	Research Topics in CBE	41 students (3.6 rating)
	CBE 439/539	Quantitative Physiology	17 students (4.3 rating)
2014	MOL/EEB/CBE 215	Quant. Principles in Cell and Mol. Biol.	50 students (4.2 rating)
	CBE 440/540	Physical Basis of Human Disease	85 students (4.1 rating)
2013	MOL/EEB/CBE 215	Quant. Principles in Cell and Mol. Biol.	64 students (3.6 rating)
2012	MOL/EEB/CBE 215	Quant. Principles in Cell and Mol. Biol.	54 students (3.9 rating)
2011	CBE 439/539	Quantitative Physiology and Tissue Design (Keller Center funding for course development)	48 students (3.8 rating)
	MOL/EEB/CBE 215	Quant. Principles in Cell and Mol. Biol.	62 students (3.9 rating)

	CBE 441	Chemical Reaction Engineering	33 students (4.2 rating)
2010	CBE 440/540 (* Commendation for Outstanding Teaching)	Physical Basis of Human Disease*	31 students (4.7 rating)
2009	CHE/MOL 539 (* Commendation for Outstanding Teaching)	Quantitative Physiology and Tissue Design*	21 students (4.5 rating)
	CHE 441	Chemical Reaction Engineering	36 students (3.9 rating)
2008	CHE 441	Chemical Reaction Engineering	31 students (4.1 rating)

*Previous Institutions*

2005	BioE 24	Aspects of Bioengineering (guest lecturer)	UC Berkeley
2002	580.221	Molecules and Cells (guest lecturer)	Johns Hopkins Univ.
2001	580.461	Biological Transport (graduate instructor)	Johns Hopkins Univ.
2000	580.440	Cell and Tissue Eng. (graduate instructor)	Johns Hopkins Univ.
1997	7.02	Experimental Biology (laboratory instructor)	MIT

**Postdoctoral Trainees [21 total; 8 current]**

Esther W. Gomez (2008-2010)	Postdoctoral fellow Research topic: Regulation of EMT by mechanical stress Current position: Associate Professor, Chemical and Biomolecular Engineering, Pennsylvania State University <ul style="list-style-type: none"> <li>• Postdoctoral fellowship from the New Jersey Commission on Cancer Research (2009)</li> <li>• Postdoctoral fellowship from Susan G. Komen for the Cure (2009-2010)</li> </ul>
KangAe Lee (2009-2012)	Postdoctoral associate Research topic: EMT in branching morphogenesis
Hye Young Kim (2011-2013)	Postdoctoral associate Research topic: Mechanical regulation of lung branching morphogenesis Current position: Young Scientist Fellow, Korea Advanced Institute of Science & Technology (KAIST)
Wenting Zhu (2011-2013)	Postdoctoral associate Research topic: Signaling dynamics during branching morphogenesis Current position: Adjunct Faculty, Biology, The College of New Jersey
Jason P. Gleghorn (2010-2014)	Postdoctoral associate Research topic: Mechanical stress in tissues Current position: Associate Professor, Biomedical Engineering, University of Delaware

Victor D. Varner (2012-2015)	Postdoctoral associate Research topic: Mechanical regulation of branching Current position: Assistant Professor, Bioengineering, University of Texas, Dallas and Biomedical Engineering, University of Texas, Southwestern
Adam Navis (2014-2015)	Postdoctoral associate Research topic: Mechanics of lung development Current position: Senior Manager, Taconic Biosciences
Mei-Fong Pang (2013-2018)	Postdoctoral fellow Research topic: EMT in cancer progression Current position: Scientist, PTC Therapeutics <ul style="list-style-type: none"> <li>• Postdoctoral fellowship from the Swedish Society for Medical Research (SSMF; 2014-2016)</li> <li>• Postdoctoral fellowship from the New Jersey Commission on Cancer Research (2016-2017)</li> <li>• EACR Meeting Bursary Award (2017)</li> </ul>
James W. Spurlin (2015-2020)	Postdoctoral fellow Research topic: Smooth muscle contraction and lung development Current position: Staff Scientist, Rice University <ul style="list-style-type: none"> <li>• Postdoctoral fellowship from the NIH/NHLBI (NRSA; 2017-2020)</li> <li>• Society for Developmental Biology Travel Award (2018)</li> </ul>
Andreas Kourouklis (2017-2019)	Postdoctoral fellow Research topic: Mechanical signaling in tumors Current position: Research Associate, ETH Zurich, Switzerland <ul style="list-style-type: none"> <li>• Postdoctoral fellowship from the New Jersey Commission on Cancer Research (2018-2019)</li> </ul>
Aswin Sundarakrishnan (2018-2020)	Postdoctoral associate Research topic: Pressure dynamics and lung development Current position: Postdoctoral fellow, University of Toronto
Nihan Kilinc (2018-2021)	Postdoctoral fellow Research topic: Dynamics of epithelial-mesenchymal transition Current position: Postdoctoral fellow, MIT <ul style="list-style-type: none"> <li>• Postdoctoral fellowship from the New Jersey Commission on Cancer Research (2020-2021)</li> </ul>
Sandra B. Lemke (2019-2021)	Postdoctoral fellow Research topic: Signaling dynamics in 3D tissues Current position: Zeiss Microscopy <ul style="list-style-type: none"> <li>• Walter Benjamin Postdoctoral Fellowship, DFG (2021)</li> </ul>
Susan E. Leggett (2019-present)	Postdoctoral fellow Research topic: Tumor heterogeneity, invasion, and metastasis <ul style="list-style-type: none"> <li>• Postdoctoral fellowship from the NJ Alliance for Clinical and Translational Science (ACTS) (2020-2023)</li> </ul>
Maryam Kohram (2021-present)	Postdoctoral fellow Research topic: Biophysics of abscission failure

- Center for the Physics of Biological Function Postdoctoral Fellowship (2021-2024)

Bezia Lemma (2021-present)	Postdoctoral associate (with Andrej Kosmrlj) Research topic: Chicken lung development
Carolina Trenado Yuste (2021-present)	Postdoctoral associate (with Sujit Datta and Ned Wingreen) Research topic: Collective motion in tissues
Samhita Banavar (2022-present)	Postdoctoral associate Research topic: Mechanics of morphogenesis
Eric Fowler (2022-present)	Postdoctoral associate Research topic: Lung organoids
Pengfei Zhang (2022-present)	Postdoctoral fellow (with Michelle Chan) Research topic: Spatial transcriptomics and lineage tracing <ul style="list-style-type: none"> <li>• PBI2 Distinguished Postdoctoral Fellowship (2022-2025)</li> </ul>
Aaron Griffing (2022-present)	Postdoctoral associate (with Ricardo Mallarino) Research topic: Evo/devo lung development

#### Graduate Students [19 total; 5 current]

Nikolce Gjorevski (2008-2012)	Ph.D., chemical engineering (2012) Thesis: Mechanical regulation of mammary epithelial branching morphogenesis Current position: Senior Scientist, Roche <ul style="list-style-type: none"> <li>• Best poster award, Gordon Research Conference on Signal Transduction by Engineered Extracellular Matrices (2010)</li> <li>• Kristine M. Layn Award (2010)</li> <li>• Wallace Memorial Honorific Fellowship (2011-2012)</li> </ul>
Qike K. Chen (2008-2013)	Ph.D., chemical engineering (2013) Thesis: Microenvironmental regulation of epithelial-mesenchymal transition Current position: Senior Manager, Equitable
Sriram Manivannan (2009-2013)	Ph.D., chemical engineering (2013) Thesis: Dynamics of tissue morphogenesis Current position: Vice President, Product Development, Vorbeck Materials, Jessup, Maryland <ul style="list-style-type: none"> <li>• Air Products Assistant in Instruction Award (2013)</li> </ul>
Eline Boghaert (2009-2014)	Ph.D., chemical engineering (2014) Thesis: Modeling interactions between a neoplastic cell and its host Current position: Lecturer, Chemical Engineering, University of Waterloo, Canada <ul style="list-style-type: none"> <li>• Predoctoral fellowship from the New Jersey Commission on Cancer Research (2009-2011)</li> <li>• Biomedical Engineering Society (BMES) Graduate Research Award (2011)</li> </ul>
Alexandra Piotrowski	Ph.D., chemical engineering (2016)

- (2012-2016) Thesis: Physical forces and collective migration in development and disease  
Current position: Postdoctoral fellow, Yale University
- Award for Excellence in Teaching, Princeton Graduate School (2015)
  - Charlotte Elizabeth Procter Honorific Fellowship (2015-2016)
  - Wu Prize for Excellence (2015-2016)
  - Best Presentation award, AIChE Meeting (2015)
- Michael Siedlik  
(2013-2018) Ph.D., chemical engineering (2018)  
Thesis: The multiscale dynamics of tissue development: From nuclear spin to collective migration  
Current position: Postdoctoral fellow, University of Pennsylvania
- National Science Foundation Graduate Research Fellowship (2013-2016)
  - Reviewer Choice Award, Biomedical Engineering Society (BMES) annual meeting (2015)
  - Air Products Independent Proposition Award (2016)
  - Princeton School of Engineering and Applied Science Award for Excellence (2016)
  - Wallace Memorial Honorific Fellowship (2017-2018)
- Allison Simi  
(2013-2018) Ph.D., chemical engineering (2018)  
Thesis: Mechanical regulation of genomic instability in cancer  
Current position: Senior Communications Specialist, Janssen Oncology Medical Affairs
- Honorable mention, National Science Foundation Graduate Research Fellowship (2014)
  - Reviewer Choice Award, Biomedical Engineering Society (BMES) annual meeting (2014)
  - Predoctoral fellowship from the New Jersey Commission on Cancer Research (2016-2017)
- Siyang Han  
(2014-2019) Ph.D., molecular biology (2019)  
Thesis: Biomechanical regulation of cell proliferation, epithelial-mesenchymal transition and invasion  
Current position: Medical Associate and Product Manager, Siuvo
- Alişya Anlaş  
(2015-2020) Ph.D., chemical engineering (2020)  
Thesis: Mechanical regulation of autophagy, chemoresistance and genomic instability in breast cancer  
Current position: Postdoctoral fellow, University of Pennsylvania
- Predoctoral fellowship from the New Jersey Commission on Cancer Research (2017-2018)
- Brian Silver  
(2016-2020) Ph.D., molecular biology (2020)  
Thesis: Mechanical regulation of cellular membrane voltage bioelectric gradients in epithelial tissues  
Current position: Postdoctoral fellow, NIH
- Honorable mention, National Science Foundation Graduate Research Fellowship (2016)
  - National Science Foundation Graduate Research Fellowship (2017-2020)
- Bryan Nerger Ph.D., chemical engineering (2021)



- (2016-2021) Thesis: The extracellular matrix as a regulator of branching morphogenesis  
Current position: Postdoctoral fellow, Harvard University
- Postgraduate Scholarship-Doctoral (PGS D) from the Natural Science and Engineering Research Council (NSERC) (2017-2020)
  - AIChE Division 15 Oral Presentation Award (2017)
  - Princeton Professional Development Travel Award (2018)
  - Biomedical Engineering Society (BMES) Student Travel Award (2018)
  - Princeton SEAS Award for Excellence (2018)
  - Kristine M. Layn Award (2018)
  - Mid-Atlantic Society for Developmental Biology (MASDB) Travel Award (2019)
  - Biomedical Engineering Society (BMES) Career Development Award (2019)
  - Finalist, Iozzo Trainee Award, American Society for Matrix Biology (ASMB; 2020)
- Jacob Jaslove  
(2016-2021) M.D., Ph.D., molecular biology (2021)  
Thesis: Retinoic acid signaling and transmural pressure in mouse lung development  
Current position: Medical student, Rutgers University
- Predoctoral fellowship from the NIH/NHLBI (F30; 2017-2022)
- Michael Palmer  
(2017-2021) Ph.D., chemical engineering (2021)  
Thesis: Evolution-guided investigation of developmental mechanisms in lungs of terrestrial vertebrates  
Current position: Postdoctoral fellow, Marine Biological Laboratory
- Society for Developmental Biology (SDB) Emerging Research Organisms Grant (2021)
- Emann Rabie  
(2018-2021) M.D., Ph.D., molecular biology (2021)  
Thesis: Genomic instability and invasion in breast cancer  
Current position: Medical student, Rutgers University
- Predoctoral fellowship from the New Jersey Commission on Cancer Research (declined)
  - Predoctoral fellowship from the NIH/NIGMS (F30; 2020-2023)
- Katharine Goodwin  
(2017-present) Ph.D., quantitative and computational biology (expected)  
Thesis topic: Mechanics of lung development
- Best presentation award, Mid-Atlantic Society for Developmental Biology Meeting (2017)
  - Society for Developmental Biology Travel Award (2018)
  - Student Travel award, Epithelial-Mesenchymal Interactions in Lung Development and Fibrosis Conference (2019)
  - Postgraduate Scholarship-Doctoral (PGS D) from the Natural Science and Engineering Research Council (NSERC) (2019-2022)
  - CFUW/FCFUDU Dr. Margaret McWilliams Pre-Doctoral Fellowship (2019-2020)
  - Student travel award, American Society for Cell Biology (ASCB) Annual Meeting (2019)
  - Charlotte Elizabeth Procter Honorific Fellowship (2021-2022)
  - American Heart Association (AHA) Predoctoral Fellowship (2021-2022)

Payam Farahani (2018-present)	Ph.D., chemical engineering (expected; co-advised by Jared Toettcher) Thesis topic: Optogenetics and mechanobiology <ul style="list-style-type: none"> <li>• National Science Foundation Graduate Research Fellowship (2017-2020)</li> <li>• SABIC Best First Proposition Award (2019)</li> </ul>
Sarah Paramore (2018-present)	Ph.D., molecular biology (expected; co-advised by Danelle Devenport) Thesis topic: Planar cell polarity and lung development <ul style="list-style-type: none"> <li>• Honorable mention, National Science Foundation Graduate Research Fellowship (2019)</li> <li>• GOLD Research Talk Award, Princeton Research Day (2019)</li> <li>• Predoctoral fellowship from the NIH/NHLBI (F31; 2021-2024)</li> <li>• Best graduate student talk, Mid-Atlantic Society for Developmental Biology meeting (2021)</li> <li>• Best graduate student talk, Cell Polarity Signaling GRS (2022)</li> </ul>
Molly Brennan (2019-present)	Ph.D., chemical engineering (expected) Thesis topic: Fibroblasts and the tumor microenvironment <ul style="list-style-type: none"> <li>• Predoctoral fellowship from the New Jersey Commission on Cancer Research (2021-2022)</li> <li>• GradFUTURES Social Impact Fellowship (2022)</li> </ul>
Evelyn Salazar Navarro (2021-present)	Ph.D., chemical engineering (expected) Thesis topic: Engineering alveolar organoids

### Senior Thesis Students [48 total; 2 current]

Sándor Kovács (2007, with Ilhan Aksay)	B.S.E., chemical engineering (2007) Thesis: In vitro deformation of ECM using artificial muscle Ph.D., chemical engineering (2012), Washington University in St. Louis Current position: Principal Project Engineer, Bayer
Sichen Susan Shao (2007-2008, with Amicus)	B.S.E., chemical engineering (2008) Thesis: Compound screening for $\beta$ -glucosidase chaperones for treatment of Parkinson's disease Ph.D., biology (2011), Johns Hopkins University Current position: Assistant Professor, Cell Biology, Harvard Medical School
Alexander Weldon (2007-2008)	B.S.E., chemical engineering (2008) Thesis: Elucidating the microscale mechanical properties of collagen gels Ph.D., chemical engineering (2014), Lehigh University Current position: Senior Engineer, Firefly Space Systems
Kathryn Miller (2007-2008)	B.S.E., chemical engineering (2008) Thesis: Engineering sensors for in situ analysis of growth factor signaling Current position: Staff engineer, Merck & Co.
Jiyong Jay Kwak (2008-2009)	B.S.E., chemical engineering (2009) Thesis: Mapping the dynamics of branching morphogenesis in lungs of chick embryos

Current position: M.D. student, Yonsei College of Medicine

- Calvin Dodd MacCracken Senior Thesis Award (2009)
- Merck & Co. Outstanding Senior Thesis Award (2009)
- Biomedical Engineering Society (BMES) Undergraduate Research Award (2009)

Scott Callahan  
(2008-2009)

B.S.E., chemical engineering (2009)  
Thesis: Subcellular localization of Smad proteins  
Ph.D. (2018), Memorial Sloan Kettering  
Current position: Medical Writer, BGB Group

Joshua Hoff  
(2009-2010)

B.S.E., chemical engineering (2010)  
Thesis: Elucidating the mechanical properties of collagen gels  
Current position: Process Development Engineer, FMC Corporation

Andrew Sue-Ako  
(2008-2010)

B.S.E., chemical engineering (2010)  
Thesis: Mechanical force in chick lung development  
Current position: Patent examiner, USPTO

- Stoll Fellow (2008)

Neal Bennett  
(2010-2011)

B.S.E., chemical engineering (2011)  
Thesis: In situ fluorescence analysis of the mechanical properties of collagen gels  
Ph.D., biomedical engineering (2016), Rutgers University  
Current position: Postdoctoral scholar, Gladstone Institutes

Vanessa Goff  
(2010-2011)

B.S.E., chemical engineering (2011)  
Thesis: Pattern formation during lung development  
Current position: M.D. student, Commonwealth Medical College

Cecillia Lui  
(2009-2011)

B.S.E., chemical engineering (2011)  
Thesis: Mammary stem cell differentiation and the mechanical microenvironment  
M.D., Johns Hopkins University (2015)  
Current position: General Surgeon, Johns Hopkins Medicine

- Ticona Senior Thesis Award (2011)
- Biomedical Engineering Society (BMES) Undergraduate Research Award (2011)

Jacquelyn Nestor  
(2010-2012)

A.B., molecular biology (2012)  
Thesis: The role of microtubules in collective cell migration  
Current position: M.D./Ph.D. student, Hofstra University

Sarah Hom  
(2011-2012)

B.S.E., chemical engineering (2012)  
Thesis: Effect of mechanical tension on morphogenesis of the lung  
Current position: Technical Business Analyst, Indeed.com

Andrea Oliva  
(2011-2012)

B.S.E., chemical engineering (2012)  
Thesis: Bonding collagen sheets using tissue transglutaminase  
Current position: Digital Research Manager, Major League Baseball

Adaeze Undieh  
(2011-2012)

B.S.E., chemical engineering (2012)  
Thesis: A quantitative analysis of the effects of kinase signaling manipulation on lung branching morphogenesis

M.S., biomedical engineering (2016), City College of New York  
Current position: Ph.D. student, Stanford University

Alyssa Mancini  
(2011-2013)  
B.S.E., chemical engineering (2013)  
Thesis: Peripheral innervation and pattern formation during lung development  
M.D., Rutgers Robert Wood Johnson Medical School (2017)  
Current position: Resident, Beth Israel Deaconess Medical Center

- Stoll Fellow (2011)
- Lambert award, Princeton Neuroscience Institute (2012)

Alice Stanton  
(2011-2013)  
B.S.E., chemical engineering (2013)  
Junior paper: Embryonic lung development in chickens and the role of FGF10  
Thesis: The role of mechanical stresses in regulation of FGF10 signaling in embryonic mouse lung development  
Current position: Ph.D. student, Stanford University

- Second place, paper competition, AIChE regional meeting (2013)
- Merck & Co. Outstanding Senior Thesis Award (2013)

Hannah Gu  
(2011-2013)  
B.S.E., chemical engineering (2013)  
Thesis: Genomic instability and the mechanical microenvironment  
M.D., University of Pennsylvania (2017)  
Current position: Pediatric Resident, Children's Hospital of Philadelphia

Samantha Halpern  
(2011-2014)  
B.S.E., chemical engineering (2014)  
Junior paper: The role of oxygen tension on TGF $\beta$ -mediated epithelial-mesenchymal transition  
Thesis: Oxygen tension and Rac1b localization  
Current position: Manager, US Marketing, Vertex Pharmaceuticals

Siu-Yuan Huang  
(2013-2014)  
B.S.E., chemical engineering (2014)  
Thesis: Putting it together: A study of epithelial fusion in the embryonic avian lung  
M.D., New York Medical College (2018)  
Current position: Surgery, Kaiser Permanente

- Ernest F. Johnson Distinguished Service Award, AIChE (2014)

Jason Adleberg  
(2013-2014)  
B.S.E., civil engineering (2014)  
Thesis: Direct writing of silk fibroin for use in three-dimensional culture models of mammary gland tissue  
Current position: M.D. student, Drexel University

Vincent Chu  
(2014-2015)  
A.B., chemistry (2015)  
Thesis: An investigation of Rac1b under normoxia and hypoxia  
Current position: Ph.D. student, Harvard University

Lisa Kojima  
(2014-2015)  
B.S.E., chemical engineering (2015)  
Thesis: Determining airway smooth muscle differentiation pattern during airway bifurcation and quantitative image analysis of tissue differentiation and lung development  
Current position: Research associate, Massachusetts General Hospital

Dror Liebenthal  
B.S.E., chemical engineering (2015)

(2014-2015) Thesis: Branching morphogenesis and epithelial fusion in embryonic development of avian lungs  
Current position: Director of Operations, Toptal

Adrija Navarro (2014-2015) B.S.E., chemical engineering (2015)  
Thesis: Hypoxia and the mechanical microenvironment  
Current position: Ph.D. student, Harvard University

- Merck & Co. Outstanding Senior Thesis Award (2015)

Sahana Jayaraman (2014-2016) B.S.E., chemical engineering (2016)  
Junior paper: The effects of parasympathetic innervation on the development of embryonic chicken lungs  
Thesis: Investigating peripheral innervation and epithelial development in embryonic chicken lungs  
Current position: M.D./Ph.D. student, Johns Hopkins University

- Project X Summer Program Research Fellowship

Divya Seshadri (2013-2016) B.S.E., chemical engineering (2016)  
Thesis: Role of mechanical stretching in inducing fiber alignment in collagen gels  
Current position: Research Associate, Cornerstone Research

Benjamin Spar (2013-2016) B.S.E., computer science (2016)  
Junior paper: Computational kinetic modeling of the spatiotemporal localization of myocardin-related transcription factor A  
Thesis: Information transduction capacity of the RhoA-MRTF-A signaling axis  
Current position: Software developer, General Dynamics Mission Systems

- Computer Science Department Best Poster Award for independent work (Fall 2014)
- Honorable mention, Computing Research Association (CRA) Outstanding
- Undergraduate Male Researcher Award for PhD-granting Institutions (2016)
- Outstanding Senior Thesis Award (2016)

Danny Thomson (2014-2016) A.B., molecular biology (2016)  
Thesis: Investigating mechanisms by which the localization of Rac1b is regulated by hypoxia  
Current position: Research associate, University of Washington

Daniel Tzou (2014-2016) B.S.E., chemical engineering (2016)  
Junior paper: evo-devo lung development  
Thesis: Avian species comparisons and cell shape changes in the developing lung  
Current position: M.D. student, Thomas Jefferson University

Anastasia Ivanushkina (2016-2017) B.S.E., chemical engineering (2017)  
Thesis: The role of p38 MAP kinase in branching morphogenesis of the embryonic chicken lung  
Current position: Consultant, Efficio

Shiyi Li (2015-2017) B.S.E., chemical engineering (2017)  
Junior paper: Rheological characterization of the viscoelastic properties of polyacrylamide gels

	<p>Thesis: Integrin-linked kinase regulates TGFbeta-induced phenotypes on stiff extracellular matrix  Current position: M.D. student, University of Pennsylvania</p>
Lili Macharashvili (2016-2017)	<p>B.S.E., chemical engineering (2017)  Thesis: Effect of mitogen-activated protein kinase kinase inhibition on apical constriction and differential proliferation rate in the embryonic chicken lung</p>
Caitlin Miller (2015-2017)	<p>A.B., chemistry (2017)  Junior paper topic: 3D printing scaffolds  Thesis: Characterization of lyophilized crosslinked chitosan scaffold for tissue engineering and its potential for vascularization  Current position: Healthcare consultant, IQVIA</p>
Arthur Kim (2016-2018)	<p>B.S.E., chemical engineering (2018)  Thesis: The role of MRTF-A in branching morphogenesis of the avian lungs  Current position: Senior Analyst, Marwood Group</p>
Allyson Brown (2017-2018)	<p>B.S.E., chemical engineering (2018)  Thesis: The effects of hydrostatic pressure on the morphogenesis and molecular signaling of embryonic chicken lungs  Current position: Research Associate, Axxess</p>
Nathan Bolanos (2018-2019)	<p>B.S.E., chemical engineering (2019)  Thesis: Elucidating the role of protein phosphatase 2A in branching morphogenesis of the embryonic chicken lung  Current position: Laboratory Technician, Church &amp; Dwight</p>
Sarah Mathew (2018-2019)	<p>B.S.E., chemical engineering (2019)  Thesis: The effects of hypoxia on branching morphogenesis of the embryonic chicken lung  Current position: Analyst, Axiom Healthcare Strategies</p>
Niroshan Anandavisam (2017-2020)	<p>B.S.E., chemical engineering (2020)  Thesis: Influences of mechanotransduction through integrin-linked kinase on collective cell migration  Current position: Graduate student, University of California, Berkeley</p> <ul style="list-style-type: none"> <li>• Overall Excellence in Chemical Engineering Award (2020)</li> </ul>
Rawlison Zhang (2018-2020)	<p>B.S.E., chemical engineering (2020)  Thesis: Advective transport of tenascin-C during lung branching morphogenesis from the airway epithelium into the mesenchyme</p> <ul style="list-style-type: none"> <li>• Stoll Fellow (2019)</li> <li>• Merck Outstanding Senior Thesis Award (2020)</li> </ul>
Albert Jiang (2020-2021)	<p>B.S.E., chemical engineering (2021)  Thesis: Growth under pressure: mechanical regulation of lung branching morphogenesis</p> <ul style="list-style-type: none"> <li>• Essig-Enright Summer Research Fellowship (summer 2020)</li> </ul>
Chantal Thantrong (2020-2021)	<p>B.S.E., chemical engineering (2021)  Thesis: Sex and race differences in gene expression in the developing human</p>

lung related to the pathogenesis of bronchopulmonary dysplasia

Jimi Oniya  
(2021-2022)

B.S.E., chemical engineering (2022)  
Thesis: Regulation of sacculation by mesenchymal Vangl2 during lung development

Sophia Martinez  
(2020-2022)

B.S.E., chemical engineering (2022)  
Thesis: A machine learning approach to understanding the role of tumor heterogeneity on metastatic breast cancer progression

- Stoll Fellowship (summer 2020)
- Ernest F. Johnson Distinguished Outstanding Senior Thesis Award (2022)

Katherine Shelburne  
(2020-2022)

B.S.E., chemical engineering (2022)  
Thesis: Tissue-specific responses to transpulmonary pressure promote branching morphogenesis of the mouse lung

Adam Boukind  
(2020-2022)

A.B., molecular biology (2022)  
Thesis: Branching morphogenesis and the impact of canonical Wnt on mechanical and dynamic properties of the lung mesenchyme

- OURSIP Fellowship (summer 2020)

Nelson Chow  
(2021-present)

A.B., molecular biology (expected)  
Research topic: mesothelium and lung development

Bharvi Chavre  
(2022-present)

A.B., chemistry (expected)  
Research topic: diet and cancer progression

### **Graduate Student Researchers (non-thesis) [17 total]**

Bong-Ihn Koh  
(fall 2010)

Ph.D., molecular biology (2015)  
Rotation topic: Tumor evolution

Katie Morgan  
(summer 2011)

M.D., Ph.D. (expected)  
Rotation topic: Interstitial fluid pressure and tumor invasion

Megan Gladwin  
(fall 2011)

M.S., molecular biology (2014)  
Rotation topic: Chicken lung development

Joseph Koos  
(winter 2012)

Ph.D., molecular biology (2019)  
Rotation topic: Chicken lung development

Carly Geronimo  
(spring 2013)

Ph.D., molecular biology (expected)  
Rotation topic: Chicken lung development

Dena Oravsky  
(2013-2015)

Ph.D., molecular biology (expected)  
Rotation topic: Autophagy and the tumor microenvironment

Megan Koenecke  
(fall 2015)

Ph.D., molecular biology (expected)  
Rotation topic: ECM and lung development

Jacqueline Grimm

Ph.D., molecular biology (expected)

(spring 2016)	Rotation topic: Building optogenetic constructs for membrane targeting
Shiyi Zhou (winter 2017)	Ph.D., molecular biology (expected) Rotation topic: Mechanics and cancer cells
Jake Siebert (summer 2018)	M.D., Ph.D. (expected) Rotation topic: Lung development
Abraham (Avi) Wolf (2016-2019)	Ph.D., chemical engineering (expected) Research topic: Collective migration and rotation
Lena Barrett (2016-2021)	Ph.D., chemical engineering (expected) Research topic: Pressure, stiffness, and phenotype
Richard Thornton (fall 2019)	Ph.D., molecular biology (expected) Rotation topic: Cancer biology
Brandon Trejo (winter 2019)	Ph.D., molecular biology (expected) Rotation topic: Vascular development in the lung
Sara Camilli (spring 2020)	Ph.D., quantitative and computational biology (expected) Rotation topic: bioinformatics analysis of human cancer datasets
Connor Dunn (spring 2021)	Ph.D., molecular biology (expected) Rotation topic: abscission failure
Deepika Bhatnagar (spring 2021)	Ph.D., molecular biology (expected) Rotation topic: effects of pressure on mesenchymal cells

### **Undergraduate Student Researchers (non-thesis) [28 total]**

Lila Cheung (2007-2009)	B.S.E., chemical engineering (2010) Research topic: Chicken lung development Current position: Associate scientist, Amyris, Inc.
Pandora Chua (summer 2008)	B.S.E., chemical engineering (2010) Research topic: Smad-based biosensors M.D., University of Pennsylvania (2015) Current position: Resident Physician, Santa Clara Valley Medical Center <ul style="list-style-type: none"> <li>• Stoll fellow (2008)</li> </ul>
Nadia Tsao (summer 2009)	B.S.E., chemical engineering (2011) Research topic: Tissue-specific differentiation Ph.D., University of Cambridge (2015) Current position: Associate Consultant, Cambridge Healthcare Research
Alina Yang (2010)	B.A., molecular biology (2013) Research topic: Molecular biology Current position: M.D. student, Yale University
Mala Shah	B.S., chemical engineering (Carnegie Mellon University; 2013)



(summer 2010)	Research topic: Molecular biology and chicken lung development Current position: Associate engineer, Caterpillar
Rachel Roesch (summer 2011)	B.S., chemistry and mathematics (The College of New Jersey; 2012) Research topic: Crosslinking gels (with Joe Tien) Current position: Research assistant, University of Pennsylvania
Vyas Ramasubramani (summer 2011)	B.S.E., chemical engineering (2013) Research topic: Quantitative physiology Current position: Analyst, DC Energy
Shwetha Raghuraman (summer 2011)	B.S.E., computer science (2014) Research topic: Dynamics of cell division Current position: Software engineer, Pure
Alexander Judge (2011-2012)	B.S.E., chemical engineering (2014) Research topic: Mechanics in 3D tissues Current position: Scientist, Engineering, Merck
Elen Miteva (spring 2013)	A.B. chemistry (2014) Junior paper topic: MRTF shuttling
Jermaine Blakley (summer 2013)	B.S., biology (Morehouse College; 2015) Research topic: RhoA signaling M.P.A., New York University (2017) Current position: Program Manager, UCSF Health
Ariel Kunkel (2013-2014)	B.S.E., chemical engineering (2015) Research topic: nerves and lung development Current position: Product Manager, CourseKey
Chibuzo Anojulu (2013-2014)	B.S., biology (Pennsylvania State University; expected) Research topic: lung development <ul style="list-style-type: none"> <li>• <i>Choose Development!</i> fellow</li> </ul>
Juliet Baidoo (summer 2014)	B.S., chemistry (City College of New York; 2015) Research topic: optogenetic signaling Current position: Ph.D. student, College of Staten Island
Jasmine Geathers (summer 2014)	B.S., chemistry (Xavier University; 2015) Research topic: patterning cells Current position: M.D. student, Pennsylvania State University
Virginia Lane (summer 2014)	B.S., chemical engineering (University of Florida; 2015) Research topic: interstitial fluid pressure
Carolyn Stewart (summer 2014)	A.B., molecular biology (2016) Research topic: nerves and lung development Current position: Research assistant, Memorial Sloan Kettering Cancer Center
Ed Xiao (2014)	B.S.E., operations research and financial engineering (2016) Research topic: pressure and lung development

Current position: Analyst, Goldman Sachs

John McNeil (spring 2015)	A.B., molecular biology (expected) Research topic: Alternative splicing of Rac1
Miguel Torres (summer 2015)	B.S., electrical engineering (Harold Washington College; expected) Research topic: 3D printing scaffolds
Paradorn Rummaneethorn (summer 2015)	B.S.E., chemical engineering (2018) Research topic: domain branching in lung development Current position: Ph.D. student, University of Pennsylvania
Michael Zhou (2016)	A.B., molecular biology (expected) Research topic: bifurcating branching in avian lungs
Eseiwi Aifuwa (2016)	B.S.E., chemical engineering (2019) Research topic: cancer development
Audrey Shih (2017-2018)	B.S.E., chemical engineering (expected) Research topic: cancer development
Busra Uralcan (summer 2017)	M.D., school of medicine (Medeniyet University, Turkey; expected) Research topic: cancer development
Destiny Batton (summer 2018)	B.S., physiological science (UCLA, expected) Research topic: lung development
Moses Im (summer 2019)	A.B., molecular biology (expected) Research topic: hypoxia inducible factor in lung development
Christine Nguyen (2020-2021)	B.S.E., chemical engineering (expected) Research topic: mammary gland involution <ul style="list-style-type: none"><li>• ReMatch+ Summer Fellowship (summer 2020)</li></ul>

### **High School Student Researchers [19 total; 3 current]**

Maya Anjur-Dietrich (2010-2011)	Princeton Day School (class of 2011) Research topic: Molecular biology & chicken lung development B.S., Bioengineering, Stanford University (2015) Current position: Ph.D. student, Harvard University
Carolina Pelaez (summer 2010)	Union City High School (class of 2011) Research topic: Chicken lung development B.E., Chemical Engineering, Stevens Institute of Technology (2015) Current position: PDP Engineer, BASF <ul style="list-style-type: none"><li>• Gold medal, Hudson County Science Fair (2011)</li><li>• Finalist, Intel International Science and Engineering Fair (2011)</li></ul>
Patrick Quinn (summer 2011)	Peddie School (class of 2012) Research topic: Chicken lung development Current position: Undergraduate student, Rutgers University

Cecily O'Leary (summer 2011)	Bromfield School (class of 2012) Research topic: Tumor pressure A.B., Chemistry, Princeton University (2016)
Akarsh Sharma (spring 2013)	Princeton High School (class of 2013) Research topic: Decellularized lungs Current position: Undergraduate student, Yale University
Daniel Chang (summer 2013)	Peddie School (class of 2014) Research topic: Chicken lung development Current position: Undergraduate student, University of California, Berkeley
Chris Chu (2013-2014)	Montgomery High School (class of 2015) Research topic: Chicken lung development Current position: Undergraduate student, Princeton University
Sanchitha Balasubramanian (summer 2014)	The Hun School of Princeton (class of 2015) Research topic: Optogenetics and morphogenesis Current position: Undergraduate student, Carnegie Mellon University
Louis Petitjean (summer 2014)	Rutgers Preparatory School (class of 2016) Research topic: Patterning red blood cells for sickle cell disease
Tiffany Hsia (2014-2015)	West Windsor-Plainsboro High School South (class of 2016) Research topic: Tissue stiffness and tumor signaling Current position: Undergraduate student, Carnegie Mellon University <ul style="list-style-type: none"> <li>• 1st Place (cell &amp; mol bio), Intel Mercer Science &amp; Engineering Fair (2015)</li> <li>• Research Award, US Air Force (2015)</li> <li>• Research Award, Society for In Vitro Biology (2015)</li> <li>• 1st Place (cell &amp; mol bio), Intel Mercer Science &amp; Engineering Fair (2016)</li> <li>• Research Award, US Air Force (2016)</li> <li>• Research Award, US Navy &amp; Marine Corps Department of Science and Technology (2016)</li> </ul>
Ares Alivisatos (summer 2015)	Princeton High School (class of 2017) Research topic: Development of avian lungs Current position: Undergraduate student, Princeton University
Lily Chu (2015-2016)	Montgomery High School (class of 2017) Research topic: Aneuploidy in tumor cells Current position: Undergraduate student, Wellesley College
Panayiotis (Panos) Vandris (summer 2016)	The Lawrenceville School (class of 2017) Research topic: Lung development Current position: Undergraduate student, Stanford University
Henry Claise (summer 2017)	Hun School of Princeton (class of 2018) Research topic: 3D printing
Sriprachodaya Gaddam (summer 2017)	West Windsor-Plainsboro High School North (class of 2018) Research topic: Cancer development

Gary Zhao (summer 2017, 2018)	Clarence High School (class of 2019) Research topic: Lung development
Raelynn Cui (summer 2022)	Hopewell Valley Central High School (class of 2023) Research topic: Lung development
Irit Laderman (summer 2022)	The Beekman School (class of 2023) Research topic: Lung development
Kayla Zhang (summer 2022)	Princeton Day School (class of 2023) Research topic: Lung development

**Thesis Committees (as non-advisor) [30 total; 9 current]**

2021-present	Sonia Arumuganar Zachary Schmidt	Ph.D., chemical engineering (expected) Ph.D., chemical engineering (expected)
2020-present	Evan Underhill Madeleine Chalifoux Elena Cho	Ph.D., chemical engineering (expected) Ph.D., chemical engineering (expected) Ph.D., chemical engineering (expected)
2018-present	Lena Basta	Ph.D., molecular biology (expected)
2017-present	Archit Verma Shaimar Gonzalez	Ph.D., chemical engineering (expected) Ph.D., cell biol., genetics, molecular medicine (expected) (University of Texas Health Science Center)
2014-present	Brian Wilson Lian Zhu	Ph.D., chemical engineering (expected) Ph.D., chemical engineering (expected)
2011-present	Leah Owens	Ph.D., molecular biology (expected)
Wen Kang Chou	Ph.D., chemical engineering (2020) Advisor: Mark Brynildsen Thesis: Targeting bacterial nitric oxide defenses for the development of novel anti-infectives	
Jasmin Imran-Alsous	Ph.D., chemical engineering (2018) Advisor: Stanislav Shvartsman Thesis: Collective growth in a small multicellular structure	
Teresa Zulueta-Coarasa	Ph.D., cell and systems biology (University of Toronto; 2018) Advisor: Rodrigo Fernandez Gonzalez Thesis: The role of cell mechanics in embryonic wound repair: staggered contraction at the leading edge	
Granton Jindal	Ph.D., chemical engineering (2017) Advisor: Stanislav Shvartsman Thesis: Analyzing pathogenic MEK variants in zebrafish	

Marina Feric	Ph.D., chemical engineering (2016) Advisor: Clifford Brangwynne Thesis: Mechanics of cell growth
Junyoung Park	Ph.D., chemical engineering (2016) Advisor: Joshua Rabinowitz Thesis: Integration of metabolomics and fluxomics via nonequilibrium thermodynamics
Jonathan Robinson	Ph.D., chemical engineering (2016) Advisor: Mark Brynildsen Thesis: Exploration of bacterial nitric oxide stress responses as a source of anti-virulence targets
Josephine Lembong	Ph.D., chemical engineering (2015) Advisor: Howard A. Stone Thesis: Coupling of chemical sensing, mechanosensing, and wound healing in mammalian cells through collective calcium dynamics
Bomyi Lim	Ph.D., chemical engineering (2015) Advisor: Stanislav Shvartsman Thesis: Dynamics of inductive ERK signaling in the Drosophila embryo
James Smadbeck	Ph.D., chemical engineering (2014) Advisor: Christodoulos A. Floudas Thesis: Advances in protein design: Conformational switch, multimeric, and protein-DNA design
Sahar Javaherian	Ph.D., chemical engineering (University of Toronto; 2014) Advisor: Alison McGuigan Thesis: Engineering tissue patterning: Rules governing gene expression patterning and compartment boundary formation in vitro
Brian Figura	Ph.D., chemical engineering (2014) Advisor: Robert K. Prud'homme Thesis: Complex fluidic systems in the energy industry: Interactions of a hydrophobically modified polymer with surfactant worm-like micelles and controlling and measuring the hydration of hydraulic cement
Victoria Sanchez	Ph.D., chemical engineering (2013) Advisor: Stanislav Shvartsman Thesis: ERK signaling during terminal patterning of the Drosophila embryo
Cara Carraher	Ph.D., molecular biology (2013) Advisor: Jean Schwarzbauer Thesis: Substrate rigidity affects fibronectin matrix assembly in fibroblasts
Suzanne D'Addio	Ph.D., chemical engineering (2012) Advisor: Robert K. Prud'homme Thesis: Tuberculosis therapeutics: Engineering of nanomedicinal systems for local delivery of targeted drug cocktails

- Siyang Zhang Ph.D., chemical engineering (2012)  
Advisor: A. James Link  
Thesis: Discovery of anti-apoptotic macromolecular cancer therapeutics and development of a biocompatible nanoparticle system for targeted drug delivery
- Valgarður Sigurðsson Ph.D., anatomy (University of Iceland; 2012)  
Advisors: Þórarinn Guðjónsson and Magnús Karl Magnússon  
Thesis: Cellular and molecular mechanisms in breast morphogenesis and epithelial to mesenchymal transition
- Wan-Yi Wu Ph.D., chemical engineering (2010)  
Advisor: David Wood  
Thesis: Simplified protease-free bioseparation methods by self-cleaving inteins
- Jessica Lembong Ph.D., chemical engineering (2009)  
Advisor: Stanislav Shvartsman  
Thesis: Experimental and computational analysis of tissue patterning in development
- Jeffrey Quinn Ph.D., chemical engineering (2008)  
Advisor: Richard A. Register  
Thesis: Nitroxide-mediated radical polymerization and functional group-containing block copolymers

## Research Support

### *Current Support*

<b>National Institutes of Health</b> U01 CA214292 (PI: Tien + Nelson) Engineered invasive human breast tumors with integrated capillaries and lymphatics	04/01/2017 – 03/31/2023 \$3,281,923
<b>Eric and Wendy Schmidt Transformative Technology Fund</b> Stress ball morphogenesis: Combining mechanics and optogenetics to engineer tissue folding	08/01/2019 – 07/31/2022 \$655,672
<b>National Institutes of Health</b> R01 HD099030 (PI: Nelson) Mechanical forces and the regulation of airway progenitor cells	08/15/2019 – 06/30/2024
<b>Helen Shipley Hunt Fund</b> TBD (PI: Nelson) Measuring changes in mechanics during acute lung injury	03/01/2021 – 08/31/2023 \$100,000
<b>National Science Foundation</b> 2124582 (PI: Nelson) RECODE: Using light and mechanics to monitor and control the differentiation of lung alveolar organoids	12/01/2021 – 11/30/2025 \$1,500,000
<b>HMEI Biodiversity Grand Challenge</b> (PI: Nelson + Mallarino) Endless forms most beautiful: uncovering the molecular basis for diversity in the vertebrate lung	07/01/2021 – 06/30/2023 \$138,000
<b>National Institutes of Health</b> R01 HL164861 (PI: Nelson) Interplay between mechanical forces and retinoic acid in lung development	01/01/2022 – 12/31/2025 \$2,161,018

### *Pending Proposals*

<b>National Institutes of Health</b> R21 HD104041 (PI: Nelson) Mechanical regulation of pulmonary vascular development	09/01/2020 – 08/31/2022
<b>National Institutes of Health</b> DP1 HD111539 (PI: Nelson) Mechanical clocks during fetal development	09/30/2022 – 07/31/2027
<b>National Institutes of Health</b> R01 TBD (PI: Downey+Radisky+Nelson) Defining mechanisms that inhibit lung repair in ARDS	07/01/2022 – 06/30/2026
<b>National Institutes of Health</b> R01 TBD (PI: Nelson+Devenport) Uncovering the mesenchyme-specific roles of planar cell polarity in lung development	09/01/2022 – 8/31/2027

### *Completed Support*

<b>National Institutes of Health</b> R21 CA128660 (PI: Nelson) In vitro synthesis of fibrosis genesis	09/01/2007 – 08/31/2010 \$338,508
<b>Susan G. Komen for the Cure</b> FAS0703855 (PI: Nelson)	04/16/2008 – 04/15/2012

Engineered culture model of breast fibrogenesis	\$600,000
<b>Susan G. Komen for the Cure</b> KG091156 (PI: Nelson) Effects of matrix compliance and mechanical tension on fibrosis	09/15/2009 – 09/14/2012 \$180,000
<b>Princeton Keller Center for Innovation in Engineering Education</b> Course development support for CBE 439/539	summer 2011 \$2,857
<b>Physical Sciences-Oncology Center</b> Pilot (PI: Nelson) Microfluidic culture models to explore how fluid pressure affects the evolution of tumors	01/10/2012 – 01/09/2013 \$50,000
<b>National Institutes of Health</b> R01 GM083997 (PI: Nelson) Spatial patterning of branching morphogenesis	05/01/2008 – 04/30/2014 \$1,441,423
<b>National Institutes of Health</b> R21 HL110335 (PI: Nelson) Mechanical regulation of branching morphogenesis	07/01/2011 – 06/30/2014 \$442,750
<b>Alfred P. Sloan Foundation</b> Sloan (PI: Nelson) Sloan Fellowship in Molecular Biology	09/16/2010 – 09/15/2014 \$50,000
<b>Burroughs Wellcome Fund</b> 1006489 (PI: Nelson) Biophysical dynamics in the regulation of tissue morphogenesis	01/01/2007 – 12/31/2015 \$500,000
<b>Essig-Enright Fund</b> 1602349 (PI: Nelson) Wiring the airways: engineering lungs through nervous stimulation	05/01/2013 – 08/30/2016 \$30,000
<b>National Institutes of Health</b> R21 HL118532 (PI: Nelson) Exogenous fluid forces and branching morphogenesis of the mammalian lung	02/18/2014 – 01/31/2017 \$420,638
<b>Project X Fund</b> TBD (PI: Nelson) Dynamics of matrix remodeling	01/08/2015 – 08/31/2017 \$75,000
<b>David &amp; Lucile Packard Foundation</b> 2008-33018 (PI: Nelson) Packard Fellowship for Science and Engineering	11/15/2008 – 11/14/2017 \$875,000
<b>Helen Shipley Hunt Fund</b> TBD (PI: Nelson) Redox targets for asthma treatment	01/01/2016 – 12/31/2017 \$164,000
<b>National Science Foundation</b> CMMI-1435853 (PI: Nelson) The mechanics of lung development in three different species	09/01/2014 – 08/31/2018 \$400,000
<b>New Jersey Health Foundation</b> TBD (PI: Nelson) Airway remodeling and redox signaling in asthma	03/01/2017 – 12/31/2018 \$35,000
<b>Camille &amp; Henry Dreyfus Foundation</b> The chemistry of morphogenesis: Quantitative analysis of transcription factor kinetics during tissue development	07/01/2012 – 05/30/2019 \$75,000
<b>National Institutes of Health</b> R01 HL120872 (PI: Kahn) Genetic investigation of pulmonary lymphatic development	09/01/2014 – 06/30/2019 \$316,926 (to Princeton)



and function

<b>National Science Foundation</b> CBET-1531871 (PI: Arnold) MRI: Acquisition of an X-Ray Tomography Microscope Supporting Multidisciplinary Fundamental and Applied Research	09/15/2015 – 08/31/2019 \$586,140
<b>National Institutes of Health</b> R01 HL120142 (PI: Nelson) Mechanical regulation of mesenchyme and mammalian lung development	08/15/2014 – 04/30/2020 \$1,620,000
<b>National Institutes of Health</b> R01 CA187692 (PI: Nelson) Biochemical and biophysical effects of the ECM on breast epithelial cells	06/01/2015 – 05/31/2020 \$2,682,842
<b>Helen Shipley Hunt Fund</b> TBD (PI: Nelson) Stopping preterm labor: pharmacokinetic and microfluidic analysis of consequences for lung development	01/01/2019 – 12/31/2020 \$96,121
<b>HHMI</b> 55108548 (PI: Nelson) Faculty scholars award	11/01/2016 – 10/31/2021 \$600,000