

CURRICULUM VITAE

Celeste M. Nelson, Ph.D.

Department of Chemical & Biological Engineering
Department of Molecular Biology
Princeton University
303 Hoyt Laboratory, William Street
Princeton, NJ 08544
Tel: 609.258.8851
Fax: 609.258.1247
E-mail: celesten@princeton.edu
Web: www.princeton.edu/~cmngroup

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

2016-present Professor of Chemical & Biological Engineering
Associated Faculty, Department of Molecular Biology
Member, Rutgers Cancer Institute of New Jersey, Breast Cancer Research and Cancer
Metabolism and Growth Programs

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

2018	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

Editor, *Tissue Morphogenesis volume II, Methods in Molecular Biology* series (2019)

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* (2016-2021)

Editorial advisory board, *Journal of Cell Science* (2016-2018)

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); 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

2019 Co-organizer (with Francois Nedelec, Ulrich Schwarz, Xavier Trepap, 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

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), 2nd 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 (PICASs) 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 ≥ 25 , 50, 100, and 250 ISI citations, respectively)
[ISI total citations = 9147; Average citations per paper = 55; H-index = 42]
[Google scholar total citations = 13129; i10-index = 85; H-index = 49]

Submitted

127. 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, *Dev. Cell*, in submission (submitted 9/25/2018).
126. Nerger B.A., Brun P.-T., **Nelson C.M.** 3D-printing anisotropic networks of type I collagen, *Biomaterials*, in review (submitted 7/13/2018).
125. Spurlin J.W., Siedlik M.J., Pang M.F., Jayaraman S., **Nelson C.M.** Focal adhesion kinase directs tenascin-C expression and airway epithelial branching in the embryonic chicken lung, *Development*, in revision (submitted 8/10/2017).
124. Stanton A.E., Gleghorn J.P., Pavlovich A.L., **Nelson C.M.** Negative transmural pressure disrupts airway morphogenesis by inhibiting FGF10, in revision.
123. Zhang S., Lee K., **Nelson C.M.**, Link A.J. Affinity maturation of a minimal Bim BH3 peptide: Engineering of potent cytotoxic stapled peptides, in revision.

2018

122. Goodwin K., **Nelson C.M.** Myoepithelial crowd control of cancer cells, *J. Cell Biol.*, 217: 3319-3321 (2018).
121. **Nelson C.M.** Epithelial packing: Even the best of friends must part, *Curr. Biol.*, 28: R1190-R1211 (2018).
120. Nerger B.A., **Nelson C.M.** 3D culture models for studying branching morphogenesis in the mammary gland and mammalian lung, *Biomaterials*, in press (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.*, in press (2018).
112. Simi A.K., Pang M.F., **Nelson C.M.** Extracellular matrix exists in a feedback loop that drives tumor progression, *Biomechanics in Oncology*, in press (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 on 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).
- 94**. Pang M.F., Georgoudaki A.M., Lambu L., Johansson J., Tabor V., Hagikura K., Jin Y., Jansson M., Alexander J.S., **Nelson C.M.**, Jakobsson L., Betsholtz C., Sund M., Karlsson M.C., Fuxe J. TGF β 1-induced EMT promotes targeted migration of breast cancer cells through the lymphatic system by activation of CCR7/CCL21-mediated chemotaxis, *Oncogene*, 35: 748-760 (2016).

2015

93. Kim H.Y., Pang M.F., Varner V.D., Kojima L., Miller E., Radisky D.C., **Nelson C.M.** Localized smooth muscle differentiation is essential for epithelial bifurcation during branching morphogenesis of the mammalian lung, *Dev. Cell*, 34: 719-726 (2015).
92. Varner V.D., Gleghorn J.P., Miller E., Radisky D.C., **Nelson C.M.** Mechanically patterning the embryonic airway epithelium, *Proc. Natl. Acad. Sci. USA*, 112: 9230-9235 (2015).
- 91*. Gjorevski N., Piotrowski A.S., Varner V.D., **Nelson C.M.** Dynamic tensile forces drive collective cell migration through three-dimensional extracellular matrices, *Sci. Rep.*, 5: 11458 (2015).
- 90*. Paluch E.K., **Nelson C.M.**, Biais N., Fabry B., Moeller J., Pruitt B.L., Wollnik C., Kudryasheva G., Rehfeldt F., Federle W. Mechanotransduction: use the force(s), *BMC Biology*, 13: 47 (2015).
89. Cichon M.A., **Nelson C.M.**, Radisky D.C. Regulation of epithelial-mesenchymal transition in breast cancer cells by cell contact and adhesion, *Cancer Informatics*, 14: 1-13 (2015).
88. Siedlik M.J., **Nelson C.M.** Regulation of tissue morphodynamics: an important role for actomyosin contractility, *Curr. Opin. Genet. Dev.*, 32: 80-85 (2015).
87. Pang M.F., **Nelson C.M.** Intercellular communication, the tumor microenvironment, and tumor progression. In *Intercellular Communication in Cancer* (ed. Kandouz M.), Springer, 343-362 (2015).

2014

86. Boghaert E., Radisky D.C., **Nelson C.M.** Lattice-based model of ductal carcinoma in situ suggests

rules for breast cancer progression to an invasive state, *PLOS Comp. Biol.*, 10: e1003997 (2014).

85. Simi A.K., Piotrowski A.S., **Nelson C.M.** Mechanotransduction, metastasis, and genomic instability. In *Genomic Instability and Cancer Metastasis: Mechanisms, Emerging Themes, and Novel Therapeutic Strategies*, (eds. Maxwell C. and Roskelley C.), 20: 139-158 (2014).
- 84**. Varner V.D., **Nelson C.M.** Cellular and physical mechanisms of branching morphogenesis, *Development*, 141: 2750-2759 (2014).
83. Schwarz U., **Nelson C.M.**, Silberzan P. Proteins, cells, and tissues in patterned environments, *Soft Matter*, 10: 2337-2340 (2014).
82. Jakus Z., Gleghorn J.P., Enis D., Sen A., Chia S., Liu X., Rawnsley D., Yang Y., Hess P., Zou Z., Yang J., Guttentag S., **Nelson C.M.**, Kahn M.L. Lymphatic vascular function is required perinatally for lung inflation at birth, *J. Exp. Med.*, 211: 815-826 (2014).
81. Siedlik M.J., **Nelson C.M.** Mechanics of tissue morphogenesis. In *Cell and Matrix Mechanics*, (eds. Zemel A. and Kaunas R.), CRC Press, 285-308 (2014).
80. Varner V.D., **Nelson C.M.** Toward the directed self-assembly of engineered tissues. *Annu. Rev. Chem. Biomol. Eng.*, 5: 507-526 (2014).
79. Tien J., **Nelson C.M.** Microstructured extracellular matrices in tissue engineering and development, an update, *Ann. Biomed. Eng.*, 42: 1413-1423 (2014).
78. Kim H.Y., **Nelson C.M.** Epithelial engineering: from sheets to branched tubes. In *Bio-Inspired Materials for Biomedical Engineering* (eds. Kirschner C.M. and Brennan A.B.), 161-173 (2014).
77. Piotrowski A., Varner V.D., Gjorevski N., **Nelson C.M.** Three-dimensional traction force microscopy of engineered epithelial tissues. In *Tissue Morphogenesis (Methods in Molecular Biology)* (ed. Nelson C.M.), 1189: 191-207 (2014).
76. Lee K., **Nelson C.M.** Determining the role of matrix compliance in the differentiation of mammary stem cells. In *Biomimetics and Stem Cells: Methods and Protocols (Methods in Molecular Biology)* (eds. Vunjak-Novakovic G., Turksen K.), 1202: 79-94 (2014).

2013

75. **Nelson C.M.** Forces in epithelial origami, *Dev. Cell*, 26: 554-556 (2013).
74. Varner V.D., **Nelson C.M.** Let's push things forward: disruptive technologies and the mechanics of tissue assembly, *Integr. Biol.*, 5: 1162-1173 (2013).
- 73*. Kim H.Y., Varner V.D., **Nelson C.M.** Apical constriction initiates new bud formation during monopodial branching of the embryonic chicken lung, *Development*, 140: 3146-3155 (2013).
72. Zhu W., **Nelson C.M.** PI3K regulates branch initiation and extension of cultured mammary epithelia via Akt and Rac1 respectively, *Dev. Biol.*, 379: 235-245 (2013).
71. Radisky D.C., **Nelson C.M.** Regulation of mechanical stress by mammary epithelial tissue structure controls breast cancer cell invasion, *Oncotarget*, 4: 498-499 (2013).

70. Gleghorn J.P., Manivannan S., **Nelson C.M.** Quantitative approaches to uncover physical mechanisms of morphogenesis, *Curr. Opin. Biotechnol.*, 24: 954-961 (2013).
69. Zhu W., **Nelson C.M.** Adipose and mammary epithelial tissue engineering, *Biomatter*, 3: 2, e24630 (2013).
- 68*. Chen Q.K., Lee K., Radisky D.C., **Nelson C.M.** Extracellular matrix proteins regulate epithelial-mesenchymal transition in mammary epithelial cells, *Differentiation*, 86: 126-132 (2013).
Selected commentary on this manuscript: *one of five most highly cited papers published in Differentiation*
- 67**. Mori H., Lo A.T., Ghajar C.M., Inman J.L., Alcaraz J., Chen C.S., **Nelson C.M.**, Zhang H., Mott J.D., Bascom J.L., Seiki M., Bissell M.J. Transmembrane/cytoplasmic, rather than catalytic, domains of Mmp14 signal to MAPK activation and mammary branching morphogenesis via binding to integrin $\beta 1$. *Development*, 140: 343-352 (2013).
Selected commentary on this manuscript: Bradbury J. Non-catalytic role for Mmp14 in stromal invasion. *Development*, 140: e202 (2013).

2012

- 66*. Boghaert E., Gleghorn J.P., Lee K., Gjorevski N., Radisky D.C., **Nelson C.M.** Host epithelial geometry regulates breast cancer cell invasiveness. *Proc. Natl. Acad. Sci. USA*, 109: 19362-19367 (2012).
Selected commentary on this manuscript: *highlighted in Mammary Cell News*
65. **Nelson C.M.** Symmetry breaking during morphogenesis in the embryo and in engineered tissues. *AIChE J.*, 58: 3608-3613 (2012).
featured on cover of journal issue
64. Tien J., Truslow J.G., **Nelson C.M.** Modulation of invasive phenotype by interstitial pressure-driven convection in aggregates of human breast cancer cells. *PLOS ONE*, 7: e45191 (2012).
- 63**. Lee K., Chen Q.K., Lui C., Cichon M.A., Radisky D.C., **Nelson C.M.** Matrix compliance regulates Rac1b localization, NADPH oxidase assembly, and epithelial-mesenchymal transition. *Mol. Biol. Cell*, 23: 4097-4108 (2012).
featured on cover of journal issue
Selected commentary on this manuscript: chosen by Editorial Board for *Highlights from MBoC*
62. Manivannan S., **Nelson C.M.** Dynamics of branched tissue assembly. *Stem Cell Res. Ther.*, 3: 42 (2012).
- 61**. Gjorevski N., **Nelson C.M.** Mapping of mechanical strains and stresses around quiescent engineered three-dimensional epithelial tissues. *Biophys. J.*, 103: 152-162 (2012).
60. Zhu W., **Nelson C.M.** PI3K signaling in the regulation of branching morphogenesis. *BioSystems*, 109: 403-411 (2012).
59. Gleghorn J.P., Kwak J., Pavlovich A.L., **Nelson C.M.** Inhibitory morphogens and monopodial branching of the embryonic chicken lung. *Dev. Dyn.*, 241: 852-862 (2012).
58. Kim H.Y., **Nelson C.M.** Extracellular matrix and cytoskeletal dynamics during branching morphogenesis. *Organogenesis*, 8: 56-64 (2012).

- 57*. Chung J.W., Lee K., Neikirk C., **Nelson C.M.**, Priestley R.D. Photo-responsive coumarin-stabilized polymeric nanoparticles as a detectable drug carrier. *Small*, 8: 1693-1700 (2012).
- 56**. **Nelson C.M.**, Gleghorn J.P. Sculpting organs: Mechanical regulation of tissue development. *Annu. Rev. Biomed. Eng.*, 14: 139-154 (2012).
55. **Nelson C.M.** Bioengineering and mechanobiology: pushing (and pulling) the limits of cellular mechanics. *Mol. Biol. Cell.*, 23: 969 (2012).
54. Lui C., Lee K., **Nelson C.M.** Matrix compliance and RhoA direct the differentiation of mammary progenitor cells. *Biomech. Modeling Mechanobiol.*, 11: 1241-1249 (2012).
53. Gjorevski N., Boghaert E., **Nelson C.M.** Regulation of epithelial-mesenchymal transition by transmission of mechanical stress through epithelial tissues. *Cancer Microenviron.*, 5: 29-38 (2012).
52. Gleghorn J.P., **Nelson C.M.** Nanopatterned surfaces for exploring and regulating cell behavior. In *Encyclopedia Nanotech.* (ed. Bhushan B.) Springer, New York, pp. 1670-1678 (2012).
51. Manivannan S., Gleghorn J.P., **Nelson C.M.** Engineered tissues to quantify collective cell migration during morphogenesis. In *Kidney Development: Methods and Protocols (Methods in Molecular Biology vol. 886)* (ed. Michos O.) Springer, New York, pp. 173-182 (2012).
50. Cung K., Slater R.L., Cui Y., Manivannan S., Jones S.E., Ahmad H., **Nelson C.M.**, Naik R.R., McAlpine M.C. Rapid, multiplexed microfluidic phage display. *Lab Chip*, 12: 562-565 (2012).
- 49**. Lee K., **Nelson C.M.** New insights into the regulation of epithelial-mesenchymal transition and tissue fibrosis. *Int. Rev. Cell Mol. Biol.*, 294: 169-219 (2012).

2011

- 48**. Gjorevski N., **Nelson C.M.** Integrated morphodynamic signalling of the mammary gland. *Nat. Rev. Mol. Cell Biol.*, 12: 581-593 (2011).
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Seminars and Papers Presented

I. Invited seminars and lectures

Scheduled

144. EMBO Morphogenetic Engineering of Developmental and Stem Cell Systems, Pasteur Institute, Paris, TBD, 2019.
143. Department of Chemical & Biological Engineering seminar, South Dakota School of Mines, Rapid City, South Dakota, TBD.
142. Department of Chemical & Biological Engineering seminar, University of Buffalo, TBD.
141. Synthetic embryology workshop, Banff International Research Station, Canada, TBD, 2019.
140. Developmental and Stem Cell Biology (DSCB) Research Program, The Hospital for Sick Children, Toronto, Canada, TBD.
139. Plenary Symposium, “Growth and Form”, European Developmental Biology Congress, Alicante, Spain, October 25, 2019.
138. Fluid Physics of Life Workshop, Max Planck Institute for Physics of Complex Systems, Dresden, Germany, October 21-25, 2019.
137. Developmental Biology Center Symposium, University of Minnesota, October 7, 2019.
136. Developmental Biology Gordon Research Conference, Mt. Holyoke College, MA, June 16-21, 2019.
135. International Conference on Bioengineering and Nanotechnology, Baltimore, MD, May 28-31, 2019.
134. Mechanics of airway morphogenesis. Developmental Biology research seminar series, Memorial Sloan Kettering, New York, NY, May 23, 2019.
133. Markey Cancer Center Seminar, University of Kentucky, April 24, 2019.
132. Mechanical forces in lung morphogenesis and differentiation. Symposium on “Bridging cell and tissue mechanics to fate specification in development”, Santiago, Chile, April 1-5, 2019.
131. Women in STEM speaker, Randolph High School, Randolph, NJ, February 27, 2019.
130. Mechanics, midbodies, and EMT. Physical Science of Cancer Gordon Research Conference, Galveston, TX, February 10-15, 2019.
129. Biomechanics of epithelial morphogenesis. Developmental & Regenerative Biology seminar series, Northwestern University, Chicago, IL, January 18, 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, 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 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 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

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.