

Lance F. Barton

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Contributions to Undergraduate Education/Research:

Curriculum: I have developed new courses within the biology department as well as courses for the core curriculum. I regularly teach six courses within biology for all levels of undergraduates. I have used case-based teaching for over a decade, developed research-like experiences in the course laboratory, and I currently teach two courses that use the authentic research experience in the course laboratory model. Within the biology department, I have worked with colleagues to develop a new curriculum, a new major in cell and molecular biology (2013), revamp freshman level labs, and integrate research into the curriculum. I have promoted the use of “clicker” technology, advocated for effective use of peer mentoring and peer education, and I helped develop the STAR program, which is developing a new student competency model for science education that integrates a behavioral model for leadership development into the general science education program. I have co-taught and collaboratively taught several courses at Austin College in both the long semesters and the shortened January term. I have served within our faculty mentoring program to develop a pre-tenured assistant professor and served on the steering committee of Austin College’s faculty development center for eight years. I served on the college-wide curriculum committee at Austin College from 2010-13. Prior to arriving at Austin College, through community outreach programs and volunteer work, I have been in classrooms at every level of K-12, college, graduate, and medical education.

Undergraduate Research: At Austin College, I have worked with colleagues in my department, division, and across divisions to increase the quantity and quality of student research opportunities. Within my department, I developed a tiered set of courses for students to earn credits toward their degree for performing undergraduate research, I developed learning contracts used by our department, I established a productive model for group lab meetings with undergraduates, and I have guided the transition of our research program from a senior thesis dominated model to a developmental program where we enroll high percentages of sophomores and retain them for multiple experiences. For eight years I helped develop an annual poster symposium in the sciences and then became the first coordinator of our all-campus research conference in 2013. I led a two pronged evaluation of our undergraduate research programs on campus in 2012-13 that included a reflective self-study and an external program review, which led to a formal program evaluation committee for undergraduate research in 2014 and ultimately the formation of an undergraduate research office and my appointment as undergraduate research program director in 2015. Much of my career at Austin College has been focused on the creation and development of an effective training program for undergraduates through research.

Education:

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| 2003 | Ph.D. in Immunology
“The Proteasome Activator PA28 and Major Histocompatibility Class One Antigen Processing <i>In Vitro</i> and <i>In Vivo</i> ”
Department of Molecular Genetics, Biochemistry, and Microbiology
University of Cincinnati, College of Medicine, Cincinnati, OH |
| 2001 | Certificate in Preparing Future Faculty (PFF)
Certificate in Preparing Future Faculty in the Life Sciences (PFFLS)
University of Cincinnati |
| 1998 | B.S. - Biology, <i>cum laude</i>
Dickinson College, Carlisle, PA |

Professional Training:

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| 2018 | Certified Specialist of Wine (CSW), Society of Wine Educators |
| 2016 | Summer Leadership Institute, AAC&U/PKAL, Adamstown, MD |

Administrative Positions Held:

- 2020- Present Chair, Biology Department, Austin College, Sherman, TX
- 2015 - 2021 Director, Center for Research, Experiential, Artistic, and Transformative Education (CREATE), Austin College, Sherman, TX

Teaching Experience (undergraduate level):

- 2017 - present Professor, Department of Biology, Austin College, Sherman, TX
- 2009 - 2017 Associate Professor, Department of Biology, Austin College, Sherman, TX
- 2003 - 2009 Assistant Professor, Department of Biology, Austin College, Sherman, TX
- Courses Taught: Cancer Biology (Biol347), Cellular Physiology (Biol248), Human Infectious Diseases (Biol354), Immunology (Biol340), Introductory Cell Biology (Biol116), Research and Design of Experiments (Biol472), Research Experience (Biol240), Non-majors Biology (Biol101 & Sci201), Communication/Inquiry (Freshman Seminar)

Selected Publications:

- Reed KE, DP Aiello, **LF Barton**, SL Gould, K McCain, JM Richardson. (2016) Integrating Leadership Development Throughout the Undergraduate Science Curriculum. *J College Science Teaching*. 45(5):51-59.
- Uchimura Y, **LF Barton**, C Rada and MS Neuberger. (2011) REG γ associates with and modulates the abundance of nuclear activation-induced deaminase. *J Exp. Med.* 208(12): 2385-91.
- Zannini L, D Lecis, G Buscemi, L Carlessi, P Gasparini, E Fonatanella, S Lisanti, **LF Barton**, and D Delia. (2008) REG γ proteasome activator is involved in the maintenance of chromosomal stability. *Cell Cycle* 7(4): 504-512.
- Chen X, **LF Barton**, Y Chi, BE Clurman, and JM Roberts. (2007) Ubiquitin-independent degradation of cell cycle inhibitors by the REG γ proteasome. *Molecular Cell*. 26(6):843-852.
- Barton, L.F.**, HA Runnels, TD Schell, Y Cho, R Gibbons, SS Tevethia, GS Deepe Jr., and JJ Monaco. (2004) Immune Defects in 28-kDa Proteasome Activator gamma-Deficient Mice. *J. Immunol.* 172(6):3948-3954.

Selected Recent Student Research Presentations (227 total): (* indicate undergraduate author)

- Aller E* & **Barton L.F.**, "The Function of the Oncogene c-Myc is Affected by PA28 γ in Cancer." *CUR Posters on the Hill, April 27-28, 2021.*
- Ramirez MG*, Aller EJ*, Fusco AN*, Barrett JH* & **Barton LF**, "Analysis of CURE-generated Data Supports its Utility for Supporting Faculty and Students." *National Conference on Undergraduate Research (NCUR) April 12, 2021.*
- Patel T*, Nguyen TB*, White A*, & **Barton LF**, "Investigating carcinogenesis in early and late stage cancer cell lines." *Texas Academy of Science Annual Meeting, Nacogdoches, TX, February 28-29, 2020, Cell & Molecular Biology 015.082.*
- Kotipalli V*, Shah P*, Aller E*, Ramirez M*, Hoffman J*, McMillen B*, Nguyen TB*, and **Barton LF**, "Screening and Isolation of Cancer Cells Containing CRISPR Deletion of PA28 γ " *Texas Academy of Science Annual Meeting, Nacogdoches, TX, February 28-29, 2020, Cell & Molecular Biology 015.084.*
- Hoffman J. *, McMillen B. *, **Barton L.F.** "PA28 γ Expression Does Not Determine ER α Expression in Mammary Cancer Cells." *American Society for Cell Biology /European Molecular Biology Organization Annual Meeting, Washington, DC, December 7-11, 2019, abstract P2016.*
- Thornburg E.J.C. * & **Barton L.F.** "Regulation of PA28 γ expression by p38 and miRNA7 in Cancer." *Beta Beta South Central Regional Meeting, Cedar Hill, TX, April 6, 2019.*
- Ramesh J. *, Pederson A. *, Aller E. *, **Barton L.F.** "PA28 γ does not promote carcinogenesis via cellular management of oxidative stress" *American Society for Cell Biology /European Molecular Biology Organization Annual Meeting, San Diego, CA, December 8-12, 2018, abstract P1272.*

Kuncham M. *, Ramesh J. *, Shah D.S. *, Smucker B.W., & **Barton L.F.**, “Characterizing the DNA-Binding and Anti-Proliferative Effects of Modified Planar Platinum(II) Compounds” *Society for Advancement of Chicanos/Hispanics and Native Americans in Science Conference, San Antonio, TX, October 11-13, 2018.*

Bundrant B.E. * & **Barton L.F.** “PA28 γ affects cellular resolution of oxidative DNA damage.” *Beta Beta Beta South Central Regional Meeting, Cedar Hill, TX, April 7, 2018.*

Butterfield H*, Nguyen T*, Thornburg E*, Nguyen T*, & **Barton LF**, “Investigating the role of PA28 γ in NF κ B-mediated inflammatory and cancer responses” *Texas Academy of Science Annual Meeting, Midland, TX, March 2-3, 2018, poster 025.201.*

Shah D.S. *, Dang B. *, Hu J. *, Mortenson M.L. *, Smucker B.W., **Barton L.F.** “Platinum coordinated compounds bind DNA and alter cellular viability presenting the potential for use as novel anticancer therapeutics” *American Society for Cell Biology, 56th Annual Meeting, San Francisco, CA, December 3-7, 2016, abstract P1915.*

Barrett J. *, Clinton B. *, Herrera C. *, Liang T. *, Musoke N. *, Reed K.E., **Barton L.F.** “Investigating the Influence of PA28 γ Upon the Mammalian Gastrointestinal Microbiome” *Texas Branch American Society for Microbiology, 2014 Spring Meeting, New Braunfels, TX, April 3-5, 2014, abstract 13.*

Sliz A. *, Flores V.M. *, Raghunath A. *, Jamshidi R.J. *, Iqbal N.S. *, **Barton L.F.** “PA28 γ Regulates p53 Involvement in Cell Fate Decisions following Double Strand Breaks” *American Society for Cell Biology, 53rd Annual Meeting, New Orleans, LA, December 14-18, 2013, abstract 2091.*

Simpson S.S. *, Clarke J.A. *, Ellington L.E. *, Shah P.K. *, **Barton L.F.** “PA28 γ is required for effective initiation of apoptosis signaling by p53.” *American Society for Cell Biology, 51st Annual Meeting, Denver, CO, December 3-7, 2011, abstract 1299.*

Jamshidi R.J. *, Iqbal N.S. *, Collins A.C. *, Zannini L., **Barton L.F.** “PA28 γ Mediates the Progression of Intracellular Apoptosis.” *American Association of Immunologists, 36th Autumn Immunology Conference, Chicago, IL, November 16-19, 2007, abstract 46.*

Hamilton M.P. *, Swamy P. *, Park S. *, **Barton L.F.** “Dynamic Proteasome Regulation by PA28 γ -Dependent and Ubiquitin-Independent Mechanisms.” *American Association of Immunologists, 36th Autumn Immunology Conference, Chicago, IL, November 16-19, 2007, abstract 65.*

Selected Recent Mentored Research Student Awards (75 students, 60 awards total):

- 2021 Emily Aller, Second place, Frank G. Brooks Award for Outstanding Oral Presentation, Beta Beta Beta South Central Region.
- 2020 Tajal Patel, Collegiate Academy Undergraduate Poster Presentation Award; Cell and Molecular Biology Division, “*Investigating carcinogenesis in early and late stage cancer cell lines,*” Texas Academy of Science.
- 2019 Jessica Hoffman and Brittany McMillen, Undergraduate Travel Award to present research at the American Society for Cell Biology /European Molecular Biology Organization Annual Meeting, ASCB Education Committee.
- 2019 Emma Thornburg, First place, Frank G. Brooks Award for Outstanding Oral Presentation, Beta Beta Beta South Central Region.
- 2018 Bethany Bundrant, First place, Frank G. Brooks Award for Excellence in Student Research, Beta Beta Beta South Central Region.
- 2018 Hannah Butterfield, Collegiate Academy Student Research Grant; First place, “*An investigation of PA28 γ implications in oncogenic IKK ϵ signaling,*” Texas Academy of Science.
- 2018 Hannah Butterfield, Collegiate Academy Undergraduate Poster Presentation Award; Cell and Molecular Biology Division, “*Investigating the Role of PA28 γ in NF κ B-mediated Inflammatory and Cancer Responses,*” Texas Academy of Science.

- 2017 Bethany Bundrant, Grants in Aid of Research, “*Investigating the Role of PA28 γ in DNA Base Excision Repair*,” Sigma Xi.
- 2017 Bethany Bundrant, 3rd place Undergraduate Poster Competition Award at the Annual Meeting of the American Society for Cell Biology.
- 2017 Dilan Shah, Second place, Frank G. Brooks Award for Excellence in Student Research, Beta Beta Beta South Central Region.
- 2017 Dilan Shah, Grants in Aid of Research, “*Platinum coordinated compounds bind DNA and alter cellular viability presenting the potential for use as novel anticancer therapeutics*,” Sigma Xi.
- 2016 George Melchor, Minority Affairs Committee Special Recognition (Undergraduate) Presentation Award at the 56th Annual Meeting of the American Society for Cell Biology, ASCB MAC.
- 2015 Rose Massey, Council on Undergraduate Research, Biology Division Travel Award to present research at the 55th Annual Meeting of the American Society for Cell Biology.

Selected Awards and Honors:

- 2019 Bill Richardson Endowed Chair of Skeptical Thought in Center for Research, Experiential, Artistic, and Transformative Education (CREATE), Austin College, Sherman, TX.
- 2019 Roy F. Melugin Award for Outstanding Scholarship in the Sciences, Austin College, Sherman, TX.
- 2016 Nominee for the Minnie Stevens Piper Outstanding Professor of Texas, President’s Office, Austin College, Sherman, TX.
- 2015 Roy F. Melugin Award for Outstanding Service in the Sciences, Austin College, Sherman, TX.
- 2012 Outstanding Scholarship Award, Sciences Division, Austin College, Sherman, TX.
- 2009 Excellence in Teaching and Campus Leadership Award, Austin College, Sherman, TX.
- 2007 Excellence in Teaching Award, Sciences Division, Austin College, Sherman, TX.

Selected Recent Seminars, Workshops, & Other Professional Presentations (82 total):

“Authentic Research Opportunities for All through CUREs: The CUR Mentorship for Integrating Research Into the Classroom (MIRIC) program.” Wolyniak M, **Barton LF**, Sandquist E, Putzke A, Centering Diversity, Equity, and Inclusion in Undergraduate Research and Creative Activity Virtual Conference, Council on Undergraduate Research, June 25, 2021.

“Developing STEM Leaders Through Applied Learning Experiences and Reflection” Richardson JM, **Barton LF**, Findley M, Goldsmith S, McCain KS, AAC&U’s Transforming STEM Higher Education: This Changes Everything Virtual Conference, November 5-7, 2020, Poster 52.

“Mechanisms for Effective Mentoring of Undergraduates in Research Projects” **LF Barton**, M Wolyniak, & K Resendes, American Society for Cell Biology/ European Molecular Biology Organization Annual Meeting, Washington DC, December 8, 2019.

“Mentorship for Developing CUREs: The CUR Mentorship for Integrating Research into the Classroom (MIRIC) Program.” M Wolyniak, **L Barton**, J Fernandez & K Resendes. Building and Enhancing Undergraduate Research and Creative Inquiry Programs URPD Conference, Council on Undergraduate Research, Columbus, OH, June 27, 2019, abstract 34.

“Integrating Research into the Curriculum at Primarily Undergraduate Institutions.” Fernandez, T. Lahm, **L Barton**, Ohio State University, Columbus, OH, June 25, 2019.

“Improving Persistence and Success through Leadership Development in Undergraduate STEM Curricula” **Barton LF**, KS McCain, & JM Richardson, AAC&U’s Transforming STEM Higher Education: Confirming the Authority of Evidence, Atlanta, GA, November 8-10, 2018, Workshop.

“Developing Community among Undergraduate Research Students at a Primarily Undergraduate Institution.” **Barton LF** & J Healy. CUR Biennial Conference, Council on Undergraduate Research, Washington DC, July 2, 2018, abstract 9.

“Multiple Access Points for Research Engagement Encourages Student Success.” **Barton LF** & J Healy. CUR Biennial Conference Workshop, Council on Undergraduate Research, Washington DC, July 1, 2018.

“Developing a research program focused on undergraduates” **Barton LF**, J Fernandes, M Wolyniak, American Society for Cell Biology, 56th Annual Meeting Career Mentoring Roundtable, San Francisco, CA, December 3-7, 2016.

“Sustaining an active research program through classroom undergraduate research experiences” **Barton LF**, American Society for Cell Biology, 56th Annual Meeting, San Francisco, CA, December 3-7, 2016, P843.

“Getting What You Ask for... Now What? Institutionalizing Undergraduate Research via Grass Roots Efforts at Primarily Undergraduate Institutions.” **Barton LF** & KT Lee. CUR Conference Workshop, Council on Undergraduate Research, University of South Florida, June 27, 2016.

“Designing Course-Embedded Research Projects for Sophomore-Level Courses in the Sciences.” **Barton LF** & R Felix. CUR Conference Workshop, Council on Undergraduate Research, University of South Florida, June 27, 2016.

“Mechanisms for Effective Mentoring of Undergraduates in Research Projects.” **Barton LF**, S Byrd, & K Resendes CUR Conference Workshop, Council on Undergraduate Research, University of South Florida, June 27, 2016.

“Promoting Leadership Development Within Undergraduate STEM Curricula” Aiello DP, **LF Barton**, SP Gould, KS McCain, KE Reed, & JM Richardson, AAC&U’s Network for Academic Renewal’s Crossing Boundaries: Transforming STEM Education, Seattle, WA, November 12-14, 2015, abstract P11.

“Explore. Dream. Discover. Frontiers in Cancer Research.” Phi Theta Kappa, Texas Honors Institute, U. of North Texas, Denton, TX, July 25, 2015.

“Undergraduate Research as a Platform to Develop Scientific Leaders.” **Barton LF** & SP Gould. CUR Conference Presentation, Council on Undergraduate Research, Washington D.C., June 29, 2014.

Membership in Professional Societies:

- 2015 - Present Texas Academy of Science, member
 - Student poster and oral presentation judge (2015-17, 19-21)
 - Graduate Student Research Proposal Reviewer (2019, 2021)
 - Undergraduate Student Research Proposal Reviewer (2020)

- 2009 - Present American Society for Cell Biology, member
 - Career Discussion and Mentoring Roundtable leader (2013, 15-18)
 - Undergraduate Poster Judge (2015, 17-18)

- 2003 - Present Council on Undergraduate Research
 - Biology Division Councilor (2013-2022)
 - Biology Division Chair (2020-23)
 - Biology Division Vice-Chair/Chair-Elect (2019-20)
 - Student Programs Task Force (2013 – 2020)
 - Student Resource Center subcommittee chair (2016-2020)
 - Recognized as Outstanding Committee/Task Force of the year (2017)
 - Student Resource Center @ NCUR (2018, 20)
 - Program Reviewer (2016 - present)
 - Austin College Liaison (2007 - Present)
 - Mentor Network volunteer (2007 - Present)
 - Posters on the Hill Abstract Reviewer (2014 - Present)
 - Biology Division Faculty Mentor Awards Reviewer (2014-Present)

