Joseph L. Bull, Ph.D.

ADDRESS

Maseeh College of Engineering and Computer Science
Portland State University

EDUCATION

Northwestern University, Evanston, IL

Ph.D., Mechanical Engineering, June 2000
M.S., Mechanical Engineering, June 1995

University of Wisconsin, Platteville, WI
B.S., Mechanical Engineering, May 1992
Summa Cum Laude

EXPERIENCE

Portland State University, Portland, OR
H. Chik M. Erzurumlu **Dean**, Maseeh College of Engineering and Computer Science, 2022 – present
Professor, with tenure, Department of Mechanical and Materials Engineering, 2022 – present

Tulane University, New Orleans, LA
Associate Dean for Research, Faculty Affairs and Graduate Studies, School of Science and Engineering, 2019 – 2022
Interim Department Chair, Earth and Environmental Sciences, 2019 – 2022
John and Elsie Martinez Biomedical Engineering Chair, 2017 – 2022
Professor, with tenure, Department of Biomedical Engineering, 2017 – 2022

University of Michigan, Ann Arbor, MI
Arthur F. Thurnau Professor, 2013 – 2016
Professor, with tenure, Department of Biomedical Engineering, 2013 – 2016
Arthur F. Thurnau Associate Professor, 2012 – 2013
Master's Program Chair, Department of Biomedical Engineering, 2012 – 2016
Associate Professor, with tenure, Department of Biomedical Engineering, 2007 – 2013
Associate Chair and Director of Undergraduate Program, Department of Biomedical Engineering, 2008 – 2011, and 2016

Associate Professor, Department of Surgery, 2007 – 2012
Assistant Professor, Department of Biomedical Engineering, 2001 – 2007
Assistant Professor, Department of Surgery, 2006 – 2007
Research Investigator, Pediatric Surgery, 2001
Postdoctoral Fellow, Pediatric Surgery, 2000
Visiting Graduate Student (from Northwestern), Biomedical Engineering, 1998 – 2000

Northwestern University, Evanston, IL
Graduate Student Researcher, Biomedical Engineering, 1995 – 2000

Real Estate Improvement Corp., Roscoe, IL
Project Engineer, 1993 – 1995

ACADEMIC LEADERSHIP

Portland State University
Portland State University is Oregon's largest urban research university. Portland State is classified as "R2: Doctoral Universities – High research activity" in the Carnegie Classification of Institutions of Higher Education, and has the Carnegie Community Engagement Classification. PSU's enrollment exceeds 20,000 students and its annual externally funded research expenditures exceed $70M. PSU is a Minority Serving Institution, is an Asian American and Native American Pacific Islander-Serving Institution (AANAPISI) and is an emerging Hispanic Serving Institution (HSI). PSU is the most diverse public university in Oregon, with more than 50% students of color. PSU has the largest Native American enrollment, largest Black enrollment, largest Hispanic enrollment in the state of Oregon. PSU is ranked 222 in National Universities and is ranked 42 in Social Mobility among National Universities by US News & World Report in 2026.

H. Chik M. Erzurumlu Dean, Maseeh College of Engineering and Computer Science (2022-present)
This endowed deanship is the CEO of the Maseeh College of Engineering and Computer Science. The role includes substantial external-facing and campus-wide activities. The Maseeh College is comprised of 5 departments and more than 2,700 students and 132 faculty. The Maseeh College total attributed annual E&G budget expenditures are ~$45M (does not include philanthropy, research expenditures, auxiliary, etc.). The Maseeh College offers B.S., M.S., and Ph.D. programs.

- Fiscal responsibility: Maseeh College became largest net revenue generator of all colleges and schools at PSU in FY2023-24
- Outperformed adopted budget by >$2M every year
- Successful ABET reaccreditation of all Maseeh College undergraduate programs, 2024
- Led successful request for $1.9M state legislature funding to establish a PSU semiconductor center to support workforce development
- Closed $1.3M Daimler Truck North America gift: created three Maseeh College Daimler Professorships, Daimler Graduate Assistantships, and Daimler Scholarships
- Grew Maseeh College's external research grant funding by more than 50% to record level (set record in multiple years including most recent FY), currently > $15M annually
- Set fundraising record for Maseeh College in FY2025, ~$7M, was highest amount of any unit/college/school at PSU and more than 25% of PSU's total for all unit/college/school

fundraising that year
- Fundraising, first College to meet PSU Foundation goal in fiscal years 2023, 2024, and 2025
- Maseeh College led collaboration with College of Liberal Arts and Sciences and Graduate School received Sloan Centers for Systemic Change grant to advance a mission of equitable and diverse STEM PhD programs (only university in the Northwest to receive the grant and only R2, among primarily AAU recipients)
- Maseeh College and PSU invited to be considered for Sloan Indigenous Graduate Partnership (SIGP), an invitation only program of the Sloan Foundation (application process is ongoing)
- Chair of search committee (in progress) in search for PSU Chief Diversity Officer (reports to President), 2025-2026
- Chair of search committee in successful search for Business School Dean, 2023-2024
- Chair of search committee in successful search for inaugural PSU Executive Director for Tribal Relations (reports to President), 2023
- Search committee in successful search for Dean of the College of Liberal Arts and Sciences, 2025
- Search Committee (in progress) for Director of Native American Student and Community Center, 2025-2026
- Successful hiring and retention of faculty, for example, successfully navigated hiring 6 tenure track faculty and 3 non-tenure track faculty during a university-wide hiring pause in AY2022-2023
- Developed College strategic priorities in collaboration with faculty, staff, students, alumni, community and industry
    - Visibility—tell our story more broadly and more often
    - Justice, Equity, Diversity, and Inclusion: Make PSU the destination for Indigenous STEM, Inclusive Innovation, Student Success, Enrollment Sustainability and Growth
    - Grow Education and Research Programs
    - Bring joy to work
- Created and filled new position Maseeh College Communications Manager
- Implemented Maseeh College Newsletter
- Implemented internal faculty and staff bulletins
- Grew media relations and external communications
- Increased external-facing activities and relationship building
- Engaged State Legislature, Governor, US Senator and Representative, US Secretary of Commerce, alumni, industry, community
- Engaged with all of Oregon's federal delegation
- Reimaging Dean's Executive Council to include advocacy, student success, and philanthropy sub-committees
- Created and filled new position of Assistant Dean of Inclusive Innovation
- New position of Student Success & Recruitment Coordinator
- Initiated college-wide undergraduate curriculum overhaul with focus on student success, inclusion, exploration, and improved learning outcomes
- Implemented annual Maseeh College Inclusive Teaching Symposium
- Maseeh College Futures Initiative: revision of tutoring and student success initiatives, including a student mentoring and cohort building program for students from underrepresented backgrounds
- Mentoring and outreach to Native American students

- Engagement with Oregon Tribes' education departments and initiation of tribal visits
- Advocated for creation of new PSU Executive Director of Tribal Relations position
- Collaborations with industry and PSU partners to center Indigenous knowledge in STEAM
- Recruited two Native American engineering CEOs to Maseeh College Dean's Executive Council
- New degree programs in AI, cybersecurity, Applied Linguistics + Computer Science and (collaboration with College of Liberal Arts and Science, appears to be first undergrad program nationally to combine CS/AI/LLM and linguistics, has component of language revitalization and sustaining at risk languages), planning new biomedical engineering minor, biomedical engineering major collaboration with OHSU
- Growth in existing computer science, computer engineering, power, and semiconductor programs
- New research initiatives: biomedical engineering, clean tech and environmental sustainability, growth in CS, AI, cybersecurity, electrical engineering, power, and semiconductor
- Implemented faculty mentoring and professional development programs
- Revitalized community and transitioned to in person post COVID through townhalls, listening sessions, lunch with the Dean, holiday party, awards events, community building, planning for facility renovation to enhance interaction and collaboration, building collaboration across campus and across institutions
- In collaboration with Executive Director for Tribal Relations implemented tribal visits with tribal councils of all of Oregon's federally recognized tribes
- Collaborated with Travel Portland to attract American Indian Science and Engineering Society National Conference to Portland in 2026
- Maseeh College led effort to host American Indian Science and Engineering Society North Region Conference (Regions 1 and 5) on PSU campus in 2025
- Re-established the Native Caucus, PSU-wide Indigenous employee resource group
- Maseeh College of Engineering and Computer Science at Portland State University received American Society for Engineering Education Bronze Award Diversity Recognition Program. 2024-2026
- Successfully navigated PSU's Academic Program Revitalization in AY2024-2025 to meet college target to contribute to eliminating the university's structural deficit through cost savings, curricular efficiencies, and growth without eliminating any tenure track faculty or non-tenure track faculty positions
- Maseeh College moved from unranked in both national university engineering doctoral and undergraduate to 158 and 161 in US News & World Report rankings, respectively
- Built highly effective Dean's Office and college teams
- President's University Leadership Council (President's Executive Team), 2025-2026

Tulane University

As a member of the prestigious Association of American Universities, a select group of the leading research universities in the United States and Canada with "preeminent programs of graduate and professional education and scholarly research", Tulane consistently earns high rankings for its academic programs. Tulane is classified as "R1: Doctoral Universities – Very high research activity" in the Carnegie Classification of Institutions of Higher Education. Of more than 4,300 higher educational institutions rated by the foundation, Tulane remains in that prestigious category that includes only two percent of universities nationwide. Tulane enrolls over 14,000 students and employs approximately 2,000 faculty. Its annual research

expenditures exceed $200 million. During my time at Tulane, it was ranked 39-42 in National Universities by US News & World Report.

Associate Dean for Research, Faculty Affairs and Graduate Studies, School of Science and Engineering, Tulane University (2019-2022)
Performs a critical leadership role within the School of Science and Engineering (SSE), responsible for overseeing and directing research, faculty, and graduate studies within SSE.

- Research incentive program—introduced program to return portion of indirect costs on grants to PI to incentivize faculty externally funded research
- Faculty Ph.D. student graduation incentive program—developed program to reward faculty for each Ph.D. student advisee supported on grants upon graduation
- SSE record years for external research funding during my time as associate dean, with external research funding in SSE in FY 2022 with record year of $30M, roughly doubling research expenditures during my time as associate dean.
- Doubled the number of active NSF CAREER grants in SSE
- SSE wide graduate student recruiting—school led recruiting visits coordinated across departments to leverage common resources of SSE and increase number of underrepresented minority students
- Introduced Ph.D. student tuition supported on research grants to align revenues and expenditures within SSE
- Developed faculty mentoring program that supports all untenured faculty (assistant professors and professors of practice) and faculty who have another potential promotion (associate professors)
- Implemented faculty research working groups to explore collaboration and funding
- Tulane Research & Innovation Award—developed research program for incoming undergraduate students to work with faculty during first year of undergraduate studies with selection process that is part of the recruiting and admissions process
- New SSE faculty awards program, including first SSE Faculty Honors and Awards Dinner, and implementation of SSE Honors and Awards Committee for internal and external awards
- Led change to holistic review of Ph.D. admissions to improve equity, diversity, and inclusion in graduate programs
- Developed professionalism program
- Managed graduate student COIs and research compliance within SSE
- Implemented TA expectation forms with SSE to communicate expectations more effectively and to ensure fair service requirements across graduate student teaching assistants
- Implemented SSE department research and teaching metrics
- New class size guidelines to build student cohorts and manage resources more effectively
- Manage cost share for grants
- Founded the Tulane Research Council in collaboration with the Vice President for Research, and chaired since its inception for the remainder of my time at Tulane
- Development of Tulane University Research Awards and the Tulane Research Hall of Fame, university-wide programs to celebrate outstanding investigators (Tulane Research Council)
- Tulane Centers of Excellence Program focused on convergent research by multidisciplinary teams (Tulane Research Council)
- SSE leader of Grant Lifecycle Management Redesign project to update pre- and post-

award grant management across the university, and campus leader of the project as member of the Executive Team and Steering Committee
- Tulane Life Science eClinical Platform, Executive Team and Steering Committee, to improve clinical trial speed and quality through digital optimization and modernization of clinical trial execution
- COVID response for research, faculty, and graduate students
- SSE Strategic Planning Committee, including development of strategic initiatives and currently ongoing oversight of the SSE Strategic Planning Committee in developing recommendations on space allocation and revision of P&T process
- Supported successful efforts for SSE PI's to obtain research center and program project grants
- Work with Dean to evaluate and manage tenure and promotion, faculty annual reviews and merit raises
- Development of long-term faculty hiring plans
- Successful recruiting and retention of SSE faculty and staff
- Interface with SSE Advisory Board and work with task force within the board to address strategic planning, convergent research, and graduate educational programs
- Development, corporate relations, and government relations within SSE
- Member of ABET reaccreditation team (all engineering programs reaccredited for 6 years in 2020 following site visit in fall 2019)
- SACS reaccreditation
- Paul Hall planning and construction; new 76,000 square foot interdisciplinary building that broke ground at end of 2020, completed fall 2023; SSE research labs, animal research facilities, cleanroom, and auditorium
- Equity, diversity, inclusion, and anti-racism faculty and student activities
- A Strategy for Tomorrow Steering Committee, leads development and implementation of Tulane's equity, diversity, and inclusion strategic plan
- Strategic planning and implementation of the new Tulane Innovation Institute, which is focused on tech transfer and innovation
- Innovation Institute Commercialization Ideation Committee, co-chair of Incentivize and Recognize Innovators/Mentors Sub-Committee

Interim Department Chair, Department of Earth and Environmental Sciences, Tulane University (2019-2022)
- Significantly improved department culture and climate
- Faculty development, searches, and retention, including hiring 3 regular faculty, an endowed professor, and 2 successful retentions
- Hired new staff
- Grew diversity of faculty, staff, and students
- Oversaw departmental faculty promotions and reappointments
- Led development of departmental strategic plan
- Undergraduate enrollment more than doubled
- Grew PhD enrollment and transitioned from ~half supported on research grants to nearly all graduate students supported on research grants
- Improved department ranking, moved to 70 from 103 in USNWR rankings during time as chair
- Implemented professional online courses for GIS certificate
- Undergraduate program revision
- Equity, diversity, and inclusion initiatives within department

- Alumni and donor relations
- Faculty mentoring, including supporting faculty in grant proposal success, including NASA, NSF, NSF CAREER (first in the history of the department), and others
- Developed succession plan, mentored and supported professional development of next chair

Graduate Program Director, Department of Biomedical Engineering, Tulane University (2018-2019)

- Managed graduate programs, M.S. and Ph.D.
- Oversaw admissions
- Administered teaching assistant assignments

University of Michigan

As a founding member of the prestigious Association of American Universities and one of the premier public universities in the country, the University of Michigan consistently earns high rankings for its academic programs. Michigan is classified as “R1: Doctoral Universities – Very high research activity" in the Carnegie Classification of Institutions of Higher Education. Founded in 1817, Michigan is one of the top research universities in the world and is consistently ranked in among the top 3 public universities by U.S. News & World Report and its College of Engineering is consistently ranked in the top 10. University of Michigan Medical School is consistently ranked among the top nationally, however it withdrew from the U.S. News & World Report annual rankings process in January 2023. During my time at Michigan, Biomedical Engineering transitioned from a College of Engineering Department to a joint department between College of Engineering and School of Medicine (at the time only one of two institutions ranked in the top 10 in both engineering and medicine). Michigan enrolls over 52,000 students and employs more than 8,400 faculty. Michigan’s operating budget exceeds $15 billion and its annual research expenditures exceed $2 billion. When I started at Michigan, the Department of Biomedical Engineering was only a few years old and the undergraduate program was new. Beginning in my time as associate chair and since, the department has been consistently ranked in the top 10 in the country.

Associate Chair and Director of Undergraduate Program, Department of Biomedical Engineering, University of Michigan (2008-2011 and 2016)

I served as the first associate chair and director of undergraduate program in the department. The undergraduate program began in 2001, and I was involved in shaping the program prior to taking on this official role in 2008.

- Revised undergrad curriculum—computational thread and experiential learning, including flipped classroom and other teaching modalities (led development of undergrad curriculum)
- Led department’s first ABET re-accreditation
- Grew undergraduate enrollment by 50%, from approximately 140 to 210 (students are in the major for second through last years of their undergraduate degree and some variations in when students declare make numbers approximate)
- Mentored faculty in teaching
- Undergraduate program moved into top 10 in US News & World Report rankings
- Oversaw faculty advising of students and assessment of our curriculum
- In a separate role, served on the Center for Research on Learning and Teaching Advisory Board
- In a separate role, served on UM ADVANCE Advisory Board, implemented faculty

mentoring program and variety of inclusion activities
- Led department's undergraduate recruiting and mentoring activities
- Implemented town hall meetings with undergraduate students

Executive Committee, Department of Biomedical Engineering, University of Michigan (2008-2011, 2015-2016)
- Led searches
- Strategic planning
- Formulated research priorities
- Faculty service and committee assignments
- Teaching assignments,
- Exploration of joint (between College of Engineering and School of Medicine) department

Master's Program Chair, Department of Biomedical Engineering, University of Michigan (2012-2016)
- Grew revenue generating master's program and revised curriculum
- Introduced new tract to master program
- Managed master's admissions
- Administered fellowship program

Professional Leadership Development (representative examples)

1. The Change Leadership Toolkit for Advancing Systemic Change in Higher Education, 2025
2. EAB Compassionate Leadership Training, 2025
3. Western Academic Leadership Academy, Western Interstate Commission for Higher Education, year-long professional development program for academic leaders in the WICHE region's postsecondary sector with a focus on preparing next generation of Western chief academic officers and presidents. 2024-2025
4. Development for Deans and Academic Leaders, Council for Advancement and Support of Education, 2022
5. Confronting Challenges in Academic Units, National Center for Principled Leadership & Research Ethics, 2021
6. Research leadership Institute, American Society for Engineering Education, 2020
7. Engineering Leadership Development, American Society for Engineering Education, 2020
8. Association of American Universities STEM Network Conference, 2020
9. KEEN Leadership Unleashed, year-long leadership training, 2020
10. ADVANCE Workshop for Academic Leaders, 2013
11. University of Michigan Academic Leadership Program, 1 year didactic and workshops, and 2 years of leadership coaching, University of Michigan, 2013-2014
12. Franklin Covey Leadership Symposium, 2005

Media Coverage (representative examples)

1. Symposium highlights Tribal energy development, Mvkoke News (the newspaper of the Muscogee (Creek) Nation), November 2025
   https://www.mvskokemedia.com/symposium-highlights-tribal-energy-development/

2. We Are Healers profile, May 2025, https://www.wearehealers.org/dr-joseph-bull
3. Underscore Native News, “A Nationally Distinctive Model of Community Science Design”, January 2025, also featured on ICTnews.org, PBS, The Oregonian, etc., https://www.underscore.news/justice/education/a-nationally-distinctive-model-of-community-science-design/
4. American Society for Engineering Education (ASEE) Prism magazine, Winter 2024, p. 13, Heritage Month Interview, https://aseecmsprod.azureedge.net/aseecmsprod/asee/media/content/prism%20pdfs/prism_winter_2024-final_low.pdf
5. American Indian Science and Engineering Society (AISES) Winds of Change magazine, Executive Excellence, pp. 66-67, Fall 2024, https://v3.pageraft.nxtbook.com/staging/aises/winds_of_change/fall2024/cover.html
6. Portland Business Journal, PSU empowers diverse graduates to shape Oregon's workforce, December 2024, https://www.bizjournals.com/portland/news/2024/12/05/psu-diverse-graduates-oregon-workforce.html
7. Honored as Native American leader by NBA team Portland Trailblazers in the Moda Center for Celebration of Native American Heritage Month, November 2024
8. Deans Decoded, November 2024, https://insideportlandstate.pdx.edu/2024/11/21/deans-decoded-meet-dean-bull/
9. American Indian Science and Engineering Society Executive Excellence Award Press Release and Video, October 2024, https://aises.org/professional-of-the-year-awards/
10. Portland Business Journal, Viewpoint: Native American PSU dean on the ROI of unlocking STEM excellence, October 2024, https://www.bizjournals.com/portland/news/2024/10/01/psu-stem-indigenous-native-people.html
11. SXSW EDU, Session Announcement Press Release, October 2024, https://www.sxswedu.com/news/2024/announcing-sxsw-edu-2025-sessions-selected-from-panelpicker/
12. Society for Advancement of Chicanos/Hispanics & Native Americans in Science Distinguished Awardees Press Release, October 2024, https://www.sacnas.org/diversity-news/sacnas-2024ndistem-distinguished-awardees
13. Planting the Seeds, September 2024, https://www.pdx.edu/news/planting-seeds
14. Wings Conference Talk, What Engineering Can Learn From Indigenous People, April 2024, https://www.youtube.com/watch?v=9gXoDhVigS8
15. Underscore Native News, “Portland State to Become Destination School for Indigenous Doctorate Students”, February 2024, also featured on ICTnews.org, Apple News, PBS, The Oregonian, etc. https://www.underscore.news/justice/portland-state-to-become-destination-school-for-indigenous-doctorate-students/
16. KOIN TV Interview, November 2023, first in series, “Storytellers: Indigenous Life in the Northwest”, https://www.koin.com/news/education/psu-engineering-dean-leans-into-native-american-heritage/
17. KOIN TV, Live TV Interview, “Resetting the narrative: New PSU science center dedicates space for indigenous STEM education” October 2023, https://www.koin.com/news/portland/resetting-the-narrative-new-psu-science-center-dedicates-space-for-indigenous-stem-education/
18. Oregon MESA, Career Conversations: a Native American Heritage Celebration, February 2023, https://www.youtube.com/watch?v=4h2i6RryHQo
19. Extensive coverage of research activities, some are denoted in research sections below

CONTRIBUTIONS TO INCLUSIVE EXCELLENCE

As a ***Native American (enrolled citizen of the Delaware Tribe of Indians, a federally recognized tribe of the Lenape)*** and a **first-generation college graduate**, I am well positioned to contribute to inclusive excellence and success for all through my work as a faculty member and a higher education leader. My activities in this space have broadly included mentoring, outreach, and service, and have been ongoing throughout my career. In in my role as dean, I have led systemic institutional change. My work in this area was recognized by my receiving the **Raymond J. and Monica E. Schultz Outreach and Diversity Award** from the University of Michigan in 2016. **I am the first ever Native American to be dean of engineering** in the country. Some representative activities are listed below.

1. Board of Directors, Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS), 2026-2028
2. Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS) Native American/Indigenous Affairs Committee Chair, 2026-present
3. Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS) Native American/Indigenous Affairs Committee, 2025-present
4. Oregon MESA, Board of Directors, 2025-present
5. Tribal Council visits, with PSU President, to all Oregon Tribes to develop PSU-Tribal Nations relationships and MOUs, 2024-2025
6. Implemented annual Maseeh College Inclusive Teaching Symposium, 2024-present
7. Maseeh College of Engineering and Computer Science at Portland State University received American Society for Engineering Education Bronze Award Diversity Recognition Program. 2024-2026
8. Society for Advancement of Chicanos/Hispanics & Native Americans in Science 2023 National Diversity in STEM (NDiSTEM) Conference Cultural Advisory Workgroup, 2023
9. Portland State University Co-Chair of Search Committee for Executive Director of Tribal Relations, 2023
10. The Future and Thriving of BIPOC Communities Macro Convening, 2023
11. Chair of Nations employee resource group (Native American affinity group), 2023-present
12. Supported Portland State University students in starting a new student chapter of the Society for Advancement of Chicanos/Hispanics & Native Americans in Science development, 2023
13. Engagement with Native American community and Education Departments of Oregon Tribes around Native American STEM, 2022-present
14. Native Leaders Roundtable, October 2022
15. Supported Tulane students in starting a new student chapter of the Society for Advancement of Chicanos/Hispanics & Native Americans in Science development, 2022
16. Tulane Equity, Diversity, and Inclusion Teach-In, Indigenous Panel, 2022
17. A Strategy for Tomorrow Steering Committee, led development and implementation of Tulane's equity, diversity and inclusion strategic plan, 2021-2022
18. Tulane ALAAMEA Alliance Leadership Team, 2021-2022
19. Tulane Native American Affinity Group, co-chair, 2021-present, activities led to Tulane land acknowledgement, plans for social action, and fundraising.
20. Equity, Diversity and Inclusion Faculty Council, 2020-2022
21. Coalition to Stop Sexual Violence, 2019-2022
22. Tulane SSE received American Society for Engineering Education Bronze Award Diversity Recognition Program. 2020-2022
23. Native American outreach for a variety of programs and grant submissions at Tulane

24. American Indian Science and Engineering Society Lighting the Path program for Native pathways into the professoriate faculty mentor, 2020-2022
25. Tulane SSE Equity, Diversity and Inclusion initiatives, 2019-2022
26. Academic Advisory Council, American Indian Science and Engineering Society, 2019-present.
27. Review Committee for Center for Engineering Diversity and Outreach (College of Engineering organization that houses the Office of Engineering Outreach and Engagement, the Women in Science and Engineering programs, and the Minority (later "Multicultural") Engineering Program Office), 2014-2015
28. Faculty mentor for career advising workshop at the Society for Advancement of Chicanos and Native Americans in Science Annual Conference, Los Angeles, 2014
29. UM Senate Committee for an Inclusive University, member, 2012-2015
30. UM ADVANCE Advisory Board for the College of Engineering, 2013-2016
31. American Indian Science and Engineering Society, UM student chapter faculty advisor, 2011-2016
32. Michigan Alliance for Graduate Education and the Professoriate (AGEP) Advocate, 2006-2016 (AGEP is aimed at providing mentoring of underrepresented minority students in engineering and sciences.)
33. BME Department Underrepresented Minority Coordinator, 2005-2016
34. BME Department Liaison to Native American Student Association and American Indian Science and Engineering Society, 2001-2016
35. College of Engineering and Department recruiting representative at Society for Advancement of Chicanos and Native Americans in Science Annual Conference, 2011-2014.
36. College of Engineering recruiting representative at American Indian Science and Engineering Society Annual Conference, 2007-2014.
37. UM College of Engineering Future Faculty Development Workshop faculty mentor, 2012
38. Mentor for "Networking with Grad Admissions Experts & Building Your Grad Applications Portfolio" Workshop at Society for Advancement of Chicanos and Native Americans in Science Conference, Seattle, 2012
39. Mentor to Black, Indigenous, and people of color students and postdoctoral fellows in BME Department and in my research lab
40. Speaker at National Consortium for Graduate Degrees for Minorities in Engineering and Science Workshop at American Indian Science and Engineering Society Annual Conference, 2008-2010.
41. College of Engineering recruiting representative at the Institute on Teaching and Mentoring, October 2006 and October 2007.
42. Part of College of Engineering group to visit Focus:HOPE in 2007.

HONORS AND AWARDS

Distinguished Scientist Award, Society for Advancement of Chicanos/Hispanics and Native Americans in Science, 2024
Executive Excellence Award, American Indian Science and Engineering Society, 2024
John and Elsie Martinez Biomedical Engineering Chair, Tulane University, 2017
Raymond J. and Monica E. Schultz Outreach and Diversity Award, College of Engineering, University of Michigan, 2016
Fellow, American Institute for Medical and Biological Engineering, 2014
Sequoyah Fellow, American Indian Science and Engineering Society, 2013

Arthur F. Thurnau Professorship, University of Michigan, 2012
John F. Ullrich Education Excellence Award, College of Engineering, University of Michigan, 2008
Outstanding Achievement Award, Department of Biomedical Engineering, University of Michigan, 2007
One of 14 former Parker B. Francis Fellows profiled in 30-year history book of the Foundation, 2006
Whitaker Foundation Biomedical Engineering Research Award, 2004-2005
Parker B. Francis Fellow, 2001-2004
NIH NRSA Fellowship F32 HL68416, 2001 (Declined NRSA in order to accept Parker B. Francis Fellowship. The rules of the NRSA do not allow the recipient to simultaneously hold another named fellowship.)
Interfaces for the Twenty-First Century Participant Support Award, 1999
Northwestern-NSF Graduate Fellowship
Highest G.P.A. (4.00/4.00) in graduating class, 1992
Wisconsin Power and Light Scholarship 1988-1992
Phi Kappa Phi
Tau Beta Pi

Trainee Awards (a representative listing of some awards received by my students)
Rackham Travel Grant 2014 Piyumi Fernando (mentor: J.L. Bull)
Rackham Travel Grant 2014 Samantha Stephenson (mentor: J.L. Bull)
Student Biomedical Research Program Fellowship, 2009, Doug Valassis (mentor: J.L. Bull)
Rackham Travel Grant 2012, 2013, 2014 John Pitre (mentor: J.L. Bull)
Rackham Travel Grant 2008, 2009, 2010, 2011, 2012, 2013 Robinson Seda (mentor: J.L. Bull)
Rackham Travel Grant 2008, 2009, 2010, 2011, 2012, 2013 David Li (mentor: J.L. Bull)
Rackham Travel Grant 2007, Doug T. Valassis (mentor: J.L. Bull)
Winner of Poster Award Competition at Michigan-American College of Cardiology Conference, Traverse City, MI October, 2006., T. Tsai (co-mentors: J.L. Bull and K. Eagle)
Experimental Biology FASEB MARC Travel Award 2006, Andrés J. Calderón (mentor: J.L. Bull)
Rackham Travel Grant 2005, Andrés J. Calderón (mentor: J.L. Bull)
Rackham Travel Grant 2004 and 2005, Yu-chun Lin (mentor: J.L. Bull)
UMNBEI Cells to Stars Symposium Poster Award 2005, Yu-chun Lin (mentor: J.L. Bull)
Poster Presenter Award Recipient, ASAIO Conference 2005, Stefano Tredici and Paola Bagnoli (mentor J.L. Bull)
ASAIO Biomedical Engineering Student Fellowship 2004-2005, Yu-chun Lin (mentor: J.L. Bull)

RESEARCH SUMMARY

My research program is focused on biofluid mechanics and ultrasound, and includes theoretical and computational modeling, and *in vitro* and *in vivo* experiments. This work primarily centers on the cardiovascular and pulmonary systems, related biomedical devices, and edema. In each of these areas, we address fundamental biofluid mechanics problems that may enable new clinical therapies or diagnostics. Research in each sub-area is summarized below.

Gas Embolotherapy
Our novel approach is a potential treatment for cancer that involves injecting perfluorocarbon liquid droplets into the bloodstream and then selectively vaporizing them to form gas bubbles that occlude blood flow and/or deliver drugs to tumors. Although occlusion of blood flow to

tumors with solid emboli is not a new idea, it is severely limited by the inability to only infarct the tumor. The novelty of our approach lies in the use of selectively formed gas emboli, which could potentially provide a significant improvement in confinement of infarction. The bubbles originate as albumin- or lipid- encapsulated liquid droplets of perfluorocarbon (PFC), mixed in saline, and are injected into the vascular system. The droplets are small enough to pass through capillary beds, so they can circulate until the next stage of the therapy. By strategic placement of an ultrasound source, vaporization of the droplets, which we have termed Acoustic Droplet Vaporization (ADV), can be induced in or near the tumor. The resulting bubble volume is ~125-150 times the droplet volume, and the bubbles resulting from an approximately 5 μm droplet are large enough to lodge in the microcirculation and occlude blood flow to the tumor. Smaller droplets can induce bioeffects that enhance drug delivery without occlusion. This gas embolotherapy approach is minimally invasive, would allow selective delivery of gas emboli to the tumor or fibroid, and is well suited to repeated doses and long-term use. Our early gas embolotherapy work focused on understanding the underlying biofluid mechanics involved in ADV, transport, and lodging of these novel emboli. Our work in this area has made significant fundamental contributions necessary to move this treatment strategy toward clinical translation and made contributions to other applications of cardiovascular microbubbles. We later shifted our focus to the induced biological response induced by gas embolotherapy and to testing its efficacy in an *in vivo* tumor model. In a murine model of hepatocellular carcinoma, we have demonstrated that the combination of gas embolization and chemotherapy can result in complete tumor regression. **My research group is nationally and internationally recognized for our groundbreaking work in gas embolotherapy and acoustic droplet vaporization.**

Localized Drug Delivery
We are interested in acoustic droplet vaporization and ultrasound-driven microbubbles for localized drug delivery in the absence of occlusion of blood flow, e.g. nano- or micro-droplets that are smaller than in the embolization application. The stresses induced by droplet and bubble dynamics can induce biological responses, such as transient opening of the blood-brain barrier, and we are exploring drug-loaded droplets as a vehicle for localized drug delivery to the brain and other organs.

Tissue Compression and Intra-Tissue Flow
When soft tissues are compressed, in trauma or in therapy, intracellular and extracellular fluid may be redistributed and this relates to changes in bioimpedance and changes in tissue mechanical properties that can be measured using ultrasound. We are interested in the biomechanics of tissues, in particular how they relate to intra- and extra-cellular flows during compression. Our investigations have applications to edema and fluid management in patients.

NO Release for Bactericidal and Nonthrombogenic Catheters
Our work in this area relates to the development of optimal catheter and NO release designs to prevent biofilm and thrombus formation. There are several mechanisms for NO release, and we are exploring these for a variety of intravascular applications. For example, a bactericidal central venous catheter would represent a significant step in reducing infections in the ICU and in hospitals in general, with a large clinical impact.

Vascular Mechanics and Blood Flow
Our work in this area has focused on flow and transport, including accurate ultrasound methods for measurement of blood flow and shear stress, and coupling of blood flow and vessel wall interactions in aneurysms, aortic dissections, and intravascular medical devices. This work has demonstrated the importance of fully coupling the flow and wall deformation in aneurysm

computations (even though the deformation is small), the importance of non-Newtonian contributions, and the mechanisms involved in rupture of aortic dissections. These finding led to changes in the way researchers computationally model vascular flows. Aortic dissections involve the de-lamination of the vessel wall to create a true and false lumen, and currently a significant percentage of these rupture in patients despite intervention. Our work suggests how the currently standard surgical treatment might be modified to prevent this. Additionally, our work has provided insights regarding the accuracy and design of ultrasound flow and shear measurement devices using decorrelation ultrasound.

Artificial Lungs and Dialysis
This device, which is intended to serve as a bridge to transplant, is comprised of a shell containing hollow fibers. Gas flows through the fibers and blood flows around them. Blood flow through the device is driven entirely by the heart. Although steady flow past cylinders has been extensively investigated, little previous work exists regarding time-dependent flows. Our particle image velocimetry work has shown that flow pulsatility can have significant effects on resulting flow structures and on the interaction of multiple cylinders. Much of our work has considered stationary fibers, but in recent studies we have shown that fiber oscillations can enhance mixing in artificial lungs and dialyzers.

Liquid Ventilation
Filling the lungs with perfluorocarbon liquid and ventilating with a liquid (total liquid ventilation) or gas (partial liquid ventilation) tidal volume are experimental treatment methods for lung injury, such as acute respiratory distress syndrome. Our work has focused on how to best fill the lungs with perfluorocarbon, flow and gas transport during liquid ventilation, and how to prevent flow-induced collapse of airways on expiration, which reduces the tidal volumes and ventilation rates that can be achieved in liquid ventilation. Our work on liquid instillation suggests that liquids can be preferentially delivered to certain regions of the lungs by varying ventilation and liquid properties, a finding that may have implications for drug delivery and other applications besides liquid ventilation. Our work on airway collapse has introduced new fundamental physics to this area because of the importance of time-dependent inertial contributions, which are negligible in gas ventilation.

Biological Microfluidic Devices
Biomolecular motors are highly efficient and robust, and are a potential power source for microfluidic devices, such as biosensors and drug delivery systems. Our work has focused on flow and transport in novel device designs that leverage the efficiency and size of biomolecular motors, and has suggested the feasibility of such devices. Related work has helped explain the role of bubbles and acoustic phenomena in laser machining of nano-channels.

Surfactant Transport
Transport of surfactants is critical to both normal lung function and treatment of respiratory distress syndrome by instillation of exogenous surfactant. This work has experimentally and theoretically demonstrated that pre-existing surfactant slows the propagation of newly instilled surfactant while creating a surface compression disturbance that propagates through the pre-existing surfactant, an effect that could lower the surface tension in alveoli even though the new surfactant has not yet reached them (thus resolving conflicting reports in the literature). A new method for measuring film thickness and observing the propagation of surface waves during surfactant transport was developed. The effects of airway wall stretch, due to breathing, on transport were investigated experimentally and computationally, and the importance of surface tension gradients to transport of foreign particles from the small airways was identified.

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Refereed Conference Abstracts

1. A Panel Session for those Considering or Pursuing an Academic Career: Voices of the Academic Advisor Council, T. Anderson, V.L. Woriax, J. Bull, M.J. Ondrechen, A. Thomas, R. Whitman, and R. Emanuel, American Indian Science and Engineering Society National Conference, October, 2024

2. Engineering and Science Pathways for Natives, J. Bull, UNITY National Conference, Portland, OR, July 2024

3. Diversifying Leadership Positions within Academia, P. Padilla, L. Bitsoi, and J. Bull, Society for Advancement of Chicanos/Hispanics & Native Americans in Science National Conference, Portland, OR, October, 2023

4. Native Academic Leadership in STEM, T. Anderson and J. Bull, American Indian

Science and Engineering Society National Conference, Spokane, WA, October, 2023.

5. Native Engineering Faculty and Academic Leaders, J. Bull and T. Anderson, American Indian Science and Engineering Society National Conference, Palm Springs, CA, October, 2022.

6. Pitre J.J., Weitzel W.F., and Bull J.L. A new poroelastography approach based on the steady-state elastic limit, World Congress of Biomechanics, Dublin Ireland, July 2018.

7. Bull J.L., Qamar A., Li D.S., Stephenson S., Pitre J., and Fowlkes J.B. Microbubble Transport in Gas Embolotherapy, Coupled Problems 2017, Rhodes Island, Greece, June 2017 (invited).

8. Bull J.L. Acoustic droplet vaporization of vascular droplets in gas embolotherapy, Annual Meeting of American Physical Society Division of Fluid Dynamics, Portland, OR November 2016 (invited).

9. Smith N.A., Fabiilli M.L., Seda R., Li D.S., Pitre J.J., Fowlkes J.B. and Bull J.L. Specific Binding of Functionalized Droplets to Integrin Receptor $\alpha_v\beta3$, Pacifichem 2015, Honolulu, HI, December 2015.

10. Bull J.L. Acoustic Vaporization of Vascular Microdroplets for Therapeutic Applications, Annual Meeting of American Physical Society Division of Fluid Dynamics, Boston, November 2015 (invited).

11. Smith N.A., Fabiilli M.L., Seda R., Li D.S., Pitre J.J., Fowlkes J.B. and Bull J.L. Specific Binding of Functionalized Droplets to Integrin Receptor $\alpha_V\beta_3$, BMES Annual Meeting, Tampa, October 2015.

12. Bull J.L. Mechanisms of Ultrasound Quantification of Pulmonary Edema, CFD in Medicine & Biology Conference, Invited Talk, Albufeira, Portugal, August 2015 (invited).

13. Seda R., Singh R., Li D., Pitre J., Putnam A., Fowlkes J., and Bull J. Effects of viscosity on endothelial cell damage under acoustic droplet vaporization, APS Division of Fluid Dynamics Annual Meeting, San Francisco, November 2014.

14. Stephenson S., Li D., Hellmeier F., Pitre J., Fowlkes J. and Bull J. Micro-PIV of Bubble Splitting in a Bifurcation, APS Division of Fluid Dynamics Annual Meeting, San Francisco, November 2014.

15. Pitre J., Mueller B., Lewis S., and Bull J. Secondary flows enhance mixing in a model of vibration-assisted dialysis, APS Division of Fluid Dynamics Annual Meeting, San Francisco, November 2014.

16. Li D., Fabiilli M., Kripfgans O., Fowlkes J., and Bull J. Acoustic Droplet Vaporization in Microchannels, APS Division of Fluid Dynamics Annual Meeting, San Francisco, November 2014.

17. Pitre J., Kozoil L., Kruger G., Weitzel W. and Bull J. A Single-Element Ultrasound Viscoelastography System for Point-of-Care Edema Quantification, BMES Annual Meeting, San Antonio, TX, October 2014.

18. D. Li, Fabiilli M., Fowlkes J., Carson P., and Bull J.L. A Theoretical Model on the Acoustic Vaporization of Dual Phase Microdroplets, BMES Annual Meeting, San Antonio, TX, October 2014.

19. Fernando P., Cheriyan H., Bull J., and Bartlett R. Modeling A Novel Design For A Total Artificial Lung With Enhanced Flow Mixing, BMES Annual Meeting, San Antonio, TX, October 2014.

20. Bull J.L., Li D.S., Kripfgans O.D., and Fowlkes J.B. Acoustic droplet vaporization for gas embolotherapy, 15th International Conference on Biomedical Engineering, Singapore, December 2013.

21. Pitre J.J. and Bull J.L. Numerical investigation of vortex shedding behind a square cylinder oscillating in a closed channel, APS Division of Fluid Dynamics Annual Meeting, Pittsburgh, November 2013.

22. Seda R., Li D., Fowlkes J.B., and Bull J.L. Are endothelial cell bioeffects from acoustic droplet vaporization proximity dependent? APS Division of Fluid Dynamics Annual Meeting, Pittsburgh, November 2013.

23. Li D.S., Allen S., Hernandez-Garcia L., and Bull J.L. Characterization of Acoustic Droplet Vaporization Using MRI, APS Division of Fluid Dynamics Annual Meeting, Pittsburgh, November 2013.

24. Stephenson S., Hellmeier F., Pitre J., Li D., and Bull J. Micro-PIV of Bubble Splitting in a Bifurcation, BMES Annual Meeting, Seattle, September 2013.

25. Li D., Fowlkes J., and Bull J. Nucleation Site Formation During Acoustic Droplet Vaporization, BMES Annual Meeting, Seattle, September 2013.

26. Seda R., Fowlkes J., and Bull J. Characterization of bioeffects of acoustic droplet vaporization at 3.5MHz on endothelial cells, BMES Annual Meeting, Seattle, September 2013.

27. Li D.S., Krifgans O.D., Fowlkes J.B., and Bull J.L. The Short Time Scale Events of Acoustic Droplet Vaporization, APS Division of Fluid Dynamics Annual Meeting, San Diego, November 2012.

28. Seda R., Fowlkes J.B., and Bull J.L. Interaction between endothelial cells and albumin encapsulated droplets in Poiseuille flow, APS Division of Fluid Dynamics Annual Meeting, San Diego, November 2012.

29. Qamar A., Samtaney R., and Bull J.L. Design Modification and Mass Transport Enhancement in Total Artificial Lung, ASME Congress, IMECE2012-86946, Houston, November 2012.

30. Li D.S., Krifgans O.D., Fowlkes J.B., and Bull J.L. High Speed Imaging of Acoustic Droplet Vaporization, BMES Annual Meeting, Atlanta, October 2012.

31. Seda R., Li D.S., Fowlkes J.B., and Bull J.L. Effects of Acoustic Droplet Vaporization on

Endothelial Cells, BMES Annual Meeting, Atlanta, October 2012.

32. Bull J.L., Qamar A., Wong Z.Z., Samuel S., Kripfgans O.D., and Fowlkes J.B. Vascular droplet and bubble dynamics in gas embolotherapy, Biological Flow Conference, "TJP Fest," University of Cambridge, Cambridge, England, April 2012.

33. Bull J.L., Qamar A., Wong Z.Z., Kripfgans O.D., and Fowlkes J.B. Acoustic droplet vaporization for gas embolotherapy, Computational Fluid Dynamics (CFD) in Medicine and Biology and the Seventh International Biofluid Mechanics Symposium, Ein Bokek, Dead Sea, Israel, March 2012.

34. Li D., Seda-Padilla R., Fowlkes J.B., and Bull J.L. The acoustic atomization of droplets within a bubble, APS Division of Fluid Dynamics Annual Meeting, Baltimore, November 2011.

35. Qamar A. and Bull J.L. Bubble transport and splitting in a symmetric bifurcation, APS Division of Fluid Dynamics Annual Meeting, Baltimore, November 2011.

36. Seda R., Fowlkes J.B., and Bull J.L. Biological Effects of Acoustic Droplet Vaporization in Gas Embolotherapy. IEEE International Ultrasonics Symposium, Orlando, October 2011.

37. Qamar A., Seda R., and Bull J.L. A computational model of pulsatile flow past an oscillating cylinder. XXXVIII Congress of the European Society for Artificial Organs (ESAO 2011) and IV Biennial Congress of the International Federation on Artificial Organs (IFAO 2011), Porto, Portugal, October 2011.

38. Li D., Eshpuniyani B., Fowlkes J.B., and Bull J. Boundary elements model of the trans-capillary motion of a sliding bubble. Pacifichem 2010, Honolulu, HI, December 2010.

39. Li D., Schalte K., Fowlkes J.B., and Bull J.L. Microfluidic production of monodisperse perfluorocarbon microdroplets, APS Division of Fluid Dynamics Annual Meeting, Long Beach, CA, 359, November 2010.

40. Qamar A., Wong Z.Z., Fowlkes J.B., and Bull J.L. Dynamics of acoustically vaporized microdroplets, APS Division of Fluid Dynamics Annual Meeting, Long Beach, CA, 335, November 2010.

41. Seda R., Qamar A., and Bull J.L. Pulsatile flow past a single oscillating cylinder. APS Division of Fluid Dynamics Annual Meeting, Long Beach, CA,134, November 2010.

42. Samuel S., Fabiilli M.L., Bull J.L., and Fowlkes J.B. First *in vivo* observations of bubble lodging, vessel occlusion, and bubble dislodging due to acoustic droplet vaporization, IEEE International Ultrasonics Symposium, San Diego, October 2010.

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44. Nieuwstadt H., Li D., Seda R., Fowlkes J.B., and Bull J.L. Lift-force-driven microfluidic droplet sorting device. APS Division of Fluid Dynamics Annual Meeting, Minneapolis, MN, November 2009.

45. Li D., Samuel S., Fowlkes J.B., and Bull J.L. Acoustic droplet vaporization through PDMS. APS Division of Fluid Dynamics Annual Meeting, November 2009.

46. Qamar A. and Bull J.L. Bubble evolution during acoustic droplet vaporization. APS Division of Fluid Dynamics Annual Meeting, Minneapolis, MN, November 2009.

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49. Dodde R., Geiger J., Bull J.L., and Shih A. Electrical resistivity changes in splenic tissue under compression. APS Division of Fluid Dynamics Annual Meeting, San Antonio, TX, November 2008.

50. Valassis D., Dodde R., Eshpuniyani B., Fowlkes J.B., and Bull J.L. Cardiovascular microbubble transport in vessel bifurcations with pulsatile flow: experimental model and theory. APS Division of Fluid Dynamics Annual Meeting, San Antonio, TX, November 2008.

51. Li D., Younger J.Y., and Bull J.L. A computational model of bacterial clearance from the bloodstream. BMES Annual Meeting, St. Louis, MO, September 2008.

52. Wong Z.Z., Kripfgans O.D., Fowlkes J.B., and Bull J.L. Ultra-high-speed imaging of microbubble expansion for gas embolotherapy. BMES Annual Meeting, St. Louis, MO, September 2008.

53. Li D., Hohne D., Bortz D., Bull J., and Younger J. Modeling Bacterial Clearance from the Bloodstream using Computational Fluid Dynamics and Monte Carlo Simulation, International Conference on Complexity in Acute Illness, Long Beach, CA, October 2007.

54. Valassis D., Eshpuniyani B., Fowlkes J.B., and Bull J.L. A model study of cardiovascular microbubble transport in vessel bifurcations with pulsatile flow. BMES Annual Meeting, Hollywood, CA, September, 2007.

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56. Bull J.L., Calderón A.J., Eshpuniyani B., Valassis D., and Fowlkes J.B. Transport of cardiovascular microbubbles in gas embolotherapy, American Physical Society Division of Fluid Dynamics Annual Meeting, Tampa Bay, November, 2006.

57. Tsai T.T., Schlicht M., Khanafer K.M., Berguer R., Bull J.L., Montgomery D., Valassis D., Williams D.M., and Eagle K.A. Tear size and Location Impacts False Lumen Pressure in

an Ex-Vivo Model of Chronic Type B Aortic Dissection, Michigan-American College of Cardiology Conference, Traverse City, MI October, 2006. **Winner of Poster Award Competition** (T. Tsai was a cardiology fellow who was co-advised in research by K. Eagle and me)

58. Bull J.L. and Eshpuniyani B. Experimental and computational studies of bubble dynamics in model vessel bifurcations, BMES Annual Meeting, Chicago, October, 2006.

59. Khanafer K.M., Bull J.L., and Berguer R. Computational modeling of fluid-structure interaction in aneurysms: effect of turbulent flow, BMES Annual Meeting, Chicago, October, 2006.

60. Bull J.L. Cardiovascular bubbles for therapy. ASME Joint U.S.-European Fluids Engineering Summer Meeting, Miami, July, 2006. (Invited)

61. Khanafer K.M., Berguer R. and Bull J.L. Effect of turbulence on the temporal variation of hemodynamic stresses in aneurysm model under resting and exercise conditions. *Bulletin of the American Physical Society* **50**(9): 246, Chicago, November 2005.

62. Calderón A.J. and Bull J.L. A computational model of microbubble transport through a blood-filled vessel bifurcation. *Bulletin of the American Physical Society* **50**(9): 127, Chicago, November 2005.

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64. Eshpuniyani B., Fowlkes J.B. and Bull J.L. Bubble transport in multiple arteriole bifurcations – experimental modeling. *Bulletin of the American Physical Society* **50**(9): 127, Chicago, November 2005.

65. Stephen J.H. and Bull J.L. Bubble adhesion in a microfluidic model of cardiovascular microbubble sticking. *Bulletin of the American Physical Society* **50**(9): 126, Chicago, November 2005.

66. Lin Y.C. and Bull J.L. Pulsatile flow across a cylinder—an investigation of flow in a total artificial lung. *Bulletin of the American Physical Society* **50**(9): 22, Chicago, November 2005.

67. Bull J.L. and Eshpuniyani B. Bubbles sticking and sliding along vessel walls in microcirculation. BMES Annual Meeting, Baltimore, September, 2005.

68. Eshpuniyani B. and Bull J.L. Bubble transport through bifurcating arterioles - benchtop experiments. BMES Annual Meeting, Baltimore, September, 2005.

69. Khanafer K.M., Gadhoke P., Berguer R., Bull J.L. Turbulent pulsatile flow characteristics in axisymmetric abdominal aortic aneurysm models. BMES Annual Meeting, Baltimore, September, 2005.

70. Calderón A.J. , Heo S., Takayama S., and Bull J.L. An experimental investigation of bubble lodging in an arteriole model. BMES Annual Meeting, Baltimore, September,

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71. Lin Y.C. and Bull J.L. Pulsatile flow around a single cylinder—an experimental model of flow inside an artificial lung. *Bulletin of the American Physical Society* **49**(9):134-135, Seattle, WA, November 2004.

72. Bull J.L., Eshpuniyani B., and Fowlkes J.B. An experimental investigation of bubble splitting through multiple bifurcations. *Bulletin of the American Physical Society* **49**(9):120, Seattle, WA, November 2004.

73. Ye T. and Bull J.L. A computational model of micro-bubble-induced blood vessel deformation in gas embolotherapy. *Bulletin of the American Physical Society* **49**(9):120, Seattle, WA, November 2004.

74. Calderón A.J., Heo Y., Huh D., Nobuyuki F., Takayama S., Fowlkes J.B., and Bull J.L. An experimental investigation of bubble sticking in an arteriole bifurcation model. *Bulletin of the American Physical Society* **49**(9):119, Seattle, WA, November 2004.

75. Eshpuniyani B. and Bull J.L. Bubble sticking and sliding on the wall of a two-dimensional channel. *Bulletin of the American Physical Society* **49**(9):119-120, Seattle, WA, November 2004.

76. Calderón A.J. , Fowlkes J.B., and Bull J.L. A computational model of cardiovascular bubble transport in a bifurcation. BMES Annual Meeting, 637, Philadelphia, PA, October 2004.

77. Ye T. and Bull J.L. A computational model of micro-bubble-induced blood vessel deformation in gas embolotherapy. Proceedings of BMES Annual Meeting, 631, Philadelphia, PA, October 2004.

78. Bull J.L. and Ye T. Perfluorocarbon bubble expansion in gas embolotherapy. 4th European Symposium on Perfluorocarbon Application, Dresden, Germany, September, 2004.

79. Tredici F., Tredici S., Brant D.O., Hirschl R.B., and Bull J.L. The effects of perfluorocarbon viscosity on lung filling for liquid ventilation. Extracorporeal Life Support Organization Annual Meeting, Ann Arbor, MI, September, 2004.

80. Bull J.L. Gas embolotherapy for the treatment of cancer. Whitaker Foundation Biomedical Research Conference, 117, San Diego, CA, August 4, 2004.

81. Bull J.L. and Ye T. Computational modeling of bubble dynamics in gas embolotherapy. Multiscale Computational Models for Biomedical Research. San Diego, CA, March 2004.

82. Bull J.L. A theoretical model of a molecular-motor-powered microfluidics pump. *Bulletin of the American Physical Society* 48(10): 26, East Rutherford, NJ, November 2003.

83. Ye T. and Bull J.L. Simulation of a micro bubble in a narrow tube. *Bulletin of the American Physical Society* 48(10): 26, East Rutherford, NJ, November 2003.

84. Calderón A.J. and Bull J.L. An experimental investigation of bubble splitting. *Bulletin of the American Physical Society* 48(10): 226, East Rutherford, NJ, November 2003.

85. Bull J.L. A computational model of a kinesin powered microfluidics pump. BMES Annual Meeting, Nashville, Tennessee. October, 2003.

86. Calderón A.J. and Bull J.L. An experimental investigation of bubble splitting in a bifurcation. BMES Annual Meeting, Nashville, Tennessee. October, 2003.

87. Tredici F., Tredici S., Brant D.O., Hirschl R.B., Bull J.L. Viscosity effects on the distribution of a liquid instilled into the lungs. BMES Annual Meeting, Nashville, Tennessee. October, 2003.

88. Ye T. and Bull J.L. Simulation of bubble, flow and flexible wall interaction. BMES Annual Meeting, Nashville, Tennessee. October, 2003.

89. Halpern D., Bull J.L., Grotberg J.B. The effect of airway wall motion on surfactant and liquid transport. BMES Annual Meeting, Nashville, Tennessee. October, 2003.

90. Bull J.L., Tredici S., Komori E., Brant D.O., Grotberg J.B., and Hirschl R.B. Distribution dynamics of liquid delivery to the lungs: posture effects. Extracorporeal Life Support Organization Annual Meeting, Chicago, September, 2003.

91. Komori E., Tredici S., Bull J.L., Grotberg J.B., Bartlett R.H., Hirschl R.B. Maximizing gas exchange during total liquid ventilation: optimal combinations of respiratory rate and tidal volume. American Thoracic Society 99th International Meeting, Seattle, Washington, May 2003.

92. Bull J.L. Bubble transport and sticking in gas embolotherapy. 55th Annual Meeting of American Physical Society Division of Fluid Dynamics, Dallas, Texas. November 2002.

93. Bull J.L., Hunt A.J., Hasselbrink E.F., Guo L.J., Kurabayashi K., Meyhöfer E. A computational model of a novel biomolecular microfluidics pump. BMES Annual Meeting, Houston, Texas. October, 2002.

94. Bull J.L., Reikert C.A., Komori E., Tredici S., Grotberg J.B., Hirschl R.B. Limitation of expiratory flow in liquid ventilation. Fourth World Congress of Biomechanics, Calgary, Canada, August 2002 (Invited).

95. Komori E., Tredici S., Reickert C., Bull J.L., Bartlett R.H., Hirschl R.B. Evaluation of total liquid ventilation and flow limitation during passive drainage of perfluorocarbons from the rabbit lung. American Thoracic Society, Atlanta, GA, May 17-22, 2002.

96. Bull J.L., Halpern D., Grotberg J.B. Liquid plug flow in a vertical, two-dimensional channel. 54th Annual Meeting of American Physical Society Division of Fluid Dynamics, San Diego, California, November 2001.

97. Haft J., Montoya J.P., Alnajjar O., Posner S., Bull J., Bartlett R.H., Iannettoni M., and Hirschl R.B. An artificial lung reduces pulmonary input impedance in acute pulmonary hypertension. American College of Surgeons Clinical Congress. Chicago, Illinois, October 2000.

98. Bull J.L., Halpern D., and Grotberg J.B. The effects of periodic wall stretch on surfactant and liquid transport. 52nd Annual Meeting of American Physical Society Division of Fluid Dynamics, New Orleans, Louisiana. November 1999.

99. Bull J.L., Halpern D., and Grotberg J.B. The effects of breathing on surfactant transport in the lung. Biomedical Engineering Society, Annual Meeting, Atlanta, Georgia. October 1999. (Invited)

100. Bull J.L., Halpern D., and Grotberg J.B. A model of the effects of breathing on surfactant spreading. 51st Annual Meeting of American Physical Society Division of Fluid Dynamics, Philadelphia, Pennsylvania. November 1998.

Invited Lectures

External

1. Engineering a New Perspective: What STEM Can Learn From Indigenous Approaches, Keynote, American Indian Science and Engineering Society North Regional Conference, April 2025

2. Challenge and Meaning in Careers, Keynote, Autodesk Career Month, April 2025

3. Keynote, Honoring Undergraduate and Graduate Scholars Symposium, Heritage University, Toppenish, WA, April 2025

4. Engineering a New Perspective: Indigenous Wisdom in STEM, SXSW EDU, Austin, TX, March, 2025

5. What Engineering Can Learn from Indigenous People, The Wings Conference, Main Stage Talk, Portland OR, April 2024
https://www.youtube.com/watch?v=9gXoDhVigS8

6. Path of an Engineer: My Journey and a Few Things I've Learned about the Societal Impact of Engineering, Oregon Engineers Week, Keynote Address, February 2024

7. Silicon Forest Tech Summit, Hillsboro, OR, January 2024

8. A Native American Journey in STEM, NW NARCH Public Health Research Academy, Portland, June 2023

9. Portland State University Overview, Oregon Higher Education Coordinating Commission Tribal Support Network, May 2023

10. Acoustic Droplet Vaporization and Gas Embolotherapy for Cancer Treatment, Cancer Early Detection Advanced Research Center, Knight Cancer Research, OHSU, April 2023

11. A Native American Journey in STEM, Pacific Northwest Louis Stokes Alliance for Minority Participation Conference, Keynote Address, Portland, April 2023

12. Designing the Future: How Academia and Industry Can Prepare Students for the Engineering Industry, American Council of Engineering Companies of Oregon, April 2023

13. Northwest Native American Chamber Luncheon, Keynote Address, March 2023

14. Ultrasound Research Highlights and Potential Collaboration, Cardiovascular Medicine, OHSU, March 2023

15. Career Conversations: A Native American Heritage Celebration, Oregon MESA, January 2023

16. Therapeutic Ultrasound Research Highlights and Potential Collaborations, Biomedical Engineering Department Retreat, OHSU, January 2023

17. A Native American Journey in STEM, Apple, URCiA Speaker Series, November 2022

18. Acoustic droplet vaporization and gas embolotherapy, Acoustical Society of America, Denver, CO, May 2022

19. Microbubble Transport in Gas Embolotherapy, Coupled Problems 2017, Rhodes Island, Greece, June 2017

20. Acoustic droplet vaporization of vascular droplets in gas embolotherapy, Annual Meeting of American Physical Society Division of Fluid Dynamics, Portland, OR, November 2016.

21. Biofluid Mechanics and Ultrasound for Clinical Applications, Invited Seminar, Tulane University, March 2016.

22. Acoustic Vaporization of Vascular Microdroplets for Therapeutic Applications. Invited Talk, Annual Meeting of American Physical Society Division of Fluid Dynamics, Boston, November 2015.

23. Acoustic Vaporization of Vascular Microdroplets for Therapeutic Applications. Invited Seminar, Tulane University, Department of Biomedical Engineering, November 2015.

24. Acoustic Vaporization of Vascular Microdroplets for Therapeutic Applications. Invited Seminar, University of California—Riverside, Department of Bioengineering, October 2015.

25. Mechanisms of Ultrasound Quantification of Pulmonary Edema, CFD in Medicine & Biology Conference, Invited Talk, Albufeira, Portugal, August 2015.

26. Acoustic Vaporization of Vascular Microdroplets for Therapeutic Applications. Invited Seminar, Auckland Bioengineering Institute, University of Auckland, March 2015.

27. Acoustic Vaporization of Microdroplets for Therapeutic Applications. Invited Seminar, Department of Mechanical Engineering, University of Hawaii, January 2015.

28. Acoustic Vaporization of Microdroplets for Therapeutic Applications. Invited Talk,

Beihang University, Beijing, China, October 2014.

29. Acoustic droplet vaporization in gas embolotherapy: interfacial dynamics and bioeffects, Invited Talk, World Congress of Biomechanics, Boston, July 2014.

30. Vascular droplet and bubble dynamics in gas embolotherapy, Invited Talk, Biological Flow "TJP Fest," University of Cambridge, Cambridge, England, April 2012.

31. Vascular Microbubbles for Therapy. Invited Seminar, King Abdullah University of Science and Technology, Saudi Arabia, March 2012.

32. Vascular microbubbles for therapy. Invited Seminar, University of Iowa, January 2011.

33. Voices from the field. American Indian Science and Engineering Society Annual Conference, Albuquerque, New Mexico, November 2010.

34. Bubble evolution in acoustic droplet vaporization. Invited Talk, Acoustic Society of America Conference, Baltimore, Maryland, April 2010.

35. Biomedical Flow and Transport. Invited Seminar, Medtronic Forum, Medtronic, April 2010.

36. Vascular microbubbles for therapy. Michigan State University, College of Engineering, Invited Seminar, November 2009.

37. Voices from the field. American Indian Science and Engineering Society Annual Conference, Portland, October 2009.

38. Gas embolotherapy: a vascular microbubble approach for tumor treatment. Northwestern University, Department of Engineering Science and Applied Mathematics, Invited Seminar, May 2009.

39. Gas embolotherapy: a vascular microbubble approach for tumor treatment. Cancer Angiogenesis and Mathematical Tools Symposium, University Paris Descartes, Invited Seminar, June 2008.

40. Gas embolotherapy: a vascular microbubble approach for tumor treatment. Penn State University, Department of Bioengineering, Invited Seminar, March 2008.

41. Bull J.L. Gas embolotherapy: a vascular microbubble approach for tumor treatment. IIT Kanpur, Invited Seminar, March 2008.

42. Vascular microbubbles for therapy. International Biomedical Modeling School and Workshop, Bangalore, India. Invited Seminar, March 2008.

43. Gas Embolotherapy: A Vascular Microbubble Approach for Tumor Treatment. IIT Delhi, Invited Seminar, February 2008.

44. Vascular microbubbles for therapy. University of Hawaii, Invited Seminar, February 2008.

45. A microfluidic model of cardiovascular bubble lodging. Invited Talk, 5th Joint ASME/JSME Fluids Engineering Conference San Diego, 2007.

46. Therapeutic applications of perfluorocarbons. Harvard University, School of Public Health Seminar, Invited Seminar, October 2006.

47. Cardiovascular bubbles for therapy. Invited Talk, ASME Joint U.S.-European Fluids Engineering Summer Meeting, Miami, July 2006.

48. Cardiovascular microbubbles for therapy. Keynote Address, The Second International Conference on Thermal Engineering Theory and Applications (Sponsored/organized by ASME and AIChE). Al-Ain, UAE, January 2006.

49. Cardiovascular microbubbles for therapy. The University of Virginia, Department of Biomedical Engineering Seminar. Invited Seminar, November 2005.

50. Pulmonary fluid mechanics and biological microfluidics. Department of Bioengineering, Politecnico di Milano, Invited Seminar, Milan, Italy, October 2002.

51. Surfactant and liquid delivery to the lungs. Mechanical and Industrial Engineering, University of Illinois. Invited Seminar, March 2001.

52. Surfactant and liquid delivery to the lungs. School of Engineering, Cornell University. Invited Seminar, February 2001.

53. Dynamic distribution of perfluorocarbon in the lung. Invited Talk, Biomedical Engineering Society, Annual Meeting, Seattle, October 2000.

54. The effects of breathing on surfactant transport in the lung. Invited Talk, Biomedical Engineering Society, Annual Meeting, Atlanta, Georgia. October 1999.

55. The effects of breathing on surfactant transport in the lung. Invited Seminar, School of Engineering, Mercer University. October 1999.

56. Models of surfactant and liquid transport in the lung. Price Waterhouse Coopers Scientific Lecture Series. June 1999.

Internal

1. Engineering and Art: The Intersection of Creativity, and Indigenous Perspectives at the opening of the Jordan Schnitzer Museum of Art exhibit Storywork: The Prints of Marie Watt From the Collections of Jordan D. Schnitzer and His Family Foundation, September 2025

2. Maseeh College Overview and Priorities, Business Advisory Council, School of Business, Portland State University, April 2023.

3. Biotransport and Ultrasound Research, Tulane University, BMEN 2310 Product & Experimental Design course, November 2017.

4. Biotransport and Ultrasound Research, Tulane University, BMEN 4900 Art of

Professional Engineering course, October 2017.

5. Biomedical Engineering, University of Michigan—Medtronic Visit, January 2014.

6. Vascular Microbubbles for Therapy, University of Michigan, December 2013.

7. Vascular Microbubbles for Therapy. The University of Michigan, Biomedical Engineering Society Student Chapter, March 2011.

8. Vascular Microbubbles for Therapy. The University of Michigan, Department of Biomedical Engineering, February 2011.

9. UM Biomedical Engineering. The University of Michigan, Tech Day, November 2009.

10. Biological Flow and Transport. The University of Michigan, Biomedical Engineering Society Student Chapter, March 2009.

11. Vascular Microbubbles for Therapy. The University of Michigan, Department of Biomedical Engineering, March 2009.

12. UM Biomedical Engineering. The University of Michigan, Tech Day, November 2008.

13. Vascular Microbubbles for Therapy. The University of Michigan, Department of Biomedical Engineering, October 2007.

14. Therapeutic applications of perfluorocarbons. Michigan Research Community, Invited Seminar, November 2006.

15. Biological Flow and Transport. Department of Biomedical Engineering, The University of Michigan, April 2005.

16. Bubble expansion, transport and adhesion in Gas Embolotherapy. Microfluidics Interdisciplinary Workshop. The University of Michigan. December 2004.

17. Biomedical fluid mechanics and transport. Biomedical Engineering Program 40th Anniversary Symposium. The University of Michigan. April 2004.

18. Gas embolotherapy. The University of Michigan. April 2004.

19. Biological flow and transport. Biomedical Engineering Department. The University of Michigan. March 2004.

20. Biofluid mechanics. Biomedical Engineering Department. The University of Michigan. September 2002.

21. Biofluid mechanics. Internal Medicine, Surgery, and Biomedical Engineering. The University of Michigan. April 2002.

22. Liquid ventilation. Department of Surgery Research Seminar. The University of Michigan. January 2002.

23. Surfactant and liquid delivery to the lungs. Orthopedic Research Laboratory Seminar. The University of Michigan. November 2001.

24. Surfactant and Liquid Delivery to the Lungs. Biomedical Engineering Department. The University of Michigan. February 2001.

25. Surfactant spreading, theory and experiments. Biomedical Engineering Department, Northwestern University. January 1997.

26. Models of surfactant replacement therapy. Biomedical Engineering Department, Northwestern University. February 1996.

Patents and Invention Disclosures

Gated-Concentric Artificial Lung, Patent 10,589,015, March 17, 2020, Robert H. Bartlett, Joseph L. Bull, Uditha Piyumindri Fernando

A System for Defining the Hemodynamic Significance of a Lesion Identified on Coronary CT Angiogram. November 20, 2010. File 4884, Hitinder S. Gurm and Joseph L. Bull

Design Modifications to Provisional Patent #61645025, April 4, 2013, John Pitre Jr., Joseph Bull, William Weitzel, Grant Kruger, Leo Koziol, Alan Vollmer

RESEARCH SUPPORT

PI or Co-PI on > $32M of research funding

Current Support

1. Alfred P. Sloan Foundation, “Sloan Center for Systemic Change: Portland State University”, $249,863, 01/01/2024-06/30/2026, PI: Zhang, co-PI: Bull

Completed Support

1. NIH R01 HD097466, “Placental Functional Imaging to Predict Preeclampsia Therapeutic Outcomes” $1,605,829, 09/15/2019-07/31/2024 PI: Bayer, co-investigator: Bull. 1.5 month effort

2. NIH R01HL128337 “Bactericidal, Nonthrombogenic Intravascular Catheters” $2,820,131, 8/1/2015-7/31/2020, PI: Bartlett (Surgery), co-investigator: Bull. 1.45 calendar month effort. Percentile score: 1.

3. NIH R01 HL132037 “Advanced Thromboresistant/Bactericidal Catheters via Electromodulated NO Release” PI: Meyerhoff (Chemistry), co-investigator: Bull. $1,618,386, 1/1/2017- 12/31/2020

4. National Institutes of Health, NIH 2R01EB006476 “Dynamics of Vascular Microbubbles and Microdroplets in Gas Embolotherapy” Competitive Renewal, $2,307,992. 05/01/2013-

4/30/2019. PI: Bull. ***Impact/Priority Score: 10 (perfect score, e.g. entire study section scored it 1), Percentile: 1***. 3.5 calendar months effort
Competitive renewal of previously funded R01, $4,001,148. 09/12/2007-4/30/2019

5. Department of Veterans Affairs, Merit 1I01BX001684-01 "Telehealth-Enabled Ultrasound-Bioimpedance Viscoelastographic Edema Monitoring", $649,728. 4/1/2012-3/31/2017. PI: Weitzel (VA and Internal Medicine). Co-PI: Bull. 20% effort

6. NIH R56HL119403 "Advanced Thromboresistant/Bactericidal Catheters via Electromodulated NO Release", 09/01/2014-08/31/2016, $553,864. PI: Meyerhoff (Chemistry), co-investigator: Bull. 1 calendar month effort.

7. Michigan Institute for Clinical and Health Research, "Compression Bio-Impedance: novel, accurate edema quantification", 07/01/2014-1/31/2016, $75,000. PI: Bull, 7% effort.

8. Coulter Foundation, "Radio Frequency (RF) decorrelation based vascular ultrasound device Research Stage/Description of Technology, Year 2", $90,480, 07/01/2013-06/30/2014, PI: Bull. Co-PI: Weitzel of Internal Medicine.

9. UM MCubed, "Substructural neuromodulation by ultrasonic vaporization of biochemical-loaded perfluorocarbon microdroplets", $60,000, 12/18/2012-06/30/2014. PIs: Bull, Carson (Radiology), Hernandez.

10. Michigan Institute for Clinical and Health Research, "Effects of Vibration on Clearance During Hemodialysis Performed with a Standard Permeability Dialyzer", $49,745. 06/01/2013-05/31/2014, PI: Mueller (Pharmacy), co-I: Bull

11. National Institutes of Health, NIH 1R01HL089043 "Compliant Thoracic Artificial Lungs", $1,447,940. 01/01/2009-12/31/2013. PI: Cook (Surgery), co-investigator: Bull.

12. National Institutes of Health, S10-RR-025592 "A Platform for Optical Nanomachining and Nanoablation for Biomedical Engineering and Basic Biology", $411,666. 09/01/09-08/31/13. PI: Hunt (BME), co-PI: Bull

13. Coulter Foundation, "Radio Frequency (RF) decorrelation based vascular ultrasound device", $110,000, 07/1/2012-06/30/2013, PI: Bull, Co-PI: Weitzel (VA and Internal Medicine).

14. National Institutes of Health, NIH R01EB006476 "Dynamics of Vascular Microbubbles and Microdroplets in Gas Embolotherapy", $1,693,156. 09/12/2007-04/30/2013. PI: Bull.

15. National Institutes of Health, R01EB006476-S1 "Dynamics of Vascular Microbubbles and Microdroplets in Gas Embolotherapy" Supplement, $149,135. 09/12/2007-05/31/2011. PI: Bull.

16. National Institutes of Health, 1S10RR022425-01A1 "High-speed Optical Imaging for Medical Diagnosis and Therapy", $499,071. 04/01/2007-03/31/2009. PI: Kripfgans (Radiology), Co-PI: Bull

17. Coulter Foundation, "Novel technology for controlling electrosurgical thermal spread: Preservation of neurovascular bundle during radical prostatectomy", $100,000, 04/01/2007-

03/31/2008. PI: Bull. Co-PIs: J. Geiger of Surgery, A. Shih of ME.

18. Sage Medical Inc., “Analysis for an endovascular device for the treatment of acute aortic dissection”, $50,000. 10/01/2006-09/30/2007. PI: Bull.

19. National Institutes of Health, R21EB006098 “Rapid Prototyping of 3D Nanofluidic Systems in Glass Substrates”, $374,878. 04/01/2006-03/31/2008. PI: Alan Hunt of BME. Co-PI: Bull.

20. National Institutes of Health, R21EB003541 “Development of a Novel Gas Embolotherapy Technique for the Treatment of Cancer”, $399,558. 04/01/2004-03/31/2007. PI: Bull.

21. Whitaker Foundation, RG-03-0017 “Gas embolotherapy for the treatment of cancer”, $160,000. 1/1/2004-12/31/2005. PI: Bull.

22. National Science Foundation, BES-0301278 “Gas embolotherapy for the treatment of tumors”, $251,702. 7/15/2003-6/30/2007. PI: Bull.

23. National Aeronautics and Space Administration, NNC04AA21A “NASA Bioscience and Engineering Institute”, $7,650,000, 09/01/2003-09/30/2007. PI: Grotberg (BME). Co-Investigator: Bull.

24. National Institutes of Health, R01HL69420-S1 “Development of a Total Artificial Lung” Supplement, $174,525. 01/01/2003-12/31/2006. PI: R.H. Bartlett of Surgery. Co-investigator: Bull. (supplement to support my graduate student)

25. Defense Advanced Research Projects Agency, BAA01-47 “Biomolecular motor-based nanotechnology: sorters, pumps and engines”, $1,955,599. 07/01/2002 - 02/28/2005. PI: Meyhöfer (Mechanical Engineering). Co-investigator: Bull.

26. National Institutes of Health, R01HL69420 “Development of a Total Artificial Lung”, $5,386,977. 02/01/2002-8/14/2007. PI: R.H. Bartlett of Surgery. Co-investigator: Bull. Note: this was a Bioengineering Research Partnership Grant, which is a multi-investigator funding mechanism.

27. National Institutes of Health, F32 HL68416 “Liquid Delivery into the Lung”, $90,600. 11/01/2001-10/31/2003. PI: Bull. Note: I declined this NRSA award in order to accept the Parker B. Francis Fellowship. The rules of the NRSA do not allow holding another named fellowship simultaneously with the NRSA.

28. Francis Family Foundation, Parker B. Francis Fellowship “Dynamics of Liquid Delivery into the Lung”, $120,000. 07/01/2001-06/31/2004. PI: Bull.

29. UM/NIH Nathan Shock Pilot Grant, “Effects of Aging on Liquid Delivery to the Lungs”, $100,000. 07/01/2001-06/31/2002. PI: Bull.

30. National Institutes of Health, R01HL64373 “Total Liquid Ventilation: A Bioengineering Partnership”, $2,590,320. 09/30/1999-08/31/2005. PI: Hirschl (Surgery), Co-investigator: Bull. Note: this was a Bioengineering Research Partnership Grant, which is a multi-investigator funding mechanism.

31. National Institutes of Health, R29 HL 54224-04S1 “Liquid Ventilation in ARDS” Supplement, $78,302, 7/1/1999-3/31/2001, PI: Hirschl (Surgery), Co-investigator: Bull.

TEACHING

New Courses Introduced at Tulane University

Biomechanics and Biotransport BMEN 3650

This course introduces students to biomechanics and biotransport. Specific topics include: the analysis of forces and stresses/strains in biological structures under loading; constitutive models for biological materials; the relationship between structure and function in tissues and organs. These topics will be related to fundamental principles of fluid mechanics and mass transport of biological systems at the cellular, tissue, and organ levels including cell adhesion and migration; intracellular, transmembrane and transvascular transport; drug transport and pharmacokinetics. Fulfills departmental 'domain" requirement.

Courses Taught at Tulane University

Course #	Course title	Teaching Role[1]	Term	Enrollment	Q7 Overall course rating max=5	Q8 Overall instructor rating max=5
BMEN 3440	Biofluid Mechanics	Instructor	Fall 2019	35	4.5	4.8
BMEN 3650/6650	Biomechanics & Biotransport	Instructor	Spring 2019	39	4.7	4.9
BMEN 3440	Biofluid Mechanics	Instructor	Fall 2018	57	4.6	4.8
BMEN 3650/6650	Biomechanics & Biotransport	Instructor	Spring 18	15	4.6	4.8
BMEN 3650/6650	Biomechanics & Biotransport	Instructor	Spring 17	20	4.6	4.9

New Courses Introduced at U of M

1. Introduction to Biofluid Mechanics BiomedE 331
(introduced as BiomedE 499-112 prior to getting permanent course number)

The objective of BiomedE 331 is to provide a rigorous education in the principals of introductory fluid mechanics as it relates to biomedical engineering, medicine, and biology. This course introduces the fundamentals of biofluid dynamics and continuum mechanics, including conservation of mass, momentum, and energy, and non-dimensionalization. Students are taught concepts relating flow to physiologic function

[1] Instructor, Co-instructor, Recitation/discussion leader, etc.

and disease, and are introduced to fluid-structure interactions as they relate to pulmonary, cardiovascular, and cellular flows.

2. Biotransport BiomedE 479

The objective of this course is to teach the fundamentals of mass transport as they relate to living systems. Convection, diffusion, active transport, and osmosis are considered. Conservation of momentum, mass and energy are applied to a variety of biological transport phenomena, ranging in length-scale from molecular to organ level. Examples from cardiovascular, respiratory and renal physiology, as well as examples from BioMEMS and micro-scale locomotion, are examined.

Courses Substantially Revised at U of M

BME 231 Introduction to Biomechanics

This course introduces topics in biomechanics, including statics, dynamics, and deformable body mechanics, as they apply to biology and medicine. The course was substantially revised to integrate biomedical applications, covering molecular to whole body size scales, throughout the course.

Courses Taught at U of M

Course #	Course title	Teaching Role[2]	Term	Enrollment	Q1 "Overall, this was an excellent course" max=5	Q2 "Overall, the instructor was an excellent teacher" max=5
BiomedE 331	Intro. Biofluid Mechanics	Instructor	Fall 16	81	4.84	4.97
BiomedE 331	Intro. Biofluid Mechanics	Instructor	Fall 15	86	4.85	4.98
BiomedE 331	Intro. Biofluid Mechanics	Instructor	Fall 14	84	4.80	4.96
BiomedE 231	Intro. Biomechanics	Instructor	Winter 14	98	4.41	4.67
BiomedE 331	Intro. Biofluid Mechanics	Instructor	Fall 13	71	4.88	4.98
BiomedE 231	Intro. Biomechanics	Instructor	Winter 13	85	4.33	4.94
BiomedE	Intro. Biofluid	Instructor	Fall 12	76	4.71	4.95

[2] Instructor, Co-instructor, Recitation/discussion leader, etc.

331	Mechanics					
Biomed 231	Intro. Biomechanics	Instructor	Winter 12	91	4.76	4.89
BiomedE 331	Intro. Biofluid Mechanics	Instructor	Fall 11	80	4.84	4.91
BiomedE 331	Intro. Biofluid Mechanics	Instructor	Fall 10	78	4.70	4.95
BiomedE 331	Intro. Biofluid Mechanics	Instructor	Fall 09	80	4.78	4.99
BiomedE 419/519	Quantitative Physiology	Co-instructor	Fall 09	N/A		
BiomedE 331	Intro. Biofluid Mechanics	Instructor	Fall 08	62	4.83	4.96
BiomedE 331	Intro. Biofluid Mechanics	Instructor	Fall 07	73	4.56	4.90
BiomedE 479	Biotransport	Instructor	Winter 07	45	4.63	4.85
BiomedE 331	Intro. Biofluid Mechanics	Instructor	Fall 06	58	4.75	4.95
BiomedE 479	Biotransport	Instructor	Winter 06	41	4.00	4.27
BiomedE 499.112	Intro. Biofluid Mechanics	Instructor	Fall 05	44	4.38	4.80
BiomedE 479	Biotransport	Instructor	Winter 05	34	3.97	4.68
BiomedE 499.112	Intro. Biofluid Mechanics	Instructor	Fall 04	14	4.50	4.86
BiomedE 479	Biotransport	Instructor	Winter 04	25	3.96	4.54
BiomedE 499.112	Intro. Biofluid Mechanics	Instructor	Fall 03	24	4.12	4.56
BiomedE 479	Biotransport	Instructor	Winter 03	24	3.63	3.92
MechEng 230.002	Thermal-Fluid Science I	Instructor	Fall 02	93 + 1 in ME499	3.26	3.38
BiomedE 419/519	Quantitative Physiology	Co-instructor	Fall 02	N/A		
MechEng 230.002	Thermal-Fluid Science I	Instructor	Winter 02	87	3.41	3.65
BiomedE 295	Biomedical Engineering Undergraduate Seminar	Discussion Leader	Winter 02	47	3.95	3.84
BiomedE 500	BME Grad Seminar	Discussion Leader	Fall 01	77	4.03	3.75
BiomedE 419/519	Quantitative Physiology	Co-instructor	Fall 01	N/A		

Inter-University Activities

Participant in biomechanics teaching consortium.

Student Training

Ph.D. Committees chaired/co-chaired

1. Xianglong Wang, May 2020, "Computer Simulation of a Nitric Oxide-Releasing Catheter with a Novel Stable Convection-Diffusion Equation Solver and Automatic Quantification of Lung Ultrasound Comets by Machine Learning." Chair. (Initial position after PhD: Assistant Professor at Washington State University)
2. Jonah Harmon, April 2020, "Gas Embolization as a Minimally Invasive Therapy for the Treatment of Hepatocellular Carcinoma." Chair. (Initial position after PhD: postdoc at University of Washington)
3. John Pitre, January 2017, "Ultrasound Methods for Quantitative Edema Monitoring." Chair. (Current position: ultrasound researcher at Philips Healthcare, first position after my lab: postdoc at University of Washington)
4. Uditha Piyumindri Fernando, December 2016, "Development of an Artificial Membrane Lung." Co-chair.
5. David Skoog, December 2015. Co-chair with primary advisor Keith Cook. (First position: postdoc at Carnegie Mellon University)
6. Ryan Orizondo, September 2015. Co-chair with primary advisor Keith Cook. (First position: postdoc at University of Pittsburgh)
7. Robinson Seda, December 2013, "Characterization of Bioeffects on Endothelial Cells Under Acoustic Droplet Vaporization". Chair. (Current position: research staff at University of Michigan)
8. David Li, November 2013, "Bubble Dynamics and Acoustic Droplet Vaporization in Gas Embolotherapy". Chair. (current position: ultrasound researcher at Philips Healthcare, first position after my lab: postdoc at University of Washington)
9. Carl McGill, May 2012, "Investigation of Precise Needle Insertion for Prostate Brachytherapy". Co-chair. (Current position: industry)
10. Robert E. Dodde, January 2011, "Electrical Properties of Soft Tissue Under Compression". Co-chair. (Initial position after PhD: Engineer, Stryker)
11. Martin S. Schlicht, Jr., January 2011, "An Experimental Model of Human Aortic Dissection". Co-chair. (Initial position after PhD: Postdoctoral Fellow, University of Michigan)
12. Zheng Zheng Wong, April 2009, "Gas Embolotherapy: Bubble Evolution in Acoustic Droplet Vaporization and Design of a Benchtop Microvascular Model". Chair. (Initial position after PhD: Research Engineer, A-Star, Singapore)
13. Yu-chun Lin, December 2006, "Pulsatile flow across cylinders: a model of flow in a total artificial lung". Chair. (Current position: Assistant Professor at National Taiwan University, after my lab: postdoc at Harvard, and postdoc at Stanford)
14. Paola Bagnoli, May 2006, (Politecnico di Torino, co-advised with M.L. Costantino, primary mentor during her extended visit to my lab), "Biomechanics of total liquid ventilation". Co-chair. (Initial position after PhD: Assistant Professor, Politecnico di Milano)
15. Andrés J. Calderón, April 2006, "A multiphase flow study of bubbles traveling through bifurcations for a novel gas embolotherapy application". Chair. (Initial position after PhD: postdoc at University of Pennsylvania, then Biomechanics and Biomedical Engineer, Consulting Engineers and Scientists, Inc., Philadelphia, PA)

Postdoctoral Fellows (Ph.D.'s)

1. Heng Vivien Yu, 2020-2021 (subsequently working in industry)
2. Foad Kabinejadian, Ph.D. (subsequently research engineer at Canon)
3. John Pitre, Ph.D. (subsequently postdoctoral fellow at University of Washington, currently ultrasound engineer at Phillips)
4. Robinson Seda, Ph.D. (currently at Data Office for Clinical & Translational Research, University of Michigan)
5. David S. Li, Ph.D. (subsequently postdoctoral fellow at University of Washington, currently ultrasound engineer at Phillips)
6. Robert E. Dodde, Ph.D. (co-advised with Rick Weitzel), engineer at Stryker
7. Stan Samuel, Ph.D. (co-advised with Brian Fowlkes), at a startup company
8. Adnan Qamar, Ph.D., research staff at KAUST
9. Sanghyun Lee, Ph.D. (co-advised with Alan Hunt)
10. Balaji Srinivasan, Ph.D., (first position after was Assistant Professor at IIT Delhi, India)
11. Khalil Khanafer, Ph.D., (subsequently Associate Research Scientist at University of Michigan)
12. Brijesh Eshpuniyani, Ph.D., (subsequently Assistant Professor at IIT Kanpur, India)
13. Tao Ye, Ph.D., currently working in industry

Medical Resident and Fellow Training
1. Ambroise Duprey, M.D. (co-mentored with Ramon Berguer)
2. Tom Tsai, M.D. (co-mentor with K. Eagle)
3. Rupa Seetharamaiah, M.D. (co-mentor with R.B. Hirschl)
4. Stefano Tredici, M.D. (co-mentor with R.B. Hirschl)

Medical Student mentoring (M4 Elective Clerkship)
1. Doug Valassis, M.D., M.S. (2012), Currently Emergency Medicine attending physician.
2. Megan Guetzko, M.D. (2012), Currently OB/GYN attending physician.

Medical Student mentoring (Summer research project)
1. Doug Valassis, M.D., M.S. (Summer 2009), Currently Emergency Medicine attending physician.

M.S. students advised/co-advised (master's theses for student I wasn't primary advisor are not listed for brevity)
1. Natalie Schwartz, 2020-2021
2. Stephen Hahn, 2020-2021
3. Chloe Celingant-Copie, 2019-2020
4. Junjie Zhong, 2019
5. Jonah Harmon, 2017
6. Lanxin Li, 2015, (Initial position after my lab: Ph.D. student, Wayne State University)
7. Samantha Stephenson, 2015, (Initial position after my lab: consultant, Accenture)
8. Nelson Smith, 2015, (Initial position after my lab: consultant, ZS Associates)
9. Zhaowei Chu, 2015, visiting Ph.D. student from Beihang University
10. Florian Hellmeier, 2013, (Initial position after my lab: medical student, Germany)
11. Kristin Solt, 2012, (Initial position after my lab: engineer, Terumo)
12. Scott Rudkin, 2011, (Initial position after my lab: medical student, University of Pittsburgh)
13. Amanda Xi, 2011, (Initial position after my lab: medical student, Oakland University)
14. Harm Nieuwstadt, 2010, (from Delft University of Technology, Netherlands, visited to conduct his thesis work with me), (Initial position after my lab: Ph.D. student, Erasmuc Medical University, Rotterdam)
15. Doug Valassis, 2008, (Current position: emergency medicine attending physician)

16. Molly O'Loughlin, 2008 (Initial position after my lab: consultant, Diamond Consulting)
17. Brad Steele, 2007 (Initial position after my lab: Medtronic)
18. Jia Qin, 2006, (Initial position after my lab: Engineer, St. Jude Medical Systems)
19. Mike Lawrenchuk, 2006, (Initial position after my lab: Engineer, Materialise)
20. Niral Dalal, 2005.
21. Prateek Gadhoke, 2005, (Technical Operations Associate, Bristol-Myers Squibb)
22. James Stephen, 2003, (Initial position after my lab: medical school, and then surgery resident, University of Pennsylvania)
23. Elizabeth Frank, 2002, (Initial position after my lab: Food and Drug Administration)
24. Ronald Mashni, 2001
25. Jeffrey P. Katstra, 2001, (Initial position after my lab: Senior Scientist, Pulmatrix, Inc.)

Note: all of my Ph.D. students also obtained their masters with me, but these are not listed here.

Undergraduate major projects directed

1. Thien-Y Nguyen, 2021-2022
2. Grace Qian, 2020-2022
3. Natalie Schwartz, 2019-2020
4. Stephen Hahn, 2018-2020
5. Chloe Celingant-Copie, 2018-2019
6. Cathleen Chenyu Kuo, 2017- 2019
7. Jonah Harmon, 2015-2016
8. Mengfan Li (visitor from Beihang University, Beijing, China), 2014-2015
9. Alex Waselewski (SURE Program), 2014
10. Xianglong Wang, 2013 – 2015
11. Hannah Cheriyan, 2014-2015
12. Samantha Stephenson, 2012 – 2014
13. Nelson Smith, 2012 – 2014
14. Umakanthan Kavin (SURE Program), 2012
15. Uziel Mendez, (summer student from Michigan Tech, part of SROP to encourage underrepresented minority students to pursue graduate education), 2011 (subsequently BME Ph.D. student at UM and NSF graduate fellowship recipient)
16. Elizabeth Bojanic (SURE), 2011
17. Amanda Xi, M.S (also worked with me while in M.S. program), 2010
18. Catilin Winget, 2010
19. Zaide Feliciano (summer student from University of Puerto Rico-Mayaguez, part of SROP to encourage underrepresented minority students to pursue graduate education), 2010 (subsequently BME Ph.D. student at Ohio State University)
20. Kevin Schalte, 2010
21. Brittany Gnewkowski, 2009-2010
22. David Li, 2007-2008
23. Doug Valassis, summer 2006 and academic year 2006-2007 (also worked with me during M.S. and M.D.)
24. Brad Steele, summer 2006 and academic year 2006-2007
25. April McDonald, Spelman College, part of RISE program to encourage underrepresented minority students to pursue graduate education, summer project 2003
26. Francesco Tredici, B.S. (visited my lab from Politecnico di Milano, 2003-2004, I was the advisor for his undergraduate thesis)

High School Student Research Mentoring

1. Stephen Robards, 2013-2014
2. Noel Fischre

Dissertation Committees

1. Dylan Lawrence, 2021
2. Xianglong Wang, 2020 (**chair**)
3. Jonah Harmon, 2020 (**chair**)
4. Heng “Vivien” Heng, 2020
5. Akinjide R Akintunde, 2019
6. Louise McCarroll, 2017
7. John Pitre, 2017 (**chair**)
8. Uditha Piyumindri Fernando, 2016 (**co-chair**)
9. Barry Belmont, 2015
10. David Skoog (**co-chair** and qualifying exam chair), 2015
11. Ryan Orizondo (**co-chair** and qualifying exam chair), 2015
12. Jack Wang, 2014
13. Alex Thompson, 2014
14. David Lai, 2014 (Qualifying exam chair)
15. Robinson Seda, 2013 (**chair**)
16. David Li, 2013 (**chair**)
17. Jacob Ceccarellli, 2013
18. Auresa Thomas, 2013 (Qualifying exam chair)
19. David Cepeda, 2012
20. Carl McGill, May 17, 2012 (**co-chair**)
21. Roland Chen, 2012
22. Scott Medina, 2012
23. Rebecca Schewe-Mott, 2012 (Qualifying exam chair)
24. Phapanin Charoenphol, 2011
25. Irene Sinn, 2011 (Qualifying exam chair)
26. Kagya Amoako, 2011 (Qualifying exam chair)
27. Zhenzhen Fan, 2011
28. Amy Hsiao, 2011 (Qualifying exam chair)
29. Robert Dodde, January 14, 2011 (**co-chair**)
30. Marty Schlicht, January 4, 2011 (**co-chair**)
31. Mario Fabiilli, 2010 (Qualifying exam chair)
32. Matthew Chastagner, 2010
33. Zheng Zheng Wong, April 16, 2009 (**chair**)
34. Paul Makidon, 2008 (Qualifying exam chair)
35. Nelson Chen, 2008
36. Dongyul Chai, 2008
37. Yunseok Heo, 2008 (Qualifying exam chair)
38. Jonathan Song, 2008 (Qualifying exam chair)
39. Ying Zheng, 2008 (Qualifying exam chair)
40. Sanghyun Lee, 2007
41. Albert Cheuh, 2007 (Qualifying exam chair)
42. Andrea Lo, 2007
43. Jeongho Kim (Qualifying exam chair)
44. Yu-chun Lin, December 12, 2006, (**chair**)
45. Jennifer Zierenberg, 2006 (Qualifying exam chair)

46. Dongeun Huh, 2006
47. Michol Cooper, 2006
48. Brenda Cho, 2006 (Qualifying exam chair)
49. Paola Bagnoli, May 30, 2006 (Politecnico di Torino, co-mentor with M.L. Costantino, primary mentor during her extended visit to my lab)
50. Andrés J. Calderón, April 11, 2006 (**chair**)
51. Tom Phelan, 2004
52. Ravi Birla, 2004

Qualifying Exam Committee only
53. Jayant Saksena
54. Matt Gibson (Qualifying exam chair)
55. Jeongho Kim (Qualifying exam chair)

SERVICE

Departmental Service

Tulane University, BME Department
1. Faculty Advisor to class of 2021
2. Graduate program director, 2018-2019
3. Graduate Education Committee, 2017-2019
4. Faculty Search Committee, chair, 2017-2018

UM BME Departmental
5. Associate Chair and Director of Undergraduate Program, 2008-2011, 2016
6. Executive Committee, 2008-2011, 2015-2016
7. ABET Assessment Committee, 2008-2016, Chair 2008-2011
8. BMES Student Chapter Advisor, 2014-2016
9. Underrepresented Minority Coordinator, 2005-2016
10. Liaison to Native American Student Association and American Indian Science and Engineering Society, 2001-2016
11. Honors and Awards Committee, 2014-2015, Chair 2015-2016
12. Master's Program Chair, 2012-2016
13. Biomechanics, Rehabilitation Engineering and Ergonomics Tract Undergraduate Curriculum Committee, 2003-2016, chair, 2008-2011
14. Undergraduate Education Committee, member, 2011-2016
15. Graduate Admissions Committee, 2011-2016
16. Promotion Casebook Committee (Mayer), 2014-2015
17. Promotion Casebook Committee (Claflin), Chair, 2014-2015
18. Faculty General Search Committee, member, Fall 2012-Winter 2013
19. Faculty Search Biomechanics Subcommittee, member, Fall 2012-Winter 2013
20. Joint BME/Cardiovascular Surgery Faculty Search Committee, 2011-2012
21. Promotion Casebook Committee (Schmedlen), Chair, 2011-2012
22. Tenure Casebook Committee (Deng), 2009-2010
23. Promotion Casebook Committee (Schmedlen), Chair, 2008-2009
24. Undergraduate Education Committee, Chair, 2008-2011
25. Graduate Admissions Committee, Chair, 2006-2008
26. Biomechanics Advisor (academic advisor for graduate students in biomechanics tract),

2001-2008
27. BME Faculty Search Committee, Fall 2005-Winter 2006
28. Biomedical Engineering 40th Anniversary Symposium Planning Committee, 2003-2004
29. Graduate Education Committee, member 2001- 2008
30. Graduate Admissions Committee, 2001-2004

School Service

Tulane University School of Science and Engineering
1. SSE Graduate Studies Committee, 2019-2022
2. SSE Curriculum Committee, 2019-2022
3. SSE Executive Committee, 2019-2022
4. SSE Strategic Initiatives Committee, 2018-2022

UM College of Engineering
5. ABET Committee, 2008-2016
6. UM ADVANCE Advisory Board for the College of Engineering, 2013-2016
7. Promotion Casebook Committee (Eniola), member, 2016
8. Reappointment Casebook Committee (Mehta), member, 2015-2016
9. Recruiting representative at American Indian Science and Engineering Society Annual Conference, 2007-2016.
10. Recruiting representative at Society for Advancement of Chicanos and Native Americans in Science Annual Conference, 2011-2016
11. Review Committee for Center for Engineering Diversity and Outreach (College of Engineering organization that houses the Office of Engineering Outreach and Engagement, the Women in Science and Engineering programs, and the Minority (later "Multicultural") Engineering Program Office), 2014-2015
12. Curriculum Committee, 2012-2014
13. International Programs Curricular and Faculty Engagement, 2012-2013
14. Promotion Casebook Committee (Alfano), member 2012-2013
15. Promotion and Tenure Casebook Committee (Eniola), member, 2012-2013
16. Reappointment Casebook Committee (Eniola), member, 2008-2009
17. Commission on Undergraduate Education, led revision of college undergraduate curriculum, 2008-2009
18. Research Strategy Committee, College of Engineering, 2007
19. Recruiting representative at the Institute on Teaching and Mentoring, October 2006 and October 2007.
20. CoE group to visit Focus:HOPE in 2007
21. Recruiting of URM postdoctoral fellows and students at conferences, examples: the Institute on Teaching and Mentoring, and the American Indian Science and Engineering Society Annual Conference.

University Service

Portland State University
1. Search Committee for Assistant Director Native American Student Community Center, 2025
2. Strategic Enrollment Plan Task Force, leadership team, 2025-present
3. Search Committee for Dean of the College of Liberal Arts and Sciences, 2025
4. Chair of PSU China Programs Transition Team, 2025-present

5. Honorary Degree Recipient Selection Committee, 2023 and 2024
6. Chair of Nations employee resource group (Native American affinity group), 2023-present
7. Chair of Search Committee for Dean of the School of Business, 2023-2024
8. Co-Chair of Search Committee for Executive Director of Tribal Relations (reports to President), 2023
9. Affiliated Tribes of Northwest Indians Higher Education Committee Workshop, 2023
10. Deans Council, 2022-present
11. Academic Leadership Team, 2022-present
12. Search Committee (in progress) for Director of Native American Student and Community Center, 2025
13. University Leadership Council (President's Executive Team), 2025-present
14. Chair of Search Committee for Chief Diversity Officer (reports to President), 2025-2026

Tulane University

1. Native American Affinity Group, co-chair, 2021-2022
2. A Strategy for Tomorrow Steering Committee (leading the development of Tulane's 5-year plan to advance equity, diversity, inclusion, and anti-racism through University-wide actions), 2021-2022
3. Innovation Institute Commercialization Ideation Committee, co-chair of Incentivize and Recognize Innovators/Mentors Sub-Committee, 2021-2022
4. Life Science Study Technical (e-Clinical) Platform Committee, Executive Board, 2021-2022
5. Associate Vice President for Enterprise Risk Management search committee, 2021
6. School of Public Health & Tropical Medicine, Department of Environmental Health Sciences Department Chair search committee, 2020-2022
7. Equity, Diversity and Inclusion Faculty Council, 2020-2022
8. Environmental Health and Safety Operations Committee, 2019-2022
9. Coalition to Stop Sexual Violence, 2019-2022
10. Grant Lifecycle Process Steering Committee, 2019-2022
11. Academic Affairs Uptown Graduate Student Reopening Committee (return to in person during COVID pandemic), 2020
12. Tulane Research Council, Chair, 2019-2022
13. SSE representative to the Newcomb-Tulane College Study-Abroad Committee, 2017-2020

University of Michigan

14. American Indian Science and Engineering Society, faculty advisor, 2011-2016
15. Michigan Alliance for Graduate Education and the Professoriate (AGEP) Advocate, 2006-2016
    AGEP is aimed at providing mentoring of underrepresented minority students in engineering and sciences.
16. Rackham Graduate School Faculty Allies for Diversity, 2010-2016
17. UM ADVANCE Launch Committee Convener (mentoring for 2 new assistant professors), 2013-2014, and 2016
18. Faculty Senate Committee for an Inclusive University, member, 2012-2015
19. Faculty Selection Committee for the Rackham International Student Fellowships, member, 2013-2014
20. Faculty Selection Committee for the Rackham Predoctoral Fellowships, member, 2013-2014
21. Thurnau Advisory Committee, 2013
22. Center for Research on Learning and Teaching (CRLT) Google Faculty Learning Community, 2011-2012
23. Center for Research on Learning and Teaching (CRLT) Faculty Advisory Board, 2009-2011
24. Reviewer of applications for Medical Scientist Training Program (UM M.D/Ph.D. program),

2006-2008

State Service

1. Future Ready Oregon Technology Industry Consortium Board, 2023-present
2. Louisiana Optical Network Infrastructure, Management Council, 2022

State and Federal Government Testimony

1. Oregon Federal Delegation visit, 2025
2. PSU representative at Roundtable of Presidents of HSIs and emerging HSIs and Congressional leaders 2024
3. Oregon State Legislature 2024 session
4. US Secretary of Commerce Raimondo, Governor Kotek, and Oregon Federal Delegation visit, 2023
5. Oregon State Legislature 2023 session

Nonprofit Board Service

1. Society for Advancement of Chicanos/Hispanics & Native Americans in Science, Board of Directors, 2026-2028
2. Oregon MESA, Advisory Board, 2025-present
3. Underscore Native News, Board of Directors, 2024-present
4. Underscore Native News, Board of Directors, Treasurer 2025-present
5. Center for Tribal Nations Design Team Selection Committee, 2023-2024
6. Future Ready Oregon - Technology Industry Consortium Board, Higher Education Coordinating Commission State of Oregon, 2023-present

Professional Society Service

1. Native American/Indigenous Affairs Committee, Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS), 2025-present
2. Native American/Indigenous Affairs Committee, Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS), Chair 2026-present
3. Academic Advisory Council, American Indian Science and Engineering Society (AISES), 2019-present.
4. American Indian Science and Engineering Society (AISES) Lighting the Path program for Native pathways into the professoriate faculty mentor, 2020-2022

Editorial Board

ASAIO Journal (2005-2013)
Annals of Vascular Surgery (2004-2010)

Referee Service

Journal Referee:

1. Academic Emergency Medicine
2. Annals of Biomedical Engineering
3. Annals of Vascular Surgery
4. Applied Physics Letters
5. Arabian Journal for Science and Engineering
6. ASAIO Journal
7. BioMedical Engineering OnLine
8. Biophysical Journal
9. Biotechnology Progress
10. Bulletin of Mathematical Biology
11. Cardiovascular Research
12. Chemical Engineering Science
13. Current Opinion in Chemical Engineering
14. Current Pharmaceutical Design
15. IEEE Signal Processing Letters
16. IEEE Transactions on Biomedical Engineering
17. IEEE Transactions on Advanced Packaging
18. IEEE/ASME Journal of Microelectromechanical Systems
19. Journal of Applied Physiology
20. Journal of Biomechanical Engineering
21. Journal of Biomechanics
22. Journal of Computational Physics
23. Journal of Controlled Release
24. Journal of Fluids and Structures
25. Journal of Fluids Engineering
26. Journal of Fluid Mechanics
27. Journal of Manufacturing Science and Engineering
28. Journal of Mathematical Biology
29. Journal of Porous Media
30. Journal of the Acoustical Society of America
31. Medicine and Science in Sports and Exercise
32. Microcirculation
33. Microfluidics and Nanofluidics
34. Langmuir
35. Physics of Fluids
36. Physical Review E
37. Physical Review Letter
38. PLOS ONE

Conference Referee:
Proceedings of the First International Conference on Microchannels and Minichannels—ASME, 2003

Textbook Reviewer:
Cambridge University Press, 2006 and 2014
Wiley, 2004-2006
Prentice Hall, 2003-2004

Grant Reviewer:
1. Sloan Foundation, January 2025
2. Fellowships Office of The National Academies, Ford Foundation Fellowship Programs

reviewer, March 2023
3. NIH Study Section, Center for Scientific Review Special Emphasis Panel 2022/05 ZRG1 VH-C (10) B, April 2022
4. Fellowships Office of The National Academies, Ford Foundation Fellowship Programs reviewer, March 2022
5. Ralph E. Powe Junior Faculty Enhancement Awards, Oak Ridge Associated Universities, February 2022
6. Fellowships Office of The National Academies, Ford Foundation Fellowship Programs reviewer, 2021
7. NSF EPSCoR Review Panel, July 2019
8. NSF EPSCoR Review Panel, June 2018
9. NIH Bioengineering and Computational Biology Special Emphasis Panel, April 2018
10. NSF Biomedical Engineering Panel, September 2017
11. NIH Medical Imaging (MEDI) Study Section, September 2016
12. NIH Medical Imaging (MEDI) Study Section, June 2016
13. NSF Biomedical Engineering Panel, February 2016
14. NIH Medical Imaging (MEDI) Study Section, February 2016
15. Center for the Advancement of Science in Space, October 2015
16. NIH Medical Imaging (MEDI) Study Section, October 2015
17. Center for the Advancement of Science in Space, October 2014
18. UM/SJTU Grant Reviewer, May 2013
19. NSF Biophotonics Review Panel, member, November 2013
20. NSF Major Research Instrument Program, Review Panel, member, May 2013
21. Reviewer for UM Biomedical Research Council, Bridging Support Program for Biomedical Research, October 2012
22. NIH K Award Application Review Study Section, ZEB1 OSR-B (J2), member, October 2012
23. NIH Surgical Sciences and Bioengineering Study Section, ZRG1 SBIB-J(02)M, member, June 2012
24. NSF Biophotonics, Advanced Imaging, and Sensing for Human Health, Review Panel, November 2011
25. NIH Surgical Sciences and Bioengineering Study Section, ZRG1 SBIB-X(02)M, October 2011
26. AXA Research Fund, June 2011
27. NSF Biophotonics, Advanced Imaging, and Sensing for Human Health, Review Panel, June 2011
28. NSF Major Research Instrument Program, Review Panel, May 2011
29. NSF Biophotonics, Advanced Imaging, and Sensing for Human Health, Review Panel, December 2010
30. NSF Biophotonics, Advanced Imaging, and Sensing for Human Health and Biosensing, CAREER panel, September 2010
31. NSF Major Research Instrumentation Program Panel, June 2010
32. NSF Interdisciplinary Research Panel, February 2010
33. South Carolina, Grants for Exploratory Academic Research, November 2009
34. NIH Modeling and Analysis of Biological Systems (MABS) Study Section, October 2009
35. NSF Biophotonics, Advanced Imaging, and Sensing for Human Health and Biosensing, CAREER panel, September 2009
36. NSF Biophotonics, Advanced Imaging, and Sensing for Human Health, Review Panel, June 2009
37. NIH Predictive Multicale Models of the Physiome in Health and Disease Study Section, ZRG1-BST-E(51), June 2009
38. NIH Predictive Multicale Models of the Physiome in Health and Disease, ZRG1-BST-E(51),

Study Section Chair, January 2009
39. NSF IGERT Bioengineering Full Proposal Panel, December 2008
40. NSF Biophotonics, Advanced Imaging, and Sensing for Human Health Review Panel, December 2008
41. NIH Multicale Models of Physiome Conflict, ZRG1 BST-Q (51) R, Study Section Chair, September 2008
42. NIH Multiscale Modeling, ZRG1 BST-E (51) R, Study Section Chair, September 2008
43. NIH Multiscale Models of Physiome Conflict Study Section, ZRG1 BST-F(51), May 2008
44. NIH Multiscale Modeling Study Section, ZRG1 BST-E(51), May 2008
45. NSF Biophotonics, Advanced Imaging, and Sensing for Human Health Review Panel, May 2008
46. NSF Biophotonics, Advanced Imaging, and Sensing for Human Health Review Panel, November 2007
47. NSF SBIR Photo/electrochemistry Review Panel, August 2007
48. NSF Nanoscale Exploratory Research Review Panel, February 2007
49. NSF CBET Bio-Fluid Dynamics Review Panel, January 2007
50. NSF Bioengineering BES/RAPD Review Panel, December 2006
51. NSF IGERT Review Panel, June 2006
52. NSF NIRT Review Panel, March 2006
53. NSF Active Nanostructure and Nanosystems, Nanoscale Exploratory Research Review Panel, February 2006
54. NSF Mail Reviewer (scheduling conflicts with CAREER and BES panel meetings), 2005 and 2006
55. NSF Biotechnology SBIR/STTR Biochips Review Panel, March 2005
56. NSF Theory, Modeling and Simulation, Nanoscale Exploratory Research Review Panel, March 2005
57. NSF Bioengineering BES/RAPD Review Panel, January 2005
58. NSF Biosystems at the Nanoscale Review, Nanoscale Exploratory Research Review Panel, January 2005
59. NSF Biotechnology SBIR/STTR Biochips Review Panel, September 2004
60. NSF Bioengineering CAREER Review Panel, November 2004
61. NASA Biofluids Review Panel, March 2004
62. NSF Nanoscale Exploratory Research Review Panel, January 2004
63. NSF Bioengineering CAREER Review Panel, November 2003
64. NASA Biofluids Review Panel, March 2003

Promotion and/or Tenure Casebook External Referee
1. University of North Dakota
2. Northeastern University
3. Ohio State University
4. Virginia Tech
5. University of Hawaii
6. University of Virginia
7. Tufts University
8. University of Colorado, Colorado Springs
9. Louisiana State University
10. National University of Singapore
11. Stevens Institute of Technology
12. University of Hong Kong
13. Tulane University (prior to moving to Tulane)

Conference Organization and Sessions Chaired

1. Society for Advancement of Chicanos/Hispanics & Native Americans in Science 2023 National Diversity in STEM (NDiSTEM) Conference Cultural Advisory Workgroup, 2023
2. 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2018, Therapeutic Ultrasound 2, Session Chair
3. American Physical Society, Division of Fluid Dynamics, Biological Fluid Dynamic: Small-Scale Vascular Flow, 2017, Session Chair
4. American Physical Society, Division of Fluid Dynamics, Biofluids: Respiratory Flows, 2014, Session Chair
5. BMES Annual Meeting, Translational Respiratory Engineering, 2014, Session Chair
6. Computational Fluid Dynamics/Seventh International Biofluid Mechanics Symposium, Ein Bokek, Israel, 2012, Microfluidic Devices, Session Chair
7. World Congress of Biomechanics, Vascular Biomechanics, 2010, Session Chair
8. American Physical Society, Division of Fluid Dynamics, Biofluids: General - Biomedical Flows, 2009, Session Chair
9. American Physical Society, Division of Fluid Dynamics, Bio-fluids: Lungs, 2008, Session Chair
10. North American Congress on Biomechanics (joint meeting between the American Society of Biomechanics and the Canadian Society of Biomechanics), 2008. Organizing Committee.
11. 5th Joint ASME/JSME Fluids Engineering Conference, Blood Flows II, 2007, Session Organizer.
12. The Second International Conference on Thermal Engineering Theory and Applications, Biological and Environmental, 2006, Session Chair.
13. American Physical Society, Division of Fluid Dynamics, Hemodynamics I, 2005, Session Chair.
14. American Society for Artificial Internal Organs Annual Conference, Cardiac 4, 2005 Session Chair (student: Yu-chun Lin).
15. American Physical Society, Division of Fluid Dynamics, Bio-Fluids IV, 2002, Session Chair.

Faculty Mentoring (excluding Dean, Associate Dean and Department Chair activities)

1. Kristin Miller, Ph.D.
2. Carolyn Bayer, Ph.D.
3. Rhima Coleman, Ph.D.
4. Joan Greve, Ph.D.
5. Khalil Khanafer, Ph.D.
6. Rachael Schmedlen, Ph.D.
7. Clive D'Souza, Ph.D. (ADVANCE Launch Program)
8. Jacob Abernethy, Ph.D. (AVANCE Launch Program)