

PENELOPE GEORGES

ASSISTANT DIRECTOR, STEM EDUCATION, COUNCIL ON SCIENCE AND TECHNOLOGY
pgeorges@princeton.edu · Princeton University · 233 Lewis Library · (609) 258-1655

EDUCATION

DOCTOR OF PHILOSOPHY, UNIVERSITY OF PENNSYLVANIA

Bioengineering, *School of Engineering and Applied Science*, Philadelphia, PA

BACHELOR OF SCIENCE, COLUMBIA UNIVERSITY

Biomedical Engineering, *School of Engineering and Applied Science*, New York, NY

EXPERIENCE

2020 – PRESENT ASSISTANT DIRECTOR OF STEM EDUCATION, COUNCIL ON SCIENCE AND TECHNOLOGY, PRINCETON UNIVERSITY

- Planning, development, and instruction of courses blending engineering with arts and humanities
- Support faculty in course development and improving inclusive teaching practices
- Support faculty in development of broader impacts statements in grant applications as well as implementation of funded activities
- Research on curricular changes to improve retention in science and engineering courses
- Development of programming to improve science literacy in the Princeton University community
- Reviewing courses proposed for “Science and Engineering” designation in the undergraduate curriculum
- Review faculty funding proposals to the Council on Science and Technology for curricular and co-curricular activities

2015 – 2020 BIOMEDICAL ENGINEERING UNDERGRADUATE COORDINATOR, NJIT

- Develop curriculum across various disciplines in biomedical engineering to prepare undergraduates for careers in the biopharmaceutical industry
- Lead of department Undergraduate Curriculum Committee to ensure that the Department of Biomedical Engineering participates in continuous quality improvement both curricular and extracurricular
- Committee member of on-going readiness for accreditation (ABET)
- Serve as the major conduit between the University Curriculum Committee and the General University Requirement committee and the department
- Actively encourages faculty-student interaction within the department
- Supporting departmental teaching efforts
- Mentoring students in medical device development
- Grant writing to provide research experiences for undergraduate students
- Course instruction with a concentration in Introductory and Advanced Biomaterials

2010 -2012 LECTURER, UNIVERSITY OF PENNSYLVANIA

- Instructor for graduate-level Cell and Molecular Biology course

2007 -2008 **POSTDOCTORAL RESEARCH ASSOCIATE**, RUTGERS UNIVERSITY

- Design and manufacture of DNA-crosslinked polymer biomaterials for cell culture of primary cells and embryonic neuronal stem cells
- Harvested and culture cells from embryonic tissue
- Designed experiment to populate primary cells within hydrogels and measure effects of material stiffness on variety of cell behavior
- Immunocytochemistry and confocal cell microscopy of cells in 3D environment to analyze cytoskeletal changes based on extracellular matrix mechanics
- Examined the neuroprotective effect of compliant substrates against glutamate treatment on spinal cord neurons
- Examined local protein expression Rho activity and Cypin expression in dendrites of cortical neurons using gel electrophoresis
- Performed rheological analysis to study mechanical properties of DNA crosslinked hydrogels
- Taught graduate students how to isolate mammalian primary cells via tissue explant techniques and maintain general cell culture
- Wrote protocols for hydrogel fabrication, laboratory equipment, and experimental designs to allow future students to learn independently

2001-2007 **GRADUATE RESEARCH FELLOW**, UNIVERSITY OF PENNSYLVANIA

- Rheological measurement to characterize mechanical properties of intact brain and liver tissue as well as hydrogels on a strain-controlled rheometer
- Development of cellular scaffolds from biological polymers – specifically fibrin of fish origin
- Developed a novel method of covalently conjugating ligand to surface of polyacrylamide gels
- Modeled tissue stiffness in vitro with mechanically controllable hydrogels as cell substrates to characterize the morphology and protein expression of neurons, astrocytes, and hepatocytes on compliant substrates
- Extensive immunocytochemical evaluation of synaptogenesis in three dimensional matrices

TEACHING EXPERIENCE

PRINCETON UNIVERSITY

FEBRUARY 2021 TO MAY 2021

Lecturer, CST

- Designed and taught the new course FRS127 Body Builders: Living Systems as Art Media, a freshman seminar that surveys biotechnology topics through their connection to the arts
- Taught STC209: Transformations in Engineering and the Arts, an undergraduate course that explores similarities between design processes in engineering and the arts
 - Revised the syllabus and developed the studio course to be delivered virtually
 - Curated invited artists and engineers and coordinated the course co-instructors

NJIT, NEWARK, NJ

JANUARY 2016 TO AUGUST 2020

University Lecturer, Dept of Biomedical Engineering

- Taught undergraduate courses BME304 (Material Fundamental of Biomedical Engineering) and BME420 (Advanced Biomaterials Science)
- Covered topics around understanding material selection, important properties of materials for use in the body and failure modes of applied biomaterial

UNIVERSITY OF PENNSYLVANIA

SEPTEMBER 2010 TO MAY 2012

Adjunct, Dept of Bioengineering

- Taught graduate course BE513 (Molecular and Cellular Biology) to approximately 100 students

PROFESSIONAL SERVICE

FACILITATOR OF DEI COMMUNITY OF PRACTICE (2021-22)

Assisted a group of faculty fellows exploring diversifying the science and engineering curriculum and oversaw a student research group who sought ways to support the faculty

WORKSHOP CO-ORGANIZER (JULY 2021)

Lab Tales – 3 day graduate student workshop on science storytelling

WORKSHOP CO-ORGANIZER (SPRING 2021)

Voices of STEM – 8-part science communication series tailored to graduate students and postdoctoral researchers. Spring 2021

WORKSHOP CO-ORGANIZER (MAY 2021)

Simple Language Science: make your scientific story engaging and accessible (Princeton Research Day Spring 2021)

INVITED LECTURES

March 2021 – NJIT, Newark, NJ - *Inspiring Future Women in STEM*

SKILLS

- Extensive mammalian cell biology and culture training (microscopy, biopolymer synthesis, flow cytometry)
- Material testing with Instron/Rheometer
- Statistical analysis using Kaleidograph and Excel
- Excellent verbal and written communication skills
- Demonstrated proficiency: Adobe Creative suite, entire Microsoft Office Suite, and ImageJ
- Excellent time management and attention to detail
- Strong interpersonal skills with varied university members including provost's office, department chair, and staff populations
- Ability to develop professional rapport and work cooperatively in a diverse team environment

SELECTED PUBLICATIONS

Compression stiffening of brain and its effect on mechanosensing by glioma cells. Pogoda K, Chin L, **Georges PC**, Byfield FJ, Bucki R, Kim R, Weaver M, Wells RG, Marcinkiewicz C, Janmey PA. New J Phys. 2014 Jul;16:075002.
Soft materials to treat central nervous system injuries: evaluation of the suitability of non-mammalian fibrin gels.

Uibo R1, Laidmäe I, Sawyer ES, Flanagan LA, Georges PC, Winer JP, Janmey PA. Biochim Biophys Acta 2009 May 1793(5): 924-30 The yin-yang of dendrite morphology: unity of actin and microtubules. **Georges PC**, Hadzimichalis NM, Sweet ES, Firestein BL. Mol Neurobiol. 2008 Dec;38(3):270-84
Basic rheology for biologists. Janmey PA, **Georges PC**, Hvidt S. Methods Cell Biol. 2007;83:3-27.
Matrices with compliance comparable to that of brain tissue select neuronal over glial growth in mixed cortical cultures. **Georges PC**, Miller WJ, Meaney DF, Sawyer ES, Janmey PA. Biophys J. 2006 Apr 15;90(8):3012-8
Effects of substrate stiffness on cell morphology, cytoskeletal structure, and adhesion. Yeung T, **Georges PC**, Flanagan LA, Marg B, Ortiz M, Funaki M, Zahir N, Ming W, Weaver V, Janmey PA. Cell Motil Cytoskeleton. 2005
Cell type-specific response to growth on soft materials. **Georges PC**, Janmey PA. J Appl Physiol 2005 Apr

PROFESSIONAL AFFILIATIONS

Biomedical Engineering Society 2004 - present