Stanford

Alexander Dunn

Professor of Chemical Engineering

NIH Biosketch available Online Curriculum Vitae available Online

Bio

BIO

Alex Dunn is a Professor in the Department of Chemical Engineering at Stanford University. His research focuses on understanding how living cells sense mechanical stimuli, with particular interests in stem cell biology and tissue engineering. Dr. Dunn worked as a postdoctoral scholar with James Spudich in the Department of Biochemistry at the Stanford University School of Medicine. He received his Ph.D. at the California Institute of Technology under the direction of Harry Gray, where his work focused on understanding the catalytic mechanism selective C-H bond oxidation by cytochrome P450 enzymes. His work has been recognized with numerous awards, including the Hertz Fellowship, the Burroughs Wellcome Career Award at the Scientific Interface, the NIH Director's New Innovator Award, and the HHMI Faculty Scholar Award.

ACADEMIC APPOINTMENTS

- Professor, Chemical Engineering
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)
- Faculty Fellow, Sarafan ChEM-H
- Member, Wu Tsai Neurosciences Institute

HONORS AND AWARDS

- Teaching Award, Tau Beta Pi (Stanford) (2018)
- Faculty Scholar Award, HHMI (2016)
- New Innovator Award, National Institutes of Health (2010)
- Career Award at the Scientific Interface, Burroughs Wellcome Foundation (2008)
- Postdoctoral Fellowship, American Heart Association (2007)
- Herbert Newby McCoy Award, McCoy family (2003)
- Jane Coffin Childs Fellowship, Jane Coffin Childs Memorial Fund for Medical Research (2003)
- Fannie and John Hertz Fellowship, Fannie and John Hertz Foundation (1998)

PROFESSIONAL EDUCATION

- PhD, Caltech (2003)

LINKS

- http://dunngroup.stanford.edu: http://dunngroup.stanford.edu

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

The goal of our laboratory is to determine how molecular-scale information encodes the shape and physical properties of cells, tissues, and whole organisms. To do so, we use a combination of sophisticated microscopy, single-molecule biophysics, and theoretical modeling to explore how information propagates upwards across biological length scales. Specific questions we are currently investigating include: 1) How do molecular-scale asymmetries encoded in individual proteins give rise to the emergent physical properties of the cell; and 2) How do cells coordinate their actions to shape organs and tissues? In helping to answer these general questions we hope to understand the physical principles that underlie the construction of complex, multicellular life. We anticipate that this knowledge will be highly relevant to the development of stem-cell-based therapies and to engineering complex, three-dimensional tissues in the laboratory.

Teaching

COURSES

2024-25

- Foundational Biology for Engineers: CHEMENG 55, ENGR 55 (Aut)
- Growth and Form: CHEMENG 420 (Spr)

2022-23

- Biochemistry II: CHEM 183, CHEMENG 183, CHEMENG 283 (Win)
- Foundational Biology for Engineers: CHEMENG 55, ENGR 55 (Aut)
- Growth and Form: CHEMENG 420 (Spr)
- Special Topics in Advanced Biophysics and Protein Design: CHEMENG 518 (Aut)

2021-22

- Chemical Kinetics and Reaction Engineering: CHEMENG 320 (Spr)
- Foundational Biology for Engineers: CHEMENG 55, ENGR 55 (Aut)
- Special Topics in Advanced Biophysics and Protein Design: CHEMENG 518 (Aut, Win, Spr, Sum)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Dane Kawano, Ev Nichols, Ada Undieh, Maiya Yu, Olivia Zhou

Postdoctoral Faculty Sponsor

Abrar Bhat, Chuqiao Huyan, Jason Liu, Christopher Marang, Carlos Vera

Doctoral Dissertation Advisor (AC)

Joey Yoniles

Doctoral Dissertation Co-Advisor (AC)

Lexie Adams, Madeline Cooper, Matt DeJong, Emma Magee, Achuthan Raja Venkatesh, Carlos Rodriguez Santiago, John Shin, Daiyao Zhang

Doctoral (Program)

Max Polanek

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biophysics (Phd Program)

Publications

PUBLICATIONS

- **Emergent actin flows explain distinct modes of gliding motility** *NATURE PHYSICS*
  Hueschen, C. L., Segev-Zarko, L., Chen, J., Legros, M. A., Larabell, C. A., Boothroyd, J. C., Phillips, R., Dunn, A. R.
  2024
- **Piconewton Forces Mediate GAIN Domain Dissociation of the Latrophilin-3 Adhesion GPCR.** *Nano letters*
  Zhong, B. L., Lee, C. E., Vachharajani, V. T., Bauer, M. S., Südhof, T. C., Dunn, A. R.
  2023
- **Co-opting signalling molecules enables logic-gated control of CAR T cells.** *Nature*
  Tousley, A. M., Rotiroti, M. C., Labanieh, L., Rysavy, L. W., Kim, W. J., Lareau, C., Sotillo, E., Weber, E. W., Rietberg, S. P., Dalton, G. N., Yin, Y., Klysz, D., Xu, et al
  2023
- **The membrane-actin linker ezrin acts as a sliding anchor.** *Science advances*
  Korkmazhan, E., Dunn, A. R.
  2022; 8 (31): eabo2779
- **The C-terminal actin-binding domain of talin forms an asymmetric catch bond with F-actin.** *Proceedings of the National Academy of Sciences of the United States of America*
  Owen, L. M., Bax, N. A., Weis, W. I., Dunn, A. R.
  2022; 119 (10): e2109329119
- **Physical basis for the determination of lumen shape in a simple epithelium.** *Nature communications*
  Vasquez, C. G., Vachharajani, V. T., Garzon-Coral, C., Dunn, A. R.
  2021; 12 (1): 5608
- **Regulation and dynamics of force transmission at individual cell-matrix adhesion bonds.** *Science advances*
  Tan, S. J., Chang, A. C., Anderson, S. M., Miller, C. M., Prahl, L. S., Odde, D. J., Dunn, A. R.
  2020; 6 (20): eaax0317
- **Vinculin forms a directionally asymmetric catch bond with F-actin** *SCIENCE*
  Huang, D. L., Bax, N. A., Buckley, C. D., Weis, W. I., Dunn, A. R.
  2017; 357 (6352): 703–6
- **Cluster Assembly Dynamics Drive Fidelity of Planar Cell Polarity Polarization.** *bioRxiv : the preprint server for biology*
  Nissen, S. B., Weiner, A. T., Suyama, K., Bosch, P. S., Song, S., Gu, Y., Dunn, A. R., Axelrod, J. D.
  2024
- **Myosin II tension sensors visualize force generation within the actin cytoskeleton in living cells.** *Journal of cell science*
  Hart, R. G., Kota, D., Li, F., Zhang, M., Ramallo, D., Price, A. J., Otterpohl, K. L., Smith, S. J., Dunn, A. R., Huising, M. O., Liu, J., Chandrasekar, I.
  2024
- **Split Luciferase Molecular Tension Sensors for Bioluminescent Readout of Mechanical Forces in Biological Systems.** *ACS sensors*
  Zhong, B. L., Elliot, J. M., Wang, P., Li, H., Hall, R. N., Wang, B., Prakash, M., Dunn, A. R.
  2024
- **Lumen expansion is initially driven by apical actin polymerization followed by osmotic pressure in a human epiblast model.** *Cell stem cell*
  Indana, D., Zakharov, A., Lim, Y., Dunn, A. R., Bhutani, N., Shenoy, V. B., Chaudhuri, O.
  2024; 31 (5): 640-656.e8

- **Bill Weis (1959-2023): Pioneering structural biologist and biochemist who revolutionized our understanding of cell adhesion and Wnt signaling.** *The Journal of cell biology*
  Peifer, M., Dunn, A. R.
  2024; 223 (4)
- **Content-aware frame interpolation (CAFI): deep learning-based temporal super-resolution for fast bioimaging.** *Nature methods*
  Priessner, M., Gaboriau, D. C., Sheridan, A., Lenn, T., Garzon-Coral, C., Dunn, A. R., Chubb, J. R., Tousley, A. M., Majzner, R. G., Manor, U., Vilar, R., Laine, R. F.
  2024
- **Response of lymphatic endothelial cells to combined spatial and temporal variations in fluid flow.** *FASEB journal : official publication of the Federation of American Societies for Experimental Biology*
  Michalaki, E., Surya, V. N., Rodríguez-Hakim, M., Fuller, G. G., Dunn, A. R.
  2023; 37 (12): e23240
- **Cryo-electron tomography reveals the structural diversity of cardiac proteins in their cellular context.** *bioRxiv : the preprint server for biology*
  Woldeyes, R. A., Nishiga, M., Vander Roest, A. S., Engel, L., Giri, P., Montenegro, G. C., Wu, A. C., Dunn, A. R., Spudich, J. A., Bernstein, D., Schmid, M. F., Wu, J. C., Chiu, et al
  2023
- **PDZ Domains from the Junctional Proteins Afadin and ZO-1 Act as Mechanosensors.** *bioRxiv : the preprint server for biology*
  Vachharajani, V. T., DeJong, M. P., Dunn, A. R.
  2023
- **Extracellular filaments revealed by affinity capture cryo-electron tomography of lymphocytes.** *bioRxiv : the preprint server for biology*
  Engel, L., Zaoralova, M., Dunn, A. R., Oliver, S.
  2023
- **Wildebeest herds on rolling hills: Flocking on arbitrary curved surfaces.** *Physical review. E*
  Hueschen, C. L., Dunn, A. R., Phillips, R.
  2023; 108 (2-1): 024610
- **Chromatin accessibility dynamics of neurogenic niche cells reveal defects in neural stem cell adhesion and migration during aging.** *Nature aging*
  Yeo, R. W., Zhou, O. Y., Zhong, B. L., Sun, E. D., Navarro Negredo, P., Nair, S., Sharmin, M., Ruetz, T. J., Wilson, M., Kundaje, A., Dunn, A. R., Brunet, A.
  2023
- **Multi-level force-dependent allosteric enhancement of alphaE-catenin binding to F-actin by vinculin.** *Journal of molecular biology*
  Bax, N. A., Wang, A., Huang, D. L., Pokutta, S., Weis, W. I., Dunn, A. R.
  2023: 167969
- **Visualizing Neurons Under Tension In Vivo with Optogenetic Molecular Force Sensors.** *Methods in molecular biology (Clifton, N.J.)*
  Sanfeliu-Cerdán, N., Lin, L. C., Dunn, A. R., Goodman, M. B., Krieg, M.
  2023; 2600: 239-266
- **Multiomic characterization and drug testing establish circulating tumor cells as an exvivo tool for personalized medicine.** *iScience*
  Chen, J., Chou, H., Lim, S. C., Huang, Y., Lai, K., Guo, C., Tung, C., Su, C., Wang, J., Liu, E., Han, H., Yeh, P., Hu, et al
  2022; 25 (10): 105081
- **Facile detection of mechanical forces across proteins in cells with STReTCh.** *Cell reports methods*
  Zhong, B. L., Vachharajani, V. T., Dunn, A. R.
  2022; 2 (9): 100278
- **Improved immunoassay sensitivity and specificity using single-molecule colocalization.** *Nature communications*
  Hariri, A. A., Newman, S. S., Tan, S., Mamerow, D., Adams, A. M., Maganzini, N., Zhong, B. L., Eisenstein, M., Dunn, A. R., Soh, H. T.
  2022; 13 (1): 5359
- **Extraction of accurate cytoskeletal actin velocity distributions from noisy measurements.** *Nature communications*
  Miller, C. M., Korkmazhan, E., Dunn, A. R.

2022; 13 (1): 4749

- **Mechanism of the cadherin-catenin F-actin catch bond interaction.** *eLife*
  Wang, A., Dunn, A. R., Weis, W. I.
  2022; 11
- **High-order correlations in species interactions lead to complex diversity-stability relationships for ecosystems.** *Physical review. E*
  Korkmazhan, E., Dunn, A. R.
  2022; 105 (1-1): 014406
- **Tether-guided lamellipodia enable rapid wound healing.** *Biophysical journal*
  Korkmazhan, E., Kennard, A. S., Garzon-Coral, C., Vasquez, C. G., Dunn, A. R.
  2022
- **How cells tell up from down and stick together to construct multicellular tissues - interplay between apicobasal polarity and cell-cell adhesion.** *Journal of cell science*
  Vasquez, C. G., de la Serna, E. L., Dunn, A. R.
  2021; 134 (21)
- **Lattice micropatterning for cryo-electron tomography studies of cell-cell contacts.** *Journal of structural biology*
  Engel, L., Vasquez, C. G., Montabana, E. A., Sow, B. M., Walkiewicz, M. P., Weis, W. I., Dunn, A. R.
  2021: 107791
- **The role of ordered cooperative assembly in biomolecular condensates.** *Nature reviews. Molecular cell biology*
  Korkmazhan, E., Tompa, P., Dunn, A. R.
  2021
- **Adhesion-mediated mechanosignaling forces mitohormesis.** *Cell metabolism*
  Tharp, K. M., Higuchi-Sanabria, R., Timblin, G. A., Ford, B., Garzon-Coral, C., Schneider, C., Muncie, J. M., Stashko, C., Daniele, J. R., Moore, A. S., Frankino, P. A., Homentcovschi, S., Manoli, et al
  2021
- **3D Microwell Platforms for Control of Single Cell 3D Geometry and Intracellular Organization** *CELLULAR AND MOLECULAR BIOENGINEERING*
  Wilson, R. E., Denisin, A. K., Dunn, A. R., Pruitt, B. L.
  2020
- **Spatially controlled stem cell differentiation via morphogen gradients: A comparison of static and dynamic microfluidic platforms** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
  Cui, K. W., Engel, L., Dundes, C. E., Nguyen, T. C., Loh, K. M., Dunn, A. R.
  2020; 38 (3)
- **Scaling up single-cell mechanics to multicellular tissues - the role of the intermediate filament-desmosome network.** *Journal of cell science*
  Broussard, J. A., Jaiganesh, A., Zarkoob, H., Conway, D. E., Dunn, A. R., Espinosa, H. D., Janmey, P. A., Green, K. J.
  2020; 133 (6)
- **Perpendicular alignment of lymphatic endothelial cells in response to spatial gradients in wall shear stress.** *Communications biology*
  Michalaki, E. n., Surya, V. N., Fuller, G. G., Dunn, A. R.
  2020; 3 (1): 57
- **Limited Dishevelled/Axin oligomerization determines efficiency of Wnt/β-catenin signal transduction.** *eLife*
  Kan, W. n., Enos, M. D., Korkmazhan, E. n., Muennich, S. n., Chen, D. H., Gammons, M. V., Vasishtha, M. n., Bienz, M. n., Dunn, A. R., Skiniotis, G. n., Weis, W. I.
  2020; 9
- **Tuning the Antigen Density Requirement for CAR T Cell Activity.** *Cancer discovery*
  Majzner, R. G., Rietberg, S. P., Sotillo, E. n., Dong, R. n., Vachharajani, V. T., Labanieh, L. n., Myklebust, J. H., Kadapakkam, M. n., Weber, E. W., Tousley, A. M., Richards, R. M., Heitzeneder, S. n., Nguyen, et al
  2020
- **Binding partner- and force-promoted changes in alphaE-catenin conformation probed by native cysteine labeling.** *Scientific reports*

Terekhova, K., Pokutta, S., Kee, Y. S., Li, J., Tajkhorshid, E., Fuller, G., Dunn, A. R., Weis, W. I.
2019; 9 (1): 15375

- **Myosin-II mediated traction forces evoke localized Piezo1-dependent Ca2+ flickers.** *Communications biology*
  Ellefsen, K. L., Holt, J. R., Chang, A. C., Nourse, J. L., Arulmoli, J., Mekhdjian, A. H., Abuwarda, H., Tombola, F., Flanagan, L. A., Dunn, A. R., Parker, I., Pathak, M. M.
  2019; 2 (1): 298
- **Oscillatory cortical forces promote three dimensional cell intercalations that shape the murine mandibular arch.** *Nature communications*
  Tao, H., Zhu, M., Lau, K., Whitley, O. K., Samani, M., Xiao, X., Chen, X. X., Hahn, N. A., Liu, W., Valencia, M., Wu, M., Wang, X., Fenelon, et al
  2019; 10 (1): 1703
- **Lymphatic endothelial cell calcium pulses are sensitive to spatial gradients in wall shear stress** *MOLECULAR BIOLOGY OF THE CELL*
  Surya, V. N., Michalaki, E., Fuller, G. G., Dunn, A. R.
  2019; 30 (7): 923–31
- **Mechanical loading of desmosomes depends on themagnitude and orientation of external stress.** *Nature communications*
  Price, A. J., Cost, A., UngewiSS, H., Waschke, J., Dunn, A. R., Grashoff, C.
  2018; 9 (1): 5284
- **Mechanobiology: ubiquitous and useful.** *Molecular biology of the cell*
  Dunn, A. R.
  2018; 29 (16): 1917–18
- **DACH1 stimulates shear stress-guided endothelial cell migration and coronary artery growth through the CXCL12-CXCR4 signaling axis** *GENES & DEVELOPMENT*
  Chang, A. H., Raftrey, B. C., D'Amato, G., Surya, V. N., Poduri, A., Chen, H. I., Goldstone, A. B., Woo, J., Fuller, G. G., Dunn, A. R., Red-Horse, K.
  2017; 31 (13): 1308–24
- **A cytoskeletal clutch mediates cellular force transmission in a soft, 3D extracellular matrix.** *Molecular biology of the cell*
  Owen, L. M., Adhikari, A. S., Patel, M., Grimmer, P., Leijnse, N., Kim, M. C., Notbohm, J., Franck, C., Dunn, A. R.
  2017
- **Integrin-mediated traction force enhances paxillin molecular associations and adhesion dynamics that increase the invasiveness of tumor cells into a three-dimensional extracellular matrix.** *Molecular biology of the cell*
  Mekhdjian, A. H., Kai, F., Rubashkin, M. G., Prahl, L. S., Przybyla, L. M., McGregor, A. L., Bell, E. S., Barnes, J. M., DuFort, C. C., Ou, G., Chang, A. C., Cassereau, L., Tan, et al
  2017; 28 (11): 1467-1488
- **A semi-interpenetrating network of polyacrylamide and recombinant basement membrane allows pluripotent cell culture in a soft, ligand-rich microenvironment.** *Biomaterials*
  Price, A. J., Huang, E. Y., Sebastiano, V., Dunn, A. R.
  2017; 121: 179-192
- **Genetic defects in beta-spectrin and tau sensitize C.elegans axons to movement-induced damage via torque-tension coupling** *ELIFE*
  Krieg, M., Stuehmer, J., Cueva, J. G., Fetter, R., Spilker, K., Cremers, D., Shen, K., Dunn, A. R., Goodman, M. B.
  2017; 6
- **Sphingosine 1-phosphate receptor 1 regulates the directional migration of lymphatic endothelial cells in response to fluid shear stress** *JOURNAL OF THE ROYAL SOCIETY INTERFACE*
  Surya, V. N., Michalaki, E., Huang, E. Y., Fuller, G. G., Dunn, A. R.
  2016; 13 (125)
- **The tubulin repertoire of Caenorhabditis elegans sensory neurons and its context-dependent role in process outgrowth** *MOLECULAR BIOLOGY OF THE CELL*
  Lockhead, D., Schwarz, E. M., O'Hagan, R., Bellotti, S., Krieg, M., Barr, M. M., Dunn, A. R., Sternberg, P. W., Goodman, M. B.
  2016; 27 (23): 3717-3728
- **Single Molecule Force Measurements in Living Cells Reveal a Minimally Tensioned Integrin State.** *ACS nano*
  Chang, A. C., Mekhdjian, A. H., Morimatsu, M., Denisin, A. K., Pruitt, B. L., Dunn, A. R.
  2016: -?

- **Kank2 activates talin, reduces force transduction across integrins and induces central adhesion formation** *NATURE CELL BIOLOGY*
  Sun, Z., Tseng, H., Tan, S., Senger, F., Kurzawa, L., Dedden, D., Mizuno, N., Wasik, A. A., Thery, M., Dunn, A. R., Faessler, R.
  2016; 18 (9): 941-953
- **Multiplexed Fluid Flow Device to Study Cellular Response to Tunable Shear Stress Gradients** *ANNALS OF BIOMEDICAL ENGINEERING*
  Ostrowski, M. A., Huang, E. Y., Surya, V. N., Poplawski, C., Barakat, J. M., Lin, G. L., Fuller, G. G., Dunn, A. R.
  2016; 44 (7): 2261-2272
- **How Hydra Eats.** *Biophysical journal*
  Dunn, A. R.
  2016; 110 (7): 1467-1468
- **Nanoscale Patterning of Extracellular Matrix Alters Endothelial Function under Shear Stress** *NANO LETTERS*
  Nakayama, K. H., Surya, V. N., Gole, M., Walker, T. W., Yang, W., Lai, E. S., Ostrowski, M. A., Fuller, G. G., Dunn, A. R., Huang, N. F.
  2016; 16 (1): 410-419
- **A Force Balance Can Explain Local and Global Cell Movements during Early Zebrafish Development** *BIOPHYSICAL JOURNAL*
  Chai, J., Hamilton, A. L., Krieg, M., Buckley, C. D., Riedel-Kruse, I. H., Dunn, A. R.
  2015; 109 (2): 407-414
- **Visualizing the Interior Architecture of Focal Adhesions with High-Resolution Traction Maps** *NANO LETTERS*
  Morimatsu, M., Mekhdjian, A. H., Chang, A. C., Tan, S. J., Dunn, A. R.
  2015; 15 (4): 2220-2228
- **Mechanical systems biology of C. elegans touch sensation.** *BioEssays*
  Krieg, M., Dunn, A. R., Goodman, M. B.
  2015; 37 (3): 335-344
- **Energetics and forces in living cells** *PHYSICS TODAY*
  Dunn, A. R., Price, A.
  2015; 68 (2): 27-32
- **Cell adhesion. The minimal cadherin-catenin complex binds to actin filaments under force.** *Science*
  Buckley, C. D., Tan, J., Anderson, K. L., Hanein, D., Volkmann, N., Weis, W. I., Nelson, W. J., Dunn, A. R.
  2014; 346 (6209)
- **The CDC42-Interacting Protein 4 Controls Epithelial Cell Cohesion and Tumor Dissemination** *DEVELOPMENTAL CELL*
  Rolland, Y., Marighetti, P., Malinverno, C., Confalonieri, S., Luise, C., Ducano, N., Palamidessi, A., Bisi, S., Kajiho, H., Troglio, F., Shcherbakova, O. G., Dunn, A. R., Oldani, et al
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- **Mechanical control of the sense of touch by ß-spectrin.** *Nature cell biology*
  Krieg, M., Dunn, A. R., Goodman, M. B.
  2014; 16 (3): 224-233
- **Mechanical control of the sense of touch by ß-spectrin.** *Nature cell biology*
  Krieg, M., Dunn, A. R., Goodman, M. B.
  2014; 16 (3): 224-233
- **Microvascular Endothelial Cells Migrate Upstream and Align Against the Shear Stress Field Created by Impinging Flow** *BIOPHYSICAL JOURNAL*
  Ostrowski, M. A., Huang, N. F., Walker, T. W., Verwijlen, T., Poplawski, C., Khoo, A. S., Cooke, J. P., Fuller, G. G., Dunn, A. R.
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- **Quantification of nanowire penetration into living cells.** *Nature communications*
  Xu, A. M., Aalipour, A., Leal-Ortiz, S., Mekhdjian, A. H., Xie, X., Dunn, A. R., Garner, C. C., Melosh, N. A.
  2014; 5: 3613-?
- **Molecular tension sensors report forces generated by single integrin molecules in living cells.** *Nano letters*
  Morimatsu, M., Mekhdjian, A. H., Adhikari, A. S., Dunn, A. R.

2013; 13 (9): 3985-3989

- **Conformational Dynamics Accompanying the Proteolytic Degradation of Trimeric Collagen I by Collagenases** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Adhikari, A. S., Glassey, E., Dunn, A. R.
  2012; 134 (32): 13259-13265
- **E-cadherin is under constitutive actomyosin-generated tension that is increased at cell-cell contacts upon externally applied stretch** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Borghi, N., Sorokina, M., Shcherbakova, O. G., Weis, W. I., Pruitt, B. L., Nelson, W. J., Dunn, A. R.
  2012; 109 (31): 12568-12573
- **Multiplexed Single-molecule Force Proteolysis Measurements Using Magnetic Tweezers** *JOVE-JOURNAL OF VISUALIZED EXPERIMENTS*
  Adhikari, A. S., Chai, J., Dunn, A. R.
  2012
- **Strain Tunes Proteolytic Degradation and Diffusive Transport in Fibrin Networks** *BIOMACROMOLECULES*
  Adhikari, A. S., Mekhdjian, A. H., Dunn, A. R.
  2012; 13 (2): 499-506
- **Nucleotide Pocket Thermodynamics Measured by EPR Reveal How Energy Partitioning Relates Myosin Speed to Efficiency** *JOURNAL OF MOLECULAR BIOLOGY*
  Purcell, T. J., Naber, N., Franks-Skiba, K., Dunn, A. R., Eldred, C. C., Berger, C. L., Malnasi-Csizmadia, A., Spudich, J. A., Swank, D. M., Pate, E., Cooke, R.
  2011; 407 (1): 79-91
- **Mechanical Load Induces a 100-Fold Increase in the Rate of Collagen Proteolysis by MMP-1** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Adhikari, A. S., Chai, J., Dunn, A. R.
  2011; 133 (6): 1686-1689
- **Robust Mechanosensing and Tension Generation by Myosin VI** *JOURNAL OF MOLECULAR BIOLOGY*
  Chuan, P., Spudich, J. A., Dunn, A. R.
  2011; 405 (1): 105-112
- **Mechanical force induces a 100-fold increase in the rate of collagen proteolysis by MMP-1** *J. Am. Chem. Soc.*
  Adhikari, A., S., Chai, J., Dunn, A., R.
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- **Contribution of the myosin VI tail domain to processive stepping and intramolecular tension sensing** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Dunn, A. R., Chuan, P., Bryant, Z., Spudich, J. A.
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- **Electron tunneling through sensitizer wires bound to proteins** *COORDINATION CHEMISTRY REVIEWS*
  Hartings, M. R., Kurnikov, I. V., Dunn, A. R., Winkler, J. R., Gray, H. B., Ratner, M. A.
  2010; 254 (3-4): 248-253
- **SINGLE-MOLECULE DUAL-BEAM OPTICAL TRAP ANALYSIS OF PROTEIN STRUCTURE AND FUNCTION** *METHODS IN ENZYMOLOGY, VOL 475: SINGLE MOLECULE TOOLS, PT B*
  Sung, J., Sivaramakrishnan, S., Dunn, A. R., Spudich, J. A.
  2010; 475: 321-375
- **Force dependence of myosin VI nucleotide binding kinetics** *J. Mol. Biol.*
  Chuan, P., Y., Spudich, J., A., Dunn, A., R.
  2010; 405: 105-112
- **Nanosecond photoreduction of inducible nitric oxide synthase by a Ru-diimine electron tunneling wire bound distant from the active site** *JOURNAL OF INORGANIC BIOCHEMISTRY*
  Whited, C. A., Belliston-Bittner, W., Dunn, A. R., Winkler, J. R., Gray, H. B.
  2009; 103 (6): 906-911

- **Probing the heme-thiolate oxygenase domain of inducible nitric oxide synthase with Ru(II) and Re(I) electron tunneling wires.** *J. Porphyrins Phthalocyanines*
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