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Research Interests

Our laboratory employs synthetic organic chemistry, molecular evolution, and protein design to develop molecular technologies to study chemistry in living systems. Our current primary research interests include 1) how chemical modifications to cysteine residues are controlled and regulate cell signaling, 2) developing new biosensing and synthetic biology strategies to reprogram and control biomolecular interactions, and 3) developing synthetic biology-based tools to interrogate and exploit epitranscriptomic regulation. Our guiding principle is that our ability as chemists to create *functional* molecules through both rational and evolutionary approaches will lead to new breakthroughs in biology and medicine.

Professional Experience and Positions

Member, The University of Chicago Comprehensive Cancer Center	2014-present
Associate Professor, Department of Chemistry, The University of Chicago	2019-present
Assistant Professor, Department of Chemistry, The University of Chicago	2014-2019
Jane Coffin Childs Memorial Fellow, Harvard University <i>with Professor David R. Liu, Department of Chemistry and Chemical Biology</i>	2011-2014
Graduate Research, University of California, Berkeley <i>with Professor Christopher J. Chang, Departments of Chemistry and Molecular and Cellular Biology</i>	2006-2010
Undergraduate Research, University of Maryland, College Park <i>with Professor David Fushman, Department of Chemistry and Biochemistry</i>	2004-2006
Joint Institute of Food Safety and Applied Nutrition Intern, FDA	2003

Education

Ph.D. in Chemistry, University of California, Berkeley	2006-2010
B.S. in Biochemistry, University of Maryland, College Park	2002-2005

Select Honors and Awards

2020	Arthur L. Kelly Faculty Prize for Exceptional Service in the Physical Sciences Division, University of Chicago
2019	40 Under 40 Chicago Scientist, HaloCures
2019	Camille Dreyfus Teacher-Scholar Award
2018	NSF CAREER Award
2017	Sloan Foundation Research Fellowship
2014	Young Investigator Award, Cancer Research Foundation
2013	American Chemical Society Nobel Laureate Signature Award
2011	Jane Coffin Childs Memorial Fund for Medical Research Fellowship
2011	NIH Individual Postdoctoral Fellowship (declined)
2010	Ash Stevens Outstanding Poster Award, Bioorganic Gordon Research Conference
2005	Departmental Honors, Chemistry and Biochemistry, University of Maryland, College Park
2005	Honors Citation, Environmental Studies, University of Maryland, College Park
2005	Alpha Chi Sigma Award, University of Maryland, College Park
2005	Phi Kappa Phi Honor Society, University of Maryland, College Park
2004	Howard Hughes Medical Institute Undergraduate Research Fellowship

Select Key Publications

Synthetic Biology of RNA regulation:

- Evolution of a reverse transcriptase to map *N*¹-methyladenosine in human mRNA. [Nat. Methods](#)
- Programmable RNA-guided RNA effector proteins built from human parts. [Cell](#)
- Evolution of a split RNA polymerase as a versatile biosensor platform. [Nat. Chem. Biol.](#)

Chemical biology of protein lipidation:

- ABHD10 is an S-depalmitoylase affecting redox homeostasis through peroxiredoxin-5. [Nat. Chem. Biol.](#)
- Active and dynamic mitochondrial S-depalmitoylation revealed by targeted fluorescent probes. [Nat. Commun.](#)
- A fluorescent probe for cysteine depalmitoylation reveals dynamic APT signaling. [Nat. Chem. Biol.](#)

Mechanisms of molecular evolution:

- Chance, contingency, and necessity in the replicated experimental evolution of ancestral proteins. [bioRxiv](#)
- A phage-assisted continuous selection approach for deep mutational scanning of protein-protein interactions. [ACS Chem. Biol.](#)

All Peer-Reviewed Publications

Independent publications:

69. Cochran, V.; Pu, J.; Metzger, B.; Thornton, J.; **Dickinson, B.C.** "Chance, contingency, and necessity in the replicated experimental evolution of ancestral proteins." *submitted* (2020). [BioRxiv](#)
68. Drayman, N.; Jones, K.; Azizi, S.-A.; Froggatt, H.M.; Tan, K.; Maltseva, N.I.; Chen, S.; Nicolaescu, V.; Dvorkin, S.; Furlong, K.; Kathayat, R.S.; Firpo, M.R.; Mastrodomenico, V.; Bruce, E.A.; Schmidt, M.M.; Jedrzejczak, R.; Munoz-Alia, M.A.; Schuster, B.; Nair, V.; Botten, J.W.; Crooke, C.B.; Baker, S.C.; Mpunce, B.C.; Heaton, N.S.; **Dickinson, B.C.**; Jaochimiak, A.; Randall, G.; Tay, S. "Drug repurposing screen identifies masitinib as 3CLpro inhibitor that blocks SARS-CoV-2 *in vitro*." *submitted* (2020). [BioRxiv](#)
67. Osipiuk, J.; Azizi, S.-A.; Dvorkin, S.; Endres, M.; Jedrzejczak, R.; Jones, K.A.; Kathayat, R.S.; Lisnyak, V.G.; Maki, S.L.; Kang, S.; Kim, Y.; Nicolaescu, V.; Taylor, C.A.; Tesar, C.; Zhang, Y.; Zhou, Z.; Randall, G.; Michalska, K.; Snyder, S.A.*; **Dickinson, B.C.***; Joachimiak, A.* "Structure of papain-like protease from SARS-CoV-2 and its complexes with non-covalent inhibitors." *Accepted Nat. Commun.* (2020). *co-corresponding authors [BioRxiv](#)
66. Gupta, Y.; Maciorowski, D.; Zak, S.; Jones, K.A.; Kathayat, R.S.; Azizi, S.-A.; Mathur, R.; Pearce, C.M.; Husein, H.; Herbert, A.; Bharti, A.; Rathi, B.; Durvasula, R.; Becker, D.P.; **Dickinson, B.C.**; Dye, J.M. Kempaiah, P. "Bisindolylmaleimide IX as a novel anti-SARS-CoV-2 therapeutic candidate with a validated mechanism of action." *submitted* (2020). [preprint](#)
65. Rauch, S.; Jones, K.; **Dickinson, B.C.** "Small molecule-inducible RNA-targeting systems for temporal control of RNA regulation." *In press, ACS Central Science* (2020). [ChemRxiv link](#)
64. Dewey, J.A. and **Dickinson, B.C.** "Split T7 RNA Polymerase Biosensors to Study Multiprotein Interaction Dynamics." *Methods Enzymol.*, 641, 413-432 (2020). [link](#)
63. Wei, X.; Adak, S.; Zayed, M.; Yin, L.; Feng, C.; Speck, S.L.; Kathayat, R.S.; Zhang, Q.; **Dickinson, B.C.**; Semenkovich, C.F. "Endothelial palmitoylation cycling coordinates vessel remodeling in peripheral artery disease." *Circ. Res.*, 127, 249-265 (2020). [link](#)
62. Zinkus-Boltz, J.; DeValk, C.; **Dickinson, B.C.** "A phage-assisted continuous selection approach for deep mutational scanning of protein-protein interactions." *ACS Chem. Biol.*, 14, 2757-2767 (2019). [ChemRxiv link](#)
61. Azizi, S.-A.; Kathayat, R.S.; **Dickinson, B.C.** "Activity-Based Sensing of S-Depalmitoylases: Chemical Technologies and Biological Discovery." *Acc. Chem. Res.* 53, 3029-3038 (2019). [link](#)

60. Jones, K.; Zinkus-Boltz, J.; **Dickinson, B.C.** “Biosensors for directed evolution and synthetic biology.” *Nano Futures* 3, 042002 (2019). [link](#)
59. Cao, Y.; Qiu, T.; Kathayat, R.; Azizi, S.-A.; Thorne, A.K.; Ahn, D.; Fukata, Y.; Fukata, M.; Rice, P.; **Dickinson, B.C.** “ABHD10 is an S-depalmitoylase affecting redox homeostasis through peroxiredoxin-5.” *Nat. Chem. Biol.* 15, 1232-1240 (2019). [link](#)
- *Behind the paper*: “Chemical biology approaches lead to discovery of a new protein lipidation regulatory enzyme.” [link](#)
58. Zhou, H.; Rauch, S.; Qing, D.; Cui, X.; Zhang, Z.; Nachtergaele, S.; Sepich, C.; He, C.; **Dickinson, B.C.** “Evolution of a reverse transcriptase to map *N*¹-methyladenosine in human mRNA.” *Nat. Methods* 16, 1281-1288 (2019). [link](#)
- *Behind the paper*: “Measuring RNA modifications with evolved enzymes.” [link](#)
 - Wang, D.O. News and Views: “Mapping m⁶A and m¹A with mutation signatures.” *Nat. Methods* (2019). [link](#)
57. Jones, K., Kentala, K.; Beck, M.W.; An, W.; Lippert, A.; Lewis, J.; **Dickinson, B.C.** “Development of a split esterase for multimodal protein-protein interaction detection.” *ACS Cent. Sci.* 5, 1768-1776 (2019). [ChemRxiv link](#)
- Sierrecki, E. First Reactions: “A Novel Split Reporter Uncages New Possibilities.” *ACS Cent. Sci.* 5, 1744-1746 (2019). [link](#)
56. Zingler, P.; Särchen, V.; Glatter, T.; Caning, L.; Saggau, C.; Kathayat, R.S.; **Dickinson, B.C.**; Adam, D.; Schneider-Brachert, W.; Schütze, S.; Fritsch, J. “Palmitoylation is required for TNF-R1 signaling.” *Cell Commun. Signal.* 17:90 (2019). [link](#)
55. Rauch, S.; He, E.; Srien, M.; Zhou, H.; Zhang, Z.; **Dickinson, B.C.** “Programmable RNA-guided RNA effector proteins built from human parts.” *Cell* 178, 122-134 (2019). [link](#)
- Rusk, N. “Human CRISPR”, Research Highlight, *Nat. Methods* 17, 677 (2019) [link](#)
 - Mali, P. “Humanizing Transcriptome Engineering.” Leading Edge Preview, *Cell* 178, 8-9 (2019). [link](#)
 - Wei, K. and He, C. “Site-specific m⁶A editing”. *Nat Chem. Biol.* 15, 848-849 (2019) [link](#)
 - UChicago News Article [link](#); Chicago Chemistry News [link](#); Chicago Marron Article [link](#)
 - *BioCentury*, “A human CRISPR-like system adds a new approach to regulating translation”, Laurant Martz; June 20, 2019; [link](#)
54. Kathayat, R.S. and **Dickinson, B.C.** “Measuring S-depalmitoylation activity *in vitro* and in live cells using fluorescent probes.” *Protein Lipidation: Methods and Protocols, Methods Mol. Biol.* 99-109 (2019). [link](#)
53. Pu, J.; Disare, M.; **Dickinson, B.C.** “Evolution of C-terminal modification tolerance in full-length and split T7 RNAP biosensors.” *ChemBioChem* 20, 1547-1553 (2019). [link](#)
- Special Edition: “ChemBioTalents”
 - Cover Picture [link](#)
52. Rauch, S. and **Dickinson, B.C.** “Targeted m⁶A reader proteins to study the epitranscriptome.” *Methods Enzymol.* 621, 1-16 (2019). [link](#)
51. Rauch, S.; He, C.; **Dickinson, B.C.** “Targeted m⁶A reader proteins to study epitranscriptomic regulation of single RNAs.” *J. Am. Chem. Soc.* 140, 11974–11981 (2018). [link](#)
50. Sagedhi, R.S.; Kulej, K.; Kathayat, R.S.; Garcia, B.A.; **Dickinson, B.C.**, Brady D.C.; Witze, E.S. “Wnt5a Signaling Induced Phosphorylation Increases APT1 Activity and Promotes Melanoma Metastatic Behavior.” *eLife* 7:e34362 (2018). [link](#)
49. Kathayat, R.S.; Cao, Y.; Elvira, P.; Sandoz, P.A.; Zaballa, M.-E.; Springer, M.Z.; Drake, L.E.; MacLeod, K.F.; van der Goot, F.G.; **Dickinson, B.C.** “Active and dynamic mitochondrial S-depalmitoylation revealed by targeted fluorescent probes.” *Nat. Commun.* 9, 334 (2018). [link](#)
- *Acta Biochim. Biophys. Sin.* “Research Highlight” (2018). [link](#)

48. Qiu, T.; Kathayat, R.S.; Cao, Y.; Beck, M.; **Dickinson, B.C.** "A fluorescent probe with improved water solubility permits the analysis of protein S-depalmitoylation activity in live cells." *Biochemistry* 57, 221-225 (2018). [link](#)
- Special Edition: "Future of Biochemistry"
47. Pu, J.; Kentala K.; **Dickinson, B.C.** "Multidimensional chemical control of Cas9 using evolved RNA polymerase-based biosensors." *ACS Chem. Biol.* 13, 431-437 (2018). [link](#)
46. Beck, M.W.; Kathayat, R.S.; Cham, C.M.; Chang, E.B.; **Dickinson, B.C.** "Michael addition-based probes for ratiometric fluorescence imaging of protein S-depalmitoylases in live cells and tissues." *Chem. Sci.* 8, 7588-7592 (2017). [link](#)
45. Pu, J.; Dewey, J.A.; Hadji, A.; LaBelle, J.L.; **Dickinson, B.C.** "RNA Polymerase tags to monitor multidimensional protein-protein interactions reveal competition between Bcl-2 proteins upon pharmacological engagement." *J. Am. Chem. Soc.* 139, 11964-11972 (2017). [link](#)
44. Pu, J.; Zinkus-Boltz, J.; **Dickinson, B.C.** "Evolution of a split RNA polymerase as a versatile biosensor platform." *Nat. Chem. Biol.* 13, 432-438 (2017). [link](#)
- "Evolved RNAP 'Plug-and-Play' Biosensors." *Cell Chem. Biol.* 24, 428 (2017). [link](#)
43. Kathayat, R.S.; Elvira, P.; **Dickinson, B.C.** "A fluorescent probe for cysteine depalmitoylation reveals dynamic APT signaling." *Nat. Chem. Biol.* 13, 150-152 (2017). [link](#)
42. Pu, J.; Chronis, I.; Ahn, D.; **Dickinson, B.C.** "A panel of Protease-Responsive RNA Polymerases respond to biochemical signals by production of defined RNA outputs in live cells." *J. Am. Chem. Soc.* 136, 15996-15999 (2015). [link](#)
- JACS "Spotlight." *J. Am. Chem. Soc.* 138, 1 (2016) [link](#)

Undergraduate, graduate, and postdoctoral publications:

41. Huet, O.; Pickering, R.J.; Tikellis, C.; Latouche, C.; Long, F.; Kingwell, B.; **Dickinson, B.C.**; Chang, C.J.; Masters, S.; Mackay, F.; Cooper, M.E.; de Haan, J.B. "Protective Effect of Inflammasome Activation by Hydrogen Peroxide in a Mouse Model of Septic Shock." *Crit. Care Med.* 45, e184-e194 (2017).
40. Rodella, U.; Scorzeto, M.; Duregotti, E.; Negro, S.; **Dickinson, B.C.**; Chang, C.J.; Yuki, N.; Rigoni, M.; Montecucco, C. "An animal model of Miller Fisher syndrome: Mitochondrial hydrogen peroxide is produced by the autoimmune attack of nerve terminals and activates Schwann cells." *Neurobiol. Dis.* 96, 95-104 (2016).
39. Tong, Q.; Zhu, Y.; Galaske, J.W.; Kosmacek, E.A.; Chatterjee, A.; **Dickinson, B.C.**; Oberley-Deegan, R.E.; "MnTE-2-PyP modulates thiol oxidation in a hydrogen peroxide-mediated manner in a human prostate cancer cell." *Free Radic. Biol. Med.* 101, 32-43 (2016).
38. Cox, A.G.; Kim, A.J.; Saunders, D.; Tsomides, A.; Hwang, K.L.; Evason, K.J.; Heide, J.R.; Brown, K.K.; Yuan, M.; Lien, E.; Lee, B.C.; Nissim, S.; **Dickinson, B.C.**; Chhangawala, S.; Chang, C.J.; Gladyshev, V.N.; Asara, J.; Houvras, Y.; Goessling, W. "Selenoprotein H suppresses ROS and cooperates with p53 during development and tumorigenesis." *Proc. Natl. Acad. Sci. USA.* 113, E5562-E5571 (2016).
37. Tomalin, L.E.; Day, A.M.; Underwood, Z.E.; Smith, G.R.; Pezze, P.D.; Rallis, C.; Patel, W.; **Dickinson, B.C.**; Bähler, J.; Brewer, T.F.; Chang, C.J.; Shanley, D.P.; Veal, E.A. "Increasing extracellular H₂O₂ produces a biphasic response in intracellular H₂O₂, with peroxiredoxin hyperoxidation only triggered once the cellular H₂O₂-buffering capacity is overwhelmed." *Free Rad. Biol. Med.* 95, 333-348 (2016).
36. Andresen, E.; Kroenlein, S.; Stärk, H.-J.; Riegger, U.; Borovec, J.; Mattusch, J.; Heinz, A.; Schmelzer, C.; Matoušková, S.; **Dickinson, B.C.**; Küpper, H. "Cadmium toxicity investigated on physiological and biophysical level under environmentally relevant conditions using the aquatic model plant *Ceratophyllum demersum L.*" *New Phytologist.* 210, 1244-1258 (2016).
35. Duregotti, E.; Negro, S.; Scorzeto, M.; Zornetta, I.; **Dickinson, B.C.**; Chang, C.J.; Montecucco, C.; Rigoni, M. "Mitochondrial alarmins released by degenerating motor axon terminals activate perisynaptic Schwann cells." *Proc. Natl. Acad. Sci. USA.* 112, E497-E505 (2015).

34. *Fu, X.; *Tang, Y.; ***Dickinson, B.C.**; Chang, C.J.; Chang, Z. "An oxidative fluctuation hypothesis of aging generated by imaging H₂O₂ levels in live *C. elegans* with altered lifespans." *Biochem. Biophys. Res. Commun.* 458, 896-900 (2015).
*denotes equal contribution
33. Lippert, A.R.; **Dickinson, B.C.**; New, E.J. "Imaging Mitochondrial Hydrogen Peroxide in Living Cells." *Methods Mol. Biol.* 1264, 231-243 (2015).
32. **Dickinson, B.C.**; Packer, M.S.; Badran, A.H.; Liu, D.R. "A system for the continuous directed evolution of proteases rapidly reveals drug-resistance mutations." *Nat. Commun.* 5, 5352 (2014).
31. Yang, M. Haase, A.D.; Huang, F.-K.; Coulis, G.; Rivera, K.D.; **Dickinson, B.C.**; Chang, C.J.; Pappin, D.; Neubert, T.A.; Hannon, G.J.; Boivin, B.; Tonks, N.K. "Dephosphorylation of Tyrosine 393 in Argonaute 2 by Protein Tyrosine Phosphatase 1B Regulates Gene Silencing in Oncogenic RAS-Induced Senescence." *Mol. Cell* 55, 782-790 (2014).
30. Sanders, L.H.; McCoy, J.; Hu, X.; Mastroberardino, P.G.; **Dickinson, B.C.**; Chang, C.J.; Chu, C.T.; Van Houten, B.; Greenamyre, J.T. "Mitochondrial DNA damage: A molecular marker of vulnerable nigral neurons in Parkinson's disease." *Neurobiol. Dis.* 70, 214-223 (2014).
29. Basu, S.; Rajakaruna, S.; **Dickinson, B.C.**; Chang, C.J.; Menko A. "Endogenous hydrogen peroxide (H₂O₂) production in the epithelium of the developing embryonic lens." *Mol. Vis.* 20, 458-467 (2014).
28. Banerjee, B.; Ghatak, P.D.; Soy, S.; Khanna, S.; Sequin, E.K.; Bellman, K.; **Dickinson, B.C.**; Suri, P.; Subramaniam, V.V.; Chang, C.J.; Sen, C.K. "Improvement of human keratinocyte migration by a redox active bioelectric dressing." *PLoS One.* 9, e89239 (2014).
27. Guo, H.; Aleyasin, H.; **Dickinson, B.C.**; Haskew-Layton, R.E.; Ratan, R.R. "Recent advances in hydrogen peroxide imaging for biological applications." *Cell Biosci.* 4, 64 (2014).
26. **Dickinson, B.C.**; Leconte, A.M.; Allen, B.; Esvelt, K.M.; Liu, D.R.L. "Experimental interrogation of the path dependence and stochasticity of protein evolution using phage-assisted continuous evolution." *Proc. Natl. Acad. Sci. USA.* 110, 9007-9012 (2013).
25. *Leconte, A.M.; ***Dickinson, B.C.**; Yang, D.D.; Chen, I.A.; Allen, B.; Liu, D.R.L. "A population-based experimental model for protein evolution: Effects of mutation rate and selection stringency on evolutionary outcomes." *Biochemistry.* 52, 1490-1499 (2013).
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24. **Dickinson, B.C.**; Lin, V.S.; Chang, C.J. "Preparation and use of MitoPY1 imaging hydrogen peroxide in mitochondria of live cells." *Nat. Prot.* 8, 1249-1259 (2013).
23. Boivin, B.; Chaudhary, F.; **Dickinson, B.C.**; Haque, A.; Pero, S.C.; Chang, C.J.; Tonks, N.K. "Receptor protein tyrosine phosphatase α regulates focal adhesion kinase phosphorylation and contributes to ErbB2 oncoprotein-mediated mammary epithelial cell motility." *J. Biol. Chem.* 288, 36926-36935 (2013).
22. Andresen, E.; Opitz, J.; Thomas, G.; Stärk, H.-J.; Dienemann, H.; Jenemann, K.; **Dickinson, B.C.**; Küpper, H. "Effects of Cd & Ni toxicity to *Ceratophyllum demersum* under environmentally relevant conditions in soft & hard water including a German lake." *Aquat. Toxicol.* 142-143, 387-402 (2013).
21. Guo, H.; Aleyasin H.; Howard, S.S.; **Dickinson, B.C.**; Lin, V.S.; Haskew-Layton, R.E.; Xu, C.; Chen, Y.; Ratan, R.R. "Two-photon fluorescence imaging of intracellular hydrogen peroxide with chemoselective fluorescent probes." *J. Biomed. Opt.* 18, 106002 (2013).
20. Lin, V.S.; **Dickinson, B.C.**; Chang, C.J. "Boronate-based fluorescent probes: Imaging hydrogen peroxide in living systems." *Meth. Enzymol.* 526, 19-43 (2013).
19. Thomas, G.; Stärk, H.-J.; Wellenreuther, G.; **Dickinson, B.C.**; Küpper, H. "Effects of nanomolar copper on water plants - Comparison of biochemical and biophysical mechanisms of deficiency and sublethal toxicity under environmentally relevant conditions." *Aquat. Toxicol.* 140-141, 27-36 (2013).
18. Gray, J.E.; Starmer, J.; Lin, V.S.; **Dickinson, B.C.**; Magnuson, T. "Mitochondrial hydrogen peroxide and defective cholesterol efflux prevent in vitro fertilization by cryopreserved inbred mouse sperm." *Biol. Reprod.* 89, 17, 1-12 (2013).

17. Harris, J.M.; Esain, V.; Frechette, G.M.; Harris, L.J.; Cox, A.G.; Cortes, M.; Garnaas, M.K.; Carroll, K.J.; Cutting, C.C.; Khan, T.; Elks, P.M.; Renshaw, S.A.; **Dickinson, B.C.**; Chang, C.J.; Murphy, M.P.; Paw, B.H.; Vander Heiden, M.G.; Goessling, W.; North, T.E. "Glucose metabolism impacts the spatiotemporal onset and magnitude of HSC induction in vivo." *Blood*. 121, 2483-2493 (2013).
16. Sakai, J.; Li, J.; Subramanian, K.K.; Mondal, S.; Bajrami, B.; Hattori, H.; Jia, Y.; **Dickinson, B.C.**; Zhong, J.; Ye, K.; Chang, C.J.; Ho, Y-S.; Zhou, J.; Luo, H.R. "Reactive oxygen species-induced actin glutathionylation controls actin dynamics in neutrophils." *Immunity*. 37, 1037-1049 (2012).
15. Woolley, J.F.; Naughton, R.; Stanicka, J.; Gough, D.R.; Bhatt, L.; **Dickinson, B.C.**; Chang, C.J.; Cotter, T.G. "H₂O₂ production downstream of FLT3 is mediated by p22phox in the Endoplasmic Reticulum and is required for STAT5 Signalling." *PLoS One*. 7, e34050 (2012).
14. Bhatt, L.; **Dickinson, B.C.**; Gough, D.R.; O'Leary, D.P.; Cotter, T.G. "Imaging localised hydrogen peroxide production in living systems." *Curr. Chem. Biol.* 6, 113-122 (2012).
13. Hu, C.; Mori, T.; Lu, Y.; Guo, Q.; Sun, Y.; Yoneki, Y.; Ohsaki, Y.; Nakamichi, T.; Oba, T.; Sato, E.; Ogawa, S.; **Dickinson, B.C.**; Chang, C.J.; Miyata, T.; Sato, H.; Ito, S. "Role of specific T-type calcium channel blocker R(-)-Efonidipine in the regulation of renal medullary circulation." *J. Hypertens.* 30, 1620-1631 (2012).
12. Ohsaki, Y.; O'Connor, P.; Mori, T.; Ryan, R.P.; **Dickinson, B.C.**; Chang, C.J.; Lu, Y.; Ito, S.; Cowley, A.W. "Increase of sodium delivery stimulates the mitochondrial respiratory chain H₂O₂ production in rat medullary thick ascending limb." *Am. J. Physiol. Renal Physiol.* 302, F95-F102 (2012).
11. **Dickinson, B.C.**; Tang, Y.; Chang, Z.; Chang, C.J. "A nuclear-localized fluorescent hydrogen peroxide probe for monitoring sirtuin-mediated oxidative stress responses in vivo." *Chem. Biol.* 18, 943-948 (2011).
10. **Dickinson, B.C.**; Chang, C.J. "Chemistry and biology of reactive oxygen species in signaling or stress responses." *Nat. Chem. Biol.* 7, 504-511 (2011).
9. **Dickinson, B.C.**; Peltier, J.; Stone, D.; Schaffer, D.V.; Chang, C.J. "Nox2 redox signaling maintains essential cell populations in the brain." *Nat. Chem. Biol.* 7, 106-112 (2011).
 - *Chem. Eng. News* January 10, 2011, p. 32-33. "Peekaboo, H₂O₂."
 - *Nat. Chem. Biol.* 7, 71-72 (2011). News and Views: "Metabolite imaging: Knock, Nox-ROS there?"
8. Lu, J.; Esposito, G.; Scuderi, C.; Steardo, L.; Delli-Bovi, L.C.; Hecht, J. L.; **Dickinson, B.C.**; Chang, C.J.; Mori, T.; Sheen, V. "S100B and APP promote a gliocentric shift and impaired neurogenesis in Down Syndrome neural progenitors." *PLoS ONE*. 6, e22126 (2011).
7. *Miller, E.W.; ***Dickinson, B.C.**; Chang, C.J. "Aquaporin-3 mediates hydrogen peroxide uptake to regulate downstream intracellular signaling." *Proc. Natl. Acad. Sci. USA*. 107, 15681-15686 (2010).
 - *denotes equal contribution
 - *ACS Chem. Biol.* 5, 902 (2010). "Spotlight."
 - *Faculty of 1000*. (2010) Evaluation rating 8, "Must read." (F1000.com/5237960)
 - *Kidney International*. 78, 946 (2010). "Journal Club."
6. **Dickinson, B.C.**; Huynh, C.; Chang, C.J. "A palette of fluorescent probes with varying emission colors for imaging hydrogen peroxide signaling in living cells." *J. Am. Chem. Soc.* 132, 5906-5915 (2010).
5. **Dickinson, B.C.**; Srikun, D.; Chang, C.J. "Mitochondrial-targeted fluorescent probes for reactive oxygen species." *Curr. Opin. Chem. Biol.* 14, 50-56 (2010).
4. Sims, J. J.; Haririnia, A.; **Dickinson, B.C.**; Fushman, D.; Cohen, R.E. "Avid interactions underlie the Lys63-linked polyubiquitin binding specificities observed for UBA domains." *Nat. Struct. Mol. Biol.* 16, 883-889 (2009).
3. **Dickinson, B.C.** and Chang, C.J. "A targetable fluorescent probe for imaging hydrogen peroxide in the mitochondria of living cells." *J. Am. Chem. Soc.* 130, 9638-9639 (2008).
 - *Chem. Eng. News* July 28, 2008, p. 16. "Visualizing hydrogen peroxide: new fluorophore lights up hydrogen peroxide in live mitochondria."
 - *Angew. Chem. Int. Ed.* 48, 3022-3024 (2009). "Lighting up H₂O₂: the molecule that is a necessary evil in the cell."

2. Albers, A.E.; **Dickinson, B.C.**; Miller, E.W.; Chang, C.J. "A red-emitting naphthofluorescein-based fluorescent probe for selective detection of hydrogen peroxide in living cells." *Bioorg. Med. Chem. Lett.* 18, 5948–5950 (2008).
1. **Dickinson, B.C.**; Varadan, R.; Fushman, D. "Effects of cyclization on conformational dynamics and binding properties of Lys48-linked di-ubiquitin." *Protein Sci.* 16, 369–378 (2007).

Patents

3. US Patent App. (2020) – "Systems and methods for modulating RNA"
2. US Patent 10,413,583 (2019) – "Synthetic substrates for enzymes that catalyze reactions of modified cysteines and related methods"
1. WO2017212400A3 (2018) – "Proximity-dependent split RNA polymerases as a versatile biosensor platform"

Commentaries

5. Rauch, S. and **Dickinson, B.C.** "Expanding the chemical scope of RNA base editors." *Biochemistry*, 58, 3555-3556 (2019)
4. **Dickinson, B.C.** "Repurposing a viral protein and drugs that target it for synthetic biology." *Nat. Methods*, 15, 489-490 (2018). [link](#)
3. Rauch, S. and **Dickinson, B.C.** "Programmable RNA binding proteins for imaging and therapeutics." *Biochemistry*, 57, 363-364 (2018). [link](#)
2. **Dickinson, B.C.** "Metabolism: Plugging the leak." *Nat. Chem. Biol.* 11, 831-832 (2015). [link](#)
1. "Voices of Chemical Biology." *Nat. Chem. Biol.* 11, 378-379 (2015).

In the News

9. Burrows, C. "First Accounts: The capstone of a tenure tour." *Acc. Chem. Res.* 53, 1003-1004 (2020). [link](#)
8. Landis, D.C. "Stop the Coronavirus: The Science of Washing Your Hands." *Chicago Health*, March 27, 2020 [link](#)
7. 40 Under 40 Chicago Scientist profile. [link](#)
6. Kim, S.E. "Revolutionizing disease treatment with biotechnology and functional molecules." At the forefront – UChicago Medicine (2019). [link](#)
5. Hsiao, I. "Irrational Design." *The Chemists Club - The University of Chicago*, Spring Ed., 63, 1-5 (2018). [link](#)
4. Webb, S. "Directing Drug Evolution." *Biotechniques*, 63, 248-251 (2017). [link](#)
3. Kuriki, Y.; Komatsu, T.; Ycas, P.D.; Coulup, S.K.; Carlson, E.J.; Pomerantz, W.C.K. "Meeting Proceedings ICBS2016—Translating the Power of Chemical Biology to Clinical Advances." *ACS Chem. Biol.* 12, 869-877 (2013). [link](#)
2. Goss, K. "At the interface of chemistry and cancer." *Science Life – At the Forefront*, UChicago Medicine, Feb. 10, 2017. [link](#)
1. Brennan, M. "Reactions: Bryan Dickinson." *The Sceptical Chymist*, Dec. 23, 2016. [link](#)

Presentations

- 2021/10/29 **6th Dreyfus Foundation Teacher-Scholar Symposium**, New York, NY
- 2021/9/23 **Genome Engineering and Synthetic Biology**, VIB Tools & Technologies Conference, Ghent, Belgium (*invited seminar*)
- 2020/11/13 **University of Virginia**, Chemistry Colloquium, Charlottesville, VA (*invited seminar - electronic*)

- 2020/10/20 **University of Toronto**, Medicine by Design Global Speaker Series, Toronto, Canada (*invited seminar - electronic*)
- 2020/10/16 **Colby College**, Chemistry Department Seminar, Waterville, ME (*invited seminar - electronic*)
- 2020/9/29 **California Institute of Technology**, *Frontiers in Chemical Biology* Symposium, Chemistry Department, Pasadena, CA (*invited seminar - electronic*)
- 2020/9/16 **Michigan State University**, Chemistry Department Seminar, Lansing, MI (*invited seminar - electronic*)
- 2020/3/11 **Illinois Institute of Technology**, Chemistry Colloquium, *Chicago, IL* (*invited seminar*)
- 2020/3/1 **Pittcon**, Novel Probes for Visualizing Biochemical Events in Cells, Tissues, and Tumors Symposium, *Chicago, IL* (*invited seminar*)
- 2019/12/5 **Case Western Reserve University**, Chemistry Department Seminar, *Cleveland, OH* (*invited seminar*)
- 2019/11/22 **NIH NCI IMAT Meeting**, Los Angeles, CA (*invited seminar*)
- 2019/11/17 **Hatteras SAB Meeting**, San Diego, CA (*invited seminar*)
- 2019/11/8 **7th China Nucleic Acids Forum (CNAF)**, Guangzhou, China (*invited seminar*)
- 2019/10/28 **NSF MCB CAREER Awardee Conference**, Washington, DC
- 2019/9/25 **Stanford University – Frontiers in Biology Seminar Series**, Department of Genetics, Palo Alto, CA (*invited seminar*)
- 2019/8/27 **258th ACS National Meeting, ACS Sensors Young Investigators Symposium**, Analytical Chemistry Division, San Diego, CA (*invited seminar*)
- 2019/7/6 **FASEB Conference on Protein Lipidation**, *Olean, NY* (*invited seminar*)
- 2019/6/24 **UChicago-AbbVie Symposium**, Chicago, IL (*invited seminar*)
- 2019/6/17 **Abcam Functions of Epitranscriptomes Conference**, Chicago, IL (*invited seminar*)
- 2019/5/21 **Great Lakes Bioinformatics Conference**, UW-Madison, WI (*invited seminar*)
- 2019/5/6 **Cornell University**, Chemistry Department Seminar, Ithaca, NY (*invited seminar*)
- 2019/5/1 **Great Lakes Regional Meeting - ACS**, Biologically Related Molecules & Processes Seminar Series, Lisle, IL (*invited seminar*)
- 2019/4/13 **4th Biannual Meyers Symposium for Organic Chemistry**, Southern Illinois University, Carbondale, IL (*invited seminar*)
- 2019/4/1 **257th ACS National Meeting, ACS Chemical Biology Lectureship Symposium**, Orlando, FL (*invited seminar*)
- 2019/3/7 **St. Jude Children’s Research Hospital**, Chemical Biology & Therapeutics Seminar Series, Memphis, TN (*invited seminar*)
- 2019/2/19 **University of California, Davis**, Chemistry Department Seminar, Davis, CA (*invited seminar*)
- 2019/1/28 **Emory University**, Chemistry Department Seminar, Atlanta, GA (*invited seminar*)
- 2018/11/16 **University of Toronto, “Peter Yates Lecturer”**, Chemistry Department Seminar, Toronto, Canada (*invited seminar*)
- 2018/11/15 **York University**, Chemistry Department Seminar, Toronto, Canada (*invited seminar*)
- 2018/11/8 **USC**, Chemical Biology Seminar, Los Angeles, CA (*invited seminar*)
- 2018/9/5 **Northwestern University**, Biotechnology Program, Synthetic Biology: Biosensors Practicum, Evanston, IL (*student-invited seminar*)
- 2018/8/21 **256th ACS National Meeting, Symposium on “Synthetic Chemical Biology”**, Boston, MA (*invited seminar*)

- 2018/8/13 **Nature-NYU Conference on Chemical Biology**, Symposium on “Programming Protein Function”, New York, NY (*invited seminar*)
- 2018/6/10 **Bioorganic Chemistry – Gordon Research Conference**, Proctor Academy, Andover, NH (*invited seminar*)
- 2018/5/27 **101st Canadian Chemistry Conference**, Symposium on Synthetic Biology, Edmonton, AB (Canada) (*invited seminar*)
- 2018/4/21 **American Society for Biochemistry and Molecular Biology (ASBMB) Meeting**, Spotlight Leader for “Chemical Biology” and “Engineering Biology”, San Diego, CA (*invited seminar*)
- 2017/11/20 **University of Minnesota**, Chemical Biology Colloquium, Minneapolis, MN (*invited seminar*)
- 2017/8/22 **254th ACS National Meeting, Division of Physical Chemistry**, Symposium on “Experimental and Computational Advances in Understanding Enzyme Specificity and Promiscuity”, Washington, DC (*invited seminar*)
- 2017/7/17 **FASEB Conference on Protein Lipidation**, Saxtons River, VT (*invited seminar*)
- 2017/6/11 **Bioorganic Chemistry – Gordon Research Conference**, Proctor Academy, Andover, NH
- 2017/4/17 **Colorado State University**, Chemistry Department Seminar, CO (*invited seminar*)
- 2016/10/25 **International Chemical Biology Society Meeting**, Madison, WI (*invited seminar*)
- 2016/6/8 **Bioorganic Chemistry – Gordon Research**, Proctor Academy, Andover, NH
- 2016/4/13 **Frontiers of Nanoscience (fNano)**, Snowbird Resort, Salt Lake City, UT (*invited seminar*)
- 2015/11/19 **Loyola University Chicago**, Chemistry Seminar, Chicago, IL (*invited seminar*)
- 2015/4/23 **Pomona College**, Chemical Biology Seminar, Claremont, CA (*invited seminar*)
- 2013/6/9 **Bioorganic Chemistry – Gordon Research Conference**, Proctor Academy, Andover, NH
- 2013/4/10 Award Address, Nobel Laureate Signature Award sponsored by Avantor Performance Materials. **245th ACS National Meeting**, New Orleans, LA (*invited seminar*)
- 2013/3/21 **The University of Pennsylvania**, Biological Chemistry Seminar, Philadelphia, PA (*invited seminar*)
- 2012/8/9 **ModeRNA**, Cambridge, MA (*invited seminar*)
- 2012/7/7 **Harvard-LMU Young Scientists Symposium**, Harvard University (*invited seminar*)
- 2011/9/31 **Pfizer**, Neuroscience and Medicinal Chemistry Groups, Groton, CT (*invited seminar*)
- 2010/8/22 **240th ACS National Meeting**, Boston, MA
- 2010/6/13 **Bioorganic Chemistry – Gordon Research Conference**, Proctor Academy, Andover, NH

Professional Activities

Manuscript Referee

- *eLife Early-Career Reviewer*
- *The Journal of the American Chemical Society*
- *Nature*
- *Nature Chemical Biology*
- *Nature Chemistry*
- *Nature Biotechnology*
- *Nature Methods*
- *ACS Chemical Biology*
- *ACS Central Science*
- *ACS Sensors*
- *Cell Chemical Biology*
- *Chem*
- *Cell Reports*
- *Cell Systems*
- *Chemical Science*
- *ChemBioChem*
- *Bioconjugate Chemistry*
- *PLOS One*
- *Biomaterials*
- *Chemical Reviews*
- *Biotechnology and Bioengineering*
- *Scientific Reports*
- *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*

- *BMC Cell Biology*
- *Acta Biochimica et Biophysica Sinica*
- *Acta Biomaterialia*
- *Analyst*
- *Trends in Biochemical Science*
- *Current Cancer Drug Targets*
- *Cellular and Molecular Life Sciences*
- *Journal of Photochemistry and Photobiology*
- *Emerging Topics in Life Sciences*

Community Activities

- *Chair* - FASEB Conference on Protein Lipidation (2023)
- *Editor* – Synthetic Biology Section – *Current Opinion in Chemical Biology* (2021)
- *Vice Chair* - FASEB Conference on Protein Lipidation (2021)
- *Editor* – Engineering and Design Section – *Current Opinion in Structural Biology* (2021)
- Northwestern Synthetic Biology Program Thesis Committee Member
- *Guest Editor*- *eLife* (Spring 2019)
- *Conference Organizer* – *Spotlight Sessions in Chemical Biology*, American Society for Biochemistry and Molecular Biology (ASBMB) Meeting, San Diego (2018)

Grant Reviewer

Standing Member:

- NIH – *The Synthetic and Biological Chemistry A (SBCA)* study section member (July 2020 – Jun 2024)
- *Accelerator Review Board (ARB)*, Chicago Biomedical Consortium (CBC) (2018 - present)

Ad hoc NIH study sections:

- NIH – *National Human Genome Research Institute: Novel Synthetic Nucleic Acid Technology Development SEP* (Fall 2020)
- NIH – *National Institute of General Medical Sciences Special Emphasis Panel: K99/R00 Pathway to Independence applications* (Summer 2020)
- NIH – *The Synthetic and Biological Chemistry A (SBCA)* study section member (Fall 2019)
- NIH – *National Institute of General Medical Sciences Special Emphasis Panel: K99/R00 Pathway to Independence applications* (Spring 2019)
- NIH – *National Institute of General Medical Sciences Special Emphasis Panel: K99/R00 Pathway to Independence applications* (Summer 2018)
- NIH – *National Institute of General Medical Sciences Special Emphasis Panel: K99/R00 Pathway to Independence applications* (Spring 2018)

Other ad hoc grant reviewing:

- Mark Foundation for Cancer Research – ASPIRE Award (Spring 2020)
- US Army Research Office (Winter 2020)
- Ludwig Maximilian University of Munich (LMU) Research Fellowship Program (Winter 2020)
- Great Ormond Street Hospital (GOSH) Children's Charity (Fall 2019)
- Boehringer Ingelheim Fonds PhD fellowship - Ad hoc reviewer (2019)
- Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) – (2019)
- NSF – *Chemistry of Life Processes* (2019)
- Academy of Finland - *Research Council for Biosciences, Health and Environment, Academy projects, postdoctoral researchers* (2019)
- Medicine by Design New Ideas Awards competition, University of Toronto (2019)
- Swiss National Science Foundation (SNSF): *Early Postdoc.Mobility* (Spring 2018)

University of Chicago Service

- University of Chicago - University Senate (2020-2023)
- Quantum Community Impact Steering Committee - Economic Development Sub-Committee (2020)
- Physical Sciences Division Research Resumption Committee (2020)
- Chemistry Department COVID-19 Research Start-up Planning Committee (2020 – chair)
- University of Chicago/Argonne COVID-19 BSL-3 research review committee (2020)
- Chemistry Faculty Awards Committee (2019 – chair, 2020 - chair)

- Chemistry Safety Committee (2019, 2020)
- Chemistry Graduate Program Admissions Committee (2017, 2018, 2019)
- Biophysics Graduate Training Oversight Committee (2017, 2018)
- Stony Island House “Aims of Education” Guest Speaker (2017)
- Chair of Website and Department Promotion Committee (2016, 2017, 2018)
- Graduate Student Recruitment Committee (2015, 2016 – chair, 2018)
- Biophysics Graduate Program Admissions Committee (2016)
- Rising Stars in Chemistry Applicant Review Committee (2015)
- Website Redesign Committee (2015 - chair)

Courses Taught

- Discovery and Translation of Molecular Therapeutics (Spring 2019, Spring 2020, Spring 2021)
- Chemical Biology I, Graduate (Winter 2015, Fall 2015, Fall 2016, Fall 2017, Fall 2018)
- Honors Organic Chemistry II (Winter 2016, Winter 2017, Winter 2020, Winter 2021)
- Organic Chemistry II (Winter 2018)
- Translational Approaches in Cancer Biology – “Synthetic Biology in Cancer” lecture (2016, 2017, 2018)

Current Composition of Group

- 6 Postdocs
- 6 Chemistry Graduate Students
- 1 M.D./Ph.D. Student
- 3 Undergraduates

Select Accolades of Trainees

- **2020 Award for Best Dissertation in the Division of the Biological Sciences** - Simone Rauch
- **2020 Best Thesis Award in Biochemistry and Biophysics** - Simone Rauch
- **2019 Chicago Harper Fellow** – Simone Rauch
- **2019 Knowles Award** (Bioorganic Chemistry Gordon Conference) – Simone Rauch
- **2018 Bioorganic Chemistry Gordon Conference Poster Award** - Dr. Michael Beck
- **2018 Gerhard Closs Teaching Award in Organic Chemistry** - Victoria Cochran
- **2018 Outstanding Poster Award** –University of Chicago Postdoctoral Symposium - Dr. Jinyue Pu
- **2017 Bioorganic Chemistry Gordon Conference Poster Award** - Dr. Rahul Kathayat

Travel Awards:

- UChicago Chemistry Departmental Postdoc Travel Award (Dr. Jinyue Pu – 2016, Dr. Rahul Kathayat – 2017, Dr. Jinyue Pu – 2018, Dr. Jane Zhou - 2019)
- Grad Council Travel Fund Award (Simone Rauch – 2019)

Training Awards:

- Cancer Center Training Grant Fellowship (Jeffrey Dewey)
- Chemical-Biology Interface Training Grant Fellowship (Julia Zinkus, Kaitlin Kentala)
- Chicago Fellows Award (Dr. Jane Zhou)
- NSF GRFP (Victoria Cochran - *award*, Kaitlin Kentala – *honorable mention*)
- Herman Samuel Bloch Lecture Graduate Fellowship (Julia Zinkus – 2017, Tian Qiu – 2018)
- Martha & Joseph Chenicek Research Fellowship (Yang Cao – 2020)

Group Alumni

Post-doctoral fellows

- Dr. Huiqing Zhou (2016-2020), Assistant Professor, Department of Chemistry, Boston College
- Dr. Michael Beck (2015-2019), Assistant Professor, Department of Chemistry, Eastern Illinois University

Graduate Students

- Dr. Simone Rauch (2016-2020), Scientist at Skyhawk Therapeutics
- Dr. Julia Zinkus-Boltz (2015-2020), Scientist at Abbot Labs

Recent Undergraduates

- Fernando Banales Mejia (former PSD MS student), Graduate Student, University of Washington
- Perla “PJ” Sandoval (former post-bacc PREP scholar), Graduate Student, UCSD
- Pablo Elvira (former undergraduate), Graduate Student, Stanford University
- Ian Chronis (former undergraduate), Graduate Student, University of Oxford
- Christopher Watkins (former PSD Masters Student), Graduate Student, University of Chicago

Research Support

* direct costs listed

Current

NIH R01 <i>Advancing our Understanding of the Brain Epitranscriptomics</i> "Base-resolution mapping and site-specific epitranscriptomic studies in the brain" Role: coPI	Dickinson (PI)	9/25/2019-7/31/2024	\$299K / y ((\$250K / y to Dickinson))
NSF CAREER National Science Foundation (NSF) "CAREER: Rapid continuous evolution to create and probe protein-protein interactions" Role: PI	Dickinson (PI)	1/1/2018-12/31/2022	\$574K total
Teacher-Scholar Award <i>Camille Dreyfus Foundation</i> Role: PI	Dickinson (PI)	2019	\$100K total
NIH R35 <i>Maximizing Investigators' Research Award (MIRA)</i> "Molecular imaging approaches to interrogate mammalian signaling by lysine acylation" Role: PI	Dickinson (PI)	7/15/2016-7/15/2021	\$250K / y
Chicago Biomedical Consortium <i>Catalyst Award</i> "Engineering human protein-based mRNA translational controllers for therapeutics" Role: coPI	Dickinson (PI)	2/1/2020-2/1/2022	\$125K total
NIDDK Pilot Grant <i>UCCCC Pilot Project Award</i> "Developing biosensors for at-home analysis of fecal calprotectin to monitor gut health" Role: PI	Dickinson (PI)	12/1/2019-12/1/2021	\$30K total

Completed

NIH R01 <i>BRAIN Initiative: Development and Validation of Novel Tools to Analyze Cell-Specific and Circuit-Specific Processes in the Brain (R01)</i> "Split RNA polymerases for sensitive, multidimensional analysis of intercellular PPIs at synapses" Role: coPI	Dickinson (PI)	7/1/2017-6/30/2020	\$500K / y ((\$300K / y to Dickinson))
NIH R21 <i>Innovative Molecular and Cellular Analysis Technologies for Basic and Clinical Cancer Research, IMAT (R21)</i> "rePPI-i: A system for the rapid continuous evolution of protein-protein interaction inhibitors" Role: PI	Dickinson (PI)	7/1/2017-6/30/2020	\$400K total
Sloan Foundation <i>Sloan Research Fellowship</i> Role: PI	Dickinson (PI)	9/1/2017-8/31/2019	\$60K total
Chicago Biomedical Consortium <i>Catalyst Award</i> "Fluorescent probes for live-cell imaging of sirtuin activity: applications to breast cancer" Role: Co-PI	Dickinson (PI)	10/1/2015-9/31/2017	\$100K total
National Cancer Institute <i>UCCCC Pilot Project Award</i> "New tools to interrogate post-transcriptional gene expression regulation in cancer" Role: PI	Dickinson (PI)	7/1/2016-7/1/2017	\$50K total
Cancer Research Foundation	Dickinson (PI)	1/1/2015-12/31/2016	\$75K total

Young Investigator Award

“Proteases reprogrammed through evolution as novel cancer therapies”

Role: PI

DFI Pilot Grant

Dickinson (PI)

12/1/2018-12/1/2019

\$70K total

UCCCC Pilot Project Award

“Biosensors for fecal calprotectin to study and control gut health”

Role: PI