

PERSONAL INFORMATION

Matthew W. Parker

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POSITIONS

- 10/2020 – present Assistant Professor of Biophysics, UT Southwestern Medical Center, Dallas, TX
Cecil H. and Ida Green Endowed Scholar in Biomedical Computational Science
- 01/2015 – 09/2020 Postdoctoral Fellow, University of California Berkeley, Berkeley, CA
Johns Hopkins School of Medicine, Baltimore, MD
Joint advisors: James M. Berger, Ph.D. and Michael R. Botchan, Ph.D.
- 08/2010 – 12/2014 Ph.D. Student, University of Kentucky College of Medicine, Lexington, KY
Advisor: Craig W. Vander Kooi, Ph.D.
- 08/2008 – 05/2010 Thornton Undergrad. Researcher, Western Colorado University, Gunnison, CO
Advisor: Cassandra Osborne, Ph.D.

EDUCATION

- 08/2010 – 12/2014 University of Kentucky College of Medicine, Lexington, KY
Department of Molecular and Cellular Biochemistry, Ph.D.
Thesis title: “*Molecular Mechanisms of Neuropilin-Ligand Binding*”
- 08/2005 – 05/2010 Western Colorado University, Gunnison, CO
Department of Biology, B.A.

ACHIEVEMENTS & AWARDS

- NIH NRSA F32 Postdoctoral Fellow (Johns Hopkins School of Medicine, 2015)
Robert Lester Award (for the significance of thesis work, University of Kentucky, 2014)
College of Medicine Research Incentive Award (University of Kentucky, 2013)
Alumni Award for Excellence (Western Colorado University, 2010)
NSF Research Experience for Undergraduates (University of Kentucky, 2009)
Noddin-McKenny Award (for excellence in biology, Western Colorado University, 2009)

TEACHING

- 2023 – Present Lecturer, Macromolecules I (UTSW)
2023 – Present Lecturer, Macromolecules and Metabolism (UTSW)
2023 – Present Coordinator, Proteins Core Course Discussion Section (UTSW)
2021 – Present Lecturer, Proteins Core Course (UTSW)
2021 – Present Discussion Leader, Proteins Core Course (UTSW)
2020 – 2021 Discussion Leader, Cells Core Course (UTSW)

GRANT SUPPORT

Current

- 2024 – 2029 NIH - National Institute of General Medical Sciences (R01GM155100)
2023 – 2027 The National Science Foundation (NSF) Research Project Grant (2308642)
2023 – 2027 The Welch Foundation Catalyst for Discovery (V-I-0004-20230731)
2020 – 2025 Cancer Prevention and Research Institute of Texas (CPRIT)

2020 – 2025 Recruitment of First-Time, Tenure-Track Faculty Member Award (RR200070)
UTSW Endowed Scholars Program in Medical Science

Completed

2021 – 2024 Welch Foundation Research Grant (I-2074-20210327)
2015 – 2018 NIH NRSA F32 Postdoctoral Fellowship (Johns Hopkins, F32GM116393)
2008 – 2010 Thornton Research Scholar (Western Colorado University)

INVITED TALKS

2023 National Institutes of Health, RADAR Workshop on Biomolecular Condensates
2021 University of Kentucky, Department of Molecular and Cellular Biochemistry
2021 University of Maryland Baltimore County, Department of Biochemistry
2020 University of Chicago, Department of Biochemistry and Molecular Biophysics
2019 Cold Spring Harbor, Eukaryotic DNA replication conference
2018 University of California Berkeley, Single Biomolecules symposium

PROFESSIONAL SERVICE

Ad hoc reviewer for: eLife, Molecular Cell, NSMB, Nature Communications, Life Science Alliance, Cell, MBoC, and JCB (ongoing activity)
Organizer for Biophysics of Nuclear Organization and Function Symposium (UC Berkeley, 2018)
Organizer for Drosophila Development Super-group (UC Berkeley, 2018)

PUBLICATIONS (#corresponding)

Adiji OA, McConnell BS, **Parker MW**[#]. 2024. The Origin Recognition Complex requires chromatin tethering by a hypervariable intrinsically disordered region that is functionally conserved from sponge to man. *Nucleic Acids Research* **52**:4344-4360. doi.org/10.1093/nar/gkae122
McConnell BS, **Parker MW**[#]. 2023. Protein intrinsically disordered regions have a non-random, modular architecture. *Bioinformatics* **39**(12). doi: 10.1093/bioinformatics/btad732.
Jeong J, Lee JH, Carcamo CC, **Parker MW**, Berger JM. 2022. DNA-stimulated Liquid-Liquid phase separation by eukaryotic topoisomerase ii modulates catalytic function. *Elife*. doi:10.7554/eLife.81786
Parker MW[#], Kao JA, Huang A, Berger JM, Botchan MR. 2021. Molecular determinants of phase separation for Drosophila DNA replication licensing factors. *Elife* **10**. doi:10.7554/eLife.70535
Said AM, **Parker MW**, Vander Kooi CW. 2020. Design, synthesis, and evaluation of a novel benzamidine-based inhibitor of VEGF-C binding to Neuropilin-2. *Bioorg Chem* **100**. doi:10.1016/j.bioorg.2020.103856
Parker MW, Bell M, Mir M, Kao JA, Darzacq X, Botchan MR, Berger JM. 2019. A new class of disordered elements controls DNA replication through initiator self-assembly. *Elife*. doi:10.7554/eLife.48562
Parker MW, Botchan MR, Berger JM. 2017. Mechanisms and regulation of DNA replication initiation in eukaryotes. *Crit Rev Biochem Mol Biol* **52**:107–144. doi:10.1080/10409238.2016.1274717
Parker MW, Vander Kooi CW. 2017. Plate-based assay for measuring direct semaphorin-neuropilin interactions. *Methods Mol Biol* **1493**:73–87. doi:10.1007/978-1-4939-6448-2_5
Thacker BE, Seamen E, Lawrence R, **Parker MW**, Xu Y, Liu J, Vander Kooi CW, Esko JD. 2016. Expanding the 3-O-Sulfate Proteome - Enhanced Binding of Neuropilin-1 to 3-O-Sulfated Heparan Sulfate Modulates Its Activity. *ACS Chem Biol* **11**:971–980. doi:10.1021/acscchembio.5b00897
Parker MW, Linkugel AD, Goel HL, Wu T, Mercurio AM, Vander Kooi CW. 2015. Structural basis for VEGF-C binding to neuropilin-2 and sequestration by a soluble splice form. *Structure* **23**:677–

687. doi:10.1016/j.str.2015.01.018
- Raththagala M, Brewer MK, **Parker MW**, Sherwood AR, Wong BK, Hsu S, Bridges TM, Paasch BC, Hellman LM, Husodo S, Meekins DA, Taylor AO, Turner BD, Auger KD, Dukhande V V., Chakravarthy S, Sanz P, Woods VL, Li S, Vander Kooi CW, Gentry MS. 2015. Structural mechanism of laforin function in glycogen dephosphorylation and lafora disease. *Mol Cell* **57**:261–272. doi:10.1016/j.molcel.2014.11.020
- Li X, **Parker MW**, Kooi CW. 2014. Control of cellular motility by neuropilin-mediated physical interactions. *Biomol Concepts* **5**:157–166. doi:10.1515/bmc-2013-0035
- Parker MW**, Vander Kooi CW. 2014. Microplate-based screening for small molecule inhibitors of neuropilin-2/vascular endothelial growth factor-C interactions. *Anal Biochem* **453**:4–6. doi:10.1016/j.ab.2014.02.017
- Guo HF, Li X, **Parker MW**, Waltenberger J, Becker PM, Vander Kooi CW. 2013. Mechanistic basis for the potent anti-angiogenic activity of Semaphorin 3f. *Biochemistry* **52**:7551–7558. doi:10.1021/bi401034q
- Parker MW**, Linkugel AD, Vander Kooi CW. 2013. Effect of C-terminal sequence on competitive semaphorin binding to neuropilin-1. *J Mol Biol* **425**:4405–4414. doi:10.1016/j.jmb.2013.07.017
- Parker MW**, Xu P, Guo HF, Vander Kooi CW. 2012. Mechanism of Selective VEGF-A Binding by Neuropilin-1 Reveals a Basis for Specific Ligand Inhibition. *PLoS One* **7**.
- Parker MW**, Guo HF, Li X, Linkugel AD, Vander Kooi CW. 2012. Function of members of the neuropilin family as essential pleiotropic cell surface receptors. *Biochemistry* **51**:9437–9446. doi:10.1021/bi3012143
- Parker MW**, Xu P, Li X, Vander Kooi CW. 2012. Structural basis for selective vascular endothelial growth factor-A (VEGF-A) binding to neuropilin-1. *J Biol Chem* **287**:11082–11089. doi:10.1074/jbc.M111.331140
- Parker MW**, Hellman LM, Xu P, Fried MG, Vander Kooi CW. 2010. Furin processing of semaphorin 3F determines its anti-angiogenic activity by regulating direct binding and competition for neuropilin. *Biochemistry* **49**:4068–4075. doi:10.1021/bi100327r
doi:10.1371/journal.pone.0049177