

Matthew W. Parker, Ph.D.

Assistant Professor
Department of Biophysics
UT Southwestern Medical Center

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POSITIONS

- 10/2020 – Present **Assistant Professor**, UT Southwestern Medical Center, Dallas, TX
Function and mechanism of phase separation in chromatin-contextualized processes
- 01/2015 – 09/2020 **Postdoctoral Fellow**, University of California Berkeley, Berkeley, CA
Postdoctoral Fellow, Johns Hopkins School of Medicine, Baltimore, MD
Joint advisors: James M. Berger, Ph.D. and Michael R. Botchan, Ph.D.
Molecular and cellular mechanisms for initiating metazoan DNA replication
- 08/2010 – 12/2014 **Ph.D. Student**, University of Kentucky College of Medicine, Lexington, KY
Advisor: Craig W. Vander Kooi, Ph.D.
Structural basis for Neuropilin-ligand interactions and competitive inhibition
- 08/2008 – 05/2010 **Thornton Undergraduate Researcher**, Western Colorado University, Gunnison, CO
Advisor: Cassandra Osborne, Ph.D.
Effects of environmental xenoestrogens on aquatic vertebrate development

EDUCATION

- 08/2010 – 12/2014 **University of Kentucky College of Medicine**, Lexington, KY
Department of Molecular and Cellular Biochemistry, Ph.D.
- 08/2005 – 05/2010 **Western Colorado University**, Gunnison, CO
Department of Biology, B.A. (*magna cum laude*)

HONORS, AWARDS & GRANT FUNDING

- 2020 – Present **Cancer Prevention & Research Institute of Texas (CPRIT) Scholar**
UT Southwestern Medical Center
- 2020 – Present **Cecil H. and Ida Green Endowed Scholar in Biomedical Computational Science**
UT Southwestern Medical Center
- 2015 – 2018 **NIH NRSA F32 Postdoctoral Fellow**
Johns Hopkins School of Medicine
- 2015 **Life Sciences Research Foundation (LSRF) Postdoc. Fellowship Finalist** (top 5%)
Johns Hopkins School of Medicine
- 2014 **Robert L. Lester Award** (for the quality, originality, and significance of thesis work)
University of Kentucky

- 2011 – 2013 **NIH T32 Interdisciplinary Cardiovascular Training Grant**
University of Kentucky
- 2011 **NSF Graduate Research Fellowship Honorable Mention**
University of Kentucky
- 2010 – 2013 **College of Medicine Research Incentive Award**
University of Kentucky
- 2010 **Alumni Award for Excellence** (the university's highest honor for graduating seniors)
Western Colorado University
- 2009 **National Science Foundation Research Experience for Undergraduates (NSF-REU)**
University of Kentucky (Lab of Craig W. Vander Kooi, Ph.D.)
- 2009 **Noddin-McKenny Award for Outstanding Biology Major**
Western Colorado University
- 2008 – 2010 **Thornton Research Scholar** (competitive grant and training support)
Western Colorado University (Lab of Cassandra Osborne, Ph.D.)

TEACHING

- 2011 **BCH401G – Fundamentals in Biochemistry**, Teacher's Assistant
University of Kentucky
- 2008-2009 **BIO150 – Fundamentals in Biology**, Teacher's Assistant
Western Colorado University
- 2008-2009 **CHE111/112 – General Chemistry I/II**, Tutor
Western Colorado University

PUBLICATIONS

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. *Bioorganic Chemistry* (in press).

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*. 48562.

*Highlighted in accompanying *eLife* Insight

Parker MW, Botchan MR, Berger JM, 2017. Mechanisms and regulation of DNA replication initiation in eukaryotes. *Critical Reviews in Biochemistry and Molecular Biology*. 52(2):107-144.

Parker MW, Vander Kooi CW, 2017. Plate-Based Assay for Measuring Direct Semaphorin-Neuropilin Interactions. *Methods in Molecular Biology*. 1493:73-87.

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 Chemical Biology*. 11(4):971-80.

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(4):677-87. (Accompanying *Structure* preview 32(4):610-11)

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 VV, Chakravarthy S, Sanz P, Woods VL Jr, Li S, Vander Kooi CW, Gentry MS, 2015. Structural mechanism of laforin function in glycogen dephosphorylation and lafora disease. *Molecular Cell*. 57(2):261-72.

Li X, **Parker MW**, Vander Kooi CW, 2014. Control of cellular motility by neuropilin-mediated physical interactions. *Biomolecular Concepts*. 5(2):157-66.

Parker MW, Vander Kooi CW, 2014. Microplate-based screening for small molecule inhibitors of neuropilin-2/vascular endothelial growth factor-C interactions. *Analytical Biochemistry*. 453:4-6.

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(43):7551-8.

Parker MW, Linkugel AD, Vander Kooi CW, 2013. Effect of C-terminal sequence on competitive semaphorin binding to neuropilin-1. *Journal of Molecular Biology*. 425(22):4405-14.

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(11):e49177.

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(47):9437-46.

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. *The Journal of Biological Chemistry*. 287(14):11082-9.

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(19):4068-75.

INVITED PRESENTATIONS

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| 2020 | “A new class of disordered elements controls DNA replication through initiator self-assembly”
Department of Biochemistry
University of Maryland Baltimore County |
| 2020 | “A new class of disordered elements controls DNA replication through initiator self-assembly”
Department of Biochemistry and Molecular Biophysics
University of Chicago |
| 2019 | “Initiator-type disordered domains in replication initiators and beyond”
Eukaryotic DNA replication & genome maintenance
Cold Spring Harbor, NY |
| 2018 | “Initiation factors assemble on DNA through CDK/Cyc-controlled self-assembly”
Single Biomolecules
Cold Spring Harbor, NY |

- 2018 **“Replication initiation factors assemble on DNA through phase separation”**
 Biophysics of Nuclear Organization and Function Symposium
 University of California Berkeley, Berkeley, CA
- 2013 **“Effect of C-terminal sequence on competitive Semaphorin binding to Neuropilin”**
 Bluegrass Molecular Biophysics Symposium
 University of Kentucky, Lexington, KY
- 2012 **“Tipping the balance between angiogenic and anti-angiogenic cues”**
 Gill Heart Cardiovascular Research Symposium, *oral* presentation
 University of Kentucky, Lexington, KY

LEADERSHIP & SERVICE

- 2019 **Diversity, Equity & Inclusion (DEI) Workshop**, attendee
 Led by Dr. Adrienne Coleman
 University of California Berkeley
- 2018 **Biophysics of Nuclear Organization and Function Symposium**, co-organizer
 University of California Berkeley
- 2017 – 2018 **Drosophila development super-group**, co-organizer
 University of California Berkeley
- 2013 **Integrated Biomedical Sciences Biochemistry Recruiting Day**, co-organizer
 University of Kentucky