

Michael B. Jarstfer
CURRICULUM VITAE

PERSONAL

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EDUCATION

1998-2001 Damon Runyon-Walter Winchell Postdoctoral Fellow, University of
Colorado, Boulder, Colorado
Research advisor: Professor Thomas R. Cech
1993-1998 Ph.D. Chemistry, University of Utah, Salt Lake City, Utah
Thesis advisor: Professor C. Dale Poulter
Dissertation: *Squalene Synthase: On The Mechanism of Action*
1988-1992 B.A. Biochemistry, Trinity University, San Antonio, Texas

PROFESSIONAL EXPERIENCE

2018-present Assistant Dean of Graduate Education, Eshelman School of Pharmacy
2018-Present Director of Graduate Studies, Eshelman School of Pharmacy
2007-present Associate Professor of Chemical Biology and Medicinal Chemistry, Eshelman
School of Pharmacy
2012-present Carolina Institute for Developmental Disabilities faculty member
2001-present Lineberger Comprehensive Cancer Center, University of North Carolina, UNC-
CH, faculty member
2001-2021 Molecular and Cellular Biophysics Faculty member
2001-2007 Assistant Professor of Medicinal Chemistry and Natural Products, Eshelman
School of Pharmacy

HONORS

2018 UNC Eshelman School of Pharmacy PY1 Instructor of the Year
2016 UNC Eshelman School of Pharmacy PY1 Instructor of the Year
2014 UNC Eshelman School of Pharmacy PY2 Instructor of the Year
2006 Academic Excellence Award in Teaching and Research from the University of
North Carolina, School of Pharmacy
2005 Academic Excellence Award in Teaching and Research from the University of
North Carolina, School of Pharmacy
2003 Junior Faculty Development Award, UNC-CH (RJ Reynolds Fund)
2002 American Association of Colleges of Pharmacy (AACP) New Investigator
Award
1998-2001 Damon Runyon-Walter Winchell Cancer Research Fund Fellowship
1997 Department of Chemistry Cheves Walling Graduate Research Prize,
University of Utah
1995 American Chemical Society Division of Organic Chemistry Graduate Fellowship

1992 Henry Eyring Research Fellowship, University of Utah
1990 American Chemical Society Petroleum Research Fund Summer
Research Fellowship

BIBLIOGRAPHY

Refereed Articles

(*corresponding author)

Published at UNC-CH

- (1) Dorszynski, A., Lee, E., Ton, M.T., Mintz, A., McLaughlin, J.E., Jarstfer, M. "Virtual Pharmacopedia: An online educational database housing student-developed, expert-reviewed modules for PharmD curricular expansion." *Curr. Pharm. Teach. Learn.* **2021**, *13*, 1432-1437, doi:10.1016/j.cptl.2021.09.009
- (2) Persky, A.M., Fuller, K.A., Jarstfer, M., Rao, K., Rodgers, J.E., Smith, M. "Maintaining Core Values in Postgraduate Programs During the COVID-19 Pandemic" *Am. J. Pharm. Educ.* **2020**, *84*, ajpe8158. doi: 10.5688/ajpe8158
- (3) Olsen, A.A., Minshew, L.M., Jarstfer, M.B., McLaughlin, J.E. "Exploring the Future of Graduate Education in Pharmaceutical Fields" *Med.Sci.Educ.* (2019). <https://doi.org/10.1007/s40670-019-00882-3>
- (4) Moy, S.S; Teng, B.L; Nikolov, V.D.; Riddick, N.V.; Simpson, C.; Van Deusen, A.; Janzen, W.P.; Sassano, F.A.; Pedersen, C.A.; Jarstfer, M.B. "Prosocial effects of an oxytocin metabolite in a mouse model of autism" *Neuropharmacology*, **2019**, *144*, 301-311, doi: 10.1016/j.neuropharm.2019.10.036
- (5) Shelby L. Hudson, S. L.; Jarstfer, M. B.; Persky, A. M. "Student Learning with Generated and Answered Peer-written Questions" *Am. J. Pharm. Educ.*, **2018**, *82*, 6315, doi: 10.5688/ajpe6315.
- (6) Teng, B.L., Nikolova, V.D., Riddick, N.V., Agster, K.L., Crowley, J.J., Baker, L.K., Koller, B.H., Pedersen, C.A., Jarstfer, M.B., Moy, S.S. "Reversal of social deficits by subchronic oxytocin in two autism mouse models" *Neuropharmacology*, **2016**, *105*, 61-71.
- (7) Shirgahi Talari F., Bagherzadeh K., Golestanian S., Jarstfer M., Amanlou, M. "Potent Human Telomerase Inhibitors: Molecular Dynamic Simulations, Multiple Pharmacophore-Based Virtual Screening, and Biochemical Assays" *J. Chem. Inf. Model.* **2015**, *55*, 2596-610.
- (8) Teng, B.L.; Nonneman, R.J.; Agster, K.L; Nikolova, V.D.; Davis, T.T.; Riddick, N.V.; Baker, L.K.; Pedersen, C.A.; Jarstfer, M.B.; Moy, S.S. "Prosocial effects of oxytocin in two mouse models of autism spectrum disorders". *Neuropharmacology* **2013**, *72*, 187-196
- (9) Cole D.I.; Legassie, J.D.; Bonifacio, L.N.; Sekaran, V.G.; Ding, F.; Dokholyan, N.V. *; Jarstfer, M.B.* "New models of tetrahymena telomerase RNA from experimentally derived constraints and modeling" *J. Amer. Chem. Soc.* **2012**, *134*, 20070-20080.
- (10) Sassano, M. F.; Schlesinger, A. P.; Jarstfer, M. B. * "Identification of G-Quadruplex Inducers Using a Simple, Inexpensive and Rapid High Throughput Assay, and Their Inhibition of Human Telomerase" *Open Med. Chem. J.* **2012**, *6*, 20-28.
- (11) Soares, J; Lowe, M.M.; Jarstfer, M.B.* "The Catalytic Subunit of Human Telomerase is a Unique Caspase-6 and Caspase-7 Substrate" *Biochemistry.* **2011**, *50*, 9046-9055.
- (12) Soares, J.; Keppler, B.K.; Wang, X.; Lee, K.-H.; Jarstfer, M.B.* "Ortho-Quinone Tanshinones Inhibit Telomerase through an Oxidative Mechanism Mediated by Hydrogen Peroxide" *Biord. Med. Chem. Lett.* **2011** *21*, 7474-8.

- (13) Bonifacio, L.; Jarstfer, M. B. * "MiRNA Profile Associated with Replicative Senescence, Extended Cell Culture, and Ectopic Telomerase Expression in Human Foreskin Fibroblasts" *PLoS ONE*, **2010**, *5*, e12519.
- (14) Fu, Y. T.; Keppler, B. R.; Soares J.; Jarstfer, M. B. * "3,6-Disubstituted Acridine Dimers That Block Telomere-Binding Proteins" *Bioorg. Med. Chem.* **2009**, *17*, 2030-2037
- (15) Cockrel, L.; Church F.; Jarstfer, M. B. * "The Effect of Locked-Nucleic Acids on a Biologically Active G-Quadruplex: A Structure-activity Relationship of the Thrombin Aptamer" *Int. J. Mol. Sci.* **2008**, *9*, 422-433
- (16) Chen, Y; Fender, J; Legassie, J. D.; Jarstfer, M. B.; Bryan, T. M.; Varani, G. * "Structure of Stem-loop IV of Tetrahymena telomerase RNA" *EMBO J*, **2006**, *25*, 3156-3166.
- (17) Keppler B. R.; Jarstfer, M.B. * "A High Throughput Screen for Human Telomere Reverse Transcriptase Interactions with Human Telomerase RNA" *Anal. Biochem.* **2006**, *353*, 75-82.
- (18) Keppler, B. R.; Grady, A. T.; Jarstfer, M. B. * "The Biochemical Role of the Heat Shock Protein 90 Chaperone Complex in Establishing Human Telomerase Activity" *J. Biol. Chem*, **2006**, *281*, 19840-19848.
- (19) Oganessian, L; Moon, I. K.; Bryan, T. M.*; Jarstfer, M. B. * "Ciliate telomerase extends a subset of G-quadruplex DNA structures" *EMBO J*. **2006**, *25*, 1148–1159.
- (20) Fouche, N.; Keppler, B. R.; Griffith, J. D. * Jarstfer M. B. "Direct Visualization of Telomerase by Electron Microscopy" *Biochemistry*, **2006**, 9624-9631.
- (21) Jeffries, C.*; Perkins, D., Jarstfer, M. "Systematic discovery of the grammar of translational inhibition by RNA hairpins" *J. Theor. Biol.* **2006**, *241*, 205-215.
- (22) Legassie, J. D.; Jarstfer, M. B. * "Telomerase as a DNA-Dependent DNA Polymerase" *Biochemistry*, **2005**, *44*, 14191-14201.
- (23) Jeffries, C*.; Jarstfer, M. B.; Perkins, D. O. "Folded RNA from an Intron of One Gene Might Inhibit Expression of a Counteracting Gene" *In Silico Biol.* **2005**, *5*, 407-413
- (24) Dominick, P. K.; Keppler, B. R.; Legassie, J. D.; Moon, I. K.; Jarstfer, M. B. * "Nucleic-Acid Binding Ligands Identify New Mechanisms to Inhibit Telomerase" *Bioorg. Med. Chem. Lett.* **2004**, *14*, 3467-3471.
- (25) Keppler, B. K.; Jarstfer, M. B. * "Inhibition of Telomerase Activity by Preventing Proper Assemblage. *Biochemistry* **2004**, *43* 334-343.
- (26) Dominick P. K.; Jarstfer, M. B. * "A Conformationally Constrained Nucleotide Analog Allows Control of G-Quadruplex DNA Folding" *J. Amer. Chem. Soc.* **2004**, *126*, 5050-5051.

Published as Student or Postdoc

- (27) Jarstfer, M.B.; Zhang, D.L.; Poulter, C.D. "Recombinant Squalene Synthase. Synthesis of Non-Head-to-Tail Isoprenoids in the Absence of NADPH" *J. Amer. Chem. Soc.* **2002**, *124*, 8834-8845.
- (28) Blagg, B.S.J.; Jarstfer, M.B.; Rogers, D.H.; Poulter, C.D. "Recombinant Squalene Synthase. A Mechanism for the Rearrangement of Presqualene Diphosphate to Squalene" *J. Amer. Chem. Soc.* **2002**, *124*, 8846-53.
- (29) Jarstfer, M.B.*; Cech, T.R. "Effects of nucleotide analogs on *Euplotes aediculatus* telomerase processivity: evidence for product-assisted translocation" *Biochemistry*, **2002**, *41*, 151-161.
- (30) Jarstfer, M.B.; Blagg, B.S.J.; Rogers, D.H.; Poulter, C.D. "Biosynthesis of Squalene. Evidence for a Tertiary Cyclopropylcarbinyl Cationic Intermediate in the Rearrangement of Presqualene Diphosphate to Squalene" *J. Amer. Chem. Soc.* **1996**, *118*, 13089-13090.

- (31) Humpf-H.-U.; Berova, N.; Nakanishi, K.; Jarstfer, M.B.; Poulter, C.D. "Allylic and Homoallylic CD Exciton Chirality: A Sensitive Method for Determining the Absolute Stereochemistry of Natural Products" *J. Org. Chem.* **1995**, *60*, 3539-3542.
- (32) Chase, C.E.; Jarstfer, M.B.; Arif, A.M.; West, F.G. "Unexpected and Efficient Photochemical Rearrangement of 6-Hydroxyethylpyran-2-ones to 4-Alkylidene-5,6-dihydropyrans" *Tetrahedron Lett.*, **1995**, *36*, 8531-8534.
- (33) Mendoza, J.A.; Jarstfer, M.B.; Goldenberg, D.P. "Effects of Amino Acid Replacements on the Reductive Unfolding Kinetics of Pancreatic Trypsin Inhibitor" *Biochemistry* **1994**, *33*, 1143-1148.
- (34) Doyle, M.P.; Westrum, L.J.; Protopopova, M.M.; Eismont, M.Y.; Jarstfer, M.B. "Dirhodium(II) Tetraacetate Catalyzed Hydroboration of Alkenes" *Mendeleev Commun.* **1993**, 81-82.
- (35) Burgess, K.; van der Donk, W.A.; Jarstfer, M.B.; Ohlmeyer, M.J. "Further Evidence for the Role of d π -p π Bonding in Rhodium-Mediated Hydroborations" *J. Amer. Chem. Soc.* **1991**, *113*, 6139-6144.
- (36) Doyle, M.P.; Brandes, B.D.; Kazala, A.P.; Pieters, R.J.; Jarstfer, M.B.; Walkins, L.M.; Eagle, C.T. "Chiral Rhodium (II) Carboxamides. "A New Class of Catalysts for Enantioselective Cyclopropanation Reactions" *Tetrahedron Lett.* **1990**, *31*, 6613-6616.

Invited Peer-Reviewed Reviews and Methods

- (37) Soares, J; Sekaran, V.G. Jarstfer, M.B. * "Telomere Maintenance as a Target for Anticancer Drug Discovery" *J. Med. Chem* **2014**, *57*, 521-538.
- (38) Moon, I. K.; Jarstfer, M. B. * "Preparation of G-quartet structures and detection by native gel electrophoresis" in *Methods Mol. Biol.* **2010**, *608*, 51-63.
- (39) Sekaran, V. G; Soares, J.; Jarstfer, M. B. * "Structures of telomerase subunits provide functional insights" *Biochim. Biophys. Acta* **2010**, *1804*, 1190-1201.
- (40) Moon, I. K.; Jarstfer, M. B. * "The Structure of Human Telomeric DNA: Human Disease, Therapy, and Biotechnology" in "DNA Structures, Genome Instability and Human Disease" *Front. Biosci.*, **2007**, *12*, 4595-4620.
- (41) Bryan T. M.*; Jarstfer, M. B. * "Interrogation of G-quadruplex-protein interactions" *Methods*, **2007**, *43*, 332-339.
- (42) Legassie, J.D.; Jarstfer, M.B. * "The Unmasking of Telomerase" *Structure*, **2006**, *14*, 1603-1609.

Unrefereed Book Reviews

- (1) Jarstfer, M.B. Review of "Advances in Organic Chemistry. Volume 1 Edited by Atta-ur-Rahman and Gerhard Jenner." *J. Med. Chem.* **2005**, *48*, 7916-1916

Invited Lectures

- (1) Duke University "Telomere biology and aging", February 2021
- (2) North Carolina Central University. "UNC Biomedical PhD Programs" for the International Society of Pharmaceutical Engineers, October 2019,
- (3) UNC Chapel Hill. "Flipped Classroom Experience" for the Cultural Opportunities in Pharmacy at ESOP (CORxE), March 3, 2019
- (4) North Carolina Central University. "Breadth and Mechanisms of the Neurological Effects of Oxytocin", October 19, 2017.

- (5) University of North Carolina, Chapel Hill, NC , CIPhER Fall 2017 Celebration of Educational Innovation, Scholarship & Research, "Considerations for Pre-class Exercises" December 1, 2017.
- (6) University of North Carolina, Chapel Hill, NC , CIPhER, Innovative Assessment with ExamSoft: Expanding Your Options – A Panel Session, "Mini-Exams as Formative Assessments in Molecular Foundation of Drug Actions" October 27, 2017.
- (7) Campbell University, Continuing Education Workshop on Classroom Flipping "Flipping the classroom- practical advice from clinician and scientist faculty on how to adapt your course" December 12, 2016
- (8) University of North Carolina, Chapel Hill, NC, Carolina Institute for Developmental Disorders Retreat, "Drug Discovery for FXS", May 20, 2014
- (9) University of South Carolina, Columbus, SC, Department of Drug Design and Biomedical Sciences, "Targeting Telomere Maintenance in Cancer Cells" April 2013
- (10) Campbell University, Buies Creek, NC, Department of Chemistry, "Chemical Biology to Study Telomere Function", April 2013
- (11) Purdue University, West Lafayette, IN, Medicinal Chemistry and Molecular Pharmacology, "Telomerase at the Nexus of Life and Death" September 2012
- (12) University of Puerto Rico, San Juan Puerto Rico, Department of Chemistry, MARC Conference, "Structural Studies of a Molecular Fountain of Youth: Telomerase in 3D" February 2012
- (13) Elon University, Elon, NC, Department of Chemistry "Chemical Biology to Study Telomere Function", November 2011
- (14) NS State, Raleigh, NC. Department of Biochemistry, "Telomerase at the Nexus of Life and Death" March 4, 2010
- (15) College of Charleston, Charleston, SC. Department of Chemistry, November 16, 2008. "Tales of Chemical Biology and Drug Discovery at UNC"
- (16) Jarstfer, M.B. "The SHAPE(s) of Tetrahymena Telomerase RNA" Cech Symposium, Boulder CO, 2007
- (17) University of Maryland, College Park MD. Department of Chemistry, October 10th, 2006. "Using Chemistry to Study Telomere Biology"
- (18) American Chemical Society, Medicinal Chemistry Symposium: Telomerase, An Emerging Target for Anticancer Agents, San Francisco CA. "Telomerase Inhibition: Overview and Perturbation of Assemblage" September 10, 2006
- (19) University of Arizona, Tucson AZ., Department of Pharmacology and Toxicology, "Chemical Biology to Study Telomere Maintenance", September 7, 2006."
- (20) University of Utah, Salt Lake City, UT., Department of Chemistry "Using Chemistry to Study Telomere Biology" September 5, 2006.
- (21) UNC Chapel Hill, Department of Chemistry, Chapel Hill, NC, August 30, 2006. "Using Chemistry to Study Telomere Biology"
- (22) UNC Chapel Hill, Lineberger Cancer Center, High Throughput Screening Workshop,. "In Situ Generation of a Dominant Negative Telomerase Complex" November 28, 2005
- (23) Virginia Commonwealth University Department of Pathology, Richmond Va.,. "Telomerase Assemblage as an Anticancer Drug Platform" February 2005
- (24) UNC Chapel Hill, Division of Drug Delivery and Disposition (now Molecular Pharmaceutics), Chapel Hill, NC,. "Telomerase Assemblage as an Anticancer Drug Platform" October 2005
- (25) Appalachian State University, Department of Chemistry, Boone, NC, "Telomerase Assemblage as an Anticancer Drug Platform" November 30, 2005
- (26) National Institute of Environmental Health Sciences, Research Triangle Park, NC "The Interaction of Telomerase with the Telomere" December 2004.

- (27) UNC Chapel Hill, Division of Drug Delivery and Disposition (now Molecular Pharmaceutics), Chapel Hill, NC, . "Telomerase: Unusual Template Usage and Inhibition of Assemblage, October 2005
- (28) Trinity University, San Antonio TX, "Telomerase Makes the End for Cancer" March 28, 2003.
- (29) UNC Chapel Hill, Division of Medicinal Chemistry, Chapel Hill, NC, "Telomerase: Maintaining the End" August 23, 2001

TEACHING ACTIVITIES (2015-2020)

Biochemical Foundation of Chemical Biology (CBMC 804a)

Required CBMC PhD course

2015-present

Course Coordinator, Course lecturer, Course developer (2015-present)

14 class sessions (50 min each) ~10 students

Molecular Foundations of Drug Action (PHCY 503)

Required PharmD course

Course Coordinator and Course developer 2015-2017, Course lecturer (2015-present),

12 class sessions (80 min each), ~150 students

Foundations for Cross-Disciplinary Training in the Pharmaceutical Sciences (PHRS 801)

Required PHRS (including CBMC) PhD course

Lecturer 2015-2017, Coordinator 2018-present

14 class sessions (50 min), ~18 students

Drug Development and Professional Skills Development (PHRS 802)

Required PHRS (including CBMC) PhD course

Coordinator and lecturer 2020-present

14 class sessions (50 min), ~18 students

Medicinal Chemistry III (PHCY425)

Required PharmD course

2003-2016

Lecturer on information based drugs, immunotherapy, and steroid based drugs to treat cancer

Co-Coordinator 2009-2016

3 lectures (50 min each), ~170 students

Pharmacy Bridging Course (PHCY500, Biochemistry Module)

Required PharmD course

2015-2017

Lecturer

3 class sessions (50 min each) ~150 students

Biochemical Foundation of Chemical Biology: Journal Club (CBMC 804b)

Required CBMC PhD course

2015-2017

Course Coordinator (2015-2017), Course developer

12 class sessions (50 min each) ~10 students

RESEARCH MENTORING

Current

Merrill Froney Joint mentoring with Samantha Pattenden.

Previous Postdoctoral Research Associates

Brian Teng Autism Speaks Postdoctoral Fellow
Yuan-te Fu
Pamela Dominick
Joana Soares
Vijay Sekaran

Previous Graduate Students

Carrie-Ann Gordon	Defended May 2014, NIH predoctoral fellow, CRA, Novella
Rachel Henderson	CBMC MS student, Associate Scientist, PPD
Daud Cole	Defended November 2013, post doc UCSF NIH predoctoral fellow
Vijay Sekaran	Defended April 2012, Scientist at HemoSonics
Laura Bonifacio, PharmD,	Defended July 2010, Vice President, Clinical at Aravive Biologics, co-founder Subveho, President Lodestar Pharma Consulting AFPE Fellow
Joana Soares	Defended April 2010, JD 2019 Patent Attorney at Wilson Sonsini Goodrich & Rosati
Maria Sassano	Defended December 2009, lab director, UNC Amgen Fellowship, GSK Fellowship
Ian Moon	Defended 2009, CRA at Novella
Jason Legassie	Defended 2007 Director, Formulation at Axcella
Brian Keppler	Defended 2006, scientist at Metabolon AFPE Fellow

PhamD students

Deanna Wung	
Tamara Davis	Co-author on a manuscript
Margaret Lowe	Co-author of a manuscript and currently a Research Scientist at UCSF
Laura Bonifacio	Co-author on several manuscripts; PhD UNC

Post-baccalaureates

Kendra Johnson	currently a graduate student at Columbia University, NSF fellow. UNC PREP
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Adam Friedman (CBMC)
Brian Bower (Genetics)
Arpi Tandon (Biochemistry)
Morgan Chapman (CBMC)
Kelsey Lamb (First Year SAC)
Luong Nguyen (CBMC, chair)
Brittany Wright (CMBC, Chair)
Ryan Bullis (CBMC, Chair)
Sherket Peterson (CBMC, Chair)
Patrick Guley (MOPH)
Weichen Xu (CBMC)
Caia Duncan (Chemistry)
Michael Hackett (MOPH)
Danielle Cook (CBMC, Chair)
Ozlem Arat (Biochemistry)
Luda Shtessel (Biology)
Alex Schlesinger (Biochemistry)
Man Luo (CBMC, Chair)
Heather Bethea (Medicinal Chemistry)
Courtney Jones (Medicinal Chemistry)
Steve Cotten (Medicinal Chemistry)
Tanarat Kietsakorn (Medicinal Chemistry)
Luo Man (Medicinal Chemistry, Chair)
Rengeng Liu (Medicinal Chemistry)
Jui-Hua Hsieh (Medicinal Chemistry)
Michael Hackett (MOPH)
Michael Duncan (Medicinal Chemistry)
Ronald Copeland (Medicinal Chemistry)
Suzanne Edavettal (Medicinal Chemistry)
Timothy Wigle (Medicinal Chemistry)
Anthony Cesare (Genetics)
Nicole Fouche (Biochemistry)
Mia Lowden (Biology)
Jon Ahn (Drug Delivery and Disposition/MOPH)
Andrew Brogan (Medicinal Chemistry)
Nadir Monori (Medicinal Chemistry)
Corey Fowler (Medicinal Chemistry)

RESEARCH SUPPORT

Ongoing Research/Grant Support: Jarstfer

Innovations in Graduate Education (Jarstfer, PI, no salary, 5% effort) 7/1/2019-6/30/2022

UNC Graduate School

NextGen Training

We are developing innovative approaches to increase interdisciplinary engagement in the Pharmaceutical Sciences PhD program that will foster developing and assessing translatable skills beyond technical skills associated with independent research.

1R25GM119987-01A (Jarstfer, MPI, 5% effort) 8/1/2018-7/31/2023

NIH

Bridges to Doctorate – Bioinformatics and Biomedical Bridges between NCA&T and UNC-CH

Though deliberate mentoring, course design, professional development, cross-disciplinary training, and cross-institutional engagement, we will foster the matriculation of MS students from NCA&T to PhD programs at UNC-CH.

1 R03 CA230935-01 (Jarstfer, MPI, 5%) 7/1/2020 – 6/30/2022

NIH

Targeting ALT-Cancer

We will develop and implement screens to identify agents that selective for ALT-cancer cells.

Expired Research/Grant Support

RX03812106 (Jarstfer, PI, no salary, 5% effort) 6/1/2018--4/15/2020

Eshelman Institute of Innovation

Discovery of Senescence Markers and Drug Targets

We will use activity-base protein profiling to identify serine hydrolases that display differential activity in senescent compared to cycling cells.

2T36GM075791-06 5/15/13-5/14/18

NIH (PI: Jarstfer)

Summer Short Course in Biophysics

RX03712104 (Jarstfer, PI, no salary, 5% effort) 6/1/2017-11/31/2018

Eshelman Institute of Innovation

Rescuing Rare Genetic Disorders by Kinase Inhibition

We will determine if small molecule inhibition of a the kinase SMG1 will increase read through of disease causing premature termination codons

2KR531403 (Jarstfer, PI) 4/1/14-3/31/15

NC TraCS

“Chemical Probes for Regulators of RNA Biogenesis”

\$ 2,000

We are developing the assays for RNA methyltransferases with the long term goal of developing chemical probes to study RNA methyltransferase biology and determine if RNA methyltransferase are viable drug targets.

AR100231P1 (Jarstfer, PI) 08/8/11-08/7/15

DoD

Total direct: \$308,000

“Preclinical Testing of Novel Oxytocin Receptor Activators in Models of Autism Phenotypes “
We will test the preclinical efficacy in mouse models of cell assay-validated small molecule human oxytocin (OT) receptor activators discovered by high throughput screening and synthetic optimization.

1 F31 AG040985-01 (Jarstfer, PI, Carrie-Ann Gordon, Fellow)
NIH

“The connection between reactive oxygen species and telomere in CVD”

1-F31-GM086084-01 (Jarstfer, PI, Daud Cole, Fellow)

7/17/2008 - 7/16/2013

NIH

“The structure of telomerase RNA during catalysis”

We are testing the hypothesis that telomerase RNA is a functionally dynamic subunit owing to its ability to exist in several discrete states that promote telomerase-catalyzed primer extension. The goal is to establish the mechanisms by which telomerase activity can be regulated to produce telomeres of specific length.

Autism Speaks

9/1/12-8/31/13

Postdoctoral Fellowships in Translational Research
(Jarstfer mentor, Brian Teng, Fellow)

NCTracs (Jarstfer, PI)

5/1/12-4/30/13

“Telomerase Activation for the Treatment of Cardiovascular Disease”

We characterized the effects of SOD2 deficiency on telomere maintenance in a mouse model for cardiovascular disease.

MCB-0751372 (Jarstfer, PI, 0.6 months)

8/1/08-7/31/12

National Science Foundation

"The Structure of Telomerase RNA Attending Catalysis"

We are using a multidisciplinary approach to investigate the structure and function of telomerase RNA.

2008-MRG-1111 (Jarstfer, co-PI)

8/1/08-7/31/10

North Carolina Biotechnology Center

"Development of Non-Peptide Human Oxytocin Receptor Agonist and Potentiator Drugs"

We are investigating the ability of small molecules to control social behavior by activating the oxytocin pathway.

Innovation Award (Jarstfer, PI)

4/1/09-3/31/2011

University Cancer Research Fund

"High Throughput Assays for Telomere Modulators"

We are developing and high throughput compatible assays for telomere-binding proteins.

1R03MH085678-01 (Jarstfer, PI)

4/1/2009-3/31/2010

National Institutes of Health

Allosteric Potentiators of the Oxytocin System for the Control of Social Motivation

We conducted a high throughput screen at the NIH screening center at Scripps Florida.

MCB-0446019

National Science Foundation 2/01/2005-1/31/2008

Role: Principal Investigator

The Interaction of Telomerase with the Telomere

We are using a multidisciplinary approach to investigate the interaction of the ribonucleoprotein complex telomerase with a DNA primer and telomere models. We have identified the minimal sequence requirements for telomerase-telomere binding, have obtained the first structure of telomerase and have provided evidence that telomerase dimerizes to allow sister chromatid pairing.

1R03NS053661-01

National Institutes for Health

9/30/2005-8/31/2007

Role: Principal Investigator

A High Throughput Screen for Telomerase Assembly

To generate a high throughput screen using scintillation proximity assay to report on essential macromolecular interactions, seeking to optimize HTS with specific consideration of cost and simplicity. The completion of these studies will provide a novel HTS that will allow us to identify compounds that specifically block proper assemblage of the telomerase holoenzyme complex.

Elsa U. Pardee Foundation

3/01/04-2/28/06

Role: Principal Investigator

Telomerase Assemblage: A New Target in the Anticancer Drug Arsenal

We investigated new methods to inhibit telomerase specifically by targeting the RNA subunit. We have found that we can generate, in situ, a dominant negative telomerase. We are testing the effects of this approach in cultured cells, and studying the role of hsp90 in establishing telomerase activity.

University Research Council

12/01/02-11/31/04

Role: Principal Investigator

Novel Tools for Evaluating the Structure and Physicochemical Properties of Telomeric DNA We synthesized a novel polyamide-based telomere-affinity column. This will be used to study telomere structure.

North Carolina Pharmacy Foundation

01/01/03-1/31/04

Role: Principal Investigator

RNA Aptamers for Heparan Sulfate

We found that RNA can bind specific structures found in the heterogeneous heparan sulfate polymer. These RNAs need to be further refined in order to generate novel tools to establish the distribution of heparan sulfate in vivo and establish the roles of the different heparan sulfate forms.

North Carolina Pharmacy Foundation

1/01/02-12/31/02

Role: Principal Investigator

Human Telomerase RNA: A Novel Small-Molecule Drug Target

Dr. Jarstfer (PI) is supervising a graduate student, whom has developed a screen for telomerase inhibitors that target the telomerase RNA subunit. We showed that targeting specific portions of the human telomerase RNA with complementary oligonucleotides could inhibit telomerase assemblage.

University Research Council

12/01/01-11/20/03

Role: Principal Investigator

A Novel DNA-Dependent Telomerase: A Direct Test of Template Specificity

Dr. Jarstfer (PI) supervised Jason Legassie, who determined that telomerase can use a DNA template. This unique activity was reported in Biochemistry.

American Association of Colleges of Pharmacy

12/01/02-11/31/03

Role: Principle Investigator

Novel Tools for Evaluating the Structure and Physiochemical Properties of Telomeric DNA Dr. Jarstfer (PI) supervised an undergraduate student, Allen Grady, who synthesized a novel polyamide-based telomere-affinity column. This was evaluated as a technique to isolate intact telomeres.

PROFESSIONAL SERVICE

2012-2018 Director of the Biophysical Society Summer Course in Biophysics
2011-2018 Ad hoc member of the Minority Affairs Committee, Biophysics Society
2009-2014 Chair/Director of the NC RNA Society Steering Committee
2011-2012 co-Director of the Biophysical Society Summer Course in Biophysics
2010-2011 Organizer of the 2011 NC RNA Society Symposium
2006 Organizer ACS Medicinal Chemistry Symposium on Telomerase Inhibition
2006-2007 Organizing Committee for the 2007 NC RNA Society Symposium
2004-2015 Member of the NC RNA Society Steering Committee

Peer reviewer for funding agencies

National Science Foundation
National Institutes of Health, DMP study section ad hoc reviewer
National Institutes of Health, MSFB study section ad hoc reviewer, February and October
National Institutes of Health, COBRE (P20) Special Emphasis Panel Review, June
Terry Fox Foundation in Canada
University Cancer Research Fund
Health Research Board of Ireland
Council for Earth and Life Sciences (Netherlands)
Israel Science Foundation
Czech Science Foundation

Peer reviewer for scholarly journals

ACS Chemical Biology
ACS CombiChem
Analytical Biochemistry
Apoptosis
Biochemistry
Bioorganic and Medicinal Chemistry
Bioorganic and Medicinal Chemistry Letters
Breast Cancer
British Journal of Cancer
ChemBioChem
European Journal of Medicinal Chemistry
Journal of the American Chemical Society
Journal of Biological Chemistry
Journal of Biophysics

Journal of Inorganic Biochemistry
Journal of Medicinal Chemistry
Journal of the Royal Society Interface
Molecular Cell
Nature Methods
Nucleic Acids Research
Nucleosides, Nucleotides and Nucleic Acids
PlosOne
Proceedings of the National Academy of Science
RNA

Service to UNC-CH

Academic Policy Committee UNC Graduate School (2018-present)
Graduate School Advisory Board UNC Graduate School (2018-present)
Advisory committee for the Graduate Certificate in Business Fundamentals (2018-present)
BBSP executive committee (2012-present)
Reviewer of Dean's Distinguished Dissertation Award Applications (2020-present)
Chair BBSP Admissions Committee (2015-2018)
Weekend coordinator for BBSP recruitment (recruitment for 2014 class)
Member Health Sciences Library Advisory Committee (2012-2015)
Member BBSP admissions committee (2009-2013)
Mentor, BBSP First Year Group (2010-2012)
Member Biophysics Training Grant admission committee (2006-2009)
Member Faculty Research Committee (2006-2009)

Service to the Eshleman School of Pharmacy

Director of Graduate Studies, Pharmaceutical Science (2018-present)
Education Advisory Committee (2020-present)
Wellness Committee (2021-present)
Chair, Graduate Education Committee (2018-present)
Executive Committee (2018-present)
Member of the Global Engagement Advisory Committee (2017-present)
Member of the Graduate Education Committee (2006-present)
Participant in PharmD applicant interviewer (2002-present)
Digital Learning Advisory Committee (2019-2020)
Operational Return Committee (2020-2021)
Division Director of Graduate Studies, Chemical Biology and Medicinal Chemistry (2011-2018)
Member of the curriculum committee (2008-2017)
Member of the Curriculum Transformation Oversight Committee (2013-2016)
Faculty sponsor of the Graduate Student Organization (2009-2013)
Chair and organizer of the PharmD/PhD Dual Degree Program formation committee (2012-2014)
Member of the Steering Committee for the Curricular Transformation
Division Director of Graduate Admissions, Chemical Biology and Medicinal Chemistry (2006-2011)
Member Singapore Planning Team (2010-2013)
Curricula innovations advisory committee (2010-2012)
Member Combined PharmD-PhD Oversight Committee (2006-2008)
Professional Student Advisor (2005-2010)

Interviewer for Pharmacy Admission (2001-2013)
Medicinal Chemistry Senior Faculty Search Committee (2006-2007)
Medicinal Chemistry Faculty Search Committee (2005-2006)
Director Instructional Innovation Search Committee (2006)
Member Scholastic Achievement and Progressions Committee (2005- 2008)
Instrumentation Committee (2002-2005)
Pharmacotherapy Search Committee (2005): Hired Howard L. McLeod
Medicinal Chemistry Chair Search Committee (2005)