February 2023

TEXAS STATE VITA
Xiaoyu Xue, Ph.D.

Assistant Professor
Department of Chemistry and Biochemistry
Texas State University
601 University Drive, San Marcos, TX 78666

Phone: (512) 245-6607
Email: xiaoyu.xue@txstate.edu

Education

Ph.D., Biology, Tsinghua University, Beijing, China, 2008, Zihe Rao
B.S., Biochemistry, Nanjing University, Nanjing, China, 2003

Appointments

2018-present	Assistant Professor	Texas State University – San Marcos
2019-present	Regular Doctoral Faculty	Texas State University – San Marcos
2008-2014	Postdoctoral Associate	Yale University – New Haven
2014-2018	Associate Research Scientist	Yale University – New Haven

I. TEACHING

A. Courses taught (Texas State, 8)

1) CHEM 4375/5375 – Biochemistry. Revise existing course.
   Semester: Fall 2018, Spring 2019

2) CHEM 4481 – Advanced Biochemistry Lab I. Revise existing course.
   Semester: Fall 2019, Fall 2020, Fall 2021, Fall 2022

3) CHEM 4382 – Advanced Biochemistry Lab II. Revise existing course.
   Semester: Spring 2022

4) CHEM 4382 – Advanced Biochemistry Lab II. Biochemistry undergraduate research.
   Semester: Spring 2019 - present

5) CHEM 4299 – Undergraduate research.
   Semester: Fall 2018 - present

6) BIO 4299 – Undergraduate research.
   Semester: Spring 2020

7) CHEM 5199/5399 – Thesis Research.
   Semester: Fall 2018 - present

8) MSEC 7103/7203/7303/7299/7999 – MSEC Research and Dissertation.
Semester: Fall 2019 - Spring 2022

B. Directed Student Learning (Texas State, 36 students)

1. Graduate theses/dissertations as mentor/committee chair: (Texas State, 7 students)

1) Ashley Summers (Ph.D. MSEC), "The role of Esc2 and DNA in Smc5/6-mediated Sgs1-Top3-Rmi1 sumoylation"
Status: *Completed.* (August, 2019 – July, 2022)

2) Jesse Durham (M.S., Biochemistry), "Biochemical Characterization of Mte1-Rad51 Interaction in Homologous Recombination"
Status: *Completed.* (August, 2019 – July, 2021) (South Texas Doctoral Bridge Program)

3) Kathryn Banks (M.S., Biochemistry), "The function of ALYREF on UAP56-mediated R-loop resolution"
Status: *Completed.* (August, 2018 – May, 2020)

4) Shahad Amdeen (M.S., Biochemistry), "Roles of human DDX47 helicase in R-loop resolution"
Status: *In Progress (Thesis defense passed).* (December, 2020 – present) (South Texas Doctoral Bridge Program)

5) Darriel Andabati-Eyaa (M.S., Biochemistry), "Mechanisms of human ZGRF1 helicase in replication fork protection and R-loop resolution"
Status: *In Progress.* (August, 2021 – present) (South Texas Doctoral Bridge Program)

6) Patricia Gallegos (M.S., Biochemistry), "Mechanism of Smc5/6 sumoylation mediated by Mms21 Sumo E3 ligase in genome maintenance"
Status: *In Progress.* (August, 2022 – present) (South Texas Doctoral Bridge Program)

7) Lillian Eliaz (M.S., Biochemistry), "Functions of human ZGRF1 and Hel Z helicases in R-loop resolution and genome maintenance"
Status: *In Progress.* (January, 2023 – present) (South Texas Doctoral Bridge Program)

2. Graduate theses/dissertations and exit committees as committee member: (Texas State, 3 students)

1) Brianna Norbury (M.S., Biochemistry), "The Role of Vertebrate LARP-6 N-Terminal-Region in Protein Activity", Supervisor: Dr. Karen Lewis.
Status: *Completed.* (August, 2018 – May, 2020)

2) Ayyam Yousef Ibrahim (M.S., Biochemistry), "Mechanisms of RNA Binding Specificity and Phase Separation by LaRP6", Supervisor: Dr. Karen Lewis.

Status: *Completed.* (August, 2020 – July, 2022)

3) Benjamin Zejnelovski (M.S., Biochemistry), Supervisor: Dr. Karen Lewis.
Status: *In Progress.* (August, 2020 – present)

3. Undergraduate research as mentor: (Texas State, 27 students)

1) Kiana Holland (B.S., Biochemistry and U-RISE Scholar), "Regulation of Mms21 SUMO E3 ligase activity by components of the Smc5/6 complex"
Status: *In Progress.* (June, 2022 – present)

2) Isela Rojas (B.S., Biochemistry), "Regulation of Mms21 SUMO E3 ligase activity by components of the Smc5/6 complex"
Status: *In Progress.* (Aug, 2022 – present)

3) Amber Gomez (B.S., Biochemistry), "Purification of human ZGRF1 and its truncation mutants"
Status: *In Progress.* (June, 2022 – present)

4) Keenan Beachem (B.S., Biochemistry), "Purification of human ZGRF1 and its truncation mutants"
Status: *In Progress.* (June, 2022 – present)

5) Andrea Romero (B.S., Biochemistry and U-RISE Scholar), "The effect of different DNA structures on the SUMO E3 ligase activity of Mms21 within the Smc5/6 complex"
Status: *In Progress.* (January, 2023 – present)

6) John Epps (B.S., Biology), "Regulation of Sgs1-Top3-Rmi1 sumoylation by Esc2"
Status: *In Progress.* (August, 2021 – present)

7) Kylie Hedge (B.S., Biochemistry)
Status: *In Progress.* (August, 2022 – present)

8) Coleton Saverance (B.S., Biochemistry), "Expression, purification of human RAD51 in *E. coli* and analyzing its interaction with ZGRF1"
Status: *Completed.* (September, 2021 – present)

9) Drew Barton (B.S., Biochemistry), "Expression, purification of human RAD51 in *E. coli* and analyzing its interaction with ZGRF1"
Status: *Completed.* (January, 2022 – present)

10) Jade Barger (B.S., Biochemistry), "Expression, purification of human RAD51 in *E. coli* and analyzing its interaction with ZGRF1"
Status: *Completed.* (September, 2021 – present)

11) Lillian Maeve Eliaz (B.S., Biochemistry), "DNA binding analysis of ZGRF1 fragments"

Status: *Completed.* (September, 2021 – present)

12) Shams Hassan (B.S., Biochemistry), "DNA binding analysis of ZGRF1 fragments"
Status: *Completed.* (September, 2021 – present)

13) Dan Estevez (B.S., Biochemistry), "Purification of budding yeast Sgs1 in insect cells"
Status: *Completed.* (September, 2020 – May, 2021)

14) Arnold Arron Anzaldua (B.S., Biochemistry), "Protein isolation and purification of the Rmi1 Subunit of the Budding yeast Sgs1-Top3-Rmi1 complex via Sepharose and cation exchange chromatography"
Status: *Completed.* (September, 2020 – May, 2021)

15) Armando Gomez (B.S., Biochemistry), "The Expression and Purification of the Top3 Subunit of the STR Complex in Hi5 Cells Using SF/IMAC Chromatography and SDS-PAGE"
Status: *Completed.* (September, 2020 – May, 2021)

16) Hunter Collier (B.S., Biochemistry), "Purification of yeast RPA complex and analysis of its DNA binding activity"
Status: *Completed.* (December, 2020 – July, 2021)

17) Alicia Puig (B.S., Biology), "Functions of UAP56, ALYREF, and CHTOP on Aberrant R-loops Removal"
Status: *Completed.* (September, 2019 – September, 2020)

18) Michael Madrid (B.S., Biochemistry), "Developing a protocol for purifying DNA sensor AIM2 protein"
Status: *Completed.* (September, 2019 – May, 2020)

19) Adam Krull (B.S., Biochemistry), "Generating Mte1 mutants using quikchange mutagenesis"
Status: *Completed.* (September, 2019 – May, 2020)

20) Sierra Southwell (B.S., Biochemistry), "Constructing human AQR helicase mutants and purification of human UAP56 helicase"
Status: *Completed.* (September, 2018 – May, 2019)

21) Stephen So (B.S., Biochemistry), "Characterization of Esc2 and Ubc9 interaction using pull down assy"
Status: *Completed.* (September, 2018 – August, 2019)

22) Andrea Garcia (B.S., Biochemistry), "Expression and Purification of human DNA sensor AIM2 protein"
Status: *Completed.* (September, 2018 – May, 2019)

23) Haley Perry (B.S., Biochemistry), "Expression and Purification of human DNA sensor AIM2 protein"
Status: *Completed.* (September, 2018 – May, 2019)

24) Sam Lindsey (B.S., Biology), "Functions of ZGRF1 in Homologous Recombination" (Dr. Xue served as Capstone Mentor)
Status: *Completed.* (September, 2020 – May, 2021)

25) Samantha Lopez (B.S., Engineering),
Status: *Completed.* (December, 2020 – February, 2021)

26) Cillian Wing (B.S., Biochemistry)
Status: *Completed.* (December, 2020 – May, 2021)

27) Emily Bagwell (B.S., Biochemistry)
Status: *Completed.* (July, 2019 – August, 2019)

C. Student Accomplishments

1. Awards: (Texas State, 5)

1) Kiana Holland (B.S. Biochemistry and U-RISE Scholar). **1st** Place oral presentation, Molecular Biology 5 Division, UT-Austin Fall Undergraduate Research Symposium (UT-FURS), UT-Austin. (Sep 24, 2022).
Presentation title: Regulation of Mms21 SUMO E3 ligase activity by components of the Smc5/6 complex
Role: *mentor/supervisor*

2) Jesse Durham (M.S. Biochemistry). **1st** place Research Poster Award, Women in Science and Engineering (WISE) Conference, Texas State University. (March 6, 2020)
Poster title: Biological role of Mte1 in Homologous Recombination
Role: *mentor/supervisor*

3) Jesse Durham (M.S. Biochemistry). 2020 Excellence in Laboratory Research Award, Department of Chemistry and Biochemistry, Texas State University. (November, 2020)
Role: *mentor/supervisor*

4) Alicia Puig (B.S. Biology). Undergraduate Research Funding (URF), $1000, Texas State University. (November 1, 2019)
Proposal title: Functions of UAP56, ALYREF, and CHTOP on Aberrant R-loops Removal
Role: *mentor/supervisor*

5) Adam Krull (B.S. Biochemistry). Outstanding Undergraduate Research Student, Department of Chemistry and Biochemistry, Texas State University. (May, 2020)
Role: *mentor/supervisor*

2. Refereed journal article: 4 Texas State students authored on 3 articles.

3. Refereed conference proceeding: 1 Texas State students authored on 1 proceeding

4. Poster and oral presentations: 8 Texas State students presented 9 posters and 2 oral presentations

II. RESEARCH

A. Publications

1. Refereed journal articles:
(, corresponding author; #, Texas State students and staff)**

a) published (*, published while at Texas State 9; total citations: 2287; h-index: 20; i10-index: 22)

*1) Marchena-Cruz, E., Camino, L. P., Bhandari, J. #, Silva, S., Marqueta-Gracia, J. J., Amdeen, S. A. #, Guillén-Mendoza, C., García-Rubio, M. L., Calderón-Montaño, J. M., **Xue, X.**, Luna, R.*, and Aguilera, A*. DDX47, MeCP2 and other functionally heterogeneous factors protect cells from harmful R-loops. ***Cell Rep***. (in press).
Impact factor: 9.995

*2) Li, S., Mutchler, A. # **(co-first author)**, Zhu, X. #, So, S. #, Epps, J. #, Guan, D., Zhao, X.**, and **Xue, X**** (**co-corresponding author**). Multifaceted regulation of the sumoylation of the Sgs1 DNA helicase. ***J Biol Chem***. 2022, 298(7): 102092.
Impact factor: 5.486

*3) Li, S., Bonner, J. N., Wan, B., So, S. #, Mutchler, A. #, Gonzalez, L. #, **Xue, X.****, and Zhao, X.** (**co-corresponding author**). Esc2 orchestrates substrate-specific sumoylation by acting as a SUMO E2 cofactor in genome maintenance. ***Genes Dev.*** 2021, 35(3-4): 261-272.
Impact factor: 12.89

*4) Lisby, M. ** and **Xue, X.**** (**co-corresponding author and Lead Contact**). Protocol for purification of human ZGRF1 and its regulatory function on RAD51-mediated D-loop formation. ***STAR Protoc.*** 2020, 1(2): 100099.
Impact factor: 1.344

*5) Brannvoll, A., **Xue, X.** (**co-first author**), Kwon, Y., Kompocholi, S., Simonsen, A. K. W., Viswalingam, K. S., Gonzalez, L. #, Hickson, I. D., Oestergaard, V. H., Mankouri, H. W., Sung, P., and Lisby, M. The ZGRF1 helicase promotes recombinational repair of replication-blocking DNA damage in human cells. ***Cell Rep.*** 2020, 32(1): 107849.
Impact factor: 9.995

*6) Pérez-Calero, C., Bayona-Feliu, A., **Xue, X.**, Barroso, S. I., Muñoz, S., González-Basallote, V. M., Sung, P., and Aguilera, A. UAP56/DDX39B is a major cotranscriptional RNA-DNA helicase that unwinds harmful R loops genome-wide. ***Genes Dev.*** 2020, 34(13-14): 898-912.
Impact factor: 12.89

*7) Daley, J. M., Tomimatsu, N., Hooks, G., Wang, W., Miller, A. S., **Xue, X.**, Nguyen, K. A., Kaur, H., Williamson, E., Mukherjee, B., Hromas, R., Burma, S., and Sung, P. Specificity of end resection pathways for double-strand break regions containing ribonucleotides and base lesions. ***Nat Commun.*** 2020, 11(1): 3088.
Impact factor: 17.69

*8) Jiang, H., **Xue, X.**, Panda, S., Kawale, A., Hooy, R. M., Liang, F., Sohn, J., Sung, P., and Gekara, N. O. Chromatin-bound cGAS is an inhibitor of DNA repair and hence accelerates genome destabilization and cell death. ***EMBO J.*** 2019, 38(21): e102718.
Impact factor: 13.78

*9) Xue, C., Daley, J. M., **Xue, X.**, Steinfeld, J., Kwon, Y., Sung, P., and Greene, E. C. Single-molecule visualization of human BLM helicase as it acts upon double- and single-stranded DNA substrates. ***Nucleic Acids Res.*** 2019, 47(21):11225-11237.
Impact factor: 19.16

10) Wang, W., Daley, J. M., Kwon, Y., **Xue, X.**, Krasner, D., Miller, A. S., Nguyen, K., Williamson, E., Shim, E., Lee, S., Hromas, R., and Sung, P. A DNA nick at Ku-blocked double-strand break ends serves as an entry site for exonuclease 1 (Exo1) or Sgs1-Dna2 in long-range DNA end resection. ***J Biol. Chem.*** 2018, 293(44): 17061-17069.
Impact factor: 5.486

11) Li, T., Zhao, Q., Yang, X., Chen, C., Yang, K., Wu, C., Zhang, T., Duan, Y., **Xue, X.**, Mi, K., Ji, X., Wang, Z., and Yang, H. Structural insight into the Zika virus capsid encapsulating the viral genome. ***Cell Res.*** 2018, 28(4): 497-499.
Impact factor: 46.3

12) Daley, J. M., Jimenez-Sainz, J., Wang, W., Miller, A. S., **Xue, X.**, Nguyen, K. A., Jensen, R. B., and Sung, P. Enhancement of BLM-DNA2-Mediated Long-Range DNA End Resection by CtIP. ***Cell Rep.*** 2017, 21(2): 324-332.
Impact factor: 9.995

13) Miller, A. S., Daley, J. M., Pham, N. T., Niu, H., **Xue, X.**, Ira, G., and Sung, P. A novel role of the Dna2 translocase function in DNA break resection. ***Genes Dev.*** 2017, 31(5): 503-510.
Impact factor: 12.89

14) **Xue, X.**, Papusha, A., Choi, K., Bonner, J. N., Niu, H., Kaur, H., Zheng, X. F., Donnianni, R., Lu, L., Lichten, M., Zhao, X., Ira, G., and Sung, P. Differential regulation

of the anti-crossover and replication fork regression activities of Mph1 by Mte1. ***Genes Dev.*** 2016, 30(6): 687-699.
Impact factor: 12.89

15) Bonner, J. N., Choi, K., **Xue, X.**, Torres, N., Szaka, B., Wei, L., Wan, B., Arter, M., Matos, J., Sung, P., Brown, G., Branzei, D., and Zhao, X. Smc5/6 Mediated Sumoylation of the Sgs1-Top3-Rmi1 Complex Promotes Removal of Recombination Intermediates. ***Cell Rep.*** 2016, 16(2): 368-378.
Impact factor: 9.995

16) **Xue, X.**, Sung, P. and Zhao, X. Functions and regulation of multi-tasking FANCM family of DNA motor proteins (invited review). ***Genes Dev.*** 2015, 29(17): 1777-1788.
Impact factor: 12.89

17) **Xue, X.,** Choi, K., Bonner, J. N., Szakal, B., Papusha, A., Saro, D., Niu, H., Ira, G., Branzei, D., Sung, P., and Zhao, X. Selective modulation of the functions of a conserved DNA motor by a histone-fold complex. ***Genes Dev.*** 2015, 29(10): 1000-1005.
Impact factor: 12.89

18) **Xue, X.,** Choi, K., Bonner, J. N., Chiba, T., Kwon, Y., Xu, Y., Sanchez, H., Wyman, C., Niu, H., Zhao, X., and Sung, P. Restriction of Replication Fork Regression Activities by a Conserved SMC Complex. ***Mol Cell***. 2014, 56(3): 436-445.
Impact factor: 19.33

19) Zhao, Q., **Xue, X. (co-first authors)**, Longerich, S., Sung, P., and Xiong, Y. Structural Insights into 5' Flap DNA Unwinding and Incision by the Human FAN1 Dimer. ***Nat Commun***. 2014, 5:5726.
Impact factor: 17.69

20) Daley, J. M., Chiba, T., **Xue, X.**, Niu, H., and Sung, P. Multifaceted role of the Topo IIIα-RMI1-RMI2 complex and DNA2 in the BLM-dependent pathway of DNA break end resection. ***Nucleic Acids Res***. 2014, 42(17): 11083-91.
Impact factor: 19.16

21) **Xue, X.,** Raynard, S., Busygina, V., Singh, A. K., and Sung, P. Role of Replication Protein A in Double Holliday Junction Dissolution Mediated by the BLM-Topo IIIα-RMI1-RMI2 Protein Complex. ***J Biol. Chem***. 2013, 288(20): 14221-7.
Impact factor: 5.486

22) Tsai, S. P., Su, G. C., Lin, S. W., Chung, C. I., **Xue, X.**, Dunlop, M. H., Akamatsu, Y., Jasin, M., Sung, P., and Chi, P. Rad51 presynaptic filament stabilization function of the mouse Swi5-Sfr1 heterodimeric complex. ***Nucleic Acids Res***. 2012, 40(14): 6558-69.
Impact factor: 19.16

23) Daee, D. L., Ferrari, E., Longerich, S., Zheng, X. F., **Xue, X.**, Branzei, D., Sung, P., and Myung, K. Rad5-dependent DNA repair functions of the Saccharomyces cerevisiae FANCM protein homolog Mph1. ***J Biol. Chem***. 2012, 287(32): 26563-75.
Impact factor: 5.486

24) Hohl, M., Kwon, Y., Galván, S. M., **Xue, X.**, Tous, C., Aguilera, A., Sung, P., and Petrini, J. H. J. The Rad50 coiled-coil domain is indispensable for Mre11 complex functions. ***Nat Struct Mol Biol***. 2011, 18(10): 1124-31.
Impact factor: 18.36

25) **Xue, X.**, Yu, H., Yang, H., Xue, F., Wu, Z., Shen, W., Li, J., Zhou, Z., Ding, Y., Zhao, Q., Zhang, X. C., Liao, M., Bartlam, M., and Rao, Z. Structures of Two Coronavirus Main Proteases: Implications for the Substrate Binding and Anti-viral Drug Design. ***J Virol***. 2008, 82(5): 2515-27
Impact factor: 6.208; citation: 402

26) Bartlam, M., **Xue, X.** and Rao, Z. The search for a structural basis for therapeutic intervention against the SARS coronavirus (review). ***Acta Crystallographica Section A***. 2008, 64(Pt 1): 204-13.
Impact factor: 2.331

27) **Xue, X.**, Yang, H., Shen, W., Zhao, Q., Li, J., Yang, K., Chen, C., Jin, Y., Bartlam, M., and Rao, Z. Production of authentic SARS-CoV M(pro) with enhanced activity: application as a novel tag-cleavage endopeptidase for protein overproduction. ***J Mol. Biol***. 2007, 366 (3): 965-75.
Impact factor: 5.469; citation: 200

28) Liang, W., Yang, H., **Xue, X.**, Huang, Q., Bartlam, M., and Chen, S. Expression, crystallization and preliminary X-ray studies of the immunoglobulin-like domain 3 of human paladin. ***Acta Crystallogr Sect F Struct Biol Cryst Commun***. 2006, 62 (6): 556-58
Impact factor: 1.056

29) Yang, H., Xie, W., **Xue, X.**, Yang, K., Ma, J., Liang, W., Zhao, Q., Zhou, Z., Pei, D., Ziebuhr, J., Hilgenfeld, R., Yuen, K. Y., Wong, L., Gao, G., Chen, S., Chen, Z., Ma, D., Bartlam, M., and Rao, Z. Design of wide-spectrum inhibitors targeting coronavirus main proteases. ***PLoS Biol***. 2005, 3 (10): e324.
Impact factor: 9.593; citation: 654

30) Wu, D., Yang, H., and **Xue, X.**, Liang, W., Miao, X., Chen, S., and Pang, H. Oligomerization study of NHR3 and NHR4 domains from ETO protein involved in t(8;21)-associated acute myeloid leukemia. ***Chinese Science Bulletin***. 2005, 50 (9): 875-9.

31) Yang, H., Wu, D., **Xue, X.**, Liang, W., Miao, X., Pang, H., and Chen, S. Cloning, expression, purification and crystallization of NHR3 domain from acute myelogenous

leukemia-related protein AML1-ETO. ***Acta Biochim Biophys Sin (Shanghai)***. 2004, 36 (8): 566-70
Impact factor: 3.848

b) Submitted or in preparation:

*1) Chakraborty, A., Dutta, A., Dettori, L., Gonzalez, L#., **Xue, X.**, Hehnly, H., Sung, P., Bah, A., and Feng, W. FMRP bridges R-loops and DHX9 through direct interactions. ***BioRxiv***, 2021, doi: https://doi.org/10.1101/2021.04.21.440759

*2) Bhandari, J. #, Banks, K. #, Southwell, S. #, Zhu, X. #, Andres, Aguilera., and **Xue, X****. ALY promotes the R-loop resolution function of UAP56 helicase. (in preparation)

2 Refereed conference proceedings:
(#, Texas State students; *, published while at Texas State)

*1) Durham, J #. Function of Mte1/ZGRF1 in homologous recombination. *FASEB J*, 34(No.1 Suppl). (April, 2020). https://doi.org/10.1096/fasebj.2020.34.s1.09324. (Durham, J was a graduate student under my supervision)

2) Daley, J. M., **Xue, X.**, Chiba, T., Sung, P. Stimulation of the BLM-hDNA2 pathway of DNA double-strand break end resection by TopoIIIα/RMI1/RMI2. *FASEB J*, 27 (No.1 Suppl). (April, 2013). https://doi.org/10.1096/fasebj.27.1_supplement.760.1.

B. Invited Talks, Lectures, and Presentations:
(*, activities while at Texas State University)

***1) Xue, X.** *Multi-faceted regulation of the sumoylation of the Sgs1 DNA helicase in genome maintenance*. **6th International Conference on Nucleic Acids: Research and Therapeutics**, virtually, Jan 27, 2023.

***2) Xue, X.** *The Functions and Regulation of DNA/RNA helicases in DNA damage repair and genome maintenance*. **Clemson University**, Clemson, SC, Feb 3, 2023.

***3) Xue, X.** *The Functions and Regulation of DNA/RNA helicases in DNA damage repair and genome maintenance*. **Purdue University**, West Lafayette, IN, Feb 15, 2023.

***4) Xue, X.** *The Functions and Regulation of DNA/RNA helicases in DNA damage repair and genome maintenance*. **Texas State University**, San Marcos, TX, Mar 20, 2023.

***5) Xue, X.** Career Development Workshop: introduction of career experience and Texas State University to Ph.D. candidates. **FASEB - The Genetic Recombination and Genome Rearrangements Conference,** Steamboat Springs, CO, August 14-19, 2022.

*6) **Xue, X.** *Mechanisms of ZGRF1 in Replication-Blocking DNA Damage Repair and Homologous Recombination*. **UT Health San Antonio**, San Antonio, TX, Dec 13, 2021.

*7) **Xue, X.** *Mechanisms of ZGRF1/Mte1 in Replication-Blocking DNA Damage Repair and Homologous Recombination*. **Cleveland State University**, Cleveland, OH, Mar 26, 2021.

*8) **Xue, X. Annual Experimental Biology meeting (2020)**. §The meeting was cancelled due to the Covid-19 pandemic.

*9) **Xue, X. Texas Conference on Genome Repair (2020)**. §The meeting was cancelled and due to the Covid-19 pandemic.

*10) **Xue, X.** *Mechanisms of DNA/RNA motor proteins in genome maintenance and cancer avoidance*. **Texas State University**, San Marcos, TX, Feb 5, 2018.

11) **Xue, X.** *Mechanisms of DNA/RNA motor proteins in genome maintenance and cancer avoidance*. **University of Toledo**, Toledo, OH, Jan 17, 2018.

12) **Xue, X.** *Mechanisms of DNA/RNA motor proteins in genome maintenance and cancer avoidance.* **University of New Mexico**, Albuquerque, NM, Jan 18, 2017.

13) **Xue, X.** *Mechanisms of DNA/RNA motor proteins in genome maintenance and cancer avoidance.* The **University of Texas Medical Branch**, Galveston, TX, Jan 31, 2017.

14) **Xue, X.** *Mechanisms of DNA/RNA motor proteins in genome maintenance and cancer avoidance*. **SUNY Upstate Medical University**, Syracuse, NY, Feb 12, 2018.

15) **Xue, X.** *Mechanisms of DNA/RNA motor proteins in genome maintenance and cancer prevention*. **University of South Florida**, Tampa, FL, Feb 27, 2018.

16) **Xue, X.** *Functions and Regulation of the FANCM Family DNA Motor Proteins in DNA Repair*. **Symposium on Directions in Modern Health Science** at Tianjin University, Tianjin, China, November 22-25, 2015.

17) **Xue, X.** *Design of Wide-Spectrum Inhibitors Targeting Coronavirus Main Proteases*. **International Workshop on Discovery of Antiviral Compounds** in Lubeck, Germany. April 26-29, 2006.

C. Poster and oral presentations:
(#, Texas State students and staff; *, activities while at Texas State; presenter underlined)

*1) Li, S., Mutchler, A. #, Zhu, X. #, So, S. #, Epps, J. #, Guan, D., Zhao, X., and **Xue, X.**. *Multi-faceted regulation of the sumoylation of the Sgs1 DNA helicase in genome*

maintenance. **FASEB - The Genetic Recombination and Genome Rearrangements Conference**, Steamboat Springs, CO, Aug 14-19, 2022. (Poster)

*2) **Xue, X.**, Brannvoll, A., Sung, P., and Lisby, M. *Functions of the human ZGRF1 helicase in the repair of replication-blocking damage*. **Texas Conference on Genome Repair 2022**, San Antonio, TX, Oct 2-4, 2022. (Poster)

*3) **Xue, X.**, Bhandari, J. #, Banks, K. #, and Aguilera, A. *Roles of the human UAP56 helicase in R-loop resolution and genome maintenance*. **Health Scholar Showcase 2022**, Texas State University, San Marcos, TX, Apr 8, 2022. (Poster)

*4) Holland, K. #, Zhu, X. #, **Xue, X**. *Purifying Smc5/6 subunits and mutants to further investigate its SUMO E3 function*. **REU Summer Research Symposium**, Texas State University, San Marcos, TX, Aug 4, 2022. (Poster)

*5) Holland, K. #, Zhu, X. #, **Xue, X**. *Regulation of Mms21 SUMO E3 ligase activity by components of the Smc5/6 complex*. **UT-Austin Fall Undergraduate Research Symposium (UT-FURS)**, UT-Austin, Austin, TX, Sep 24, 2022. (Oral presentation, Holland won 1st place in her session)

*6) Holland, K. #, Zhu, X. #, **Xue, X**. *Regulation of Mms21 SUMO E3 ligase activity by components of the Smc5/6 complex*. **ABRCMS 2022**, Anaheim, CA, Nov 9-12, 2022. (Poster)

*7) Holland, K. #, Zhu, X. #, **Xue, X**. *Regulation of Mms21 SUMO E3 ligase activity by components of the Smc5/6 complex*. **Dean's Advisory Council Meeting**, Texas State University, San Marcos, TX, Dec 02, 2022. (Oral presentation)

*8) Andabati-Eyaa, D. #, Zhu, X. #, **Xue, X**. *Mechanisms of Human ZGRF1 Helicase in R-Loop Resolution*. **ABRCMS 2022**, Anaheim, CA, Nov 9-12, 2022. (Poster)

*9) Amdeen, S. #, Aguilera, A., **Xue, X**. *Roles of human DDX47 helicase in R-loop resolution*. **ABRCMS 2022**, Anaheim, CA, Nov 9-12, 2022. (Poster)

*10) **Xue, X.**, *Functions of the human ZGRF1 helicase in DNA damage repair.* **2021 Virtual Health Scholar Showcase**, Texas State Univeristy, San Marcos, TX, Apr 12-16, 2021. (Poster)

*11) Durham, J. #, **Xue, X.** *Biological role of Mte1 in Homologous Recombination.* **Women in Science and Engineering Conference**, San Marcos, TX, Mar 6, 2020. (Poster; Durham, J. won the **1st** place Research Poster)

*12) Durham, J. #, **Xue, X.** *Function of Mte1 on Rad51-made D-loop Formation*. **Annual Biomedical Research Conference for Minority Students (ABRCMS),** Virtual, Nov 9-13, 2020. (Poster)

*13) Durham, J. #, **Xue, X.** *Function of Mte1/ZGRF1 in Homologous Recombination.* **EB 2020**. §The meeting was cancelled due to the Covid-19 pandemic.

*14) Li, S., Bonner, J. N., So, S.[#], Gonzalez, L.[#], Sung, P, **Xue, X.**, and Zhao, X. *Esc2 serves as a DNA-structure specific SUMO E2 cofactor to promote genome maintenance*. **FASEB: The Genetic Recombination and Genome Rearrangements Conference**, Steamboat Springs, Colorado, July 14-19, 2019. (Poster)

15) **Xue, X**. *Regulation of Mph1's replication fork regression activities by Smc5-Smc6 complex*. **FASEB: The Genetic Recombination and Genome Rearrangements Conference**, Steamboat Springs, Colorado, Jul 2015. (Poster)

16) **Xue, X**. *Restriction of replication fork regression activities by a conserved SMC complex.* **Yale Molecular Biophysics and Biochemistry Department Retreat**, New Haven, CT, Oct 2014. (Poster)

17) **Xue, X**. *Role of replication protein A in double holliday junction dissolution mediated by the BLM-Topo IIIa-RMI1-RMI2 protein complex*. **Yale Molecular Biophysics and Biochemistry Department Retreat**, New Haven, CT, Oct 2013. (Poster)

18) **Xue, X**. *Functional insights into the Smc5/6 complex in Homologous Recombination.* **Yale Molecular Biophysics and Biochemistry Department Retreat**, New Haven, CT, Oct 2011. (Poster)

D. Patents:

1) Rao, Z., Yang, H., **Xue, X.**, Yang, K., Bartlam, M., Ma, D., Xie, W. *Preparation and application of inhibitors targeting the main proteases of Coronaviruses.* Patent registration number (China): 200410087721.7. Date of registration: Oct 22nd, 2004.

E. Honors and Awards:

(*, awards while at Texas State University)

*2022	College Achievement Award for Excellence in Scholarly/Creative Activities. College of Science and Engineering, Texas State University.
*2022	Nomination of International Young Scientist Awards.
*2021	Presidential Distinction Award for Excellence in Scholarly/Creative Activities. College of Science and Engineering, Texas State University.
2015	Admitted for permanent residence in the United States
2007	Awards of the 10th Challenge Cup (Grade 3), China
2006-2007	Hongkong Hengtai Scholarship (Grade 1) of Tsinghua University, China
2005	Innovation awards of the 23rd Innovation Contest of Tsinghua University, China
2005	Second-class awards of the 23rd Innovation Contest of Tsinghua University, China

F. Grants:

1. Funded External Grants:
(*, secured while at Texas State University, $808,403.29 total to Texas State University)

*1) **Xue, X (PI)**
Title: Roles of the human UAP56 helicase in co-transcriptional R-loop resolution and genome maintenance
Agency: NIH-NIGMS
Type of grant: R15-AREA
Amount: $300,000 direct / $436,350 total
Duration: 9/1/2020 - 8/31/2023

*2) **Xue, X (PI)**
Title: Functions of the DNA/RNA motor protein AQR in R-loop resolution
Agency: NIH-NIEHS
Type of grant: R21
Amount: $275,000 direct / $423,725 total
Duration: 12/15/2017 - 11/30/2020
$344,377.89 Transferred to Texas State University

*3) Sung, P (PI), **Xue, X (Co-investigator)**
Title: Roles of the nucleic acid motor protein ZGRF1 in chromosome damage repair
Agency: NIH-NIEHS
Type of grant: R21
Amount: $275,000 direct, $27,675.4 direct to Xue lab.
Duration: 08/15/2018 - 07/31/2020

*4) Lewis, K. A. (PI), Kerwin, S. (Co-PI), Whitten, S. (Co-PI), Kornienko, A. (Supporting), Peterson, R. (Supporting), **Xue, X. (Supporting)**
Title: MRI: Acquisition of Automated Isothermal Titration Calorimeter for Biophysical Research at Texas State University
Agency: NSF
Type of grant: MRI
Duration: 8/1/2022 - 7/31/2025

2. Funded Internal Grants:
(*, secured while at Texas State University, 3)

*1) **Xue, X (PI)**
Title: Functions of the Human ZGRF1 Helicase in DNA Damage Repair
Agency: Texas State University
Type of grant: Health Scholar Showcase 2021 Award
Amount: $5,000
Duration: 5/5/2021 - 12/31/2021

*2) **Xue, X (PI)**, Lewis, Karen (Co-PI)
Title: Roles of the Human TREX Complex Component UAP56 in R-loop Processing
Agency: Texas State University
Type of grant: Research Enhancement Program (REP)
Amount: $16,000 direct, 50% contribution
Duration: 1/1/2019 - 12/31/2020

*3) Puig, A (Principle), **Xue, X (Supporting)**
Title: Functions of UAP56, ALYREF, and CHTOP on Aberrant R-loops Removal
Agency: Texas State University
Type of grant: Undergraduate Research Funding (URF)
Amount: $1,000 direct to Xue lab
Duration: 11/1/2019 - 8/31/2020

3. Submitted, but not funded External Grants:
(*, Submitted while at Texas State, 6)

*1) **Xue, X (PI)**
Title: CAREER: Roles of DNA/RNA helicases in R-loop resolution and chromosome damage repair.
Agency: NSF
Type of grant: NSF CAREER
Amount: $775,995
Submission Date: 7/19/2022
Status: Not funded.

*2) **Xue, X (PI)**
Title: Role of human DNA/RNA helicase ZGRF1 in R-loop resolution and DNA damage repair.
Agency: The Camille & Henry Dreyfus Foundation
Type of grant: Henry Dreyfus Teacher-Scholar Awards
Amount: $75,000
Submission Date: 7/21/2022
Status: Not funded

*3) **Xue, X (PI)**
Title: Biochemical characterization of SUMOylation of a Holliday junction dissolution complex in genome maintenance
Agency: Research Corporation for Science Advancement
Type of grant: Cottrell Scholar Award
Amount: $100,000 direct cost
Submission Date: 6/21/2021
Status: Not funded.

*4) **Xue, X (PI)**

Title: Roles of the human UAP56 helicase in co-transcriptional R-loop resolution and genome maintenance
Agency: Cancer Prevention & Research Institute of Texas (CPRIT)
Type of grant: CPRIT High-Impact/High-Risk Research Awards
Amount: $250,000 direct cost
Submission Date: 1/2020
Status: Not funded.

*5) **Xue, X (PI)**
Title: Roles of the Human TREX Complex Component UAP56 in R-Loop Resolution and Genome Maintenance
Agency: Cancer Prevention & Research Institute of Texas (CPRIT)
Type of grant: CPRIT High-Impact/High-Risk Research Awards
Amount: $200,000 direct cost
Submission Date: 1/2019
Status: Not funded.

*6) **Xue, X (PI)**
Title: Recruitment of First-Time Tenure-Track Faculty Members
Agency: Cancer Prevention & Research Institute of Texas (CPRIT)
Type of grant: Recruitment of First-Time Tenure-Track Faculty Members
Amount: $1,750,000 direct cost
Submission Date: 3/2018
Status: Not funded.

7) **Xue, X (PI)**
Title: Roles of conserved nucleic acid motor ensembles in chromosome damage repair and disease avoidance
Agency: NIH
Type of grant: KL2 Mentored Career Development Award
Amount: 75% salary support on salaries (up to $120,000 inclusive of fringe), $35,000 in research funds, $2,000 travel funds a year
Submission Date: 1/2017
Status: Not funded.

8) **Xue, X (PI)**
Title: Functions of the DNA/RNA motor protein AQR in R-loop resolution
Agency: NIH-NIEHS
Type of grant: R21
Amount: $275,000 direct cost
Submission Date: 6/1/2016
Status: Not funded.

4. Submitted, but not funded Internal Grants:
(*, Submitted while at Texas State, 2)

*1) **Xue, X (PI)**
Title: Molecular mechanism of Esc2 in sumoylation of Sgs1-Top3-Rmi1 in genome maintenance
Agency: Texas State University
Type of grant: Research Enhancement Program (REP)
Amount: $8,000 direct
Submission Date: 10/2020
Status: Not funded.

*2) **Xue, X (PI)**
Title: Biochemical Characterization of SUMOylation of a Holliday Junction Dissolution Complex in Genome Maintenance
Agency: Texas State University
Type of grant: Research Enhancement Program (REP)
Amount: $8,000 direct
Submission Date: 10/2021
Status: Not funded.

III. SERVICE

A. Institutional (Texas State)

1. University:

1) The Outstanding Master's Thesis Award Selection Committee, The Graduate College (2019)
2) Faculty respondents and Poster Judge, International Research Conference for Graduate Students, Texas State University (2022)

2. Department/School:

1) Biochemistry Curriculum Committee (2018 -present)
2) Graduate Biochemistry Curriculum Committee (2018 - present)
3) Ad Hoc Committee on Development of PhD Program (2019 - present)
4) Equipment Committee (2021 - present)
5) MSEC Admissions Committee (2021 - present)

6) Program Coordinator/Exam Administrator of ASBMB 2023 Certification Exam (2023 - present)

B. Professional (*, activities while at Texas State)

1. Conference organization:

*1) Co-Chair and discussion leader, the Recombination Variations & Telomeres Session, FASEB - The Genetic Recombination and Genome Rearrangements Conference, Steamboat Springs, CO. (August 14-19, 2022)

*2) Panel participants, Career Development Workshop, FASEB - The Genetic Recombination and Genome Rearrangements Conference, Steamboat Springs, CO. (August 14-19, 2022)

2. Grant reviewer:

*1) Medical Research Council (MRC), United Kingdom Research and Innovation (UKRI), online. (June 2020)

*2) Medical Research Council (MRC), United Kingdom Research and Innovation (UKRI), online. (July 2019)

3. Journal article reviewer: (9 journals, 11 reviews, 5 reviews while at Texas State)

*1) Computational and Structural Biotechnology Journal (IF 7.271). (Feb 2022)

*2) Clinical and Translational Medicine (IF 11.492). (Jan 2022)

*3) STAR Protocols (IF n/a). (Oct 2020, Nov 2022)

*4) Genes (IF 3.688). (Nov 2018)

5) Protein & Cell (IF 14.87). (2015)

6) Journal of Biomedical Science (IF 5.762). (2014, 2015)

7) Bioprocess and Biosystems Engineering (IF 3.21). (2014)

8) Chemical Research in Chinese Universities (IF 1.16). (2014)

9) Life Science Research (IF n/a). (2014)

4. Journal editor or editorial board:

*1) Frontiers in Molecular Biosciences (IF 4.615), co-editor (2021)

*2) International Journal of Bioorganic Chemistry & Molecular Biology (IJBCMB), editorial board. (2013-present)