**Daniel L. Kober**

Assistant Professor

W.W. Caruth, Jr. Scholar in Biomedical Research

Department of Biochemistry

UT Southwestern Medical Center

<https://labs.utsouthwestern.edu/kober-lab>

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**Positions**

* Assistant Professor, Department of Biochemistry 2022-present
* University of Texas Southwestern Medical Center
* Postdoctoral Fellow, Labs of Dan Rosenbaum and Arun Radhakrishnan2017-2022
* University of Texas Southwestern Medical Center

**Education**

* **Washington University in St. Louis** May 2017
* Ph.D. in Biomedical Sciences GPA: 3.81
* Thesis: Structural, Biophysical, and Functional Studies of TREM2 In Neurodegenerative Disease
* Mentor: Tom Brett
* **Evangel University** May 2012
* B.S. in Biology and Chemistry awarded *Summa Cum Laude* GPA: 3.96

**Awards and Honors**

* **Postdoctoral**
* NIGMS K99/R00 Pathway to Independence Award 2021-present
* American Heart Association Post-Doctoral Fellowship 2018-2020
* Helmsley Scholarship to attend the Cryo-EM course at Cold Spring Harbor 2018
* **Graduate**
* American Heart Association Pre-Doctoral Fellowship 2017
* American Heart Association Pre-Doctoral Fellowship 2015-2017
* Cell Molecular Biology Training Grant 2012-2014
* NSF-GRF Fellowship Honorable Mention 2014
* **Undergraduate**
* Outstanding graduate in Chemistry 2012
* Endowed Scholarship, Science and Technology 2009-2012
* Founder’s Scholarship, Half Tuition Award 2008-2012
* Dean’s list, Evangel University 2008-2012

**Current Research Support**

* **I-2246-20250403 (Welch Foundation)** 2025-2028
* Characterizing lipid-regulated ubiquitination
* **R01GM155152 (NIH)** 2024-2029
* Structural and mechanistic basis for the maturation of site-one protease in the secretory pathway
* **R00GM141261 (NIH)** 2023-2026
* The mechanistic basis for targeted protein degradation in lipid metabolism
* **UT Southwestern Endowed Scholars Program** 2022

**Previous Research Support**

* UT Science and Technology Acquisition and Retention Program (STARS) Award 2022
* American Heart Association (18POST34080141) 2018-2020
* Structural and biophysical investigation of Scap-SREBP activation
* American Heart Association (17PRE32780001) 2017
* Structural, biophysical, and functional investigation of TREM2 interaction with ligands
* American Heart Association (15PRE22110004) 2015-2017
* Structural and functional consequences of TREM-2 mutants linked to neuroinflammation

**Teaching and Service**

* **Mentor Training**
  + UTSW Research Mentor Training Program Fall 2024
    - Four hour structured in-person training program
* **Teaching**
* Biological Chemistry Journal Club Spring 2025
* Grant writing course discussion group, Biological Chemistry program Fall 2024
* Macromolecules and Metabolism: Fatty acid synthesis and oxidation Fall 2024-2025
* Core Course Discussion Leader, Proteins Module 2023 - 2024
* Core Course Discussion Leader, Cell Biology Module 2022 - 2023
* Discussion group leader, Responsible Conduct of Research Spring 2023
* Enzymes & Disease Course: Lipid Metabolism and Disease 2023 - 2025
* **Graduate Programs**
* Core course curriculum committee 2024-present
* Thesis Committee Member: Louis Walton, MSTP 2024-present
  + Qualifying Exam Chair, Biological Chemistry Program (5 exams) 2023-2025
  + Qualifying Exam Committee Member, Biological Chemistry Program (1 exam) Spring 2025
  + Qualifying Exam Committee Member, Molecular Biophysics Program (1 exam) Spring 2024
  + Graduate School Awards Committee, Molecular Biophysics Representative Fall 2023-26
  + Graduate Admissions Committee, Biological Chemistry Representative Fall 2023-26
* **Other Service**
  + NIH Early Career Reviewer Program Spring 2024
  + Faculty Search Committee, Dept of Biochemistry 2023-2025
  + Hosted Conrad Leadership Program undergraduate intern Summer 2023
  + Hosted STARS High School intern Summer 2023
  + Hosted NIH-funded PB2PHD Postbac students
    - Ashley Bullington 2024-2025
    - Ysidro Motto Summer 2023
  + Biochemistry Science and Society Committee 2023-present
* **Peer Review**
* Early Career Reviewer, Journal of Biological Chemistry
* Reviewed for: Science, eLife, Nature Cell Biology, Scientific Reports, Journal of Cell Biology, Biophysical Journal, Integrative Biology, Archives of Biochemistry and Biophysics, Frontiers in Bioengineering and Biotechnology, Frontiers in Pharmacology, and Frontiers in Immunology

**Manuscripts as corresponding author**

4. *Structural basis for substrate selectivity by site-one protease revealed by studies with a small-molecule inhibitor*. Bullington AV, Micallo I, Bajaj B, Kumar P, Schlamowitz N, Silva A, Hendrix S, Zelcer N\*, and **Kober DL**\*. **Proceedings of the National Academy of Sciences** (2025) PMID: 40299693.

\* co-corresponding authors

3. *Structures of the multi-domain oxygen sensor DosP: remote control of a c-di-GMP phosphodiesterase by a regulatory PAS domain*. Wu W, Kumar K, Brautigam CA, Tso S-C, **Kober DL\***, and Gilles-Gonzalez MA\*. **Nature Communications** (2024). PMID: 39511182.

\* co-corresponding authors

2. *SPRING licenses S1P-mediated cleavage of SREBP2 by displacing an inhibitory pro-domain*.

Hendrix S, Dartigue V, Hall H, Bawaria S, Kingma J, Bajaj B, Zelcer N\*, and **Kober DL**\*. **Nature Communications** (2024). PMID: 38977690.

\* co-corresponding authors

1. *Development of a mutant aerosolized ACE2 that neutralizes SARS-CoV-2 in vivo*.

**Kober DL**\*, Van Dyke MCC, Eitson JL, Rosenbaum DM\*, and Schoggins JW\*

**mBio** (2024). PMID: 38771062.

\* co-corresponding authors

**Other manuscripts as faculty**

2. *Development of a monoclonal antibody for MARCH6, an E3 ligase that regulates proteins that control lipid homeostasis*. Xu S, Donnelly L, **Kober DL**, Mak M, and Radhakrishnan A. **Journal of Lipid Research**. (2024). PMID: 39306038.

1. *SPRING is a dedicated licensing factor for SREBP-specific activation by S1P*. Hendrix S, Tan JME, Ndoj K, Kingma J, Valiloo M, Zijlstra LF, Ottenhoff R, Seidah NG, Loregger A, **Kober DL**, and Zelcer N. **Molecular and Cellular Biology**. (2024). PMID: 38747374.

**Manuscripts prior to faculty position**

12. *Scap Structures Highlight Key Role for Rotation of Intertwined Luminal Loops in Cholesterol Sensing.*

**Kober DL**,Radhakrishnan A, Goldstein JL, Brown MS, Clark LD, Bai X-C, and Rosenbaum DM. **Cell**. (2021) PMID: 34139175.

11.*Identification of a degradation signal at the carboxy terminus of SREBP2: A new role for this domain in cholesterol homeostasis.*

**Kober DL\*,** Xu S\*, Li S, Bajaj B, Liang G, Rosenbaum DM, and Radhakrishnan A. **Proceedings of the National Academy of Sciences**. (2020) PMID: 33106423.

\*Contributed equally.

10. *Functional insights from biophysical study of TREM2 interactions with ApoE and Aβ1-42.*

**Kober DL**, Stuchell-Brereton SD, Kluender CE, Dean HB, Strickland MR, Steinberg DF, Nelson SS, Baban B, Holtzman DM, Frieden C, Alexander-Brett J, Roberson ED, Song Y, and Brett TJ. **Alzheimer’s & Dementia.** (2021) PMID: 33090700.

9.*YbtT is a low-specificity type II thioesterase that maintains production of the metallophore yersiniabactin in pathogenic enterobacteria.*

Ohlemacher SI, Xu Y, **Kober DL**, Malik M, Nix JC, Brett TJ, Henderson JP. **Journal of Biological Chemistry**. (2018) PMID: 30355735.

### 8. *Limiting Respiratory Viral Infection by Targeting Antiviral and Immunological Functions of BST-2/Tetherin: Knowledge and Gaps.*

### Berry KN, Kober DL, Su A, Brett TJ. Bioessays. (2018) PMID: 30113067.

7. *TREM2-ligand interactions in health and disease.*

**Kober DL** and Brett TJ. **Journal of Molecular Biology**. (2017) PMID: 28432014.

6.*Neurodegenerative disease mutations in TREM2 reveal a functional surface and distinct loss-of-function mechanisms.*

**Kober DL**, Alexander-Brett JM, Karch CM, Cruchaga C, Colonna M, Holtzman MJ, Brett TJ. **eLife** (2016) PMID: 27995897.

Highlighted:*Detailing the Molecular Roots of Alzheimer’s Disease*https://www.aps.anl.gov/APS-Science-Highlight/2016-12-21/detailing-the-molecular-roots-of-alzheimers-disease

5.*First comprehensive structural and biophysical analysis of MAPK13 inhibitors targeting DFG-in and DFG-out binding modes.*

Yurtsever Z, Patel DA, **Kober DL**, Su A, Miller CA, Romero AG, Holtzman MJ, Brett TJ. **Biochimica et Biophysica Acta** (2016) PMID: 27369736.

4.*Efficient Mammalian Cell Expression and Single-step Purification of Extracellular Glycoproteins for Crystallization.*

**Kober DL\***, Yurtsever Z\*, Brett TJ. **Journal of Visualized Experiments** (2015)

PMID: 26780656.

\*Contributed equally.

3. *TREM-2 promotes macrophage survival and lung disease after respiratory viral infection.*

Wu K, Byers DE, Jin X, Agapov E, Alexander-Brett JM, Patel AC, Cella M, Gilfilan S, Colonna M, **Kober DL,** Brett TJ, Holtzman MJ. **Journal of Experimental Medicine** (2015) PMID: 25897174.

2. *Preparation, crystallization, and preliminary crystallographic analysis of wild-type and mutant human TREM-2 ectodomains linked to neurodegenerative and inflammatory diseases.*

**Kober DL**, Wanhainen KM, Johnson BM, Randolph DT, Holtzman MJ, Brett TJ. **Protein Expression and Purification** (2014) PMID: 24508568.

1. *Microfibril-associated Glycoprotein 2 (MAGP2) Loss of Function Has Pleiotropic Effects in Vivo.*

Combs MD, Knutsen RH, Broekelmann TJ, Toennies HM, Brett TJ, Miller CA, **Kober DL**, Craft CS, Atkinson JJ, Shipley JM, Trask BC, Mecham RP. **Journal of Biological Chemistry** (2013) PMID: 23963447.

**Presentations**

14. SPRINGing off the lock: Activation and inhibition of site-one protease. **ASBMB Deuel Conference on Lipids**. Jan 2025, Long Beach CA.

13. Regulated maturation of secretory proteases. Jan 17th, 2025. **Department of Molecular Genetics Seminar Series**. UT Southwestern.

12. SPRINGing off the lock: activation of site-1 protease. May 13th, 2024. **Chemistry-Biology Interface 2024 Symposium.** University of Michigan.

11. SPRINGing off the lock: activation of site-1 protease. Jan 5th, 2024. **Department of Molecular Genetics Seminar Series**. UT Southwestern.

10. Structural and mechanistic basis for the maturation of Site-One Protease in the secretory pathway. **ASBMB Serine proteases in pericellular proteolysis and signaling**.Nov 2-3, 2023.

*\*Best flash talk award*

9. Protein turnover and lipid metabolism. **New Faculty Research Forum.** UT Southwestern. Oct 30th, 2023.

8. Visualizing a Membrane Sensor: Structural Basis for Cholesterol Regulation by Scap. **DFW Young Investigator’s Symposium.** February 2023. UT Arlington.

7. **Kober DL.** Xiaochen Bai,Arun Radhakrishnan, and Daniel M. Rosenbaum.*Structural basis of cholesterol regulation by Scap and Insig.* **The ASBMB Deuel Conference on Lipids**. March 2022. Monterey, CA. (Poster)

6. **Kober DL.** Xiaochen Bai,Arun Radhakrishnan, and Daniel M. Rosenbaum.Scap Structures Highlight Key Role for Rotation of Intertwined Luminal Loops in Cholesterol Sensing. **Three Dimensional Electron Microscopy Gordon Research Conference.** Oct 2021. Waterville Valley, NH. (Poster)

5. **Kober DL.** *Scap Structures Highlight Key Role for Rotation of Intertwined Luminal Loops in Cholesterol Sensing.* **Future Stars in CryoEM II**.June 16, 2021. Medical College of Wisconsin.

4. **Kober DL**, Shimeng Xu, Shili Li, Bilkish Bajaj, Guosheng Liang, Arun Radhakrishnan, and Daniel M. Rosenbaum.*Functional and biophysical investigation of the Scap-SREBP pathway.* **The ASBMB Deuel Conference on Lipids**. March 2020. Coronado, CA. (Poster)

3. **Kober DL**, Shimeng Xu, Shili Li, Lindsay Clark, Guosheng Liang, Arun Radhakrishnan, and Daniel M. Rosenbaum. *A molecular dissection of the interaction between SREBP2 and Scap*. **Gordon Research Conference Molecular Membrane Biology**. July 2019. Andover, NH. (Poster)

2. **Kober DL**, Alexander-Brett J, Cruchaga C, Colonna M, and Brett TJ. *Neurodegenerative disease mutations in TREM2 reveal a functional surface and two distinct loss-of-function mechanisms*. Poster Presentation, **Gordon Research Conference Neuroimmune Communication in Health & Disease**. January 2017. Ventura Beach, CA. (Poster)

1. **Kober DL**, Brett TJ: *Structural Studies of TREM-2 Mutants Linked to Neurodegenerative Diseases*. Acta Crystallographica Section A: Foundations and Advances 08/2014; 70(a1). DOI:10.1107/S2053273314097514. Abstract for poster presentation, **23rd conference, International Union of Crystallography**. September 2014. Montreal, Canada. (Poster)