

# Stanford

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## Ved Topkar

- MD Student, expected graduation Spring 2024
- Ph.D. Student in Biophysics, admitted Autumn 2018
- MSTP Student

### Bio

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#### BIO

I am a lover of all things RNA currently interested in studying sub-cellular localization of mRNA molecules. Using primary oligodendrocytes as a model system, I am studying the mechanisms of mRNA transport in myelin development.

#### LINKS

- Personal Site: <http://vedtopkar.com>

### Publications

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#### PUBLICATIONS

- **Combinatorial optimization of mRNA structure, stability, and translation for RNA-based therapeutics.** *Nature communications*  
Leppek, K., Byeon, G. W., Kladwang, W., Wayment-Steele, H. K., Kerr, C. H., Xu, A. F., Kim, D. S., Topkar, V. V., Choe, C., Rothschild, D., Tiu, G. C., Wellington-Oguri, R., Fujii, et al  
2022; 13 (1): 1536
- **Defining genome-wide CRISPR-Cas genome-editing nuclease activity with GUIDE-seq.** *Nature protocols*  
Malinin, N. L., Lee, G., Lazzarotto, C. R., Li, Y., Zheng, Z., Nguyen, N. T., Liebers, M., Topkar, V. V., Iafrate, A. J., Le, L. P., Aryee, M. J., Joung, J. K., Tsai, et al  
2021
- **mRNA Transport and Local Translation in Glia.** *Trends in cell biology*  
Meservey, L. M., Topkar, V. V., Fu, M.  
2021
- **Anomalous Reverse Transcription through Chemical Modifications in Polyadenosine Stretches.** *Biochemistry*  
Kladwang, W., Topkar, V. V., Liu, B., Rangan, R., Hodges, T. L., Keane, S. C., Al-Hashimi, H., Das, R.  
2020
- **Structural Determinants of mRNA Transport Specificity in Oligodendrocytes**  
Topkar, V. V.  
CELL PRESS.2020: 67A
- **Accelerated cryo-EM-guided determination of three-dimensional RNA-only structures.** *Nature methods*  
Kappel, K. n., Zhang, K. n., Su, Z. n., Watkins, A. M., Kladwang, W. n., Li, S. n., Pintilie, G. n., Topkar, V. V., Rangan, R. n., Zheludev, I. N., Yesselman, J. D., Chiu, W. n., Das, et al  
2020; 17 (7): 699–707
- **Transcription factors, coregulators, and epigenetic marks are linearly correlated and highly redundant** *PLOS ONE*  
Ahsendorf, T., Mueller, F., Topkar, V., Gunawardena, J., Eils, R.  
2017; 12 (12): e0186324

- **CIRCLE-seq: a highly sensitive in vitro screen for genome-wide CRISPR Cas9 nuclease off-targets** *NATURE METHODS*  
Tsai, S. Q., Nguyen, N. T., Malagon-Lopez, J., Topkar, V. V., Aryee, M. J., Joung, J.  
2017; 14 (6): 607-+
- **Open-source guideseq software for analysis of GUIDE-seq data** *NATURE BIOTECHNOLOGY*  
Tsai, S. Q., Topkar, V. V., Joung, J., Aryee, M. J.  
2016; 34 (5): 483
- **Broadening the targeting range of Staphylococcus aureus CRISPR-Cas9 by modifying PAM recognition** *NATURE BIOTECHNOLOGY*  
Kleinstiver, B. P., Prew, M. S., Tsai, S. Q., Nguyen, N. T., Topkar, V. V., Zheng, Z., Joung, J.  
2015; 33 (12): 1293-+
- **Engineered CRISPR-Cas9 nucleases with altered PAM specificities** *NATURE*  
Kleinstiver, B. P., Prew, M. S., Tsai, S. Q., Topkar, V. V., Nguyen, N. T., Zheng, Z., Gonzales, A. W., Li, Z., Peterson, R. T., Yeh, J., Aryee, M. J., Joung, J.  
2015; 523 (7561): 481-U249
- **Dimeric CRISPR RNA-Guided FokI-dCas9 Nucleases Directed by Truncated gRNAs for Highly Specific Genome Editing** *HUMAN GENE THERAPY*  
Wyvekens, N., Topkar, V. V., Khayter, C., Joung, J., Tsai, S. Q.  
2015; 26 (7): 425-431
- **Defining Genome-Wide Off-Target Cleavage Profiles of CRISPR-Cas RNA-Guided Nucleases Using GUIDE-Seq**  
Tsai, S. Q., Zheng, Z., Nguyen, N. T., Liebers, M., Topkar, V. V., Thapar, V., Wyvekens, N., Khayter, C.  
NATURE PUBLISHING GROUP.2015: S274
- **Engineered Cas9 Variants with Novel PAM Specificities Expand the Targeting Range of CRISPR/Cas Nucleases**  
Kleinstiver, B. P., Prew, M. S., Topkar, V. V., Tsai, S. Q., Joung, J. K.  
NATURE PUBLISHING GROUP.2015: S26
- **Replacing Uridine with 2-Thiouridine Enhances the Rate and Fidelity of Nonenzymatic RNA Primer Extension** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*  
Heuberger, B. D., Pal, A., Del Frate, F., Topkar, V. V., Szostak, J. W.  
2015; 137 (7): 2769-2775
- **GUIDE-seq enables genome-wide profiling of off-target cleavage by CRISPR-Cas nucleases** *NATURE BIOTECHNOLOGY*  
Tsai, S. Q., Zheng, Z., Nguyen, N. T., Liebers, M., Topkar, V. V., Thapar, V., Wyvekens, N., Khayter, C., Iafrate, A., Le, L. P., Aryee, M. J., Joung, J.  
2015; 33 (2): 187-197