Stanford

Shruti Singh Kakan

Postdoctoral Scholar, Ophthalmology

NIH Biosketch available Online Curriculum Vitae available Online

Bio

BIO

I am a Biomedical Scientist with a Ph.D. in Translational Sciences. During my PhD, I investigated how the tear composition of patients with Sjogren's Disease (SjD) associated Dry Eye disease, differed molecularly from patients with other forms of dry eye disease or other autoimmune diseases. These differences can be leveraged to develop a diagnostic test, and we established this proof-of concept using tear microRNA that could differentiate SjD-Dry Eye from Dry Eye associated with Meibomium Gland Disease.

During my postdoctoral training at Stanford, I am advancing my genomics data analysis skillset to include DNA methylation, chromatin states and accessibility, and long range DNA interactions through Whole Genome Bisulfite Sequencing, Chromatin Immunoprecipitation followed by sequencing (ChIP-Seq), ATAC-Sequencing and HiC, respectively. I am applying these techniques to study mechanisms of retinal homeostasis during development, aging and retinal disease, including both inherited and metabolic retinal diseases that cause blindness.

PROFESSIONAL EDUCATION

- B.Pharm. (Hons), Birla Institute of Technology & Sciences - Pilani (Hyderabad Campus) , Pharmacy (2013)
- M.S., University of Southern California , Pharmaceutical Sciences (2017)
- Ph.D., University of Southern California , Pharmaceutical & Translational Sciences (2022)

STANFORD ADVISORS

- Ximena Corso Diaz, Postdoctoral Faculty Sponsor

LINKS

- Google Scholar: https://scholar.google.com/citations?user=_y-stzgAAAAJ&hl=en

Research & Scholarship

LAB AFFILIATIONS

- Ximena Corso Diaz (1/16/2025)

Publications

PUBLICATIONS

- **Regulation of neuronal transcription by RNA-binding proteins via R-loop dynamics.** *Neural regeneration research*
  Kakan, S. S., Corso-Diaz, X.
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- **Serum and tear autoantibodies from NOD and NOR mice as potential diagnostic indicators of local and systemic inflammation in Sjögren's disease.** *Frontiers in immunology*
  Singh Kakan, S., Abdelhamid, S., Ju, Y., MacKay, J. A., Edman, M. C., Raman, I., Zhu, C., Raj, P., Hamm-Alvarez, S. F.
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- **Tear Fluid as a Biomarker for Parkinson's Disease: Downregulation of DNA Repair Genes/Pathways via RNA-Seq Analysis**
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- **The miRNA Landscape of Lacrimal Glands in a Murine Model of Autoimmune Dacryoadenitis.** *Investigative ophthalmology & visual science*
  Singh Kakan, S., Li, X., Edman, M. C., Okamoto, C. T., Hjelm, B. E., Hamm-Alvarez, S. F.
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- **Serum and Tear Autoantibodies from nor Mice as Potential Diagnostic Indicators of Local and Systemic Inflammation in Sjogren's Syndrome**
  Kakan, S., Ju, Y., Edman, M., Hamm-Alvarez, S.
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- **Tear miRNAs Identified in a Murine Model of Sjögren's Syndrome as Potential Diagnostic Biomarkers and Indicators of Disease Mechanism.** *Frontiers in immunology*
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- **Identification of miRNAs in tears of a murine model of Sjogren's syndrome that may represent putative diagnostic biomarkers**
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- **Small RNA Deep Sequencing Identifies a Unique miRNA Signature Released in Serum Exosomes in a Mouse Model of Sjögren's Syndrome.** *Frontiers in immunology*
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- **Tears - more to them than meets the eye: why tears are a good source of biomarkers in Parkinson's disease.** *Biomarkers in medicine*
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  2020; 14 (2): 151-163

- **Berunda Polypeptides: Multi-Headed Fusion Proteins Promote Subcutaneous Administration of Rapamycin to Breast Cancer In Vivo.** *Theranostics*
  Dhandhukia, J. P., Li, Z., Peddi, S., Kakan, S., Mehta, A., Tyrpak, D., Despanie, J., MacKay, J. A.
  2017; 7 (16): 3856-3872

- **Discovery of novel lysine ε-aminotransferase inhibitors: An intriguing potential target for latent tuberculosis.** *Tuberculosis (Edinburgh, Scotland)*
  Devi, P. B., Sridevi, J. P., Kakan, S. S., Saxena, S., Jeankumar, V. U., Soni, V., Anantaraju, H. S., Yogeeswari, P., Sriram, D.
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- **Extending the N-linked aminopiperidine class to the mycobacterial gyrase domain: pharmacophore mapping from known antibacterial leads.** *European journal of medicinal chemistry*
  Bobesh, K. A., Renuka, J., Jeankumar, V. U., Shruti, S. K., Sridevi, J. P., Yogeeswari, P., Sriram, D.
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- **Gyrase ATPase domain as an antitubercular drug discovery platform: structure-based design and lead optimization of nitrothiazolyl carboxamide analogues.** *ChemMedChem*
  Jeankumar, V. U., Renuka, J., Kotagiri, S., Saxena, S., Kakan, S. S., Sridevi, J. P., Yellanki, S., Kulkarni, P., Yogeeswari, P., Sriram, D.
  2014; 9 (8): 1850-9

- **Investigating structure-activity relationship and mechanism of action of antitubercular 1-(4-chlorophenyl)-4-(4-hydroxy-3-methoxy-5-nitrobenzylidene) pyrazolidine-3,5-dione [CD59].** *International journal of mycobacteriology*
  Samala, G., Kakan, S. S., Nallangi, R., Devi, P. B., Sridevi, J. P., Saxena, S., Yogeeswari, P., Sriram, D.
  2014; 3 (2): 117-26

- **A novel amine impregnated graphene oxide adsorbent for the removal of hexavalent chromium** *CHEMICAL ENGINEERING JOURNAL*
  Kumar, A., Kakan, S., Rajesh, N.
  2013; 230: 328-337

- **Effective adsorption of hexavalent chromium through a three center (3c) co-operative interaction with an ionic liquid and biopolymer.** *Journal of hazardous materials*
  Krishna Kumar, A. S., Gupta, T., Kakan, S. S., Kalidhasan, S., , Rajesh, V., Rajesh, N.
  2012; 239-240: 213-24