

DEVANSHI SHUKLA

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OVERVIEW

Ph.D. in Neuroscience from the University of Arizona, with 3+ years of biotech/pharma R&D experience, studied proteinopathy implicated in neurodegenerative diseases and adaptive immune pathways. Experienced in preclinical therapeutic development, analytical method design, and technology transfer. Experienced in working across cross-functional research teams, mentoring trainees, and contributing to collaborative, high-impact, patent pending neuroscience projects.

TECHNICAL AND TRANSFERABLE SKILLS

- **Biological Assays:** Immunohistochemistry (IHC) | Immunocytochemistry (ICC) | Double IHC | H&E and Nissl staining | Sirius Red staining | Immunofluorescence (IF) staining | TUNEL stain | Tissue sectioning/embedding (FFPE) | Preclinical drug treatment and administration | Drug pilot study strategizing | Adherent and suspension cell culture (HEK293/THP-1/SHSY-5) | Primary neuron culture and isolation | Animal (rodent) handling and behavior studies | Electrophysiological techniques (neuromuscular junction (NMJ) recordings) | Injection administration (I.P./oral gavage/I.V.) | Animal surgery (craniotomy, laminectomy, intrathecal) | Mice perfusion, sacrifice and organ harvesting | Orobos O2k | Crude and pure mitochondria isolation and fractionation | Blue-native PAGE | CD4+ T cell isolation and culture | Cytokine/ chemokine profiling | Molecular cloning | Cell imaging (Confocal/FRAP) | RNA extraction/isolation (fresh/frozen tissues) | Blood/Plasma/Serum collection | Protein purification | Proximity Ligation Assay
- **Quantitative analytical techniques:** Method development | Validation | Tech Transfer | ELISA | RT-PCR (TaqMan and SYBR Green) | SDS-PAGE | Relicant-Competent Retrovirus | Mycoplasma testing | Western Blotting | HPLC | 2D-PAGE | Horizontal and vertical IEF | Spectroscopy (UV-Vis Fluorescence) | Particle size- Dynamic light scattering (DLS) | Flow cytometry, FACS
- **Software proficiency:** R Programming | snRNA/scRNA/bulk-RNA analysis | Multi-omics/NGS technology | Proteomics study | Machine Learning | Data Science | Computational Biology | Adobe AI/PS | MS Excel modeling | GraphPad Prism | Biorender
- **Transferable skills:** Creative problem-solving and strategic thinking, teamwork, communication and presentation.

RESEARCH/WORK EXPERIENCE

❖ Postdoctoral Researcher

(June. 2026- present)

(Dr. Pankaj Kapahi's Lab—relocated and transferred from Buck to Stanford in September 2026)

Stanford University/Buck Institute for Research on Aging

Stanford, CA/ Novato, CA

Project: Defining the Role of Neuronal Glycogen Breakdown in Tau Aggregation and Proteostasis in Alzheimer's Disease

- Investigating the role of neuronal glycogen metabolism in regulating tau aggregation, proteostasis, and neurodegeneration.
- Developing cellular and molecular models to dissect glycogen breakdown pathways and their impact on neuronal homeostasis.
- Applying advanced biochemical, molecular biology, and imaging approaches to quantify tau pathology, protein aggregation, and proteostasis mechanisms.
- Performing mechanistic studies integrating metabolic regulation with neurodegenerative disease pathways to identify novel therapeutic targets.
- Designing and optimizing in vitro and in vivo experimental workflows to evaluate metabolic interventions for AD.
- Collaborating across multidisciplinary teams to integrate aging biology, metabolism, and neuroscience in translational research.

❖ PhD Neuroscience

(Jan. 2021- May. 2026)

(Dr. Xinglong Wang's Lab – relocated and transferred from UNMC to UofA in January 2023)

University of Arizona (UofA) /University of Nebraska Medical Center (UNMC)

Tucson, AZ/ Omaha, NE

Project 1: A therapeutic strategy to target the conserved region within the low-complexity domain of TDP-43 to treat neurodegeneration (*co-first author, published in *Nature Aging*, 2026) <https://doi.org/10.1038/s43587-026-01166-3>

- Developed live-cell imaging and FRAP assays to monitor TDP-43 condensate dynamics to evaluate therapeutic modulation.
- Generated AAV-mediated in vivo models expressing mutant and wild-type TDP-43 to study pathogenic mechanisms and preclinical therapeutic strategies in neurodegenerative disease contexts.
- Assessed TDP-43 solubility, mitochondrial integrity, and neuronal bioenergetics using biochemical fractionation, Blue-Native PAGE, and Orobos O2k, demonstrating molecular restoration trends after compound intervention.
- Designed structure-based compound screening to identify small molecules targeting TDP-43 (patent-pending).
- Validated therapeutic effects via histological, confocal microscopy, and pharmacokinetic/safety studies in ALS mice model.
- Engineered TDP-43 mutants to characterize its functional roles using molecular and vector engineering approaches.

Project 2: Loss of TDP-43 in CD4 T cells induces non-cell-autonomous neurodegeneration in mice (under review in *Neuron*)

- Generated CD4⁺ T-cell-specific TDP-43 knockout mice to study immunoregulation and neuronal impact.

- Applied single-cell, single-nucleus, and bulk RNA-seq to characterize transcriptional profiles of immune cells to profile inflammatory responses and metabolic rewiring.
- Used flow cytometry and cytokine analysis to define immune activation and signaling alterations.
- Conducted functional metabolic assays linking immune dysregulation to neuronal energy deficits.
- Performed integrative bioinformatics to identify dysregulated pathways and potential molecular targets.

Other projects: Preclinical evaluation of small-molecule therapeutics across neurodegenerative models (patent-pending).

- Designed and led pilot pharmacology studies in each mouse models of Alzheimer's, ALS, and Parkinson's disease to evaluate small molecular therapeutic safety, dosing, biomarker and cross-disease efficacy.
- Conducted longitudinal oral dosing, behavioral testing, and post-treatment biochemical/histological/biomarker analyses to track therapeutic impact.
- Integrated PK/PD data with efficacy outcomes, supporting patent submissions and compound optimization.

❖ **Research Associate in Biocharacterization Development lab (BDL)**

(Apr. 2019-Jul. 2020)

Intas Biopharmaceutical Ltd

Ahmedabad, India

- Designing, planning, and execution of experiments. Qualification and transfer of ELISA based and RT-PCR based analytical methods for the characterization of process related impurities (HCDNA, HCP & LPA) in monoclonal antibodies and fusion proteins.
- Process characterization and QC support for ongoing projects. Documentation of LNB/DRS as per GDP norms.

❖ **Assistant Manager in QC Bioassay Lab**

(Jun. 2017-Mar. 2019)

Dr Reddy's Laboratories, Biologics Division

Hyderabad, India

- Designing, planning, and execution of experiments related to biochemical, molecular and immunological techniques for testing QC criteria in monoclonal antibodies related drug development.
- Identification and troubleshooting of gaps in Assays. Tech transfer and QA support for ongoing projects
- Documentation and drafting/revision of SOPs as per GDP Norms. Presented and communicated project outlines internally.

❖ **Master of Science in Medical Biotechnology**

(Jul. 2015-May. 2017)

MS University of Baroda, Vadodara

Vadodara, India

Project: Evaluation of the effect of oral δ -Tocotrienol and Pyrroloquinoline Quinone on High-fat diet-induced Obesity and Development of probiotic *Escherichia coli* Nissle 1917 secreting δ -Tocotrienol

- Engineered dual-gene expression vectors for probiotic-based non-invasive delivery and optimized outcomes using HPLC, biochemical assays, and mouse organ function tests.

EDUCATION

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| • Ph.D. in Neuroscience (GPA: 3.8)
<u>University of Arizona</u> | (Jan 2023-May. 2026)
Tucson, AZ |
| • PhD candidate in Pharmacology and Experimental Neuroscience (GPA: 3.7).
<u>University of Nebraska Medical Center</u> | (Jan. 2021-Dec. 2022)
Omaha, NE |
| • Master of Science in Medical Biotechnology (GPA: 3.1)
<u>MS University of Baroda</u> | (Jul. 2015-May. 2017)
Vadodara, India |
| • Diploma in Bioinformatics (GPA: 3.9)
<u>M & N Virani Science College</u> | (July 2013-May 2014)
Rajkot, India |
| • Bachelor of Science in Biotechnology (GPA: 3.8)
<u>M & N Virani Science College</u> | (July 2012-May 2015)
Rajkot, India |

SELECTED PUBLICATIONS ([Google Scholar Link](#))

1. Ju Gao*, **Devanshi Shukla***, et al. A therapeutic strategy to target the conserved region within the low-complexity domain of TDP-43 to treat neurodegeneration. (*co-first authors) *Nature Aging* (2026). <https://doi.org/10.1038/s43587-026-01166-3>
2. Ju Gao, Mao Ding, Siyue, Qin, **Devanshi Shukla**, et al. The mechanisms underlying TDP-43-associated neurodegeneration in Alzheimer's Disease and related dementias. *Molecular Psychiatry* (2025). <https://doi.org/10.1038/s41380-025-03089-8>
3. Ju Gao, Mao Ding, Yanbin Xiyang, Siyue Qin, **Devanshi Shukla**, et al. Aggregatin is a mitochondrial regulator of MAVS activation to drive innate immunity. *The Journal of Immunology* (2025). <https://doi.org/10.1093/jimmun/vkae019>
4. Chandan Krishnamoorthy, Anthony Delaney, **Devanshi Shukla**, et al. Palmitoleate Protects against Zika virus infection-induced Endoplasmic Reticulum Stress and Apoptosis in Neurons. *BioRxiv* (2025). <https://doi.org/10.1101/2025.01.22.634157>

5. Wen Xiu, Bo Liu, Haipeng Zhnag, Sangjin Ryu, Mitchell Kuss, **Devanshi Shukla**, et al. Controllable fabrication of alginate/poly-L-ornithine polyelectrolyte complex hydrogel networks as therapeutic drug and cell carrier. *Acta Biomater* 138 (2022). <https://doi.org/10.1016/j.actbio.2021.11.004>
6. Ju Gao, Siyue, Qin, **Devanshi Shukla**, et al. Disrupted interaction between TDP-43 with the translational machinery causes progressive human-like TDP-43 proteinopathy (accepted in *Nature Neuroscience*)
7. **Devanshi Shukla**, et al. Loss of TDP-43 in CD4 T cells induces non-cell-autonomous neurodegeneration in mice (under review in *Neuron*)
8. **Devanshi Shukla**, et al. The pathophysiological function of TDP-43 (manuscript in preparation)

PRESENTATIONS AND ACHIEVEMENTS/AWARDS

- Secured 3rd place in the poster presentation in National level conference on Recent Advances in Biochemical Research **2015** on "Review article on Novel Breakthroughs in Treatment for Alzheimer's Disease" held at Rajkot, India.
- Spot Award in Intas Biopharmaceutical Ltd (Dec. **2019**)
- Young Investigator Award in the poster presentation at International Research Conference on Neurodegenerative Diseases (**IRCND**) **2022** held at Omaha NE on "Functional impact on TDP-43 due to possible interlink between SARS-CoV2 related proteins and tau". (Jul. **2022**)
- Excellence Service Award at IRCND 2022 (Jul. **2022**)
- Awarded a Travel Grant from University of Arizona to attend/present at Society for Neuroscience (SfN) (**2025**) in San Diego.