Srikrishnan Mallipeddi

(828) 485-7782 | krish.mallipeddi@gmail.com

PROFESSIONAL SUMMARY:

Senior scientist with 8+ years of experience in biochemistry, protein engineering, and drug discovery. Extensive expertise in high diversity library generation, high-throughput protein production, purification and characterization in diverse modalities including biologics, enzymes and membrane proteins. Strong track record of leading cross-functional teams in matrix environments, advancing therapeutics through discovery pipelines, and fostering development of junior scientists.

CORE COMPETENCIES:

Technical Expertise:

- Protein expression (Bacterial, mammalian, yeast, insect cell, cell-free)
- High throughput cloning and DNA library construction
- Directed Evolution (library design, screening strategies, selection methods)
- Structure-based protein engineering (Pymol, Alphafold, Schrödinger)
- De novo protein design (Protein/LigandMPNN, Rfdiffusion)
- Protein analytics (SEC, CE-SDS, DSF, LC-MS, SPR, BLI)

Leadership:

- Cross-functional project leadership and resource management
- IP development and Invention disclosure writing (patent filing)
- Successful track record in mentoring and developing junior scientists

RECENT WORK EXPERIENCE:

Senior Scientist, Biochemistry - ADM, Decatur, IL (Dec 2022-Present)

- Established protein expression, purification and high-throughput (HT) screening platform and characterized >5000 enzyme variants leading to 2 patent applications
- Performed HT biophysical characterization assays including WB, CE-SDS, DSF and SEC
- Led structure-based protein engineering and ML-based approaches to alter substrate specificity and cofactor preference of multiple enzyme classes (1 patent application filed)
- Led a cross-functional team of 10 scientists, successfully achieving strain engineering project deliverables and navigating phase-gate process towards commercialization
- Mentored two MS/PhD-level scientists through experimental design and data analysis

Senior Scientist, Protein Engineering **-** Absci, Vancouver, WA (Aug 2021-Dec 2022)

- Designed and evaluated multiple ML-designed high-diversity libraries (over 10 million size) for improved functional activity against therapeutic targets across discovery programs.
- Developed methods for HT biologics production (5k variants) and SPR (Carterra LSA) analysis.
- Designed and managed cloning of mAbs targeting novel antigens via CDR grafting techniques in support of therapeutic pipeline program.
- Managed the cloning of AI/ML designed high-diversity libraries for FACS-based screening.
- Led company-wide cross-functional project to develop a platform process to express, purify and characterize clinical-grade multi-specifics, mAbs and antibody fragments from *E. coli*
- Directly mentored three MS/PhD-level scientists and championed two promotions

Staff Scientist - Glycosyn LLC (Jul 2017-Aug 2021)

- Designed and cloned mutant glycosyltransferases, using rational structure-based approach, for improved productivity and purity of oligosaccharides and secured IP.
- Developed mid-throughput assay for the evaluation of enzymatic activity and impurity profile.
- Led Analytical and Bio-analytical capabilities for the characterization of fusion proteins, peptides, oligosaccharides and impurities in both bioreactor and development samples.
- Led a metabolic engineering project to produce human milk oligosaccharide in *E. coli*
- Coordinated and supervised external collaborations for proteomics, metabolomics and fluxomics studies on in-house developed bacterial strains.
- Mentored and trained an undergraduate summer intern in various analytical techniques.

PhD Co-Op - Bristol-Myers Squibb (Jan 2016-Jun 2016)

- Designed and performed a DOE study to optimize Caliper Labchip method for antibody analysis.
- Isolated Low Molecular Weight (LMW) species from in-process assay samples using Protein A, and SEC and characterized using bottom-up LC/MS analysis.
- Evaluated the aggregation and impurity status, charge distribution and binding activity of process characterization samples using UPLC (SEC, RP and IEX), CE-SDS and Octet, respectively.
- Participated in vendor-provided hands-on training for DSC, DLS and Tecan scripting.

ACADEMIC EXPERIENCE:

Postdoctoral Researcher - Northeastern University (Jan 2017-Jul 2017)

- Performed proteomic analysis of purified endocannabinoid hydrolase enzymes for structural characterization and covalent ligand binding studies
- Developed a mass spec. method for simultaneous quantitation of multiple neurotransmitters in brain micro-dialysate samples from rodents.

Doctoral Research Assistant - Northeastern University (Sep 2012-Dec 2016)

- Expressed integral membrane proteins using cell-free expression system in conjunction with nano-lipid membrane discs
- Designed, cloned and purified membrane proteins using bacterial (*E. coli*), mammalian (*HEK293*), insect (*sf9*) cell expression systems for biophysical characterization
- Conducted in-depth mass spectrometry-based investigation of the binding pocket of human cannabinoid 2 receptor (CB2) using novel covalent ligands and coordinated with medicinal chemists to help design next generation of compounds.
- Conducted ligand binding assays and cell-based functional assays for 500+ novel compounds, as part of various NIH funded research projects (co-authored 4 publications)
- Maintained core mammalian cell-line library and liquid-nitrogen storage
- Mentored multiple BS, MS and PhD students on rotation

EDUCATION:

PhD in Pharmaceutical Sciences: Drug Discovery (2016)
Northeastern University, Boston
Thesis - Biochemical and Biophysical Study of Cannabinoid 1 and Cannabinoid 2 Receptors
Specialization: *Protein-ligand interactions, Structure-function relationships, Protein characterization*

MS in Pharmacology (2012)
Northeastern University, Boston
Thesis - In vitro expression of human cannabinoid 1 receptor for ligand-assisted binding site characterization
Specialization: *Protein expression, Cell-line development, Ligand screening assays*

Bachelor's in Pharmacy (2010)
Manipal University, India

PATENT(S):

1. **Mallipeddi, S.,** et al "Genetically engineered yeast strains producing 3HP" (2025) *Provisional*
2. Ryan, O., […], **Mallipeddi, S.,** et al "Genetically engineered yeast strains producing malic acid" (2024) *Provisional*
3. Bachas, S., […], **Mallipeddi, S.,** et al "High-throughput methods for kinetic characterization, quantifying, and optimizing antibodies and antibody fragments expression in bacteria
4. **Mallipeddi, S.**, et al "Sialyltransferases and their uses thereof" (2017) US11274325B2

PUBLICATION(S):

1. Malamas, M.S., […] **Mallipeddi, S.** and Makriyannis, A., (2018). Oximes short-acting CB1 receptor agonists. *Bioorganic & Medicinal Chemistry*.
2. **Mallipeddi, S**., Zvonok, N. and Makriyannis, A., (2018). Expression, Purification and Characterization of the Human Cannabinoid 1 Receptor. *Scientific reports*, *8*(1), p.2935.
3. **Mallipeddi, S.**, et al. (2017). Binding Site Characterization of AM1336, a Novel Covalent Inverse Agonist at Human Cannabinoid 2 Receptor, Using Mass Spectrometric Analysis. *Journal of proteome research,* 16(7), pp.2419-2428.
4. M**allipeddi, S.**, et al. (2017). Functional Selectivity at G-Protein Coupled Receptors: Advancing cannabinoid receptors as drug targets. *Biochemical Pharmacology,* 128:1-11.
5. Kulkarni, S., […], **Mallipeddi, S.**, [...], and Makriyannis, A. (2016). Novel C-Ring-Hydroxy-Substituted Controlled Deactivation Cannabinergic Analogues. *Journal of Medicinal Chemistry*, 59(14), pp.6903-6919.
6. Ogawa, G., […] **Mallipeddi, S**. and Makriyannis, A., (2015). 3'-Functionalized Adamantyl Cannabinoid Receptor Probes. *Journal of Medicinal Chemistry*, *58*(7), pp.3104-3116.
7. Sharma, R., Nikas, S. P., Guo, J. J., **Mallipeddi, S.,** Wood, J. T., & Makriyannis, A. (2014). C-Ring Cannabinoid Lactones: A Novel Cannabinergic Chemotype. *ACS Medicinal Chemistry Letters* 5(4), pp.400-404. **(ACS Editors' Choice Award)**