Stanford



Seraphine Kamayirese

Postdoctoral Scholar, Bioengineering

NIH Biosketch available Online Curriculum Vitae available Online

Bio

BIO

I am a protein and peptide biochemist with a focus on biophysical characterization, structural activity relationship (SAR)study, and design and optimization of peptides targeting disease-relevant proteins. My Ph.D. research focused on designing and optimizing ligands that target the 14-3-3ε protein to disrupt its interaction with the cell cycle regulator CDC25A, an interaction known to suppress apoptosis in squamous cell carcinoma. Inhibiting this pathway is expected to promote apoptosis in cutaneous squamous cell carcinoma. At Stanford University, I am expanding my research to study antimicrobial peptidoids and peptides such as LL-37 and their interactions with amyloid beta peptides, and the potential application of the resulting complexes as antiviral therapeutics. I bring strong experience in rational peptide design, structural activity relationship studies, molecular dynamics simulations, peptides and peptoids synthesis and purification, protein expression, and biophysical assays. My research has led to multiple peer-reviewed publications, presentations at national and international conferences, and awards, including the Young Investigator Poster Award at the American Peptide Symposium.

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Creighton University (2024)
- Bachelor of Science, Arizona State University (2019)

STANFORD ADVISORS

- Annelise Barron, Postdoctoral Faculty Sponsor

Research & Scholarship

LAB AFFILIATIONS

- Annelise Barron, Barron Lab (2/1/2025)

Publications

PUBLICATIONS

- **Human cathelicidin peptide LL-37 compacts nucleic acids and alters neutrophil extracellular trap structure.** *Scientific reports*
  Zielke, C., Rad, B., Nielsen, J. E., Li, J., Pimcharoen, S., Sawant, M., Kamayirese, S., Lin, J. S., Thiam, H. R., Barron, A. E.
  2026
- **Chlorotoxin does not target matrix metalloproteinase-2 in glioblastoma.** *PloS one*
  Blaney, E., Demeke, M., Kamayirese, S., Monga, L., Hansen, L. A., Watts, C. R., Lovas, S.
  2026; 21 (4): e0328964

- **Ligand recognition by 14-3-3 proteins requires negative charges but not necessarily phosphorylation.** *FEBS letters*
  Kamayirese, S., Hansen, L. A., Lovas, S.
  2025; 599 (6): 838-847
- **The Development of CDC25A-Derived Phosphoseryl Peptides That Bind 14-3-3ε with High Affinities.** *International journal of molecular sciences*
  Kamayirese, S., Maity, S., Hansen, L. A., Lovas, S.
  2024; 25 (9)
- **Optimizing Phosphopeptide Structures That Target 14-3-3ε in Cutaneous Squamous Cell Carcinoma.** *ACS omega*
  Kamayirese, S., Maity, S., Dieckman, L. M., Hansen, L. A., Lovas, S.
  2024; 9 (2): 2719-2729