
Dr. Kavita Rao

Postdoctoral Research Fellow, Cell Biology

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01 PROFILE

Cell biologist studying how immune cells sense and respond to stress. Eight years of bench research spanning imaging, single-cell genomics and CRISPR screens, with a record of mentoring students.

02 EDUCATION

Ph.D., Molecular Biology · 2016 – 2022

National Centre for Cell Science Research

Thesis: Calcium signalling in activated T cells

M.Sc., Biotechnology · 2014 – 2016

Deccan Valley University

University Gold Medal

B.Sc., Life Sciences · 2011 – 2014

St. Aldwin's College

03 RESEARCH EXPERIENCE

Postdoctoral Fellow · 2022 – Present

Riverstone Institute for Immunology

- Lead a CRISPR screen across 4,000 genes identifying 12 regulators of T-cell exhaustion.
- Manage two technicians and mentor three Ph.D. students.

Doctoral Researcher · 2016 – 2022

National Centre for Cell Science Research

- Developed a live-imaging assay for calcium flux adopted by three partner labs.

Visiting Researcher · Jan 2020 – Jun 2020

Kestrel Genomics Centre, Singapore

- Generated single-cell RNA-seq data for 60,000 immune cells.

04 PUBLICATIONS

Iyer, M., **Rao, K.**, Okafor, D., & Fischer, A. (2026). Revisiting microbiome shifts after antibiotics. *Molecular Systems Reports*, 11(9), 212–232.

Rao, K., & Menon, V. (2026). Measuring circadian control of metabolism. *Journal of Cellular Signalling*, 26(8), 426–435.

Chen, L., **Rao, K.**, & Okafor, D. (2026). Scaling single-cell atlases of the liver. *Annual Meeting of the Society for Cell Biology*, pp. 375–384.

Gupta, R., **Rao, K.**, & Fischer, A. (2025). Measuring calcium signalling in T cells. *Annual Meeting of the Society for Cell Biology*, pp. 429–441.

- Rao, K.**, Banerjee, P., Chen, L., & Menon, V. (2025). A study of microbiome shifts after antibiotics. *Genome Methods Letters*, 13(6), 756–767.
- Mensah, K., Chen, L., & **Rao, K.** (2025). New approaches to protein folding stress responses. *Annual Meeting of the Society for Cell Biology*, pp. 491–502.
- Kim, J., **Rao, K.**, Mensah, K., & Fischer, A. (2024). Designing for calcium signalling in T cells. *Molecular Systems Reports*, 34(11), 875–886.
- Haddad, N., Banerjee, P., & **Rao, K.** (2024). Designing for microbiome shifts after antibiotics. *Frontiers in Microbial Research*, 32(11), 125–147.
- Iyer, M., & **Rao, K.** (2024). Evidence on circadian control of metabolism. *Genome Methods Letters*, 23(10), 573–583.
- Rao, K.**, Gupta, R., Chen, L., & Kim, J. (2023). Understanding CRISPR screens for drug resistance. *Journal of Cellular Signalling*, 31(12), 285–302.
- Menon, V., **Rao, K.**, & Okafor, D. (2023). New approaches to microbiome shifts after antibiotics. *Molecular Systems Reports*, 44(12), 185–196.
- Rao, K.**, Chen, L., & Gupta, R. (2023). Measuring single-cell atlases of the liver. *Genome Methods Letters*, 37(9), 811–829.
- Rao, S., & **Rao, K.** (2022). Understanding CRISPR screens for drug resistance. *Annual Meeting of the Society for Cell Biology*, pp. 372–381.
- Chen, L., Menon, V., & **Rao, K.** (2022). Evidence on protein folding stress responses. *Frontiers in Microbial Research*, 36(11), 883–905.
- Banerjee, P., **Rao, K.**, & Sato, Y. (2022). Towards microbiome shifts after antibiotics. *Annual Meeting of the Society for Cell Biology*, pp. 421–430.
- Haddad, N., & **Rao, K.** (2021). Towards protein folding stress responses. *Genome Methods Letters*, 22(9), 539–554.

05 CONFERENCE PRESENTATIONS & INVITED TALKS

- Invited talk: “Evidence on circadian control of metabolism”, Symposium on Cellular Signalling, Pune, 2026.
- Contributed talk: “Evidence on circadian control of metabolism”, Molecular Systems Reports, Chennai, 2026.
- Seminar: “Measuring single-cell atlases of the liver”, Annual Meeting of the Society for Cell Biology, Singapore, 2025.
- Invited talk: “New approaches to calcium signalling in T cells”, Molecular Systems Reports, Berlin, 2025.
- Contributed talk: “Understanding circadian control of metabolism”, Molecular Systems Reports, Hyderabad, 2024.
- Keynote: “Scaling single-cell atlases of the liver”, Genome Methods Letters, Berlin, 2024.
- Keynote: “Scaling circadian control of metabolism”, Genome Methods Letters, Bengaluru, 2023.
- Poster: “Designing for single-cell atlases of the liver”, Annual Meeting of the Society for Cell Biology, London, 2023.

06 TEACHING

- Instructor, Hands-on Flow Cytometry Workshop (annual, 2023–2025)
- Mentor to 6 M.Sc. dissertation students (2019–2025)
- Guest lecturer, Immunology, Ganga Valley University (2024)

07 GRANTS, AWARDS & HONOURS

- Early Career Fellowship, national biomedical trust (2022–2027), ₹1.2 crore

- EMBO-style Short-Term Fellowship (2020)
- Best Thesis Award, institute (2022)
- Young Scientist Award, Society for Cell Biology meeting (2021)

08 PROFESSIONAL SERVICE

- Reviewer for Journal of Cellular Signalling and Molecular Systems Reports
- Co-organiser, Hyderabad Immunology Club seminar series (2023–present)
- Science outreach volunteer for government schools

09 SKILLS

Wet lab: CRISPR screening, flow cytometry, confocal and live imaging, primary T-cell culture, qPCR

Computational: R (Seurat), Python, ImageJ/Fiji, basic Linux

Languages: English, Telugu (native), Hindi

10 REFERENCES

Prof. A. Fischer

Group Leader, Riverstone Institute for Immunology
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Dr. P. Banerjee

Scientist, National Centre for Cell Science Research
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Dr. Y. Sato

Principal Investigator, Kestrel Genomics Centre
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