Stanford

Sneha Ramakrishna

Assistant Professor of Pediatrics (Hematology/Oncology)

Pediatrics - Hematology & Oncology

CLINICAL OFFICE (PRIMARY)

- **Pediatric Hematology and Oncology**

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Bio

BIO

Sneha Ramakrishna obtained her B. A. from the University of Chicago and her M.D. from the Cleveland Clinic Lerner College of Medicine at Case Western Reserve University. In medical school, through the Howard Hughes Medical Research Scholar Award, she joined Dr. Crystal Mackall's laboratory, where she designed and developed various GD2 CAR-Ts and tested them in preclinical models. During her residency training in Pediatrics at the Children's Hospital of Philadelphia, she cared for some of the first patients treated with CD19 CAR T cells, learning the power of this therapy first-hand. During her fellowship in Pediatric Hematology/ Oncology at the Johns Hopkins/National Cancer Institute combined program, she worked with Dr. Terry Fry. She evaluated the mechanism of CD22 CAR T cell relapse in patients by developing an antigen escape model and establishing a deeper understanding of the effects of antigen density on CAR-T phenotype, expansion, and persistence (Fry…Ramakrishna…Mackall Nat Med, 2018; Ramakrishna, et al., Clinical Cancer Research, 2019). Since arriving at Stanford, Dr. Ramakrishna leads an interdisciplinary team that designs, develops, and successfully implements a robust correlative science platform for our novel CAR-T therapies. Analyzing patient samples from our first-in-human GD2 CAR-T trial (NCT04196413) treating a universally fatal cancer, diffuse midline glioma (DMG), we identified that intracerebroventricular CAR-T administration correlates with enhanced pro-inflammatory cytokines and reduced immunosuppressive cell populations in cerebrospinal fluid as compared to intravenous CAR-T administration (Majzner*, Ramakrishna*, et al., Nature 2022 *co-first authors). Her research program evaluates unique sets of patient samples using novel single-cell immune profiling to identify the drivers of CAR-T success or failure. Building on these findings, her team assesses approaches to enhance CAR-T efficacy and translate these findings to the clinic.

Clinically, Dr. Ramakrishna cares for children with solid tumors and treats hematologic, solid, and brain tumor pediatric patients with CAR T cell therapies in the Cancer Cellular Therapies program.

CLINICAL FOCUS

- Pediatric Hematology-Oncology

ACADEMIC APPOINTMENTS

- Assistant Professor - University Medical Line, Pediatrics - Hematology & Oncology
- Member, Maternal & Child Health Research Institute (MCHRI)

- Member, Stanford Cancer Institute

HONORS AND AWARDS

- Young Physician Scientist Award, American Society for Clinical Investigation (2024)
- Clinical Scientist Research Career Development Award (K08), National Cancer Institute (2022-2027)
- Young Investigator Award, Hyundai Hope on Wheels (2020-2022)
- ASH Abstract Achievement Award, American Society of Hematology (2017)
- Research Scholar, Howard Hughes Medical Institute (2010)

PROFESSIONAL EDUCATION

- Board Certification: Pediatric Hematology-Oncology, American Board of Pediatrics (2019)
- Board Certification, American Board of Pediatrics , Hematology/Oncology (2019)
- Board Certification: Pediatrics, American Board of Pediatrics (2015)
- Fellowship: Johns Hopkins and National Cancer Institute Ped Hematology and Oncology Training (2018) MD
- Residency: Children's Hospital of Philadelphia Pediatric Residency (2015) PA
- Medical Education: Case Western Reserve School of Medicine (2012) OH

LINKS

- Ramakrishna Lab Website: https://med.stanford.edu/ramakrishnalab

Research & Scholarship

CLINICAL TRIALS

- GD2 CAR T Cells in Diffuse Intrinsic Pontine Gliomas(DIPG) & Spinal Diffuse Midline Glioma(DMG), Recruiting
- Phase I Dose Escalation Study of CD19/CD22 Chimeric Antigen Receptor (CAR) T Cells in Children and Young Adults With Recurrent or Refractory B Cell Malignancies, Recruiting
- CD22-CAR T Cells in Children and Young Adults With B Cell Malignancies, Not Recruiting
- SPEARHEAD-3 Pediatric Study, Not Recruiting

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Aanchal Preet Kaur

Publications

PUBLICATIONS

- **Immune determinants of CAR-T cell expansion in solid tumor patients receiving GD2 CAR-T cell therapy.** *Cancer cell*
  Kaczanowska, S., Murty, T., Alimadadi, A., Contreras, C. F., Duault, C., Subrahmanyam, P. B., Reynolds, W., Gutierrez, N. A., Baskar, R., Wu, C. J., Michor, F., Altreuter, J., Liu, et al
  2023
- **INSPIRED Symposium Part 4B: CAR T cell correlative studies-established findings and future priorities.** *Transplantation and cellular therapy*
  Ligon, J. A., Ramakrishna, S., Ceppi, F., Calkoen, F. G., Diorio, C., Davis, K. L., Jacoby, E., Gottschalk, S., Schultz, L. M., Capitini, C. M.
  2023
- **GD2-CAR T cell therapy for H3K27M-mutated diffuse midline gliomas.** *Nature*

Majzner, R. G., Ramakrishna, S., Yeom, K. W., Patel, S., Chinnasamy, H., Schultz, L. M., Richards, R. M., Jiang, L., Barsan, V., Mancusi, R., Geraghty, A. C., Good, Z., Mochizuki, et al

2022

- **Modulation of Target Antigen Density Improves CAR T Cell Functionality and Persistence.** *Clinical cancer research : an official journal of the American Association for Cancer Research*

  Ramakrishna, S. n., Highfill, S. L., Walsh, Z. n., Nguyen, S. M., Lei, H. n., Shern, J. F., Qin, H. n., Kraft, I. L., Stetler-Stevenson, M. n., Yuan, C. M., Hwang, J. D., Feng, Y. n., Zhu, et al

  2019

- **CD22 CAR T cells demonstrate high response rates and safety in pediatric and adult B-ALL: Phase 1b results.** *Leukemia*

  Schultz, L. M., Jeyakumar, N., Kramer, A. M., Sahaf, B., Srinagesh, H., Shiraz, P., Agarwal, N., Hamilton, M., Erickson, C., Jacobs, A., Moon, J., Baggott, C., Arai, et al

  2024

- **Tumor inflammation-associated neurotoxicity.** *Nature medicine*

  Mahdi, J., Dietrich, J., Straathof, K., Roddie, C., Scott, B. J., Davidson, T. B., Prolo, L. M., Batchelor, T. T., Campen, C. J., Davis, K. L., Gust, J., Lim, M., Majzner, et al

  2023

- **Role of peripheral blood MRD and 18F-FDG PET in the post-CAR relapse setting: a case study of discordant peripheral blood and bone marrow MRD.** *Journal for immunotherapy of cancer*

  Schultz, L., Davis, K. L., Walkush, A., Baggott, C., Erickson, C., Ramakrishna, S., Aftandilian, C., Lacayo, N., Nadel, H. R., Oak, J., Mackall, C. L.

  2023; 11 (2)

- **CD22-CAR T-Cell Therapy Mediates High Durable Remission Rates in Adults with Large B-Cell Lymphoma Who Have Relapsed after CD19-CAR T-Cell Therapy**

  Frank, M. J., Baird, J. H., Patel, S., Craig, J., Spiegel, J. Y., Ehlinger, Z., Chinnasamy, H., Younes, S. F., Oak, J. S., Natkunam, Y., Reynolds, W. D., Iglesias, M., Crawford, et al

  AMER SOC HEMATOLOGY.2021

- **CAR T cells with dual targeting of CD19 and CD22 in adult patients with recurrent or refractory B cell malignancies: a phase 1 trial.** *Nature medicine*

  Spiegel, J. Y., Patel, S., Muffly, L., Hossain, N. M., Oak, J., Baird, J. H., Frank, M. J., Shiraz, P., Sahaf, B., Craig, J., Iglesias, M., Younes, S., Natkunam, et al

  2021

- **Use of cardiac radiation therapy as bridging therapy to CAR-T for relapsed pediatric B-cell acute lymphoblastic leukemia.** *Pediatric blood & cancer*

  Marquez, C. P., Montiel-Esparza, R., Hui, C., Schultz, L. M., Davis, K. L., Hoppe, R. T., Donaldson, S. S., Ramakrishna, S., Hiniker, S. M.

  2020: e28870

- **Using single-cell analysis to predict CAR T cell outcomes.** *Nature medicine*

  Ramakrishna, S., Shah, N. N.

  2020

- **Use of Chimeric Antigen Receptor Modified T Cells With Extensive Leukemic Myocardial Involvement** *JACC: CARDIOONCOLOGY*

  Han, B., Montiel-Esparza, R., Chubb, H., Kache, S., Schultz, L. M., Davis, K. L., Ramakrishna, S., Su, L.

  2020; 2 (4): 666–70

- **Identification of dual positive CD19+/CD3+ T cells in a leukapheresis product undergoing CAR transduction: a case report.** *Journal for immunotherapy of cancer*

  Schultz, L., Patel, S., Davis, K. L., Ramakrishna, S., Sahaf, B., Bhatia, N., Baggott, C., Erickson, C., Majzner, R. G., Oak, J., Bertaina, A., Mackall, C., Feldman, et al

  2020; 8 (2)

- **Delayed cancer diagnoses and high mortality in children during the COVID-19 pandemic.** *Pediatric blood & cancer*

  Ding, Y., Ramakrishna, S., Long, A. H., Phillips, C. A., Montiel-Esparza, R., Diorio, C. J., Bailey, L. C., Maude, S. L., Aplenc, R., Batra, V., Reilly, A. F., Rheingold, S. R., Lacayo, et al

  2020: e28427

- **Prospects and Challenges for Use of CAR T Cell Therapies in Solid Tumors.** *Expert opinion on biological therapy*

  Ramakrishna, S., Barsan, V., Mackall, C.

  2020

- **Immunotherapy for the Treatment of Acute Lymphoblastic Leukemia.** *Current oncology reports*
  Barsan, V., Ramakrishna, S., Davis, K. L.
  2020; 22 (2): 11

- **Supercharging your CAR.** *Blood*
  Ramakrishna, S. n., Davis, K. L.
  2020; 135 (9): 593–94

- **CD22-Directed CAR T-Cell Therapy Induces Complete Remissions in CD19-Directed CAR-Refractory Large B-Cell Lymphoma.** *Blood*
  Baird, J. H., Frank, M. J., Craig, J. n., Patel, S. n., Spiegel, J. Y., Sahaf, B. n., Oak, J. S., Younes, S. n., Ozawa, M. n., Yang, E. n., Natkunam, Y. n., Tamaresis, J. S., Ehlinger, et al
  2020

- **Preclinical Development of Bivalent Chimeric Antigen Receptors Targeting Both CD19 and CD22** *MOLECULAR THERAPY-ONCOLYTICS*
  Qin, H., Ramakrishna, S., Nguyen, S., Fountaine, T. J., Ponduri, A., Stetler-Stevenson, M., Yuan, C. M., Haso, W., Shern, J. F., Shah, N. N., Fry, T. J.
  2018; 11: 127–37

- **CD22-targeted CAR T cells induce remission in B-ALL that is naive or resistant to CD19-targeted CAR immunotherapy.** *Nature medicine*
  Fry, T. J., Shah, N. N., Orentas, R. J., Stetler-Stevenson, M. n., Yuan, C. M., Ramakrishna, S. n., Wolters, P. n., Martin, S. n., Delbrook, C. n., Yates, B. n., Shalabi, H. n., Fountaine, T. J., Shern, et al
  2017

- **Reduction of MDSCs with All-trans Retinoic Acid Improves CAR Therapy Efficacy for Sarcomas** *CANCER IMMUNOLOGY RESEARCH*
  Long, A. H., Highfill, S. L., Cui, Y., Smith, J. P., Walker, A. J., Ramakrishna, S., El-Etriby, R., Galli, S., Tsokos, M. G., Orentas, R. J., Mackall, C. L.
  2016; 4 (10): 869-880