Stanford



Manoj Kumar

Basic Life Research Scientist, SCI Faculty Support

Bio

ACADEMIC APPOINTMENTS

- Basic Life Research Scientist, SCI Faculty Support
- Member, Maternal & Child Health Research Institute (MCHRI)

HONORS AND AWARDS

- The Alavi-Mandell Award (I) - 2022, Society of Nuclear Medicine and Molecular Imaging (SNMMI) (2022)
- The Alavi-Mandell Award (II) - 2022, Society of Nuclear Medicine and Molecular Imaging (SNMMI) (2022)
- PCF - Young Investigator Award - 2021, Prostate Cancer Foundation (PCF) (2021)
- Sanjiv Sam Gambhir—Philips Fellowship, Stanford Medicine - PHIND (2021)
- The Alavi-Mandell Award - 2020, Society of Nuclear Medicine and Molecular Imaging (SNMMI) (2020)
- Scholarship for Training Course on Experimental Modeling of Human Cancer, The Jackson Laboratory (2019)
- RSNA Student Travel Award - 2018, Radiological Society of North America (RSNA) (2018)
- AACR Scholar-in-Training Award 2018, American Association for Cancer Research (AACR) (2018)
- Graduate School Research Grant Competition Award, University of Wisconsin-Madison Graduate School (2018)

PROFESSIONAL EDUCATION

- Doctor of Philosophy (Ph.D.), University of Wisconsin-Madison , Clinical Investigation (2020)
- Master of Science (MS), University of Wisconsin-Madison , Biotechnology (2014)
- Bachelor of Technology (B.Tech), Uttar Pradesh Technical University , Biotechnology (2010)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

I develop imaging-guided therapeutic strategies to study and modulate immune responses in cancer, combining molecular imaging with targeted therapeutic development. My training is in molecular imaging, where during my doctoral work I developed and validated a PET-based approach to evaluate endocrine therapy response in advanced breast cancer.

My current research focuses on integrating immuno-oncology with experimental and translational systems, including lipid nanoparticle (LNP)-mediated mRNA delivery, in situ CAR-T cell engineering, and antibody-based therapeutics. I design and apply in vitro and in vivo models to study tumor immune markers and treatment responses, with the goal of developing integrated platforms that can both monitor and guide therapeutic interventions.

To achieve this, I use antibodies, nanoparticles, and reporter gene systems, alongside combination therapeutic strategies aimed at modulating and restoring anti-tumor immune function. This work is carried out in close collaboration with multidisciplinary teams across immunology, radiochemistry, and clinical oncology, bridging experimental research with translational and clinical applications.

LAB AFFILIATIONS

- Everett Meyer, Meyer Lab (6/1/2025)

Publications

PUBLICATIONS

- **B7-H4 ImmunoPET Imaging Tracks Tumor-Associated Macrophage Changes in Prostate Cancer.** *Molecular pharmaceutics*
  Kumar, M., Singh, S. B., Vasyliv, I., Habte, F., Kalita, M., Alam, I. S., Koladiya, A., Dai, S. Y., James, M., Rao, J., Beziere, N., Daldrup-Link, H. E.
  2025
- **Autoimmune disease: genetic susceptibility, environmental triggers, and immune dysregulation. Where can we develop therapies?** *Frontiers in immunology*
  Kumar, M., Yip, L., Wang, F., Marty, S. E., Fathman, C. G.
  2025; 16: 1626082
- **PET Imaging of Estrogen Receptors Using 18F-Based Radioligands.** *Methods in molecular biology (Clifton, N.J.)*
  Kumar, M., Salem, K., Jeffery, J. J., Fowler, A. M.
  1800; 2418: 129-151
- **Recent Advances in Imaging Steroid Hormone Receptors in Breast Cancer** *JOURNAL OF NUCLEAR MEDICINE*
  Kumar, M., Salem, K., Tevaarwerk, A. J., Strigel, R. M., Fowler, A. M.
  2020; 61 (2): 172–76
- **Longitudinal molecular imaging of progesterone receptor reveals early differential response to endocrine therapy in breast cancer with an activating ESR1 mutation.** *Journal of nuclear medicine : official publication, Society of Nuclear Medicine*
  Kumar, M. n., Salem, K. n., Jeffery, J. J., Yan, Y. n., Mahajan, A. M., Fowler, A. M.
  2020
- **Correction: Dual-enzyme activated theranostic nanoparticles for image-guided glioblastoma therapy.** *Scientific reports*
  Varniab, Z. S., Chang, E., Wang, J., Duwa, R., Suryadevara, V., Wu, W., Kumar, M., Liang, T., Khatoon, Z., Morais, G. R., Falconer, R., Shi, Y., Tikhomirov, et al
  2026; 16 (1): 4475
- **Apparent diffusion coefficient can assist in differentiating between benign and malignant primary bone tumors in pediatric patients.** *Skeletal radiology*
  Lokesha, Y. U., Singh, S. B., von Krüchten, R., Varniab, Z. S., Kumar, M., Suryadevara, V., Sarrami, A. H., Liang, T., Wong, J., Pribnow, A., Daldrup-Link, H. E.
  2025
- **The role of ubiquitin ligases in regulating immune cell functions.** *Frontiers in immunology*
  Marty, S. E., Yip, L., Wang, F., Kumar, M., Fathman, C. G.
  2025; 16: 1625419
- **Dual-enzyme activated theranostic nanoparticles for image-guided glioblastoma therapy.** *Scientific reports*
  Shokri Varniab, Z., Chang, E., Wang, J., Duwa, R., Suryadevara, V., Wu, W., Kumar, M., Liang, T., Khatoon, Z., Morais, G. R., Falconer, R., Shi, Y., Tikhomirov, et al
  2025; 15 (1): 13540
- **PET/CT in the Evaluation of CAR-T Cell Immunotherapy in Hematological Malignancies.** *Molecular imaging*
  Singh, S. B., Bhandari, S., Siwakoti, S., Kumar, M., Singh, R., Bhusal, S., Sharma, K., Bhandari, S., Khanal, K.
  2024; 23: 15353508241257924

- **Attenuation correction and truncation completion for breast PET/MR imaging using deep learning.** *Physics in medicine and biology*
  Li, X., Johnson, J., Strigel, R. M., Bancroft, L. C., Hurley, S. A., Estakhraji, I. Z., Kumar, M., Fowler, A. M., McMillan, A. B.
  2024
- **PET/CT in the Evaluation of CAR-T Cell Immunotherapy in Hematological Malignancies** *Molecular Imaging*
  Singh, S. B., Bhandari, S., Siwakoti, S., Singh, R., Bhusal, S., Sharma, K., Bhandari, S., Khanal, K.
  2024; 23: 15353508241257924
- **Spatial mapping of cellular senescence: emerging challenges and opportunities.** *Nature aging*
  Gurkar, A. U., Gerencser, A. A., Mora, A. L., Nelson, A. C., Zhang, A. R., Lagnado, A. B., Enninful, A., Benz, C., Furman, D., Beaulieu, D., Jurk, D., Thompson, E. L., Wu, et al
  2023
- **Surface-Engineered Extracellular Vesicles in Cancer Immunotherapy.** *Cancers*
  Johnson, V., Vasu, S., Kumar, U. S., Kumar, M.
  2023; 15 (10)
- **Surface-Engineered Extracellular Vesicles in Cancer Immunotherapy** *CANCERS*
  Johnson, V., Vasu, S., Kumar, U. S. S., Kumar, M.
  2023; 15 (10)
- **NIH SenNet Consortium to map senescent cells throughout the human lifespan to understand physiological health** *NATURE AGING*
  Lee, P. J., Benz, C. C., Blood, P., Boerner, K., Campisi, J., Chen, F., Daldrup-Link, H., De Jager, P., Ding, L., Duncan, F. E., Eickelberg, O., Fan, R., Finkel, et al
  2022; 2 (12): 1090-1100
- **Gadolinium-based contrast agent attenuation does not impact PET quantification in simultaneous dynamic contrast enhanced breast PET/MR.** *Medical physics*
  Allen, T. J., Henze Bancroft, L. C., Kumar, M., Bradshaw, T. J., Strigel, R. M., McMillan, A. B., Fowler, A. M.
  2022
- **SU086, an inhibitor of HSP90, impairs glycolysis and represents a treatment strategy for advanced prostate cancer.** *Cell reports. Medicine*
  Rice, M. A., Kumar, V., Tailor, D., Garcia-Marques, F. J., Hsu, E., Liu, S., Bermudez, A., Kanchustambham, V., Shankar, V., Inde, Z., Alabi, B. R., Muruganantham, A., Shen, et al
  2022; 3 (2): 100502
- **Measuring Glucose Uptake in Primary Invasive Breast Cancer Using Simultaneous Time-of-Flight Breast PET/MRI: A Method Comparison Study with Prone PET/CT.** *Radiology. Imaging cancer*
  Fowler, A. M., Kumar, M., Bancroft, L. H., Salem, K., Johnson, J. M., Karow, J., Perlman, S. B., Bradshaw, T. J., Hurley, S. A., McMillan, A. B., Strigel, R. M.
  2021; 3 (1): e200091
- **MCM2-7 complex is a novel druggable target for neuroendocrine prostate cancer.** *Scientific reports*
  Hsu, E. C., Shen, M., Aslan, M., Liu, S., Kumar, M., Garcia-Marques, F., Nguyen, H. M., Nolley, R., Pitteri, S. J., Corey, E., Brooks, J. D., Stoyanova, T.
  2021; 11 (1): 13305
- **Progesterone Receptor Gene Variants in Metastatic Estrogen Receptor Positive Breast Cancer** *HORMONES & CANCER*
  Fowler, A. M., Salem, K., DeGrave, M., Ong, I. M., Rassman, S., Powers, G. L., Kumar, M., Michel, C. J., Mahajan, A. M.
  2020; 11 (2): 63–75
- **F-18-Fluoroestradiol PET Imaging of Activating Estrogen Receptor-alpha Mutations in Breast Cancer** *JOURNAL OF NUCLEAR MEDICINE*
  Kumar, M., Salem, K., Michel, C., Jeffery, J. J., Yan, Y., Fowler, A. M.
  2019; 60 (9): 1247–52
- **Sensitivity and Isoform Specificity of F-18-FluorofuranylnorprogesteroneforMeasuring Progesterone Receptor Protein Response to Estradiol Challenge in Breast Cancer** *JOURNAL OF NUCLEAR MEDICINE*
  Salem, K., Kumar, M., Yan, Y., Jeffery, J. J., Kloepping, K. C., Michel, C. J., Powers, G. L., Mahajan, A. M., Fowler, A. M.
  2019; 60 (2): 220–26

- **Determination of binding affinity of molecular imaging agents for steroid hormone receptors in breast cancer.** *American journal of nuclear medicine and molecular imaging*
  Salem, K., Kumar, M., Kloepping, K. C., Michel, C. J., Yan, Y., Fowler, A. M.
  2018; 8 (2): 119-126
- **F-18-16 alpha-17 beta-Fluoroestradiol Binding Specificity in Estrogen Receptor-Positive Breast Cancer** *RADIOLOGY*
  Salem, K., Kumar, M., Powers, G. L., Jeffery, J. J., Yan, Y., Mahajan, A. M., Fowler, A. M.
  2018; 286 (3): 868–76
- **Determination of binding affinity of molecular imaging agents for steroid hormone receptors in breast cancer** *AMERICAN JOURNAL OF NUCLEAR MEDICINE AND MOLECULAR IMAGING*
  Salem, K., Kumar, M., Kloepping, K. C., Michel, C. J., Yan, Y., Fowler, A. M.
  2018; 8 (2): 119-126
- **Dendrimer-stabilized smart-nanoparticle (DSSN) platform for targeted delivery of hydrophobic antitumor therapeutics** *PHARMACEUTICAL RESEARCH*
  Tekade, R. K., Tekade, M., Kumar, M., Chauhan, A. S.
  2015; 32 (3): 910–28