

Stanford



Israt Alam

Senior Research Scientist-Basic Life, Rad/Molecular Imaging Program at Stanford

SUPERVISORS

- Sanjiv Gambhir

Bio

BIO

Research Focus and interests: Molecular Imaging, PET, Immuno-Oncology, Graft versus Host Disease, CAR T cells

Dr. Israt Alam is a Senior Scientist in the Radiology Department at Stanford University. She trained in Prof. Sanjiv Sam Gambhir's lab and transitioned to Dr. Michelle James' lab in 2021. Her research focuses on studying lymphocyte activation with the motivation of developing non-invasive imaging tools, to monitor immune dynamics in response to cancer immunotherapy and in immunopathology. Her work has supported the clinical translation of several nuclear imaging agents (small molecules and a biologic) for early detection of cancer and prediction of treatment response. She has also worked on several biomarker detection platforms for early disease detection. She is currently co-chair of the "Imaging in cell and immune therapies" (ICIT) interest group for the World Molecular Imaging Society (WMIS).

Appointments:

- Senior Research Scientist, James Lab, Department of Radiology, Stanford
- Life Sciences Research Associate, Gambhir Lab, Department of Radiology, Stanford
- Post-Doctoral Scholar, Gambhir Lab, Department of Radiology, Stanford
- Visiting Researcher /Churchill Travel Fellow in the Plateforme d'imagerie dynamique lab of Prof. Spencer Shorte, Pasteur Institute, Paris
- Science Education Consultant: United Nations Educational, Science and Cultural Organization (UNESCO), Paris
- Science Education Intern: United Nations Educational, Science and Cultural Organization (UNESCO), Paris

HONORS AND AWARDS

- Ones to Watch, Society of Nuclear Medicine & Molecular Imaging (SNMMI) (2023)
- Mitzi and William Bland Pilot Research Grant, Education and Research Foundation for Nuclear Medicine and Molecular Imaging/SNMMI (2023)
- Top 10 abstract-2nd highest scored abstract (out of 400+ submitted), World Molecular Imaging Congress (2021)
- Radiopharmaceutical Sciences Young Investigator Award-2nd Place, SNMMI Annual Meeting (2018)
- Top abstract-highest scoring abstract in the conference (out of 400+ submitted), European Molecular Imaging Meeting, San Sebastian, Spain (2018)

- Science and Technology Travel Fellow, Winston Churchill Memorial Trust (2014)
- Poster Prize, World Molecular Imaging Congress-Kyoto, Japan (2010)
- Travel Award, World Molecular Imaging Congress-Kyoto, Japan (2010)
- Travel Award, World Molecular Imaging Congress-Montreal, Canada (2009)
- Travel Award, World Molecular Imaging Congress-Nice, France (2008)
- First Class Honors, Imperial College London (2005)
- Governor's Prize- Class Valedictorian, Imperial College London (2005)

EDUCATION AND CERTIFICATIONS

- PhD, University of Cambridge, Emmanuel College, UK , Molecular Imaging-Supervisor Prof. Kevin Brindle. Thesis title: ' Novel Probes for Imaging Cell Death'
- MSci, Imperial College London, UK , Biochemistry

PATENTS

- Israt Alam. "United States Patent US-2018-0043040-A1 Imaging tumor glycolysis by non-invasive measurement of pyruvate kinase M2.", Feb 15, 2018
- Israt Alam, Maaik de Backer, Andre Neves, Kevin Brindle. "United Kingdom Patent Europe EP2280735 Agents for detecting and imaging cell death", University of Cambridge, Apr 29, 2009

Teaching

COURSES

2023-24

- Probes and Applications for Multi-modality Molecular Imaging of Living Subjects: BIOE 224, BMP 224, RAD 224 (Win)

2022-23

- Probes and Applications for Multi-modality Molecular Imaging of Living Subjects: BIOE 224, BMP 224, RAD 224 (Win)

2021-22

- Probes and Applications for Multi-modality Molecular Imaging of Living Subjects: BIOE 224, RAD 224 (Win)

2020-21

- Probes and Applications for Multi-modality Molecular Imaging of Living Subjects: BIOE 224, RAD 224 (Win)

Professional

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

- Subcategory Chair-Inflammation/Immunology, WMIC 2023 Prague-World Molecular Imaging Society (2023 - 2023)
- Subcategory Chair-Inflammation/Immunology, WMIC 2024 Montreal-World Molecular Imaging Society (2024 - present)
- Co-Chair, Imaging in Immune and Cell Therapy (ICIT) interest group/WMIS (2021 - present)
- Subcategory Chair-Immuno-oncology, European Molecular Imaging Meeting (2021 - 2022)
- Category Chair-Immunology & Infection, WMIC 2021-World Molecular Imaging Society (2021 - 2021)
- Program Committee Member-World Molecular Imaging Congress 2021, World Molecular Imaging Society (2020 - present)
- Course Co-Director and Lecturer, Stanford BioEngineering (BioE 224)-Probes for Multi-modality Molecular Imaging (2016 - present)
- Member, World Molecular Imaging Society (WMIS) (2015 - present)
- Member, European Society of Molecular Imaging (ESMI) (2015 - present)
- Member, Society of Nuclear Medicine and Molecular Imaging (SNMMI) (2018 - present)
- Member, Society of Immunotherapy of Cancer (SITC) (2022 - present)

Publications

PUBLICATIONS

- **Molecular Imaging of Acute Graft-Versus-Host Disease.** *Journal of nuclear medicine : official publication, Society of Nuclear Medicine*
Bernardi, C., Garibotto, V., Mobashwera, B., Negrin, R. S., Alam, I. S., Simonetta, F.
2024
- **PET Imaging of Innate Immune Activation Using 11C Radiotracers Targeting GPR84.** *JACS Au*
Kalita, M., Park, J. H., Kuo, R. C., Hayee, S., Marsango, S., Straniero, V., Alam, I. S., Rivera-Rodriguez, A., Pandrala, M., Carlson, M. L., Reyes, S. T., Jackson, I. M., Suigo, et al
2023; 3 (12): 3297-3310
- **Application of Machine Learning Driven Computational Approaches for Novel CNS PET Tracer Development**
Jackson, I., Luo, A., Webb, E., Zhang, B., Guo, A., Nagy, S., Shao, X., Kuo, R., Carlson, M., Alam, I., Rodriguez, A., Winton, W., Stauff, et al
ELSEVIER SCIENCE INC.2023: S40-S41
- **Development and Initial Assessment of [18F]OP-801: a Novel Hydroxyl Dendrimer PET Tracer for Preclinical Imaging of Innate Immune Activation in the Whole Body and Brain.** *Molecular imaging and biology*
Carlson, M. L., Jackson, I. M., Azevedo, E. C., Reyes, S. T., Alam, I. S., Kellow, R., Castillo, J. B., Nagy, S. C., Sharma, R., Brewer, M., Cleland, J., Shen, B., James, et al
2023
- **PET imaging of TREM1 identifies CNS-infiltrating myeloid cells in a mouse model of multiple sclerosis.** *Science translational medicine*
Chaney, A. M., Cropper, H. C., Jain, P., Wilson, E., Simonetta, F., Johnson, E. M., Alam, I. S., Patterson, I. T., Swarovski, M., Stevens, M. Y., Wang, Q., Azevedo, C., Nagy, et al
2023; 15 (702): eabm6267
- **Clinical Radiosynthesis and Translation of [18F]OP-801: A Novel Radiotracer for Imaging Reactive Microglia and Macrophages.** *ACS chemical neuroscience*
Jackson, I. M., Carlson, M. L., Beinat, C., Malik, N., Kalita, M., Reyes, S., Azevedo, E. C., Nagy, S. C., Alam, I. S., Sharma, R., La Rosa, S. A., Moradi, F., Cleland, et al
2023
- **Development and initial evaluation of a novel 11C-labeled PET tracer to image GPR84 expressing-myeloid cells during neuroinflammation**
Kalita, M., Park, J., Hayee, S., Marsango, S., Carlson, M., Reyes, S., Nagy, S., Straniero, V., Pandrala, M., Jackson, I., Alam, I., Valoti, E., Milligan, et al
SOC NUCLEAR MEDICINE INC.2023
- **Highly Excretable Gold Supraclusters for Translatable In Vivo Raman Imaging of Tumors.** *ACS nano*
Yu, J. H., Jeong, M. S., Cruz, E. O., Alam, I. S., Tumbale, S. K., Zlitni, A., Lee, S. Y., Park, Y. I., Ferrara, K., Kwon, S., Gambhir, S. S., Rao, J.
2023
- **ICOS ImmunPET Enables Visualization of Activated T Cells and Early Diagnosis of Murine Acute Gastrointestinal GvHD.** *Blood advances*
Xiao, Z., Alam, I. S., Simonetta, F., Chen, W., Scheller, L., Murty, S., Lohmeyer, J. K., Lopes Ramos, T. L., James, M. L., Negrin, R. S., Gambhir, S. S.
2022
- **Engineering genetically-encoded synthetic biomarkers for breath-based cancer detection**
Vermesh, O., D'Souza, A., Alam, I., Wardak, M., McLaughlin, T., El Rami, F., Sathirachinda, A., Bell, J., Pitteri, S., James, M., Hori, S., Gross, E., Gambhir, et al
AMER ASSOC CANCER RESEARCH.2022
- **Multiparameter Longitudinal Imaging of Immune Cell Activity in Chimeric Antigen Receptor T Cell and Checkpoint Blockade Therapies.** *ACS central science*
Xie, J., El Rami, F., Zhou, K., Simonetta, F., Chen, Z., Zheng, X., Chen, M., Balakrishnan, P. B., Dai, S., Murty, S., Alam, I. S., Baker, J., Negrin, et al
2022; 8 (5): 590-602
- **Visualizing T cell responses: The T cell PET imaging toolbox.** *Journal of nuclear medicine : official publication, Society of Nuclear Medicine*
Li, C., Han, C., Duan, S., Li, P., Alam, I., Xiao, Z.
2021
- **A Clinical PET Imaging Tracer ([18F]DASA-23) to Monitor Pyruvate Kinase M2 Induced Glycolytic Reprogramming in Glioblastoma.** *Clinical cancer research : an official journal of the American Association for Cancer Research*

- Beinat, C., Patel, C. B., Haywood, T., Murty, S., Naya, L., Castillo, J. B., Reyes, S. T., Phillips, M., Buccino, P., Shen, B., Park, J. H., Koran, M. E., Alam, et al
2021
- **Neurovascular, muscle, and skin changes on [18F]FDG PET/MRI in complex regional pain syndrome of the foot: A Prospective Clinical Study.** *Pain medicine (Malden, Mass.)*
Yoon, D., Xu, Y., Cipriano, P. W., Alam, I. S., Mari Aparici, C. A., Tawfik, V. L., Curtin, C. M., Carroll, I. R., Biswal, S.
2021
 - **A miniaturized optoelectronic biosensor for real-time point-of-care total protein analysis.** *MethodsX*
Vermesh, O., Mahzabeen, F., Levi, J., Tan, M., Alam, I. S., Chan, C. T., Gambhir, S. S., Harris, J. S.
2021; 8: 101414
 - **Minicircles for a two-step blood biomarker and PET imaging early cancer detection strategy.** *Journal of controlled release : official journal of the Controlled Release Society*
Robinson, E. R., Gowrishankar, G., D'Souza, A., Kheirrolomoom, A., Haywood, T., Hori, S. S., Chuang, H. Y., Zeng, Y., Tumbale, S., Aalipour, A., Beinat, C., Alam, I. S., Sathirachinda, et al
2021
 - **Nuclear Imaging of Endogenous Markers of Lymphocyte Response** *Nuclear Medicine and Immunology*
Alam, I. S., Shaffer, T. M., Gambhir, S. S.
Springer.2021: 15-59
 - **Real-time point-of-care total protein measurement with a miniaturized optoelectronic biosensor and fast fluorescence-based assay.** *Biosensors & bioelectronics*
Mahzabeen, F., Vermesh, O., Levi, J., Tan, M., Alam, I. S., Chan, C. T., Gambhir, S. S., Harris, J. S.
2020: 112823
 - **Molecular Imaging of Chimeric Antigen Receptor T Cells by ICOS-ImmunoPET.** *Clinical cancer research : an official journal of the American Association for Cancer Research*
Simonetta, F., Alam, I. S., Lohmeyer, J. K., Sahaf, B., Good, Z., Chen, W., Xiao, Z., Hirai, T., Scheller, L., Engels, P., Vermesh, O., Robinson, E., Haywood, et al
2020
 - **PET reporter gene imaging and ganciclovir-mediated ablation of chimeric antigen receptor T-cells in solid tumors.** *Cancer research*
Murty, S., Labanieh, L., Murty, T., Gowrishankar, G., Haywood, T., Alam, I. S., Beinat, C., Robinson, E., Aalipour, A., Klysz, D. D., Cochran, J. R., Majzner, R. G., Mackall, et al
2020
 - **Visualization of activated T cells by OX40-immunoPET as a strategy for diagnosis of acute Graft-versus-Host-Disease.** *Cancer research*
Alam, I. S., Simonetta, F., Scheller, L., Mayer, A. T., Murty, S., Vermesh, O., Nobashi, T. W., Lohmeyer, J. K., Hirai, T., Baker, J., Lau, K. H., Negrin, R., Gambhir, et al
2020
 - **Clinical and radiological features of immune checkpoint inhibitor-related pneumonitis in lung cancer and non-lung cancers.** *The British journal of radiology*
Nobashi, T. W., Nishimoto, Y., Kawata, Y., Yutani, H., Nakamura, M., Tsuji, Y., Yoshida, A., Sugimoto, A., Yamamoto, T., Alam, I. S., Noma, S.
2020: 20200409
 - **Intravital imaging reveals synergistic effect of CAR T-cells and radiation therapy in a preclinical immunocompetent glioblastoma model** *Oncoimmunology*
Murty, S., Haile, S. T., Beinat, C., Aalipour, A., Alam, I. S., Murty, T., Shaffer, T. M., Patel, C. B., Graves, E. E., Mackall, C. L., Gambhir, S. S.
2020; 9 (1)
 - **Evaluation of [18F]DASA-23 for non-invasive measurement of aberrantly expressed pyruvate kinase M2 in glioblastoma: preclinical and first in human studies**
Beinat, C., Patel, C., Haywood, T., Murty, S., Alam, I., Xie, Y., Gandhi, H., Holley, D., Gambhir, S.
SOC NUCLEAR MEDICINE INC.2019
 - **Development and Evaluation of an 18F-Radiolabeled Monocyclam Derivative for Imaging CXCR4 Expression.** *Molecular pharmaceutics*
Brickute, D., Braga, M., Kaliszczak, M. A., Barnes, C., Lau, D., Carroll, L., Stevens, E., Trousil, S., Alam, I. S., Nguyen, Q. D., Aboagye, E. O.
2019
 - **The characterization of 18F-hGTS13 for molecular imaging of xC- transporter activity with positron emission tomography.** *Journal of nuclear medicine : official publication, Society of Nuclear Medicine*

- Beinat, C. n., Gowrishankar, G. n., Shen, B. n., Alam, I. S., Robinson, E. n., Haywood, T. n., Patel, C. B., Azevedo, E. C., Castillo, J. n., Ilovich, O. n., Koglin, N. n., Schmitt-Willich, H. n., Berndt, et al
2019
- **Imaging of Red-Shifted Light From Bioluminescent Tumors Using Fluorescence by Unbound Excitation From Luminescence** *Front. Bioeng. Biotechnol*
Sônego, F., Bouccara, S., Pons, T., Alam, I. S., Shorte, S. L., Tournebize, R.
2019
 - **Positron emission tomography reporter gene strategy for use in the central nervous system** *PNAS*
Haywood, T., Beinat, C., Gowrishankar, G., Patel, C. B., Alam, I. S., Murty, S., Gambhir, S. S.
2019
 - **Tracking T Cell Activation By OX40 Immuno-PET: A Novel Strategy for Imaging of Graft Versus Host Disease**
Simonetta, F., Alam, I. S., Mayer, A. T., Murty, S., Vermesh, O., Hirai, T., Nobashi, T., Lau, K., Gambhir, S. S., Negrin, R. S.
AMER SOC HEMATOLOGY.2018
 - **An intravascular magnetic wire for the high-throughput retrieval of circulating tumour cells in vivo** *NATURE BIOMEDICAL ENGINEERING*
Vermesh, O., Aalipour, A., Ge, T., Saenz, Y., Guo, Y., Alam, I. S., Park, S., Adelson, C. N., Mitsutake, Y., Vilches-Moure, J., Godoy, E., Bachmann, M. H., Ooi, et al
2018; 2 (9): 696–705
 - **Positron emission tomography imaging of activated T cells by targeting OX40 reveals spatiotemporal immune dynamics and predicts response to in situ tumor vaccination**
Mayer, A. T., Alam, I. S., Sagiv-Barfi, I., Wang, K., Vermesh, O., Czerwinski, D. K., Johnson, E. M., James, M. L., Levy, R., Gambhir, S. S.
AMER ASSOC CANCER RESEARCH.2018
 - **Emerging Intraoperative Imaging Modalities to Improve Surgical Precision.** *Molecular imaging and biology : MIB : the official publication of the Academy of Molecular Imaging*
Alam, I. S., Steinberg, I., Vermesh, O., van den Berg, N. S., Rosenthal, E. L., van Dam, G. M., Ntziachristos, V., Gambhir, S. S., Hernot, S., Rogalla, S.
2018
 - **[F-18] FSPG-PET reveals increased cystine/glutamate antiporter (xc-) activity in a mouse model of multiple sclerosis** *JOURNAL OF NEUROINFLAMMATION*
Hoehne, A., James, M. L., Alam, I. S., Ronald, J. A., Schneider, B., D'Souza, A., Witney, T. H., Andrews, L. E., Cropper, H. C., Behera, D., Gowrishankar, G., Ding, Z., Wyss-Coray, et al
2018; 15
 - **Eradication of spontaneous malignancy by local immunotherapy.** *Science translational medicine*
Sagiv-Barfi, I., Czerwinski, D. K., Levy, S., Alam, I. S., Mayer, A. T., Gambhir, S. S., Levy, R.
2018; 10 (426)
 - **Imaging activated T cells predicts response to cancer vaccines.** *The Journal of clinical investigation*
Alam, I. S., Mayer, A. T., Sagiv-Barfi, I. n., Wang, K. n., Vermesh, O. n., Czerwinski, D. K., Johnson, E. M., James, M. L., Levy, R. n., Gambhir, S. S.
2018
 - **Intraoperative Molecular Imaging in Lung Cancer: The State of the Art and the Future.** *Molecular therapy : the journal of the American Society of Gene Therapy*
Rogalla, S. n., Joosten, S. C., Alam, I. S., Gambhir, S. S., Vermesh, O. n.
2018; 26 (2): 338–41
 - **The Utility of [18F]DASA-23 for Molecular Imaging of Prostate Cancer with Positron Emission Tomography.** *Molecular imaging and biology : MIB : the official publication of the Academy of Molecular Imaging*
Beinat, C. n., Haywood, T. n., Chen, Y. S., Patel, C. B., Alam, I. S., Murty, S. n., Gambhir, S. S.
2018
 - **A PET Imaging Strategy to Visualize Activated T Cells in Acute Graft-versus-Host Disease Elicited by Allogenic Hematopoietic Cell Transplant.** *Cancer research*
Ronald, J. A., Kim, B., Gowrishankar, G., Namavari, M., Alam, I. S., D'Souza, A., Nishikii, H., Chuang, H., Ilovich, O., Lin, C., Reeves, R., Shuhendler, A., Hoehne, et al
2017; 77 (11): 2893-2902

- **Rapid Imaging of Tumor Cell Death In Vivo Using the C2A Domain of Synaptotagmin-I** *JOURNAL OF NUCLEAR MEDICINE*
Neves, A. A., Xie, B., Fawcett, S., Alam, I. S., Witney, T. H., de Backer, M. M., Summers, J., Hughes, W., McGuire, S., Soloviev, D., Miller, J., Howat, W. J., Hu, et al
2017; 58 (6): 881-87
- **FJDASA-23 for Imaging Tumor Glycolysis Through Noninvasive Measurement of Pyruvate Kinase M2.** *Molecular imaging and biology*
Beinat, C., Alam, I. S., James, M. L., Srinivasan, A., Gambhir, S. S.
2017
- **Microwave gallium-68 radiochemistry for kinetically stable bis(thiosemicarbazone) complexes: structural investigations and cellular uptake under hypoxia** *DALTON TRANSACTIONS*
Alam, I. S., Arrowsmith, R. L., Cortezon-Tamarit, F., Twyman, F., Kociok-Koehn, G., Botchway, S. W., Dilworth, J. R., Carroll, L., Aboagye, E. O., Pascu, S. I.
2016; 45 (1): 144-155
- **Radiopharmaceuticals as probes to characterize tumour tissue** *EUROPEAN JOURNAL OF NUCLEAR MEDICINE AND MOLECULAR IMAGING*
Alam, I. S., Arshad, M. A., Quang-De Nguyen, Q. D., Aboagye, E. O.
2015; 42 (4): 537-561
- **Acetyl-CoA Synthetase 2 Promotes Acetate Utilization and Maintains Cancer Cell Growth under Metabolic Stress** *CANCER CELL*
Schug, Z. T., Peck, B., Jones, D. T., Zhang, Q., Grosskurth, S., Alam, I. S., Goodwin, L. M., Smethurst, E., Mason, S., Blyth, K., McGarry, L., James, D., Shanks, et al
2015; 27 (1): 57-71
- **Preclinical Evaluation of 3-F-18-Fluoro-2,2-Dimethylpropionic Acid as an Imaging Agent for Tumor Detection** *JOURNAL OF NUCLEAR MEDICINE*
Witney, T. H., Pisaneschi, F., Alam, I. S., Trousil, S., Kaliszczak, M., Twyman, F., Brickute, D., Nguyen, Q., Schug, Z., Gottlieb, E., Aboagye, E. O.
2014; 55 (9): 1506-1512
- **Radiolabeled RGD Tracer Kinetics Annotates Differential $\alpha(v)\beta(3)$ Integrin Expression Linked to Cell Intrinsic and Vessel Expression** *MOLECULAR IMAGING AND BIOLOGY*
Alam, I. S., Witney, T. H., Tomasi, G., Carroll, L., Twyman, F. J., Quang-De Nguyen, Q. D., Aboagye, E. O.
2014; 16 (4): 558-566
- **A Novel Radiotracer to Image Glycogen Metabolism in Tumors by Positron Emission Tomography** *CANCER RESEARCH*
Witney, T. H., Carroll, L., Alam, I. S., Chandrashekrana, A., Quang-De Nguyen, Q. D., Sala, R., Harris, R., DeBerardinis, R. J., Agarwal, R., Aboagye, E. O.
2014; 74 (5): 1319-1328
- **RGD-targeted MnO nanoparticles as T-1 contrast agents for cancer imaging - the effect of PEG length in vivo** *JOURNAL OF MATERIALS CHEMISTRY B*
Gallo, J., Alam, I. S., Lavdas, I., Wylezinska-Arridge, M., Aboagye, E. O., Long, N. J.
2014; 2 (7): 868-876
- **PET imaging with multimodal upconversion nanoparticles** *DALTON TRANSACTIONS*
Gallo, J., Alam, I. S., Jin, J., Gu, Y., Aboagye, E. O., Wong, W., Long, N. J.
2014; 43 (14): 5535-5545
- **Evaluation of Deuterated F-18- and C-11-Labeled Choline Analogs for Cancer Detection by Positron Emission Tomography** *CLINICAL CANCER RESEARCH*
Witney, T. H., Alam, I. S., Turton, D. R., Smith, G., Carroll, L., Brickute, D., Twyman, F. J., Quang-De Nguyen, Q. D., Tomasi, G., Awais, R. O., Aboagye, E. O.
2012; 18 (4): 1063-1072
- **Imaging sialylated tumor cell glycans in vivo** *FASEB JOURNAL*
Neves, A. A., Stoeckmann, H., Harmston, R. R., Pryor, H. J., Alam, I. S., Ireland-Zecchini, H., Lewis, D. Y., Lyons, S. K., Leeper, F. J., Brindle, K. M.
2011; 25 (8): 2528-2537
- **Comparison of the C2A Domain of Synaptotagmin-I and Annexin-V As Probes for Detecting Cell Death** *BIOCONJUGATE CHEMISTRY*
Alam, I. S., Neves, A. A., Witney, T. H., Boren, J., Brindle, K. M.
2010; 21 (5): 884-891