Ref: Madhukar (Mathew) Thakur PhD

Mathew joined Jefferson as Prof. of Radiation Oncology, in the div. of nuclear medicine in 1982 .Mathew became Prof. of Radiology at TJU in 1992 when the div. of Nuc. Med. merged with the Dept. of Radiology. In 2018 Mathew also received a joint appointment as Prof. Of Urology. Currently Mathew is the Director of the laboratories of radiopharmaceutical research, molecular imaging and Bio -fluid diagnostics.

Since his tenures at Bhabha Atomic Research Center, India, Medical Research Council at Hammersmith hospital, London, UK, Washington University, St. Louis, MO, Yale University, New Heaven CT and then at TJU, the major thrust of a Mathew's research has been to develop small bio molecules for diagnostic and therapeutic applications of diseases, the field that finds home as Nuclear Medicine and Molecular Imaging modality. This modality was born in early 1960s.

Mathew's service to the profession has helped advance the field of Nuclear Medicine and Molecular Imaging, nationally and internationally. A few contribution highlights are:

- Due to his seminal contribution to research, innovations, education and service to the field of Nuc. Med. and Mol. Imaging, Mathew was elected President by the members of three national and International Societies serving the field of Nuc. Med. and Mol. Imaging.
- Mathew has served on the board of directors of them and diligently contributed for their professional advancement for decades.
- While as the President of the Soc. of Nuc. Med and Mol.Imaging, in 2004-2005, for example, Mathew formed a Molecular Imaging Center of Excellence that is not only alive today after nearly two decades, but has continued to thrive.
- Because of his significant contributions to the field of Nuc. Med. Mol. Imaging, he was chosen Fellow of five, major, national and international organizations. These include, the Soc. of Nuclear Medicine and Molecular Imaging, the National Academy of Inventors, the American College of Nuclear Medicine, Indian Society of Nuclear Medicine and the Academy of Radiology Research.
- In 1983, through a generous financial support of NATO (North Atlantic Treaty Organization), Mathew organized a two week symposium and workshop in Italy, to teach and train 85 young physicians hailed from 63 NATO member countries, the highly innovative technique Mathew has developed and translated into clinical practice of Nuclear Medicine. This was to radiolabel living white blood cells to image infection, then a new advancement in the field of Nuc. Med. This technique is now being used in millions of patients throughout the world. This advanced symposium is one of the many that Mathew either organized or played an active role in their organization.
- By invitation of Int. Atomic Energy Agency (IAEA, Vienna, Austria) ,Mathew also taught this technique to hundreds of other scientists and physicians in the member countries.
- Mathew has published his innovative work in more than 500 original articles, abstracts, wrote 55 book chapters, and 12 editorials.
- Mathew edited 4 books. One of the books is now converted into an e-book, a one among one hundred that Plenum publishing company chose from the thousands that they have published since 1960.

- To further advance the field, Mathew, then as the President of the Society of Nuc. Med and Mol. Imaging, visited the Capital Hill several times and spoke with late Senators Arlan Spector (PA) and Edward Stevens (Alaska) to reinstate $ 35M federal funding for Nuc. Med residency program and he succeeded.
- Mathew has shared his findings at 280 national and international Nuc, Med. Mol. Imaging gatherings, many of which were as an invited speaker.
- He has given 78 invited presentations at academic institutions throughout the world, more than half dozen of which were named lectures.
- He has also given 62 invited presentations at Nuc. Med. industries, nationally and internationally, and
- Given 57 presentations at various, national and international training courses.
- In recognitions of his contributions, he has received 12 prestigious, national and international awards, including the Nuc. Med. Mol. Imaging Society's highest honor the Cassen award. In nearly 70 years of the history of the Soc. of Nuc. Med. Mol. Imaging, Mathew was only the third individual who was honored with all three most prestigious awards given by that international organization.
- Among many, Mathew developed I-131 labelled Rose Bengal for renal clearance studies, Kr-81 m for pulmonary function studies, In-111 bleomycin for imaging solid tumors, In-111-oxine to label blood cells in vitro and Tc-99m labeled monoclonal antibody to label white blood cells in vivo for imaging infection, Cu-64 TP3804 for PET imaging of malignant urological diseases and fluorescence labeled TP 4303 for diagnosis of malignant diseases in easily available biofluids.
- For imaging infection, Mathew performed translational research in 67 patients with pyogenic infection and published his finding in the J. Nuc. Med. a leading periodical in radiologic sciences. The journal celebrated its 60 th anniversary in 2021 in which a few articles which have made a significant impact on the clinical practice of Nuc. Med. This article of Mathew and his colleagues was one of them.
- Four of small molecular drugs developed by Mathew with his colleagues have been approved by FDA. All have contributed to advance the practice of nuclear medicine and molecular imaging.
- Mathew serves on editorial board of numerous epriodicals , reviews grant applications for NIH, DOD, Canadian Institution of Cancer Research, Kuwait university and several charitable foundations in Europe.
- Throughout his career Mathew's research has been supported by NIH, DOD, charitable organizations, industries and by TJU.
- Mathew holds 40 expired, active and pending patents, a few of which have been licensed to industries that one day may add to enhance the practice of nuclear medicine and molecular imaging.
- Currently, supported by NIH, Mathew and his colleagues are engaged in developing a novel, simple, and reliable technique in which he targets a certain genomic molecule to diagnose oncologic disease. A key small molecule developed by Mathew that has a very high affinity for the genomic biomolecule is a subject of worldwide patents.
- To advance the practice of Nuc. Med. Mol. Imaging, Mathew , throughout his active participation, determines the area of clinical need, develops hypotheses, synthesizes novel, small biomolecules, validates the hypotheses on the bench and pre-clinically and then with all federal and institutional approvals translates them into clinical feasibility to be able to use the molecules from bench to bed side.

- At TJU, over the years, Mathew has served on Research Comm., Comm. of Appointments and Promotions, Radioactive Drug Research Comm. Radiation Safety Comm. , Dean's Advisory Comm., Faculty Advisory Comm. and Protocol Review Comm., to name a few.
- Because of his extensive contribution that sustained and enhanced the clinical practice of Nuclear Medicine and Molecular Imaging, SNMMI (Society of Nuclear Medicine and Molecular Imaging) established "Lalita and Mathew (Madhukar) Thakur Award" to be given each year for the best translational research presented at the SNMMI annual meeting (Lalita is his late wife)