

The Mazumdar-Shaw International Oncology Fellows: A Koch Institute Partnership for Catalytic Cancer Research at MIT

Detailed Program Description *Pioneering the Field*

In the world of cancer research, MIT has made a quiet but spectacular impact. Its scholars have earned some of the most prestigious national and international scientific honors and include five Nobel laureates in Physiology or Medicine, seven Howard Hughes Medical Institute Investigators, six National Medal of Science winners, and 18 members of the National Academy of Science or Engineering. MIT's David H. Koch Institute for Integrative Cancer Research has its origins in the Center for Cancer Research (CCR), founded in 1974 by MIT Professor and Nobel Laureate Salvador E. Luria to study basic biological processes of cancer. In its first three decades, the CCR's research community made enormous contributions to the field: identifying the molecules that led to two of the first FDA-approved molecularly targeted anticancer drugs, Herceptin and Gleevec; contributing to the sequencing of the human genome; and isolating the first human cancer genes. Today, under the leadership of David H. Koch Professor of Biology Tyler Jacks – past President of the American Association of Cancer Research, a Howard Hughes Medical Investigator, and a member of both the National Academy of Science and the National Institute of Medicine – the researchers of the Koch Institute (KI) seek new solutions to the complex problems of cancer. Highly collaborative teams of biologists and engineers pursue innovative and cross-disciplinary strategies for detecting, treating, monitoring, and even preventing cancer. These teams, led by the KI's 25 faculty members, reflect MIT's and the KI's core commitment to education, and comprise a large cohort of postdoctoral researchers, graduate students, and MIT undergraduates who will themselves form the next generation of leading cancer investigators.

In December 2010, the KI's new 350,000 square foot, purpose-built research and technology facility formally opened on the MIT campus. Here, over 650 of the world's boldest cancer researchers deploy leading-edge technology, engineering, biology, and computation to invent new and more effective ways to address cancer. Their collaboration with over 20 other MIT departments and laboratories brings MIT's total interdisciplinary cancer research force to over 1,000, augmented by the Koch Institute's proximity to more than 90 biotechnology and pharmaceutical firms and 14 world-renowned hospitals. Research partnerships with hospitals and companies expand the reach of MIT's cancer research into pre-clinical and translational projects designed to more quickly bring life-saving discoveries and inventions to cancer patients worldwide.

Cancer is the leading cause of death in the world – a global challenge that calls for a global response. The Koch Institute is committed to collaborative and increasingly international efforts to address the complexities of the disease. KI scientists and engineers seek to interact with the most gifted scholars in the field, wherever they may be, as global innovations in bioinformatics, nanotechnology, mobile technology, and advanced materials hold tremendous promise in the fight against cancer.

The Mazumdar-Shaw International Oncology Fellows Program

To capture these opportunities, MIT has established the Mazumdar-Shaw International Oncology Fellows Program: a high-impact, bilateral collaboration with India focusing on cancer research training as its cornerstone. The aim of the Mazumdar-Shaw International Oncology Fellows Program is to help raise a new generation of cancer researchers in India whose careers and professional networks will be increasingly global. The broader mission is to build India's position as an intellectual hub for oncology research from which significant advances are expected to emerge. This Fellowship program offers opportunities for postdoctoral scientists, engineers, and physicians to undertake cancer research at the Koch Institute for Integrative Cancer Research at MIT, working at the interfaces between biology/medicine and the diverse fields of mathematics, engineering, computer science, and the physical and chemical sciences.

Candidates will be expected to identify an important biomedical research question and to propose a project to extend their research interests and abilities. After their Fellowship, candidates will be expected to continue their research and share the benefit of their MIT training within an Indian host institution.

What's Included: The Mazumdar-Shaw International Oncology Fellows Program provides funding for:

- A two year full-time postdoctoral research fellowship within the Koch Institute at MIT
- Travel expenses to India for the researcher and a Koch Institute faculty advisor to share their research with colleagues with Indian peer institutions in India.

The Fellowship is awarded with the expectation that the Fellows will subsequently continue their research in India. This funding will need to be secured separately from a host institution. Mazumdar-Shaw International Oncology Fellows will have extensive opportunities for substantive engagement with the KI research community, the larger Boston-area research community, and other postdoctoral researchers at MIT. At the KI, the Fellows will be encouraged to:

- Collaborate with other researchers from within the Koch Institute's 26 intramural and 23 extramural faculty labs and from across MIT
- Participate in a range of KI- and lab-sponsored programs, activities, and events
- Attend regular lab meetings, weekly KI-sponsored research forums and seminars, project-specific research retreats, and the annual KI research retreat.

Beyond MIT, the Fellows will have the opportunity to:

- Attend seminars sponsored by the many member hospitals of Dana Farber Harvard Cancer Center in the Boston area
- Take advantage of MIT's relationship with the larger life sciences, biomedical, and engineering communities in the Boston area.

At MIT, the Fellows will be part of a dynamic academic community that includes over 800

postdoctoral scholars. In order to ensure a high quality of life for those pursuing postdoctoral research at MIT, fellows at MIT have access to a [website for postdoctoral researchers at MIT](#), that provides links to:

- the Postdoctoral Advisory Council
- a calendar of postdoctoral seminars and events
- the MIT Careers Office
- the MIT International Scholars Office
- the INet Internship Network
- the MIT Postdoctoral Facebook and LinkedIn groups
- and the MIT Postdoctoral Lunch Table.

Research at MIT

The applicant's initial application will state the intended research objective with particular focus on the two years to be spent at MIT. The proposed research should fall within the Koch Institute's current research areas of focus:

- Nanotechnology-based cancer therapeutics
- Devices for cancer detection and monitoring
- Molecular and cellular basis of metastasis
- Analysis of cancer pathways and drug resistance
- Immunology and cancer

These research themes are more fully described on the [Koch Institute's web site](#).

The Mazumdar-Shaw International Oncology Fellowship will provide a stipend of between \$37,368 and \$47,000, depending on experience; additional support to cover expenses related to travel, health insurance, small items of equipment; and \$40,000 per Fellow per year for research.

Research Visits to India during the Fellowship Term

The Fellowship is awarded with the expectation that the Fellows will travel to India once or twice per year during their Fellowship term to present their research to colleagues at peer institutions in India, and that during one of these trips their KI faculty advisor will join them. Funding for travel and related expenses covered by the Fellowship will require pre-approval by the Koch Institute.

Post-Fellowship Research in India

Mazumdar-Shaw International Oncology Fellows are expected to have plans for continuing their research work in India following their Fellowship at MIT. Funding for these research expenses in India are not included in this Fellowship.

The award of funds for the second year of the Fellowship at MIT will require the formal approval of a progress report containing:

- a report on the first year research carried out at MIT
- a statement of support by the Fellow's MIT faculty sponsor(s)
- a statement of intent about subsequent research plans in India.

Eligibility and Application

Applications are accepted on a rolling basis. Fellows are generally selected in August and January, but exceptions may be made on a case-by-case basis. These awards are open to individuals – postdoctoral scientists, engineers, and physicians – with a passion both to tackle India-centric oncology problems and to further India's position as one of the world's hubs for cancer research.

In order to promote the probability of high impact translational research with relevance to Indian oncology patients, the applicant must be either:

- an Indian national, or
- a non-Indian national who has a career intent to work on an Indian-centric research problem and spend time conducting research in India.

The Koch Institute may consider inquiries from a host university regarding an exceptional biomedical research scientist or engineer who does not fall within the categories above.

The applicant should be about to submit his/her doctoral thesis or have up to, but no more than, three years postdoctoral experience from date of his/her PhD or MD. Time spent outside the research environment will be taken into consideration.

Applicants may have a background in any appropriate field of study (e.g. biology, medicine, chemistry, physics, or engineering) but must propose to address an important cancer research question.

The proposed research should fall within the Koch Institute's current research areas of focus, as described above and on the [Koch Institute's web site](#). Applicants must indicate which KI laboratory or laboratories would most effectively align with his or her proposed research.

Application and Review Process

Applications and all required documentation will be submitted electronically to MIT, via academicjobsonline.org.

Applicants' supporting materials are reviewed by the Mazumdar-Shaw International Oncology Fellowship Screening Committee, a board of leading Indian cancer research professionals. The Mazumdar-Shaw International Oncology Fellowship Screening Committee then submits to the Koch Institute a short-list of candidates for an initial phone or video screening interviews with Koch Institute faculty. Ahead of the initial screening interview, candidates will have identified the KI lab in which they prefer to conduct their research.

Through this video screening interview process, the Koch Institute faculty will select final candidates for onsite interviews. These candidates will travel to MIT at the Program's expense for a full day of interviews. The Koch Institute Executive Committee will make the final selection of Fellows. No more than two Mazumdar-Shaw International Oncology Fellows will be selected each year. Awards will be conditional upon a satisfactory performance at the interview. Applicants will be notified in writing of their success, or otherwise. Decisions will not be available by telephone.

Application Advice

The applicant should give careful thought to his/her choice of MIT faculty sponsor(s). The applicant should drive the identification of a research question and the development of the proposal. However, the applicant's KI faculty sponsor(s) may be able to provide the applicant with advice and support during the application process.

Applicants may not apply for more than one Koch Institute fellowship at any one time.

Reviewers typically assess:

- the applicant's track record
- the importance of the research question
- the interdisciplinary training component (such as, will a biologist be gaining experience in technologies and/or approaches that are not typically used in biomedical research or will a physicist, for example, be conducting research in a biomedical context?)
- the applicants' choice of appropriate research sponsors
- the feasibility of the approach
- the applicant's vision of how the Fellowship will contribute to his/her career development
- the applicant's longer-term aspirations
- the impact the applicant seeks to make on a difficult cancer problem.

Resubmissions are not permitted.

Application Contact

Inquiries may be e-mailed to ki-msfellowship@mit.edu or mailed to:

Koch Institute for Integrative Cancer Research at MIT
Executive Director's Office
Attn: Mazumdar-Shaw Fellowship
77 Massachusetts Avenue, Building 76-158
Cambridge, MA 02139
United States of America

Applications and all required documentation must be submitted electronically to MIT, via academicjobsonline.org.