Fergusson College Admission Process

ABHINAV CAREER SCOPE
Perfect Career Guide

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Abhinav CareerScope

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Need Of Neuroscience

- Neuroscience examines how information is processed in the brain, what behaviours are controlled and regulated by brain activity.
- An important component when it comes to diagnosis and treatment of psychiatric (sub-speciality) health conditions such as depression, anxiety disorders including OCD & PTSD; Schizophrenia; Bipolar Disorder.
- Neuroscience is vital for studying the brain and treating neurological disorders such as Alzheimer's, Parkinson's Diseases or Multiple Sclerosis.
- Understanding the role of neuroscience in improving cognitive functions such as memory.

How To Become NeuroScientist

- **High School Preparation**

  Emphasis in Science and Math: Enrol in classes like biology, chemistry, physics is mathematics.

  Get Involved: Join a science club, attend workshops or volunteer in research labs to get early exposure.

- **Earn a Bachelor's Degree**

  Major choice: neuroscience, biology or psychology or any related field.

  Get some research: Do undergrad researchers in order to learn how science works as a real skillet, not only theoretical ones.

How To Become NeuroScientist

Maintain a High GPA: You will need to have strong grades in order for you to apply for graduate school.

- **Pursue Advanced Education**
- **Complete a Ph.D. Program**
- **Postdoctoral Research (Optional)**
- **Develop Professional Skills**

Skills Sets & Qualities Required

Skill Sets

- Research Skills
- Technical Skills
- Analytical Skills
- Communication Skills
- Interpersonal Skills
- Attention to Detail
- Organizational Skills
- Technical Writing Skills

Personal Qualities

- Curiosity
- Perseverance
- Creativity
- Critical Thinking
- Empathy
- Adaptability
- Ethical Judgment
- Motivation and Passion

Type Of Courses

- Cognitive Neuroscience
- Neuroanatomy
- Developmental Neuroscience
- Pharmacology
- Advanced Neuroscience
- Neuroscience Research Methods
- Neurogenetics
- Neuroimaging
- Social Neuroscience

Practical and Laboratory Courses

- Laboratory Techniques in Neuroscience
- Neuroscience Research Project

Top Colleges

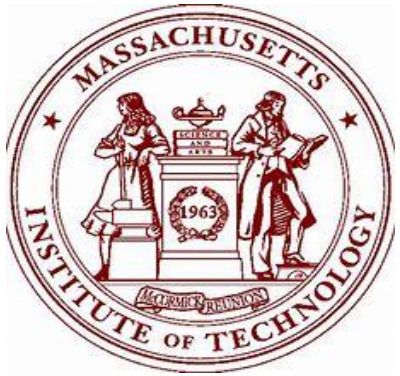
- Harvard University, Cambridge, MA, USA
- Stanford University, Stanford, CA, USA
- Massachusetts Institute of Technology, Cambridge, MA, USA
- University of California, San Francisco, San Francisco, CA, USA
- Johns Hopkins University, Baltimore, MD, USA
- University of Oxford, Oxford, England
- University of Cambridge, Cambridge, England
- Columbia University New York City, NY, USA
- University of California, Los Angeles, Los Angeles, CA, USA
- Yale University, New Haven, CT, USA
- University of Chicago, Chicago, IL, USA
- University of Pennsylvania, Philadelphia, PA, USA
- Duke University, Durham, NC, USA
- University of Michigan, Ann Arbor, MI, USA
- Northwestern University, Evanston, IL, USA

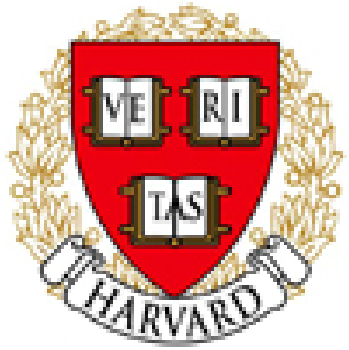
Job Opportunities

- Neuroscientist
- Postdoctoral Researcher
- Laboratory Technician
- Research Assistant
- Clinical Neuroscientist
- Neuropsychologist
- Neurosurgery Technician
- Physician Assistant
- Clinical Research Associate
- Drug Development Scientist
- Regulatory Affairs Specialist
- Medical Science Liaison
- Public Health Researcher
- Policy Analyst
- Advocacy Coordinator
- Educator/Professor
- Science Communicator
- Curriculum Developer
- Data Scientist
- Bioinformatics Specialist
- Neuroinformatics Engineer
- Cognitive Neuroscience Consultant
- Forensic Neuroscientist
- User Experience Researcher

Top Recruiters

- Johnson & Johnson
- Mayo Clinic
- Cleveland Clinic
- Johns Hopkins Hospital
- Massachusetts General Hospital
- Cleveland Clinic Foundation
- UCSF Medical Centre
- Mount Sinai Health System
- Duke University Health System
- National Institutes of Health (NIH)
- Howard Hughes Medical Institute
- Salk Institute for Biological Studies
- The Max Planck Society
- Cold Spring Harbor Laboratory
- University Research Labs
- Google
- IBM (Watson Health)
- Neurotechnology startups
- Apple
- Medtronic



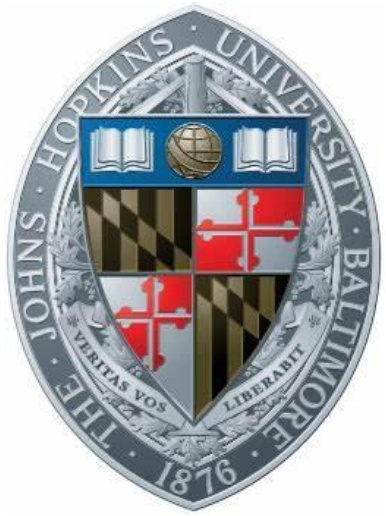


STANFORD
UNIVERSITY

UNIVERSITY OF
OXFORD

COLUMBIA
UNIVERSITY

UNIVERSITY OF
CAMBRIDGE



New chapter in treating infertility

Setting a new precedent, recently, the Interventional Radiology department at Fortis Hospital, Vasant Kunj, has introduced a technique that helps infertility patients by tackling blocked Fallopian tubes in women and varicocele in men non-surgically.

Dr Pradeep Muley

While surgical options come with their share of possible complications, simple non-surgical techniques called 'Fallopian tube cannulation' and 'varicocele embolisation' are cost-effective, and do not require general anaesthesia or sutures. The interventional radiology technique helps a patient with both side varicoceles or blocked tubes, have them fixed simultaneously in one sitting. According to Dr Pradeep Muley, MD head and senior Interventional Radiology at Fortis Hospital, the technique is widely used in the West and is patient-friendly.

The minimal invasive procedure helps keep pain low, avoid surgical scars and save patients' time by allowing them to return to normal activities immediately.

Dr Muley has been trained in the US and Singapore and has performed over 20,000 non-surgical treatments for diseases like fibroids, varicose veins, inoperable liver tumour, bleeding from mouth due to chest TB, brain aneurysm and opening of blocked Fallopian tubes and varicocele.

For more information, call 09810492778 or email – muleypradeep@hotmail.com or website – http://www.indianinterventionalradiology.in. **TNN**

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Meet on neurological diseases

HT Correspondent
w http://hindustantimes.com

JAIPUR: Soon people having neurological diseases would benefit. Three medical experts of neurological stream from Gurgaon based Medanta The Medicity assembled in the city for taking part in Continuous Medical Education programme on advances in neurosciences.

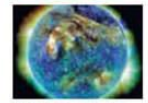
The CME programme was organised in collaboration with the department of medicine and department of neurology, Sawai Man Singh Medical College and Jaipur chapter of the Associations of Physicians of India (API) at Hotel Ramada in Rain Park, Jaipur.

Dr Vipul Gupta, head endovascular neurointervention said "advance techniques in neurological diseases are not available in Rajasthan and we are here to train the doctors". He said in future also CME would be organised in Jaipur along with students would be trained in neurosciences and also plan to hold medical camps and OPD for patients.

Dr Gupta addressing the doctors explained that stroke and brain haemorrhages are the third most common cause of death and disability. With advances in technology and expertise, the brain blood vessels could be repaired through endovascular techniques as done in the heart. Dr Aditya Gupta, senior consultant neurosurgery referred to 'Brain Suite'. He said it is an advanced intraoperative MRI with real time navigation capabilities. With this, tumour removal can be maximised while sparing critical brain function.

14 SCIENCE & TECHNOLOGY THE HINDU on Sunday
September 2, 2018

CAPSULE



Detecting geostorms
Scientists at Potsdam Institute have a new method of analysing Earth's magnetic field data to provide better short-term forecasting of geomagnetic storms. The technique is for systems in a state far from equilibrium, such as the earth's magnetic field.

CRISPR on dogs
Duchenne muscular dystrophy is a common genetic disease leading to muscle and heart failure and early death. A team from University of Texas Southwestern Medical Centre, U.S., has fixed this in dogs using the CRISPR-Cas9 gene-editing tool. The study was on just four dogs; human trials are not immediately foreseen.

Idle genes
Researchers analysing genes that have been believed to code for proteins found that close to 20% of these do not

Drug target for neurodegenerative diseases and cancer discovered

Decreasing the activity of TRIM16 protein can reduce tumour growth

R. PRASAD

Bhubaneswar-based researchers have discovered that activation of a particular protein (TRIM16) can turn out to be a potential therapeutic intervention strategy for neurodegenerative diseases such as Alzheimer's, Parkinson's and amyotrophic lateral sclerosis (ALS). At the same time, inhibiting this protein in cancer cells can bring about a reduction in tumour proliferation. The results were published in *The EMBO Journal*.

Studies carried out in test tubes and in mice models have shown that the protein has the ability to protect cancer cells from oxidative stress, and inhibiting this protein can therefore lead to reduced tumour growth.

The team led by Santosh Chauhan (right) has identified how misfolded proteins form aggregates and get degraded in the cell.

Neurodegenerative diseases

Normally, about 30% of newly synthesised proteins in a cell can end up being misfolded, which are then degraded and removed from the cell. Genetic mutations and stress (both cellular and environmental) can increase the rate of misfolding. When the amount of misfolded proteins far exceeds the capacity of cells to degrade and clear them, the cells tend to aggregate the misfolded proteins to reduce toxicity.

Though protein aggregates are less toxic to cells, they too can turn toxic if the aggregates increase in number and size, which is what is seen in the case of Alzheimer's, Parkinson's and ALS.

A team of researchers led by Santosh Chauhan from the Cell Biology and Infectious Diseases Unit at the Institute of Life Sciences, Bhubaneswar, has identified a novel mechanism by which misfolded proteins form aggregates and get degraded in the cell.

They found the TRIM16 protein playing a role both in the formation of protein aggregates and in their degradation. Protein aggregates are formed when the TRIM16 protein activates a particular pathway (P62-NRF2), while protein aggregates get degraded when TRIM16 enhances a different pathway (autophagy). Autophagy is a process of degrading the unwanted material to clean the cells and keep them healthy.

"The current strategy is to use small molecules to enhance the autophagy process to destroy protein aggregates. But small molecules are non-specific and can target other pathways too," says Dr. Chauhan. "Pharmacological activation of TRIM16 protein, on the other hand, will be more specific for therapeutic targeting of neurodegenerative diseases." When more TRIM16 protein is produced by activation, autophagy gets enhanced leading to higher rate of protein aggregate degradation.

Cancer cell growth

Since cancer cells proliferate rapidly unlike normal cells, plenty of metabolic waste gets generated and accumulated inside cancer cells. In this study, the researchers have shown that cancer cells via TRIM16 can hijack both the autophagy and P62-NRF2 pathways to keep the cells clean and survive in harsh conditions. The P62-NRF2 pathway detoxifies the reactive oxygen species-related metabolic waste.

When the TRIM16 activity was reduced in cancer cells in vitro, the capacity to proliferate was reduced. "The cancer cells were able to grow normally when the researchers added (complemented) TRIM16 protein, thus validating the crucial role of TRIM16 in cancer cell growth," says Kautilya Kumar Jena from the Institute's Cell Biology and Infectious Diseases Unit and first author of the paper.

In the case of animal studies, the researchers first removed (knockout) the TRIM16 protein from cancer cells and then introduced the cancer cells into mice models.

"Compared with controls, tumour growth was drastically reduced in mice when cancer cells did not have the TRIM16 protein," says Dr. Chauhan. "If we pharmacologically decrease the activity of TRIM16 in cancer cells then tumour growth can be inhibited."