

SHARWAREE GOKHALE MEMORIAL LECTURE

ROLE OF ENDOGENOUS RETROVIRUSES IN BRAIN DEVELOPMENT AND NEURODEGENERATION

Nearly eight percent of the human genome consists of endogenous retroviruses, however their role in human physiology and disease is poorly understood. It has become apparent that these elements are highly active in early stages of embryogenesis and get silenced once organogenesis has occurred. Several of these viral elements are unique to humans and may be critical for the acquisition of complex functions of the human brain compared to other mammals. We have shown that one of the viruses HML-2 is highly expressed in stem cells and their persistent activation can be found in brain tumor stem cells. All the same they are silenced in terminally differentiated neurons, and reactivation of these genes can cause neuronal cell death. Motor neurons seem to be particularly susceptible to such injury. In keeping with these observations, we have found that HML-2 is activated in the brains of patients with amyotrophic lateral sclerosis. We are studying the mechanisms by which the viral proteins can cause neuronal injury and are developing a rational approach to block the expression of the virus.



DR. AVINDRA NATH

Chief, Section of Infections of the Nervous System

Clinical Director, National Institute of Neurological Disorders and Stroke
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Dr. Nath is a physician–scientist who specializes in neuro-immunology and neurovirology. His research is focused on studying the clinical manifestations and pathophysiology and developing treatments for neurological infections with a focus on HIV infection and endogenous retroviruses. In recent years, he has studied the neurological complications of emerging infections including Ebola, Zika virus and SARS-CoV-2 and conducts research on patients with undiagnosed neuroinflammatory disorders. He has served on advisory committees to the NIH, CDC, FDA, and WHO. The International Society of NeuroVirology gave him the ‘Pioneer in NeuroVirology’ Award for his contributions to HIV neuropathogenesis and elected him as the President of the Society. He received the Wybran award from the Society of Neuroimmune Pharmacology for contributions to Neurovirology. He also received the NIH Director’s award for his work on SARS-CoV-2 and the Health and Human Services Secretary’s award for his work on Ebola infection.

DATE: Wednesday, February 15, 2023

TIME: 4 to 5 pm, followed by high tea

VENUE: Faculty Hall, Main Building,
IISc Campus

GUESTS OF HONOUR:

DR. KRIS GOPALAKRISHNAN,
Chair, Governing Council, IISc

PROF. G. RANGARAJAN,
Director, IISc