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SREE CHITRA-LED INDO-GERMAN PROJECT ON PARKINSON'S RESEARCH GETS $2.3 MN

by **BLIVE**
January 22, 2020, 9:59 am

An Indo-German collaborative research proposal titled 'Genetic Architecture of Parkinson's disease,' led by the Comprehensive Care Centre for Movement Disorders at the Thiruvananthapuram-based Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST) and the Centre for Genetic Epidemiology, University of Tuebingen, Germany, has received US $2.3 million from The Michel J Fox Foundation, USA.

The highly competitive award was won under the Fox Genetic Diversity in PD program and was submitted by Dr. Manu Sharma from the University of Tubingen, Germany;

and Prof. Asha Kishore, Movement Disorders Specialist and Director of SCTIMST. A consortium of Movement Disorder specialists,neurologists and geneticists from 20 Indian centres are co-investigators in the multicentre international study along with the team in Germany led by Dr. Manu Sharma. This will be the first Genome-Wide Association Study (GWAS) on Parkinsons disease (PD) in India and one of the largest GWAS conducted in the country.

While SCTIMST would be the lead nodal centre in India, AIIMS New Delhi, NIMHANS Bangalore and Nizams Institute of Medical Sciences, Hyderabad will participate as nodal centres. As many as 16 subcentres, including PGI Chandigarh, AIIMS Rishikesh, Institute of Neurosciences, Kolkotta, Vikram Hospital, Banglore,Vijaya Institute of Clinical and Medical Research, Chennai, PSG Institute of Medical Sciences and Research, Coimbatore,Goa Medical College, Lourdes Hospital, Ernakulam, Global Hospital, Jaslok Hospital, Dhirubhai Ambani Hospital, Mumbai, and Narayana Hridayalaya, Bengaluru. The Centre for Cellular and Molecular Biology, Hyderabad and Centre for Genetic Epidemiology, Tubingen, will be the Indian and German genetic laboratories that will conduct the molecular biological and advanced analytics of the genetic data.

GWAS in Western Population and East Asian regions have identified about 20 or more genetic variants as risk factors for PD. As ethnically diverse populations vary in terms of the frequency of these variants in the population, it is necessary to conduct GWAS of PD in India to capture the genetic variants that pose a risk for PD among Indian patients underrepresented in Western studies.

The aim of this research is to identify genetic risk factors of PD in India through a GWAS. Approximately a half-million genetic markers will be assessed to identify the Indian PD population-specific risk variants. To meet our objectives, more than 10,000 PD patients and 10,000 healthy controls will be recruited from across India to define a pan-Indian PD map for the Indian population

PD is a disabling and progressive degenerative neurological disease with a prevalence of about 1% in people over 60 years and 4% in people over the age of 85. A clear hereditary cause of PD is found only in 5-10% of patients. In the remaining, it is considered sporadic and probably caused by an interaction of genetic susceptibility

and environmental factors. About 6 genes are known to cause a hereditary form of PD and there may be several others yet to be identified in different populations including the Indian population.

PD is caused by the death of brain cells in specific regions of the brain leading to tremulousness of hands, stiffness of the body, slow movements, poor balance and a variety of other symptoms unrelated to movement. Understanding the genetics and the molecular basis ofthe death of brain cells in certain regions is important for future drug development to prevent cell death. It is predicted that genetic subtypes of PD may require the development of new drugs that can arrest cell death in that subtype of PD in order to arrest the progression of the disease. Scientific research suggests that personalized therapy based on genetic, environmental and behavioral risk factors in a PD patient may become the future of treatment of PD.

The project is organized within the regulatory framework of the Indian Medical Council of Research (ICMR)- HMSC for international collaborative research . In addition to the novel research outcomes anticipated, the study will also contribute to creating a core network of clinicians and researchers dedicated to PD genetics in India. A long term biorepository and capacity building in terms of infrastructure and skill upgradation are additional advantages.