

## **Hari Shanker Sharma, Ph. D. (BHU), Dr. Med. Sci. (UU)**



**Hari Shanker Sharma** (*Swedish Citizen*), Docent in Neuroanatomy (UU); Professor of Neurobiology (MRC), is currently working in Uppsala University Hospital, Department of Surgical Sciences, Division of Anesthesiology & Intensive Care Medicine, Uppsala University, Sweden.

### **Career History on Research in Neuroscience**

Hari Sharma was born on Jan 15, 1955 in an Industrial town Dalmianagar (Bihar), India in a well-reputed family: Father Shri Ram Rup Sharma, M.Eng. (Cal), and one of the founders of Paper Factory under Rohtas Industries Ltd. Hari Sharma did his Higher Secondary Schooling in 1969 from Dalmianagar and enrolled in Bihar University, Muzaffarpur for higher studies. He did his Bachelor of Science with Honors from the prestigious L S College Muzaffarpur in 1973 and secured 1<sup>st</sup> position in his batch. He obtained his Master Degree from Bihar University with special expertise in Cell Biology in 1976 and awarded Gold Medal of Bihar University for securing 1<sup>st</sup> position in the 1<sup>st</sup> Class. Having a knowledge in cell biology with special interest in the central nervous system, Hari Sharma joined the group of Professor Prasanta Kumar Dey, a neurophysiologist by training in the Department of Physiology, Institute of Medical Sciences, Banaras Hindu University, Varanasi in 1977 to obtain Doctor of Philosophy Degree (D. Phil) in Neurosciences. In the lab he conducted experiments on morphine dependence and withdrawal in relation to body temperature regulation, behavioral changes and neurochemistry in rat and mice models. In addition he was trained as neurophysiologist to record electrophysiological activity in relation to stress, hyperthermia and drugs of abuse. Hari Sharma was always fascinated by the role of blood-brain barrier (BBB) in various experimental conditions and wanted to know whether brain disease has any relation with the spontaneous disruption of the BBB. His curiosity about the role of the BBB breakdown in stress condition leading to mental diseases was the basis of his Doctoral studies on “Blood-Brain Barrier in Stress” in which he for the first time showed that long or short term stress can disrupt the BBB and disrupts the EEG activity. These changes can be altered by drugs capable to modulate neurochemical metabolism of serotonin, prostaglandins and opioids in the CNS. On this work, he was awarded Ph D in 1982, that was examined and approved by the renowned team of experts on the BBB, namely: the father of Blood-Brain Barrier Research, Stanley I Rapoport of NIH, Bethesda, Maryland, USA; a pioneer on BBB in hypertension Professor Barbro Johansson, Department of Neurology of Lund University, Lund, Sweden; and noted Neuroanatomist with special regard to BBB Erik Westergaard, University of Copenhagen, Copenhagen, Denmark.

Hari Sharma after carrying out a series of Govt. of India funded Research Projects on the BBB and brain dysfunction (1982-1987), joined the lab of Neuropathology at Uppsala University with Professor Yngve Olsson in 1988 to expand his knowledge on the passage of tracer transport across the BBB in stress caused by traumatic insults to the Brain and Spinal cord at light and electron microscopy. Dr Sharma awarded the prestigious Alexander von Humboldt Foundation Fellowship of German Govt. (1989-1991) to work on hyperthermia induced BBB dysfunction at the ultrastructural level in the laboratory of Professor Jorge Cervós-Navarro (recognized as living “Legends in Neuropathology in Europe”, World Federation of Neuropathology in 1990, Kyoto, Japan, and later awarded with the German Govt. highest Civil Award, Bundestag by German Chancellor in 1996). After that Dr Sharma came back to Uppsala to continue his research on Neurotrauma and established a network of collaboration on “Experimental CNS Injury Research Group” with key collaborators in various parts of Europe, USA, and Australia including his parent Institutions in India that is still continuing. The works carried out by Dr Sharma on the pathophysiology of blood-brain barrier in hyperthermia using immunohistochemistry and electron microscopy in the Neuroanatomy Department of Uppsala University (1995-1999). On his work on hyperthermia Dr Sharma was decorated with prestigious Neuroanatomy award “Rönnows Research prize” of Uppsala University for “best neuroanatomical research of the year 1996” followed by the Award of the Degree of Doctor of Medical Sciences of Uppsala University in Neuroanatomy in 1999 (examined and approved by another legend of Blood-brain barrier Research, Professor David Begley, Kings College London, UK). The Uppsala University Thesis of Dr Sharma was also selected for the Best Thesis Award of the Medical faculty, “The Hwassers Prize” of 1999. Subsequent research of Dr Sharma in Uppsala University on the neurobiology of hyperthermia in relation to the Blood Brain barrier and Brain edema (2000-2003) has earned the prestigious title of Docent in Neuroanatomy of Medical Faculty, Uppsala University (approved and recommended by eminent Neuroanatomist, Professor Ole Petter Ottersen, University of Oslo, Norway) in April 2004.

### **Research Interest & Publications**

Currently his main research interest is Neuroprotection and Neuroregeneration, in relation to the Blood-brain barrier in stress, trauma, and drugs of abuse in health and disease. Dr Sharma on his research on brain pathology and neuroprotection in different model received the prestigious award from The Laerdal Foundation of Acute Medicine, Stavanger, Norway, in 2005. His recent research is aimed to find out the role of nanoparticles in neurodegeneration and Neuroprotection using various treatment

strategies supported by European Aerospace Research & Development (EOARD), London, UK and US Air Force Research Laboratory, Wright Patterson Air Force Base, Dayton, Oh, USA.

Hari Sharma has published over 180 peer reviewed research papers, 50 reviews, 8 monographs, 55 international book chapters and edited 6 book volumes. He served as Guest Editor of *Curr Pharm Desig* (2005, 2007); *J Neural Transmiss* (2006) and is founding Editor-in-Chief of *International J Neuroprotec & Neuroregen* (2004-), UK., now renamed as *American Journal of Neuroprotection and Neuroregeneration*, American Scientific Publications, (2009-) USA and *Journal of Nanoneuroscience* (2009-). Dr Sharma is on board of various International Journals including *Journal of Neurodegeneration and Regeneration*, USA; *CNS & Neurological Disorders - Drug Targets*, Bentham and is associate editor of *Journal of Nanoscience & Nanotechnology* (Nanoneuroscience 2006-), USA; *Frontiers Series on Aging Neuroscience* (2009-); Review editor in *Frontiers Series on Neuroengineering* (2008-) and *Neurorestoratology* (2010-).

Dr Sharma has served as an expert evaluator and advisor to various Boards, Councils and Institutions for their Research Grants in Europe, USA and in Australasia. Some of the notable organizations include: Australia and New Zealand Health Council (2000-); University Commission of Grants, Hong Kong (2002-), Singapore Medical Council, Singapore (2003-); UK Charity Organization "Research on Ageing: Help the Aged" (2003-); Selection committee for faculty members of various Universities as external Expert reviewer: Israel, USA, India, UK.

#### **Other Notable Awards & Distinctions**

SIRI Research Prize, 1986, on Hyperthermia Induced Brain Dysfunction, Indian Association of Biomedical Scientists, Shakuntala Amir Chand Research Prize 1988, on "Blood-Brain Barrier and Brain Function", Indian Council of Medical research, Govt of India  
Neuronal Plasticity Award 1991; on "Brain Dysfunction in Heat Stress", International neuroplasticity Conference on Brain Dysfunction, Sicily, Italy  
Career Award 1989, University Grants Commission, New Delhi, Govt. of India on Research on Blood-Brain Barrier and Brain Pathology.  
Distinguished Leadership Award, Neuroscience 1990, by Am Bio Res Inst, North Carolina, USA.  
Elected Fellow, Am Inst of Stress, 1996, New York, USA  
Elected Dy. Governor (Board of Governors) of Am Bio Res Inst, North Carolina, USA, 1988 for Europe to help finding and highlighting eminent researchers in the World whose research has really improved the life of Humans or has the potential to change the current scientific thinking for the benefit of mankind.  
Elected Dy. Director General, Int Bio Soc, Cambridge, UK 1997 for Europe to provide input and awareness about the work of scientists whose research can influence the current status of medicine & healthcare.  
Certificate of Excellence, National Centre for Toxicological Research (NCTR), US Food & Drug Administration (FDA), Jefferson, Ar, USA on Works on Psychostimulants and the Blood-Brain Barrier.  
Distinguished International Scientist Collaboration Award (DISCA) by NIH to work in NIDA, Baltimore, USA on Psychostimulants induced neurotoxicity, 2006, 2007, 2008.  
Ambassador of the City of Uppsala 2007- Uppsala County Award for promoting Uppsala, Sweden as International Research Collaboration/Meetings and Conference Destination  
Entered into the "Hall of Fame" 2009, Record for Distinguished services in "Neuroscience" influencing Human Health Factors in November 2009, ABRI, NC, USA.  
Awarded Honorary Doctorate, Doctor of science (D.Sc) by Medical University of Cluj-Napoca, October 2009.

#### **Current research projects**

*Molecular mechanisms of blood-brain barrier permeability and cell injury in CNS trauma and neuroprotection*  
*Effect of Nanoparticles on the Blood-Brain Barrier. An Experimental Study in Rats and Mice*  
*Drugs of Abuse Induced Neurotoxicity. An Experimental Study in Rats using Physiological and Morphological Approaches*  
*Pathophysiology of CNS damage in heat stress. Exploration of suitable therapeutic measures.*  
*Brain pathology induced by cardiac arrest. Possible mechanisms of brain damage and repair.*  
*Novel peptides and neurotrophic factors in neuroprotection and Neuroregeneration against CNS insults*  
*Therapeutic role of antibodies in CNS injuries*

#### **Some Internationally Acclaimed Book Volumes**

1. Nyberg F, Sharma HS, Wissenfeld-Hallin Z. *Neuropeptides in the Spinal Cord*. Prog Brain Res 104, Elsevier Science BV, Amsterdam, North Holland, 1998.
2. Sharma HS, Westman J Editors. "Brain Function in Hot Environment", Prog Brain Res 115, Elsevier Science BV, Amsterdam, North Holland, 1998.
3. Sharma HS, Westman J Editors "Blood-Spinal Cord and Brain Barriers in Health and Disease, Academic Elsevier, Boston, San Diego, USA, 2004.
4. Sharma HS Editor. "Neurobiology of Hyperthermia", Prog Brain Res 162, Elsevier Science BV, Amsterdam, North Holland, 2007.
5. Sharma HS. 2009. Editor, Psychostimulants induced Neurotoxicity, Int Rev Neurobiology 88, Elsevier, Oxford Publ.
6. Sharma HS. 2009. Editor, Nanoneuroscience & Nanoneuropharmacology, Prog Brain Res 180: 1-270, Elsevier, Oxford, Publ.

Hari Sharma is married to Aruna Sharma (nee Bajpai) since 23<sup>rd</sup> April 1979 and has two sons (1. Prashant born in India 1981; 2. Suraj, born in Germany 1990). The family has interest in Research on Philosophy, Religion and Photography. Yoga and meditation are other hobbies for relaxation in the family. Contact information: Hari S Sharma, voice & fax: +46-18-243899, cell phone: +46 70 641 9843; e.mail: [Sharma@surgsci.uu.se](mailto:Sharma@surgsci.uu.se)