

Special Feature:**Translational Research - New Opportunities****M. Gourie-Devi***Emeritus Prof. of Neurology, Institute of Human Behaviour and allied sciences, New Delhi.**Chairperson, Department of Neurophysiology, Senior consultant Neurologist, Sir Gangaram Hospital, New Delhi*Convocation address delivered on 18th September 2012, at Tirupati on the occasion of the 3rd convocation of Sri Venkateswara Institute of Medical Sciences, Tirupati.**M. Gourie-Devi. Translational Research-New Opportunities 2012;1:206-8.**

Hon'ble Chief Minister Government of Andhra Pradesh and Chairman of Sri Venkateswara Institute of Medical Sciences Governing Council, Hon'ble Minister for Medical Education, Arogyasree, Health Insurance and First Vice-Chairman, SVIMS Governing Council, the Chairman, TTD Board of Trustees and Second Vice Chairman, Governing Council, Distinguished Members of Governing Council, Prof. B. Vengamma Director of SVIMS, Postgraduate and Graduate students, their proud Parents, Ladies and Gentlemen.

I consider it an honour and a privilege to have been invited to participate in the third convocation and deliver the convocation address of this prestigious institute, Sri Venkateswara Institute of Medical Sciences. On this memorable day I congratulate all of you, the awardees of degrees, and convey my best wishes for a brilliant future. Emerging from an excellent institution, a fountain head of education and training, I am confident that you will carry the torch and bring name and fame to yourself and to your alma mater through your dedicated work. I also pay tribute to the faculty and others who have shaped the young minds through their sustained commitment to provide teaching and training of high order.

Having witnessed the growth of this institute of excellence over the years, I am amazed at the unparalleled growth and development, indeed a quantum jump in all spheres, establishment of state-of-the art facilities for

diagnosis and treatment, training of postgraduates in diverse medical disciplines, nursing and physiotherapy professionals, providing quality health care not only to those seeking consultation at the institute but also to the community at large through outreach programmes. This institute built over years by untiring efforts of successive directors and collective efforts of faculty, has attained a preeminent position in the country. I take this opportunity to salute all the former directors Dr P. Satyanarayana, Dr K.V.Naidu, Dr C. Surya Prakasa Rao and Dr G. Subramanyam for their vision and establishment of traditions of excellence. I am proud to see Dr B. Vengamma, the present director, who has set her goals very high and is magnificently steering the destiny of this institute. I congratulate the entire family of SVIMS, faculty, students, nurses, technical and all supportive staff for their valuable contributions to the Institute's achievements.

Very impressed with the track record of research in clinical, applied and basic fields at SVIMS, I have chosen for my convocation address the theme of "Translational Research-New Opportunities" a subject, relevant and contemporary, attracting attention of scientific organizations and scientists across the world. There is an urgency to improve human health through development of sensitive diagnostic methods and new and effective drugs. To achieve these goals, scientific research at cellular molecular level needs to be translated to offer

Received: 18 September, 2012.

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practical solutions, a concept imbedded in the oft quoted aphorism "from bench to bedside". Needless to say this approach is really a two-way phenomenon; there are several examples of patients with interesting disorders leading to path breaking neurosciences research. To quote the famous example of patient known as HM (Henry Molaison) who had uncontrolled epilepsy and had bilateral temporal lobectomy at the age of 27 years in 1953. Post-operatively he had developed very peculiar memory problems which were thoroughly assessed by eminent scientist Prof. Brenda Milner of Montreal Neurological Institute and her extensive studies and observations led to the concept of short term and long term memory. Patient HM could recall events of his childhood but was unable to learn new facts e.g. his treating doctors had to reintroduce themselves every day as he was not able to recall their faces or names. When given a task he was able to execute it but if his attention was diverted by someone talking to him or a phone call, he had no memory of what he had been doing a few minutes ago. All these observations have provided us with invaluable information that short term memory is different from long term memory. Long term memory is stored throughout the brain and hippocampus is necessary for retention of the current memory. Thus the foundation for modern concepts of cognitive neurosciences concerned with memory was laid down. This patient died on 2nd December 2008, at the age of 82 and studies are in progress on his brain tissue which may yield further interesting information on biological basis of memory.

Reverting back to complexities of bridging the border between clinical and basic research, while new knowledge is rapidly accumulating from research in basic sciences, translation to clinical sciences is becoming more difficult and challenging. Development of drugs and medical devices based on research in multiple disciplines of biology, technology, bioinformatics,

pharmaceutical sciences, molecular genetics etc. is of fundamental necessity to treat diseases which either have no proven therapies or do not have satisfactory effective agents. Therefore translational medicine based on translational research offers hope to the public.

Translational research evolves from scientists and researchers with a broad knowledge base, who can concentrate on bringing together basic scientific innovations with clinical studies converging on human health.

Recognizing the need to create greater opportunity to facilitate and enhance development of the new discipline of Translational research, innovative approach in US by National Institutes of Health (NIH) was the establishment of Clinical and Translational Science Awards (CTSA) Consortium in 2006 by networking 12 institutions of health which was further expanded to 46 and very soon 60 institutions will be linked. The aims are to nurture multidisciplinary and inter-disciplinary investigators, promote innovative research and information technologies so that new knowledge and techniques can be rapidly translated to patient care.

It is a happy augury that India has not lagged behind; the Government of India with an ambitious aim has already put in place the Translational Health Science and Technology Institute (THSTI) in Faridabad in the year 2010. The objective is to create a conducive institutional ambience for initiating multidisciplinary approach to research and to translate the emerging leads to scientific and technological output which logically should transform to appropriate innovations relevant to medical practice. The ultimate goal is of developing new strategies for diagnosis and management of diseases and also facilitate preventive and promotive health programmes. In this venture the institute has established partnership with Harvard-MIT Health Science Technology, which integrates science, engineering and medicine and has excellent

training programmes for clinicians and researchers. I am sure many of you would be eager to take part in this novel initiative in the country.

While on the subject of contributions of engineering to health sciences, future lies in the field of nanotechnology to treat disorders which are currently challenging. Nanotechnology is the engineering of functional systems at the molecular scale, which involves designing and production of small electronic devices and circuits built from individual atoms and molecules. The application of nanotechnology to medical sciences, in particular to neurosciences, will initiate an exciting era, perhaps with astonishing results.

The physiotherapists in this audience will appreciate that there is not enough research in rehabilitation, restoration and reintegration of disabled people. In the recent years front line research has been focused on human brain-computer interaction and this interface has been advantageously used to improve communication skills in patients with brain stem injury. By using head movements or eye blinks or facial movements, communication with computer can be established on a specially fitted keyboard. This has been very well demonstrated in 2 patients in India and can help many more people to overcome disability. Certainly the systems have to be customized to individual needs. In future, brain waves may be used to activate the computers, bringing science fiction to daily life. You would agree that this is an excellent example of translational research

integrating computer sciences and neurosciences to alleviate human suffering.

It is common knowledge that there is a great need and demand for novel therapeutic agents, drug delivery systems and cutting edge treatments. Targeted therapy has to emerge from understanding the normal function, unraveling pathophysiology of disease and identification of molecular targets. For the development of new agents and bring them to bedside, there are bottle necks, one of the major issues in this aspect of translational research is the enormous cost involved; in such situations public-private partnership may facilitate the process. Government resources may be particularly required for diseases which are either exclusively or predominantly prevalent in developing countries and therefore may not attract active participation of national and international private sectors.

To successfully achieve the vision and set goals of the novel concept of Translational Research, a paradigm shift in our attitude to research has to occur along with establishment of a multi-sectorial network of scientific organizations, technology institutes, computer professionals, medical and health care institutes with generous financial support by Government and private sectors.

I would like to end with a quote by Joel Barker a great scholar, who popularized the concept of paradigm shifts and was certainly a futurist
"Vision without action is just a dream
Action without vision just passes the time
But vision and action can change the World".