

**Address By Smt. D. Purandeswari MOS (HRD) As Chief Guest Inaugurating The C.T.C At The Palodia Auditorium L.V. Prasad Eye Institute, Hyderabad On 30-1-2008.**

Chairman and Board of Trust of L.V. Prasad Eye Institute and HE Mr. Luis Filipe Castro Mendes, Portuguese Ambassador to India.

It is my great privilege to be the Chief Guest at the inauguration of Champalimaud Translational Centre for Research (CTCR) which is being sponsored by L.V. Prasad Eye Institute (LVPEI) in partnership with the Champalimaud Foundation, Portugal, which, as I understand, is a major Portuguese Philanthropic Foundation which was established with the object of promoting medical research with vision research as one of the important component.

**Eyes** are organs of vision that detect light. Different kinds of light-sensitive organs are found in a variety of animals. The simplest eyes do nothing but detect whether the surroundings are light or dark, In the human eye, light enters the pupil and is focused on to the retina by the lens. Light-sensitive nerve cells called rods (for brightness) and cones (for color) react to the light. They interact with each other and send messages to the brain that indicate brightness, color, and contour. Rods and cones are both photosensitive, but respond differently to different frequencies of light.

There are many diseases, disorders, and age-related changes that may affect the eyes and surrounding structures. As the eye ages certain changes occur that can be attributed solely to the aging process. Most of these anatomic and physiologic processes follow a gradual decline. With aging, the quality of vision worsens due to reasons independent of aging eye diseases. While there are many changes of significance in the nondiseased eye, the most functionally important changes seem to be a reduction in pupil size and the loss of accommodation or focusing capability.

In addition accidents involving common household products cause 125,000 eye injuries each year in the U.S. More than 40,000 people a year suffer eye injuries while playing sports. Sports-related eye injuries occur most frequently in baseball, basketball and racquet sports. Each day about 2000 U.S. workers have a job-related eye injury that requires medical treatment. About one third of the injuries are treated in hospital emergency departments and more than 100 of these injuries result in one or more days of lost work. Chemical burns to one or both eyes from splashes of industrial chemicals or cleaning products are common. Thermal burns to the eye occur as well. Among welders, their assistants, and nearby workers, UV radiation burns (welder's flash) routinely damage workers' eyes and surrounding tissue. In addition to common eye injuries, health care workers, laboratory staff, janitorial workers, animal handlers, and other workers may be at risk of acquiring infectious diseases via ocular exposure.

The problem of quality eye care has become an important issue in developing countries also. I am told that 75% of the blindness burden in our country is needless- and treatable, avoidable. I am also told that there are 12000 practicing, qualified eye doctors across the country. The problem is that while the blind are spread across the country evenly, the doctors are found in cities and towns. Thus, novel solutions of outreach have to be found. It is here that LV Prasad, with its pyramid model, has broken new grounds, which Dr. Rao has already outlined. I had the pleasure, as I said, of inaugurating one secondary eye care centre of the L Prasad family, in the yellow base of the five-colour-pyramid.

75% of the blindness burden can be take care of, using models such as the pyramid, actively involving the community as a stake holder, and with public-private- partnerships. What about the remainder 25% of the burden? It is here that research is keenly needed. From the findings of the researcher comes translation to the patient as drugs and therapy.

India is a study in contrasts. The most sophisticated systems demand matching capacity of the patients to pay for them and more. A large percentage of India's 20 million blind can neither access nor afford such systems. The loss of productivity due to blindness or visual impairment affects the poor at a higher level of intensity. L .V. Prasad Eye Institute, I understand has a staggered system of cross-subsidisation which offers free high-quality care to the economically

underprivileged, who form more than fifty percent of our patient base. The Institute's coordinated and interlinked functions of patient care, training, research, rehabilitation, community eye care and product development serve a wide population of persons in need of eye care services and a large network of practitioners and students. A web of national and international partnerships provides a solid framework of support. Underpinning all the efforts of LVPEI are three dominant themes - efficiency, equity and excellence.

LVPEI also has a state-of-the-art eye bank, which collects, stores and distributes donor corneas for transplantation and research. In addition they have initiated the development of several affordable eye care products, such as preservation medium for corneal tissues and rehabilitation devices for low vision patients.

In the 20 years since its establishment they have provided outpatient services to over 2 million people and surgical care to over 250,000 patients – nearly 50 percent of them free of charge. In addition, they have trained over 10,000 doctors and para-medical personnel from India and abroad, and made over 1700 research presentations at national and international meetings.

Fundamental to all its efforts is the generous support received from individuals, institutions and the industry, from all over the world, who have shared our dream. The Institute is managed by two not-for-profit trusts, the Hyderabad Eye Institute and Hyderabad Eye

Research Foundation, which are registered under the Registration of Society Act.

The cornerstone of progress in all branches of medical science is research. LVPEI's robust research programme also has many successes such as:

Research in stem cells and their transplantation to cure otherwise unmanageable eye diseases and conditions.

Innovative application of lasers to treat corneal and retinal diseases. An unconventional approach to understanding and dealing with glaucoma; and,

Frontline research in the area of the molecular genetic basis of eye disease.

Human embryonic stem (ES) cells capture the imagination because they are immortal and have an almost unlimited developmental potential. After many months of growth in culture dishes, these remarkable cells maintain the ability to form cells ranging from muscle to nerve to blood — potentially any cell type that makes up the body. The proliferative and developmental potential of human ES cells promises an essentially unlimited supply of specific cell types for basic research and for transplantation therapies and recent research since August 2001 when President

George Bush allowed federal funding of this research, reveals encouraging results.

Genetics and molecular biology have made tremendous progress in all fields and this applies to ophthalmology as well. Molecular biological techniques such as Polymerase Chain Reaction (PCR) permits us to identify the organisms causing infection within a matter of few hours, while routine culture methods take several days. The CSIR-NMTILI from India have devised a DNA chip that permits identification of about five to eight organisms causing ocular diseases by using the PCR technique. The chip has been devised in such a way that no major equipment is required to perform the test and the report should be ready in few hours' time.

The use of newer technologies to map the human genome has its repercussions in the field of ophthalmology as well. In addition to identifying predisposition to a disease, it may help in tailor-made drug prescription in the future. Genetic studies of a disease process also enable better understanding of the disease and selection of potential targets for treatment. The other important buzz word is stem cell research. Stem cell research has already reached the clinical application stage in the field of corneal diseases.

I am glad that the L.V. Prasad Eye Institute has developed a way to grow new corneas from adult stem cells restoring sight to the blind. The treatment uses stem cells harvested from the limbus, located where the cornea touches the white of the eye. For those with

damaged corneas, these cells - called "limbic" and "conjunctiva" - are harvested from a patient's good eye, if he has one, or from a close relative. They are placed in a petri dish and chemically tweaked to grow into the lower layer of a cornea, called the epithelium. It is then transplanted into the eye of the patient, where in most cases it takes hold and grows. In 56% of the cases at the Prasad Institute, patients could still see clearly 40 months later.

Indians are well known for reverse engineering, meaning they can deduce how drugs are made in order to produce generic versions. But in this case, Sangwan and Vemuganti, a pathologist, developed the technique on their own from reading papers and running experiments in the lab.

Sangwan says he had a number of patients with burned eyes who could not be helped with standard corneal transplants from cadavers, so he persuaded Vemuganti to try growing corneas in her lab. "You know how to grow cells, and I know how to do the transplant surgery," Vemuganti recalls him saying. "Why don't we work together?" She smiles and shakes her head. "I had no clue if this was going to work."

Vemuganti's major innovation was developing a platform on which to grow the corneas. First she designed a circular glass tube about the size of a stack of coins. "I had the handyman here cut the glass for me," she says. Then she overlaid the glass with tissue from a human placenta, which is "a good surface to grow the corneas on," she says. After that she placed stem cells in four places around a

circle, added a growth medium, and watched the corneas begin to grow.

It is important to note that in addition to the Hyderabad project, only Holland's programme and a half-dozen others in the world conduct operations using corneas grown from stem cells. This is really creditable.

A swank suite called the Pavilion serves wealthy patients, who pay five-star-hotel rates for rooms. Lower-income patients can receive the corneal procedure for free. The more affluent pay up to \$1,500 - about one-tenth of what is charged in the U.S. for similar treatment. Commercial interest among stem cell companies for the procedure has been scant because of the perceived small volume of patients, says venture capitalist Antoun Nabhan of Bay City Capital, who sits on the board of Cellerant, a leading stem cell company in San Carlos, Calif.

India is a welfare country and as such the State has primary responsibility for the health care of its citizens. The government has therefore to strive for the attainment of health care for people through wide network of Health Care delivery system. We must not forget that the national Health care is more than 'medical care'. It embraces a multitude of the services provided to the individual or community by health personnel aiming at promotion, protection and restoration of the health of the people. This should ensure a holistic health care

programme of all our citizens who constitute the human capital of a developing country.

Before I end I would like to specially thank the Government of Portugal and for having partnership with the L.V. Prasad Eye Institute for jointly starting the CTCR to carryout meaningful research in stem cell and their transplantation to cure otherwise unmanageable eye diseases.

With these words, I have great pleasure in inaugurate the CTCR and convey my best wishes for success in its endeavours.

Thank you.

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