

Establishment of Centre for Vaccinology

DESCRIPTION OF PROJECT:

The challenge of applying innovative biological approaches to solve unique and specific problems of national health and medicine issues will require the talents of soundly trained manpower which can define problems and devise strategies that will work in the local setting. In order to develop a researcher having "hands-on" experience of the various molecular biological techniques, training should be carried out in local situations to see how many things can go wrong and how to get around those hurdles and solve problems. The quality of the training will depend on the condition of the training laboratories. Traditionally, our university biology laboratories, that are the breeding grounds for future biotechnologists, have been even more deficient than the laboratories of non-university research institutes in the country. As a consequence, the university training in Pakistan lacks laboratory experience that is so vitally important for building the intellectual maturity of future researchers. It is exceedingly important, therefore, to improve the local laboratory infrastructure if the quality of our training is to be improved.

Above in view, it is proposed to develop a solid and definitive programme of advanced teaching and research through the establishment of a dedicated laboratory. The project will specifically address the following objectives:

- a) Develop a dedicated stem cell research laboratory manned and equipped at par with the best laboratories in the world.
- b) Generate a cadre of specifically trained manpower through specialized courses by involving experienced foreign faculty engaged in similar programmes.
- c) Initiate a definitive programme to exploit the repair potential of stem cells in damaged heart, pancreas, inner ear, retina, kidney, liver and muscles.

EXISTING FACILITIES:

As a consequence of a recent decision to revitalize the role of National Institute of Health, a large vaccine production unit is being established with external assistance help. This unit is designed primarily on a turn key basis and there is no supporting R&D infrastructure. The proposed Centre located in close proximity of the said vaccine production institute will be devoted to research &

development in vaccines to help strengthen the functions and work of the vaccine production Centre. Thus the focus of the present Centre will be on training of manpower and research and research on technical problems related to health issues as well, those being pursued at NIH and other health institutes in the country.

LOCATION OF THE PROJECT:

It is proposed to locate the Centre on the campus of National Institute of Health the in vicinity of newly developed vaccine production facility.

FUNCTIONS OF THE PROJECT:

The Centre after completion will serve as a high quality teaching and research institution. It is envisaged that the Centre will make fundamental contribution to vaccine production unit located on the same campus and will directly help to develop capabilities of scientists and technologists at NIH and other health organizations in the country. The Centre will have the following functions:

a) Research: There will be two main divisions of the Centre. The "First Division" will be a virology laboratory working on human DNA and RNA viruses in areas related to vaccine production on campus. The problems will be chosen in consultation with production workers in the vaccine institute to solve specific problems of direct relevance to vaccine production.

The "Second Division" will work on adult derived stem-cells and their applications in regenerative medicine. Initially, the Centre will focus on bone-marrow stem cells and study their regenerative potential with relation to liver cirrhosis.

b) Teaching and Training: The Centre will conduct short and long training programmes to build technological and scientific manpower in biotechnology so that multi-disciplinary core groups which can carry out sustained research and developmental activity can be generated. The Centre will have facilities for internship training programme similar to those organized by EMBO, AMBO and Cold Spring Harbor Labs.

c) Information: The Centre will promote flow and exchange of scientific and technological information in the field of health biotechnology.

d) Promotion of Cooperation: The Centre will promote interaction in health research among the scientific and technological community in Pakistan as well as in other countries. The Centre would serve as an expert resource for the biotechnology industry of Pakistan and this would, in addition to student fees, be its main source of revenue.

LAYOUT PLAN:

	Approximate area (in Sq.ft)
Viral Lab:	20,000
Stem Cell Research Lab:	20,000
Teaching Areas	20,000
Administration:	10,000

Construction Cost:

	Total Amount (In million rupees)
Civil Work:	130.00
Air-conditioning	70.00
Containing facilities	60.00
Equipment	700.00
Laboratory Materials	300.00
Training of manpower in Korea/Japan/Singapore	200.00
Project Staff:	150.00
Miscellaneous Cost	20.00
Total:	1630.00
	US \$ 20 million