Post Graduate Institute Of Medical Education And Research (Pgimer), Chandigarh : Research Day Celebrations

SPEECH BY THE HON'BLE MINISTER OF STATE FOR SCIENCE & TECHNOLOGY AND EARTH SCIENCES

Members on the dias:

1. Prof Mathan, ex-Director, Christian medical College, Vellore
2. Dr Yogesh Gopal, Dirctor, PGMER, Chandigarh
3. Prof Amod Gupta, Dean, PGMER, Chandigarh
4. Prof Vivekanand Jha, Research Chief, PGMER, Chandigarh

Esteemed Members in the audience:

Director, National Institute of Epidemiology, Chennai

Director, Institute of Liver and Bilary Sciences, Delhi

Director, ACTREC, Tata Memorial Hospital Mumbai

Dr Girish Sahan, Director, Institute of Microbial Technology, Chandigarh

Director IIT Ropar,

Director IISER Mohali ,

Director CSIO chandigarh,

Director IMT- Chandigarh,

Vice Chancellor- Panjab University,

Director – GMCH, Chandigarh,

Executive Director – NAFBI Mohali,

Major SC Godara –Army Hospital - Chandimandir

- I am glad to note that PGIMER, Chandigarh, a premier medical research institute is celebrating Research Day. I would like to congratulate all of you and convey my best wishes on this occasion.

- Considering the past and current scenario, medical research should have emphasis on epidemiological and social data to form a basis for data driven discovery through creative integration of information from agriculture, nutrition, livelihood, animal husbandry, human behavior and others in the way they impact human health and nutrition towards policy making.

- Medical research system should have the capacity to translate basic science knowledge into tools and concepts for prevention and early detection of disease, treatment modalities and commodities that minimize consequence of potentially crippling diseases.

- In recent years, the biological science has made phenomenal progress but without strong base of clinical and translational research, it cannot be translated into useful commodities for patients and populations.

- Keeping this in mind, the emphasis of biomedical research must be on both communicable and non-communicable diseases and life style diseases/disorders as our large population and the economic development.

- Open innovation collaboration mechanisms and consortia engaging public sector, industry and government within the country and wherever relevant internationally is the key to achieve impact in affordable health technology than fragmented contributions.

- In health research, issues related to the health system and innovation in delivering of existing and future programmes and commodities must receive high emphasis. In addition, research must be broadly interdisciplinary and not focused only on direct health interventions as non health inputs often have greater impact on human health.

Future Strategies for Strengthening Biomedical and Health Research Capacity in the country.

- The existing capacity with regard to quality human resource, institutional framework and infrastructure, communication between stakeholders within

and outside the government are grossly inadequate to effectively address above challenges and also to seize available opportunities. The following few core approaches could remedy this situation:

a) Skilled Human Resource Development

Integrated Programmes for science education, research and training for medical doctors to be promoted. These programmes need to be at the Post Graduate and Ph. D level; Masters in Science, in Biomedical Science, in Public Health, Health Economics, Medical Social Science, Translational Science and MD/Ph. D Programmes directed at either biomedical or public health research.

A career path for medical and health researchers is vital & essential in medical schools, health universities and research institutes, public health institutes etc.

Programmes for health systems research and population based science must be an essential component of major medical schools of the country.

b) Strengthening of Infrastructure

Infrastructure must be strengthened at least in the 20 percent of the premier medical institutes of India with regard to translation in biomedical research as well as for public health research.

c) Disease Specific Centres

Centres of Excellence, linking key departments within and across institutions for major infectious disease such as tuberculosis, malaria, HIV, respiratory infections, emerging viral infections, anti microbial resistance, zoonosis and for chronic diseases, neurological, cardiac, diabetes, liver, kidney and bone diseases must be established to complement the existing department based structure in apex medical schools and centres of biological research.

The recently approved Inter Institutional Centres by the Planning Commission can be effective wherever inter institutional capacities need to be sustainably connected.

Additionally, I am happy to note that there is an 81% increase in the number of publications in top 1% impact making journals during 2006-10 relative to 2001-05 periods. The impact factor profile of scientific publications

reveals a bimodal distribution. There is a call for the Indian Science Community for examining the best possible means for enhancing the quality parameters of scientific publications from India

d) Projects sanctioned

- Indian Chronic Kidney Disease Study
- Measurement of Intracellular Methotrexate-Polyglutamate levels in Rheumatoid Arthritis and its Relationship to Efficacy and Adverse effects
- Exploring the efficacy of targeting ECM (extracellular matrix) components relevant to rheumatoid arthritis Impact of vitamin D supplementation on vascular function and oxidative stress in patients with chronic kidney disease
- Analysis of red cell membrane proteins and genes involved in Hereditary Spherocytosis in North Indians
- Molecular biology of Primary Congenital Glaucoma in North Indian patients
- Pharmacogenetics of hypertension and heart failure
- Functional-genomic approaches to study the influence of Genetic factors on the development of diabetic nephropathy
- An Evaluation of Platelet Activation and GPIIb/IIIa Conformational Status in

- Cardiovascular complications in patients with chronic kidney Disease: the role of CD4+ CD28null Cells
- Structure Function relationship of defective beta myosin heavy chain in Hypertrophic Cardiomyopathy

Further research on topics related to :

- Evaluation of Mycobacterium tuberculosis complex specific protein antigen (s) for the development of an antituberculous subunit vaccine
- Identification of candidate biomarkers and molecular networks regulated by human papillomavirus in HNSCC by quantitative proteomic analysis.
- Analysis and evaluation of innate immune gene expression profiles and identification of novel signature SNPs associated with immunological/virological discordance in HIV-1 infection
- Etiology of bone marrow failure syndromes role of constitutional factors (fanconi anemia and others)
- Protective Efficacy of Recombinant Leishmania Antigens Using Various Adjuvants
- Identification and characterization of receptor(s) of an enterotoxin of Giardia lamblia on INT-407 cells (Human Intestinal cell line)

- Genetic basis for HIV-1 transmission, resistance and disease progression: polymorphism in MHC, chemokine/ cytokine and their receptor genes
- Mechanisms involved in the down regulation of effector T cell-activity in tuberculosis and HIV co-infections
- Possible role of host genetics in relation to infection, progression and pathogenesis of HIV/AIDS
- Phase I clinical trial with 'BASANT' polyhedral gel (a vaginal microbicide): to study its safety, acceptability and vaginal sensitivity

e) Innovation system

Innovation system for affordable health technology development and diffusion could be achieved through:

i. Established open innovation centres.
ii. Strengthening the regulatory system for health technology in the country.
iii. Establishment of standards and validation system for health technology products/commodities.
iv. Strengthening the science based policy system for introduction of new technology into practice and public health system based on careful assessment of safety and efficacy.

v. In keeping with the agenda of the 12th Five Year Plan which aims at faster, more inclusive and sustainable growth, it is vital to strengthen the Indian innovation eco-system to benefit people across the spectrum and improve their quality of life. The relevance of this eco-system to our future has to be ensured by leveraging international cooperation in the service of our innovation strategies. Global Innovation and Technology Alliances with strategic partners should form an integrated approach. For this, India needs new structures and mechanisms to create an innovation system which enables indigenous methods for affordable innovations and benchmarking of global best practices for quality innovations.

vi. DBT entered into a partnership with Stanford to create the Stanford-India Biodesign (SIB) Program. SIB is designed to train future leaders of the medical technology industry to identify the major health care needs of India and develop cost-effective solutions applicable across a broad socio-economic spectrum. The core offering of the program are the fellowships designed to train and groom the future leaders of the Indian medical technology industry.

vii. Innovations in medical science could be broadly considered as value based ideas with novel applications and potentials for socio economic benefits. All innovative ideas are not workable. All workable ideas do not work. All working ideas do not lead to profits. Carrying an innovative idea through the valley chain of death into a profitable venture needs a risk management strategy at three levels namely technical, financial and marketing stages. Innovations in medical research come with a) inherent risks of failures, b) difficulties in assessing returns on investments and c) the need to create new market potentials. Uncertainties of workability, return on investments and market acceptability of products of innovation form a major challenge for financial institutions to "finance innovations". In order to foster innovations, building investor confidence is a key step. Investors in medical research and innovation aim to create wealth out of knowledge.

- Emphasis should be provided on vaccines, diagnostics, biomarkers, bio-pharmaceutical drugs, devices and implants, nutrient bio fortification, assisted devices for disabled, ICT for the health care system and technologies.

Drugs and vaccines for important major diseases like TB, Malaria, HIV and Dengue etc., in the country particularly for common man requires special emphasis in our R&D efforts as global companies and institutions are less likely to invest in these areas.

- Considering India's long heritage and knowledge, we must also utilize our vast bio-resources for further development of traditional system of medicine and herbal drugs with the application of modern scientific tools.
- Building a cadre o**f "young leaders"** for biomedical research is vital from a futuristic point of view.
- Departments like **DBT, DST, CSIR** have launched a number of innovative schemes to promote biomedical research. In addition, new institutions like Translational Health Science & Technology Institute (**THSTI**), Regional Centre for Biotechnology (**RCB**), National Institute of Biomedical Genomics (**NIBMG**), Institute for Stem Cell Science and Regenerative Medicine (**INSTEM**) etc to enhance capacity building and also to create appropriate platform for biomedical research with the involvement of basic and clinical researchers.

I am glad to note that DBT has supported R&D projects since 2001 in the important areas like Kidney diseases, Rheumatoid arthritis, congenital diseases, cardio-vascular diseases, TB, HIV, Kala Azar etc. In fact, DBT

has several innovative schemes like COE, Ignition grant, SBIRI and BIPP (Private Public Partnership).

In the Agriculture area, Punjab Agricultural University, Ludhiana has contributed significantly in Green revolution through the development of high yielding crop varieties, a DBT supported Biotechnology department is fully functional.

National Agri-food Biotechnology Institute (**NABI**) and Bio-Process Unit (**BPU**), Mohali established by DBT is fully functional.

- Health of our people is one of the pillars of our development policies by the Government. Investment to ensure primary, secondary and tertiary level of health care is vital.
- You have an important role in the endeavor by ensuring affordable medicine and healthcare to the common man.

My best wishes to all of you.