



DEVELOPMENT OF BIO-REPOSITORIES AND TRANSLATIONAL SCIENCE FACILITIES UNDER THE AGEIS OF RAJIV GANDHI UNIVERSITY OF HEALTH SCIENCES

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Abstract

There is considerable interest among researchers, for developing early markers, both for genetic and molecular and using them for clinical studies. According to National Cancer Institute (NCI) of National Institute of Health (NIH), USA, "one of the most widely recognized and significant roadblocks to progress in cancer research is the lack of standardized, high-quality bio-specimens". If a State-of-the-art bio-repository is established in Bangalore, India, with international protocols, and NCI best practices procedures in place, it would provide a wealth of standardized clinical samples for all kinds of studies. The genetic diversity as well as cancer diversity in India is huge. We see a lot of collaborative projects spawning from such a platform. Kidwai Memorial Cancer Institute of Oncology (a national platform for oncology), Bangalore, has already established such multicenter collaborations with Indian Institute of Sciences, National Center for Biological Sciences, St John's Medical Academy, Bangalore and prestigious John's Hopkins University, USA and generated useful information on genomics and proteomics of squamous cell carcinoma. We are also contemplating establishing a biomarker development facility, to complement this effort. Furthermore, efforts are underway from RGUHS, to help develop centers of excellence in allied sciences, encourage collaborative research between various research institutions, in the State of Karnataka and build a common translational science platform, to promote the development of science from bench to clinic. An expert committee has been formed to coordinate these efforts. In this overview, we will present strengths and weakness of the programs in India and present a strong case for international collaboration, to develop needed bio-repositories and translational science centers in India.

Introduction

-Karnataka is one of the progressive States, located in the South Central Part of India.
-Bangalore City the Capital of Karnataka by creating IT-giants like, **Infosys** and **Wipro** revolutionized the information technology.
-We at Rajiv Gandhi University of Health Sciences (RGUHS), would like to see a similar revolution in **Science and Technology**.
-Rajiv Gandhi University of Health Sciences is a State Funded administrative platform for all the medical, dental and allied health sciences.
-Under the ageis of RGUHS, there are 40 medical schools, an equal number of dental schools, schools of allied health sciences, and colleges of Indian system of medicine, such as Ayurveda, Yoga, Unani, Siddha, Homeopathy and Naturopathy.

RGUHS Initiatives

-RGUHS, since its inception has played an important role in curriculum development and administration of the health sciences.
-Current administration, under the leadership of Dr Sriprakash, the Vice-Chancellor, has formed an expert committee, to develop centers of excellence in various areas of health sciences, prioritize the research programs to meet the current needs of the country.
-To accomplish these goals, a serious effort is being made to develop a collaborative net-work of research and development facilities within the affiliated institutions as well as other national and international institutions (U of M, Loyola, Karolinska, John's Hopkins, SASAT etc), willing to work with us.
-In the present overview, we will discuss our efforts to develop bio-repositories and translational science facilities in the State of Karnataka.

Collaborating Institutes

Basic Sciences:
Indian Institute of Sciences (<http://www.iisc.ernet.in>)
Jawaharlal Nehru Center for Advanced Scientific Research (www.jncasr.ac.in)
National Center for Biological Sciences (www.ncbs.res.in).
Institute for Bio-informatics and Applied Bio-technology (IBAB) (www.ibab.ac.in)
Institute of Bio-informatics (www.ibioinformatics.org)
Center for Human Genetics (CHG), Bangalore.
St John's National Academy of Health Sciences.

Collaborating Institutes

National Institutions:
National Institute for Tuberculosis (<http://ntiindia.kar.nic.in>)
National Institute of Mental Health and Neurosciences (www.nimhans.kar.nic.in)
Kidwai Memorial Institute of Oncology(www.kidwai.kar.nic.in)
Sri Jayadeva Institute of Cardiovascular Sciences and Research(www.jayadevacardiology.com)
Karnataka Institute of Diabetology(www.kidbangalore.in)
South Asian Society on Atherosclerosis and Thrombosis (www.sasat.org)

Collaborating Institutes

Medical and Clinical Institutions:
St. John's National Academy of Health Sciences (<http://www.stjohns.in>).
Bangalore Medical College and Research Institute (www.bmcric.org)
Health Care Global (www.hcgoncology.org)
Mazumdar-Shaw Cancer Center(www.mscc.in)
Kidwai Memorial Institute of Oncology(<http://kidwai.kar.nic.in>)
Narayana Netralaya (www.narayananeethralaya.org)
Narayana Hrudayalaya(www.narayanahospitals.com)
The New Stem Cell Research Institute (www.indiabioscience.org)
Shanakara Research Center(Ranga Durai Hospital)
R.V. Dental College and Hospital (www.rvdentalcollege.org)

Centers of Excellence

Bio-Repositories: Oncology
Kidwai Memorial Institute of Oncology
Health Care Global, Bangalore.
Mazumdar-Shaw Cancer Center
Rajiv Gandhi University of Health Sciences?
Regenerative Medicine and Tissue Engineering:
Narayana Netralaya: Ophthalmic Applications
Shankara Research Center: Urology Applications
R.V. Dental College: Dental Pulp Bank, Dental and Neurology Applications(NIMHANS)
Sri Jayadeva Institute of Cardiovascular Sciences: Vascular Applications (Narayana Hrudayalaya).

Translational Science Facilities

Narayana Netralaya: Collaborative Projects with Abexome, Immunodiagnostic company to develop Bio-marker assays.
Narayana Netralaya: Collaborative Projects with Institute of Bio-informatics and Applied Bio-technology, (computational genomics, proteomics).
Health Care Global: Collaboration with Abexome, Immunodiagnostic company to develop a variety of anti-body based bio-markers for early detection of cancer and for better management of therapies.
Karnataka Institute of Diabetology: Collaboration with Abexome (www.abexome.com) to develop antibody-based bio-markers for monitoring "at risk" patients, for acute vascular events.

Funding Agencies

-Indian Council of Medical Research (ICMR)
-Department of Science and Technology (DST)
-Department of Biotechnology (DBT)
-Defense Research and Development Organization (DRDO)
-Indo-US Science Projects (NIH/DST)
-Indo-US Science and Technology Forum
-University of Minnesota/ICMR Res. Projects

Future Directions and Action Plans

-Develop Centers of Excellence in Various Research Areas of Interest and Priority.
-Develop Bio-repositories for Tissues of Importance
-Develop Translational Science Facilities
-Develop Fellowship Programs at Centers of Excellence to Train PhDs for Research in Basic and Applied Sciences.
-Develop Fellowship Programs at Centers of Excellence to Train Physicians in Basic and Applied Sciences

Future Directions and Action Plans

-Develop International Collaboration with the Centers of Excellence in India (NIH, CDC, WHO, International Universities & Research Institutions)
-Make Bio-repositories Accessible for Scientists from All over the World.
-Establish a Common Research Platform Under the Ageis of RGUHS, so That All Affiliated Staff Can Use the Research Facilities.
-Just like IT revolution, make Bangalore the Research and Technology Capital of India.
- Integrate IT-capabilities of Bangalore, with all aspects of the development of Bio-repositories and Translational Facilities in Bangalore.

Conclusions

-State of Karnataka has over 40 Medical and Dental Colleges and National Institutes of Excellence.
-RGUHS as the Administrative Head of These Centers of Excellence, Should Prioritize the Research Agenda for the State.
-RGUHS Should Support the Development of Bio-repositories, and Translational Science Centers.
-RGUHS Should Establish Fellowship Program at All Affiliated Institutions, to Train Post-graduate Students and Clinicians for Conducting Research in Various Fields of Health Sciences.
-RGUHS Should Support and Encourage International Collaborations.
-RGUHS Should Influence the Policy Makers and Private Industries to Financially Support the Research Priorities of the State.