

*National Institute  
of Biomedical Genomics*  
**(NIBMG)**



**Kalyani, West Bengal, INDIA**

[www.nibmg.ac.in](http://www.nibmg.ac.in)

# Monday, February 23, 2009

## Cabinet

### **ESTABLISHMENT OF NATIONAL INSTITUTE OF BIOMEDICAL GENOMICS AT KALYANI**

20:52 IST

The Union Cabinet today gave its approval to the establishment of National Institute of Biomedical Genomics (NIBMG) at Kalyani in Nadia District of West Bengal as an autonomous institution under the aegis of Department of Biotechnology, Ministry of Science & Technology.

The Institute has emphasis towards enhancement of knowledge on human health & disease through genomics and to translate the knowledge using appropriate technologies for promotion of well-being and improvement of genomics-based health-care in India.

NIBMG will usher in the genomics era explicitly in the areas of medicine and public-health. It will undertake novel research; translational, educational & training programmes; network with relevant institutions; and seed biomedical genomics activities in hospitals, medical school and other health-care institutions.



*An Autonomous Institution of the  
Government of India,  
Department of Biotechnology*

**HAS BEEN REGISTERED WITH THE  
REGISTRAR OF SOCIETIES, DELHI**

**Registration No. S/66514/2009**

**under Societies Registration Act.XXI of 1860**

# NATIONAL INSTITUTE OF BIOMEDICAL GENOMICS

## **Vision:**

- To enhance knowledge on human health & disease through genomics.
- Translate the knowledge using appropriate technologies for promotion of well-being and improvement of genetics-based health care.

## **Mission:**

- To create necessary infrastructure to serve as the expert base for the principles and practice of medical genetics
- To conduct and promote cutting edge research in biomedical genomics for better fulfilment of public health needs
- Capacity building in biomedical genomics.

## Our Mantra

*Accelerating Genomics for Health*

# *Our Initiatives*

# **Our Research**

**Genomics and  
Epigenomics of  
Chronic Disease**

**Genomics and  
Proteomics of  
Infectious  
Disease**

**Accelerating  
Genomics  
for  
Health**

**Genomics,  
Epigenomics and  
Transcriptomics of  
Cancer**

**Statistical and Computational  
Genomics**

# INFECTIOUS DISEASE

- **Understanding regulatory dynamics of tubercular granulomas**
  - *Genomics and Proteomics*
- **Predicting sepsis outcome**
  - *Transcriptomics*
- **HCV**
  - **Functional characterization of *IL28B* gene alterations**
  - **Characterization of anti-HCV activity of Interferon-lambda**



# CHRONIC DISEASE

- **Noonan Syndrome: Interaction between RAF1 and Calcineurin-NFATc pathways in the development of hypertrophic cardiomyopathy**
- **Chronic Pancreatitis**
- **Non Alcoholic Fatty Liver Disease**
- **Therapeutic efficacy of Metformin in Type 2 Diabetes Mellitus**

Genome-wide  
approaches to  
understanding  
susceptibility or  
response

# CANCER

## Program on Oral Cancer

- **International Cancer Genome Consortium Project**
  - *Identify Genomic Alterations that Drive*
- *Identify Genomic Basis of Chemoresistance*
- *Identify and Characterize Stem Cells in Oral Cancer*

## • Program on Cervical Cancer

- *Estimation and Characterisation of Host-HPV Genomic & Epigenomic Interactions*
- *Genomics & Epigenomics of HPV Persistence*

# CANCER

- **Breast Cancer**

- *Effect of progesterone on transcriptome in relation to prediction of surgical outcome and survival*
- *Biochemical characterization of JMJD6. (a bifunctional histone arginine demethylase that predicts poor survival outcome)*

- **Rare Cancers**

- *Pediatric colorectal cancer*
- *Glioblastoma multiforme*
- *CNS Neoplasms*

# STATISTICS & COMPUTATION

- **Pleiotropy**

- Develop flexible statistical methods to detect pleiotropy using meta-analysis
- Extend to
  - pooled-analysis of heterogeneous subtypes of a single disease
  - gene-environment interaction analysis with multilevel exposures
  - correlated endo-phenotypes of a single complex disease.

# STATISTICS & COMPUTATION

- **Data Integration and Inference**
  - Develop an integrated statistical framework for combining next generation sequencing data with data available in existing databases for detecting aberrations that promote cancer progression.

# STATISTICS & COMPUTATION

- **Multiple-testing Adjustment for Correlated Tests**
  - Because of LD among markers, tests of association in a GWAS study are not independent, yet corrections for multiple-testing are done assuming that the tests are independent. Commonly-used Family-Wise Error Rate (FWER) or False Discovery Rate (FDR) adjustments may not be appropriate for error control in a correlated setting. This project seeks to develop appropriate statistical methods for handling correlated tests.

# **"KALYANI COHORT STUDY"**

A population-based cohort study



- Cohort of 20,000 individuals
- A platform for prospective studies on genomics of health and disease



Field investigators collecting data from individuals included in the cohort



# Sowing Seeds for Faster Translation of Research Outcomes to Clinics...





**Biological Carcinogens & Cancer**

*A Symposium to Inaugurate*  
**A Laboratory for Research on Human Papilloma Virus & Related Cancer**

Organised by :  
**National Institute of Bio-medical Genomics, Kalyani & Saroj Gupta Cancer Centre & Research Institute**  
Thakurpukur, Kolkata

**Souvenir**

Date : **21<sup>st</sup> April, 2012 (Saturday)**  
Venue : Auditorium of SGCC&RI, THAKURPUKUR, Kolkata



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## BIOMEDICAL GENOMICS CENTRE in IPGME&R and SSKM Hospital





# BUILDING CAPACITY

## *Winter Schools*

January 3-10, 2012: ***Genetic Dissection of a Complex Disease: Analytical Approaches***

(Supported by the Wellcome-DBT India Alliance.)

January 7-11, 2013: ***Analysis of Massively-Parallel Sequencing Data***

(Organized jointly with EMBL-European Bioinformatics Institute; Partially supported by the British High Commission, New Delhi.)

## *Summer School*

April 1-5, 2013: ***Genetics & Epidemiology: Study Designs and Statistical Methods***

(Organized jointly with Indian Statistical Institute & Clinical Development Services Agency; Supported by PATH-OWH.)

# Building Capacity



## NIBMG Winter School

**GENETIC DISSECTION OF A COMPLEX DISEASE: ANALYTICAL APPROACHES**

*In Celebration of the Tenth Anniversary of the Human Genome Project*

January 3-10, 2012

Organized by



National Institute of Biomedical Genomics, Kalyani, India

Sponsored by



INDIA ALLIANCE

Wellcome Trust/DBT India Alliance

## Reaching Out



The Institute regularly hosts visits by school and college students

## Honoring Artists



Some Paintings from the Permanent Gallery of the Institute  
Created by Genetically Challenged Children

# *Our Aspirations*

# **Create an Impact on Reducing Burden of Disease in Populations**

- **Disease Biology**
- **Translate Knowledge and Create Models for Delivery**
- Health Economics
- Health Policy

## Access Knowledge and Expertise through Global Partnering

- Clinical sub-phenotyping through newer methods of medical imaging (primarily, fluorescent techniques)
- Can nanoparticles combine to produce more effective results?
- Population Science
- Hybrid Study Designs: *Infer causation without randomized controlled trials*
- Toxicology
- Algorithms for Drawing Inferences from High-Dimensional Data

# PARTNERSHIP IN RESEARCH , INCLUDING TRANSLATIONAL RESEARCH

- Select disease of mutual scientific interest
- Anchor in India
  - Data and Sample Collection
  - Biospecimen Analysis
- Data Shared and Jointly Analyzed

# PARTNERSHIP IN TRAINING

- New and Emerging Areas – Certificate & Diploma Courses
- Participate in Joint Training Programmes in other Countries

- Exchange Programmes: Students, Clinicians & Scientists
- Engage through Matching Grants
- Access Global Funds





## Highest Density of Massively-Parallel DNA Sequencers in India

- five 454s
- two HiSeq 2000s
- one Ion Torrent



# Recent Visitors



Professor Obaid Siddiqi



Professor Eric D. Green, Director,  
National Human Genome Research  
Institute, USA



Professor David R. Cox,  
Director, R&D, Pfizer Inc.



Professor Mike Stratton, Director,  
Wellcome Trust Sanger Institute