Indian Institutes of Technology

IIT Kharagpur 1951
IIT Bombay 1958
IIT Madras 1959
IIT Kanpur 1960
IIT Delhi 1961
IIT Guwahati 1995
IIT Roorkee 2001

2008: Patna, Bhubaneshwar, Gandhinagar, Hyderabad, Rajasthan, Ropar
2009: Indore, Mandi
2012: BHU-Varanasi
IIT Bombay Highlights

- Established in 1958, foundation stone was laid by Prime Minister Jawahar Lal Nehru
- The Institute has degree programmes in the fields of engineering, science, humanities and social sciences, management and design; strong research focus
- Over 46,000 students have graduated in 55 years; alumni have high achievements to their credit
- IIT Bombay is the preferred choice for engineering students – 70 of top 100 JEE rankers joined IITB (IITs have a high selectivity: 8000 out of 500,000 applicants)
- Graduate about 1800 students a year (~ 180 Ph.D.)
IIT Bombay Statistics

- Campus Area: 530 acres
- Faculty Strength: 570 full time, 90 adjunct, visiting
- Bachelors Degree Students: 3600
- Masters Degree Students: 2600
- Doctoral Degree Students: 2100
- Total No. of Students: 8300
Programmes

• **Science and Engineering Departments**
  • Aerospace Engineering
  • **Biosciences & Bioengineering**
  • Chemical Engineering
  • Chemistry
  • Civil Engineering
  • Computer Science & Engineering
  • Earth Sciences
  • Electrical Engineering
  • **Energy Sciences & Engineering**
  • Environmental Science and Engineering
  • Mathematics
  • Mechanical Engineering
  • Metallurgical Engineering & Materials Science
  • Natural Resource Engineering (CSRE)
  • Physics

• **Arts and Humanities Departments**
  • Humanities and Social Sciences
  • Industrial Design
  • Management

• **Interdisciplinary Programmes**
  • Systems & Control
  • IE&OR
  • Technology and Development (CTARA)
  • MMM (Math, MEMS, Mech)
  • Educational Technology
  • Nanotechnology and Science (CRNTS)
  • Climate Change Studies
  • Urban Science & Engineering (C-USE)
Research

- Sponsored Research Projects ($50 mn/yr)
- Consultancy ($5 mn/yr)
- Technology Incubation: SINE (Society for Innovation and Entrepreneurship)
  - Startup companies (17 current, total 44)
- Research park: Launch 2014
- Patents filed (70/yr)
- Publications (1300/yr)

Theme: Research that makes a difference
Major Research Centres

- Centre for Excellence in Nanoelectronics (DIT, Applied Materials)
- National Solar Thermal Test Facility (MNRE)
- National Centre for Aerospace Innovation and Research (DST, Boeing)
- National Centre for Photovoltaic Research and Education (MNRE)
- Wadhwani Research Centre for Biosciences and Bioengineering (Wadhwani Foundation)
- Centre for Climate Change Research (DST)

Healthcare Research Initiative, Internal Security Research Centre, Centre for Urban Science and Engineering, Entrepreneurship Centre, Centre for Frugal Engineering
Healthcare Research

• A strong teaching and research program in Biosciences and Bioengineering nurtured by active collaboration between biologists, physical scientists and engineers

• 15% of IITB faculty (80) are actively involved in healthcare related research.

• 140 doctoral students + 130 masters students in healthcare related research.

• Healthcare consortium: KEM, Tata Memorial Hospital, Hinduja Hospital, Johnson and Johnson, Span Diagnostics, …
Biomaterials and Implants

- Indigenous modular rotating hinge knee prosthesis for young patients of osteosarcoma (OrthoCAD project)
- Micro-devices for cardiac use (minimally invasive surgery)
- Nanocomposites for dental and orthopedic use
- In situ gelling vitreous substitute
- Ocular inserts
- Cell-material interactions

(B Ravi, J Bellare, R Banerjee)
Tissue Engineering

- Bioreactors for expansion of stem cells
- Nanofibrous mats (bone)
- Sponge scaffolds (bone)
- Injectable scaffolds (bone & cartilage)
- Stem cell differentiation
- Growth factor delivery
- Amyloids as materials
Drug Delivery

- Nanoparticles for drug delivery in cancers
  - Targeted, triggered delivery
- Aerosols for respiratory diseases
- Liposomes for regional & systemic delivery
- Drug loaded implants
  - Intra-articular delivery
  - Ocular delivery
- Nanocarriers for neurological diseases
  - Delivery to brain tumors

(R Banerjee, D Bahadur, R Srivastava)
FAN
Faculty Alumni Network

• Faculty recruitment
• Research collaboration
• Alumni Visiting Faculty
New collaborations:
- Management
- Policy
- Healthcare
- ...

Conclusions
INDIAN INSTITUTE OF TECHNOLOGY BOMBAY – WASHINGTON UNIVERSITY IN ST. LOUIS CORPORATE NETWORK

CORPORATE LEADERS CONCLAVE