



**Government of India**  
**Ministry of Science & Technology**  
**Department of Biotechnology**

Block 2, 6–8th Floor, CGO Complex  
 Lodi Road, New Delhi 110 003

**Subject: Call for Research Proposals on “Bioengineering”**

The Department of Biotechnology (DBT) invites research and development proposals on ‘Bioengineering’ from scientists, groups/individuals. The purpose of support is to create collaborative network of basic researchers, clinicians and industry as bioengineering is one of the important disciplines in biomedical research. Some of the identified areas of interest are:

**Tissue Engineering and Stem Cells**

- Development of matrices and scaffolds for three dimensional culture configurations to promote 3D tissue organization
- Development of rapid prototyping and other engineering techniques
- Tissue engineered organs/organ support systems treatment/replacement of cornea, skin, cartilage, bone, urinary bladder, nerve regeneration, etc.
- Hybrid artificial organs
- Cellular interactions with scaffolds
- Growth factor and cell delivery
- Protection of cells against inflammation and immune attack
- Use of engineered tissues for drug testing.

**Biomaterials for therapeutics**

- New materials for cartilage, blood vessels, nerves, valves, occlusion devices, implantable devices; hollow-fibers for dialysis and oxygenation, etc.
- Development of matrices – degradable and non-degradable polymers of synthetic or biological origins; ceramics and their composites for applications in delivery of drugs, genes, vaccines, growth factors, etc.
- Development of membranes for selective filtration adsorption of peptides, antibodies, hemodialysis, etc.

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- Development of materials that are capable of releasing macromolecules such as proteins and peptides, intelligent delivery systems
- New degradable materials for delivering molecules through the skin and lungs
- Development of bio-membranes for wound dressing.

### **Biomedical Instrumentation**

- Development of cellular/molecular imaging technology
- Fabrication of medical devices and bio-instrumentation such as opto-electro-mechanics, micro-robotics for surgery, recovery and rehabilitation
- Advanced data acquisition systems to record signals from arrays of biomedical sensors.

### **Biosensors**

- Development of biosensors using molecular imprinting and other techniques for measurement of clinically relevant compounds
- Ultrasensitive biosensors for diagnosis of diseases and detection of biological agents
- Development of miniature electrode arrays and other microsensors that record unique signals from many neurons simultaneously
- Integrated circuit biomedical electrodes for detecting bioelectrical and biochemical potentials
- Development of disposable biosensors at low cost for rapid diagnosis of diseases
- Development of MEMS biosensor using multi-parameter approach.

The groups, within or across the institutes have strength in basic research, technology and medicine may submit the proposals. Networked proposals involving public and private institutions shall also be entertained. Application format may be obtained from the following DBT websites: <http://www.dbtindia.nic.in> OR <http://www.dbtindia.org>. Twenty-five hard copies of the proposal(s) along with soft copy as per above format should reach the Joint Secretary, Department of Biotechnology, Ministry of Science and Technology, Block 2, CGO Complex, Lodhi Road, New Delhi. Any additional enquiry may be addressed at Telephone: 2436 2982/ 2436 3699; e-mail: [unbehera@dbt.nic.in](mailto:unbehera@dbt.nic.in); [alka@dbt.nic.in](mailto:alka@dbt.nic.in).