Projects initiated by IIT Bombay for COVID-19 mitigation  
(updated 09 05 20)

Areas of work:

A. **Antiviral drug / molecule synthesis**

1. **Antibody based capture of 2019-nCoV and its inactivation using lipid based in-situ gel**
   - Prof. Kiran Kondabagil, Department of Biosciences and Bioengineering
   - Prof. Rinti Banerjee, Department of Biosciences and Bioengineering
   - Prof. Shamik Sen, Department of Biosciences and Bioengineering
   - Prof. Ashutosh Kumar, Department of Biosciences and Bioengineering
   Remarks: Project funded by DST, GoI

2. **Identification of global metabolite biomarkers in COVID-19 infected patients for targeted therapy**
   - Prof. Sanjeeva Srivastava, Department of Biosciences and Bioengineering
   - Collaborators: Dr. Om Shrivastav, Jaslok Hospital Dr. Jayanthi S. Shastri, (T N Medical College & Nair Hospital) Specialist at Kasturba, Nair & Jaslok Hospitals
   Remarks: Project funded by DST, GoI

3. **Plasma Proteomic Analysis of COVID-19 patients to identify the potential biomarkers and therapeutic targets: A pilot study**
   - Prof. Sanjeeva Srivastava, Department of Biosciences and Bioengineering
   - Collaborators: Dr. Om Shrivastav, Jaslok Hospital Dr. Jayanthi S. Shastri, (T N Medical College & Nair Hospital) Specialist at Kasturba, Nair & Jaslok Hospitals

B. **Sanitization approaches**

1. **Development of incineration device for safe disposal of masks/gloves in hospitals and quarantine centres**
   - Prof. Sandeep Kumar, Department of Energy Science and Engineering
   - Prof. Sanjay Mahajani, Department of Chemical Engineering

2. **Technology for portable / wheeled UVC germicidal unit / station for disinfection**
   - Prof. Ambarish Kunwar, Department of Biosciences and Bioengineering
   - Prof. Kiran Kondabagil, Department of Biosciences and Bioengineering
   **Product design:**
   - Prof. P. Kumaresan IDC School of Design
   - Prof. Purba Joshi, IDC School of Design

3. **Surface spray for decontamination and antiviral action**
   - Prof. Soumyo Mukherji, Department of Bioscience and Bioengineering
   - Prof. Suparna Mukherji, Centre for Environmental Sciences and Engineering
   Remarks: Funded by AMAT

4. **Sanitisation solution for hands for Institute personnel**
   - Prof. Soumyo Mukherji, Department of Bioscience and Bioengineering

5. **ECORSANI: Phytoformulations for walk through sanitizers**
   - Prof. Rinti Banerjee, Department of Biosciences and Bioengineering
   Remarks: Project with Thermax
C. Medical Devices

1. Respiratory support devices for COVID19: CPAP Helmet, Mechanized Ambu-bag & Advanced Ventilator
   - Prof. Ramesh Singh, Department of Mechanical Engineering
   - Prof. Soham Mujumdar, Department of Mechanical Engineering
   - Prof. Ankit Jain, Department of Mechanical Engineering
   - Prof. Ashutosh Gupta, Department of Computer Science and Engineering
   Remarks: CPAP Helmet project funded by Thermax

2. BETIC VI-SVAS: Ventilator for India
   - Prof. B. Ravi, Department of Mechanical Engineering
   Remarks: Funded by IITPL - Innovations Imaging Technologies, Bangalore

D. Personal Protection

1. Design and development of PPE solutions: Face masks; Low-cost face shields; Aerosol Box for hospitals; and Washable PPE coverall suit
   - Prof. R. Kumaresan, IDC School of Design
   - Prof. Purba Joshi, IDC School of Design
   - Prof. B.K. Chakravarthy, IDC School of Design

2. Antiviral gel spray for coating cloth masks to make them safe against COVID19
   - Prof. Rohit Srivastava, Department of Bioscience and Bioengineering
   - Prof. Kiran Kondabagil, Department of Biosciences and Bioengineering
   Remarks: Funded by BIRAC, DBT

E. Surveillance

1. Use of "SAFE" app for quarantine adherence (http://safe.cse.iitb.ac.in/)
   - Prof. Bhaskaran Raman, Department of Computer Sciences and Engineering
   - Prof. Kameswari Chebrolu, Department of Computer Sciences and Engineering

2. Privacy preserving contact tracing
   - Prof. Bhaskaran Raman, Department of Computer Sciences and Engineering

3. CORONTINE: Tracking and tracing of asymptotic carriers during pandemic
   - Prof. Ganesh Ramakrishnan, Department of Computer Science and Engineering
   - Prof. Manjesh K. Hanawal, Industrial Engineering and Operations Research

4. Contactless (video) surveillance at COVID-19 quarantine facilities
   - Prof. Ganesh Ramakrishnan, Department of Computer Science and Engineering

F. IT Solutions

1. World Wide Help: IT solution for user-friendly, cost effective and customized information access on any topic and in any domain with humans-in-the-loop
   - Prof. Kameswari Chebrolu, Department of Computer Sciences and Engineering
2. **E-token and online ordering system**  
   - Prof. Bhaskaran Raman, Department of Computer Sciences and Engineering

3. **Short-term projection of COVID-19 medical resources and inventory**  
   - Prof. P. Sunthar, Department of Chemical Engineering