Contact: Media Team
E: media@iitalumnicouncil.org
T: +1 650 9008833
M: +91 93155 21237
www.iitalumnicouncil.org
Twitter: @iitcouncil

PRESS RELEASE

IIT Alumni Council's MegaLab to include Kodoy Stack 3.0 for 10x improvement in testing errors with concurrent antibody assessment.

- Microfluidic technology developed by Indian academic institutions to be used for concurrent testing of viral, parasitic and bacterial infections along with antibody assessment.
- Initial focus to be classification of individuals based on neutralizing antibody prevalence and complete phenome analysis to enable safe grouping of people in offices and physical meetings.
- MegaLab to take swab, blood and stool samples for longitudinal studies which will help predict pathogen impact and disease risk. Will enable personalized medicine for those infected
- Technology being put in place for both identification and quantification of neutralizing antibodies. Digital immunity cards for those with neutralizing antibodies.
- Pilot testing to start with enrolled IIT Alumni in October in partnership with an I2Net institution.

New Delhi, Sept 08, 2020: IIT Alumni Council announces implementation of Kodoy 3.0 indigenous technology stack with higher accuracy and concurrent testing of swab, blood and stool samples. Microfluidics will enable concurrent phenome testing data generation from multiple samples taken from same person at different points of time for a 360 degree view of his health condition using most advanced technologies available. Phenome data will include genetic signature, blood biopsy, stomach biome

characterisation etc to facilitate predictive modelling and personalised medicine. RTqPCR to be one of several technologies used for generation of phenome data bank.

“Overcoming health problems at the national level is the foremost social challenge for ensuring quality of life and productivity of citizens. Many IIT Alumni have resolved to contribute substantially to this area to ensure that Indians have lesser incentive to migrate from India and there is adequate incentive for migrated IITians to return. Covid19 is not the last pandemic and the possibility of biological warfare in future is real. With a nationwide capacity of 1.5 million tests per day likely to go up to 2 million tests per day and actual throughput of over 1 million tests per day, RTqPCR capacity alone is no longer a challenge – however accuracy is a concern and useability of data has not achieved requisite objectives. Complimentary technologies have been identified and are being inducted to overcome both these limitations. MegaLab will target to solve affordability and accessibility by bringing the entire stack from testing to data under one integrated service” said Ravi Sharma, President, IIT Alumni Council.

“Microfluidics will eventually move from MegaLab type installations to labs and finally to point of care installations such as a primary health centre or a doctors clinic, hopefully within a few years by using learnings from the MegaLab and the development work that is going into its design and optimisation” added Prof Shantanu Bhattacharya, recipient of the highly prestigious Abdul Kalam Fellowship 2020 for his contributions in the fields of Micro-Fabrication, Nano-Materials Synthesis, Applications and Micro-fluidic Systems. Prof Bhattacharya of IIT Kanpur was part of the C19 Task Force group that demonstrated the cost saving possible by using microfluidic technology.

“The Kodoy 3.0 stack will include screening by data. Data would be collated from digitization of swab, blood and stool samples. The analysis would be carried out by state of the art equipment that uses indigenous microfluidics technology as part of the core stack. Accuracy and useability of RTqPCR data is still far from the required level because we do not have information about the host – and even if we do collect genetic or phenotype information of the host – we have no benchmark or reference to check that against. The objective of the MegaLab is now to go beyond just RTqPCR and beyond just swab based detection of virus – to a more modern and consummate health system with far wider benefits. Keeping this possibility as the target, the Kodoy 3.0 stack is now being implemented with swab, blood and stool samples” according to the spokesman for the Kodoy Technology Stack.

About IIT Alumni Council

IIT Alumni Council is the largest global body of alumni, students and academicians across all the twenty-three IITs and partnering Institutes of the India Innovation Network (I2Net). The IIT Alumni Council aspires to catalyse India's technological renaissance. For this it catalyses the creation of rapid response short term initiatives like the C19 Task Force and perpetual strategically planned initiatives like MegaFund, MegaIncubator and I2Net. Through such initiatives, IIT Alumni Council intends to act as a network and as a bridge between various providers of knowledge, wealth, information, wisdom, ideas, expertise and entrepreneurship to promote appropriate technological solutions to known social challenges at the national level. As a demonstration, the six month C19 Task Force set up in March 2020 conceived of large start-up initiatives like the NSCI Dome, Covid Test Bus, MegaLab and MegaTx – by aggregating over 10 million hours of 20,000+ volunteers, all of it on a pro bono basis. The Council is continuing to rally the considerable resources – both financial and technological - of the global IIT alumni ecosystem to catalyse global scale interventions in the social sector. For more information on IIT Alumni Council, please visit: www.iitalumnicouncil.org

A distinguished Alumnus of IIT Roorkee, former Corporate leader and now full time Philanthropist - Ravi Sharma plays an active role in global revitalisation and unification of IIT alumni across countries, across IITs and across age groups. He is the President and Chief Volunteer of the IIT Alumni Council and also leads the Institute Outreach & Branding initiatives. The main deliverables of the Council are facilitating alumni networking, fortifying Brand IIT and Brand India, catalysing alumni participation in nation building and accelerating technological developments in key areas of our economy including start-ups, manufacturing and digital transformation. The Council has six operating missions - Alumni Networking (PanIIT Alumni) , Mentorship (PanIIT Institute), Social Venture funding (PanIIT Fund), CSR Platform (PanIIT Foundation), a Thinktank (PanIIT Forum) a Biomolecule Mega Incubator (PanIIT Incubator). The IIT Alumni Council is now actively engaged in solving the corona crisis and has formed the C19 Task Force which has the participation of over 20,000 alumni and includes Mumbai University and ICT Mumbai as institutional partners. C19 Task Force initiatives include MegaLab Mumbai, MegaTx NCR, MegaFund India and TieNet.

Professor Shantanu Bhattacharya is an eminent academician who has served the Indian industry for 7 + years and the academia for 13 + years. He has been recently selected to receive the prestigious Abdul Kalam Technology Innovation National Fellowship of the Indian National Academy of Engineering for a period of three years from October 1, 2020. The fellowship is in recognition of his outstanding contributions in the field of micro fabrication, nano material synthesis and applications, microfluidic and nano fluidic systems. Prof Bhattacharya has been a mentor and guide to the team of volunteers at the IIT Alumni Council and the credit for using microfluidics in the MegaLab for concurrent multi pathogen testing goes solely to him. To date, there is no commercial approved system that uses microfluidics concepts with sample volumes almost in the nano liter scale for testing of covid samples as collected using swabs. Recently the FDA approved a system realized for saliva testing. The smart chip system for the MegaLab deployment will be completely indigenously developed and can in the short term be also made compatible with the globally available commercial solutions subject to approvals and concurrence of the companies. It is planned that such systems be deployed in the Mega Lab to cater to low cost, high throughput diagnostics thus circumventing the problem of sample pileup and testing accuracy owing to the phenomenally high growth of infection over the last couple of months. Dr Bhattacharya has developed some PCR, RT-PCR systems earlier for which he owns several US patents, has completed a PhD from the University of Missouri-Columbia, Missouri, a MS degree from Texas Tech University, Lubbock, Texas and a BE degree from Delhi College of Engineering. He has a vast research experience of over two decades in micro/nano systems engineering, biomedical microdevices, Micro/Nano-fluidic systems etc. He has authored around 80+ paper in peer reviewed International Journals, 10 + patents (comprising of 4 granted US patents), has authored around 07 books and many peer reviewed conference papers. He has graduated many PhD and master students and has served as Head of Design program @ IIT Kanpur between 2017 and 2020. He holds the Dr Gurmukh T and Veena M Mehta Chair position at IIT Kanpur and has won several prestigious national awards like the NASI Reliance Platinum Jubilee award from the National Academy of Science of India, the Er. M.P. Baya National Award, the IEI Young Engineers award, the NDRF design award etc. from the Institution of Engineers of India, the ISSS Young Science award from the Institute of Smart Structures and Systems etc. Dr. Bhattacharya is a fellow of the Institution of Engineers of India (IEI), the Institute of Electronics and Telecommunication Engineering (IETE), the International society of Energy Environment and Sustainability (ISEES) and is a senior IEEE member. He has developed some key technologies related to early dengue diagnostics through paper micro-fluidic approach, a pilot scale plant in a textile industry at Jaipur using visible light photo-catalysis to remediate effluent (technologies which are very close to commercialization), printable super-capacitors on textile and paper substrates through inkjet printing methods, acoustic meta-materials etc.