

CENTRE FOR INNOVATION IN INFECTIOUS DISEASE RESEARCH, EDUCATION, AND TRAINING (CIIDRET)

Annual Report 2017-18

Major Activities and Achievements

Centre for Innovation in Infectious Disease Research, Education, and Training (CIIDRET) established under the ordinance XV-A of the University of Delhi since October 2015 has received due approvals of the Academic Council and the Executive Council. As per its mandate, it has initiated several activities, which include interaction with college students of science stream to inspire them to take up research and Innovation as their career. CIIDRET has organized Industry-Academia Interaction through 'Entrepreneurship Guest Public Lecture Series', which includes lectures by Entrepreneurs and the facilitators of Innovation. CIIDRET has been providing state-of-the-art Proteomic and Genomic analytical facilities along with expert advice to scientists from both academia and Industry, and offers consultancy to the Biotech Industry. CIIDRET has organized Hands-on training courses covering different aspects of Genomics and Proteomics in collaboration with Industry Experts under the scheme 'Continuing Education and Skill Enhancement for Innovation in Biotechnology (CIIDRET-CESEIB).

CIIDRET has developed an ultra-large phage-displayed human antibody (scFv) library comprising of 10 billion clones by using proprietary cloning strategies, which have led to 100% recombinant clones with more than 70% in-frame full-length scFv molecule with sequences matching with germline sequences indicating the naïve-ness. This library has been successfully used for selecting binders to a clinically important human target protein, and the conversion of binders from scFv to Fab format retained the high binding specificity. This library will be useful for selecting therapeutic antibodies against various targets including snake venom as a cure for Snake bite, Antibiotic-resistant bacteria and their toxins that cause Sepsis etc.

Honors/Distinctions/Awards

Prof. Vijay K. Chaudhary Director, CIIDRET:

- Was conferred upon the Outstanding Alumnus award of the College of Basic Sciences and Humanities by the G. B. Pant University of Agriculture and Technology on November 2017.
- Has been nominated as a Member, Academic Council, Jawahar Lal Nehru University w.e.f. 8th May 2017 for two years.
- Is a member of the Task Force on "Infectious Disease Biology" of the Department of Biotechnology, Ministry of Science and Technology, Govt. of India (DBT).
- Has been nominated as Mentor, Nexus @ American Center, New Delhi. (<https://startupnexus.net/mentors>)
- Has been nominated as the Chairman of the Patent Facilitation Committee of the DBT w.e.f. 5th January 2018.

Research Projects

- Department of Biotechnology, Govt. of India has sanctioned a **Centre of Excellence** entitled "Antibody Technology: Research for therapeutic and diagnostic application" for **Rs. 6.08 crores** w.e.f. 30th Dec, 2017 for 3 years. (PI, Prof. Vijay K. Chaudhary; Co-PI, Dr. Amita Gupta) (Clinical Collaborator Dr. Sarman Singh, AIIMS).
- Department of Biotechnology, Govt. of India has sanctioned "**DBT-supported Genomic Facility at University of Delhi South Campus**" for 3 years with a total grant of **Rs. 2.47 crores**. This facility includes Sanger's DNA Sequencing using 96- and 16-capillary Applied Biosystems machines, Microarray on Agilent platform and Next Generation Sequencing on MiSeq platform. (PI, Prof. Vijay K. Chaudhary; Co-PI, Dr. Amita Gupta).
- Department of Biotechnology, Govt. of India has sanctioned a project "Identification of mycobacterial proteins and novel antigenic epitopes having immunodiagnostic potential and development of reagents for point of care

test for tuberculosis” for 3 years with total cost of **Rs. 81.9 lacs** with NITRD, New Delhi as the clinical Collaborator. (PI, Dr. Amita Gupta; Co-PI, Prof. Vijay K. Chaudhary, NITRD Co-PI, Dr. Rohit Sarin).

Publications/ Patents / provisional patents / technology transfers

Publications:

- Verma, V., Kaur, C., Grover, P., Gupta, A., Chaudhary, V.K. Biotin-tagged proteins: Reagents for efficient ELISA-based serodiagnosis and phage display-based affinity selection. (2018) PLoS ONE 13(1): e0191315.
- Gupta, A., Venkataraman, B., Vasudevan, M., & Gopinath Bankar, K. (2017). Co-expression network analysis of toxin-antitoxin loci in Mycobacterium tuberculosis reveals key modulators of cellular stress. Sci Rep, 7(1), 5868. ISSN - 2045-2322 (online)

Patents filed:

- An antibody fragment library, and uses thereof; Indian Patent application no. 201711043081 filed on 30th November 2017.
- A process for immobilizing polypeptides; Indian Patent application no. 201711040047 filed on 9th November 2017.

Posters:

- ORF selected genome fragment libraries: tools to unravel microbial proteomes. Verma, V., Gupta, A., Chaudhary, V.K. Won best poster prize at INSCR International Conference on 27th September 2017 held at Conference Center, University of Delhi and organized by Department of Zoology, University of Delhi.
- Recombinant mono-biotinylated antigens: Reagents for improved Immunoassays. Verma, V., Kaur, C., Grover, P., Gupta, A., Chaudhary, V.K. Poster presented at BioZest 2017, Faculty of Life sciences and Biotechnology, South Asian University on 10th November 2017.

Others:

The nucleotide sequence of the vector pVMExp14367 was submitted to Genbank, NCBI (Accession ID: MG599491).

Conference/Workshop/Lectures Organized

- Organized lecture by Mr. Nilesh Mehta, CEO & President, Premier Medical Corporation Ltd., Nani Daman, India entitled “Biotech Industry in India - Opportunities and Challenges” as a part of Entrepreneurship Guest Public Lecture Series to promote Industry - Academia Interaction Initiative on 7th April 2017
- Organized lecture by Dr. Renu Swarup, Senior Adviser, Department of Biotechnology, Ministry of Science & Technology, Government of India entitled “Igniting Minds....Spurring Innovations” as a part of Entrepreneurship Guest Public Lecture Series to promote Industry - Academia Interaction Initiative on 3rd July 2017.
- Organized 1st National Workshop on Protein Purification and Characterization, on February 6-9, 2018 at University of Delhi South Campus, New Delhi. In this, Hands-on training was provided in collaboration with M/s GE Healthcare, India.

Presentation in Conferences

- Prof. Vijay K. Chaudhary delivered Key note address entitled “Antibodies: Wonder Molecules” at Symposium on Translational Science, Lab2Life, organized by Sri Venkateswara College, New Delhi on 15 February, 2018.

- Prof. Vijay K. Chaudhary delivered a lecture entitled “An indigenous phage-displayed naïve human antibody (scFv) library: A potential source of recombinant antibody-based therapeutics for human diseases including snake bite treatment ” at “Development of advanced biologics for the treatment of human diseases” organized jointly by SciGenom Labs Pvt. Ltd. Kochi, India, University of Toronto and Bio 360 Life Sciences Park, Kerala State Industrial Development Corporation (KSIDC) on 2-3 February, 2018.
- Prof. Vijay K. Chaudhary delivered a lecture entitled “Human Antibodies: their production and applications” at International Conference on Advances in Biosciences and Biotechnology organized by Jaypee Institute of Information Technology (JIIT), NOIDA, on 1st February 2018.
- Prof. Vijay K. Chaudhary delivered a lecture entitled “An indigenous phage-displayed naïve human antibody (scFv) library: A source of recombinant anti-snake venom molecules!” at SNAKSYMP 2017-Conference on Recent Advances in Research on Snake Venom and Snakebite Therapy: National and International Perspectives organized by CSIR-CCMB on 1st December 2017.
- Dr. Amita Gupta delivered a lecture entitled “Insights into the Toxin-Antitoxin systems of Mycobacterium tuberculosis” at School of Life Sciences, University of Hyderabad on 14 July 2017.
- Prof. Vijay K. Chaudhary delivered a lecture entitled “Recombinant Antigens and Antibodies for improved immunoassays” at Indo-Iran Workshop to Develop Cooperation in Biotechnology organized by International Centre for Genetic Engineering & Biotechnology on 4th August 2017.
- Dr. Amita Gupta delivered a lecture entitled “Phage display technology and its Applications” at International Conference on Bacteriophages in River Ganga held at Institute of Medical Sciences, Banaras Hindu University (BHU), Varanasi on 22-23 August 2017.