Citation (brief summary) on the Research Work of the Applicant

Amit K. Yadav received his B.Sc and M.Sc degree in Biotechnology from Vinoba Bhave University, Hazaribagh, Jharkhand in 2014 and 2016 respectively. Mr. Yadav is currently pursuing his Ph.D. degree on thesis entitled **"Towards Designing of Affordable Bio-sensing platform for Detection of Cancer Biomarkers"** at Nano-Bio Laboratory, Special Centre for Nanosciences, Jawaharlal Nehru University, New Delhi under my supervision. His research focused on the design, fabrication, and characterization of nanomaterials based affordable electrochemical biosensors/aptasensors for the detection of cancer biomarkers, antibiotics, environmental pollutants, bacterial gut metabolites etc. In addition, he has also worked on selection of specific aptamer sequences against gastric cancer (GC) biomarker using a process of *in vitro*-directed molecular evolution called SELEX (Systematic Evolution of Ligands by Exponential enrichment) and developing point-of-care devices for GC diagnostics.

Mr. Yadav work has equipped with a deep understanding of various electrochemical voltammetric and amperometric measurement techniques, including cyclic voltammetry, differential pulse voltammetry, impedance spectroscopy, potentiostatic/galvanostatic methods, electrode functionalization with biomolecules and nanomaterials. He has successful experience for preparation of innovative biomaterials and nanomaterials such as metal oxides nanoparticles (Y_2O_3, MoO_3, La_2O_3, CeO_2), Transition metal dichalcogenides (MoS_2, MoS_2@rGO, MoS_2@MWCNT, MoS_2@MWCNT@rGO nanocomposites), Molecularly imprinted polymers (MIPs), self-assembled monolayers (SAMs), nanomaterials mediated hydrogels; conjugation of biomolecules with nanomaterials and their modification with nanomaterials, resulting in improved sensitivity, selectivity, and stability of biosensors, all of which are crucial for advancing electrochemical biosensor technology. Moreover, Mr. Yadav has hands-on experience with molecular biology techniques including Nucleic acid isolation and purification (DNA/RNA), Polymerase chain reaction, Primer designing, cloning techniques, Electrophoresis, cDNA synthesis, Affinity Chromatography, Dialysis, Western blot, Electrophoresis and Enzyme-linked Immunosorbent assay (ELISA).

Mr. Yadav doctoral work resulted in one patent on a novel electrochemical detection platform for cancer biomarker: Sp17; 30 publications in peer-reviewed journals; 6 book chapters in Elsevier and RSC; InSc Young Researcher Award; 2 International Travel Grants to attend conference (SERB Student Travel Grant and IWAM 2023 Travel Grant awards); 3 Best Oral presentation awards; Best Young Scientist prize; 2 research grants (Prime Minister Research Fellowship grant and Indian Council of Medical Research-Senior Research Fellowship); and InSc Research Excellence award.

In summary, Mr. Yadav has an uncanny ability to design and fabricate nanomaterials based affordable biosensing platforms in health care diagnosis that play parallel roles in rapid, accurate and early detection of various human diseases such as cancer.

Nominator

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