**Curriculum Vitae**



**AMIT KUMAR YADAV**

Ph.D. Scholar (PMRF Fellow)

Nano-Bio Laboratory, Special Center for Nanoscience (SCNS)

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**OBJECTIVE**

To seek a challenging position that utilizes my education, where I can prove my competence and intelligence, and in the process alleviate my skill and also wants to pursue my career in Biotech research and contribute to the success of the organization by giving my best which will be beneficial for me and the organization.

**RESEARCH AREA**

Electrochemical Biosensors, Cancer biomarker detection, Antibiotics, Electrochemistry, Nanotechnology, Material Science, SELEX, Aptasensors

**RESEARCH EXPERIENCE**

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| --- | --- | --- |
| **Duration** | **Institution** | **Particulars of work done** |

June 2018 to Jan 2021 Special Center for Nanoscience (SCNS), **Junior Research Fellow**

**Jawaharlal Nehru University,** New Delhi

Aug 2017 to Mar 2018 Dr. B.R. Ambedkar Centre forBiomedical Research (ACBR), **Junior Research Fellow**

**University of Delhi**, New Delhi

Feb 2016 to Aug 2016 **National Institute of Immunology**, New Delhi **Project Trainee**

Apr 2015 to May 2015 **Delhi Technological University**, New Delhi **INSA Summer Research Fellow**

**ACADEMIC QUALIFICATIONS**

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| --- | --- | --- | --- | --- | --- |
| **Exam passed** | **University/Board** | **Main subjects** | **Year of**  **Passing** | **Marks (%)** | **Division/ Grade** |
| **Ph.D.** | Jawaharlal Nehru University (JNU) | Nanoscience | Pursuing |  |  |
| **M.Sc.** | Vinoba Bhave University (VBU) | Biotechnology | 2016 | 77.05% | 1st |
| **B.Sc.** | Vinoba Bhave University (VBU) | Biotechnology (Hons.) | 2014 | 71.68% | 1st |
| **HSC** | Jharkhand academic Council (JAC) | Physics, Chemistry,Math, Biology, & English | 2011 | 67.2% | 1st |
| **SSC** | Jharkhand academic Council (JAC) | Hindi, English, Science, Social science & Math | 2009 | 67.8% | 1st |

**FELLOWSHIPS/ACHIEVEMENTS/AWARDS**

* Awarded by the **Best Oral Presentation Award** on Two-Day International Conference via Virtual Platform On Nanomedicine: Biomolecules for Human Health (NBHH-2021) Small Molecules, Big Opportunities!! Organized by Kirori Mal College, University of Delhi, under the aegis of DBT Star College Scheme, from 27th-28th September, 2021
* Awarded by the **Best Oral Presentation Award** on 7th Edition of International Conference on Nanotechnology for Better Living 2021 (NBL 2021) jointly organized by NIT Srinagar and IIT Delhi, India from September 7-11, 2021
* Selected for the **Prime Minister Research Fellowship (PMRF)**-May 2021 by the Ministry of Human Resource Development, Government of India.
* Selected for the **Senior Research Fellowship (SRF)**-2020 by the Indian Council of Medical Research (ICMR), New Delhi, Government of India.
* Selected for the **InSc Research Excellence Award** (Dec-2020) by the Institute of Scholars (InSc), Govt. of India
* Selected for the **INSA-Summer Research Fellow** 2015by theSCIENCE ACADEMIES (IASc-INSA-NASI)
* Selected for the **Jharkhnad eKalyan Scholarship** during M.Sc. (2014-2016) by Government of Jharkhand
* Selected for the **LIC Golden Jubilee Scholarship** during B.Sc. (2011-2014) by Life Insurance Corporation of India, New Delhi.
* I got my master’s degree with distinction **marks and** I am the 2nd rank holder of the university.
* Selected for the **Instructional Workshop on “Proteomics and Proteogenomics: Hands- on Protein identification and Gene Discovery from Mass Spectrometry Data”** organized by Acharya Narendra Dev College, **University of Delhi** and National Network for Mathematical and Computational Biology **(NNMCB**), Delhi Node.
* Awarded **National Certificate in Modular Employable Skills** and passed the competency test in module Computer fundamentals, MS-Office and Internet (ICT101) under sector INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) assessed by Tanstia- Fnf Service Centre (TFSC) on 21 Aug 2013.

**PUBLICATIONS**

1. **Yadav AK,** Verma D, Solanki PR. Electrophoretically deposited L-cysteine functionalized MoS2@MWCNT nanocomposite platform: a smart approach toward highly sensitive and label-free detection of gentamicin. **Materials Today Chemistry**. 2021 Dec 22;100567.
2. **Yadav AK,** Verma D, Lakshmi GB, Eremin S, Solanki PR. Fabrication of label-free and ultrasensitive electrochemical immunosensor based on molybdenum disulfide nanoparticles modified disposable ITO: An analytical platform for antibiotic detection in food samples. **Food Chemistry**. 2021 Nov 30;363:130245.
3. **Yadav AK,** Verma D, Chaudhary N, Kumar A, Solanki PR. Aptamer Based Switches: A Futuristic Approach for Helicobacter pylori Detection. **Materials Letters**. 2021 Nov 9:131239.
4. Sharma M, Kumari M, Rani S, **Yadav AK**, Solanki PR, Mozumdar S. Influence of pH, β-Cyclodextrin, and Metal Ions on the Solubility and Stability of the Medicinally Competent Isoxazole Derivative of Curcumin: A Photophysical Study. **ACS Applied Biomaterials**. 2021 Nov.
5. Jalandra R, Dalal N, **Yadav AK**, Verma D, Sharma M, Singh R, Khosla A, Kumar A, Solanki PR. Emerging role of trimethylamine-N-oxide (TMAO) in colorectal cancer. **Applied Microbiology and Biotechnology**. 2021 Sep 27:1-0.
6. Verma D, **Yadav AK**, Mukherjee MD, Solanki PR. Fabrication of a sensitive electrochemical sensor platform using reduced graphene oxide-molybdenum trioxide nanocomposite for BPA detection: An endocrine disruptor. **Journal of Environmental Chemical Engineering**. 2021 Aug 1;9(4):105504.
7. Dalal N, Jalandra R, Bayal N, **Yadav AK**, Sharma M, Makharia GK, Kumar P, Singh R, Solanki PR, Kumar A. Gut microbiota-derived metabolites in CRC progression and causation. **Journal of Cancer Research and Clinical Oncology**. 2021 Jul 17:1-5.
8. Mishra A, Nair N, **Yadav AK**, Solanki P, Majeed J, Tripathi V. Coronavirus Disease 2019 (COVID-19): Origin, Impact, and Drug Development. **Intechopen**.
9. Kumar A, Yadav AK, Yadav BK, **Yadav AK**, Bhardwaj S. Vidhi Vashistha.
10. Chauhan D, **Yadav AK**, Solanki PR. Carbon cloth-based immunosensor for detection of 25-hydroxy vitamin D 3. **Microchimica Acta**. 2021 Apr;188(4):1-1.
11. Verma D, Chauhan D, Mukherjee MD, Ranjan KR, **Yadav AK**, Solanki PR. Development of MWCNT decorated with green synthesized AgNps-based electrochemical sensor for highly sensitive detection of BPA. **Journal of Applied Electrochemistry**. 2021 Mar;51(3):447-62.
12. **Yadav AK**, Verma D, Kumar A, Kumar P, Solanki PR. The Perspectives of Biomarkers based Electrochemical Immunosensors, Artificial intelligence and the Internet of Medical Things towards COVID-19 Diagnosis and Management. **Materials Today Chemistry**. 2021 Feb 11:100443.
13. Lakshmi GB, **Yadav AK**, Mehlawat N, Jalandra R, Solanki PR, Kumar A. Gut microbiota derived trimethylamine N-oxide (TMAO) detection through molecularly imprinted polymer based sensor. **Scientific reports**. 2021 Jan 14;11(1):1-4. [Equal contribution].
14. Jalandra R, **Yadav AK**, Verma D, Dalal N, Sharma M, Singh R, Kumar A, Solanki PR. Strategies and perspectives to develop SARS-CoV-2 detection methods and diagnostics. **Biomedicine & Pharmacotherapy**. 2020 Sep 1;129:110446. [Equal contribution].
15. **Yadav AK**, Dhiman TK, Lakshmi GB, Berlina AN, Solanki PR. A highly sensitive label-free amperometric biosensor for norfloxacin detection based on chitosan-yttria nanocomposite. **International journal of biological macromolecules**. 2020 May 15;151:566-75.
16. Chaudhary N, **Yadav AK**, Sharma JG, Solanki PR. Designing and characterization of a highly sensitive and selective biosensing platform for ciprofloxacin detection utilizing lanthanum oxide nanoparticles. **Journal of Environmental Chemical Engineering**. [Accepted for Publication].

**TECHNICAL SKILLS**

* **Hands on experience** in Peptide Synthesizer, High Performance Liquid Chromatography(HPLC), Flash Column Chromatography, Thin Layer Chromatography (TLC), UV-Vis-NIR Spectroscopy, Circular Dichoism spectroscopy (CD), Fluorescence spectrophotometer, Nanodrop spectrophotometer, Electrochemical Analyzer [Cyclic Voltammetry (CV), Differential Pulse Voltammetry (DPV), Frequency Response Analysis (FRA)], Multichannel Analyzer, Lyophilizer, Rotatory Evaporator, Ultracentrifugation, Sonicator, Inverted microscope, ELISA Reader, Gel-Doc, Muffle furnace, Raman Spectroscopy, X-ray powder diffraction (XRD), Fourier Transform Infrared Spectroscopy (FT-IR), Probe Sonicator, Dip Coater, Milli-Q, UV-spectroscopy, Photoluminescence (PL), Zeta Potential, Contact angle etc.
* **Working knowledge** in Scanning electron microscopy (SEM), Transmission electron microscopy (TEM), Flow Cytometry, Nuclear Magnetic Resonance (NMR), Massspectrometry, Immunohistochemistry (IHC) Assay, Chromatin immunoprecipitation (ChIP) Assay.
* **Molecular Biology & RDT techniques** like Polymerase Chain Reaction (PCR), SDS-PAGE,Western Blotting, Agarose Gel electrophoresis (AGE), Protein Estimation, RNA & DNA isolation, Plasmid isolation, Restriction Digestion, Transformation, Primer Designing, Cell Viability Assay (MTT Assay).
* **Mammalian cell culture techniques** like Thawing of cells, Culturing of cell line;Trypsinization of cells; Making freezes of cell line; Making resistance cell line against temozolamide (TMZ) drug; Transfection with siRNA and plasmid for knockdown and overexpression of a gene.

**Cancer cell lines handled:** Glioma cell line (U87, A172, U373)

**Microorganisms handled-** *Echerichia coli*ATCC 25922,*E. coli*ML35p,*E. coli*DH5α

**Mice handling:** Sub-cutaneous injection of cancer cell line in swiss albino mice.

* **Drug discovery techniques like** Chemical synthesis of sugar compounds and characterization through Mass and NMR spectroscopy, Non-glycosylated and glycosylated peptide synthesis and purification through HPLC, Secondary structure determination of peptides through CD spectroscopy, Minimum inhibitory concentration [MIC] assay, Outer and Inner membrane permeabilization assay against bacterial cells.
* **Nanoparticles synthesis, characterization techniques and Fabrication of Biosensor like** Synthesis of nanoparticles byhydrothermal method, Functionalization of nanoparticles, Electrophoretic deposition of functionalized nanoparticles ITO electrode, Immobilization of anti-Ab on ITO electrode, Characterization of nanoparticles through scanning electron microscope (SEM), Transmission electron microscope (TEM), X-ray powder diffraction (XRD), Fourier Transform Infrared Spectroscopy (FT-IR), Raman Spectoscopy & UV-Vis spectroscopy, Electrochemical analyzer (CV, DPV & FRA) for different studies like effect of pH, electrode study, effect of scan rate study, electrochemical response study, interference study, shelf-life study and real sample analysis.
* **Basic Microbiology Biology techniques** like sterilization, plating, spreading, streaking,serial dilution techniques and storage, Gram staining and viable cell count, Bacterial inhibition assay, viability assay and antibiotic resistance assay, Bacteriological water analysis (BOD).

**PROJECTS AND TRAININGS**

* Did six months M. Sc. project work on “**Investigating the effect of sugars on anti-microbial** **peptide Halictine-2**”under supervision of **Dr. Kanwaljeet kaur**, Staff Scientist-VII,Structural Biology Unit Laboratory, **National Institute of Immunology**, New Delhi-110067.
* Did two months’ summer training on “**A Rare Earth Metal Oxide Based Biosensor for Food** **Toxin Detection**”under supervision of **Prof.(Dr.) Bansi D. Malhotra**, NanobioelectronicsLaboratory, Department of Biotechnology, **Delhi Technological University**, Delhi-110042.
* Did five months B.Sc. project work on “**Tissue Culture of** ***Embllica officinalis*, its** **phytochemical analysis and antimicrobial activity**”at Plant Tissue Culture Laboratory,Department of Biotechnology, St. Columba’s College Campus, under supervision of **Prof.(Dr.) Anwar Mallick**, Director, Advanced Science & Technology Research Center, **Vinoba Bhave University**, Hazaribag, Jharkhand-825301.
* Did 15 days training at Department of Pathology, **Patliputra Medical College and Hospital**, Dhanbad, Jharkhand.
* Did 15 days training at Department of Institute of Animal Health & Production (IAHP), **Birsa** **Agricultural University** (BAU), Ranchi, Jharkhand.

**CONFERENCE/WORKSHOP/SYMPOSIUM ATTENDED**

***Conferences/symposium:***

1. Oral presentation on “Fabrication of MIP-based sensor for detection of trimethylamine N-oxide as health-care biomarker” on Two-Day International Conference via Virtual Platform On Nanomedicine: Biomolecules for Human Health (NBHH-2021) Small Molecules, Big Opportunities!! Organized by Kirori Mal College, University of Delhi, under the aegis of DBT Star College Scheme, from 27th-28th September, 2021
2. Oral presentation on “A highly sensitive, label free and non-invasive molecularly imprinted polymer based electrochemical sensor for the detection of Gut microbiota derived trimethylamine N‑oxide (TMAO)” on 7th Edition of International Conference on Nanotechnology for Better Living 2021 (NBL 2021) jointly organized by NIT Srinagar and IIT Delhi, India from September 7-11, 2021.
3. Poster presentation on “A highly sensitive, label free and non-invasive molecularly imprinted polymer based electrochemical sensor for the detection of gut microbiome’s metabolite as cancer biomarker” on **2nd World Congress on Cancer, 2020** organized by Mahatma Gandhi university of Medical Sciences and Technology, Jaipur, India from February 3-5, 2020.
4. Poster presentation on “A novel MoS2 nanosheet based electrochemical immunosensor sensing platform for a label free detection of Ampicillin” on **National Conference on Nano/Bio-Technology, 2019** organized by Special Centre for Nanoscience, Jawaharlal Nehru University and National Institute of Immunology, New Delhi from December 19-21, 2019.
5. Poster presentation on “Electrochemical detection of Antibiotic utilizing metal oxide nanostructure as sensing platform” on **National Science Day 2019** organized by Department of Science and Technology, Govt. of India and Jawaharlal Nehru University, New Delhi.
6. Participated in the **102nd** **Indian Science Congress Association** held at University of Mumbai, Mumbai from January 3 to 7, 2015.
7. Participated in a BIOIGNITION PROGRAMME “Exploring the Emerging Paradigms of Biotechnology & Applied Microbiology”Organized by School ofBiotechnology, **KIIT University**, Bhubaneswar.
8. Participated in an International Seminar on “Effects of Pollution on Human Health”, jointly organized by Department of Chemistry, **University of Delhi** & **Indian Academy** **of Biomedical Sciences (IABS)**.
9. Participated in the 11th Symposium on Frontiers in Biomedical Research “Challenges In Human Health: Prevention, Diagnosis and Cure” organized by Dr B R Ambedkar Centre for Biomedical Research (ACBR), **University of Delhi,** from 19-21st February, 2018.

***Workshops:***

1. Participated in the workshop on **“Advanced spectroscopy Techniques for FTIR and FTNIR”** organized jointly by AIRF-JNU & PerkinElmer on 25th-26th July, 2019 at AIRF, Jawaharlal Nehru University, New Delhi.

2. Participated in UGC sponsored National Workshop on **“Hands on workshop on** **techniques in Biotechnology, Emerging application and the way forward”** Organized by Post Graduate Department of Biotechnology, VBU & Department of Biotechnology, St. Columba’s College, Hazaribag (Jharkhand) In Association with **niTza Biologicals**, Hyderabad.

3.Participated in UGC sponsored National workshop on “**Hands on workshop in** **Bioinformatics & the way forward”** Organized by Annada College, Hazaribag(Jharkhand) In Association with **niTza Biolopgicals**, Hyderabad.

4. Participated in the Instructional Workshop on “Proteomics and Proteogenomics: Hands-on Protein Identification and Gene Discovery from Mass Spectrometry Data”organized at Acharya Narendra Dev College by **NNMCB (Delhi Node)** and **ANDC (DU)** from October 10-12, 2015.

**REFEREES**

1. **Dr. Pratima R. Solanki 3. Dr. Bansi D Malhotra**

Assistant Professor, Professor, FNA, FNASc

Nano-Bio Laboratory, SCNS Nanobioelectronics Laboratory

Jawaharlal Nehru University, New Delhi- 110067 Department of Biotechnology

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Email: [bansi.malhotra@gmail.com](mailto:bansi.malhotra@gmail.com)

1. **Dr. Anil Kumar**

Staff Scientist

Gene Regulation Laboratory

National Institute of Immunology

New Delhi-110067

Email: [anilk@nii.ac.in](mailto:anilk@nii.ac.in)

**DECLARATION**

I declare that the foregoing information is correct and complete to the best of my knowledge and belief and nothing has been concealed.

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**Place: New Delhi**

**Date: 18/6/2021**

(Amit Kumar Yadav)