



**Prof. Alvina Farooqui**

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Google scholar: <https://scholar.google.co.in/citations?user=0NghJI0AAAAJ&hl=en&oi=ao>

Web of sciences: <https://www.webofscience.com/wos/author/record/IQT-9219-2023>

Scopus:<https://www.scopus.com/authid/detail.uri?authorId=57572110200>

## PROFILE

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- Ph.D\* in Biotechnology (2012) from Integral University, Lucknow.
- Post Graduate Diploma in Nanobiotechnology (2009-2010) from Department of Nanotechnology, Life Science Foundation India, Karnataka.
- M. Tech Biotechnology (2006-2008) from Integral University, Lucknow securing second position (silver medal) with 82.4%.
- B. Tech Biotechnology (2001-2005) from Allahabad Agricultural Institute – Deemed University, Allahabad securing 85% (Specialization: Genetic Engineering)
- Intermediate (2001) from ISC Board (St. Mary's Convent, Allahabad) securing 76% (Main subjects: English, Hindi, Physics, Chemistry and Biology)
- High School (1999) from I.C.S.E. Board (St. Mary's Convent, Allahabad) securing 83% (Main subjects: English, Phy, Chem, Bio, Maths, Social sciences, Hindi and Computer Science)

### **RESEARCH INTEREST:**

- Bioactive compounds from cyanobacteria
- Stress Biochemistry
- Nanotoxicology
- Environmental Bio-monitoring
- Algae based wastewater decontamination.
- Food Biotechnology
- Engineered Algal system for sustainable agriculture

### **SUMMARY OF RESEARCH ACCOMPLISHMENT:**

- PhD thesis title: Alterations in biochemical and molecular responses of Cyanobacteria exposed to metal stress.”

### **COURSE TAUGHT:**

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- Fermentation Technology
- Bioprocess Engineering
- Nanobiotechnology
- Microbial Genetics & Engineering

### **ADMINISTRATIVE/DEPARTMENTAL RESPONSIBILITY**

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- Head, Department of Bioengineering Integral University, Lucknow since 7th March, 2022.
- Convener, Sub-Committee for Research and Development under Academic Program & Research Committee (APRC).
- Member of women study center, Integral University.
- Member RDC committee of Department of Biosciences, Department of Pharmacy and IIAST Integral University, Lucknow.
- Member of Institutional animal ethics committee.
- Member of DST-FIST fund management committee.

- Convener of Stage management committee in different events like fiesta, convocation etc.
- Involved in the management and organization of Co-curricular activities like, orientation Program, Global meets ,convocation ,HRDC events, Annual fest Fiesta etc.
- NAAC/NBA coordinator at the department levels since 2012
- Convener, DST SERB and DBT Sponsored “Indo Uzbek Meet and International conference on Trends and Innovations in Food Technology from Farm to fork”(TIFT-2022) Theme: “Serving present to secure future”.
- Co-convener, International Forum on Women in STEM at Tashkent Institute of Chemical Technology, Uzbekistan. 2024 and 2023
- Co-convener, International Conference The 4th RMUTR & 3rd RICE / Sus-LaB to be held on 16<sup>th</sup>-18<sup>th</sup> August 2023 organized by Rajamangala University of Technology Rattanakosin (RMUTR), Thailand.
- Organizing Secretary in Women in Academia, Research and Management of Food Safety and Toxicology (WARM-FoST)) on 24<sup>th</sup> and 25<sup>th</sup> February 2023 at Indian Institute of Toxicology Research, Lucknow.
- Vice President- Association of Food Scientists and Technologists of India (AFSTI) Lucknow Chapter, 2023.
- Co-convener, International Scientific and Practical Conference on the Status and Development Prospects of Fundamental and Applied Microbiology: The Viewpoint of Young Scientists organized in collaboration with the Institute of Microbiology of the Academy of Sciences of the Republic of Uzbekistan and the international scientific journal Science and Innovation. Sept 25-26, 2024
- Visiting Professor, Tashkent Institute of chemical Technology (TICT), Tashkent, Uzbekistan
- Guest of Honor, International Conference “Current problems and prospects for technological processes and devices organized by Tashkent Institute of chemical technology, TICT, Tashkent, September 27-28, 2024.

## STUDENTS SUPERVISION

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**Ph.D. Registered currently:**

- **Mr. Suhail Ahmad** :(Registration date :16.8.2018) Pursuing work on “Screening of bioactive compounds from cyanobacteria having anti-diabetic potential :An Insilco and an in-vitro study
- **Mr.GyanendraTripathi:**(Registrationdate:4.9.2019)Pursuingworkon“ProductionofCost-effectiveBioenergybyNovelMicrobialConsortia and utilizationofresidualBiomassforWastewaterTreatment.
- **Ms. Irum** (21.10.2021) Pursuing work on “Anti-diabetic potential of selenium nanoparticles-unified terpenoids derived from cyanobacteria”.
- **Ms. Saba firdaus** (30.11.2022) Pursuing work on “Optimization, Production and Characterization of Exopolysaccharides from Cyanobacteria for the Production of Edible Film”

#### **Ph.D. students in collaboration:**

- Priya Dubey (Registration date: 04.01.2021) Pursuing work on “Mitigation of Chromium Contamination in Soil using Microbe-Amended Biochar”. Affiliated with CSIR-National Botanical Research Institute.
- Urvija Shankar (Registration date September 2019) Pursuing work on “Studies on herbal extracts and their antimicrobial activity for controlling eczema infections”. Affiliated with CSIR-National Botanical Research Institute.
- Mrs. Talat Ilyas (18.09.2023) Pursuing work on “leveraging the synergistic interaction of acclimatized cyanobacteria and plant growth promoting bacteria for enhanced agricultural productivity”.

#### **Ph.D. awarded:**

- Mr. Arbab Husain (Registration date August 2016) Pursuing work on “Physico-chemical characterization of phycobiliprotein(s) from selected cyanobacterial strains-Its potential role in the inhibition of glycation mediated diabetes mellitus”
- Dr. Adeeba Shamim (Registration date 10.10.2013; Award date 3.11.2020) thesis entitled “Ability of immobilized Al acclimated cyanobacterial cells to combat abiotic stress and its potential as a Biofertilizer”

- Dr. Sadaf Mahfooz (date of registration: 28.10.13; Award date: 3.11.2018) received INSPIRE fellowship, DST, Govt. of India. Thesis was entitled “Cellular and Molecular alterations in selected environmentally relevant cyanobacterial strains exposed to metallic pollutants and their nanoparticles”
- Dr. Ahmad Faiz Khan: date of registration: 27.10.14; Award date: 7.04.2018) “Effect of growth regulators on growth, protein profile and essential oil yield in aromatic grasses like lemon grass (*Cymbopogon flexuosus*) and palmarosa (*Cymbopogon martinii*)”.
- Ph.D. awarded in collaboration:
- Ms. Ankita Tripathi (date of registration: 2.5.2014; Award date: May, 2022) “Studies on Genetic Diversity of *Trichoderma* and Its Potential to Control Chickpea Wilt” with Dr. Alok K. Srivastava, Principal Scientist (Plant pathology), microbial technology unit-1, NBAIM, Mau, U.P., India
- Ms. Pallavi Agarwal: (date of registration: 27.10.14; Award date: 3.12.2020) Characterization and Functional Analysis of PGPR Induced genes In Rice with Dr. Vidhu A. Sane, Principal Scientist, Plant Gene expression Lab, CSIR-NBRI, Lucknow, U.P., India
- Dr. Sumita Pal (date of registration: 2013; Award date: 2019) Significance of Arbuscular Mycorrhiza for reclamation of soil in periurban areas of Varanasi with Prof. H. B. Singh, Department of Mycology and Plant Pathology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, India.
- Dr. Rajkumar Sharma (date of registration: 7.05.14; Award date: 18.1.2018) NMR Based Metabolomics Approaches for The Identification and Characterization of Possible Biomarkers in Gallstone Disease and Gallbladder Cancer with Dr. Neeraj Sinha Additional Professor, Centre for Biomedical Research, SGPGI, Lucknow, U.P., India

## PUBLISHED/GRANT PATENTS

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- A stable eggless mayonnaise made from *Lagenaria siceraria* was developed, consisting of 60% puree with an oil content ranging between 0% to 30%, and pectin gel incorporated at 0% to 30% as a fat replacer. Microwave treatment was utilized to enhance the emulsion's stability. The protein content of the mayonnaise ranged between 0.48% to 0.54%, and the fat content was reduced by up to 25%. This formulation remained stable for 60 days under refrigerated storage conditions. The product was filed as an Indian patent (202311029273), published on April 22, 2023, and granted on September 23, 2024.

- A street lamp has been designed with a chamber containing algae-based biofuel and a frame where the algae absorb carbon dioxide from the air and produce biofuel to power the lamp. This green energy system provides the necessary energy to keep the light glowing, while the algae-based frame helps reduce carbon dioxide levels in the air. The innovation utilizes algae, which are rich in vitamins, minerals, antioxidants, and natural colorants, adding nutritional value and improving resistance to oxidation when incorporated into food or feed. This design was published as an Indian patent (397010-001) on October 7, 2023.
- Microalgae have the ability to accumulate significant amounts of lipid-rich triacylglycerides under challenging conditions, such as nutrient scarcity. During these times, microalgae stop dividing but continue photosynthesis, and the accumulation of triacylglycerides acts as a survival mechanism. In sustainable biofuel production from microalgae, the goal is to maximize lipid output by optimizing growth rates and lipid content. In batch cultivation systems, microalgae undergo an exponential growth phase to increase biomass, followed by a lipid induction process, typically triggered by nutrient deprivation toward the end of the growth phase. This innovation was published as an Indian patent (202311072046) on November 24, 2023.
- A novel polyherbal combination consisting of *Tinospora cordifolia*, *Withania somnifera*, and *Boerhavia diffusa* was developed and evaluated in small rodents, showing potential for treating peripheral neuropathy associated with diabetes. This combination was granted as an Indian patent (202011049258) on November 23, 2022.
- In 2021, a study scientifically proved the effect of sericin, a protein derived from silk cocoons, in treating isoproterenol-induced cardiac necrosis and hypertrophy. Sericin, which has been used in alternative medicine for cardiac diseases, was granted an international (German) patent (20-2021105267) on October 15, 2021.
- In August 2022, a system was developed to evaluate the chemo-preventive potential of PHC (potentially bioactive compounds) and its prepared chitosan nanoparticles. Chitosan and its derivatives are known to selectively permeate cancer cell membranes and exhibit anti-cancer activity through enzymatic, anti-angiogenic, antioxidant defense mechanisms, and apoptotic pathways. These nanoparticles are sequestered from non-cancerous cells and provide enhanced bioavailability in cancer cells through a sustained release mechanism. This innovation was published as an international (United States) patent (Application number 17/816,792) on November 24, 2022.

- A combination of carvedilol, a non-selective  $\beta$ -blocker, and sericin, a silk protein known for its cardioprotective properties, was developed to enhance therapeutic potential for the treatment of cardiac ailments. Sericin has been widely used in alternative medicine for prophylactic purposes. This innovation was published as an Indian patent (Application number: 202211039795A) on July 22, 2022.
- A silver formulation containing an extract of the herbal plant *Silybum marianum* was developed, exhibiting a nephroprotective effect against gentamicin-induced acute kidney injury. This innovation was granted as an international (German) patent (Application number: 202022101070) on March 9, 2022.

### **PUBLISHED/ACCEPTED SCI/SCOPUS RESEARCH PAPERS**

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- Tripathi, G, Pandey, VK, Ahmad, S., Irum, Khujamshukurov, NA, **Farooqui, A.**, Mishra, V., 2024. Utilizing novel *Aspergillus* sp. For bioflocculation; a cost effective approach to harvest *Scenedesmus* microalgae for biofuel production.
- Akhtar, S., **Farooqui, A.**, Younis, K., Mani, A. and Singh, H., 2024. Plant proteins for sustainable food production: “Serving present to secure the future”. *International Journal of Food Science & Technology*, 59(1), pp.460-461.
- Khan, S., Rafi, Z., Mishra, P., Al-Keridis, L.A., **Farooqui, A.**, Mansoor, S., Alshammari, N., Al-Saeed, F.A., Siddiqui, S. and Saeed, M., 2023. Unleashing the Potential of Benincasa hispida Peel Extract: Synthesizing Selenium Nanoparticles with Remarkable Antibacterial and Anticancer Properties. *Molecular Biotechnology*, pp.1-11.
- Khanam, A., Kavita, K.M., Sharma, R.K., **Farooqui, A.**, Ahmad, S., Kumar, P. and Husain, A., 2023. In-silico exploration of cyanobacterial bioactive compounds for managing diabetes: Targeting alpha-amylase and beta-glucosidase. *Intelligent Pharmacy*.
- Tripathi, G., Dubey, P., Ahmad, S., **Farooqui, A.** and Mishra, V., 2023. Role of Algal-derived Bioactive Compounds in Human Health. *Recent Patents on Biotechnology*.
- Pandey, V.K., Tripathi, A., Srivastava, S., Dar, A.H., Singh, R., **Farooqui, A.** and Pandey, S., 2023. Exploiting the bioactive properties of essential oils and their potential applications in food industry. *Food Science and Biotechnology*, 32(7), pp.885-902.

- Sharma,P.,Osama,K.,Varjani,S.,**Farooqui,A.**andYounis,K.,2023.Microwave-assistedvalorizationand characterization of Citrus limetta peel waste into pectin as a perspective food additive. *Journal ofFoodScienceandTechnology*,pp.1-10.
- Husain, A., Alouffi, S., Khanam, A., Akasha, R., **Farooqui, A.** and Ahmad, S., 2022. TherapeuticEfficacy of Natural Product ‘C-Phycocyanin’ in Alleviating Streptozotocin-Induced Diabetes via the Inhibition of Glycation Reaction in Rats. *International Journal of Molecular Sciences*,23(22),p.14235.
- Husain, A., Alouffi, S., Khanam, A., Akasha, R., Khan, S., Khan, M., **Farooqui, A.** and Ahmad, S., 2022. Non-inhibitory effects of the potent antioxidant from sp.on the glycation reaction. *Revista Romanade Medicinade Laborator*,30(2),pp.199-213.
- Shamim,A.,Tripathi,G.,Ansari,J.A.,Mahfooz,S.,Mahdi,A.A.,Khan,A.R.,**Farooqui,A.**andMi shra,V.,2022.Effect of pH on aluminum uptake and differential aluminum tolerance in cyanobacterial strains:A bioresource for agricultural and environmental sustainability. *Bioresource Technology Reports*, 18,p.100999.
- Husain, A., **Farooqui, A.**, Khanam, A., Sharma, S., Mahfooz, S., Shamim, A., Akhter, F., Alatar, A.A.,Faisal, M. and Ahmad, S., 2021. Physicochemical characterization of C-phycocyanin from *Plectonema* sp.and elucidation of its bioactive potential through insilico approach. *CellularandMolecularBiology*,67(4),pp.68-82.(IF1.77)
- Husain, A., Khan, F., Osama, K., Mahfooz, S., Shamim, A., Ahmad, S. and **Farooqui, A.**, 2020. Mediaoptimization for C-phycocyanin production in *Plectonema* sp. using response surface methodology andcentralcompositedesign.*Int.J.Res.Pharm.Sci*,11(3),pp.3897-904.
- Khanam, A., Ahmad, S., Husain, A., Rehman, S., **Farooqui, A.** and Yusuf, M.A., 2020. Glycation andantioxidants: hand in the glove of antiglycation and natural antioxidants. *Current Protein and PeptideScience*,21(9),pp.899-915.(I.F3.2).
- Shamim, A. ,Mahfooz, S., Hussain, A. and **Farooqui, A.**, 2020. Ability of Al-acclimatized Immobilized Nostoc muscorum to Combat Abiotic Stress and its Potential as a Biofertilizer. *JPureApplMicrobiol*,14(2),pp.1377-138.
- **AlvinaFarooqui**, Deboshree Biswas, Syed Danish Rizvi, Sadaf Mahfooz, AdeebaShamim and Jamal M. Arif. Comparative free radical scavenging potential and antiproliferative activity of crude methanolic extract and partially purified compounds isolated from



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- Mahfooz, S., Shamim, A., Husain, A. and **Farooqui, A.**, 2019. Physicochemical characterisation and ecotoxicological assessment of nano-silver using two cyanobacteria *Nostoc muscorum* and *Plectonema boryanum*. *International Journal of Environmental Science and Technology*, 16, pp.4407-4418.
- Mahfooz, S., Jahan, S., Shamim, A., Husain, A. and **Farooqui, A.**, 2018. Oxidative stress and response of antioxidant system in *Nostoc muscorum* exposed to different forms of Zinc. *Turkish Journal of Biochemistry*, 43(4), pp.352-361.
- Mahfooz, S., Ali, Z.F., Singh, N., Shamim, A., Husain, A. and **Farooqui, A.**, Research Journal of Pharmaceutical, Biological and Chemical Sciences.
- Shamim, A., **Farooqui, A.**, Siddiqui, M. H., Mahfooz, S. and Arif, J., 2017. Salinity-induced modulations in the protective defense system and programmed cell death in *Nostoc muscorum*. *Russian Journal of Plant Physiology*, 64, pp.861-868.
- **Farooqui, A.**, Suhail, S. and Zeeshan, M., 2017. Cadmium induced oxidative stress and biochemical responses in cyanobacterium *Nostoc muscorum*. *Russian Journal of Plant Physiology*, 64, pp.124-132.
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- Deboshree Biswas, Mohd Haris Siddiqui, Adeeba Shamim, Sadaf Mahfooz and **Alvina Farooqui**. Partial Purification of Bioactive Compounds from Different Cyanobacterial Strains and Its Biological Potential. *International journal of biology, Pharmacy and Allied Sciences*. 2015. October, 2015, 4(10): 6107-6115.
- Mahfooz, S., Imran, Z., Shamim, A. And **Farooqui, A.**, 2016. Screening of cyanobacterial strains for toxicity assay of silver and silver nanoparticles. *International Journal of Pharma and BioSciences*, 7(4).
- **Farooqui, A.**, Mahfooz, S., Shamim, A., Siddiqui, H.M. and Kumar Kesari, K., 2016. Molecular modulations and influence of acclimation of Ni on acute Ni toxicity in *Plectonema boryanum*. *Turkish Journal of Biochemistry*, 41(6), pp.393-402.
- Pal, S., Singh, H.B., **Farooqui, A.** and Rakshit, A., 2015. Fungal biofertilizers in Indian agriculture: perception, demand and promotion. *Journal of Eco-*

*friendlyAgriculture*,10(2),pp.101-113.

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- Suhail, S., Biswas, D., **Farooqui**, A., Arif, J.M. and Zeeshan, M., 2011. Antibacterial and free radical scavenging potential of some cyanobacterial strains and their growth characteristics. *J Chem Pharm Res*,3(2),pp.472-478.
- **Farooqui**, A., Suhail, S., Arif, J.M. and Zeeshan, M., 2011. Antioxidant Enzymes Activities, Total Phenols and Proline Content In *Nostoc Muscorum* Exposed To Copper Stress. *Biochemical And Cellular Archives*,11(1),pp.71-77.
- Zeeshan, M., Suhail, S., Biswas, D., **Farooqui**, A. and Arif, J.M., 2010. Screening of selected cyanobacterial strains for phytochemical compounds and biological activities in vitro. *Biochem. Cell. Arch*,10,pp.163-168.
- Vinay Kumar Pandey, Shivangi Srivastava, Kshirod Kumar Dash, Rahul Singh, Aamir Hussain Dar, Tripti Singh, Alvina Farooqui, Ayaz Mukkaram Shaikh, Bela Kovacs. Bioactive properties of clove (*Syzygium aromaticum*) essential oil nanoemulsion: A comprehensive review. <https://doi.org/10.1016/j.heliyon.2023.e22437>
- Salman Khan, Zeeshan Rafi, Pooja Mishra, Lamyah Ahmed Al Keridis, Shazia Mansoor, **Alvina Farooqui** et al. “*Benincasa hispida* peel extract Phyto-fabricated selenium nanoparticles (P-SeNPs): its possible applications as a formidable antibacterial and anticancer agent.” *BioMed Research International* (2022):7970551. (Impact factor: 3.24)
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- Sharma, R.K., Mishra, K., **Farooqui, A.**, Behari, A., Kapoor, V.K. and Sinha, N., 2017. 1 H nuclearmagnetic resonance (NMR)-based serum metabolomics of human gallbladderinflammation.*InflammationResearch*,66,pp.97-105.
- SPal,HB Singh, **A Farooqui**, Diversity of Arbuscular Mycorrhiza Associated with LongTerm Wastewater Irrigation in the Peri-urban Soil of Varanasi. *International Journal of Agriculture, Environment and Biotechnology*10(6):779-784,Dec,2017.

## ABSTRACT PUBLISHED IN CONFERENCES

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- Suhail Ahmad, Gyanendra Tripathi, Poonam Sharma, and Alvina Farooqui, 2023. Development of *Arthospira Platensis* (*Spirulina Platensis*) based cookies: a Super Food to overcome Malnutrition. In “International Forum on Women in STEM”, held on 10th -14th Feb, 2023 at Tashkent Institute of Chemical Technology, Uzbekistan.
- Gyanendra Tripathi, Alvina Farooqui, Vishal Mishra, 2023. Phyco-remediation of Cr (VI) from wastewater and fungal assisted bio-flocculation of microalga from sustainable biofuel production. In “International Forum on Women in STEM”, held on 10th -14thFeb, 2023 at Tashkent Institute of Chemical Technology, Uzbekistan.
- Suhail Ahmad, Alvina Farooqui, Salman Akhtar. Screening of Cyanobacterial Bioactive compounds for the management of Type 2 Diabetes Mellitus. In “National Seminar on AI and Bioinformatics for Biology”. On 3rd February 2023 at Department of Bioinformatics, Bharathiar University, Coimbatore.
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- Suhail Ahmad, Gyanendra Tripathi, Arbab hussain and Alvina Farooqui. Antioxidant and Anticancer potential of C-Phycocyanin from *Plectonimaboryanum*; Investigation for plausible herbal drug in International Conference on Advances in Cancer biology, prevention, and therapy on 24th and 25th May 2022 at Shri Ramswaroop Memorial University Uttar Pradesh, India.
- Gyanendra Tripathi, Alvina Farooqui, Vishal Mishra, 2022. “Fungal Assisted bio-flocculation of microalgae for biofuel production” in National Conference on Environmental and Industrial Biotechnology” held on 10th-12th, November at Dr. Ambedkar Institute of Technology for Handicapped Awadhपुरi, Kanpur.
- Suhail Ahmad, Gyanendra Tripathi, Alvina Farooqui. *Spirulina* as a super food to overcome malnutrition” in International conference on Trends and Innovations in Food technology- Form farm to folk on 24th-25th November. 2022 at Integral University, Lucknow.

- Gyanendra Tripathi, Priyanka Dubey, Suhail Ahmad, Alvina Farooqui. Multifactorial approach for the drying of *Spirulina Plantensis* and its Incorporation for the development of cookies. In International conference on Trends and Innovations in Food technology- Form farm to folk on 24th-25th November, 2022 at Integral University, Lucknow.
- Suhail Ahmad, Salman Akhtar, Alvina Farooqui, 2022. Identification and In-silico evaluation of cyanobacterial bioactive compounds against the specific markers of type 2 diabetes mellitus (T2DM). In “International Conference on newer trends of biochemistry in ongoing medical sciences” held on 24th -25th September 2022 at Dr. Sone Lal Patel Autonomous State Medical College, Pratapgarh.
- Gyanendra Tripathi, Alvina Farooqui, Vishal Mishra, 2022. Utilization of novel microalgae strain isolated from a site contaminated with construction waste for the bioremediation of Cr (VI). In “International Conference on newer trends of biochemistry in ongoing medical sciences” held on 24th -25th September 2022 at Dr. Sone Lal Patel Autonomous State Medical College, Pratapgarh.
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- In vitro approach to the cytotoxicity of silver and copper oxide nanoparticles on A549 Cell line. Arbab Husain, Sadaf Mahfooz, Adeeba Shamim, Alvina Farooqui, National Conference on Recent Development of Biomedical, Unani and Ayurvedic Translational Research & Darker Side of Rampant Use of Lead Based Products Under the Aegis of Indian Academy of Biomedical Sciences (IABS) & Indian Society for Lead Awareness and Research (InSLAR), (NATCON-2019) organized by Department of Biochemistry Jawaharlal Nehru Medical College Aligarh Muslim University, Aligarh, March 11-12, 2019.
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