

Dr CHANDRABHAN SENIYA

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I am interested in developing a career which combines both research and teaching while maintaining my interest in STEM fields. My work is concentrated on performing basic and applied research in optical imaging methods with applications across biological sciences, engineering and industry.

RESEARCH EXPERIENCE

July 2020 – Ongoing

Assistant Professor, MEERUT INSTITUTE OF ENGINEERING AND TECHNOLOGY, MEERUT

Teaching and research for UG and PG Students of Biotechnology. I am delivering range of skills and techniques in the field of Biotechnology, for example, toxicological assays, bioinformatics, mathematical/molecular modelling, molecular dynamics simulations and optical imaging methods development for applications across biological sciences.

April 2020 – April 2021

Honorary Research Fellow, THE UNIVERSITY OF WARWICK, UNITED KINGDOM

Associated with the University of Warwick for academic research in the Optical Engineering group of Prof David Towers, Head School of Engineering, the University of Warwick.

January 2018 – March 2020

Research Fellow, THE UNIVERSITY OF WARWICK, UNITED KINGDOM

Small and room-scale imaging systems were developed to quantify flight behaviours of mosquitoes. Optical diagnostics for mosquito behaviour and thereby, new interventions to mitigate the transmission of tropical diseases were developed. A range of experimental setups was designed to test interventions, e.g. bed nets, and insecticide treatments to quantify effectiveness, repellency etc. The data analytics were applied to determine metrics that characterise mosquito behaviour.

July 2017 – December 2017

Research Assistant, THE UNIVERSITY OF WARWICK, UNITED KINGDOM

Quantified flight behaviour of mosquitoes. Deployed mosquito-tracking systems to study *Aedes aegypti* mosquitoes that are responsible for disease transmission of dengue and Zika. The customised data analysis for Liverpool School of Tropical Medicine and Fiocruz in Recife, Brazil.

January 2014 – June 2018

PhD Research Scholar, THE UNIVERSITY OF WARWICK, UNITED KINGDOM

A flexible low-cost quantitative interference phase imaging microscope was developed. To achieve qualitative and quantitative phase measurement inside microscope theoretical model developed and implemented. The microscopy method can offer new capabilities in terms of phase measurement from both thin and thick biological samples in label-free manner at sub-nano scale.

September 2008 – February 2014

Assistant Professor, MADHAV INSTITUTE OF TECHNOLOGY AND SCIENCE, GWALIOR

Teaching and research was done for UG and PG Students of Biotechnology for their thesis work. There I used range of skills and techniques used in the field of Biotechnology, for example, toxicological assays, bioinformatics, molecular modelling, molecular dynamics simulations, proteins structure prediction and analysis.

EDUCATION

PhD in Engineering

2014 - 2018

School of Engineering, University of Warwick, United Kingdom

PhD thesis: A flexible low-cost quantitative phase imaging microscopy system for label-free imaging of multi-cellular biological samples. Supervisor: Prof David Towers, Head School of Engineering, University of Warwick, Coventry, United Kingdom.

M. Tech. in Biotechnology (CGPA: 8.36/10)

2006 - 2008

A. C. College of Technology, Anna University, India

Master's thesis: *In-silico* structure analysis and molecular dynamics simulations studies on human gastric lipase.

Supervisor: Dr Sharmila Anishetty, Assistant professor of Biotechnology, Anna University, Chennai, India.

B. E. in Biotechnology (78%, with Distinction)

2002 - 2006

Madhav Institute of Technology & Science, India

UG thesis: Computational analysis and secondary structure prediction of Hup gene from *R. capsulatus*. Supervisor: Dr Nand K Sah, Professor & Head, Department of Biotechnology, Madhav Institute of Technology and Science, Gwalior, India

OTHER QUALIFICATIONS

1. A certified course in IPR from World Intellectual Property Organization (WIPO) Geneva, Switzerland.
2. Qualified Graduate Aptitude Test in Engineering (GATE) in 2011, 2012 and 2013.
3. Secured **All India rank 1st** in Combined Entrance Examination for M.Tech. Biotechnology 2006 conducted by Jawaharlal Nehru University, New Delhi.

PROJECT SUBMITTED / GRANTED OTHER QUALIFICATIONS

1. UK-India Covid-19 Partnership Initiative 2020 ||PEPS-CO: Identifying and mitigating the Psychologic, Economic, Physical and Social impact of COVID-19 on South Asian ethnicity student populations|| submitted on 03 Dec 2020 to DBT **(193.170 Lakh)**.
2. Herbal mosquito repellent formulations to prevent vector borne diseases submitted on 02 Dec 2020 to Bill and Malinda Foundation **(68.5 Lakh)**.
3. Optimising crop yields in ODA countries by understanding cellular dynamics of plant cells using a robust interference microscope, proposal submitted for GCRF Accelerator Fund **(₹50 Lakh)**.

RESEARCH GRANTS / AWARDS

1. Travel grant the University of Warwick to attend BIOS conference, Munich, Germany ₹75K (June 2017)
2. Warwick Medical Imaging Network 2017 Poster Prize for Early Career Researchers ₹25K for the poster entitled 'Low-cost Quantitative Phase Microscope for live cell imaging'

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| 3. School of Engineering bursary the University of Warwick, United Kingdom (2014 - 17) | ₹30 Lakh |
| 4. School of Engineering bursary University of Leeds, United Kingdom (2013 - 16) | ₹21 Lakh |
| 5. MP State Govt. Overseas Fellowship to pursue PhD from abroad Universities | ₹75 Lakh |
| 6. Summer Fellowship Trainee at the Indian Institute of Technology, Madras, India | ₹6.5K |
| 7. DBT Fellowship to pursue M. Tech. in Biotechnology from Anna University Chennai | ₹150K |

ACADEMIC EXPERIENCE

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|---|---------------------|
| 1. Assistant Professor of Biotechnology, MIET, Meerut | July 2020 - Ongoing |
| 2. Member DST-First center, MIET, Meerut | Oct 2020 - Ongoing |
| 3. Coordinator for purchasing, Department of Biotechnology, MIET, Meerut | Sep 2020 - Ongoing |
| 4. Honorary Research Fellow, School of Engineering, University of Warwick | Apr 2020 - Apr 2021 |
| 5. Tutor / Lab Demonstrator, School of Engineering, University of Warwick | Jan 2014 - Jun 2017 |
| 6. Assistant Professor in Biotechnology, MITS Gwalior | Sep 2008 - Feb 2014 |
| 7. Member Institute Industry Partnership Cell, MITS Gwalior | 2012 - Feb 2014 |
| 8. Coordinator, Department of Biotechnology, MITS Gwalior | Sep 2010 - Dec 2012 |
| 9. Member of Academic Council MITS Gwalior | 2009 - 2013 |
| 10. Member of Board of Studies (BOS) Biotechnology MITS Gwalior | 2009 - 2013 |
| 11. Member of M. Tech. Admissions in Biotechnology | 2008 - 2013 |
| 12. Visiting faculty at SoS in Biotechnology, Jiwaji University Gwalior | 2008 - 2013 |
| 13. External Examiners for UG and PG Examinations for Biotechnology at RGPV Bhopal (M.P.) India | 2008 - 2013 |

Note: I have supervised 33 Masters (M. Tech.), 04 M.Sc., and 14 Undergraduate (B.Eng.) thesis in the field of Biotechnology since 2009 - 2013 as an assistant professor of biotechnology.

MEMBERSHIP OF PROFESSIONAL BODIES

1. Membership of the International Association of Engineers (IAENG membership number: 273698)
2. Member of European Federation of Biotechnology (EFB)
3. Life membership of Indian Science Congress Association (ISCA)
4. Member of The International Society for Viruses of Microorganisms (ISVM)
5. Member of Asian Federation of Biotechnology (AFOB)

PARTICIPATION IN WORKSHOPS/SEMINARS/TRAININGS

1. Participated in AICTE Sponsored Quality Improvement Programme (QIP) short-term course on 'Recent Advances in Biomedical Engineering' organized via online mode during 30th Nov 2020 to 04th Dec 2020 by the Department of Biotechnology, Indian Institute of Technology, Roorkee, India.
2. Chaired a paper presentation session in 'International Conference on Intelligent control and computation for smart energy and mechatronics systems (ICCSEMS-2020) held from September 25-26, 2020 at JSS Academy of Technical Education, Noida, India.
3. Participated in online faculty development program on 'Advances in BioTechniques' organized by the Department of Biotechnology, Meerut Institute of Engineering and Technology in association with Society of Biological Chemists (India) during 09-11 October 2020.
4. Attended National Webinar on 'Covid-19: Living with Corona Virus' organized by Janta College, Bakewar, Itawa on 10th November 2020.
5. Attended Virtual RMS AFM & SPM Meeting 2020 organised by Royal Microscopic Society from 03-04 November 2020.

6. Attended the Virtual Early Career European Microscopy Congress 2020 organized by Royal Microscopic Society from 24-26 November 2020.
7. AICTE Sponsored Staff Development Program on 'Soft Computing Techniques for Improvement of systems and processes in Chemical Engineering' from 05 - 11th December 2011, organized by Department of Chemical Engineering Madhav Institute of Technology and Science Gwalior (M.P.).
8. AICTE Sponsored Staff Development Program on 'Evolutionary Techniques for numerical and engineering optimization' from 12 - 23rd December 2011, organized by Department of Electrical Engineering Madhav Institute of Technology and Science, Gwalior (M.P.).
9. Training program on 'Advance Instrumentation Methods, organized by M. P. Council of Science & Technology from 05 - 08 October 2010, held at Quality Assurance Laboratory Bhopal.
10. AICTE sponsored National Workshop on 'Quality Management in Technical Education' held at MITS Gwalior on 06 - 07 March 2009.
11. Training Program on Intellectual Property Rights & Related WTO Issues organized by Consumer Unity & Trust Society, Jaipur from 25 - 29 May 2009, under National Program for Training of Scientists & Technologists working in Govt. Sectors.
12. Regional Seminar on 'Intellectual Property and Innovation Management in Knowledge Era' organized by National Research Development Corporation in Collaboration with Jiwaji University Gwalior, 03 - 04 November 2009.
13. International Conference on 'Molecular Mechanism of Disease' held at DRDE, Gwalior, from 15 - 16 December 2008.

EXTRA CO-CURRICULUM ACTIVITIES

1. Organized blood donation camp at Madhav Institute of Technology & Science, Gwalior in collaboration with Red Cross Society, Gwalior, MP, India
2. Campus placement in Cognizant Software Solutions as programme analyst (2007).
3. Got AIR 1st rank (SC Eng. Category) in the Combined Entrance Examination of Biotechnology (M. Tech.) 2006 conducted by Jawaharlal Nehru University, New Delhi.
4. Got runner-up award for Football and Handball in Bhopal regional games meet 1999 - 2001.
5. Frist raking player in Table tennis cluster competition 2001 and selected for Bhopal Regional Games Meet.

PAPERS PUBLISHED IN JOURNALS

1. **Seniya, C.**, Towers, C. E., Towers, D.P. A flexible quantitative phase imaging microscope for label-free imaging of thick biological sample using aperture masks. (Submitted to Journal of Biomedical Optics, 2020).
2. Voloshin, V., Kröner, C., **Seniya, C.**, Murray, G. P., Guy, A., Towers, C. E., McCall, P. J., Towers, D. P. Diffuse retro-reflective imaging for improved mosquito tracking around human baited bednets. R. Soc. Open Sci. 7: 191951 (2020). [IF: 2.5]
3. Murphy, A., Matope, A., **Seniya, C.**, Voloshin, V., Foster, G., Towers, C., Ranson, H., Towers, D. and McCall, P., 2019. A laboratory bioassay to evaluate insecticides as indoor residual sprayed (IRS) wall treatments for malaria vector control: P071. Transactions of the Royal Society of Tropical Medicine and Hygiene, 113. [IF: 2.82]
4. **Seniya, C.**, Towers, C. E., Towers, D.P. Improvements in low-cost label-free QPI microscope for live cell imaging. In Proc. of SPIE BiOS (Paper No.10414-2) (2017).
5. **Seniya, C.**, Towers, C.E., Towers, D.P. Low cost label-free live cell imaging for biological samples. In Proc. of SPIE Vol. 10074, pp. 100741I-1 (2017).
6. Sah, N. K., **Seniya, C.** Survivin splice variants and their diagnostic significance. Tumor Biol. 36(9): 6623-6631 (2015). [IF: 3.65]

7. **Seniya, C.,** Sah, N. K. 188 In silico studies show effective inhibition of HIV-1 reverse transcriptase activity by an antiviral herbal compound (5E)-3-(2-aminoethyl)-5-benzylidene-1, 3-thiazolidine-2, 4-dione. *Journal of bimolecular structure and dynamics*, 33(sup1):124-124 (2015). [IF: 2.98]
8. **Seniya, C.,** Yadav, A., Khan, G. J., Sah, N. K. In-silico studies show potent inhibition of HIV-1 Reverse Transcriptase activity by a herbal drug. *IEEE/ACM Trans Comput Biol Bioinform* 12(6):1355-64 (2015). [IF: 2.43]
9. **Seniya, C.,** Shrivastava, S., Singh, S. K., Khan, G. J. Analyzing the interaction of a herbal compound Andrographolide from *Andrographis paniculata* as a folklore against swine flu (H1N1). *Asian Pacific Journal of Tropical Disease*, 4(Supl): S624-S630 (2014).
10. **Seniya, C.,** Khan, G. J., Uchadia, K. Identification of Potential Herbal Inhibitor of Acetylcholinesterase Associated Alzheimer's Disorders Using Molecular Docking and Molecular Dynamics Simulation. *Biochemistry Research International*, vol. 2014, Article ID 705451, 7 pages (2014).
11. **Seniya, C.,** Khan, G. J., Misra, R., Vyas, V., Kaushik, S. In-silico modelling and identification of a possible inhibitor of H1N1 virus. *Asian Pacific Journal of Tropical Disease*, 4(S1): S467 - S476 (2014).
12. **Seniya, C.,** Vyas, V. A molecular docking approach to study binding molecular interactions between herbal compound balanitin-6 and Plasmodium Vivex dihydrofolate reductase. *International Journal of Pharma and Bio Sciences*, 4(4): B698 - B710 (2013).
13. Kumar, S., Singh, A. K., Verma, S. K., Misra, R., **Seniya, C.** Antibacterial and phyto-chemical analysis of some medicinal plants and their efficacy on multidrug resistant bacteria. *Journal of Pure and Applied Microbiology*, 7(3): 2191 - 2204 (2013).
14. **Seniya, C.,** Mishra, R. Molecular Dynamics Simulation of Esterase (EstA) from *Aspergillus niger*. *International Journal of Bioinformatics and Biological Sciences*, (3/4):329337 (2013).
15. Gupta, S., Kumar, S., Saxena, S., Yadav, R., Thakur, A., Verma, O. P., **Seniya, C.** In-silico analysis and 3d structure prediction of matrix protein of nipah virus, *Journal of Advanced Bioinformatics Applications and Research*, 4(1): 391-395 (2013).
16. **Seniya, C.,** Mishra, H., Yadav, A., Sagar, N., Chaturvedi, B., Uchadia, K., Wadhwa G. Antiviral potential of 4-hydroxypanduratin A, secondary metabolite of Fingerroot, *Boesenbergia pandurata* (Schult.), towards Japanese Encephalitis virus NS2B/NS3 protease. *Bioinformation*, 9(1): 54 - 60 (2013).
17. Saryam, R., **Seniya, C.,** Khan, S. In-vitro Micropropagation of *Hemidesmus indicus* an important medicinal plant. *International Journal of Comprehensive Pharmacy*, 3, 12 (2012).
18. **Seniya, C.,** Verma, S. K, Trivedia, S. S., Verma, R., Vijayarti, H. S., Vyas, S. Metal stress and antibiotic susceptibility profile of some bacterial and fungal strains. *Journal of Pure and Applied Microbiology*, 66(4): 1727 - 1734 (2012).
19. Saryam, R., **Seniya, C.,** Khan, S. Physico-chemical and preliminary phytochemical screening of *Hemidesmus indicus*. *J Chem Pharm Res*, 4(11): 4695 - 4697 (2012).
20. **Seniya, C.,** Yadav, A., Uchadia, K., Kumar, S., Sagar, N., Shrivastava, P., Shrivastava, S., Wadhwa, G. Molecular docking of (5E)-3-(2-aminoethyl)-5-(2-thienylmethylene)-1, 3-thiazolidine-2, 4-dione on HIV-1 reverse transcriptase: novel drug acting on enzyme. *Bioinformation*, 8(14): 678 - 683 (2012).
21. Argal, M. S., Kumar, S., Chaudhary, H. S., Thakkar, R. M., Verma, S. K., **Seniya, C.** The efficacy of *Muirraya koeniggi* leaf extract on some bacterial and fungal strain by disk diffusion method. *J Chem Pharm Res*, 3, 697-704 (2011).
22. Kumar, S., Choudhary, H. S., and **Seniya, C.** In vitro antibacterial study of aqueous and methanolic extracts of some selected medicinal plants. *J Chem Pharm Res*, 3(4): 854 - 860 (2011).

23. **Seniya, C.**, Trivedia, S. S., Verma, S. K. Antibacterial efficacy and phytochemical analysis of organic solvent extracts of *Calotropis gigantea*. *J Chem Pharm Res*, 3(6): 330 - 336 (2011).
24. Selvan, A., **Seniya, C.**, Chandrasekaran, S. N., Siddharth, N., Anishetty, S., Pennathur, G. Molecular dynamics simulations of human and dog gastric lipases: Insights into domain movements. *FEBS Letters*, 584(22): 4599 - 4605 (2010). [IF: 3.62]
25. Singh, A. K., **Seniya, C.**, Prasad, S. Isolation of *Aspergillus flavus* from stored food commodities and *Thymus vulgaris* (L.) essential oil used as a safe plant-based preservative. *Pharmacognosy Magazine*, 5(20): 343 - 349 (2009). [IF: 1.53]

BOOK CHAPTERS

1. G.J. Khan, Atul Kr. Singh, **C. Seniya**, Jaykar Jha. Deciphering RNA Interference, 'RNA Interference - Problem & Prospects' edited by Jaykar Jha, G.J. Khan, Atul Kr Singh, Sanjay Kumar, 2013, chapter 1: pages 1-23; Shree Publishers & Distributors, New Delhi, India. ISBN No. 978-81-8329-572-7
2. Satendra Singh, Prashant Ankur Jain, Budhayash Gautam, Atul Kumar Singh, **C. Seniya**, G.J. Khan. Genome Analysis using a Computational Approach. *Advances in Biotechnology: A Practical Approach*, Edited by Harish Kumar Dhingra, P.N. Jha and P. Bajpai, 2013: chapter 1: pp: 1-14, Nova Science Publishers. ISBN: 978-1-62417-842-9
3. Atul K. Singh, **Chandrabhan Seniya**, Sharad S Lodhi, Sudhanshu Singh, G.J. Khan, Jaykar Jha. Tissue engineering and its therapeutic application, *Current Topics in Biotechnology & Microbiology*, 2011, pp: 46-69, LAP LAMBERT Academic Publishing GmbH & Co. KG. ISBN-13: 978-3844329759
4. Khan G.J., **Seniya C.**, Prabhat N. Jha, Atul K. Singh, Jaykar Jha. RNA interference: molecular mechanism and therapeutic applications, *Current Topics in Biotechnology & Microbiology*, 2011, pp: 70-92, LAP LAMBERT Academic Publishing GmbH & Co. KG. ISBN-13: 9783844329759
5. Pramod K. Yadav, Satendra Singh, **Chandrabhan Seniya**, Atul K. Singh, G. J. Khan. Structure-based drug design approaches in drug discovery, *Current Topics in Biotechnology & Microbiology*, 2011, pp: 178-195, LAP LAMBERT Academic Publishing GmbH & Co. KG. ISBN-13: 978-3844329759.

CONFERENCE PAPERS/POSTER/TALK

1. **Seniya, C.** "Phase imaging microscopy system for label-free cell imaging" guest lecture at the Department of Biotechnology, Anand Engineering College, Agra 22nd March 2018.
2. **Seniya, C.**, Towers, C.E., Towers, D.P. [LS5.2009] Development in low-cost QPI Microscope for live cell imaging. *Microscience Microscopy Congress 2017*, 03 - 06 July 2017, Manchester, UK.
3. **Seniya, C.**, and Towers, D.P. Low-cost Quantitative Phase Microscope for live cells imaging. Best Poster Prize for Early Career Researchers (£250), Warwick Medical Imaging Group, University of Warwick, Coventry, United Kingdom, Friday 28th April 2017.
4. **Seniya, C.**, Towers, D.P. Cost effective method for label free live cell imaging of biological samples, Research Poster Competition 2016 (RSSP) organized by University of Warwick, Coventry, United Kingdom, 9th June 2016.
5. **Seniya, C.**, Towers, D.P. Generate and evaluate tools to quantify cell-cell contacts in live cell imaging of unlabeled urothelium cells, 4th Annual Postgraduate Symposium, School of Engineering, the University of Warwick, Coventry, CV4 7AL, United Kingdom, 22nd April 2016. (Short Talk)
6. **Seniya, C.**, Towers, D.P. Generate and evaluate tools to quantify cell-cell contacts in live cell imaging of unlabeled urothelium cells, 3rd Annual Postgraduate Symposium, School of Engineering, the University of Warwick, Coventry, United Kingdom, 09 - 10th March 2015. (Poster).