

## Curriculum Vitae

**Name** : Dr. Kaushik Rajaram  
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Department of Microbiology, Central University  
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Lab webpage: <https://sites.google.com/view/drkaushikslab/home>

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**Current Position: Group leader- Nano-Biomaterials and Phage lab**  
(Dec 2017 onwards) Assistant Professor, Department of Microbiology,  
Central University of Tamil Nadu

### My current research focuses are on

- Antimicrobial resistance
- 2D nano-bio materials scaffolds and wound healing
- Phage therapy
- Phage display of peptides and Antibodies

### Major Responsibilities:

- Operating research projects and supervising doctoral students
- Teaching PG & PhD Microbiology students
- Member Institutional Biosafety-Committee
- UGC\_NET coaching coordinator
- Microbiologist Society, India- University coordinator

### Previous Experiences:

Designation	period	Organization/ institution	Place
Postdoctoral fellow	Sep 2016 to Dec 2017	Indian Institute of Science	Bangalore, India
Researcher	June 2015 to March 2016	Hasselt University	Hasselt, Belgium
Research Assistant	May 2014 to May 2015	Trinity College Dublin	Dublin, Ireland
Project Assistant	April 2008 to Jan 2010	Indian Institute of Science	Bangalore, India

## Educational details:

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Degree	Year of Completion	Specialization	Institution and Place
PhD	2016	Bio-Medical Science	Hasselt University, Belgium
MSc	2007	Microbiology	Madurai Kamaraj University
BSc	2005	Industrial Microbiology	Madurai Kamaraj University
PGDCIT	2006	Chem-Informatics	Madurai Kamaraj University

**PhD thesis title:** "Construction of dual display phage and its application on real-time label-free sensing platforms".

**Guides** : Prof. Luc Michiels (PI), Prof. Veerle Somers (Co-PI)

**Institute** : Hasselt University, Belgium

**Year of award:** 2016

## Publications:

1. Deeksha SarojiniDevi Radhakumar, Sundar Thiyagarajan, **Kaushik Rajaram**, Rajesh Parsanathan. Human antimicrobial peptide Histatin 1, 3, and its autoproteolytic cleaved peptides target the monkeypox virus surface proteins: molecular modelling and docking studies. **Research square** (preprints). <https://doi.org/10.21203/rs.3.rs-3000084/v1>.
2. L. Priyadarsini, A. Subbiah, S. Srivignesh, K. Rama Krishna, **K. Rajaram**, S.Kathiresan, A. Ramesh Kumar. Comparative analysis of growth and yield parameters of grape var 'Muscat Hamburg' grafted on 'Dog Ridge' rootstock and self-rooted cuttings. **Plant Archives**. 23,1, 2023 pp.384-388. <https://doi.org/10.51470/PLANTARCHIVES.2023.v23.no1.063>
3. Anh. H. Nguyen, Sojin Song, Ha. T. Do, Lan N. Mai, Thuat T. Trinh, **Kaushik Rajaram\***. Rapid and Duplex Detection of MRSA using SERS-based Molecular Beacons. **Nano Trends**. 2023, 2, 100007. <https://doi.org/10.1016/j.nwnano.2023.100007>
4. Thillaichidambaram Muneeswaran, Muthuchamy Maruthupandy, Aarcha Shanmugha Mary, Thirumalaiswamy Vennila, **Rajaram Kaushik**, Chockalingam Muthiah Ramakritinan, Franck Quero. Starch-mediated synthesis of chitosan/silver nanocomposites: in-vitro antibacterial and wound healing applications. **Journal of Drug Delivery science and Technology**. 2023, 84, 104424, <https://doi.org/10.1016/j.jddst.2023.104424>.(IF: 5.21).
5. Nithya Selvaraju, Senthilnathan Selvaraj, Neeraj Singhal, Vigneshwaran Mohan, Yuvaraj Sivalingam, **Kaushik Rajaram**, Gunasekaran Venugopal.

Electron Transfer Behaviour of Green Synthesized Carbon Quantum Dot Sensor Towards VOC and Heavy Metal Ion Sensing. **Materials Science Engineering B**. (2022-Accepted). (IF: 4.10)

6. Nashath Kalangadan<sup>#</sup>, Aarcha Shanmugha Mary<sup>#</sup>, Rudrapogu Hepsiba Jyothi<sup>#</sup>, Sathyanarayanan Punniyakoti, Srivignesh Sundaresan<sup>¥</sup>, Ramesh Kumar Alagarsamy<sup>¥</sup>, **Kaushik Rajaram**<sup>\*</sup>. Characterization and antimicrobial evaluation of green synthesized silver nanoparticle thin films with reusable applications. **Materials Letter**. **2022**, <https://doi.org/10.1016/j.matlet.2022.131923>. (IF: 3.5)
7. Aarcha Shanmugha Mary, Vikram Srinivasa Raghavan, Sirisha Kagula, Vinodhini Krishnakumar, Meganathan Kannan, Sai Siva Gorthi, **Kaushik Rajaram**<sup>\*</sup>. Enhanced In Vitro Wound Healing Using **PVA/B-PEI Nanofiber Mats**: A Promising Wound Therapeutic Agent against ESKAPE and Opportunistic Pathogens. **ACS applied biomaterials**. **2021**, *4*, *12*, 8466–8476. <https://doi.org/10.1021/acsabm.1c00985>. (IF 4.09)
8. DC Dinesh, S Tamilarasan, **K Rajaram**, E Bouřa. **Antiviral Drug Targets** of Single-Stranded RNA Viruses Causing Chronic Human Diseases. **Current drug targets**. **2020**;21(2):105-124. doi: 10.2174/1389450119666190920153247. (IF: 3.8)
9. Behera SK, Das D, Balasubramani K, Chellappan S, **Rajaram K**, Mohanta HK, Balabaskaran Nina P (2020) Seroprevalence and risk factors of brucellosis in livestock in the wildlife and livestock interface area of Similipal Biosphere Reserve, India, **Veterinary World**, *13*(3): 465-470. Doi.org/10.14202/vetworld.2020.465-470 H. (IF: 2.1)
10. Guguloth, S. K., Lakshmi, A. R., Rajendran, R., **Rajaram, K.**, Chinnasamy, T., Huang, J. D., ... & Durairajan, S. S. K. A Mechanistic Review on Plant-derived Natural Inhibitors of Human Coronaviruses with Emphasis on SARS-COV-1 and SARS-COV-2. **Current drug targets**. **2021** DOI: 10.2174/1389450122666211005115313. (IF: 3.8)
11. Durairajan, S. S. K., Selvarasu, K., Bera, M. R., **Rajaram, K.**, Iyaswamy, A., & Li, M. Alzheimer's Disease and other Tauopathies: Exploring Efficacy of Medicinal Plant-Derived Compounds in Alleviating Tau-Mediated Neurodegeneration. **Current molecular pharmacology**. **2021**. DOI: 10.2174/1874467214666210906125318. (IF: 3.7)
12. **Kaushik Rajaram**, Patricia Losada-Pérez, Veronique Vermeeren, Baharak Hossenikhani, Patrick Wagner, Veerle Somers, Luc Michiels. Real time analysis of dual display phage immobilization and autoantibody screening using quartz crystal microbalance with dissipation monitoring. **International journal of nanomedicine**. **2015**; *10*, 5237-5247. (IF: 7.4)

13. **Kaushik Rajaram**, Vermeeren V, Somers K, Somers V, Michiels L. Construction of a helper plasmid-mediated dual-display phage for autoantibody screening in serum. *Applied Microbiology and Biotechnology*. 2014; 98(14):6365–6373. (IF: 5.9)
14. Vasuki V, Sugeerappa L H, Nagalakshmi K, Somnath G, **Kaushik Rajaram**. Optimisation of an asymmetric polymerase chain reaction assay for the amplification of single-stranded DNA from *Wuchereria bancrofti* for electrochemical detection. **Mem Inst Oswaldo Cruz, Rio de Janeiro**, Vol. 108(6): 804-807, September 2013. (IF: 1.9)
15. D Yuvaraj, **Kaushik Rajaram**, and K. Narasimha Rao. Optical, Field-Emission, and Antimicrobial Properties of ZnO Nanostructured Films Deposited at Room Temperature by Activated Reactive Evaporation. **ACS Applied. Materials. Interfaces**, 2010, 2(4), pp1019–1024 (IF 10.1).
16. S. Ghosh, **Kaushik Rajaram**, K. Nagalakshmi, S. L. Hoti, G. A. Menezes, B. N. Harish, H. N. Vasan. Antimicrobial activity of highly stable silver nanoparticles embedded in agar-agar matrix as a thin film. **Carbohydrate Research**. 345 (2010) 2220– 2227. (IF- 2.1).

#### **Book chapters:**

- 1) Plant Growth Promoting Potentials of Endophytic Fungi for the Management for Agricultural Crops and Grasses. Siva Sundara Kumar Durairajan, Suchitra Rakesh, Barkavi Durairajan, **Kaushik Rajaram**, Nagarathinam Arunkumar, Rajesh Jeewon. (Accepted in plant microbe interaction SPRINGER).
- 2) Contribution of Beneficial Fungi for Maintaining Sustainable Plant Growth and Soil Fertility. Suchitra Rakesh, Arun Kumar, **Kaushik Rajaram**, and Siva Sundara Kumar Durairajan. (Accepted in plant microbe interaction SPRINGER).
- 3) Anthosphere Microbiome and Their Associated Interactions at the Aromatic Interface. Nagarathinam Arunkumar, Suchitra Rakesh, **Kaushik Rajaram**, Narayanasamy Ravi Kumar, Siva Sundara Kumar Durairajan (Accepted in plant microbe interaction SPRINGER).
- 4) Immunology – Antibodies To Widal Test. Vinodhini Krishna kumar, Aarthi Sreenikethan,, **Kaushik Rajaram**. *A Complete Guide for Experimental Procedures in Life Sciences (2021)* : 143-190.

- 5) Molecular Biology – Central Dogma of Our Life. Vinodhini Krishna kumar, Aishwarya Mohan, **Kaushik Rajaram**. A Complete Guide for Experimental Procedures in Life Sciences (2021) : 113-141.
- 6) Macromolecular chemistry: An introduction. Chandrabose Selvaraj, Dhurvas Chandrasekaran Dinesh, **Kaushik Rajaram**, Srivignesh Sundaresan, Sanjeev Kumar Singh. In-silico approaches to macromolecular chemistry. 2023. 71-128. (Elsevier).
- 7) Phage-based biosensors. Aarcha SM, Vinodhini K, Kaushik R. River Press (under printing)

**Patent:**

**Filed on 22/03/2021 (Published on Sep 2022):** Title: A spirulina based microbial culture media composition and method thereof. Application number: 202141012085 Authors: Vishnu G, Nashath K, Aarcha SM, Arunkumar N, Eswaran M, Srivignesh S, Praveen BN, Kaushik R.

**Awards and recognitions:**

1. National Postdoctoral fellowship from Science Education research board (SERB) of India- 2016 (19.20 lakh INR)
2. First Prize for oral presentation- National conference on Microbiome research at Pondicherry University March, 2019
3. First Prize for oral presentation, International Conference on Phage therapy, Karnataka University. Dharwad, Nov,2022.

**Conference attended:**

SI No:	Author's name	Title of conference	Poster/ Oral and title	Venue and Date
1	Kaushik Rajaram	National Conference on Biology and Medicine	Oral: Title: Development of nanobodies using molecular tools	Bharathiyar University, Coimbatore, Tamil Nadu, Feb 07-08, 2019.
2	Kaushik Rajaram	National conference on Recent trends in microbiome research	Oral Title: In-vitro display techniques	Pondicherry University, March 20-21, 2019
3	Kaushik Rajaram	International Conference on bacteriophage	Poster Title: Phage display diagnostic peptides	Vellore Institute of Technology

		research and antimicrobial resistance	and nanobodies	12 <sup>th</sup> -13 <sup>th</sup> Dec, 2019
4	Kaushik Rajaram	International Conference on Microbiome and synthetic biology	Oral Title: Phage display of Chicken Monoclonal IgY-ScFv antibody	Bharathidasan University 22 <sup>nd</sup> and 23 <sup>rd</sup> Sep, 2022.
5	Kaushik Rajaram	International Conference on bacteriophage research and antimicrobial resistance	Oral Title: Anti-phage mutation derived fitness cost in bacteria and its significant in silent pandemic	Karnatak University, Dharwad. 26 <sup>th</sup> and 27 <sup>th</sup> Nov, 2022
6	Aarcha Shanmugha Mary and <b>Kaushik Rajaram</b>  Nashath Kalangadan, <b>Kaushik Rajaram</b>	3rd International Conference on Bioprocess and Sustainable Environment and Energy	Oral (Title: 'Cationic polymer-based nanofibers for enhanced wound healing and infection control')  Poster (Reusable and green synthesized Ag nanoparticles embedded thin film for water purification)	NIT Rourkela, 20-24 June, 2022
7	Aarcha Shanmugha Mary and <b>Kaushik rajaram</b>	Wonders of the small 3.0 International Conference on Antimicrobial Resistance and Microbiome under changing Climate	Oral (Title: Counter acting alleviated temperature induced bacterial resistance with bacteriophage and antibiotic combination therapy')	Pondicherry University, Pondicherry 10-12 October, 2022
8	Aarcha Shanmugha Mary and <b>Kaushik Rajaram</b>	4th International Conference on Recents Trends in	Oral (Title: 'Relative fitness of phage-resistant <i>P. aeruginosa</i> and	Alagappa University, Karaikudi 5-6 January, 2023

		Microbiology	alternative combinatory dosing for prolonged infection reduction')	
9	Aarcha Shanmugha Mary and <b>Kaushik Rajaram</b>	National Level Seminar on Biotechnology and its Applications in Science and Technology	Oral (Title: 'Fitness costs of <i>P. aeruginosa</i> due to phage resistance development and the role of antibiotic efficacy during phage therapy')	Central University of Tamil Nadu, 29-30 September 2022
10	Nashath Kalangadan, <b>Kaushik Rajaram</b>  Abishek Mani and <b>Kaushik Rajaram</b>	Wonders of the small 3.0 International Conference on Antimicrobial Resistance and Microbiome under changing Climate	Poster (Smart nanofiber scaffolds for effective wound healing and MDR bacterial infection control) Poster –  Antimicrobial nano peptides an effective alternative for antibiotics in chronic wound infections.	Pondicherry University, Pondicherry 10-12 October, 2022

### **Orientation courses/Refresher courses/Faculty Development Programme attended**

1. Orientation course: Organized by HRDC Mizoram University from 28<sup>th</sup> July to 17<sup>th</sup> August 2020.
2. Refresher course: Organized by HRDC Mizoram University on Special Summer school from 20<sup>th</sup> July to 2<sup>nd</sup> August 2021.
3. Refresher course: Organized by HRDC Mizoram University on Interdisciplinary Refresher course (Lifesciences and Earth Science) from 28<sup>th</sup> July to 10<sup>th</sup> August 2022.
4. Faculty Development Program: A five days Online Faculty Development programme on "Measures To Mitigate Climate Change" conducted from 12<sup>th</sup> to 16<sup>th</sup> October 2020.

5. Faculty Development Program: One day FDP organized at the CUTN on 8<sup>th</sup> Sep 2018.

### **Invited talks**

1. **Resource person:** Stride component 1, UGC stride virtual FDP on Mitigating climate change on the topic of "climate change and microbes" on 29<sup>th</sup> April 2021.
2. **Invited talk:** In-vitro display techniques at the Department of Microbiology, Dr. NGP Arts and science College, Coimbatore on 18<sup>th</sup> Dec 2019.
3. **Resource person:** At a workshop organized at Karpagam academy of higher education, Coimbatore on "In-vitro Display techniques", on 19<sup>th</sup> Nov 2019.
4. **Invited lecture:** "Nanomaterials for wound infection control and healing At Thiagarajar college, Madurai on 12<sup>th</sup> January 2022.
5. **Resource person:** "Impact of Climate Change on agrobiodiversity" organized by Department of Horticulture CUTN on 29<sup>th</sup> and 30<sup>th</sup> December 2022 and delivered a talk on Microbes and climate Change.
6. **Resource person:** One-day workshop on Bacteriophage and their lysins as a promising therapy against human pathogens an innovative approach on 8<sup>th</sup> March 2023.
7. **Key note speaker:** At XIV Louis Pasteur International Symposium organized at DR NGP arts and Science College, Coimbatore on the topic of Bacteriophage therapy -Past Present and future on 9<sup>th</sup> March 2023.
8. **Resource person:** Workshop on "Tools to curtail AMR"and delivered a talk on "2D nanofiber scaffolds for infection control (AMR) and wound healing on 17<sup>th</sup> July 2023.
9. **Resource person:** Awareness program on "Improved Production Technology and Value-addition in Cashew" for farmers of Pudukottai district on 10<sup>th</sup> and 11<sup>th</sup> of January 2023.
10. **Invited talk:** Vaccines and Its Application at Kumaraguru Institute of Agriculture, Nachimuthupuram, Erode. 1<sup>st</sup> March 2022.

### **Research guidance including MSc dissertation**

#### **1. Ph.D. Thesis Guidance- On-going**

- a) Ms. Aarcha SM [Reg number: R192001]
- b) Mr. Nashath K [Reg number: R202002]
- c) Mr. Absihek M [Reg number: R222001]

#### **2. M.Sc. dissertation guidance-completed**



<b>S.no</b>	<b>Student name</b>	<b>Reg number</b>	<b>Dissertation title</b>	<b>Role</b>
1	Swathi P	P172019	Optimization of Loop Mediated isothermal amplification (LAMP) assay for diagnosis of diseases.	PI
2	Prathyusha J	P172020	Polyethyleneimine nanofiber and promising antimicrobial substance.	PI
3	Reena	P172014	Biosynthesis of agar embedded meta nanoparticle thin-film and it's antimicrobial activity	Co-PI
4	Nashath	P182015	Biosynthesis of selenium nanoparticles and their antimicrobial characterization	PI
5	Vishnu	P182027	Optimization of Spirulina as a bacterial growth media	PI
6	Aiswarya	P182002	Isolation and characterization of potential page cocktails against bovine mastitis causing bacteria.	PI
7	Swetha	P182025	Antimicrobial efficacy of a medicinal wild herb Solanum Xanthicarpum leaf extract and localization of secondary metabolites.	PI
8	Sindhuja S (EPH)	P181513	Antimicrobial activity of Bambusa vulgaris, Solanum trilobatum, Achyranthes aspera, Tridax procumbens, Operculina turpetum	Co-PI
9	Meenu Mariya (EPH)	P181509	Evaluation of antimicrobial properties of Cleome viscosa-	Co-PI
10	Sirisha K	P192026	Biofilm Control using B-polyethyleneimine nanofibers	PI
11	Hepsiba RJ	P192024	Probing the synergistic antimicrobial activity of nanoarticles and methanolic extracts of Senna alata leaves	PI
12	Anuwin TJ	P192003	Efficacy of bacteriophage cocktails against ESKAPE pathogens	PI
13	Abishek M	P202002	Bacteriophage-antibiotic combination therapy for multidrug resistant <i>Pseudomonas aeruginosa</i>	PI

14	Jeyalalitha	P202015	Effect of antimicrobial nanomaterials in check embryo	PI
15	Fathima Nesrina	P202012	Effect of Graphene oxide and few layer graphene compounds on vaginal microflora in vitro	PI
16	Alphy T Alias	P212001	Deciphering the wound healing and infection control potential of green synthesized silver nanoparticles	PI

### Sanctioned Project:

Title	Funding agency	Amount in lakh
PCR and M13 Phage-based Single Domain Antibody (Nanobody) development and its application in lateral flow-based detection of cathelicidin	UGC	10.0 (completed)
Reverse Transcriptase polymerase Chain Reaction (RT-PCR) based on microfluidics for the early and rapid detection of Hepatitis virus C (HCV)	SERB-NPDF	19.20 (completed)
Capacity building and promoting good husbandry practices among livestock farmers for the livelihood of sustainable livestock production and upholding public and upholding public.	DST-SEED/ Co-PI	71.35 lakh

### Conferences/Programs organized

1. Symbiosis 2020: Career guidance program for MSc students on 16<sup>th</sup> Oct 2021. The Alumni and Placement cell of the Department of Microbiology.
2. Microominis 2022: Microbiology awareness program for School children on Dec 6<sup>th</sup> 2022.
3. A special talk on "Therapeutic gene delivery and imaging wit non-viral vectors with an emphasis on cardiovascular disease". By Dr. Muthu Narayanan Muthaiah, Masonic Medical Institute, USA. On 14<sup>th</sup> Dec, 2018.
4. National Science day 2019: Essay and Quiz competition.

**Links to:** LinkedIn: <https://www.linkedin.com/in/kaushik-rajaram-0b2a817/>  
Researchgate:  
[https://www.researchgate.net/profile/Kaushik\\_Rajaram](https://www.researchgate.net/profile/Kaushik_Rajaram)

Web of science ResearcherID: B-4615-2019