

Name: Balakumar Chandrasekaran

Email: bchandrasekaran@zu.edu.jo

Faculty of Pharmacy/Department of Pharmaceutical Sciences

Academic Rank: Professor

Membership:

1	Tamil Nadu State Pharmacy Council, Chennai, India

Qualifications:

1	Bachelor of Pharmacy, 2002, The TN Dr. MGR Medical University, Chennai, Tamil Nadu, India
2	Bachelor of Pharmacy in Pharmaceutical Chemistry, 2005, Gujarat University, Ahmedabad, Gujarat, India
3	PhD in Pharmaceutical Sciences, 2012, Panjab University, Chandigarh, India

Professional Objective(s):

- Post-Doctoral Research expertise in Pharmaceutical Medicinal Chemistry/Drug Design.
- Total 20 years of professional experience (teaching + research) in India and Abroad.
- Research accomplishments: 83 paper publications, 09 patents, 26 book chapters, editor of books (04), and journals (02), and supervision of 13 Master's Graduates.
- Design of novel biologically active small organic molecules and polymeric chemistry.
- Expertise in the medicinal compounds synthesis and instrumental methods of analysis of active pharmaceutical ingredients (APIs) and drug delivery systems.
- Recipient of International Research Funding and completed many research projects and assignments, individually.
- Artificial Intelligence (AI)-focused Machine Learning (ML) research in diagnosis of diseases and solving problems associated with pharmaceutical product's solubility and stability.

Teaching Experience:

#	From	To	Position
1	20.10.2005	30.11.2006	Lecturer
2	06.12.2006	20.10.2007	Lecturer
3	24.10.2007	30.03.2011	UGC Research Fellow
4	18.04.2011	10.01.2013	Assistant Professor
5	11.01.2013	10.03.2015	Associate Professor and Head of Department
6	09.04.2015	30.06.2016	PostDoc Research Fellow
7	01.07.2016	14.11.2017	DST-NRF Innovation PostDoc Research Fellow
8	05.02.2018	31.08.2020	Assistant Professor
9	21-09-2020	09-07-2021	Professor and Head of Department
10	16-07-2021	21-09-2022	Professor and Dean
11	13-10-2022	20-09-2025	Professor
12	21-09-2025	Until now	Professor

Publications:

#	Title	Journal	Year/ Issue (Vol/No)
1	Computational Molecular Docking and Molecular Dynamics Simulations of Potential Inhibitors from Cistus incanus (Cistaceae) Against Ebola Virus	Biophysica	2026
2	Colon-targeted sinapic acid-loaded cationic guar gum - gellan gum hydrogel beads: A novel approach for treating inflammatory bowel disease	International Journal of Biological Macromolecules	2026
3	Synthesis, antidepressant evaluation and computational insights on substituted pyrazoles as selective MAO-A inhibitors	European Journal of Medicinal Chemistry	2026
4	Potential biomarkers in early detection of gastric cancer	Frontiers in Pharmacology	2026
5	Exploring phyto-Resources of Tulsi for the management of depression: A discovery through computational and pharmacological studies	Chemistry Africa	2025

6	Insights into in silico analysis to explore the multitarget antidepressant role of *Camellia sinensis*	Journal of Biomolecular Structure and Dynamics	2025
7	Microwave-assisted green synthesis: An approach for the development of anti-tubercular agents	Current Drug Targets	2025
8	Nanostructured lipid carriers (NLC)-based topical formulation of hesperidin for effective treatment of psoriasis	Pharmaceutics	2025
9	Computational network pharmacology, molecular docking, and molecular dynamics to decipher natural compounds of *Alchornea laxiflora* for liver cancer chemotherapy	Pharmaceuticals	2025
10	Microwave-assisted synthesis of morpholine-based chalcones as reversible MAO-A inhibitors in the management of mental depression	Pharmaceuticals	2025
11	Synthesis, anticancer screening, and in silico evaluations of thieno[2,3-*c*]pyridine derivatives as Hsp90 inhibitors	Pharmaceuticals	2025
12	A privileged scaffold for synthetic and biomedical applications	Journal of Molecular Structure	2025
13	Evaluation of anticancer activity of some new hybrids of 1,3,4-oxadiazole tethered cinnamamides	Journal of Molecular Structure	2025
14	A QbD-navigated approach to the development and evaluation of etodolac–phospholipid complex containing polymeric films for improved anti-inflammatory effect	Polymers	2024
15	Computational design of a novel inhibitor against COVID	Letters in Drug Design and Discovery	2024
16	Unveiling the role of exosomes as cellular messengers in neurodegenerative diseases and their potential therapeutic implications	Pathology - Research and Practice	2024
17	Benchmarking docking, density functional theory and molecular dynamics studies to assess the aldose reductase inhibitory potential of *Trigonella foenum-graecum* compounds for managing diabetes-associated complications	Pharmacia	2024

18	Integrating network pharmacology with molecular docking to rationalize the ethnomedicinal use of *Alchornea laxiflora* (Benth.) Pax & K. Hoffm. for efficient treatment of depression,	Frontiers in Pharmacology	2024
19	Pesticides: An alarming detrimental to health and environment	Science of The Total Environment	2024
20	A comprehensive overview of selective and novel fibroblast growth factor receptor inhibitors as a potential anticancer modality	Acta Pharmaceutica	2024
21	Development and characterization of econazole topical gel	Gels	2023
22	Design, synthesis, anticancer screening and molecular modelling studies of novel thiazoles	Chemistry Select	2023
23	Target protein degradation by PROTACs: A budding cancer treatment strategy	Pharmacology and Therapeutics	2023
24	Development and characterization of gel-based buccoadhesive bilayer formulation of Nifedipine	Gels	2023
25	Pharmacological and biochemical perspectives of kinase inhibitors in cancer and COVID-19 therapeutics	Frontiers in Pharmacology	2023
26	Molecular docking, multicomponent one-pot synthesis of pyrimidine derivatives as anti-mycobacterial agents	Anti-Infective Agents	2023
27	Combating microbial infections using metal-based nanoparticles as potential therapeutic alternatives	Antibiotics	2023
28	Therapeutic implications of current Janus kinase inhibitors as anti-COVID agents: A review	Frontiers in Pharmacology	2023
29	Development of a polyherbal topical gel for the treatment of acne	Gels	2023
30	Synthesis, pharmacological evaluation and , molecular modeling studies of novel isatin hybrids as potential anticancer agents	Journal of Saudi Chemical Society	2023
31	Novel fluorophenyl tethered thiazole and chalcone analogues as potential antitubercular agents: Design, synthesis, biological and in silico evaluations	Journal of Molecular Structure	2023
32	Appraising the therapeutical potentials of Alchornea laxiflora (Benth.) Pax & K. Hoffm., an underexplored medicinal herb: A systematic review	Frontiers in Pharmacology	2022

33	Development of polymeric-based formulation as potential smart colonic delivery system	Polymers	2022
34	Pharmacological and biochemical perspectives of kinase inhibitors in cancer and COVID-19 therapeutics	Frontiers in Pharmacology	2022
35	Standardization, in-silico and in-vivo safety assessment of methanol extract of *Ziziphus mauritiana Lam* leaves	Regulatory Toxicology and Pharmacology	2022
36	One-step synthesis of picolinohydrazides from fusaric acid: DFT structural characterization and molecular inhibitory studies on metastatic tumor-derived exosomal and non-exosomal proteins	Journal of Molecular Structure	2022
37	Mucilage of *Coccinia grandis* as an efficient natural polymer-based pharmaceutical excipient	Polymers	2022
38	Novel thiomorpholine tethered isatin hydrazones as potential inhibitors of resistant *Mycobacterium tuberculosis*	Bioorganic Chemistry	2021
39	In silico screening of natural phytoconstituents towards identification of potential lead compounds to treat COVID-19	Frontiers in Molecular Biosciences	2021
40	Prospective role of peptide-based antiviral therapy against the main protease of SARS-CoV-2	Frontiers in Molecular Biosciences	2021
41	Developmental landscape of potential vaccine candidates based on viral vector for prophylaxis of COVID-19	Frontiers in Molecular Biosciences	2021
42	Perspectives on RNA vaccine candidates for COVID-19	Frontiers in Molecular Biosciences	2021
43	Emerging Therapeutic Approaches to Combat COVID-19: Present status and future perspectives	Frontiers in Molecular Biosciences	2021
44	Curcumin-Celecoxib: a synergistic and rationale combination chemotherapy for breast cancer	European Review for Medical and Pharmacological Sciences	2021
45	Neurological consequences of SARS-CoV-2 infection and concurrence of treatment-induced neuropsychiatric adverse events in COVID-19 patients: Navigating the uncharted	Frontiers in Molecular Biosciences	2021

46	Green synthesis, experimental and theoretical studies to discover novel binders of exosomal tetraspanin CD81 protein	ACS Omega	2020
47	Herbal medication for the management of diabetes mellitus: A review	Current Traditional Medicine	2020
48	Synthesis and biological evaluation of novel carbazole hybrids as promising antimicrobial agents	Chemistry and Biodiversity	2020
49	Green biosynthesis of gold nanoparticles using *Croton sparsiflorus* leaves extract and evaluation of UV protection, antibacterial and anticancer applications	Applied Organometallic Chemistry	2020
50	TPGS-mediated one-pot synthesis, XRD structural analysis, antimicrobial evaluation and molecular docking of novel heterocycles as potential inhibitors of p53-MDM2 protein	Journal of Molecular Structure	2020
51	Phyto-engineered gold nanoparticles (AuNPs) with potential antibacterial, antioxidant, and wound healing activities under *in vitro* and *in vivo* conditions	International Journal of Nanomedicine	2020
52	Human serum albumin interaction, *in silico* and anticancer evaluation of Pine-Gold nanoparticles	Process Biochemistry	2020
53	Molecular modeling approaches for the discovery of adenosine A_{2B} receptor antagonists: current status and future perspectives	Drug Discovery Today	2019
54	Discovery of novel *N*-methyl carbazole tethered rhodanine derivatives as direct inhibitors of *Mycobacterium tuberculosis* InhA	Bioorganic and Medicinal Chemistry Letters	2019
55	7-Amino-2-aryl/heteroaryl-5-oxo-5,8-dihydro[1,2,4]triazolo[1,5-*a*]pyridine-6-carbonitriles:Synthesis and adenosine receptor binding studies	Chemical Biology and Drug Design	2019
56	Therapeutic potentials of A_{2B} adenosine receptor ligands: Current status and perspectives	Current Pharmaceutical Design	2019
57	Design and synthesis of novel heterofused pyrimidine analogues as effective antimicrobial agents	Journal of Molecular Structure	2019

58	Recent advances in the in-silico structure-based and ligand-based approaches for the design and discovery of agonists and antagonists of A_{2A} adenosine receptor	Current Pharmaceutical Design	2019
59	Synthesis of 4,6-disubstituted pyrazolo[3,4-*d*]pyrimidine analogues: Cyclin-dependent kinase 2 (CDK2) inhibition, molecular docking and anticancer evaluation	Journal of Molecular Structure	2019
60	Ligand- and structure-based *in silico* approaches to identify the potential kinesin spindle protein (KSP) inhibitors as anticancer agents	Journal of Biomolecular Structure and Dynamics	2018
61	Copper-catalyzed self-condensation of benzamide: domino reactions towards quinazolinones	European Journal of Organic Chemistry	2018
62	Design and synthesis of novel thiadiazole-thiazolone hybrids as potential inhibitors of the human mitotic kinesin Eg5	Bioorganic and Medicinal Chemistry Letters	2018
63	Synthesis, anticancer evaluation, and molecular docking studies of some novel 4,6-disubstituted pyrazolo[3,4-*d*]pyrimidines as cyclin-dependent kinase 2 (CDK2) inhibitors	Bioorganic Chemistry	2018
64	Crystal structure of the Eg5 - K858 complex and implications for structure-based design of thiadiazole-containing inhibitors	European Journal of Medicinal Chemistry	2018
65	Synthesis, Adenosine receptor binding and molecular modeling studies of novel thieno[2,3-*d*]pyrimidine derivatives	Chemical Biology and Drug Design	2018
66	Synthesis and adenosine receptors binding studies of new fluorinated analogues of pyrido[2,3-*d*]-pyrimidines and quinazolines	Medicinal Chemistry Research	2018
67	An appraisal on synthetic and pharmaceutical perspectives of pyrazolo[4,3-*d*]pyrimidine scaffold	Bioorganic and Medicinal Chemistry	2018
68	Synthesis, antiproliferative activity and docking study of novel rhodanine derivatives as Bcr-Abl T1351 inhibitors	Research on Chemical Intermediates	2017

69	An insight on synthetic and medicinal aspects of pyrazolo[1,5-*a*]pyrimidine scaffold	European Journal of Medicinal Chemistry	2017
70	Dehydrozingerone inspired styryl hydrazine thiazole hybrids as promising class of antimycobacterial agents	ACS Medicinal Chemistry Letters	2016
71	Development and validation of a specific RP-HPLC method for the estimation of γ-aminobutyric acid in rat brain tissue samples using benzoyl chloride derivatization and PDA detection	Acta Chromatographica	2015
72	Synthesis, anti-inflammatory evaluation and docking studies of some new thiazole derivatives	Medicinal Chemistry Research	2014
73	Synthesis of novel pyrido[3,2-*e*][1,2,4]triazolo[1,5-*c*]pyrimidine derivatives: Potent and selective adenosine A_3 receptor antagonists	Archiv der Pharmazie	2013
74	Development and validation of RP-HPLC method for the quantitative estimation of Tolterodine tartrate in capsule formulation	RGUHS Journal of Pharmaceutical Sciences	2013
75	Pharmacophore based 3D-QSAR study of biphenyl derivatives as non-steroidal aromatase inhibitors in JEG-3 cell lines	Medicinal Chemistry	2013
76	Transesterification of trimethyl ortho- acetate: An efficient protocol for the synthesis of 4-alkoxy-2-amino- thiophene-3-carbonitriles	Tetrahedron Letters	2013
77	Development and validation of RP-HPLC method for the quantitative estimation of dorzolamide hydrochloride in ophthalmic solutions	International Journal of Pharmaceutical Research	2012
78	Alkoxyphenyl methanesulphonamides: Synthesis, antiinflammatory effect, and docking studies	Medicinal Chemistry Research	2012
79	Molecular modeling evaluation of non-steroidal aromatase inhibitors	Chemical Biology and Drug Design	2012
80	Design, microwave-assisted synthesis and *in silico* docking studies of new 4*H*-pyrimido[2,1-*b*]benzothiazole-2-arylamino-3-cyano-4-ones as possible adenosine A_{2B} receptor antagonists	Indian Journal of Chemistry	2012

81	A facile microwave-assisted synthesis of 8,9-cycloalkathieno[3,2-*e*][1,2,4]triazolo[1,5-*c*]pyrimidin-5(6*H*)-ones	Journal of Chemical Sciences	2011
82	QSAR of adenosine receptor antagonists: Exploring physicochemical requirements for binding of pyrazolo[4,3-*e*]1,2,4-triazolo[1,5-*c*]-pyrimidine derivatives with human adenosine A_3 receptor subtype	Bioorganic and Medicinal Chemistry Letters	2011
83	Synthesis, anti-inflammatory evaluation and docking studies of some new fluorinated fused quinazolines	European Journal of Medicinal Chemistry	2010

Books:

#	Book Title	Publisher	Year
1	Handbook on Nano-biomaterials for therapeutic and diagnostic applications	Elsevier	2021
2	Computation in bioinformatics and its multidisciplinary applications	Wiley-Scrivener	2021
3	Small molecules and peptide-based candidates as therapeutics and vaccines for COVID-19 Pandemic	Frontiers	2021
4	Polymers in Functional Foods and Drugs: Chemistry and Essential Applications	Wiley-Scrivener	2025
5	Chemistry and Pharmacology of Advanced Cancer Therapeutics	Wiley-Scrivener	2027 (estimated)

Chapters in Books:

#	Book Chapter Title	Publisher	Year
1	Ethics and Legal Protection of Uses of Computer Applications in Pharmaceutical Research	Academic Press-Elsevier	2018
2	Computer-Aided Prediction of Pharmacokinetic (ADMET) Properties	Academic Press-Elsevier	2018
3	Basics of Crystallization Process Applied in Drug Exploration	Academic Press-Elsevier	2018
4	Protein/Peptide Drug Delivery Systems: Practical Considerations in Pharmaceutical Product Development	Academic Press-Elsevier	2018
5	Pharmacophore development	Elsevier	2019

6	The importance of nano-materials characterization techniques	Springer	2020
7	Nanomedicines in cancer management: diagnosis, therapy and nanodrug delivery	Springer	2020
8	Nanomaterials in Nutraceuticals Applications	Springer	2020
9	Drug-Receptor Interactions	Springer	2020
10	Pharmacology of Adenosine Receptors	Springer	2020
11	Nanocarriers in novel drug delivery system	Elsevier	2021
12	Bioinformatics in cancer detection	Wiley-Scrivener	2021
13	An insight of protein structure predictions using homology modelling	Wiley-Scrivener	2021
14	Biosynthetic exosome nanoparticles isolation, characterization, and their diagnostic and therapeutic applications	Elsevier	2021
15	Recent targeted discovery of phytomedicines to manage endocrine disorder develops due to adapting sedentary lifestyle	Elsevier	2023
16	Computational Pharmaceutics	Elsevier	2024
17	Recent advances in sustainability science for environmental conservation	Elsevier	2024
18	Mechanism of antibacterial drug resistance	IGI Global Publisher	2024
19	Computer-Aided Biopharmaceutical Model Development	Elsevier	2024
20	Emergent Natural Antioxidant Therapeutics to Cope with Oxidative Stress in Alzheimer's Disease	CRC Press, Taylor & Francis Group	2025
21	Smart Polymeric Carriers for Efficient Drug Delivery	Wiley-Scrivener	2025
22	Nanopolymers for Smart Drug Delivery Applications	Wiley-Scrivener	2025
23	Polymers in Novel Drug Delivery Systems: Strategies and Enhancement of Vesicular Polymeric Nanocarrier Loaded with Bioactive Phytoconstituents for the Treatment of Rheumatoid Arthritis	Wiley-Scrivener	2025
24	Impact of Diet on Gut Microbiome and Metabolic Disorders	CRC Press, Taylor & Francis Group	2026

25	Relevant Therapeutic approaches to Chronic Renal Failure	CRC Press, Taylor & Francis Group	2026
26	Dynamic Stereochemistry: Curtin Hammett Principle, Reduction of Cyclic Ketones, Felkin and Cieplak Model	Wiley-Scrivener	2026

Patents:

#	Patent Title	Patent Number	Country	Year
1	*N*-substituted isatin hydrazones as antimycobacterial and antimicrobial agents	2016/08234	South Africa	2017
2	Pharmaceutical Compounds	PCT-International Patent Application PCT/IB2017/057437, WO2018100484	PCT-International	2018
3	In silico screening, physico-chemical and pharmacokinetic analysis of novel sulfonamides as potential antimicrobial drugs docked with protein targets: PDB: 2VF5, 1KZN and 1JIJ	2021105099	Australia	2021
4	In silico evaluation and synthesis of novel sulfonamides as promising antiviral drugs docked with COVID-19 protein targets: SARS-CoV-2 main protease	2021105627	Australia	2021
5	Computer aided drug design and green synthesis of novel pyrazole analogues as potential SARS-CoV-2 main protease inhibitors against anti COVID-19 protein targets	2021106444	Australia	2021
6	A system for prediction, prevention, and diagnosis of heart-related diseases at an early stage using deep learning	202221053088	India	2022
7	AI-enabled device for Parkinson's Disease	2024-408750-001 (filed)	India	2024

8	Liposomal formulation for site-specific drug delivery in liver cirrhosis	20-2024-100935	Germany	2024
9	Smart transdermal patch for monitoring of type 2 diabetes	6387569	UK	2024

Conferences:

#	Paper Title	Organizing Institution	Conference
1	Computer-aided Drug Design (CADD) Approaches for New Era of Medication	Karunya Institute of Technology and Sciences, India	International Conference Webinar, 2020
2	Computational tools in medicinal chemistry: Concepts and applications	Arulmigu Kalasalingam College of Pharmacy, India	International Virtual Learning Series, 2020
3	Computer-aided drug design (CADD) Approaches for New Era of Medication	Roland Institute of Pharmaceutical Sciences, Berhampur, Odisha, India	AICTE Sponsored Online Faculty Development Program, 2021
4	Artificial intelligence in Drug Development: Recent trends and Future Perspective	Roland Institute of Pharmaceutical Sciences, Berhampur, Odisha, India	AICTE Sponsored Online Faculty Development Program, 2021
5	Artificial intelligence in Drug Design and Discovery	V.V. Vanniaperumal College for Women, Tamilnadu, India	DBT sponsored Online Popular Lecture Series, 2022
6	Artificial Intelligence in Drug Design and Synthesis	Isra University, Amman, Jordan	1st International Conference of the Faculty of Sciences & Faculty of Pharmacy, 2022
7	Artificial Intelligence in Design and Synthesis of Drugs	Shree Venkateshwara College of Paramedical Sciences-College of Pharmacy, India	One day seminar, 2023

8	Bridging academia and industry: Effective networking techniques	University of Cyberjaya, Malaysia	One day seminar, 2024
9	Computational design of a novel inhibitor against COVID	Al-Ain University, Abu Dhabi, UAE	Second AAU International Conference on Pharmacy and Biomedical Sciences, 2025
10	The Role of Artificial Intelligence in Pharmacy and Automation of Drug Information	Prince Hamza Hospital, Amman, Jordan	Training event, 2025
11	Drug Design and Medicinal Chemistry of Novel Compounds & tethering to AI	Isra University, Amman, Jordan	Expert Lecture, 2025
12	AI-driven Alzheimer's Disease prediction and rational drug design	Shree Venkateshwara College of Paramedical Sciences-College of Pharmacy, India	One day Conference, 2025

Supervision of Theses:

#	Year	University	Thesis Title	Student Name
1	2012	Karpagam University, India	Analytical method development and validation for related substance of pemetrexed disodium injection by RP-HPLC	Rakesh Gupta
2	2012	Karpagam University, India	Development and validation of bioanalytical method for estimation norgestrel in human k_2- EDTA – plasma using LC-MS/MS method	Divya Siriparapu
3	2012	Karpagam University, India	Analytical method development and validation for the quantitative estimation of dorzolamide hydrochloride in ophthalmic solution form by RP-HPLC	T. Lingaraj
4	2012	Karpagam University, India	Analytical method development and validation for the quantitative estimation of tolterodine tartrate in capsule formulation by RP-HPLC	M. Chandrasekar

5	2012	Karpagam University, India	Liquid chromatography-mass spectrometric (LC-MS) studies on combination of atorvastatin and metoprolol and its stress degradation products	M. Arun Kumar
6	2017	University of KwaZulu-Natal, South Africa	Design, synthesis and evaluation of novel thiadiazoline-thiazolone hybrids as kinase inhibitors	Sam Pretty Khathi
7	2020	Al-Balqa Applied University, Jordan	Synthesis of novel biologically active heterocyclic compounds	Mohammed J. Abunuwar
8	2022	ITM University, India	Formulation and evaluation of dosage form for management of kidney stones	Hema Singh
9	2022	ITM University, India	Entrapment of enzyme in gelatin gel (pepsin)	Prashant Sharma
10	2022	ITM University, India	Formulation and in vitro evaluation of Divalproex sodium bilayered tablets	Rajveer Singh Rajput
11	2022	ITM University, India	Formulation and evaluation or optimization of oxcarbazepine liquisolid compacts	Ranjit Singh Rajput
12	2022	ITM University, India	Formulation development and evaluation of Midazolam injection BP (1 mg/ml)	Rishiraj Saxena
13	2022	ITM University, India	Formulation and evaluation of Telmisartan fast dissolving tablets	Hammad Mahmood

Community Service Activities

#	Duration	Activity
1	16th May 2023	Joint scientific day of the faculty of Allied Medical Sciences and Faculty of Pharmacy at Philadelphia University, Amman, Jordan
2	19th November 2023	An awareness day at Utopia International School and Kindergarten, Al-Salt, Jordan

Personal Information

Name	Balakumar Chandrasekaran
Place and Date of Birth	India, 01-06-1981
Nationality	Indian
Marital Status	Married
Address	Amman
Work Tel No.	+96253821100 - 1490
Mobile:	+962-781199692
Postal Address	Al-Jubeiha, Amman, Jordan
Links	ORCID: https://orcid.org/0000-0003-4198-8679 Scopus: https://www.scopus.com/authid/detail.uri?authorId=36614134400 Google Scholar: https://scholar.google.com/citations?hl=en&user=2f7FaFEAAAAJ (h-index = **32**; i10-index = **65**; citations: **3537**) (Recognized as Top 2% scientists Elsevier & Stanford University Survey_2024 & 2025)