DR H. S. SANTOSH KUMAR

ASSOCIATE PROFESSOR · BIOTECHNOLOGY & BIOINFORMATICS

Systems biology and AI-driven drug discovery researcher, advancing precision biotechnology and academic leadership from regional to global platforms.

SYSTEMS BIOLOGY COMPUTER AIDED DRUG DESIGN MULTIOMICS DATA DRIVEN ASSAY DESIGN AND VALIDATION AI ENTHUSIAST

AICTE-funded Co-PI (INR 22 Lakh)	VGST-GoK COVID-19 drug-repurposing grant	36 peer-reviewed publications	International copyright in 2024

CONTACT

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Affiliation: Kuvempu University, Karnataka, India

TEACHING: **19+ yrs:** Postgraduate & curriculum leadership
RESEARCH : **24+ yrs:** Systems biology & bioinformatics
PUBLICATIONS: **36 -** Peer-reviewed journal articles
SUPERVISION-**5 PhD:** 1 awarded · 1 Submitted · 5 Pursuing · 18 MSc theses
CONFERENCE PRESENTATIONS:**56:** Oral, Poster & Invited talks

RESEARCH FOCUS

- Network-based drug target discovery
- Computer-aided drug design & MD
- Microbiome–plant–soil interactions
- Plant tissue culture
- Integrated Genomics

KEY ACHIEVEMENTS

- PI/Co-PI on AICTE & VGST-GoK funded projects.
- International copyright on computational pipeline (2024).
- Young Researcher Awardee by InSc, New Delhi
- Designed NEP-aligned biotechnology curricula at UG & PG levels.
- Organized international and national conferences/workshops.

PROFESSIONAL PROFILE

Associate Professor of Biotechnology and Bioinformatics with close to two decades of postgraduate teaching and over two decades of research experience spanning systems biology, network-based drug target discovery, and plant-microbiome interactions. Leads competitively funded research projects, supervises doctoral and master's scholars, and contributes to institutional strategy through curriculum innovation and academic governance.

ACADEMIC TRAJECTORY

Associate Professor · Biotechnology & Bioinformatics

Kuvempu University · Dec 2020 – Present

- Department Chairman (2023–2025); strategic roles in NcRF guideline, vision document, and student handbook.
- Lead postgraduate teaching in Genomics & Proteomics, Chemistry of Biomolecules & Cellular Metabolism, and project-based learning with 100% documented teaching engagement.
- Principal Investigator / Co-PI on AICTE-funded Kashyapiya Krishi paddhati project and VGST-GoK COVID-19 drug repurposing project.
- Supervise 5 PhD candidates (1 degree awarded; 1 thesis submitted) and 18 MSc dissertations.

Assistant Professor · Biotechnology

Kuvempu University · Dec 2006 – Dec 2020

- Built an independent research program in systems-level functional genomics and comparative proteomics.
- Delivered core PG biotechnology and bioinformatics courses and mentored project-based research.
- Designed NEP and SEP UG Biotechnology curricula and PG Bioinformatics curricula for Kuvempu University and partner institutions.

Scientist

Connexious Life Sciences Pvt. Ltd. · 2006

- Industry-oriented projects in applied biotechnology and bioinformatics, strengthening translational outlook.

Senior Research Fellow

IIHR, Bengaluru · 2005 – 2006

- Isolation and characterization of plant viruses and their genome analysis.

EDUCATION

Ph.D. in Biochemistry

Kuvempu University · 2017

Advanced Diploma in Bioinformatics (First Class · 69.5%)

Madurai Kamaraj University · 2005

M.Sc. in Biochemistry (First Class · 69%)

Kuvempu University · 2004

B.Sc. (Botany, Microbiology, Biochemistry)

Kuvempu University · 2002

PROFESSIONAL DEVELOPMENT

- Computational Genomics: Path to Precision – IIIT Hyderabad (2025).
- Understanding Microbiome Diversity through Metagenomics – Gene Spectrum Life Sciences, 4-week program (2024).
- Statistical Modeling with R – IIIT Allahabad, 7-day workshop (2023).
- Recent Trends in Bioinformatics – NIT Warangal (2022).

RESEARCH & GRANTS

Research integrates systems biology, network analysis, and computational chemistry to understand antimicrobial resistance, inflammation, and plant–microbiome health, aligning with global health and sustainable agriculture priorities.

AICTE – Indian Knowledge System (Ongoing)

A combinatorial approach towards the management of soil fertility, microbiome and plant health as per Kashyapiya Krishi paddhati (2023–2026; INR 12 lakhs).

VGST–Government of Karnataka (Completed)

Cheminformatics and virtual screening of bridged heterocycle compounds for drug repurposing against COVID-19 (2023–2024; INR 3 lakhs; manuscript communicated).

Drug target discovery Antibiotic resistance Microbiome & soil health Computational pipelines

SELECTED PUBLICATIONS

- Domain Architecture Based Methods for Comparative Functional Genomics Toward Therapeutic Drug Target Discovery, *Journal of Molecular Evolution*
- Comparative analysis of Rosetta Stone events in *Klebsiella pneumoniae* and *Streptococcus pneumoniae* for drug target identification, *Beni-Suef University Journal of Basic and Applied Sciences*
- Molecular docking studies of gyrase inhibitors: weighing earlier screening bedrock, *Insilco Pharmacology*

- High-throughput screening and molecular dynamics simulations of natural products targeting LuxS/AI-2 system in *Helicobacter pylori*, *Journal of Biomolecular Structure and Dynamics*
- Early diagnostic and prognostic biomarkers for gastric cancer: systems-level molecular basis from chronic atrophic gastritis to cancer, *Journal of Genetic Engineering and Biotechnology*
- Additional contributions in antimicrobial peptides, insecticide resistance, desiccation tolerance, and metal-exposure biomarkers (total 36 peer-reviewed papers).

(Detailed list of publication is available at https://kuvempu.irins.org/profile/81799)

TEACHING & CURRICULUM INNOVATION

- Coordinated and delivered PG courses in Genomics & Proteomics, Chemistry of Biomolecules & Cellular Metabolism, and Minor Projects with full load compliance.
- Introduced participatory learning through group discussions, student-authored popular science articles, concept videos, and business ideation workshops.
- Designed NEP-aligned and SEP UG Biotechnology curricula and PG Bioinformatics curricula for Kuvempu University and NITTE (Deemed to be University); contributed to PG Biotechnology curriculum at Tumkur University.

INTERNATIONAL & PROFESSIONAL ENGAGEMENT

- Presented work at international meetings including the Society of Biological Chemists (India), IABMS, INBIX-ADNAT 2024, and UN-SDG aligned environmental and biomedical conferences.
- Delivered invited lectures at IIT-Madras–EMBL-EBI Winter School, University of Mysore, University of Calicut, NITTE (Deemed to be University), and regional colleges.
- Serves on Boards of Examination at Davanagere, Tumkur, Mangalore, and Kuvempu Universities; Chief Superintendent for PG examinations in Biotechnology.
- Organized an international conference, a national workshop, and multiple university-level workshops; member of several academic and fact-finding committees.
- Reviewer for international journals (Medinformatics, Research in Pharmaceutical Sciences, Heliyon, BMC Complementary and Alternative Medicine) and Scientific Research Committee member at Valyou Products Pvt. Ltd.

INTELLECTUAL PROPERTY

Joint Copyright **SW-19912/2024** for "In silico prediction of secreted effector and elicitor candidates for understanding plant–pathogen interactions," reflecting the development of a novel computational pipeline with translational potential in plant health and biosecurity.

PERSONAL

- Nationality: Indian.
- Date of Birth: 20 June 1981
- Marital Status: Married.