

K. PRAKASH NARAYANA REDDY

[Ph.D., NET, APSET, & INSPIRE Faculty (Former)]

Lecturer

Department of Microbiology

Dr. V.S. Krishna Govt. Degree College

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OBJECTIVE

With a strong scientific commitment and dedication to the duty, I intend to contribute in my utmost capacity and capabilities to the academic and scientific growth of state of Andhra Pradesh and India. I have acquired skills at balancing both teaching, scientific and interpersonal skills with positive attitude. I am confident that I will contribute to my utmost capacity for personal growth and for the growth of my employer.

PRESENT STATUS

Working as Lecturer in Microbiology Department at Dr. V.S. Krishna Govt. Degree College (Autonomous), Visakhapatnam and engaged in teaching theory, laboratories classes, administrative duties and R & D activities. Presently I am engaged on a research topic “Development of Multiple Antigen Presentation Approach and evaluation for combating serious *Staphylococcus aureus* infections in murine model”

AREAS OF SPECIALIZATION: Diagnostic Microbiology, Subunit vaccine design and evaluation, Probiotics & health, Microbial Immunology and Vaccinology

CURRENT AREA OF RESEARCH: Development of Subunit Vaccines against *Staphylococcus aureus* and evaluation in mouse model

PROFESSIONAL EXPERIENCE

Position	From	To	Specialization	Institution/University	Total duration
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Lecturer	09 th Sep, 2021	Till date	Microbial immunology, subunit vaccines	Dr. V.S. Krishna Govt. Degree College, Visakhapatnam	10 months
INSPIRE Faculty	4 th Oct, 2017`	08 th Sep, 2021	Microbial immunology, <i>S. aureus</i> infection biology	Vignan's Foundation for Science, Technology and Research (Deemed to be University)	3 Years, 11 Months, 5 days
SERB – National Postdoctoral Fellow	22 nd March, 2016	3 rd October, 2017	Mucosal recombinant vaccine	Vignan's Foundation for Science, Technology and Research (Deemed to be University)	1 Year and 6 Months
Research Scientist/ Study director	1 st Decemb er, 2015	21 st March, 2016	Preclinical toxicity studies on pharmaceutical drugs	Sugen Life Sciences Pvt. Ltd., Tirupati	4 Months
DBT – Research Associate	1 st July, 2015	30 th November , 2015	Effect of probiotics on Metabolic disorders	Central Food Technology Research Institute (CSIR – CFTRI), Mysore	5 Months

ACADEMIC REVIEW

Qualification	Year of passing	Specialization	Institution/University	Class (% or CGPA)
Ph.D (CSIR – JRF & SRF)	2010-2015	Microbiology	Ph.D awarded by Bharathair University, Coimbatore, Tamil Nadu Ph.D work carried out at Defence Food Research Laboratory, Mysore,	Na

			Karnataka	
M.Sc in Biosciences	2007-2009	Biotechnology	Sri Sathya Sai University, Prashanti Nilayam, A.P.	O grade (4.71/5.00); 86 %
B.Sc in Biosciences	2004-2007	Botany, Zoology and Chemistry	Sri Sathya Sai University, Prashanti Nilayam, A.P.	O grade (4.65/5.00); 82.5 %
Intermediate	2002-2004	Biology, Physics and Chemistry	Vidyadarshini Junior College, Pulivendula, A.P	First (90.7 %)
SSC	2002	--	Sri Aurobindo High School, Pulivendula, A.P	First (71.6 %)

Ph.D THESIS TITLE:

“Construction and Characterization of Recombinant Immunodominant Antigens of *Staphylococcus aureus* for Detection and Prophylactic Functions”

MAIN OUTCOMES

- First to propose and prove the efficacy of IgY antibodies from chickens in eliminating SpA interference completely
- Two different formats (double antibody sandwich ELISA and conventional ELISA) were reported for eliminating SpA interference completely employing IgY antibodies
- IC-PCR-ELISA developed in this study for SEA toxin developed is the most sensitive immunoassay reported till date
- Gene fusion strategy by Heterostaggered PCR developed in this study is the only alternative strategy to SOE-PCR available till date and it is easier and more convenient than SOE-PCR
- SEA-TSST fusion protein constructed and evaluated in this thesis is another therapeutic intervention in combating the menace of *S. aureus*

PROJECTS/ INTERNSHIPS

Project/	Year	Subject area	Duration	Institute
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Course				
Masters Dissertation	2009	Functional properties of indigenous Mushrooms of India	10 months	Sri Sathya Sai University, Prasanthi Nilayam, A.P
Project Associate	2015	Validation of ABT (antibiotic) Choice for Bovine mastitis	2 months	Translational Research Platform for Veterinary Biologicals (TRPVB-TANUVAS), Chennai, Tamilnadu

AWARDS/ HONOURS

- Awarded with joint **UGC-CSIR- JRF & NET** eligibility conducted in December, 2008
- Secured All India Rank of 264 (97.8 percentile) in **GATE-2009** exam
- Awarded with **Second best research article** published in laboratory during 2012 at Annual Lab Raising Day function conducted on December 28, 2013
- Awarded with **Best Technology Group Award** during the year 2012 at Annual Lab Raising Day function conducted on December 28, 2013
- Conferred with **Project Associate** award offered by Translational Research Platform for Veterinary Biologicals (TRPVB-TANUVAS), Chennai during 2015
- Conferred with **DBT-Research Associateship** offered by IISc, Bangalore during 2015
- Awarded with **SERB-National post-doctoral fellowship** offered by DST during March, 2016
- Conferred with prestigious “**DST-Inspire Faculty Award**” on 24 July, 2017.

LIST OF PROJECTS SUBMITTED

Sl. No.	Title	Cost in lakhs	Month of Submission	Role as PI/Co-PI	Agency	Status
1.	Designing of Multi-Epitope Vaccine Candidates through Immunoinformatics Analysis and	28	March, 2022	PI	DST – SERB	Under evaluation

	Deriving their Polymeric Conjugates for Inducing Comprehensive B-Cell and T-Cell Immune Responses against <i>Staphylococcus aureus</i> Infections					
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Details of Projects completed

Sl. No.	Title	Cost in lakhs	Duration	Role as PI/Co-PI	Agency
1.	A Mechanistic Approach for Development of Multi-Class/Multi-Antigen Subunit Vaccine(s) and Assessment of Immunobiologic Response to Combat <i>S. aureus</i> Infections	35 lakhs	4 years (Resigned)	PI	DST – INSPIRE Faculty scheme
2.	<i>Lactococcus lactis</i> based Mucosal Vaccine Surface Displaying the Immunodominant Invasive Plasmid antigens (Ipa's) for Broad Protection against Shigellosis in a Murine Model	19.2	1 year 6 months (Resigned)	PI (National post-doctoral fellow)	DST – SERB

PUBLICATIONS AND BOOK CHAPTERS (23) - TOTAL IMPACT FACTOR (64.9); CITATIONS – (391); *h*-INDEX - 10

1. Reddy, P.N., Shekar, A., Kingston, J.J., Sripathy, H.M., & Batra, H.V. (2013). Evaluations of IgY capture ELISA for sensitive detection of Alpha hemolysin of *Staphylococcus aureus* without staphylococcal protein A interference. *Journal of Immunological Methods*, 391: 31-38. **IF: 2.287**
2. Reddy, P.N., Ramlal, S., Sripathy, H.M., & Batra, H.V. (2014). Development and evaluation of IgY immunocapture ELISA for detection of *Staphylococcus aureus* enterotoxin A devoid of protein A interference. *Journal of Immunological Methods*, 408: 114-122. (ISSN: 18727905; UGC No.: 28580). **IF: 2.287**

3. **Reddy, P.N.**, Ramlal, S., Sripathy, H.M., & Batra, H.V. (2012). A simple and universal ligation mediated fusion of genes based on hetero-staggered PCR for generating immunodominant chimeric proteins. *Gene*, 509: 104-109. **IF: 3.913**
4. **Reddy, P. N.**, Nagaraj, S., Sripathy, M. H., & Batra, H. V. (2015). Use of biotin-labeled IgY overcomes protein A interference in immunoassays involving *Staphylococcus aureus* antigens. *Annals of Microbiology*, 65(4), 1915-1922. **IF: 2.112**
5. Babu, L., **Reddy, P.**, Murali, H. S., & Batra, H. V. (2013). Optimization and evaluation of a multiplex PCR for simultaneous detection of prominent foodborne pathogens of Enterobacteriaceae. *Annals of Microbiology*, 63(4), 1591-1599. **IF: 2.112**
6. Shylaja, R., Thakasi, D. K. K., Murali, H. S., **Reddy, K. P. N.**, & Batra, H. V. (2012). Application of a chimeric protein construct having enterotoxin B and toxic shock syndrome toxin domains of *S. aureus* in immunodiagnostics. *Indian Journal of Microbiology*, 52(3), 449-455. **IF: 2.461**
7. **Reddy, P. N.**, Paul, S., Sripathy, M. H., & Batra, H. V. (2015). Evaluation of recombinant SEA-TSST fusion toxoid for protection against superantigen induced toxicity in mouse model. *Toxicon*, 103, 106-113. **IF: 3.035**
8. Dirisala, V. R., Nair, R. R., Srirama, K., **Reddy, P. N.**, Rao, K. S., Kumar, N. S. S., & Parvatam, G. (2017). Recombinant pharmaceutical protein production in plants: unraveling the therapeutic potential of molecular pharming. *Acta Physiologiae Plantarum*, 39(1), 18. **IF: 2.736**
9. Kollati, Y., Ambati, R. R., **Reddy, P. N.**, Kumar, N. S. S., Patel, R. K., & Dirisala, V. R. (2017). Congenital hypothyroidism: facts, facets & therapy. *Current pharmaceutical design*, 23(16), 2308-2313. (ISSN: 13816128; UGC No.: 14350). **IF: 3.310**
10. **Reddy, P. N.**, Srirama, K., & Dirisala, V. R. (2017). An update on clinical burden, diagnostic tools, and therapeutic options of *Staphylococcus aureus*. *Infectious Diseases: Research and Treatment*, 10, 1179916117703999.
11. Patra, R., **Reddy, P. N.**, Kumar, N. S., & Dirisala, V. R. (2018). Novel Validated RP-HPLC Method for Simultaneous Estimation of Valsartan & Gliclazide in Bulk and Dosage Forms. *Current Pharmaceutical Analysis*, 14(4), 412-418. **IF: 0.743**

12. Babu, L., Uppalapati, S.R., Sripathy, M.H., & **Reddy, P.N.*** (2017). Evaluation of Recombinant Multi-epitope Outer Membrane Protein-based *Klebsiella pneumoniae* Subunit Vaccine in Mouse Model. *Frontiers in Microbiology*, 8, 1805. **IF: 6.064**
13. Makam, S., Srirama, K., Dirisala, V. R., & **Reddy, P. N.*** (2018). An efficient method for integration of PCR fragments into adjacent or overlapping restriction sites during gene cloning. *3 Biotech*, 8(4), 197. **IF: 2.893**
14. Kota, R. K., Ambati, R. R., Yalakurthy, V. V. A. K., Srirama, K., & **Reddy, P. N.*** (2018). Recent advances in probiotics as live biotherapeutics against gastrointestinal diseases. *Current pharmaceutical design*, 24(27), 3162-3171. **IF: 3.310**
15. Aradhya, S., **Reddy, P.**, Ramlal, S., Nagaraj, S., Mondal, B., & Murali, H. S. (2018). Development and Evaluation of IgY Immunocapture PCR for Detection of Enteropathogenic E. coli Devoid of Protein A Interference. *Journal of Pure and Applied Microbiology*, 12(3), 1109-1119.
16. Nagaraj, S., **Reddy, P. N.**, Ramlal, S., Paul, S., Peddayelachagiri, B., & Parida, D. M. (2019). A novel tandem repeat cloning technique for creation of multiple short peptide repeats to differentiate closely related antigens. *Journal of immunological methods*, 469, 11-17. **I.F: 2.287**
17. Kota, R. K., Srirama, K., & **Reddy, P. N.*** (2019). IgY antibodies of chicken do not bind staphylococcal binder of immunoglobulin (Sbi) from Staphylococcus aureus. *Annals of Microbiology*, 69(5), 531-540. **I.F: 2.112**
18. Venkateswarulu, T. C., Peele, K. A., Krupanidhi, S., **Reddy, K. P. N.**, Indira, M., Rao, A. R., Ravuru, B.K., & Prabhakar, K. V. (2020). Biochemical and molecular characterization of lactase producing bacterium isolated from dairy effluent. *Journal of King Saud University-Science*, 32(2), 1581-1585. **I.F.: 3.829**
19. **Reddy, P. N.**, Makam, S. S., Kota, R. K., Yatung, G., Urs, R. M., Batra, H., & Tuteja, U. (2020). Functional characterization of a broad and potent neutralizing monoclonal antibody directed against outer membrane protein (OMP) of *Salmonella typhimurium*. *Applied Microbiology and Biotechnology*, 104(6), 2651-2661. **I.F.: 5.560**
20. Kota, R. K., **Reddy, P. N.***, & Sreerama, K. (2020). Application of IgY antibodies against staphylococcal protein A (SpA) of Staphylococcus aureus for detection and prophylactic functions. *Applied Microbiology and Biotechnology*, 104(21), 9387-9398. **I.F.: 5.560**

21. Bobbadi, S., Kiranmayi, C. B., **Reddy, P. N.***, & Kandhan, S. (2021). Analysis of Antibiotic Resistance and Virulence Patterns in *Klebsiella Pneumoniae* Isolated from Human Urinary Tract Infections in India. *Letters in Applied Microbiology*. **I.F.: 2.813**
22. Kota, R. K., Kolla, H. B., **Reddy, P. N.***, Samudrala, S. K., Kalagatur, N. K. (2021). Immunoinformatics Analysis and Evaluation of Recombinant Chimeric Triple Antigen Toxoid (r-HAB) against *Staphylococcus aureus* toxaemia in Mouse Model. *Applied Microbiology and Biotechnology*. **I.F.: 5.560**
23. Kolla, H. B., **Reddy, P. N.**, & Bramhachari, P. V. (2021). Dynamics of Respiratory Microbiome Profiles Contributes to Imbalance and Lung Dysbiosis in the Respiratory Tract. In *Microbiome in Human Health and Disease* (pp. 101-121). Springer, Singapore.

PATENTS FILED/ PUBLISHED (05)

1. “A dot ELISA method for specific detection of enterotoxin b producing strains of *S. aureus* in a sample”. Shylaja Ramlal, **Prakash Narayana Reddy Kudumala**, Radhika Madan Urs, Harishchandra Sripathy Murali , Harsh Vardhan Batra and Amarinder Singh Bawa (1856/DEL/2013-Published).
2. “A method for directional cloning of PCR products”. **Prakash Narayana Reddy Kudumala**, Shylaja Ramlal, Harishchandra Sripathy Murali, Harsha Vardhan Batra and Amarinder Singh Bawa (883/DEL/2012-Published).
3. “An Immunocapture Polymerase Chain Reaction (IC-PCR) Method for Identification of Protein(s)”. **Prakash Narayana Reddy Kudumala**, Shylaja Ramlal, Harishchandra Sripathy Murali and Harsha Vardhan Batra (1613/DEL/2014-Awaiting publication).
4. “A restriction & Ligation strategy for integration of DNA fragments in any cloning vector between two overlapping or Adjacent restriction sites”. **Kudumala Prakash Narayana Reddy**, Makam Sathya Narayana Shivakiran, Harishchandra Sripathy Murali & Harsh Vardhan Batra. (2719/DEL/2014-Awaiting publication).
5. Novel and specific monoplex and multiplex PCR formats for simultaneous and differential identification of *Brucella abortus*, *Brucella melitensis*, *Brucella ovis*, *Brucella suis* and *Brucella canis* irrespective of all biovars. Soumya Paul, Bhavani

PV, Madhurjya G, Sowmya N, **Prakash NRK**, Balakrishna K, Shylaja R, Murali HS and Batra HV. (1559/DEL/2015-Awaiting publication).

PAPERS PRESENTED AT INTERNATIONAL CONFERENCES (01)

1. Molecular approaches for toxin profiling of *S. aureus* from diverse sources. Batra, H.V., Shylaja, R., **Reddy, K.P.N.** In proceedings of international conference on *S. aureus* held at IISC, Bangalore in January, 2011.

IDEAS PRESENTED AT NATIONAL COMPETITIONS (01)

1. PentaFluVac- A novel, replication incompetent whole viral vaccine for human, swine and avian influenza. Bhavani, P.V., Paul, S., Sowmya, N., **Reddy, P.N.** In **DBT-BEST-ABLE** competition during October, 2014.

POSTERS PRESENTED (01)

1. “A simple and highly reliable method for directional cloning of PCR products and its application in gene splicing and recombinant protein production for toxin detection and disease diagnostics” by **Reddy, P.N.**, Shylaja, R., Batra, H.V. during International Symposium on Recent Trends in Processing and Safety of Specialty and Operational Foods held at Defence Food Research laboratory (DFRL) during November 2011.

WORKSHOPS/ QIP PROGRAMMES

1. Participant in **DBT-BEST-ABLE** work shop as a team from DFRL on **Entrepreneurship development** in Bangalore, Karnataka
2. Work shop on “Regulatory Aspects on Development of Phyto-Pharmaceuticals” conducted by CDSA in Mumbai on January 12, 2016
3. Participated in 5 day “Quality Improvement Programme” on “**Genome Editing by CRISPR – CAS9**” organized by Centre for Continuous Education (CCE), Indian Institute of Science (IISc), Bengaluru from 18 – 22nd November, 2019.

PRODUCTS DEVELOPED

1. **Staph Super Ag- WB-** developed for detection of staphylococcal enterotoxin B and toxic shock syndrome toxin of *S. aureus* in a single assay simultaneously.
2. **SEB CHECK-E-** A ELISA based test kit for detection of SEB toxin from pure cultures as well as from food samples

SCIENTIFIC AND TECHNICAL SKILLS

Vast knowledge and experience in-

- Microbiological analysis: isolation and characterization of common foodborne pathogens from clinical and environmental samples. Molecular identification of these pathogens by PCR based detection methods.
- Making of pure cultures from mixed cultures and their cultivation.
- Molecular techniques- DNA isolation and purification, plasmid isolation by mini, midi and maxi preps, excellent primer designing skills for diagnostic PCRs and cloning purposes, total RNA and mRNA extraction, mRNA to c-DNA conversion, Reverse transcriptase PCR, conventional PCR, BLAST analysis of nucleotide and protein sequences, cloning and transformation, agarose, SDS-PAGE, native PAGE and Denaturing gel electrophoresis.
- Prokaryotic cloning and expression: Acquired excellent skills in primer designing for cloning of any prokaryotic genes in *E. coli* based expression systems. Affinity purification of 6xhis- tagged, biotin labeled and GST tagged recombinant proteins.
- Protein concentration, purification, buffer exchange, SDS-PAGE and Western blot analysis techniques.
- Care and handling of experimental animals (Balb/C mice and chickens), bleeding, and antibody harvest from blood and egg yolks, feeding of mice, immunization by intramuscular, intraperitoneal and subcutaneous routes.
- Multiplex PCR development capable of detecting simultaneously up to 6 different pathogens or 6 different targets of same bacteria.
- Immunoassay development such as direct and indirect ELISA, dot ELISA, sandwich ELISA, competitive ELISA and development of immune-PCR techniques for sensitive detection of bacterial pathogens and bacterial toxins.
- Aptamer development and evaluation.
- Basic staining and immuno-histochemistry techniques
- Light microscopy of bacterial, fungal and animal cells, fluorescent microscopy for FISH analysis.
- Basic statistical analysis and interpretation of experimental data; statistical tools such as MS Excel and Graphpad prism 5.0
- *In silico* tools such as primer designing, BLAST, Primer 3, Genrunner 6.0, NEB cutter, VEC screen etc.

- Very efficient at MS word and PPT with good English writing and speaking skills
- Acquired efficient skills in scientific and official writing and articulation

TRAINING PROGRAMS

Sl. No.	Position	Postgraduate/ Undergraduate	Sole instructor or with others	Year
1.	Taught Molecular Biology and Cell Biology to II year B.Tech Biotechnology students	Undergraduate	Sole Instructor	December, 2017 – Till date
2.	Handled practical courses in Immunology, Microbiology and Bioprocess Engineering for IV and III year B.Tech Biotechnology students at VFSTR University	Under graduate	Sole instructor	April 2016-till date
3.	Teaching in UGC-CSIR coaching classes for life sciences students, at Maharanis post graduate college for Women, Mysore-11.	Post graduate students	With others	2013
4.	As instructor at work shop organized on providing “ Hands on training in basic and applied Molecular biology techniques ” at Dept. of Biosciences, Sri Sathya Sai University , Puttaparthi, AP.	Under graduate and post graduate students	With others	2012
5.	As instructor during the capsule training course conducted at Defence Food Research Laboratory, Mysore	Staff of Army units and Composite Food Laboratories	With others	2011
6.	As instructor during the capsule training course conducted at	Staff of Army units and	With others	2012

Defence	Food	Research	Composite Food
Laboratory, Mysore			Laboratories

INVITED LECTURES

1. Delivered an invited lecture on “**Laboratory Animal Science for Education and Research**” to students and staff of Sri Padmavathi Mahila Vishwa Vidyalayam on 05 Feb, 2016

POST GRADUATE THESIS SUPERVISED

Sl. No.	Name of student	Title of thesis	M.Sc/ B.Sc	Year of completion	Co-guide (if any)
1.	Chaitra Kashyap	Isolation and characterization of <i>Staphylococcus aureus</i> strains from food and environmental samples of Mysore region	M.Sc	2011	Dr. R. Shylaja, Scientist-C, DFRL, Mysore.
2.	Aravind Shekar	Application of truncated recombinant alpha-hemolysin from <i>Staphylococcus aureus</i> for detection and prophylactic function	M.Sc	2012	Dr. Joseph Kingston, Scientist-D, DFRL, Mysore.
3.	Roopika Aravind	Study of efficacy of salt inducible host with IPTG inducible hosts by cloning of PA gene of <i>Bacillus anthracis</i>	M.Sc	2013	Dr. R. Shylaja, Scientist-C, DFRL, Mysore.
4.	Rohini Krishna	Development of co-agglutination assay for selective detection of <i>Shigella</i> in dysentery patients	M.Tech	Till date	Prof. S. Krupanidhi, Head – Department of Biotechnology, Vignan’s University.

MEMBERSHIP IN PROFESSIONAL BODIES

Life member of Association of Microbiologists of India (AMI)

References

Dr. Harsh Vardhan Batra (Ph. D Guide)

Scientist H & Outstanding scientist

Former Director

Defence Food Research Laboratory,

Mysore- 570011.

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Email: drharshvardhanbatra@gmail.com

Prof. Dr. S. Krupanidhi

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Dr. M.S. Shivakiran

Manager,

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Personal Details

1. Name of the candidate: K. Prakash Narayana Reddy

2. Fathers name: K. Muni Reddy

3. Date of birth: 15/5/1987

4. Gender: Male

5. Marital status: Married

6. Category: General

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8. Permanent address:

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