



CURRICULUM VITAE

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NIRMALA NAIR

PROFILE TITLE

Molecular Biologist with more than 2 years of teaching experience and 14 years of industrial research in Life sciences and Biotechnology

OBJECTIVE

To impart my experiences in the Biotechnology industry to the young generation thereby inspiring and facilitating them into cutting edge research besides being an innovator in the field of education

PROFILE SUMMARY

A biotechnologist who is equally passionate about teaching and research. Expert in the areas of genetic engineering, molecular cloning, protein expression and protein characterization.

PROFILE SNAPSHOTS

- ❖ Ph. D – Biotechnology
- ❖ Genetic engineering & Molecular Biology
- ❖ Industrial Experience > 14 yrs
- ❖ UGC-CSIR fellow
- ❖ Teaching and training experience
- ❖ Protein characterization
- ❖ Microbial process development
- ❖ PCR Applications

EDUCATION

Degree	Year of completion	Specialization	College/ Institute	University
B. Sc	1991	Microbiology & Biochemistry	Sophia College	Mumbai University
M. Sc	1993	Biotechnology	M. S. University of Baroda	M. S. University of Baroda
Ph. D	2000	Biotechnology	Vittal Mallya Scientific Research Foundation	Mysore University

TEACHING AND TRAINING EXPERIENCE

Institution: The Oxford College of Science

Sept '2015 – Till date

Assistant Professor –PG Department of Biotechnology

Responsible for teaching and training Biotechnology Finishing School (BTFS) Students to get them industry ready. Teaching M.Sc., students Molecular Biology and Genetic Engineering.

Designed and developed course content and tutored post-graduate students in the use of algorithms and various tools leading them to a diploma in bioinformatics.

Trained more than 15 M.Sc students from Mysore and Bangalore universities for their dissertations and summer projects

INDUSTRIAL EXPERIENCE:

1. Company: Avesthagen Ltd.,

June '2009 –Aug 2015

Senior Scientist

- Responsibilities were to develop protein analytical methods for characterization and comparative analysis of Biosimilars. This included the development of orthogonal methods for demonstration of identity, safety and efficacy of the molecules according to ICH guidelines. Our routine activities included in-process quality control (IPQC), comparative analysis and complete characterization of the drug substance & drug product and stability studies. Preparation of Standard Operating Procedures (SOPs), Method Of Analysis (MOA), Method Development Reports (MDR), Data Recording Systems (DRS) etc., and preparation of reports for various regulatory submissions and approvals.

2. Company: Avesthagen Ltd., Bangalore

June '2008 – June '2009

Project Manager

- Responsibilities were to develop upstream processes in microbial systems including *E. coli*, *Saccharomyces cerevisiae* and *Pichia pastoris*. This involved cloning and expression of therapeutic proteins like GCSF, PDGF, PTH and Ranibizumab (biosimilars) in suitable systems and optimization of the same. Our routine activities included vector construction, transformation of the microbial system, media optimization, protein expression and analysis.

3. Company: bigtec private Ltd., Bangalore

Jan '2001 to Sept '2007

Unit Leader

- Responsibilities were to develop a commercially viable process for production of recombinant human insulin in *Pichia pastoris*. Our routine activities included genetic engineering, growth and screening experiments, media optimization, fermentation, protein purification and characterization

AREAS OF RESEARCH & EXPERIENCE

Microbiology

- Familiar with E. coli, Saccharomyces cerevisiae, Pichia Pastoris as expression systems
- Familiar with genetic elements involved in transcription and expression of foreign genes in microbial systems
- Familiar with media components, growth parameters and their optimization for expression and scale-up of microbial processes

Cell Biology

- Familiar with cellular processes involved in the protein expression and secretion in prokaryotic and eukaryotic systems
- Familiar with cellular processes involved in protein translocation, protein folding and protein degradation
- Familiar with post-translational modifications of proteins like glycosylation, phosphorylation & disulphide bridges and their characterization using analytical methods
- Familiar with development of cell based receptor binding assays

Immunology

- Familiar with production of polyclonal and monoclonal antibodies and their purification
- Familiar with immunoassays like ELISA, RIA and WB for the characterization of proteins
- Familiar with different approaches to humanization of antibodies
- Familiar with ADCC and CDC assays for monoclonal antibodies

Genomic Research

- Limited familiarity with genomic sequence analysis and methodologies.
- Familiar with a few bioinformatic tools used for genome and protein sequence analysis

Clinical trials

- Exposure to clinical trial protocols and regulatory guidelines for recombinant therapeutic proteins and biosimilars
- Familiar with ICH, EMEA guidelines and the use of pharmacopoeias for the development and approvals of Biosimilars

Protein Chemistry

- Familiar with protein analysis and characterization methods including electrophoresis (PAGE, 2D, IEF), HPLC (RP, SEC), spectroscopic analysis (Far & near UV), sialic acid estimation, impurity analysis, peptide mapping, glycan analysis etc.,

Process Development

- Expertise in complete process development for production of therapeutic proteins in microbial and mammalian systems

Soft Skills

- Familiar with routine Microsoft applications for documentation and report generations
- Familiar with routine DNA and Protein sequence analysis tools & user – interfaces.

Team Management

- Monitoring the performance of team members to ensure process efficiency and meeting of targets
- Creating and sustaining a dynamic environment that motivates high performance amongst team members

PUBLICATIONS

- Maity, S et. al., A non-innovator version of etanercept for treatment of arthritis, *Biologicals* (2011) 39(6): 384-95

DISSERTATIONS

- Characterization of crystal proteins from *Bacillus thuringiensis* (1991-1993) for the partial fulfillment of M. Sc degree in Biotechnology
- Investigation on heterologous protein expression and secretion in *Saccharomyces cerevisiae* - the effect of an additional copy of HSP70 (1994-2000) for the partial fulfillment of Ph. D degree in Biotechnology

FELLOWSHIPS

- UGC-CSIR Fellowship (1993-1998)
- GATE - 1993 (not availed)
- DBT Fellowship (1991-1993)

PERSONAL DETAILS

- Date of Birth: 25th August 1969
- Nationality: Indian
- Marital status: Married
- Languages known: Malayalam, Tamil, Hindi, Kannada, Sanskrit
- Hobbies and Interests: Yoga, music, reading, spirituality and social service activities

I hereby declare that all the information furnished above are correct to the best of my knowledge and belief

NIRMALA NAIR