Pichia Expression and Bioprocess engineering group

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Professional Education

Sl No.	Institution Place	Degree Awarded	Field of Study
1.	Coimbatore Institute of Technology, Bharathiar University	B.Tech	Chemical Engineering
2.	Anna University	M.Tech	Biotechnology
3.	Anna University	Ph.D	Faculty of Technology - Biotechnology

Position and Honors

Sl No.	Institution Place	Position	From (Date)	To (date)
1	Tuticorin Alkali Chemicals and Fertilisers Limited	Senior Scientist	August 1996	March 2002
2.	Centre for biotechnology, Anna University, Chennai	Assistant professor	April 2002	December 2009
3.	Centre for Biotechnology, Anna University, Chennai	Professor	December 2009	Till date

Professional Experience and Training related to research field

- Trained in Swiss Federal Institute of Technology, Zurich, Switzerland for 3 months in Medium Design and optimization
- Trained in Swiss Federal Institute of Technology, Zurich and Lausanne, Switzerland for 4 months in Online analysis of Bioprocess such as Flow Injection Analysis, Online Calorimetry, Online GC etc.
- Trained in Swiss Federal Institute of Technology, Lausanne, Switzerland for 1 month on Bioprocess Automation

Technology Transfer:

- Recombinant expression and process development of *C.antarctica* Lipase B (CALB) enzyme in *Pichia pastoris* – Technology transfer agreement signed with **M/s Fermenta Biotech Limited, Mumbai** and Pilot scale demonstration was successfully carried-out.

Research Guidance:

No of students Ph.D awarded: 6

No of students M.S (By research) awarded: 7

Publications :

1. **S. Meenakshisundaram** G. Suresh R. K. Fernando K. Jenny R. Sachidanandham K. Jayaraman "Metabolic response of *Bacillus sphaericus* 1593M for dual-substrate limitation in continuous and total-cell-retention cultures" (1997) Appl Microbiol Biotechnol Vol:47, pp 554-559 [Impact factor 3.280]

2. S.A. Rothen, M. Saner, **S. Meenakshisundaram**, B. Sonnleitner, A. Fiechter "Glucose uptake kinetics of *Saccharomyces cerevisiae* monitored with a newly developed FIA" (1996) Journal of Biotechnology, Vol:50, pp 1 – 12 [Impact factor 2.970]

3. M. Shanmugavelu **S. Meenakshisundram** Kunthala Jayaraman "Enhanced and constitutive expression of mosquito larvicidal protein genes of *Bacillus sphaericus* under leaky regulation of T7 expression system in *Escherichia coli*" (1997) Biotechnology Letters Vol:19, pp 341- 344 [Impact factor 1.768]

4. S. Janardhan, P. Pandiaraja, S. Thirugnanam, M. N. Balamurali, Kennedy Fernando, H. C. Mody, P. K. Desai, **S. Meenakshisundaram (✉),** P. Kaliraj (✉) "Production, purification and diagnostic application of filarial recombinant protein WbSXP-1 expressed in salt inducible *Escherichia coli*" (2007) J Ind Microbiol Biotechnol Vol:34, pp 675–683. [Impact factor 2.416]

5. K. Srinivasa Babu, Aju Antony, T. Muthukumaran, **S. Meenakshisundaram** "Construction of intein-mediated hGMCSF expression vector and its purification in *Pichia pastoris*" Protein Expression and Purification (2008) Vol:57, pp 201–205. [Impact factor 1.644]

6. Krishnan Subramanian, Chinnasamy Selvakumar, **Sankaranarayanan Meenakshisundaram**, Arun Balakrishnan, and Baddireddi Subhadra Lakshmi "Extract of *Alpinia Officinarum* suppresses enteropathogenic *Eschichia coli* (EPEC) Lipopolysaccharide (LPS) Induced Inflammation in J774 A.1 Macrophages" (2008) Journal of Health Science, Vol:54, pp 112-117. [Impact factor 0.742]

7. V. S. Kumar, **S. Meenakshisundaram**, N. Selvakumar "Conservation of cellulase enzyme in biopolishing application of cotton fabrics" 2008 Journal of the Textile Institute Vol: 99, No. 4 pp. 339–346. [Impact factor 0.381]

8. K. Srinivasa Babu, T. Muthukumaran, Aju Antony, S. D. Prem Singh Samuel, M. Balamurali,V. Murugan, S. Meenakshisundaram "Single step intein-mediated purification of hGMCSF expressed in salt-inducible *E. coli*" (2009) Biotechnol Lett, Vol: 31, No. 5, pp. 659-664 [Impact factor 1.768]

9. Krishnan Subramanian, Chinnasamy Selvakkumar, Kontham Sanathkumar Vinaykumar, Nabajyoti Goswami, **Sankaranarayanan Meenakshisundaram**, Arun Balakrishnan, Baddireddi Subhadra Lakshmi "Tackling multiple antibiotic resistance in enteropathogenic *Escherichia coli* (EPEC) clinical isolates: a diarylheptanoid from *Alpinia officinarum* shows promising antibacterial and immunomodulatory activity against EPEC and its lipopolysaccharide-induced inflammation" (2009) International Journal of Antimicrobial Agents Vol:33, pp.244–250. [Impact factor 3.787]

10. Vinayagam Vasu, Jayaraman Kumaresan, Manoharan Ganesh Babu and **Sankaranarayanan Meenakshisundaram** "Active site analysis of cis-epoxysuccinate hydrolase from Nocardia tartaricans using homology modeling and site-directed mutagenesis"(2012) Applied Microbiology and Biotechnology 93:2377–2386 [Impact factor 3.280]

11. Janardhan S, Srinivasa Babu K, Kaliraj P and **Meenakshisundaram S** "Optimization of media for expression and economic production of recombinant proteins of therapeutic and diagnostic interest in a novel osmotically inducible *E.coli* GJ 1158" (2007) Research Journal of Biotechnology Vol 2: pp 49-55. [Impact factor 0.284]

12. Ashok Kumar Prasanna Vadhana, Premsingh Samuel, Ronald M Berin, Jeyachandran Krishna, Kavitha Kamatchi, Meenakshisundaram Sankaranarayanan "Improved secretion of *Candida antarctica* lipase B with its native signal peptide in *Pichia pastoris*" (2013) Enzyme and Microbial Technology Vol. 52 pp. 177– 183 [Impact factor 2.367]

13. Premsingh Samuel, Ashok Kumar Prasanna Vadhana, Ramakrishnan Kamatchi, Aju Antony, Sankaranarayanan Meenakshisundaram "Effect of molecular chaperones on the expression of *Candida antarctica* lipase B in *Pichia pastoris*" (2013) Microbiological Research Vol.168 pp.615– 620 [Impact factor 1.993]

14. Murugan Surendarbabu and Sankaranarayanan Meenakshisundaram "Human Ubiquitin C Promoter Based Expression of Erythropoietin in CHO K1 Cell Lines: A Simple Transfectants Screening Approach" (2013) Animal Biotechnology, Vol. 24, pp.198-209 [Impact factor 0.882]

15. R. Ravishankaran, N.S. Radhika, L. Ansel Vishal, S. Meenakshisundaram, A.A. Karande and P. Kaliraj "An evaluation of antigen capture assays for detecting active filarial antigens" (2014) Journal of Helminthology doi:10.1017/S0022149X14000157 [Impact factor 1.157]

16. Balakumaran Palanisamy Athiyaman and Meenakshisundaram Sankaranarayanan "Modelling of process parameters for enhanced production of Coenzyme Q10 from *Rhodotorula glutinis*" (2014) Preparative Biochemistry & Biotechnology - paper accepted [Impact factor 0.406]

Research Support

Details of Government funded Research Projects

S.No	Title of the project	Name of the funding Institution	Duration	Amount (Rs in lakhs)
As Principal Investigator				
1	Engineering Microorganisms for the production of Metabolites used in the Food Industries	DBT	May 2014 – May 2017	107.983
2	Recombinant production of CALB enzyme using *P. pastoris* and its immobilization for chiral conversion applications	DBT	Jan 2008 – Dec 2010	22.15
3	Construction of a single-chain antibody fragment specific for WB-SXP1 and its expression in *E.coli*	UGC	Feb 2009 – Jan 2012	10.09
As Co-PI				
4	MHRD – Centre of Excellence in Biomedical Applications	MHRD	May 2013 – May 2017	400.00
5	University Innovation cluster – Deputy coordinator	DBT	April 2014 – March 2018	230.00
6	DBT-Programme support for production of diagnostics and development of prophylactics for neglected infectious diseases with filariasis as a model	DBT	Feb 2007 – Jan 2012	358.80

Details of Industrial projects

S.No	Title of the project	Amount (in Rs)
1	Media optimization for the production of Deca Hexanoic acid	90,000/=
2	Process optimization for the production of Deca Hexanoic acid	2,40,000/=
3	Scale-up of Novel enzyme production	1,75,000/=
4	Process optimization for production of Lactic and gluconic acid by Fermentation	3,50,000/=
5	Scale-up of Leather enzyme Protease production	1,80,000/=
6	Fermentation studies on Seleno-methionine production	3,00,000/=
7	Scale-up of Leather enzyme Protease production	2,40,000/=
8	Substrate affinity modification of PENG acylase	8,00,000/=
9.	Cloning and expression in *P.pastoris*	3,00,000/=