

Dr. Ganesh Dharma Patil



Designation: Assistant Professor

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Qualification: Ph.D Biotechnology, M.Sc. Microbiology

Area of Specialization: Protein Biochemistry, Protein Science, Engineering and Technology, Proteomics, Structural and Functional genomics

Research Interest:

- Vector (mosquito) borne infectious diseases and Neglected tropical diseases (Snakebite).
- Study Composition and Properties of Invertebrate Saliva: As a Source and Inspiration for Drug Development.
- Vector biology: Applying recombinant DNA technology and protein biochemistry (wet lab) approaches to elucidate structural and functional Genomics of recent NGS data to improve understanding of Vector (mosquito)-Pathogen (virus)-Host (human) interaction triad.
- Study protein evolution of important protein families unraveled in invertebrate salivary gland NGS data.
- Protein folding, dynamics and physico-chemical analysis.
- Develop recombinant proteins for bio therapeutic, diagnostic and industrial applications.

EDUCATIONAL QUALIFICATIONS:

- **Ph.D Biotechnology** (2009) - Institut für Biochemie und Biotechnologie, Martin-Luther-Universität Halle-Wittenberg, Germany
Thesis title: "Strategies for Production of Single Chain Antibody Fragment in *E. coli*"
Supervisor: Late Prof. Dr. Rainer Rudolph
- **M.Sc Microbiology** (2000) - North Maharashtra University, Jalgaon

- **B.Sc Microbiology** (1998) - North Maharashtra University, Jalgaon

ACADEMIC AND RESEARCH EXPERIENCE:

Academic Experience:

- **Assistant Professor:** Proteomics and Protein Biochemistry group, Dr. D.Y. Patil, Bioinformatics and Biotechnology Institute, Pune (April 2021 till present)
- **Assistant Professor:** Vidya Pratishthan's School of Biotechnology, Baramati (August 2012 – July 2016)
- **Research Assistant:** Department of Biological sciences, National Chemical Laboratory, Pune (Sept 2000 – Dec 2002)

International Experience:

- **Project Scientist:** Protein Science Lab, Department of Biological Sciences, National University of Singapore (July 2016 – Dec 2020)
- **Teaching & Research associate:** Martin Luther University, Halle, Germany (March 2002- Dec 2006)

Industrial experience:

- **Scientist (HoD):** Reagent (Bio) Development Lab, SPAN Diagnostics Ltd, Surat (Sept 2010- July 2012)
- **Research Associate:** Biologics Division, USV Ltd, Mumbai (Sept 2008 -Sept 2010)

AWARDS AND ACHIEVEMENTS:

- Fellowship, **National University of Singapore** (July 2016 – Dec 2020)
- Ph.D fellowship, **Martin Luther University, Halle, Germany** (March 2002 - Dec 2006)
- Fellowship, **Indo-Swiss Collaboration in Biotechnology (ISCB)** funded project, National Chemical Laboratory, Pune, India & ETH, Zurich (Sept 2000 – 2002)

REVIEWER:

- Invited reviewer: Biochemical Engineering Journal, Journal of Bioinformatics and Computational Biology and other journals from Elsevier group (Elsevier), and Wiley
- Working on editorial board of CIBTech Journal of Biotechnology

INTERNATIONAL ADVISORY COMMITTEE MEMBER:

- NA

SCIENTIFIC COMMITTEE MEMBER:

- Member, Marathi Vidnyan Parishad, Mumbai

PUBLICATIONS:

1. **Patil Ganesh** (2021) **Evolution of Fibrinogen Domain Related proteins in *Aedes aegypti*: Their Expression during Arbovirus infections.** Gene Reports, 23, 1010-30.
2. **Patil Ganesh**, Rudolph Rainer and Christian Lange (2017) **Expression, refolding, purification, and characterization of single chain antibody fragment produced in *E. coli*.** Indian Journal of Biotechnology, 16 (4), 563-569.
3. **Patil Ganesh**, Hauke Lilie, Rudolph Rainer and Christian Lange (2014) **Identification and Biophysical characterization of acid induced conformational state of a single chain antibody fragment.** Int. J. Pharm. Sci. Rev. Res., 24 (2), 321-326.
4. Buchfink R, Tischer A, **Patil G**, Rudolph R, Lange C (2010) **Ionic liquids as refolding additives: variation of the anion.** Journal of Biotechnology, 150, 64-72.
5. **Patil Ganesh**, Rudolph Rainer and Christian Lange (2008) ***In vitro*-refolding of a recombinantly expressed single-chain Fv fragment in the presence of aromatic thiols.** Journal of Biotechnology, 134, 218-21.
6. Lange Christian, **Patil Ganesh** and Rudolph Rainer (2005) **Ionic Liquids as Refolding Additives: N'-Alkyl and N'-(ω Hydroxyalkyl) N-Methyl Imidazolium Chlorides.** Protein Science, 14, 2693-701.
7. Jobanputra AH, **Patil Ganesh**, Sayyed RZ, Chaudhari AB and Chincholkar SB. **Microbial transformation of Rifamycin: A Novel Approach to Rifamycin Derivatives.** Indian Journal of Biotechnology, 2, 370-377.

Popular science article:

- Magical mosquito saliva: Inspiration to tackle human diseases, Published in Advances in Science, 25, 6-7.

BOOK CHAPTERS:

- **Patil Ganesh**, 2014, Production of Single Chain Antibody Fragment, LAP LAMBERT Academic Publishing group, Germany. ISBN No. 978-3-659-48289-2
- **Patil G**, Kumar RR, Ranjan T, Kumari R. Protein Purification: Science and Technology, Plant Biotechnology, Vol I: Principles, Techniques and Applications Chapter 17, B.D. Prasad et al. Apple Academic Press Inc, 2017, Page 376.
- Kumar RR, **Patil G**, Kumari R, Yadav S, Nimmy MS and Kumar V. Biotechnological Approaches for

Plant Disease Diagnosis and Management Plant Biotechnology, Vol II: Transgenics, Stress Management and Biosafety Issues - Chapter 13 B.D. Prasad et al. Apple Academic Press Inc 2017, Page 500-545.

- **Patil G**, Kumar RR, Ranjan T, Kumari R, Kumar V, and Kumar A. Molecular Tool for Insect Pest Management in Vegetable Crops, Modern Approaches for Pest Management in Vegetable Crops Chapter 8 ISBN No. 978-93-86200-81-5 Tamoghna Saha, Anil, Nithya Chandran and T. N. Goswami Satish Serial Publishing House 2018, Page 201-234.
- Rajani K, **Patil G**, Kumar RR and Ranjan T. Application of IPR to Conserve Global Genetic Resources for Commons IPR in Agriculture and Allied Sciences Chapter 4 Chandan Roy et al. Apple Academic Pres, USA 2019, Page 99-128.
- Rajani K, Kumar RR, Ranjan T and **Patil G**. Traditional Knowledge and its Promotion Through Providing Legal Rights IPR in Agriculture and Allied Sciences Chapter 5 Chandan Roy et al. Apple Academic Pres, USA 2019, Page 129-157.

CONFERENCE PROCEEDINGS:

- Deshpande M, Chandele A, Nahar P, Hadapad A, **Ganesh Patil**, Ghormade V, Siegfried Keller S, Urs Tuor (2003) Entomopathogenic fungi – Mycoinsecticides useful against lepidopteran pests in pulses. IOBC/WPRS Bulletin Vol. 26, 27-30.

CERTIFICATIONS:

- NA

EPIGEUM (Research Skill Courses):

- NA

CONFERENCES (Abstracts/Oral/Poster):

- **Ganesh Patil** – Participated in **International Conference on Vector Biology**, Department of Biological Sciences, National University of Singapore. 28 - 30 January, 2019.
- **Ganesh Patil** – Participated in “**International Conference on Infectious Diseases: Structure, Function and Dynamics of Dengue, Zika viruses**”, Department of Biological Sciences, National University of Singapore. October, 2016.
- **Ganesh Patil**, Christian Lange & Rainer Rudolph: Refolding of a Recombinant Single-chain Antibody Fragment in the Presence of Ionic Liquids. GBM Annual fall meeting, Berlin/Potsdam, 2005. **Poster presentation**
- **Ganesh Patil**, Christian Lange & Rainer Rudolph: Refolding and characterization of single-

chain antibody fragment produced in *E. coli*. In Protein Folding meeting, University of Halle, Sept-22-24 Sept, 2006. **Poster presentation**

WORKSHOPS:

- **Ganesh Patil** - attended National Workshop On “Teaching and Learning Biology: Problem Solving Approach” (4th–11th August, 2014) Department of Microbiology, University of Pune. Co-coordinator Prof. R L Deopurkar.

BIOINFORMATICS AND BIOTECHNOLOGY SKILLS:

- Specialized in Cloning, Recombinant protein expression, and purification in *E. coli* and *Pichia pastoris* expression systems.
- Skilled researcher in optimization of purification processes using IEX, Affinity, SEC, and RP-HPLC. Proficient in handling AKTA purification system, analytical HPLC's.
- Production of monoclonal antibodies, understand technical specifications for antibodies, antigens, polyclonal antibodies for product development like Lateral flow, immunodiagnostic assays for infectious diseases. To develop rapid diagnostic assays – Lateral flow tests, Dipstick.
- Assay development, ELISA, Western blot, Dot blots and pull-down assays.
- Proteomics - MS, LC/MS, MALDI-TOF, MS/MS – Peptide mass finger printing.
- Protein characterization by means of spectroscopy methods like Analytical Ultracentrifugation, IEF, SPR, Intrinsic Tryptophan Fluorescence, capillary zonal electrophoresis (CZE) etc. for quantifying proteins, assessing protein size, stability, and protein-protein interactions.
- Characterization of complex glycoproteins, glycol-isoform separation, distribution analysis and sialic acid analysis.
- Bioinformatics, Genomics, Transcriptomics, and Proteomics data analysis from NGS to study differential gene expression