

Name : Dr. V. Usha
Designation : Associate Professor
Department : Biochemistry
Qualification : M. Sc., M. Phil., Ph. D. (UK), PDF (UK)

Experience:

Teaching: 15 Years Industry: 9 Years & 6 months Research: 24 Years

Area of Specialization(s) : Microbial Biochemistry, Pre-clinical Drug discovery

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Academic Qualifications

Degree	Branch	Institution / University Name	Year of Graduation
Ph. D.	Biosciences	School of Biosciences, University of Birmingham, UK	2008
M. Phil.	Biochemistry	Avinashilingam Deemed University, Coimbatore	1992
PG	Biochemistry	PSG College of Arts & Science, Bharathiar University, Coimbatore	1990
UG	Biochemistry	PSG College of Arts & Science, Bharathiar University, Coimbatore	1988

Research Publications (Indexed)

International

- 1) Usha, V*, A. J. Lloyd*, D. I. Roper, C. G. Dowson, G. Kozlov, K. Gehring, S. Chauhan, H.T. Imam, C.A. Blindauer and G.S. Besra, **Reconstruction of Diaminopimelic Acid Biosynthesis allows Characterisation of *Mycobacterium Tuberculosis* N-Succinyl-L,L-Diaminopimelic Acid Desuccinylase**, Scientific Reports, Vol. 6., pp. 23191, March 2016, DOI: 10.1038/srep23191. (Indexed in SCOPUS). *Equal contribution first author.
- 2) Gurcha, SS*, V. Usha*, J. A. G. Cox, K. Futterer, K. A. Abrahams, A. Bhatt, L. J. Alderwick, R. C. Reynolds, N. J. Loman, V. Nataraj, C. Alemparte, D. Barros, A. J. Lloyd, L. Ballell, J. V. Hobrath, and G. S. Besra, **Biochemical and Structural Characterisation of Mycobacterial Aspartyl-Trna Synthetase Asps, A Promising TB Drug Target**, PLoS One, Vol 9., No.11, pp. e113568, November 2014, DOI: 10.1371/journal.pone.0113568. (Indexed in SCOPUS). *Equal contribution first author.
- 3) Roy, R., V. Usha, A. Kermani, D. J. Scott, E. I. Hyde, G. S. Besra, L. J. Alderwick, and K. Futterer, **Synthesis of Alpha – Glucan in Mycobacteria involves a Hetero-Octameric**

- Complex of Trehalose Synthase Tres and Maltokinase Pep2**, ACS. Chem. Biol, Vol 8., No.10, pp. 2245-55, October 2013, DOI: 10.1021/cb400508k. (Indexed in SCOPUS).
- 4) Wolfe, LM., V. Usha, Idicula-Thomas S, Schurer S, Wennerberg K, Reynolds R, Besra GS, and Dobos KM, **A Chemical Proteomics Approach to Profiling the ATP Binding Proteome of *Mycobacterium Tuberculosis***, Mol. Cell. Proteomics, Vol 12., No 6, pp. 1644-60, June 2013, DOI: 10.1074/mcp.M112.025635. (Indexed in SCOPUS).
 - 5) Usha, V., J.V. Hobrath, S.S. Gurcha, R.C. Reynolds, and G.S. Besra, **Identification of Novel MT-GUAB2 inhibitor series active against *m. tuberculosis***, PLoS One, Vol 7., No 3, pp. e33886, March 2012, DOI: 10.1371/journal.pone.0033886. (Indexed in SCOPUS).
 - 6) Usha, V., A.J. Lloyd, A.L. Lovering, and G.S. Besra, **Structure and Function of *Mycobacterium Tuberculosis* Meso-Diaminopimelic Acid (DAP) Biosynthetic Enzymes**, FEMS. Microbiol. Lett, Vol 330., No 1, pp. 10-16, May 2012, DOI: 10.1111/j.1574-6968.2012.02527.x. (Indexed in SCOPUS).
 - 7) Prados-Rosales, R., A. Baena, L.R. Martinez, J. Luque-Garcia , R. Kalscheuer, U. Veeraraghavan, C. Camara, J.D. Nosanchuk, G.S. Besra, B. Chen, J. Jimenez, A. Glatman-Freedman, W.R. Jacobs, Jr, S.A. Porcelli, and A. Casadevall, **Mycobacteria Release Active Membrane Vesicles that Modulate Immune Responses in a TLR2-Dependent Manner in Mice**, J.Clin. Invest, Vol 121., No 4, pp. 1471-83, April 2011, DOI: 10.1172/JC144261. (Indexed in SCOPUS).
 - 8) Kalscheuer, R., B. Weinrick, U. Veeraraghavan, G.S. Besra, and W.R. Jacobs, Jr, **Trehalose-Recycling ABC Transporter LPQY-SUGA-SUGB-SUGC is Essential for Virulence of *Mycobacterium Tuberculosis***, Proc. Natl. Acad. Sci USA, Vol 107., No 50, pp. 21761-21766, December 2010, DOI: 10.1073/pnas. 1014642108. (Indexed in SCOPUS).
 - 9) Usha, V., S.S. Gurcha, A.L. Lovering, A.J. Lloyd, A. Papaemmanouil, R.C. Reynolds, and G.S. Besra, **Identification of Novel Diphenyl Urea Inhibitors of MT-GUAB2 Active against *Mycobacterium Tuberculosis***, Microbiology, Vol 157., No 1, pp. 290-9, January 2011, DOI: 10.1099/mic.0.042549-0. (Indexed in SCOPUS).
 - 10) Kalscheuer, R., K. Syson, U. Veeraraghavan, B. Weinrick, K.E. Biermann, Z. Liu, J.C. Sacchettini, G.S. Besra, S. Bornemann, and W.R. Jacobs, Jr, **Self-Poisoning of *Mycobacterium Tuberculosis* by Targeting GLGE in An A-Glucan Pathway**, Nature Chemical Biology, Vol 6., No 5, pp. 376-384, May 2010, DOI: 10.1038/nchembio.340. (Indexed in SCOPUS).
 - 11) Usha, V., L.G. Dover, D.I. Roper, K. Fütterer and G.S. Besra, **Structure of the Diaminopimelate Epimerase DAPF from *Mycobacterium Tuberculosis***, Acta. Crystallogr. D. Biol. Crystallogr, Vol 65., No 4, pp. 383-7, April 2009, DOI: 10.1107/S09074444909002522. (Indexed in SCOPUS).

- 12) Usha, V., L.G. Dover, D.I. Roper, and G.S. Besra, **Characterisation of *Mycobacterium Tuberculosis* Diaminopimelic Acid Epimerase: Paired Cysteine Residues are Crucial for Racemization**, FEMS. Microbiol. Lett, Vol 280., No 1, pp. 57-63, March 2008, DOI: 10.1111/j.1574-6968.2007.01049x. (Indexed in SCOPUS).
- 13) Usha, V., L.G. Dover, D.I. Roper, A.J. Lloyd, and G.S. Besra, **Use of a Codon Alteration Strategy in a Novel Approach to Cloning the *Mycobacterium Tuberculosis* Diaminopimelic Acid Epimerase**, FEMS. Microbiol. Lett, Vol 262., No 1, pp. 39-47, September 2006. (Indexed in SCOPUS).
- 14) Ramachandran, V., B. Chandrakala, V.P.Kumar, V. Usha, S.M. Solapure, and S.M. de Sousa, **Screen for Inhibitors of the Coupled Transglycosylase-Transpeptidase of Peptidoglycan Biosynthesis in *Escherichia Coli***, Antimicrob. Agents. Chemother, Vol 50., No 4, pp. 1425-32, April 2006. (Indexed in SCOPUS).
- 15) Mir, M.A., H.S. Rajeswari, U. Veeraraghavan, and P. Ajitkumar, **Molecular Characterisation of ABC Transporter Type FTSE And FTSX Proteins of *Mycobacterium Tuberculosis***, Arch. Microbiol, Vol 185., No 2, pp. 147-58, March 2006. (Indexed in SCOPUS).
- 16) Chandrakala, B., R.K. Shandil, U. Mehra, S. Ravishankar, P. Kaur, V. Usha, B. Joe, and S.M. de Sousa, **High-Throughput Screen for Inhibitors of Transglycosylase and/or Transpeptidase Activities of *Escherichia Coli* Penicillin Binding Protein 1b**, Antimicrob. Agents. Chemother, Vol 48., No 1, pp. 30-40, January 2004. (Indexed in SCOPUS).
- 17) Usha, V., R. Jayaraman, J.C. Toro, S.E. Hoffner, and K.S. Das, **Glycine and Alanine Dehydrogenase Activities are Catalyzed by the Same Protein in *Mycobacterium Smegmatis*: Upregulation of both Activities under Microaerophilic Adaptation**, Can. J. Microbiol, Vol 48., No 1, pp. 7-13, January 2002. (Indexed in SCOPUS).

National

- 1) Karunagaran D, Mohana M.N. and Usha V, **Influence of Axis on Hydrolase Development in Cowpea (*Vigna Unduiculata L*) Cotyledons during Germination**, Indian J. Plant Physiol, Vol 35., pp. 300-304, 1992. (Indexed in SCOPUS).

Presentations in Conference

- 1) **Identification of Novel MT-GUAB2 Inhibitor Series Active Against *M. Tuberculosis***, Acid Fast Club Summer Meeting, Brighton, UK, 6th July 2012.
- 2) **Screening of a Novel Oxadiazole Inhibitor Series of MT-GUAB2 Active Against *M. Tuberculosis***, Gordon Research Conference on Tuberculosis Drug Development, Lucca, Italy, 2011.

- 3) **Characterisation of *Mycobacterium Tuberculosis* Diaminopimelic Acid Epimerase (MTDAPF)**, Tackling TB: From laboratory to your GP, The British Science Festival, University of Birmingham, UK, 2010.
- 4) **Structure and Functional Characterisation of *Mycobacterium Tuberculosis* Diaminopimelic Acid Epimerase (MT-DAPF)**, Acid Fast Club Summer meeting, Edinburgh, 3rd July 2009.
- 5) **Characterisation of *Mycobacterium Tuberculosis* Diaminopimelic Acid Epimerase (MTDAPF)**, Gordon Research Conference on Tuberculosis Drug Development, Oxford, UK, 2007.
- 6) **Use of a Codon Alteration Strategy in a Novel Approach to Cloning the *Mycobacterium Tuberculosis* Diaminopimelic Acid Epimerase**, Biosciences Graduate Research School Symposium, University of Birmingham, U.K, 30th April 2007.
- 7) **Characterisation of Mycobacterial Diaminopimelate Epimerase (DAPF)**, Biosciences Graduate Research School Symposium, University of Birmingham, U.K, 2006.
- 8) **A High Throughput Screening Assay for Alanine Dehydrogenase of *M.Tuberculosis***, International Symposium on Mycobacterial Diseases Kolkata, India, 2001.
- 9) **Heterologous Expression and Characterization of Alanine Dehydrogenase of *M. Tuberculosis***, ASM Conference on TB: Past, Present and Future, New York, USA, 2000.
- 10) **Microaerophilic Adaptation of *m. Smegmatis* – Dual Enzyme Activities of Alanine Dehydrogenase**, ASM Conference on TB: Past, Present and Future, New York, USA, 2000.

Participation in Conference

National

- 1) **Higher Education**, Confederation of Indian Industry, Coimbatore, 2 &3-Dec-16.
- 2) **Transitional and Translational Scenarios in Biological Sciences**, Dr. N.G.P. Arts and Science College, 9 &10-Sep-16.

Participation in Seminars

- 1) **National Higher Education Conclave**, Confederation of Indian Industry, Coimbatore, 1&2-Dec-17.
- 2) **Curriculum Design for Sustainable and Societal Development: A Road Map**, Amrita Vishwa Vidyapeetham, 12 &13-Aug-16.

Participation in Workshop

- 1) **Science Academies Lecture Workshop on Insights in Lifescience**, Department of Biochemistry, Bharathiar University, Coimbatore, 22 to 24-Jan-18.
- 2) **Technology Enablement for Outcome based Education**, PSGR Krishnammal College for Women, 5-16-Dec-16.

Participation in Orientation Programme / Short Term Courses

- 1) **Outcome based Pedagogic Principles for Effective Teaching**, NPTEL MOOC, IIT Kharagpur, July – August 2017.

Participation in Faculty Development Programme

- 1) **Quality Initiatives in Higher Education**, Dr. N.G.P. Arts and Science College, 3 to 9-Dec-18.
- 2) **Entrepreneurship**, Nehru group of Institutions, 9 to 21-Apr-18.
- 3) **201x on Pedagogy for Online and Blended Teaching - Learning Process**, MOOC, IIT Bombay, September-October 2017.
- 4) **101x on Foundation Program in ICT for Education**, MOOC, IIT Bombay, August–September 2017.

Conference / Seminar / Workshop Organized

- 1) Convenor, Higher Education in USA, Dr. N.G.P. Arts and Science College, 25-Jan-19.
- 2) Convenor, Workshop on Entrepreneurship development, Dr. N.G.P. Arts and Science College, 20-Nov-18 to 1-Dec-18.
- 3) Convenor, Entrepreneurship Awareness Camp, Dr. N.G.P. Arts and Science College, 24 to 26-Sep-18.
- 4) Convenor, Entrepreneurship Awareness Camp, Dr. N.G.P. Arts and Science College, 21, 23 & 24-Aug-18.
- 5) Committee Member, Future Skills Development, Dr. N.G.P. Arts and Science College, 29 June, 2019.
- 6) Committee Member, Science Academies Lecture Workshop on Recent Advances in Biochemistry, Dr. N.G.P. Arts and Science College, 10 & 11-Aug-18.
- 7) Committee Member, Inspire Science Camp for School Children, Dr. N.G.P. Arts and Science College, 26 to 30-Dec-17.
- 8) Committee Member, Science Academies Lecture Workshop on DNA Technologies in Revisiting Biology, Dr. N.G.P. Arts and Science College, 27 to 29-Jul-17.

9) Committee Member, Inspire Science Camp for School Children, Dr. N.G.P Arts and Science College, 26 to 30-Dec-16.

10) Committee Member, Science Academies Lecture Workshop on Trends in Modern Biology, Dr. N.G.P. Arts and Science College, 16 &17-Sep-16.

Membership in Professional Bodies

Name of the Professional Body	Nature of membership	Duration
Indian Association of Applied Microbiologists.	Life-time	-

Awards / Honors

Awards / Honors	Agency / Institute	Year of Award
Best Performance Award sponsored by AstraZeneca R & D, Bangalore, India	Visit to Neurobiotechnology Centre, Ohio State University, Columbus, Ohio, USA on a collaborative project.	July – November 1998

Recognition National / International

Nature of Recognition	Organization / Institution	Year
Post doctoral Fellow (PDF)	University of Birmingham, UK	2008-2015
Darwin Trust of Edinburgh Fellowship	University of Birmingham, UK	2004-2007
Business English Certificate level II exam	University of Cambridge, UK	March 2000
Business English Certificate level III exam	University of Cambridge, UK	July 2000
Scholarship for Post Matric studies in Hindi	Government of India	1985-1987