DETAILED CURRICULUM VITAE

Name	:	**Anil K. Tyagi**
Designation	:	Vice Chancellor Guru Gobind Singh Indraprastha University Sector 16-C, Dwarka, New Delhi-110078 Tel. 91-11-25302104, 25302105, Mob. 9312266218; Fax: 91-11-28035243
Past Experience	:	31 years experience of teaching, research and administration at University of Delhi as: Professor of Biochemistry, Head of the Department, Co-ordinator of UGC-SAP Programme, Chairman of Advisory Committee of WUS Health Centre, University of Delhi South Campus, Incharge, Distributed Information Sub Centre & Member of Governing Body of a number of Delhi University Colleges. Member Scientific Advisory Committee of a number of national institutions and Member of National/International Committees for evaluation/funding/review of scientific projects
Electronic Mail Address	:	aniltyagi@ipu.ac.in, akt1003@rediffmail.com
Website	:	www.aniltyagi.org
Date of Birth	:	2nd April 1951, Sex: Male

Honours/ Awards

- **Shanti Swarup Bhatnagar Prize by CSIR (1995)**
- **J.C. Bose National Fellow, Department of Science and Technology, GOI (2010)**
- **Vigyan Gaurav Samman Award by UP Government. (2010)**
- **Vice President, Society of Biological Chemists (India) from 2004-2006**
- **Ranbaxy Research Award by Ranbaxy Science Foundation (1999)**
- **P.S. Sarma memorial award by the Society of Biological Chemists (India) (1993)**
- **Dr. Nitya Anand Endowment Lecture Award by INSA (1999)**
- **C.R. Krishnamurthy Memorial Oration Award by CDRI, Lucknow (2007)**
- **Prof. S.H. Zaidi Oration Award by ITRC, Lucknow (2005)**
- **Dr. Kona Sampath Kumar prize by the University of Delhi (1983)**
- **Fellow of the National Academy of Sciences, India**
- **Fellow of the Indian Academy of Sciences, India**
- **Fellow of the Indian National Science Academy, India**
- **Fellow of the Society for Immunology and Immunopathology, India**

Membership to professional associations/societies

- Member of Guha Research Conference
- Life Member of the Society of Biological Chemists (India)
- Life Member of Indian Society of Cell Biology
- Life Member of Association of Microbiologists of India

Education

Degree	University	Subject	Division	Year
Ph.D.	University of Delhi	Medical Biochemistry	-	1977
M.Sc.	University of Allahabad	Biochemistry	First	1972
B.Sc.	University of Meerut	Zoology, Botany, Chemistry	First	1970

Positions

Duration	Designation	Institution
May 2014 onwards	**Vice Chancellor**	Guru Gobind Singh Indraprastha University, Sector 16C, Dwarka, New Delhi-110078
August 2008 - August 2011	**Professor & Head**	Department of Biochemistry, University of Delhi, South Campus, New Delhi-110021
August 1999 - August 2008	**Professor**	Department of Biochemistry, University of Delhi, South Campus, New Delhi-110021
August 1996 - August 1999	**Professor and Head of the Department**	Department of Biochemistry, University of Delhi, South Campus, New Delhi-110021
August 1993 - August 1996	**Professor of Biochemistry**	Department of Biochemistry, University of Delhi, South Campus, New Delhi-110021
May 1993 – August 1993	**Professor and Head of the Department**	Department of Biochemistry, University of Delhi, South Campus, New Delhi-110021
August 1990 - May 1993	**Reader and Head of the Department**	Department of Biochemistry, University of Delhi, South Campus, New Delhi-110021
June 1986 - August 1990	**Reader**	Department of Biochemistry, University of Delhi, South Campus, New Delhi-110021
June 1983 - June 1986	**Lecturer**	Department of Biochemistry, V.P. Chest Institute, Delhi-110007
May 1980 - June 1983	**International Visiting Associate**	National Institutes of Health, Bethesda, MD USA
May 1978 - April 1980	**International Visiting Fellow**	National Cancer Institute, NIH, Bethesda, MD USA
January 1973 - April 1978	**CSIR – JRF SRF, PDF**	Department of Biochemistry, V.P. Chest Institute, Delhi-110007

Administrative Experience / Public Service / Consulting Activity

Present Assignment

Achievements during the Vice Chancellorship of GGS Indraprastha University from May 2014 till May 2015

1. *Promoted scientific research in the University by taking initiatives such as University sponsored visits of faculty members abroad to attend scientific meetings; by providing University grants for publication charges and by enhancing University research scholarships. Besides, the perpetual delay in Ph.D. thesis adjudication was removed by taking care of anamolies by implementing new Ph.D. ordinance in the University.*

2. *The university had long standing plans for initiating its East campus at Surajmal Vihar where the school of Architecture and planning and the National School of Design have to be located but this was not started for many years. This year in January the East Campus was inaugurated by the Hon'ble Minister of Human Resource Development. The construction of the campus has already been assigned to PWD, necessary clearances have been obtained and the construction has to commence soon.*

3. *The faculty promotions in the University were not carried out for the last more than seven years. During the last one year, the exercise of CAS based promotions was completed for all levels and no faculty promotions are pending at the moment.*

4. *Several administrative branches were strengthened and recuperated in order to perform better. Special attention was provided to admission branch and affiliation branch of the University resulting in their smooth and far superior functioning.*

Past Experience

Member Scientific Advisory Committees of following National Institutions:

1. Member, Scientific Advisory Group, Translational Health Science and Technology Institute (THSTI), Udyog Vihar, Gurgaon.
2. Member Expert, Research Council of Institute of Genomics and Integrative Biology, Delhi.
3. Member, Research Advisory Committee, Central Institute of Fisheries Technology (CIFT), Cochin.
4. Member of Scientific Advisory Committee, National Centre for Cell Sciences (NCCS), Pune.
5. Member, Apex Committee of the Department of Biotechnology, Government of India on "New Programme Support in High Priority Area of Biology" at Indian Institute of Science, Bangalore.
6. Member of Scientific Advisory Committee, National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.

7. Member of the Research Area Panels and Scientific Advisory Committee, Centre for DNA Finger Printing and Diagnosis (CDFD), Hyderabad.
8. Member of Scientific Advisory Committee, Institute of Pathology, Indian Council of Medical Research, Safdarjung Hospital, New Delhi.
9. Member of Scientific Advisory Committee, Tuberculosis Research Centre, Indian Council of Medical Research, Chennai.
10. Member of the Project Advisory Committee on "Biochemistry, Biophysics and Molecular Biology", Department of Science and Technology, Government of India.
11. Member of the Research Committee on "Animal Science and Biotechnology" Council of Scientific and Industrial Research, New Delhi.
12. Member of the Research Council of Centre for Biochemical Technology, New Delhi.
13. Member, Research Area Panels and Scientific Advisory Committee, National Institute of Immunology, New Delhi.
14. External expert on the Board of Studies for Biotechnology, Banaras Hindu University, Varanasi.
15. Expert Consultant to the Tuberculosis Research Programme (TBRU) of the National Institutes of Health, USA.
16. Member Board of Studies for Biochemistry, Aligarh Muslim University, Aligarh.
17. External expert on the Board of Research Studies in Science, The University of Kashmir, Srinagar.
18. Member, Board of Research Studies, Faculty of Inter Disciplinary and Applied Sciences, University of Delhi.

Member of National / International Committees for evaluation / funding / review of scientific research

19. Member, APEX Committee, Vaccine Grant Challenge Programme, Department of Biotechnology, Government of India, New Delhi.
20. Member of Expert Committee for North Eastern Region Biotechnology Programmes, Department of Biotechnology, Government of India.
21. Member, Technical Advisory Committee (TAC) for advising, evaluating, reviewing and monitoring activities of National Research Development Corporation (NRDC), New Delhi for activities funded by DSIR.
22. Member, Task Force for Vaccines and Diagnostics in the areas of health care, Department of Biotechnology, Government of India, New Delhi.
23. Member, Task Force for Infectious Disease Biology, Department of Biotechnology, Government of India, New Delhi.
24. Member, Expert Committee, University Grants Commission (UGC), New Delhi for evaluation of major research projects.
25. Member, Task Force on International Collaborations, Department of Science and Technology, Government of India.
26. Member of the Task Force on Basic Research in Modern Biology, Department of Biotechnology, Government of India.
27. Member of the International Programme Approval Committee (IPAC), Department of Biotechnology, Ministry of Science and Technology, New Delhi.
28. Member of Research Council of Human Research Development Group, Council of Scientific and Industrial Research, New Delhi.

29. Member, Project Review Committee on “Leprosy and Tuberculosis and Other Chest Diseases”, Indian Council of Medical Research.
30. Member of the Project Advisory Committee on "Biochemistry, Biophysics and Molecular Biology”, Department of Science and Technology, Government of India.

Member Governing Bodies of Institutions

31. Chairman, Governing Body, Miranda House, University of Delhi.
32. Member, Governing Body, Moti Lal Nehru College, University of Delhi.
33. Member, Governing Body, Shivaji College, University of Delhi.
34. Member, Governing Body, Ram Lal Anand College, University of Delhi.
35. Member, Governing Body, University College of Medical Sciences (UCMS), University of Delhi.
36. Member of Academic Council of University of Delhi.
37. Member, Governing Body, Acharya Narendra Dev College, New Delhi.
38. Member, Governing Body, V.P. Chest Institute, University of Delhi, Delhi.
39. Member, Governing Body, ARSD College, University of Delhi, Dhaula Kuan, New Delhi.
40. Member, Governing Body, Dayal Singh College, New Delhi.
41. Member, Governing Body, Maulana Azad Medical College, New Delhi.
42. Member, Governing Body, Sri Venkateswara College, New Delhi.
43. Member, Governing Body, Rajkumari Amrit Kaur College of Nursing, New Delhi.
44. Member, Governing Body, Lady Harding Medical College, New Delhi.
45. Member, Governing Body, Acharya Narendra Dev College, New Delhi.
46. Member, Governing Body of Sri Venkateswara College, University of Delhi, New Delhi.
47. Member, Governing Body of Moti Lal Nehru College, University of Delhi.
48. Member, Governing Body of Maitreyi College, University of Delhi, New Delhi.

Member of Academic Committees of Scientific Institutions

49. Member, Academic Committee, Translational Health Science and Technology Institute, Gurgaon.
50. Member, Academic Committee, National Institute of Immunology, New Delhi.
51. Member, Academic Committee, International Centre for Genetic Engineering and Biotechnology, New Delhi.
52. Member, Advisory Committee of DRS Programme, Interdisciplinary Biotechnology Unit, Aligarh Muslim University, Aligarh.
53. Member of Special Committee of the Special Centre of Molecular Medicine, Jawahar Lal Nehru University, New Delhi.
54. Member of Special Committee, School of Life Sciences, Jawaharlal Nehru University, New Delhi.
55. Member of the Academic Committee, Central Drug Research Institute, Lucknow.

56. Member of Academic Committee, Centre for Biotechnology, Banaras Hindu University, Varanasi.
57. Member of the Academic Committee of the International Centre for Genetic Engineering and Biotechnology, New Delhi.
58. Member of the Academic Committee, Institute of Microbial Technology, Chandigarh.
59. Member of the Academic Committee, National Institute of Immunology, New Delhi.
60. Member of Special committee for Centre of Biotechnology, Jawaharlal Nehru University, New Delhi.
61. Member of academic committee for Biochemistry - Kurukshetra University.

Other services

62. Member Committee of Courses for M.Phil. Biotechnology for designing, reviewing and running of various courses concerning M.Phil Biotechnology at University of Delhi.
63. Member, Institutional Biosafety Committee, National Institute of Immunology, New Delhi.
64. Member, Management Committee of Bakson Homoeopathic Medical College, Greater NOIDA, Gautam Budh Nagar, U.P.
65. Member Committee of Courses for Biochemistry for designing, reviewing and modification of various curriculum of the University of Delhi pertaining to Biochemistry.
66. Member, Sectional Committee IX (General Biology), Indian National Science Academy, New Delhi.
67. Member, Sectional Committee X (General Biology), Indian National Science Academy, New Delhi.
68. Member, Sectional Committee M-2 (Multidisciplinary Committee for Engineering and Applied Sciences), Indian National Science Academy, New Delhi.
69. Member of the Biosafety Committee for the Ranbaxy Laboratories, Gurgaon, India.
70. Member of the Biosafety Committee for the Jawahar Lal Nehru University, New Delhi.
71. Member of the Biosafety Committee for the Centre for Biochemical Technology, Delhi.
72. Member of the University - Industry interaction Cell, University of Delhi.
73. Chairman, Institutional Animal Ethics Committee, University of Delhi South Campus.

Scientific meetings attended/Lectures given abroad

1. Indo-UK Meeting organized by Royal Society, London, UK, 12th–14th September 2006.
2. Tuberculosis Discussion Meeting organized by Royal Society, London, UK, 9th -10th December 2002.
3. BCG Group Meeting for the development of a vaccine against AIDS, International AIDS Vaccine Initiative, New York, 19th June 2002.
4. Expert Advisory Group Committee Meeting under INDO-US VAP Programme, Paris, 3rd November 2001.

5. INDO-GERMAN Workshop on Tuberculosis Braunschweig, Germany, 18th-20th September 2000
6. ILTP Workshop – INDO-RUSSIAN Collaboration in Biotechnology, Moscow, Russia, 24th – 30th June 2000.
7. Fourth International Meeting on the Pathogenesis of Mycobacterial Infections, Stockholm, Sweden, July 1999.
8. "Reemerging Infectious Diseases" - symposium held during the meeting of Indo-US Vaccine Action Programme, Washington D.C., USA, October 1998.
9. Annual Meeting of the Tuberculosis Research Unit of NIH, Cleveland, USA, 14th – 15th June 1998.
10. WHO Meeting on the Diagnosis of Tuberculosis, Cleveland, USA 26th June 1997.
11. Annual Meeting of the Tuberculosis Research Unit of NIH, Cleveland, USA, 24th – 25th June 1997.
12. 32nd US-Japan Co-operative Medical Science Programme Tuberculosis-Leprosy Research Conference held at Cleveland, USA, 21st – 23rd June 1997.
13. 2nd International Conference on the pathogenesis of mycobacterial infections, Stockholm, Sweden, 2nd - 4th July, 1993**.**
14. World Congress on tuberculosis, Bethesda, Maryland, USA**.** 16th-19th Nov. 1992**.**
15. The Annual meeting of the American Society of Biochemists and Molecular Biologists, USA - 1980.
16. The Annual meeting of the American Society of Biochemists and Molecular Biologists, USA - 1981.
17. The Annual meeting of the American Society of Biochemists and Molecular Biologists, USA - 1982.
18. The Annual meeting of the American Society of Biochemists and Molecular Biologists, USA - 1990.
19. Gorden Research Conference on Polyamines - New Hampshire USA, 1981.
20. The annual meeting of the American Association of Cancer Research, New Orleans, USA, 1979.

Invited Lectures delivered at:

International Conferences -

1. International Symposium on "Probiotics-From Bench to Community", New Delhi, 7th & 8th March 2015. Acted as Chief Guest and delivered a talk.
2. International Conference on Plant Biotechnology, Molecular Medicine and Human Health, Department of Genetics, UDSC, New Delhi, Chaired a session and delivered a talk, 18th to 20th October 2013.
3. Indo-Swedish Conference on "Post Genomic Opportunities in Tuberculosis and Other Mycobacteria Diseases, Unchagaon Fort, Bulandshahr, 29th – 31st January 2012.
4. International Symposium on "Vaccine to Translation", Suraj Kund, Faridabad, 14th – 17th November 2011.

5. Key note Lecture delivered in the Indo-Canada symposium on "Redox Status and Control in TB: From Basic Research to Drug Development", January 30th to February 1st, 2011, Hyderabad.
6. Rama-Robbins Lecture delivered during the annual meeting of the Indo-US Vaccine Action Programme, New Delhi 17th November 2010.
7. International symposium on "Understanding and Managing the Pathogenic Microorganisms", Institute of Microbial Technology, Chandigarh, 22-24 January 2010.
8. International symposium on Trends in Drug Discovery and Development, Department of Chemistry, University of Delhi, 5th – 8th January 2010.
9. International symposium on Emerging Trends in Biotechnology, Banaras Hindu University, Varnasi, 4th – 6th December 2009.
10. Indo-US Tuberculosis Consultation Meeing, National Institute of Immunology, New Delhi, July 2009.
11. International Symposium on Emerging Trends in Tuberculosis Research: Biomarkers, Drugs and Vaccines, ICGEB, New Delhi, 1st-3rd December 2008.
12. 49th Annual Conference of Association of Microbiologists of India – International Symposium on Microbial Biotechnology: Diversity, Genomics and Metagenomics, Delhi, 18th – 20th November 2008.
13. 22nd Meeting of the Joint Working Group of INDO-US Vaccine Action Programme, New Delhi, 23rd – 24th October 2008.
14. Indo-German Workshop on infectious diseases at INSA, New Delhi, 24th November 2007.
15. International symposium on New Frontiers in Tuberculosis Research, ICGEB, New Delhi, 4th –6th December 2006.
16. Indo-UK Meeting organized by Royal Society, London, UK, 12th –14th September 2006.
17. Indo-Europe Meeting on Infectious Diseases, Bangalore, 5th –6th June 2006
18. International Conference on Opportunistic Pathogens in AIDS, New Delhi, 27th –29th March 2006.
19. Third Indo-Australian Conference on "Vaccines for Cancer, Infectious Diseases, Lifestyle and Degenerative Diseases" Hyderabad, 6th –8th March 2006.
20. INDO-Australian Symposium, "Modern Biological Approaches for the Diseases caused by Mycobacteria and Helicobacter" CDFD, Hyderabad, 5th March 2005.
21. Asian Regional Workshop on International Training and Research in Emerging Infectious Diseases, JNU, New Delhi, 8th –11th March 2005.
22. International symposium on "Emerging Trends in Tuberculosis Research", 15th –17th November 2004, New Delhi, India
23. INDO-US Workshop on "AIDS in India: A workshop-symposium on Research, Trials and Treatment", 2nd – 4th August 2004, Bangalore, India.
24. INDO-UK Tuberculosis Meeting organized by the Royal Society London and DST, India, Hyderabad, 12th –13th January 2004.
25. 10th Congress of Federation of Asian and Oceanian Biochemists and Molecular Biologists, Bangalore, India, 7th –11th December 2003.
26. Tuberculosis Discussion Meeting organized by Royal Society, London, UK, 9th -10th December 2002.

27. INDO-German Workshop on Infectious Diseases, Centre for DNA Fingerprinting and Diagnostics, Hyderabad, 11th -13th December 2002.
28. BCG Group Meeting for the development of a vaccine against AIDS, International AIDS Vaccine Initiative, New York, 19th June 2002.
29. International symposium on "Mycobacterial Diseases: Pathogenesis, Protection and Control", Calcutta, January 2001.
30. INDO-GERMAN Workshop on Tuberculosis Braunschweig, Germany, 18th –20th September 2000
31. ILTP Workshop – INDO-RUSSIAN Collaboration in Biotechnology, Moscow, Russia, 24th – 30th June 2000.
32. 5th International Conference on Emerging Infectious Diseases in the Pacific Rim, Chennai, 7th – 9th January 2000.
33. International training and research in emerging infectious diseases - Asian Regional Workshop on Intracellular Pathogens, New Delhi, 6th – 10th December 1999.
34. WHO/IUIS Refresher Course on immunology, vaccinology and biotechnology applied to infectious diseases, Pune, 24th November – 10th December1999.
35. Indo-US Vaccine Action Programme, Joint workshop on Novel Vaccine Technologies, 26th – 27th October 1999.
36. Indo-French Symposium on Multiple Drug Resistance and Emerging Diseases, New Delhi, March 1999.
37. 12th International Congress of Immunology, New Delhi, November 1998.
38. Department of Biological Sciences, Institute of Bacteriophages, University of Pittsburgh, Pittsburgh, USA, October 1998.
39. "Reemerging Infectious Diseases" - symposium held during the meeting of Indo-US Vaccine Action Programme, Washington, DC, USA, October 1998.
40. Indo-European Commission Symposium on Tuberculosis Research: Into the 21st Century, Chennai, 3rd – 5th February 1998.
41. International conference on Eukaryotic Expression Vector Systems: Biology and Applications, National Institute of Immunology, New Delhi, February 1996.
42. International Symposium on Trends in Microbiology, Bose Institute, Calcutta, December 1995.
43. Albert Einstein Medical College, New York, USA, April 1995.
44. Institute of Public Health Services, New York, USA, April 1995.
45. John L. McClellan Memorial Veteran's Hospital, Little Rock, USA, April 1995.
46. Third Asian Conference on Transcription, Bangalore, September 1994.
47. International symposium on gene expression at Indian Institute of Science, Bangalore, December 1991.
48. Laboratory of Biochemical Pharmacology, National Institute of Arthritis, Diabetes, Digestive and Kidney Diseases, National Institutes of Health, Bethesda, Maryland, USA, May 1990.

National Conferences –

49. Delivered Bimal K. Bachhawat lecture at the 6th Symposium on "Frontiers in Molecular Medicine", JNU, New Delhi, 13th-15th February 2015.
50. Symposium on ''Current Trends in Structural Biology in Multidrug Resistant Bacterial Therapeutics and Thrombosis'', AIIMS, New Delhi, February 27-28, 2014.
51. National Symposium on "Innovation in TB Diagnostics, Drug Targets and Biomarkers", JBTDRC, MGIMS, Sevagram, January 27 - 28, 2014.

52. Zoonotic Mycobacterial Infections and their Impact on Public Health, AIIMS, New Delhi, 25th-27th February 2013.
53. Refresher Course in Life Science, UDSC, New Delhi, 15th March 2013
54. Science, Technology and Innovation (STI) Policy – a Brainstorming conference on implementation aspects, National Institute of Plant Genome Research, New Delhi, 2nd March, 2013
55. Symposium on "Vaccines for India: Innovations and Roadmap", St. Johns Research Institute, Bangalore, 5th February 2013.
56. National Symposium on Microbes in Health and Agriculture, JNU, New Delhi, 12th and 13th March 2012.
57. "Celebration of 100 years of Chemistry", special lecture on "Development of TB Vaccines", Hans Raj College, University of Delhi, 26th March 2011.
58. UGC-SAP workshop on "Advances in Molecular Biologyand Biotechnology", Department of Plant Molecular Biology, UDSC, New Delhi, 25th March 2011.
59. National Symposium on "Emerging Trends in Biotechnology", Indian Institute of Advanced Research, Gandhinagar, Ahmedabad, Gujarat, 27th-28th April 2010.
60. Inaugural Lecture for the Annual Function of Biochemistry Society, Institute of Home Economics, Hauz Khas, New Delhi, 15th December 2009.
61. 77th Annual Meeting of the Society of Biological Chemists (India), IIT Madras, Chennai, 18th – 20th December 2008.
62. Ranbaxy Science Foundation's 22nd Round Table Conference on "Challenges of MDR/XDR Tuberculosis in India", New Delhi, 13th December 2008.
63. 32nd Annual Conference of Indian Association of Medical Microbiologists (IAMM), A CME on "Vaccinology - an update", AFMC, Pune, 22nd October 2008.
64. Symposium on Industrial application of microbial proteomics, Indian Institute of Advanced Research, Gandhi Nagar, Gujarat, 2nd-4th June 2008.
65. Symposium on Recent Trends in Biotechnology, Aligarh Muslim University, Aligarh, 16th January, 2008.
66. B.R. Ambedkar Centre, University of Delhi, Delhi, 10th July 2007.
67. Dr. C.R. Krishnamurthy Memorial Oration, ITRC, Lucknow, 5th June 2007.
68. Foundation Day Lecture at JALMA National Institute of Leprosy and Other Mycobacterial Diseases, Agra, 17th April 2007
69. Department of Genetics, University of Delhi South Campus, New Delhi-110021, 4th April 2007
70. Department of Biochemistry, Faculty of Science, MS University, Baroda, 7th March 2007.
71. 24th Biennial Conference of the Indian Association of Leprologists, JALMA, Agra, 12th - 14th November 2005.
72. Annual Meeting of the Society of Biological Chemist(s) and Molecular Biologists, India, Lucknow, 7th –10th November 2005.
73. Brainstorming workshop on Tuberculosis, ICGEB, New Delhi, 19th – 21st May 2005.
74. Prof. S.H. Zaidi Oration at Industrial Toxicology Research Centre, Lucknow 3rd November 2005.

75. Symposium on Tuberculosis Research – An Indian Perspective (TRIP), AstraZeneca Bangalore, India, 20th October 2005.
76. 59th National Conference on Tuberculosis and Chest Diseases, New Delhi, 3rd-6th February 2005.
77. Ranbaxy Science Foundation's 15th Round Table Conference on "HIV and Tuberculosis: Co-Infections", New Delhi, 8th January 2005.
78. ICMR-INSERM Workshop on Tuberculosis, Agra, India, 12th – 14th December 2003.
79. Global challenges in TB: An update. V.P. Chest Institute, Delhi, 6th April 2003.
80. Symposium on "The Frontiers of Molecular Medicine", Special Centre for Molecular Medicine, Jawaharlal Nehru University, New Delhi, 2nd February 2002.
81. Refresher Course for teachers in Biochemistry, B.R. Ambedkar Centre, University of Delhi, Delhi, 6th October 2001
82. 1st Conference of Biotechnology Society of India, "Biotecon-2001", New Delhi, 4th – 6th October 2001.
83. Annual meeting of the Association of Microbiologists of India (AMI), Jaipur, November 2000.
84. ATA-Apollo Millennium Medical Conference, Hyderabad, December 2000.
85. The first Sir Dorabji Tata Symposium – Status of tuberculosis in India, March 11-12, 2000.
86. Dr. Nitya Anand Endowment Lecture 1999 (awarded by INSA), Tata Institute of Fundamental Research, Bombay, 27th December 1999.
87. Annual Meeting of the Society of Biological Chemists, India, New Delhi, December 1998.
88. HIV Vaccine Development Initiative by India - Seminar arranged by NACO and Ministry of Health, New Delhi, November 1998.
89. "Mycobacterial Genome" August - symposium arranged by : Bioinformatics Centre, JNU, August 1998.
90. Host Pathogen defences in Mycobacterium tuberculosis and HIV Infections: Emerging scenario, National Institute of Immunology, New Delhi, 1998.
91. Brain Storming Session on "Development and deployment of target molecules from New Bioactive Substances" held at CCMB, Hyderabad, 1st – 2nd August 1998.
92. ASTRA-CCMB Symposium on Molecular Aspects of Microbial Pathogenesis, Hyderabad, 11th – 13th January 1998.
93. 38th Annual Meeting of the Indian Science Congress, Hyderabad, 3rd – 6th January 1998.
94. Centre for Genetic Engineering, MK University, Madurai, March 1997.
95. Department of Biochemistry, M.S. University, Baroda, February 1997.
96. 37th Annual Meeting of the Association of Microbiologists of India, Chennai, 4th – 6th December 1996.
97. Department of Biochemistry, North-Eastern Hill University, Shillong, September 1996.
98. Institute of Nuclear Medicine and Allied Sciences, New Delhi, January 1996.
99. Workshop on Infectious diseases: diagnostics, prophylactics, and therapeutics, National Institute of Immunology, December 1995.
100. Annual meeting of the Society of Biological Chemists, India, Lucknow, October 1995.
101. Symposium on Pasteur's Heritage: from Molecular asymmetry/Industrial fermentation to causality and cure of infectious diseases, Institute of Microbial Technology, Chandigarh, September 1995.
102. XI National Symposium on Developmental Biology, Maharshi Dayanand University, Rohtak, March 1995.
103. First Congress of Federation of Indian Physiological Societies, New Delhi, March 1995

104. XVIII All India Cell Biology Conference and Symposia, National Botanical Research Institute, Lucknow, February 1995.
105. Institute of Microbial Technology, Chandigarh, August 1994.
106. Department of Biochemistry, Banaras Hindu University, Varanasi, July 1994.
107. UGC sponsored Refresher course in Biochemistry at Sri Venkateswara College, University of Delhi, April 1994.
108. Annual Meeting of the Society of Biological Chemists, India, Madurai, December 1993.
109. Department of Biochemistry, North Eastern Hill University, Shillong, December 1993.
110. UGC sponsored Refresher course in Biochemistry at Daulat Ram College, University of Delhi, July 1993.
111. Annual meeting of the Society of Biological Chemists, India, Hyderabad, December 1992.
112. National Chemical Laboratory, Pune, May 1992.
113. National Institute of Immunology, New Delhi, April 1992.
114. Department of Biochemistry, University of Allahabad - March 1992
115. Brain Storming session on Molecular Biology sponsored by TAB - CSIR Centre for Biochemicals, Delhi, March 1992.
116. Annual meeting of the Tuberculosis Association of India, New Delhi, January 1992.
117. Department of Plant Molecular Biology, University of Delhi, March 1991.
118. Symposium on Molecular Genetics, at the annual meeting of the Indian Science Congress, Indore - January 1991.
119. The annual meeting of the Society of Biological Chemists India, New Delhi, October 1984.

Editorial Work

Academic Editor, PLoS ONE from 2009 onwards, published by Public Library of Science.

Member of Editorial Advisory Board for the journal Tuberculosis from 2012 onwards.

Member of the Editorial Board for the Journal “Indian Journal of Medical Research” published by ICMR, New Delhi, 2003 onwards.

Member of Editorial Board for the journal “Tuberculosis” published by Elsevier Press, 2003-2007.

TEACHING EXPERIENCE AT UNIVERSITY OF DELHI

M.Sc., BIOCHEMISTRY	:	Molecular biology, Molecular genetics, Recombinant DNA technology, enzymes, carbohydrate metabolism
M.Sc., GENETICS	:	Molecular biology
M.Sc., MICROBIOLOGY	:	Molecular biology
M.Phil., BIOTECHNOLOGY	:	Molecular genetics and Molecular biology

DETAILS OF TEACHING EXPERIENCE

Total teaching experience = 31 years

M.Phil. Biotechnology	1988-2014	Molecular Biology
M.Sc. Microbiology	1994-2009	Molecular Biology
M.Sc. Genetics	1986-1989	Recombinant DNA Technology
M.Sc. Genetics	1986-2009	Molecular Biology
M.Sc. Biochemistry	1985-1989	Recombinant DNA Technology
M.Sc. Biochemistry	1985-2014	Molecular Biology
M.Sc. Biochemistry	1985-1987	Molecular genetics
M.Sc. Biochemistry	1983-1987	Enzymes, Carbohydrate metabolism

Development of curriculum for various courses

Major contribution in developing the curriculum for the following courses

- Development of new revised syllabus for B.Sc. (Hons) Biochemistry, University of Delhi, 2010.
- Development of new/revised curriculum for M.Sc. Biochemistry, University of Delhi, 2009.
- Development of revised curriculum for B.Sc. (Hons) Biochemistry for Delhi University, 1998.
- Development of revised curriculum for post-graduate diploma in Molecular and Biochemical Technology, University of Delhi, 1998.
- Development of Curriculum for M.Sc. Biochemistry, Kurukshetra University, 1991.
- Development of curriculum for postgraduate diploma course in Biochemical Technology, University of Delhi, 1990.
- Development of revised/advanced curriculum for M.Sc. Biochemistry, University of Delhi, 1989.
- Development of Curriculum for M.Phil Biotechnology, University of Delhi, 1988.
- Development of curriculum for B.Sc.(Hons) Biochemistry Course for Delhi University, 1987.
- Development of new/revised curriculum for M.Sc. Biochemistry, University of Delhi, 1985.

Meetings / Symposia / Refresher courses organized

- Co-Convenor of the National Symposium on “Ramachandran Manifestation: Peptide to Proteome”, UDSC, New Delhi, 14th-15th March 2013.
- Co-Convenor of the symposium on “Systems Biology” held at the Department of Biochemistry, University of Delhi South Campus, New Delhi, 26th March 2012.

- Co-Convenor of the symposium-cum-workshop on "Next Generation Sequencing Data Analysis" held at the Department of Biochemistry, University of Delhi South Campus and JNU, New Delhi, 28th – 29th January 2011.
- Co-Convenor of the national conference on "Drug Discovery and Development" held at the University of Delhi South Campus, New Delhi, organized by Bioinformatics Centre, Sri Venkateswara College in association with Bioinformatics Centre, DISC, University of Delhi South Campus, 21st – 23rd January 2009.
- Co-Convenor of the symposium-cum-workshop on "Computational Biology – Construction of databases" held at the Department of Biochemistry, University of Delhi South Campus and JNU, New Delhi, 14th - 15th March 2008.
- Co-Convenor of the symposium on "Systems Biology" held at the Department of Biochemistry, University of Delhi South Campus and JNU, New Delhi, 12th - 13th March 2006.
- Chairman, Organizing Committee for Brain Storming Session on Tuberculosis held at ICGEB, New Delhi, 19th - 21st May 2005.
- Co-Convenor of the workshop entitled, "Machine Learning Techniques in Bioinformatics" held at the Department of Biochemistry, University of Delhi South Campus and JNU, New Delhi, 28th - 29th March 2005.
- Co-Convenor of the Workshop entitled, "Biological databases – Mining of Information" held at the Department of Biochemistry, University of Delhi South Campus and JNU, New Delhi, 28th - 29th March 2003.
- Co-Convenor of the Workshop entitled, "Applications of Genomics and Proteomics" held at the Department of Biochemistry, University of Delhi South Campus and JNU, New Delhi, 1st - 3rd February 2002.
- Convenor of the Workshop entitled, "Bioinformatics and its Application to Biology" held at the Department of Biochemistry, University of Delhi South Campus, New Delhi, 22nd - 23rd March 2000.
- Joint-convenor of the meeting - TRendys in Biochemistry, held at the University of Delhi South Campus, New Delhi, 23rd – 24th November 1999.
- Convener of the symposium on "Microbial Infections: Diagnostics, Prevention and Cure" during the 38th Annual Meeting of the Association of Microbiologists of India held at New Delhi, 12th – 14th December 1997.
- Joint-Convener of "Diversity in Modern Biology - an Interdisciplinary Symposium" held at University of Delhi South Campus, 21st – 22nd September 1997
- Course in charge for the refresher course in biochemistry sponsored by the University Grants Commission, 28th June – 17th July 1993.
- Co-convener of the Guha Research Conference held at Dalhousie, 17th – 20th May 1993.
- Course Incharge for the refresher course in Immunology sponsored by the University Grants Commission, 28th September - 17th October 1992.

- Course in charge for the refresher course in Biochemistry sponsored by the University Grants Commission, 31st March – 19th April 1991.
- Course-Incharge for the workshop on Nucleic Acid Probes held on the auspices of annual meeting of the Clinical Biochemists of India, at G.T.B. Medical College, New Delhi, February 1991.
- Convener of the Annual meeting of the Society of Biological Chemists (India), New Delhi, 1984.

LIST OF COMPLETED AND ONGOING PROJECTS

S.No.	Title of the project	Funding Agency	Status	Funding (in lacs)	Duration
Ongoing Projects					
1.	A Virtual Centre of Excellence for Co-ordinated Research on Tuberculosis :Development of Alternate Strategies (Phase II)	DBT (Department of Biotechnology, GOI)	Ongoing	Rs.484.77 lacs	September 2011 to September 2016
2.	Development and evaluation of an alpha-crystallin based prime boost vaccination strategy against TB by employing MVA	DBT	Ongoing	Rs.80.89 lacs	May 2012 to November 2014
Completed Projects					
3.	A Virtual Centre of Excellence for Co-ordinated Research on Tuberculosis: Development of Alternate Strategies (Phase I)	DBT	Completed	Rs.424.51 lacs	August 2006 to August 2011
4.	rBCG85C – a candidate TB vaccine: Removal of antibiotic resistance marker, modifications for stabilization of antigen expression and efficacy studies	DBT	Completed	Rs.193.90 lacs	Sept. 2009 to August 2013
5.	Development of a mice model of latent tuberculosis and	DBT	Completed	Rs.220-.51 lacs	September 2006 –

	evaluation of immune-therapeutic potential of DNA vaccines as an adjunct to chemotherapy against tuberculosis				September 2011
6.	The *Mycobacterium w.* Genome Program: Complete Genome Sequencing, Comparative Genomics and Functional Analysis	DBT	Completed	Rs.51 lacs	January 2004 – December 2006
7.	Studies on the role of *virS* gene in the pathogenesis of *Mycobacterium tuberculosis*	ICMR	Completed	Rs.28 lacs	February 2003- January 2006
8.	Development of a heterologous prime boost immunization approach for an effective TB vaccine	DBT	Completed	Rs.44 lacs	August 2002 – July 2005
9.	Protein tyrosine phosphatases from *Mycobacterium tuberculosis* and their role in pathogenesis	ICMR	Completed	Rs. 31 lacs	February 2002 – January 2005
10.	Evaluation of protective efficacy of recombinant BCG constructs as candidate vaccines against tuberculosis and hepatitis	DBT	Completed	Rs.7 lacs	October 2000 – Sept. 2001
11.	Development and evaluation of candidate DNA vaccines for protection against tuberculosis	DBT	Completed	Rs.47 lacs	January 2000 – December 2002
12.	Analysis and characterization of monooxygenase gene of *Mycobacterium tuberculosis*	CSIR	Completed	Rs.8.5 lacs	May 1998 – April 2001
13.	Development of a detection system for rapid screening of compounds for anti-mycobacterial activity	CSIR	Completed	Rs.9.5 lacs	May 1998 – April 1999

14.	Development of a recombinant BCG based multipurpose vaccine vehicle and its application.	DBT	Completed	Rs.43 lacs	September 1996 – September 1999
15.	Molecular strategies for prevention and control of tuberculosis	DBT	Completed	Rs.45 lacs	July 1991 – July 1997
16.	Polyamine biosynthesis as a target for arresting mycobacterial growth	ICMR	Completed	Rs.1.5 lacs	Sept 1990 – Sept 1993
17.	Studies on the mechanism(s) of pathogenesis of *M.tuberculosis*	CSIR	Completed	Rs.8 lacs	March 1994 – February 1997
18.	Regulation of ornithine decarboxylase and its RNA inhibitor from *M. tuberculosis* $H_{37}Rv$	CSIR	Completed	Rs.8.5 lacs	September 1990 – September 1993
19.	Role of polyamine in transcription in mycobacteria	CSIR	Completed	Rs.6 lacs	October 1987 – October 1990

Total Research Grants Received = Rs.1742.58 lacs

DETAILS OF RESEARCH EXPERIENCE

Current Research Activities

The current research activities are focused on understanding the molecular biology of mycobacteria and developing strategies for prevention and control of tuberculosis. Techniques of molecular biology, structural biology, immunology, purification and characterization of proteins, DNA protein interactions, gene knock-outs, vaccine development strategies and animal experiments are the main tools employed. Various aspects of current research activities are:

- Vaccine development programme - Development of new vaccines against tuberculosis and evaluation of their efficacy in animal models.
- Drug discovery programme - Characterization and validation of potential drug targets of *Mycobacterium tuberculosis* and identification of new inhibitors for treatment of tuberculosis.
- Study of genes involved in the pathogenesis of *Mycobacterium tuberculosis*

Supervision of Research Work

Ph.D. awarded	:	25
Ph.D. students currently working	:	6
M.Phil. (Biotechnology) awarded	:	2
M.D. (Medical Biochemistry) awarded	:	1

Publications

Total	:	120
Published Research papers	:	102
Book chapters	:	15
Published Scientific Reviews	:	3

Name of the important periodicals/books in which research papers/book chapters have been published

Journal of Bacteriology
Journal of Biological Chemistry
Biochemistry
Proceeding of National Academy of Sciences (USA)
Gene
Molecular Microbiology
Methods in Enzymology
Journal of Infectious Diseases
Nucleic Acid Research
Nature Chemical Biology
Microbiology (U.K.)
European Journal of Biochemistry
Cancer Research

PLoS One
Biochemical Biophysical Research Communications
Achieves of Biochemistry and Biophysics
Biochemical Pharmacology
Physiology and genomics
Molecular Genetics for Mycobacteria, ASM Press, Washington DC
Advances in Polyamine Research, Raven Press, New York
Advances in Pharmacology and Chemotherapy, Academic Press, New York
The Mycobacteria Cell Envelope, ASM Press, Washington DC
Trends in Pharmacological Sciences
Journal of Applied Bacteriology
Federation Proceedings

Details of patents taken , if any.

Sr. No.	Title of the patent	Authors	Patent No.	National / International	Applied / Granted	Year Applied / Granted	If commercialized, name of industry partner; Value; Year
1	Mutants of mycobacteria and process thereof	Anil K. Tyagi, Ramandeep Singh, Vivek Rao, Vadakkuppattu Devasenapathi Ramanathan, Chinnambedu Nainarappan Paramasivan, Paranji Ramaiyengar Narayanan, Yogendra Singh	Patent No.259 594	National	Granted	Indian Patent Application No. 882/DEL/200 3 dated 09.07.2003 Patent granted on 19th March 2014	Not yet, efforts are in progress.
2.	Mutants of mycobacteria and process thereof	Anil K. Tyagi, Ramandeep Singh, Vivek Rao, Vadakkuppattu Devasenapathi Ramanathan, Chinnambedu Nainarappan Paramasivan, Paranji Ramaiyengar Narayanan, Yogendra Singh	Patent No. 7,943, 361	International (USA)	Granted	Application No.10/560,60 5 Date of Application: July 9, 2004 Date of grant : May 17, 2011	Not yet
3.	Recombinant BCG-Ag85C based immunization against tuberculosis	Anil K. Tyagi, Ruchi Jain, Bappaditya Dey, Neeraj Dhar, Vivek Rao, Ramandeep Singh,	Under consid eration	National	Applied	Application No. 2639/DEL/20 08 dated November 21, 2008	Yet to be granted

		Vadakkuppattu Devasenapathi Ramanathan, Umesh Datta Gupta, Vishwamohan Katoch					
4.	Alpha-crystallin based immunization against *Mycobacterium* and methods thereof	Anil K. Tyagi, Bappaditya Dey, Ruchi Jain, Aparna Khera, Vadakkuppattu Devasenapathi Ramanathan, Umesh Datta Gupta, Vishwamohan Katoch	Under consideration	National	Applied	Application No.473/DEL/2009 dated March 9, 2009	Yet to be granted
5.	A simple and fast process for evaluating *Mycobacterium tuberculosis* promoters and the effect of candidate antimycobacterial compounds on promoter activity and bacterial viablility under hypoxic and aerobic conditions using *M. smegmatis* as a surrogate host	Jaya Sivaswami Tyagi, Gargi Bagchi, Mayuri, Neetu Kumra, Kohinoor Kaur, Deepak Kumar Saini, Anil Kumar Tyagi	Patent No. 211217	National	Granted	Application No. 981/DEL/2003	Not yet

Important Research Contributions

Summary of Important Research Contributions

Broadly, Dr. Tyagi's laboratory, for the last 20 years, has focused on the following two important areas related to tuberculosis

(1) Vaccine development
(2) Novel targets in *M. tuberculosis* and drug discovery.

The research efforts of his group have been focused on developing the strategies, tools and knowledge related to these two aspects for the control and amelioration of tuberculosis.

In addition, Dr. Tyagi and colleagues have also carried out studies on *mycobacterium indicus pranii*. The collaborative work on this mycobacterial species, with Dr. Tyagi as the Principal Investigator, was responsible for the publication of the first completed genome of a new bacterial species from India.

The summary of the important research contributions is given below:

1. Work on the development of TB vaccines and related aspects

Dr. Tyagi and colleagues have worked in this area for the last twenty years. For this, they first studied the expression signals especially the promoters of mycobacteria and then employed them for the development of expression vectors which they later used for the expression of mycobacterial genes and development of candidate TB vaccines. The brief summary of these efforts is as follows:

A. Studies on the transcriptional signals of mycobacteria

Dr. Tyagi's group has contributed significantly to the understanding of transcriptional machinery and gene expression in mycobacteria. By isolating and characterizing, a large number of transcriptional signals from the slow growing *Mycobacterium tuberculosis* and the fast growing *Mycobacterium smegmatis*, it was demonstrated that most of the mycobacterial promoter elements function poorly in *E.coli.* His work has also provided evidence that RNA polymerases of *M.smegmatis, M.tuberculosis* and *M.bovis* BCG recognize mycobacterial promoter elements with comparable efficiencies and that mycobacterial transcriptional signals differ from their counterparts in *E.coli* with respect to their -35 regions and the corresponding recognition domain of sigma factor of RNA polymerase. These studies have shed significant light on the divergence of mycobacterial transcriptional machinery from those of other bacteria. Also, these studies have provided a better understanding of the molecular basis of slow growth rate of *M.tuberculosis* and an explanation for the poor expression of mycobacterial genes in *E.coli*.

B. Development of tools for genetic manipulations in mycobacteria

Dr. Tyagi's laboratory has developed a repertoire of vectors, which have proved to be extremely useful to several investigators in genetic manipulations of mycobacteria for the basic understanding of these organisms at a molecular level. Besides developing several vectors, for the isolation of promoters, for construction of expression libraries and for trapping the promoters of structural genes under the control of a transcriptional regulator, Dr. Tyagi and colleagues have also developed an integration-proficient vector system for stable expression of genes in mycobacteria. This recombinant BCG system has been very useful for a large number of investigators for expression of mycobacterial genes as well as antigen genes from several other pathogens for the development of BCG into a multipurpose vaccine vehicle.

C. Development of candidate vaccines against tuberculosis

With the aim of modifying BCG into a more potent vaccine against TB, a generic approach was developed by Dr. Tyagi's laboratory for expression of genes in mycobacteria which provides a desired level of expression of an antigen based upon the choice of mycobacterial promoter. Dr. Tyagi's group has expressed several antigens of *M. tuberculosis* by using this expression system to develop a number of candidate vaccines against TB. The evaluation of these candidate vaccines for immune responses in mice and for protective efficacy in guinea pigs has shown that two of the recombinant BCG vaccines provide more efficient protection than BCG itself against a sub-cutaneous challenge of *M. tuberculosis* in guinea pigs. In a parallel approach, Dr. Tyagi and colleagues have also developed several candidate DNA vaccines. Based on reduction in the bacillary load in lung and spleen of guinea pigs as well as associated histopathological changes, some of these candidate DNA vaccines imparted significant protection against the subcutaneous challenge of *M. tuberculosis*.

Till this point of time, no aerosol challenge facility was available in India. Hence, evaluation of the candidate vaccines was carried out by using subcutaneous infection of guinea pigs. However, as the aerosol infection facility at the National JALMA Institute of Leprosy and Other Mycobacterial Diseases, Agra became available, the promising candidate vaccines were evaluated against the aerosol challenge of *M. tuberculosis* in guinea pigs by using heterologous prime boost approach. In this study, three regimens comprising of (i) recombinant BCG overexpressing 85C, (ii) recombinant BCG overexpressing α–crystallin as the priming agent followed by boosting with a DNA vaccine expressing the same antigen and (iii) BCG as priming agent followed by boosting with DNA vaccine expressing α–crystallin showed extremely good results and proved their superiority in comparison to the present BCG vaccine both on the basis of reduction in the bacillary load in lung and spleen as well as histopathological changes. The Tuberculosis Vaccine Clinical Trial Expert Group (TVCTEG) of the Department of Biotechnology, Government of India, has approved these vaccine regimens for human clinical trials. Currently, pre-clinical work on these candidate vaccines is in progress so that the human clinical trials can be initiated.

By employing modified Cornell model, Dr. Tyagi and colleagues have also evaluated the potential of adjunctive immunotherapy with DNA vaccines to shorten the tuberculosis chemotherapy period and reduce disease reactivation and demonstrated that α-crystallin

based DNA vaccine (DNAacr) significantly reduced the chemotherapy period from 12 weeks to 8 weeks when compared with the chemotherapy alone. Hence, α-crystallin based DNA vaccine holds a significant promise for its use both as a prophylactic vaccine as well as in the therapeutic approach.

D. Development of first oligonucleotidew microarray for global gene expression profiling in guinea pigs: defining the transcription signature of infectious diseases

The Guinea pig (Cavia porcellus) is one of the most extensively used animal models to study infectious diseases. However, despite its tremendous contribution towards understanding the establishment, progression and control of a number of diseases in general and tuberculosis in particular, the lack of fully annotated guinea pig genome sequence as well as appropriate molecular reagents has severely hampered detailed genetic and immunological analysis in this animal model. Dr. Tyagi and colleagues developed the first comprehensive microarray (44K) for studying the global gene expression profile in guinea pigs and validation of its usefulness with tuberculosis as a case study. This study by Dr. Tyagi and colleagues addressed an important gap in the area of infectious diseases and vaccine development and provided a valuable molecular tool to optimally harness the potential of guinea pig model to develop better vaccines and therapies against human diseases.

Since, fully annotated guinea pig genome sequence was not available, Dr. Tyagi and colleagues employed cross-species hybridization technology to develop a 44 K microarray platform to study gene expression profile in guinea pigs. In their study, the pulmonary transcriptional profiling of M. tuberculosis infected guinea pigs revealed a significant regulation of 3200 unique targets. While, 1344 unique genes exhibited a marked up regulation, 1856 genes were significantly down regulated. Differentially regulated genes were further classified into different categories based on their direct or indirect involvement in various biological processes or pathways. A massive re-alignment of metabolic pathways, mostly associated with catabolism, emerged as one of the interesting themes from their analysis. The most prominent observation related to the repression of numerous genes related to MAPK, Wnt and calcium signaling pathways. MAPK signaling is known to be crucial for the anti-bacterial response of the host and it also represents a strategic target for bacterial subversion tactics. Thus, dampening of the MAPK signaling has emerged as a key to achieve alteration in the antibacterial phenotype of macrophages. Recently, Wnt signaling pathway has been implicated in the generation of long-lived multi-potent memory T cells and in the modulation of inflammatory response of macrophages to M. tuberculosis infection, thus repression of Wnt signaling pathway observed by Dr. Tyagi and colleagues suggested a possible mechanism by which, M. tuberculosis inhibits effective Tcell memory response.

The transcriptional profiling of M. tuberculosis infected guinea pig lungs developed by Dr. Tyagi and colleagues not only revealed modulation of key immunologically relevant genes but also demonstrated involvement of novel metabolic and signaling pathways in TB pathogenesis. Moreover, their analysis revealed a higher resemblance of guinea pigs to humans in terms of transcriptional response to M. tuberculosis infection when compared to mouse and non-human primates. Development of the 44 K GPOM thus has been a critical step towards characterization of the guinea pig model, which will greatly aid in improving our understanding of host responses to a number of infectious diseases.

2. Novel targets in *M. tuberculosis* and drug discovery

In a comprehensive approach, Dr. Tyagi and colleagues have worked on several aspects related to this broad area of drug discovery which include study of *M. tuberculosis* genes essential for the pathogenesis of *M. tuberculosis* and validation of their essentiality in animal models, crystallization and structure determination of important *M. tuberculosis* proteins, characterization of important *M. tuberculosis* targets and finally use these targets for the identification of mycobacterial inhibitors by target based virtual screening in addition to whole cell based screens. The summary of these efforts is provided below:

A. Study of genes that are essential for the pathogenesis of *M. tuberculosis* – identification of new drug targets

(i) mymA operon

Dr. Tyagi's laboratory identified a new gene (*virS*) from *M .tuberculosis*. The 7 genes (*Rv3083-Rv3089*), which were present divergently to *virS (Rv3082c)* constitute an operon designated as the *mymA* operon. Dr. Tyagi's group showed that transcription of the *mymA* operon is dependent on the presence of VirS protein. A 4-fold induction of the *mymA* operon promoter occurs specifically in the wild type *M. tuberculosis* and not in the *virS* mutant of *M. tuberculosis* (Mtb∆*virS*) when exposed to acidic pH. Dr. Tyagi's group showed that the expression of the *mymA* operon was also induced by 10-folds in infected macrophages. Based on further studies, his group proposed the involvement of these proteins in the modification of fatty acids required for cell envelope under acetic environment. This was supported by altered colony morphology and cell envelope ultra structure displayed by the *virS* mutant of *M. tuberculosis* (Mtb∆*virS*). Dr. Tyagi and colleagues showed that disruption of *virS* and *mymA* genes impairs the ability of *M. tuberculosis* to survive in the activated macrophages, but not in resting macrophages, suggesting the importance of *mymA* operon in protecting the bacterium against harsher conditions. Infection of guinea pigs with Mtb∆*virS*, Mtb*mym:hyg* and the parental strain resulted in ~800-fold reduced bacillary load of the mutant strains as compared with the parental strain in the spleens of animals at 20 weeks post infection. These observations by Dr. Tyagi's laboratory demonstrated important role of *mymA* operon in the pathogenesis of *M. tuberculosis* at later stages of progression of the disease.

(ii) Tyrosine phosphatases of *M. tuberculosis*

Two tyrosine phosphatases namely MptpA and MptpB have been identified and characterized from *Mycobacterium tuberculosis*. To determine the role of MptpB in the pathogenesis of *M. tuberculosis* Dr. Tyagi and colleagues constructed an *mptpB* mutant strain and showed that disruption of the *mptpB* gene specifically impairs the ability of the mutant strain to survive in guinea pigs but not *in vitro* or in a macrophage cell line suggesting the importance of its role in the host-pathogen interaction. Infection of guinea pigs with the mutant strain resulted in a 70-fold reduction in the bacillary load of spleens in infected animals as compared to the bacillary load in the animals infected with the parental strain along with the commensurate pathological damage in the organs.

Dr. Tyagi and colleagues also showed that disruption of *mptpA* gene impairs the ability of *M. tuberculosis* to survive in IFN-γ activated macrophages as well as in guinea pigs. Infection of activated macrophages with *M. tuberculosis*, or *mptipA* mutant resulted in an approximately 14-fold reduction in the survival of intracellular *mptpA* mutant in comparison to the intracellular parental strain. Dr. Tyagi and colleagues also demonstrated that on infection of guinea pigs the bacillary load in guinea pigs infected with the *mptpA* mutant strain was reduced by 80 and 90 folds in spleens and lungs, respectively, in comparison to bacillary load in guinea pigs infected with the parental strain. Commensurate with these observations, infection of animals with the *mptpA* mutant strain showed a significantly reduced histopathological damage to lungs in comparison to infection with the parental strain. These studies by Dr. Tyagi and colleagues established the importance of *mptpB* and *mptpA* operon in the intracellular survival of *M. tuberculosis*. These studies have provided a better understanding of the importance of tyrosine phosphatases in the survival of *M. tuberculosis* in the host tissue and led to the identification of these two tyrosine phosphatases as attractive targets for the development of new anti-tubercular drugs.

(iii) Iron storage proteins and their importance in the pathogenesis and survival of *Mycobacterium tuberculosis* in the host

Iron is an essential nutrient for almost all microbes, including pathogens such as *Mycobacterium tuberculosis*. It is an indispensable cofactor for proteins involved in critical cellular processes, such as electron transfer, oxygen transport, DNA synthesis, etc. Although iron is essential, excess free iron is potentially toxic for the cells because it catalyzes the production of reactive oxygen radicals by a Fenton reaction, leading to oxidative damage. Thus, all living organisms tightly regulate the cellular levels of iron by employing efficient iron acquisition and storage mechanisms. The sequencing of the *M. tuberculosis* H37Rv genome revealed the presence of two putative iron storage proteins, namely, BfrA (Rv1876), a bacterioferritin, and BfrB (Rv3841), a ferritin-like protein.

However, the biological significance of these iron-storing proteins for *M. tuberculosis* has not been genetically proven. Hence, Dr. Tyagi and colleagues generated mutants of *M. tuberculosis* lacking *bfrA* (Rv1876) and *bfrB* (Rv3841) that encode the iron storage proteins and showed that the mutant of *M. tuberculosis*, H37Rv Δ*bfrA*, Δ*bfrB*, which lacks the function of both *bfrA* and *bfrB*, has significantly reduced growth under iron-deprived conditions, is markedly vulnerable to oxidative stress, and exhibits the attenuation of growth in human macrophages. Moreover, reduced bacillary load in lung and spleen of H37Rv Δ*bfrA* Δ*bfrB*-infected guinea pigs, resulting in a significant reduction in pathology, clearly implied that these proteins play a crucial role in the pathogenesis of *M. tuberculosis.* Mycobacteria are continuously exposed to oxidative stress generated by the activated macrophages that they inhabit. Dr. Tyagi and colleagues evaluated the ability of *M. tuberculosis* mutants lacking the function of *bfrA* and *bfrB* to resist oxidative stress and observed that simultaneous mutations in *bfrA* and *bfrB* in *M. tuberculosis* (H37Rv Δ*bfrA* Δ*bfrB*) tremendously reduced its ability to withstand oxidative stress, implying the role of these iron storage proteins in restricting oxidative damage. These observations by Dr. Tyagi's laboratory clearly demonstrated the importance of these iron storage proteins in the mycobacterial response to oxidative stress.

Thus, Dr. Tyagi and colleagues demonstrated that BfrA and BfrB proteins play a crucial role in protecting the pathogen against oxidative stress encountered during infection. In addition, they showed that BfrA and BfrB proteins are important for the survival and hematogenous spread of the pathogen. Their studies established these proteins as attractive drug targets for the development of new therapeutic molecules against mycobacterial infections.

(iv) Importance of mycobactin biosynthesis in the physiology, growth and pathogenesis of *M. tuberculosis*

M.tuberculosis has developed an efficient mechanism to sequester iron from the host by secreting siderophores known as mycobactins. Mycobactins bind to iron more strongly than the iron storage proteins of the host and play a crucial role of scavenging iron from the iron limiting host environment. *M.tuberculosis*, *mbt* cluster is induced under low iron conditions. No studies have been carried out to evaluate the importance of mycobactin biosynthesis during the survival of *M.tuberculosis* in the host.

Dr. Tyagi and colleagues disrupted the *mbtE* gene (Rv2380c) of *M.tuberculosis* that encodes a non ribosomal peptide synthetase in the *mbt* cluster. Disruption of this gene renders *M.tuberculosis* incapable of synthesizing mycobactins. The Mtb∆*mbtE* mutant displayed an altered colony morphology and was drastically affected in its ability to grow on agar medium and in broth culture as compared to the parental strain. Supplementation of agar and broth medium with Fe3+CMBT or Fe3+MBT restored the growth of Mtb∆*mbtE* to levels similar to that of the parental strain. Genetic complementation of Mtb∆*mbtE* with *mbtE* gene restored the in vitro growth phenotype of the mutant similar to that of the parental strain. From these observations by Dr. Tyagi and colleagues, it was evident that mycobactin mediated iron acquisition is important for the normal growth of the pathogen. Transmission electron microscopy studies demonstrated an altered cell wall permeability of Mtb∆*mbtE*. Supplementation of growth medium with Fe3+CMBT restored the staining of Mtb∆*mbtE* similar to that of the parental strain. The altered colony morphology, cell wall permeability and growth characteristics of Mtb∆*mbtE* suggested that in the absence of mycobactins, several iron requiring systems of Mtb∆*mbtE* might have been affected (emanating as a consequence of inability of the mutant to synthesize mycobactins). The restoration of normal growth, cell wall permeability as well as colony morphology resulting from the addition of mycobactins in the media suggested that due to its essential role in procuring iron, mycobactin biosynthesis plays an important role in the biology of the pathogen.

Dr. Tyagi and colleagues also demonstrated that Mtb∆*mbtE* mutant displayed a significantly reduced ability to infect and grow inside the human THP-1 macrophages in comparison to the parental strain, emphasizing that mycobactins are vital for mycobacterial growth. Their studies in guinea pigs provided further evidence that Mtb∆*mbtE* is highly attenuated for its growth and ability to cause pathology. In the case of infection with the parental strain, a substantial number of CFU was recovered from the lungs and spleen of animals, at 4 as well as 10 weeks post infection, while no CFU was obtained from the animals infected with Mtb∆*mbtE* at both the time points. These observations demonstrated that the mutant strain could survive in the host only for a limited period of time. These observations

demonstrated a severe attenuation in the ability of the mutant to grow in the host and cause disease. Thus, this study Dr. Tyagi and colleagues highlighted the importance of mycobactins for the normal physiology of *M.tuberculosis*, in vitro as well as in the host.

(v) Secreted acid phosphatase (SapM) of *Mycobacterium tuberculosis*

Phagosomal maturation arrest is an important strategy employed by *Mycobacterium tuberculosis* to evade the host immune system. Secretory acid phosphatase (SapM) of *M.tuberculosis* is known to dephosphorylate phosphotidylinositol 3-phosphate (PI3P) present on phagosomes. However, there have been divergent reports on the involvement of SapM in phagosomal maturation arrest in mycobacteria. Dr Tyagi and colleagues conducted a study to reascertain the involvement of SapM in phagosomal maturation arrest in *M.tuberculosis*. Further, for the first time, they also studied whether SapM is essential for the pathogenesis of *M.tuberculosis*. By deleting the *sapM* gene of *M.tuberculosis*, Dr Tyagi and colleagues demonstrated that SapM mediates an important role in the protection of *M.tuberculosis* against the host defense by subverting the phagosomal maturation pathway. Moreover, the disruption of *sapM* in *M.tuberculosis* resulted in a highly attenuated strain with an impaired ability to grow in the THP-1 macrophages. Dr Tyagi et al further showed that Mtb∆*sapM* is severely attenuated for growth in the lungs and spleen of guinea pigs and has a significantly reduced ability to cause pathological damage in the host when compared with the parental strain. Also, the guinea pigs infected with Mtb∆*sapM* exhibited a significantly enhanced survival when compared with *M.tuberculosis* infected animals. The importance of SapM in phagosomal maturation arrest as well as in the pathogenesis of *M.tuberculosis* established it as an important target for the designing of anti-tubercular molecules.The fact that there are no known human analogues of SapM makes it even more important target for the development of new therapeutic molecules against TB. In addition, the secretory nature of SapM presents a unique opportunity in order to avoid the drug permeability issue due to thick hydrophobic cell envelope of *M.tuberculosis*.

(vi) Apurinic / Apyrimidinic endonucleases of *Mycobacterium tuberculosis*

In host cells, *Mycobacterium tuberculosis* encounters an array of reactive molecules capable of damaging its genome. Non-bulky DNA lesions are the most common damages produced on exposure to reactive species and base excision repair (BER) pathway is involved in the removal of such damage. During BER, apurinic / apyrimidinic (AP) endonuclease enzymes repair the abasic sites that are generated after spontaneous DNA base loss or by the action of DNA glycosylases, which if left unrepaired lead to inhibition of replication and transcription. However, the role of AP endonucleases in the growth and pathogenesis of *M.tuberculosis* has not yet been elucidated. To demonstrate the biological significance of these enzymes in *M.tuberculosis*, Dr Tyagi and colleagues generated *M.tuberculosis* mutants of the base excision repair (BER) system, disrupted in either one (Mtb∆*end* or Mtb∆*xthA*) or both (Mtb∆*end*∆*xthA*) the AP endonucleases and demonstrate that these genes are crucial for bacteria to withstand alkylation and oxidative stress *in vitro*. In addition, the mutant disrupted in both the AP endonucleases (Mtb∆*end*∆*xthA*) was shown to exhibit a significant reduction in its ability to survive inside human macrophages. However, infection of guinea pigs with either Mtb∆*end* or Mtb∆*xthA* or Mtb∆*end*∆*xthA* resulted in the similar bacillary load and pathological damage in the organs as observed in the case of infection with

*M.tuberculosis*indicating that the pathogen must have alternate repair machinery for the repair of the damaged DNA to safeguard its genome during its survival in the host.

B. Crystallization of *M. tuberculosis* proteins and structure determination

Dr. Tyagi and colleagues determined the crystal structure of several important *M. tuberculosis* proteins such as BfrA, BfrB and BirA.

(i) BfrA

Dr. Tyagi et al. determined the crystal structure of the selenomethionyl analog of bacterioferritin A (SeMet-BfrA) from *Mycobacterium tuberculosis* (*Mtb*) at 2.5 A^{o} resolution. Unexpectedly, electron density observed in the crystals of SeMet-BfrA analogous to haem location in bacterioferritins, showed a demetallated and degraded product of haem. They showed that this unanticipated observation was a consequence of the altered spatial electronic environment around the axial ligands of haem (in lieu of Met52 modification to SeMet52). Furthermore, the structure of *Mtb* SeMet-BfrA displayed a possible lost protein interaction with haem propionates due to formation of a salt bridge between Arg53-Glu57, which appeared to be unique to *Mtb* BfrA, resulting in slight modulation of haem binding pocket in this organism. Determination of the crystal structure of *Mtb* SeMet-BfrA by Dr. Tyagi and colleagues provided novel leads to the physiological function of haem in Bfrs. It may also serve as a scaffold for designing specific inhibitors. In addition, this study provided evidence against the general belief that a selenium derivative of a protein represents its true physiological native structure.

(ii) BfrB

Dr. Tyagi and colleagues also determined a 3.0 A° crystal structure of BfrB from *Mycobacterium tuberculosis* (Mtb). The Mtb BfrB subunit exhibited the characteristic fold of a four-helical bundle that possesses the ferroxidase catalytic centre. Dr. Tyagi et al. compared the structure of Mtb BfrB with representatives of the ferritin family belonging to the archaea, eubacteria and eukarya. Unlike most other ferritins, Mtb BfrB has an extended C-terminus. To dissect the role of this extended C-terminus, truncated Mtb BfrB was purified and biochemical studies carried out by Dr. Tyagi and colleagues implicate this region in ferroxidase activity and iron release in addition to providing stability to the protein.

(iii) BirA

The first committed step in lipid biosynthesis is the biotinylation of Acetyl Coenzyme A Carboxylase (ACC) mediated by biotin acetyl-CoA carboxylase ligase / biotin protein ligase (BirA). BirA appears to be an attractive target for the development of broad spectrum therapeutic agents against multiple infections. The apo BirA crystal structure developed by Dr. Tyagi et al. (at 2.69 A^{o} resolution) revealed the presence of disordered flexible loops, which undergo a conformational transition upon biotin and biotinyl-59-AMP binding. These loops are known to participate in either dimer interface or ligandbinding or both. Dr. Tyagi and colleagues showed that dehydration of *Mtb*-BirA crystals traps both the apo and active conformations in its asymmetric unit, and for the first time provided structural evidence of

such transformation. In addition, crystal dehydration resulted in a shift of 3.5 A° in the flexible loop L6, a proline-rich loop unique to *Mtb* complex as well as around the L11 region. The shift in loop L11 in the C-terminal domain on dehydration emulates the action responsible for the complex formation with its protein ligand biotin carboxyl carrier protein (BCCP) domain of ACCA3. This is contrary to the involvement of loop L14 observed in Pyrococcus horikoshii BirA-BCCP complex. This dehydrated crystal structure not only provided key leads to the understanding of the structure/function relationships in the protein in the absence of any ligand-bound structure, but also demonstrated the merit of dehydration of crystals as an inimitable technique to have a glance at proteins in action.

C. Characterization of Drug Target Proteins

(i) Characterization of FaD13 and identification of important residues

To gain further insight into the functioning of *mymA* operon, a potential target for developing antitubercular drugs, Dr. Tyagi's laboratory characterized its gene products. *fadD13*, the last gene of the *mymA* operon, encodes a Fatty Acyl-CoA Synthetase. Dr. Tyagi and colleagues developed several site-directed mutants of FadD13 and analyzed them for the structural-functional integrity of the enzyme. This study revealed that mutation of Lys487 resulted in 95% loss of the activity thus demonstrating its crucial requirement for the enzymatic activity. Comparison of the kinetic parameters by Dr. Tyagi et al. showed the residues Lys172 and Ala302 to be involved in the binding of ATP and Ser404 in the binding of CoenzymeA. The influence of mutations of the residues Val209 and Trp377 emphasized their importance in maintaining the structural integrity of FadD13. Besides, Dr. Tyagi and colleagues showed a synergistic influence of fatty acid and ATP binding on the conformation and rigidity of FadD13. FadD13 represents the first Fatty Acyl-CoA Synthetase to display biphasic kinetics for fatty acids. The studies by Dr. Tyagi and colleagues provided a significant understanding of the FadD13 protein including the identification of residues important for its activity as well for the maintenance of structural integrity.

(ii) Identification of "switch residues" or "interface hot spots" involved in the self assembly and function of bacterioferritin B of *M. tuberculosis*

By employing site-directed mutagenesis Dr. Tyagi and colleagues identified important residues for interactions between subunits of this ferritin that are required for molecular assembly, structural integrity, thermodynamic stability, and ferroxidase activity to provide an improved understanding of the determinants of self-assembly and the structure–function relationship.

To identify the crucial residues involved in the self assembly and function of BfrB, Dr. Tyagi and colleagues constructed various mutants by employing site-directed mutagenesis. The analysis of mutants led to the identification of "interface hot-spot residues" that act as "switch points" for BfrB oligomerization. These studies demonstrated the importance of 4-fold axis residues in assembly formation. Moreover, it was demonstrated that single-point mutations can enhance the thermal stability of the protein without affecting its assembly. Importantly, a comparative analysis of various mutations by Dr. Tyagi and colleagues revealed that the function of various homologous positions in different ferritins could be at variance;

hence, predicting the function of a residue just based on sequence–structure comparisons may not be appropriate. Thus, these studies showed that single-point mutations have a remarkable potential for alteration of multiple properties of ferritins. Besides, "switch residues" or "interface hot spots" identified in this study could also prove to be helpful for the rational design of interfacial inhibitors.

(D) Identification of inhibitors against *M. tuberculosis*

(i). Identification of inhibitors against Fatty Acyl-CoA Synthetase (FadD13, Rv3089) of *M.tuberculosis*

Dr. Tyagi et al. earlier demonstrated that exposure to acidic pH results in the upregulation of the *mymA* operon of *M. tuberculosis* (Rv3083 -Rv3089). The functional loss of the *mymA* operon leads to alterations in the colony morphology, cell wall structure, mycolic acid composition and drug sensitivity and results in markedly reduced intracellular survival of *M.tb* in macrophages. Besides, the *mymA* mutant of *M.tb* shows a drastic reduction (800fold) in its ability to survive in the spleen of guinea pigs as compared to the parental strain and hence, represents an important drug target for *M.tuberculosis*. *fadD13*, the last gene of the *mymA* operon, encodes a Fatty Acyl-CoA Synthetase (FACS), which catalyzes the activation of various fatty acids by converting them into fatty acyl-CoA thioesters.

Dr. Tyagi and colleagues generated the three–dimensional structure of FadD13 by comparative homology modeling. The predicted active site covered parts of both the N- and C-terminal domains along with the cleft region placed between both the domains. Moreover, the active site was similar to that seen in other homologous proteins.

Dr. Tyagi and colleagues employed the NCI Open Database comprising of 2,60,071 compounds for virtual screening against the FadD13 model with the ATP binding site as the target for docking by using AutoDock4. Based on the results, the top 40 compounds were requested from National Cancer Institute - Developmental Therapeutics Program (NCI-DTP). The compounds were experimentally evaluated for their potential to inhibit the activity of FadD13. Among the compounds evaluated, 13 exhibited inhibition of the activity. Seven compounds were selected for further studies based on their ability to inhibit FadD13 activity by more than 20%.

For further assessment, Dr. Tyagi and colleagues first examined the effect of various compounds on the growth of *M.smegmatis* (a fast grower) by using the alamar blue dye method. It was observed that two compounds exhibited a marked inhibition of *M.smegmatis* growth with MIC_{99} value of 6.25 μg/ml. Besides, one more compound also exhibited a significant inhibition of *M.smegmatis* growth with MIC_{99} value of 12.5 μg/ml. The compounds were simultaneously also evaluated for their ability to inhibit the growth of *M.tuberculosis* by broth macrodilution as well as microplate alamar blue method. The results revealed that one of the compounds exhibited the highest inhibition with an MIC_{99} value of 6.25 μg/ml. Optimization of lead obtained in this study would provide valuable inputs towards the development of inhibitors against *mymA* operon, an important target for the development of antitubercular drugs.

(ii) Identification of Inhibitors against *Mycobacterium tuberculosis* Thiamin Phosphate Synthase

In spite of the availability of drugs for the treatment of TB, the non-compliance to long chemotherapeutic regimens often results in the emergence of multidrug resistant strains of *Mycobacterium tuberculosis* adding to the precariousness of the situation. This has necessitated the development of more effective drugs. Thiamin biosynthesis, an important metabolic pathway of *M. tuberculosis*, is shown to be essential for the intracellular growth of this pathogen. Dr. Tyagi and colleagues constructed a three–dimensional homology model of *M. tuberculosis* thiamin phosphate synthase by using the X-ray crystal structure of thiamin phosphate synthase from *Pyrococcus furiosus.*

Dr. Tyagi and colleagues employed computational screening approach to identify potential small-molecule inhibitors of MtTPS from the NCI diversity set II comprising of 1541 compounds. Compound A, (4-{[(2-hydroxy-5-nitrophenyl) methylidene]amino}-5-methyl-2-(propan-2-yl)phenol), B, (3-benzylsulfanyl-phenanthro [9,10-e][1,2,4]triazine) and C, (Coumarin, 7-[[4-chloro-6-(diethylamino)-s-triazin-2-yl]amino]-3-phenyl-) were identified as potential inhibitors of *M. tuberculosis* growth. All these compounds exhibited inhibition of MtTPS enzymatic activity as well as the growth of *M. tuberculosis* in broth culture. However, one of the compounds A exhibited the highest efficacy with an MIC99 value of 6 μg/ml. In addition, it did not exhibit any significant toxicity in various cell lines till a concentration of 25 μg/ml and also adhered to the Lipinsky rules for drug-likeness. The binding mode of compound A provided key insights into the likely binding sites. The compound A is docked at the large hydrophobic pocket at the active site of MtTPS. The aromatic ring A is placed in a hydrophobic environment surrounded by Ile173, Val193 and Phe171 while the two oxygen atoms of the nitro group appear to be making hydrogen bonds with the hydrogen atoms of the adjacent Cys136 and Cys11 both present within 2.5A° distance from the oxygen atoms. Moreover, the hydroxyl group of the aromatic ring B can form hydrogen bond with the carboxyl group of Asp98 present at a distance of 1.78A°. Inhibition of MtTPS by compound A in the presence of varying concentrations of the substrate HMPPP showed that an enhancement in the concentration of the substrate causes a decline in the inhibition and vice versa, which clearly indicated that it inhibits MtTPS by competing with HMP-PP for binding at the active site thus substantiating the docking results. In conclusion, Dr. Tyagi and colleagues have identified a promising lead molecule (compound A) for the development of sterilizing agents against *M. tuberculosis* and further efforts are in progress to optimize and enhance the inhibitory potency of this lead compound.

3. The first completed genome of a new bacterial species (*Mycobacterium indicus pranii*) from India

This work on *Mycobacterium indicus pranii* (MIP) was responsible for the publication of the first completed genome of a new bacterial species from India and was covered in Nature as “Science News” item in September 2012.

MIP is a saprophytic mycobacterial species that is known for its immunomodulatory properties. MIP, which shares antigens with both *M. leprae* and *M. tuberculosis*, provides protection against *M. tuberculosis* infection in mice and accelerates sputum conversion in

both type I and type II category of tuberculosis (TB) patients when used as an adjunct to chemotherapy. In HIV/TB co-infections, a single dose of MIP converted tuberculin -ve patients into tuberculin +ve in >95% of the cases. This attribute is unique to MIP because similar application of other saprophytic mycobacteria such as *M. vaccae* does not provide commensurate protection. Based on its demonstrated immunomodulatory action in various human diseases, MIP has been the focus of several clinical trials and successful completion of one such trial has led to its use as an immunotherapeutic vaccine 'Immuvac' against leprosy. However, very little information was available about MIP's molecular, biochemical, genetic and phylogenomic features. Thus, in a collaborative effort, Dr. Tyagi and colleagues in a molecular phylogenetic study by using candidate marker genes and FAFLP (fluorescent-amplified fragment length polymorphism techniques) fingerprinting assay showed that MIP belongs to a group of opportunistic mycobacteria and is a predecessor of *M. avium* complex (MAC). A comprehensive analysis of cellular and biochemical features of MIP along with chemotaxonomic markers such as FAME (fatty acid methyl ester) analysis and comparison with other mycobacterial species established that MIP is endowed with specific attributes.

In a collaborative effort with Dr. Tyagi being the Principal Investigator, the complete MIP genome was sequenced to gain an insight into its unique life style and molecular basis of immunomodulation. In addition, they employed comparative genomics to understand the habitat diversification and bases and means of functional genetic correlates responsible for evolution of pathogenicity in ancestral mycobacterial lineages.

Different analyses performed in an earlier study established that MIP represents an organism at a unique phylogenetic point as the immediate predecessor of opportunistic mycobacterial species of MAC. It also became evident that natural selection in MAC has acted in a preferential manner on specific categories of genes leading to reduced habitat diversity of pathogenic bacteria, and thus facilitating host tropism. The genome of MIP was ~5.6Mb in size and was found to be shaped by a large number of lateral gene acquisitions thus revealing, for the first time, mosaic architecture of a mycobacterial genome. Thus, this study by Dr. Tyagi and colleagues offered a paradigm shift in our understanding of evolutionary divergence, habitat diversification and advent of pathogenic attributes in mycobacteria. A scenario for mycobacterial evolution was envisaged wherein the earliest evolving soil derived mycobacterial species like MIP underwent massive gene acquisitions to attain a unique soil–water interface habitat before adapting to an aquatic and parasitic lifestyle. These lateral acquisition events were selective and possibly facilitated by the presence of specific genetic factors (i.e. ComEC) that induce competence to acquire large chunks of DNA to confer immediate survival advantage to the recipient organism. Subsequently, mycobacterial species tuned their genetic repertoires to respective host adapted forms with a high degree of genomic fluidity aided by selective lateral gene acquisitions and gene loss by deletion or pesudogenization. Importantly, a significant increase in transposon elements in the pathogenic mycobacteria as compared with MIP, for the first time, suggested their possible role toward mycobacterial virulence. In addition, comparative genomic analysis revealed a higher antigenic potential of MIP subscribing to its unique ability for immunomodulation against various types of infections and presented a template to develop reverse genetics based approaches to design better strategies against mycobacterial infections.

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	NELSON SW	KINETIC STUDIES OF ESCHERICHIA COLI CH 2			2007
	BINKOWSKI DJ	KINETIC STUDIES OF ESCHERICHIA COLI CH 5			2007
	GINDER	CH-3 KINETIC STUDIES OF ESCHERICHIA			2007
	INGRID HP	THESIS, DEGREE OF MEDICINE, SAARLANDS UNIVERSITY			2009
	HENNES	UNIVERSITÄT DES SAARLANDES PHD THESIS			2009
	ASTRID RB	J CANCER THER	2	7796	2011
1980	KENSLER TW	CANCER TREATMENT REP	64	967	
	KARLE JM	CANCER RES	41	4952	1981
	KENSLER TW	ADV PHARMACOL CHEMOTHER	18	273	1981
	WEISS GR	CANCER CHEMOTH PHARM	8	301	1982
	PAVLIK EJ	GYNECOL ONCOL	14	243	1982
	ERLICHMAN C	J NATL CANCER I	68	227	1982
	MARTIN DS	CANCER RES	43	2317	1983
	MONKS A	J BIOL CHEM	258	3564	1983
	WHITE JC	BIOCHEM PHARMACOL	33	3645	1984
	WHITE JC	CANCER RES	44	507	1984

	OCONNELL MJ	J CLIN ONCOL			2	1133 1984
	MARTIN DS	CANCER TREAT REP			69	421 1985
	CHAN TCK	CANCER RES			46	3168 1986
	LEYLANDJONES B	CANCER TREAT REP			70	219 1986
	LEYLAND-JONES	DEVELOPMENTS IN ONCOLOGY			47	131 1986
	GREM JL	CANCER RES			48	4441 1988
	ARDALAN B	J CLIN ONCOL			6	1053 1988
	PETERS GJ	CANCER RES	50	4644	1990	
	ODWYER PJ	PHARMACOL THERAPEUT			48	371 1990
	BLIJHAM GH	ANTI-CANCER DRUG			2	233 1991
	KEMENY N	J CLIN ONCOL	10	747	1992	
	PIZZORNO G	CANCER RES			52	1660 1992
	POOLS	ERROR				1992
	GREM JL	4:5				1993
	RAGNHAMMAR P	MED ONCOL			12	187 1995
	FLEMING RA	CLIN CANCER RES			2	1107 1996
	JIN L	PROTEINS			37	729 1999
	GAGNARD V	EUR J MED CHEM			38	883 2003
	WILS J	EUR J CANCER			39	346 2003
	WHITEHEAD RP	INVEST NEW DRUG			22	467 2004
1980	PARK KW	J BIOCHEM BIOPHYS METH			2	291
	TYAGI AK	BIOCHEM PHARMACOL			30	915 1981
	TYAGI AK	TOXICOLOGY			21	59 1981
	TYAGI AK	ADV PHARMACOL CHEMOT			20	69 1984
1980	ANANDARAJ SA	BIOCHEM PHARMACOL			29	227
	TYAGI AK	CANCER RES			40	4390 1980
	TYAGI AK	BIOCHEM PHARMACOL			30	915 1981
	TYAGI AK	TOXICOLOGY			21	59 1981
	ALSTON TA	BIOCHEM BIOPH RES CO			105	560 1982
	HEIMER R	BIOCHEM PHARMACOL			32	199 1983
	TYAGI AK	TRENDS PHARMACOL SCI			4	299 1983
	GREGORIADIS G	TRENDS PHARMACOL SCI			4	304 1983
	TYAGI AK	ADV PHARMACOL CHEMOT			20	69 1984
	STRAZZOLINI P	J MED CHEM			27	1295 1984
	ALSTON TA	J BIOL CHEM			260	4069 1985
	CASEY PJ	J BIOL CHEM			261	3637 1986
	JALAL MAF	ACTA CRYSTALLOGR C			42	733 1986
	CASEY PJ	BIOCHEM PHARMACOL			36	705 1987
	DAMON LE	PHARMACOL THER			38	73 1988
	HONG SS	JPN J CANCER RES			80	592 1989
	AHLUWALIA GS	PHARMACOL THERAPEUT			46	243 1990
	PEETERS MA	ANN GENET-PARIS			34	219 1991
	RAMACHANDRAN B	J BIOL CHEM			268	23891 1993
	PALOS TP	MOL BRAIN RES			37	297 1996
	AL YU	MOLECULAR BIOLOGY OF HEMATOPOIESIS: CH 31			5	247 1996
	BATOVA A	CANCER RES			59	1492 1999
	BATOVA A	CANCER				1999
	EISENBERG D	BBA-PROTEIN STRUCT M			1477	122 2000
	HARASAWA H	LEUKEMIA			16	1799 2002
	STRAZZOLINI P	EUR J ORG CHEM			47	10 2004
	TALUKDAR A	NITRIC OXIDE DONORS			55	2005
	MARCE S	CLIN CANCER RES			12	3754 2006
	BATOVA A	BLOOD			107	898 2006
	HUANG JW	BIOCHEMISTRY-US			45	346 2006
	BERLICKI L	MINI-REV MED CHEM			8	869 2008
	INGRID HP	MD THESIS, SAARLANDS UNIVERSITY				2009
	EID T	NEUROCHEM INT			63	670 2013

1980	TYAGI AK	J BIOC BIOP METH	2	123	
	TYAGI AK	CANCER RES	40	4390	1980
	TYAGI AK	BIOCHEM PHARMACOL	30	915	1981
	TYAGI AK	TOXICOLOGY	21	59	1981
	TYAGI AK	ADV PHARMACOL CHEMOT	20	69	1984
	CASEY PJ	J BIOL CHEM	261	3637	1986
	CASEY PJ	BIOCHEM J	246	263	1987
	CASEY PJ	BIOCHEM PHARMACOL	36	705	1987
	ALENIN VV	ZH OBSHCH KHIM+	57	692	1987
	SANT ME	ANAL BIOCHEM	182	121	1989
	ALENIN VV	BIOCHEMISTRY-MOSCOW+	57	572	1992
	TRETYAKOV OY	BIOCHEMISTRY-MOSCOW+	60	1535	1995
1981	TYAGI AK	J BIOL CHEM	256	12156	
	TABOR CW	MED BIOL	59	272	1981
	POSO H	ADV POLYAMINE RES	4	603	1982
	KUEHN GD	ADV POLYAMINE RES	4	615	1982
	TYAGI AK	BIOCHEM BIOPH RES CO	109	533	1982
	MITCHELL JLA	BIOCHEM J	205	551	1982
	SEELY JE	BIOCHEMISTRY-US	21	3394	1982
	PRITCHARD ML	J BIOL CHEM	257	5892	1982
	SEELY JE	J BIOL CHEM	257	7549	1982
	TABOR CW	ADV POLYAMINE RES	4	467	1982
	LAPOINTE DS	ARCH BIOCHEM BIOPHYS	224	515	1983
	ERWIN BG	BIOCHEMISTRY-US	22	3027	1983
	POSO H	BIOCHIM BIOPHYS ACTA	747	209	1983
	SEELY JE	J BIOL CHEM	258	2496	1983
	CHOI JH	J BIOL CHEM	258	2601	1983
	TYAGI AK	METHOD ENZYMOL	94	135	1983
	ZAGON IS	METHOD ENZYMOL	94	169	1983
	TABOR CW	ANNU REV BIOCHEM	53	749	1984
	FLAMIGNI F	BIOCHIM BIOPHYS ACTA	802	245	1984
	KAYE AM	CELL BIOCHEM FUNCT	2	2	1984
	BACHRACH U	CELL BIOCHEM FUNCT	2	6	1984
	BARNETT GR	J BIOL CHEM	259	179	1984
	SKLAVIADIS TK	BIOCHIM BIOPHYS ACTA	831	288	1985
	TABOR CW	MICROBIOL REV	49	81	1985
	FONZI WA	MOL CELL BIOL	5	161	1985
	DAVIS RH	P NATL ACAD SCI USA	82	4105	1985
	HIATT AC	J BIOL CHEM	261	1293	1986
	SUKHAREVA, B.S	PYRIDOXAL PHOSPHATE:CHEMICAL BIOCHEMICAL AND MEDICAL ASPECTS		325	1986
	BELLOFATTO V	MOL BIOCHEM PARASIT	25	227	1987
	DORAZI D	PHYSIOL PLANTARUM	71	177	1987
	FONZI WA	J BIOL CHEM	262	10127	1987
	DIGANGI JJ	J BIOL CHEM	262	7889	1987
	PANDIT M	PHYTOCHEMISTRY	27	1609	1988
	EICHLER W	J PROTOZOOL	36	577	1989
	FONZI WA	J BIOL CHEM	264	18110	1989
	FONZI WA	BIOCHEM BIOPH RES CO	162	1409	1989
	BALASUNDARAM D	EUR J BIOCHEM	183	339	1989
	PEGG, A. E	ENZYMOLOGY AND MOLECULAR GENETICS		21	1989
	CANELLAKIS	ERROR			1989
	SCHAEFFER JM	BIOCHEM J	270	599	1990
	MATSUFUJI S	J BIOCHEM-TOKYO	108	365	1990
	PANDIT M	J BIOSCIENCE	15	83	1990
	COONS T	MOL BIOCHEM PARASIT	39	77	1990
	SMITH TA	PHYTOCHEMISTRY	29	1759	1990
	JOSEPH K	J EXP ZOOL	258	158	1991

	BABY TG	BIOCHIM BIOPHYS ACTA	1092	161	1991
	ROSENBERGHASSON Y	EUR J BIOCHEM	196	647	1991
	SMITH TA	MYCOL RES	96	395	1992
	HANSON S	J BIOL CHEM	267	2350	1992
	RAJAM MV	CURR SCI INDIA	65	461	1993
	YARLETT N	BIOCHEM J	293	487	1993
	SCHIPPER RG	J IMMUNOL METHODS	161	205	1993
	BALASUNDARAM D	J BACTERIOL	176	7126	1994
	NIEMANN G	BIOCHEM J	317	135	1996
	BALASUNDARAM D	J BACTERIOL	178	2721	1996
	DAVIS RH	BIOCHEMISTRY AND MOLECULAR BIOLOGY:THE MYCOTA	3	347	1996
	KAKKAR R	HIMALAYAN MICROBIAL DIVERSITY		431	1997
	KAOUASS M	MOL CELL BIOL	17	2994	1997
	HAMASAKIKATAGIRI N	GENE	187	35	1997
	KAOUASS M	J BIOL CHEM	273	2109	1998
	TOTH C	J BIOL CHEM	274	25921	1999
	PANTAZAKI AA	MOL CELL BIOCHEM	195	55	1999
	KRAUSE T	BIOCHEM J	352	287	2000
	ZHU C	BIOINFORMATICS	16	478	2000
	LEE YS	J BIOCHEM MOL BIOL	34	478	2001
	GUPTA R	P NATL ACAD SCI USA	98	10620	2001
	CHATTOPADHYAY MK	J BIOL CHEM	276	21235	2001
	COFFINO P	BIOCHIMIE	83	319	2001
	MOREHEAD TA	VIROLOGY	301	165	2002
	ARTEAGA-NIETO P	EXP PARASITOL	101	215	2002
	GANDRE S	BIOCHEM BIOPH RES CO	293	139	2002
	BAIS HP	PLANT CELL TISS ORG	69	1	2002
	POULIN R	EUR COMMISS SCI RES		3	2002
	BACHMANN AS	PHYSIOL MOL PLANT P	63	57	2003
	HOYT MA	J BIOL CHEM	278	12135	2003
	ZAVADA MS	NORTHEAST NAT	11	33	2004
	HOYT MA	BIOCHEMISTRY AND MOLECULAR BIOLOGY: THE MYCOTA		335	2004
	HOYT	THE MYCOTA CH-16			2004
	AOUIDA M	J BIOL CHEM	280	24267	2005
	AOUIDA	BIOPHYSICAL JOURNAL	6:280		2005
	SMIT AY	S AFR J ENOL VITIC	29	109	2008
	RASHKI	UNIVERSIDAD DE SALAMANCA THESIS			2009
	FOGLE EJ	BBA-PROTEINS PROTEOM	1814	1113	2011
1981	TYAGI JS	TOXICON	19	445	
	ZAIKA LL	J FOOD PROTECT	50	691	1987
	KHAN SN	J SCI IND RES INDIA	47	130	1988
1981	TYAGI JS	J APPL BACTERIOL	50	481	
	DŁUGOŃSKI J	PROTOPLASTS 1983 EXS 45: EXPERIENTIA SUPPLEMENTUM	45	346	1983
	DLUGONSKI J	CAN J MICROBIOL	30	57	1984
	LARROYA S	IRCS MED SCI-BIOCHEM	12	1064	1984
	KAWULA TH	J INVERTEBR PATHOL	43	282	1984
	LYNCH PT	T BRIT MYCOL SOC	85	135	1985
	BHATNAGAR RK	J APPL BACTERIOL	60	135	1986
	CLEVELAND TE	CAN J MICROBIOL	33	1108	1987
	CLEVELAND TE	APPL ENVIRON MICROB	53	1711	1987
	PFEIFER TA	APPL MICROBIOL BIOT	26	248	1987
	PEBERDY JF	MYCOL RES	93	1	1989
	DLUGONSKI J	J BASIC MICROB	31	347	1991

	TOWNSEND CA	SECONDARY-METABOLITE BIOSYNTHESIS AND METABOLISM, PLENUM PRESS	44	141	1992
	ANNAMALAI P	REVIEW OF LIFE, DEPARTMENT OF BOTANY, UNIVERSITY OF MADRAS			1993
	AZIZ NH	MICROBIOS	89	47	1997
	LALITHAKUMARI D	FUNGAL PROTOPLASTS:A BIOTECHNOLOGICAL TOOL SCIENCE PUBLISHERS		184	2000
1981	TYAGI AK	BIOCHEM PHARMACOL	30	915	
	TYAGI AK	TOXICOLOGY	21	59	1981
	TYAGI AK	TRENDS PHARMACOL SCI	4	299	1983
	BRIDGER WA	CELL ATP: TRANSPORT IN THE LIFE SCIENCES, WILEY, NEW YORK		1	1983
	UREN JR	ANTITUMOR DRUG RESISTANCE HANDBOOK OF EXPERIMENTAL PHARMACOLOGY	72	551	1984
	TYAGI AK	ADV PHARMACOL CHEMOT	20	69	1984
	AHLUWALIA GS	BIOCHEM PHARMACOL	33	1195	1984
	MISTRELLO G	J IMMUNOPHARMACOL	6	25	1984
	STRAZZOLINI P	J MED CHEM	27	1295	1984
	GALLIANI G	CANCER CHEMOTH PHARM	14	74	1985
	CASEY PJ	J BIOL CHEM	261	3637	1986
	CASEY PJ	BIOCHEM PHARMACOL	36	705	1987
	AHLUWALIA GS	PHARMACOL THERAPEUT	46	243	1990
	STRAZZOLINI P	EUR J ORG CHEM	47	10	2004
	MANJUNATH K	ACTA CRYSTALLOGR F	66	180	2010
1981	TYAGI AK	TOXICOLOGY	21:1	59	
	AHLUWALIA	PHARMACOLOGY & THERAPEUTICS	46:2	243	1990
	TYAGI AK	ADVANCES IN PHARMACOLOGY	20	69	1984
	GILLIANI	CANCER CHEMOTHERAPY AND PHARMACOLOGY1		4:1 7A	1985
	BRAND	CHEMISTRY - A EUROPEAN JOURNAL	12:2	599	2005
	ASTRID	JOURNAL OF CANCER THERAPY	2:4	7796	2011
1982	TYAGI AK	BIOC BIOP RES COMM	109	533	
	MITCHELL JLA	BIOCHEM J	214	345	1983
	ERWIN BG	BIOCHEMISTRY-US	22	3027	1983
	TABOR CW	ANNU REV BIOCHEM	53	749	1984
	PERSSON L	BIOCHEMISTRY-US	23	3777	1984
	DIENEL GA	J NEUROCHEM	42	1053	1984
	SEKAR V	METHOD ENZYMOL	107	154	1984
	LORAND L	MOL CELL BIOCHEM	58	9	1984
	GRILLO MA	INT J BIOCHEM	17	943	1985
	TABOR CW	MICROBIOL REV	49	81	1985
	FONZI WA	MOL CELL BIOL	5	161	1985
	HOLTTA E	J BIOL CHEM	261	9502	1986
	YAO K	THESIS, HONG KONG UNIVERSITY			1986
	FONZI WA	J BIOL CHEM	262	10127	1987
	BALASUNDARAM D	ARCH BIOCHEM BIOPHYS	264	288	1988
	FONZI WA	J BIOL CHEM	264	18110	1989
	FONZI WA	BIOCHEM BIOPH RES CO	162	1409	1989

	MIYAMOTO K	J BIOCHEM-TOKYO	106	167	1989
	PEGG AE	ENZYMES AS TARGETS FOR DRUG DESIGN. ACADEMIC PRESS		157	1990
	AL-SHABANAH OA	PHARMACOL RES	40	75	1999
	PEGG A	ENZYMES AS TARGETS FOR DRUG DESIGN CH-12			1989
1982	TABOR CW	FED PROC	41	3084	
	TABOR CW	ADV POLYAMINE RES	4	467	1982
	TUITE MF	CURR GENET	7	421	1983
	CHHH-BH	ADV POLAM RES	4	467	1983
	LIN PPC	PLANT PHYSIOL	74	975	1984
	SLOCUM	ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS	235:2	283	1984
	KORDY	JOURNAL OF PLANT PHYSIOLOGY	117:1	17	1984
	M. VENKAT RAJAM	*PLANT CELL PHYSIOL*	*26 (4): 683*		*1985*
	POHJANPELTO	*MOL CELL BIOl*	*5:6*	*1385*	*1985*
	HEBY	ADVANCES IN ENZYME REGULATION	24	103	1985
	QIAN	*BIOLOGY OF REPRODUCTION*	33:5	1189	1985
	WEINSTEIN	PLANT SCIENCE	51:2	311	1987
	FALLON	*PLANT PHYSIOLOGY*	*88 : 1*	*224*	*1988*
	PACHECO	ARCHIVES OF MICROBIOLOGY	151:1	10	1988
	PIRKKO POHJANPELTO	LIFE SCIENCES	42:20	2011	1988
	MEYSKENS	JOURNAL OF CELLULAR BIOCHEMISTRY	59:S22126		1995
	SUNG	BIOLOGIA PLANTARUM	37:2	213	1995
	SHIH	*PLANT PHYSIOLOGY*	111:3	721	1996
	CHEN	BOT BULL ACAD SIN	37	197	1996
	MEYSKENS	*CLIN CANCER RES*	*5; 945*		*1999*
	MASANOBU	NISHIKAWAFEBS LETTERS	476:3	150	2000
	YOON	BBA	1475:1	17	2000
	MCNEMAR	YEAST	18:6	555	2001
	CHILDS	CELLULAR AND MOLECULAR LIFE SCIENCES CMLS	60:7	1394	2003
	WALLACE	AMINO ACIDS	26:4	353	2004
	GERNER	NATURE REVIEWS CANCER	4	781	2004
	CHILDS	THE UNIVERSITY OF ARIZONA.PHD THESIS			2005
	WILLIAMS	*J. NAT PROD*	70 (1)	83	2007
	ALBERS	IUBMB LIFE	61:12	1132	2009
	CAO	*J. PROTEOME RES*	12 (6)	2921	2013
	CHUNG C	PHARMACY PRACTICE MAGAZINE		412	2013
	WANG	BIOCHEMICAL PHARMACOLOGY	92:3	506	2014
1983	TABOR CW	ADV POLYAM RES	4	467	
	TABOR CW	ANNU REV BIOCHEM	53	749	1984
	KAYE AM	CELL BIOCHEM FUNCT	2	2	1984
	LUK GD	WESTERN J MED	142	88	1985
	LUK GD	GASTROENTEROLOGY	90	1261	1986
	JAIN A	MOL CELL BIOCHEM	78	3	1987
	BAGNI	ADVANCES IN EXPERIMENTAL MEDICINE AND BIOLOGY	250	547	1988
	BALASUNDARAM D	MOL CELL BIOCHEM	100	129	1991
	BAGNI N	ADV EXP MED BIOL	250	547	1998
	SCHEFFLER IE	NUCLEIC ACIDS RES	17	10497	1998
	WOOLRIDGE DP	PH.D THESIS UNIVERSITY OF ARIZONA			1998
	RAJAM MV	PLANT BIOTECHNOLOGY AND MOLECULAR MARKERS		60	2005

1983	TYAGI AK	METH ENZYMOLOGY	94	135	
	TABOR CW	ANNU REV BIOCHEM	53	749	1984
	TABOR CW	MICROBIOL REV	49	81	1985
	BIRECKA H	PLANT PHYSIOL	80	798	1986
	BALASUNDARAM D	ARCH BIOCHEM BIOPHYS	264	288	1988
	YAMAMOTO S	MICROBIOL IMMUNOL	32	675	1988
	NAKAO H	J GEN MICROBIOL	135	345	1989
	SCHOMBURG D	ENZYME HANDBOOK 1		61	1990
	KLEIN RD	EXP PARASITOL	87	171	1997
	KLEIN RD	MICROBIOL-UK	145	301	1999
	GUPTA R	P NATL ACAD SCI USA	98	10620	2001
	SUBHI AL	J BIOL CHEM	278	49868	2003
	CHATTOPADHYAY MK	P NATL ACAD SCI USA	102	16158	2005
1983	TYAGI AK	TRENDS PHARMACOL SCI	4	299	
	TYAGI AK	ADV PHARMACOL CHEMOT	20	69	1984
	CASEY PJ	J BIOL CHEM	261	3637	1986
	AHLUWALIA GS	PHARMACOL THERAPEUT	46	243	1990
	KOVACEVIC Z	CONTRIB NEPHROL	121	136	1997
	BRAND J	CHEM-EUR J	12	499	2006
1984	TYAGI AK	P NAT ACAD SCI	81	1149	
	TABOR CW	ANNU REV BIOCHEM	53	749	1984
	SLOCUM RD	ARCH BIOCHEM BIOPHYS	235	283	1984
	TIPPER DJ	MICROBIOL REV	48	125	1984
	ESCRIBANO MI	ENDOCYT CELL RES	2	239	1985
	TABOR CW	MICROBIOL REV	49	81	1985
	HANNIG EM	NUCLEIC ACIDS RES	13	4379	1985
	WICKNER RB	CURR TOP MED MYCOL	1	286	1985
	NEWMAN AM	EXTRACHROMOSOMAL ELEMENTS IN LOWER EUKARYOTES	40	173	1986
	LEE M	J VIROL	58	402	1986
	FUJIMURA T	MOL CELL BIOL	6	404	1986
	WICKNER RB	ANNU REV BIOCHEM	55	373	1986
	BENDOVA O	FOLIA MICROBIOL	31	422	1986
	JAIN A	MOL CELL BIOCHEM	78	3	1987
	MITCHELL DJ	YEAST BIOTECHNOLOGY		104	1987
	BRUENN JN	RNA GENETICS FL:CRC PRESS	1	195	1988
	BOSTIANL KA	VIRUSES OF FUNGI AND SIMPLE EUKARYOTES CH-9			1988
	UEMURA H	MOL CELL BIOL	8	938	1988
	ICHO T	J BIOL CHEM	263	1467	1988
	FUJIMURA T	J BIOL CHEM	263	454	1988
	NESTEROVA GF	GENETIKA+	24	1141	1988
	TABOR CW	ENZYMOLOGY AND MOLECULAR GENETICS INTERNATIONAL ENCYCLOPEDIA OF PHARMACOLOGY AND THERAPEUTICS		97	1989
	BROWN GG	INT REV CYTOL	117	1	1989
	BALASUNDARAM D	MOL CELL BIOCHEM	100	129	1991
	TERCERO JC	J BIOL CHEM	267	20270	1992
	VANVUUREN HJJ	AM J ENOL VITICULT	43	119	1992
	WICKNER RB	ANNU REV MICROBIOL	46	347	1992
	WICKNER RB	TRENDS MICROBIOL	1	294	1993
	DAVIS RH	POLYAMINES IN FUNGI THE MYCOTA	3	347	1996
	ALBE	J OF THEORETICAL BIOLOGY	143:2	163	1999
	HOYT MA	POLYAMINES IN FUNGI THE MYCOTA	3	335	2004
	HOYT	THE MYCOTA CH-16			2004
	SINGH V	DNA REPAIR	12	450	2013

1984	TYAGI AK	ADV PHARMA CHEM	20	69	
	WIERZBA,	SIDE EFFECTS OF DRUGS ANNUAL	10	390	1986
	CASEY PJ	BIOCHEM PHARMACOL	36	705	1987
	HONG SS	JPN J CANCER RES	80	592	1989
	AHLUWALIA GS	PHARMACOL THERAPEUT	46	243	1990
	ELKS,	DICTIONARY OF DRUGS	1		1990
	PEETERS MA	ANN GENET-PARIS	34	219	1991
	ALENIN VV	BIOCHEMISTRY-MOSCOW+	57	572	1992
	RAMACHANDRAN B	J BIOL CHEM	268	23891	1993
	CARRERA CJ	HEMATOL ONCOL CLIN N	8	357	1994
	GUICHERIT OM	J BIOL CHEM	269	4488	1994
	GUICHERIT OM	ADV EXP MED BIOL	370	585	1994
	HORI H	CANCER RES	56	5653	1996
	BATOVA A	BLOOD	88	3083	1996
	PALOS TP	MOL BRAIN RES	37	297	1996
	BATOVA A	CANCER RES	59	1492	1999
	BATIUK TD	AM J PHYSIOL-CELL PH	281	C1776	2001
	HARASAWA H	LEUKEMIA	16	1799	2002
	HRABIE JA	CHEM REV	102	1135	2002
	ARULSAMY N	TETRAHEDRON LETT	44	4267	2003
	STRAZZOLINI P	EUR J ORG CHEM	47	10	2004
	TALUKDAR A	NITRIC OXIDE DONORS			2005
	VILA TP	PH.D THESIS UNIVERSITY OF DUISBURG			2006
	BATOVA A	BLOOD	107	898	2006
	LI XM	MOL CANCER THER	5	337	2006
	BRAND J	CHEM-EUR J	12	499	2006
	BILODEAU-GOESEELS	S MOL REPROD DEV 74		1021	2007
	SHIINO M	J ENZYME INHIB MED CHEM	23	16	2008
	INGRID HP	MD THESIS, SAARLANDS UNIVERSITY			2009
	HENNES	UNIVERSITÄT DES SAARLANDES			2009
1987	JAIN A	MOL CELL BIOCHEM	78	3	
	OLLER AR	BIOCHEMISTRY-US	30	2543	1991
	BALASUNDARAM D	MOL CELL BIOCHEM	100	129	1991
	SCHWARTZ B	BIOCHEM J	312	83	1995
1987	BHUTANI V	NUTRITION RES	7	763	
	BHUTANI V	INT J VITAM NUTR RES	58	452	1988
	BHUTANI V	NUTR RES	9	465	1989
1988	BALASUNDARAM D	ARCH BIOC BIOP	264	288	
	BALASUNDARAM D	EUR J BIOCHEM	183	339	1989
	SARKAR NK	BIOCHEM MOL BIOL INT	35	1189	1995
	TALAUE MT	J BACTERIOL	188	4830	2006
1989	BALASUNDARAM D	EUR J BIOCHEM	183	339	
	SANCHEZ CP	BIOCHEM BIOPH RES CO	212	396	1995
	SARKAR NK	BIOCHEM MOL BIOL INT	35	1189	1995
	SETH A	J BACTERIOL	182	919	2000
	COLEMAN CS	BIOCHEM J	379	849	2004
1990	TYAGI JS	TROP MED PARASITOL	41	294	
	VERMA A	INDIAN J BIOCHEM BIO	32	429	1995
	FULTZ TJ	US PATENT 5399491 A			1995
	DATTAGUPTA N	US PATENT 5766849 A			1998
	HAMMOND PW	US PATENT 5906917 A			1999

1990	BHARGAVA S	J BACTERIOL	172	2930	
	LEE MH	P NATL ACAD SCI USA	88	3111	1991
	KEMPSELL KE	J GEN MICROBIOL	138	1717	1992
	TYAGI JS	NUCLEIC ACIDS RES	20	138	1992
	KINGER AK	GENE	131	113	1993
	GUPTA S	GENE	126	157	1993
	VERMA A	GENE	148	113	1994
	VERMA A	INDIAN J BIOCHEM BIO	31	288	1994
	VERMA A	INDIAN J BIOCHEM BIO	32	429	1995
	MISRA N	INT J LEPROSY	63	35	1995
	BELAS R	ANNU REV FISH DIS	5	133	1995
	VASANTHAKRISHNA M	MICROBIOL-UK	143	3591	1997
	PENA CEA	J MOL BIOL	266	76	1997
	VASANTHAKRISHNA M	J BIOSCIENCE	23	101	1998
	DASTUR A	ARCH MICROBIOL	178	288	2002
	SHARMA M	BIOTECHNOLOGY IN INDIA I ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84	133	2003
	TYAGI AK	BIOTECHNOLOGY IN INDIA I ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84	211	2003
	TK GHOSE	ADV BIOCHEM ENGIN BIOTECHNOL	84:1		2003
	ENDO WB	ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84		2007
	LI A	B.SC THESIS UNIVERSITY OF BRITISH COLUMBIA			2008
	LI AH	MICROBIOL-SGM	154	2291	2008
	KOSER CU	INFECT GENET EVOL	12	807	2012
1991	BALASUNDARAM D	MOL CELL BIOCHEM	100	129	
	BLACHIER F	BIOCHIM BIOPHYS ACTA	1175	21	1992
	RAJAM MV	CURR SCI INDIA	65	461	1993
	WING LYC	J PHARMACOL EXP THER	266	179	1993
	MCCORMACK SA	AM J PHYSIOL	264	G367	1993
	BALASUNDARAM D	P NATL ACAD SCI USA	91	172	1994
	HUANG H	BIOGENIC AMINES	10	259	1994
	LINARES PN	BIOGENIC AMINES	10	365	1994
	SHINOZAKI T	J RHEUMATOL	22	1907	1995
	SARKAR NK	BIOCHEM MOL BIOL INT	35	1189	1995
	HUBER M	CANCER RES	55	934	1995
	AUCHTER RM	ARCH OTOLARYNGOL	122	977	1996
	YOUNOSZAI MK	P SOC EXP BIOL MED	211	339	1996
	MADESH M	BBA-LIPID LIPID MET	1348	324	1997
	MURLEY JS	CELL PROLIFERAT	30	283	1997
	BERLAIMONT V	ANTICANCER RES	17	2057	1997
	CORRALIZA IM	BBA-GEN SUBJECTS	1334	123	1997
	PANDYA U	J HELIMEMTHOL	71	325	1997
	MITCHELL JLA	BIOCHEM J	335	329	1998
	LEVEQUE J	ANTICANCER RES	18	2663	1998
	SARAN S	CELL BIOL INT	22	575	1998
	BOOTH VK	RADIAT RES	153	813	2000
	PENDEVILLE H	MOL CELL BIOL	21	6549	2001
	MCCORMACK SA	J PHYSIOL PHARMACOL	52	327	2001
	SCORCIONI F	BIOCHEM J	354	217	2001
	HAHM HA	CLIN CANCER RES	7	391	2001
	VERMEULIN NMJ	US PATENT 6172261 B1			2001
	FICHERT T	US PATENT 20030229037 A1			2001
	GUDI	STUDY OF OLIGONUCLEOTIDE -POLYAMINE NONCOVALENT COMPLEXES BY ESI-ION TRAP			2001
	BAIS HP	PLANT CELL TISS ORG	69	1	2002

	MASSING U	US PATENT 20030229037			2003
	VERMEULIN NMJ	US PATENT B1			2003
	M SHAMMA	THESIS: DAMASCUS			2004
	RAJAM MV	PLANT BIOTECHNOLOGY AND MOLECULAR MARKERS		60	2005
	SHARMA M	INIS	36		2005
	SAXENA AK	MICROBIAL DIVERSITY	427		2005
	PATEL C	UNIVERSITY OF KENTUCKY			2006
	BLACHIER F	AMINO ACIDS	33	547	2007
	WORTHAM BW	ADV EXP MED BIOL	603	106	2007
	JERE D	NEW GENE THERAPY AND CANCER RESEARCH			2008
	MONTEMAYOR EJ	PH.D THESIS UNIVERSITY OF TEXAS			2008
	BOOTH VK	RADIATION RESEARCH	153	813	2009
	DAIGLE ND	J CELL PHYSIOL	220	680	2009
	WORTHAM BW	ENVIRON MICROBIOL	12	2034	2010
	PLEDGIE-TRACY A	CANCER CHEMOTH PHARM	65	1067	2010
	CARVALHO CDPC	M.SC THESIS, ALGARVE UNIVERSITY			2010
	CERRADA-GIMENEZ	THESIS, UNIVERSITY OF EASTERN FINLAND			2010
	FORSHELL TP	PH.D THESIS UMEA UNIVERSITY			2011
	LEFEVRE PLC	ENDOCR REV	32	694	2011
	PLYM	UMEÅ UNIVERSITY PHD THESIS			2011
	BURNS	US PATENT RE43327,			2012
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	ISAKA M	VETERINARY SCIENCE	1	E16	2012
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	WENJUAN	FOOD SCIENCE	34	136	2013
	MURRAY-STEWART T	MOL CANCER THER	12	2088	2013
	L Y WING	*JPET*	266:1	*179*	
	STEWART	MOLECULAR CANCER THERAPEUTICS DOI: 10.1158/1535-7163			2013
	MORRIS	*CANCER RES*	*74;*	*6925*	*2014*
	SLEZAK	GUT MICROBES	5:2		2014
1992	SHANKAR S	NUCLEIC ACIDS RES	20	2891	
	SHANKAR S	GENE	132	119	1993
	SHANKAR S	GENE	131	153	1993
	ROBERTS RJ	NUCLEIC ACIDS RES	21	3125	1993
	VANSOOLINGEN D	J BACTERIOL	178	78	1996
	MANDAL P	J BIOCHEM MOL BIOL	39	140	2006
1992	SHANKAR S	NUCLEIC ACID RES	20	2890	
	SHANKAR S	GENE	132	119	1993
	SHANKAR S	GENE	131	153	1993
	ROBERTS RJ	NUCLEIC ACIDS RES	21	3125	1993
	VANSOOLINGEN D	J BACTERIOL	178	78	1996
1993	DASGUPTA SK	J BACTERIOL	175	5186	
	BASHYAM MD	BIOTECHNIQUES	17	834	1994
	TIMM JL	J BACTERIOL	176	6749	1994
	VERMA A	GENE	148	113	1994
	TIMM J	MOL MICROBIOL	12	491	1994
	RAMESH GR	INDIAN J BIOCHEM BIO	32	361	1995
	KREMER L	MOL MICROBIOL	17	913	1995
	NESBIT CE	MOL MICROBIOL	17	1045	1995
	DELLAGOSTIN OA	MICROBIOL-UK	141	1785	1995
	WINTER N	MOL MICROBIOL	16	865	1995

SARKAR NK	BIOCHEM MOL BIOL INT	35	1189	1995
KREMER L	J BACTERIOL	177	642	1995
PARISH T	METHODS IN MOLECULAR BIOLOGY ELECTROPORATION PROTOCOLS FOR MICROORGANISMS CH-24	47	237	1995
KARITA M	INFECT. IMMUN.	64	450	1996
KENNEY TJ	J. BACTERIOL	178	3564	1996
PAGET E	J. BACTERIOL	178	6357	1996
AINSA JA	GENE	176	23	1996
PAGET E	J BACTERIOL	178	6357	1996
TYAGI JS	GENE	177	59	1996
BEGGS ML	GENE	174	285	1996
BASHYAM MD	J BACTERIOL	178	4847	1996
HATFULL GF	CURR TOP MICROBIOL	215	29	1996
VASANTHAKRISHNA M	MICROBIOL-UK	143	3591	1997
PARISH T	MICROBIOL-UK	143	2267	1997
MOVAHEDZADEH F	J BACTERIOL	179	3509	1997
JAIN S	GENE	190	37	1997
BANNANTINE JP	MICROBIOL-UK	143	921	1997
MULDER MA	TUBERCLE LUNG DIS	78	211	1997
BATONI G	FEMS MICROBIOL LETT	169	117	1998
KNIPFER N	GENE	217	69	1998
BARKER LP	MOL MICROBIOL	29	1167	1998
RAYCHAUDHURI S	MICROBIOL-UK	144	2131	1998
CHUBB AJ	MICROBIOL-UK	144	1619	1998
DASGUPTA SK	BIOCHEM BIOPH RES CO	246	797	1998
BASHYAM MD	J BACTERIOL	180	2568	1998
PARISH T	METHODS IN MOLECULAR BIOLOGY MYCOBACTERIA PROTOCOLS CH-1	101	129	1998
VIA LE	METHODS IN MOLECULAR BIOLOGY MYCOBACTERIA PROTOCOLS CH-20	101	245	1998
SHINNICK TM	MYCOBACTERIA CH-3 MOLECULAR BIOLOGY OF *MYCOBACTERIUM TUBERCULOSIS*		102	1998
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JULIANO TIMM	MYCOBACTERIA:MOLECULAR BIOLOGY AND VIRULENCE:CH-4			1999
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FLOHE L	US 20030162171 A1			1999
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UNNIRAMAN S	GENES CELLS	4	697	1999
CARBONELLI DL	FEMS MICROBIOL LETT	177	75	1999
VERMA A	J BACTERIOL	181	4326	1999
BARKER LP	FEMS MICROBIOL LETT	175	79	1999
GUPTA S	FEMS MICROBIOL LETT	172	137	1999
CHAWLA M	PLASMID	41	135	1999
RUBIN EJ	P NATL ACAD SCI USA	96	1645	1999
HATFULL GF	METHOD MICROBIOL	29	251	1999
DHAR N	FEMS MICROBIOL LETT	190	309	2000
TYAGI AK	MULTI-DRUG RESISTANCE IN EMERG	10	9	2000
DASGUPTA N	TUBERCLE LUNG DIS	80	141	2000
GOMEZ M	MOL GEN MYCOBACTERIA	1	111	2000
PASHLEY C	MOL GEN MYCOBACTERIA		55	2000
OPPON E	PH.D. THESIS, WESTERN CAPE UNIVERSITY			2000
TYAGI AK	MOL GEN MYCOBACTERIA		131	2000
TYAGI AK	MULTI-DRUG RESISTANCE IN EMERGING AND RE-EMERGING			

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B GICQUEL	US PATENT 6248581 B1			2001
CASALI N	METHODS IN MOLECULAR MEDICINE: MYCOBACTERIUM PROTOCOLS	54	1	2001
UNNIRAMAN S	J BIOL CHEM	276	41850	2001
TRICCAS JA	MICROBIOL-SGM	147	1253	2001
COWLEY SC	GENE	264	225	2001
UNNIRAMAN S	NUCLEIC ACIDS RES	30	5376	2002
SIRAKOVA TD	J BACTERIOL	184	6796	2002
DASTUR A	ARCH MICROBIOL	178	288	2002
UNNIRAMAN S	J BACTERIOL	184	5449	2002
MEDEIROS MA	MICROBIOL-SGM	148	1999	2002
KAMALAKANNAN V	FEMS MICROBIOL LETT	209	261	2002
BASU A	J BACTERIOL	184	2204	2002
KT LAM	US PATENT 6355469 B1			2002
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. TYAGI AK	BIOTECHNOLOGY IN INDIA I: ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84	211	2003
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CHATTOPADHYAY C	J BIOCHEM MOL BIOL	36	586	2003
RAO V	SCAND J IMMUNOL	58	449	2003
AGARWAL N	FEMS MICROBIOL LETT	225	75	2003
UNNIRAMAN S	BIOTECHNIQUES	35	256	2003
SMITH I	CLIN MICROBIOL REV	16	463	2003
SATCHIDANANDAM V	FEMS MICROBIOL LETT	218	365	2003
SOHASKEY CD	FEMS MICROBIOL LETT	240	187	2004
SAU S	J BIOCHEM MOL BIOL	37	254	2004
BASU A	J BACTERIOL	186	335	2004
BAGCHI G	MICROBIOL-SGM	151	4045	2005
ZHU JC	THERMOCHIM ACTA	439	52	2005
DEOL P	J BACTERIOL	187	3415	2005
RAO V	SCAND J IMMUNOL	61	410	2005
DATTA I	J BIOCHEM MOL BIOL	38	89	2005
MACHOWSKI EE	INT J BIOCHEM CELL B	37	54	2005
JIANQIANG LEI,	CURR MICROBIOL	51:3	141	2005
TRIPATHI	MSC THESIS,OREGON STATE UNIVERSITY			2005
AGARWAL N	NUCLEIC ACIDS RES	34	4245	2006
GUPTA R	BIOCHEM BIOPH RES CO	343	1141	2006
GALL K	FEMS MICROBIOL LETT	255	301	2006
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ZHANG L	JPN J INFECT DIS	62	26	2009
MOVAHEDZADEH F	METHODS IN MOLECULAR BIOLOGY: MYCOBACTERIA PROTOCOLS:CH-14	465	217	2009
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	PENGFEI	CHINESE JOURNAL OF INFECTIOUS DISEASES	30		2012
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	REDDY PV	J BACTERIOL	194	567	2012
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	ROY S	MICROB BIOTECHNOL	5	98	2012
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	SHANKAR S	GENE	132	119	1993
	SHANKAR S	GENE	131	153	1993
	RAMESH GR	INDIAN J BIOCHEM BIO	32	361	1995
	YOUNG DB	ANNU REV MICROBIOL	49	641	1995
	BELAS R	ANNUAL REVIEW OF FISH	1	133	1995
	COLLINS DM	TRENDS MICROBIOL	4	426	1996
	GORDON S	J APPL BACTERIOL	81	S10	1996
	QUINN FD	CURR TOP MICROBIOL	215	131	1996
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	TYAGI AK	MULTI-DRUG RESISTANCE IN EMERG	10	9	2000
	MONAHAN IM	MICROBIOL-UK	147	459	2001
	WEI J	PH.D THESIS UNIVERSITY OF ARIZONA			2001
	SINGH A	FEMS MICROBIOL LETT	227	53	2003
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	SINGH A	J BACTERIOL	187	4173	2005
	ACW ULTRASTRUCTURE	CURR OPIN INFECT DIS	18	171	2005
	PUROHIT	INFECT DISORD DRUG TARGETS	7	245	2007
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	JAIN S	AMER J BIOC BIOTECH	4	226	2008
	PAWARIA S	APPL ENVIRON MICROB	74	3512	2008
	NDE CW	APPL MICROBIOL BIOT	90	277	2011
	TK GHOSE	ADV BIOCHEM ENGIN BIOTECHNOL		84:1	2003
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1993	SHANKAR S	GENE	131	153	
	ROBERTS RJ	NUCLEIC ACIDS RES	22	3628	1994
	VANSOOLINGEN D	J BACTERIOL	178	78	1996
	MANDAL P	J BIOCHEM MOL BIOL	39	140	2006
	VOSSOUGHI M	MA COMPUT SCI ENG		7	2007
	JACOBS-SERA D	VIROLOGY	434	187	2012
1993	SHANKAR S	GENE	132	119	
	ROBERTS RJ	NUCLEIC ACIDS RES	22	3628	1994
	VANSOOLINGEN D	J BACTERIOL	178	78	1996
	MANDAL P	J BIOCHEM MOL BIOL	39	140	2006
	JACOBS-SERA D	VIROLOGY	434	187	2012
1994	BASHYAM MD	BIOTECHNIQUES	17	834	
	ROBERT BELAS	ANNUAL REV OF FISH DISEASES	5	133	1995
	TYAGI JS	GENE	177	59	1996
	JACKSON M	MICROBIOL-UK	142	2439	1996
	BASHYAM MD	J BACTERIOL	178	4847	1996
	FALKINHAM JO	CLIN MICROBIOL REV	9	177	1996
	BANERJEE SK	BIOCHEM BIOPHYS RES COMMUN	226	362	1996
	CACERES NE	J BACTERIOL	179	5046	1997
	NAGY I	LETT APPL MICROBIOL	25	75	1997
	PEIRS P	EUR J BIOCHEM	244	604	1997
	BANNANTINE JP	MICROBIOL-UK	143	921	1997
	MANGAN JA	NUCLEIC ACIDS RES	25	675	1997
	BERTHET FX	MICROBIOL-UK	144	3195	1998
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	HATFULL GF	METHOD MICROBIOL	29	251	1999
	ALONSO G	FEMS MICROBIOL LETT	192	257	2000
	GILOT P	J MED MICROBIOL	49	887	2000
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	TYAGI AK	BIOTECHNOLOGY IN INDIA I: ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84	211	2003
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	SUNG K	FEMS MICROBIOL LETT	229	97	2003
	SINGH A	FEMS MICROBIOL LETT	227	53	2003
	FENG ZY	ANTIMICROB AGENTS CH	47	283	2003
	STEPHAN J	BMC MICROBIOL	4	45	2004
	SHARBATI-TEHRANI S	INT J MED MICROBIOL	294	235	2004
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	SHARBATI	FREIE UNIVERSITÄT BERLIN THESIS			2005
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	KIM BH	J PHYCOL	42	1137	2006
	JAHN CE	J MICROBIOL METH	75	318	2008
	SHARBATI S	BMC MICROBIOL	9	31	2009
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	GONZALEZYMERCHAND JA	J BACTERIOL	179	6949	1997
	BARNES MR	J BACTERIOL	179	6145	1997
	SPOHN G	MOL MICROBIOL	26	361	1997
	CACERES NE	J BACTERIOL	179	5046	1997
	NAGY I	LETT APPL MICROBIOL	25	75	1997
	MOVAHEDZADEH F	J BACTERIOL	179	3509	1997
	WU QL	J BACTERIOL	179	2922	1997
	JAIN S	GENE	190	37	1997
	BANNANTINE JP	MICROBIOL-UK	143	921	1997
	GOMEZ JE	TUBERCLE LUNG DIS	78	175	1997
	MULDER MA	TUBERCLE LUNG DIS	78	211	1997
	VASANTHAKRISHNA M	MICROBIOL-UK	143	3591	1997
	BOSHOFF HIM	J BACTERIOL	180	5809	1998
	BERTHET FX	MICROBIOL-UK	144	3195	1998
	KNIPFER N	GENE	217	69	1998

RAYCHAUDHURI S	MICROBIOL-UK	144	2131	1998
DHANDAYUTHAPANI S	GENE	215	213	1998
LARKIN MJ	ANTON LEEUW INT J G	74	133	1998
GOMEZ M	MOL MICROBIOL	29	617	1998
DASGUPTA SK	BIOCHEM BIOPH RES CO	246	797	1998
FORD ME	J MOL BIOL	279	143	1998
BASHYAM MD	J BACTERIOL	180	2568	1998
PLIKAYTIS BB	J BACTERIOL	180	1037	1998
MATSUMOTO S	MICROBIOL IMMUNOL	42	15	1998
PRABHAKAR S	TUBERCLE LUNG DIS	79	43	1998
HU Y	J BACTERIOL	181	2469	1999
RODIGUEZ MG	TUBERCLE LUNG DIS	79	287	1999
TIMM J	GENE EXPRESSION		85	1999
	AND REGULATION CH-4		85	1999
BISHAI WR	US PATENT 6004764			1999
CONNELL N	MOLECULAR MYCOBACTERIOLOGY:			1999
	TECHNIQUES AND CLINICAL			
	APPLICATIONSCH-10			
IDEM MR	J BACTERIOL			
OLARIO J	PH.D THESIS MASSEY			
	UNIVERSITY PALMERSTON			1999
DALEJEREMY	MOLECULAR MYCOBACTERIOLY:			1999
	TECHNIQUES AND CLINICAL			
	APPLICATIONS CH-11			
UNNIRAMAN S	GENES CELLS	4	697	1999
MULDER MA	MICROBIOL-UK	145	2507	1999
FERNANDES ND	J BACTERIOL	181	4266	1999
VERMA A	J BACTERIOL	181	4326	1999
BARKER LP	FEMS MICROBIOL LETT	175	79	1999
DUSSURGET O	J BACTERIOL	181	3402	1999
HU YM	J BACTERIOL	181	3486	1999
HU YM	J BACTERIOL	181	1380	1999
RUBIN EJ	P NATL ACAD SCI USA	96	1645	1999
STOLT P	NUCLEIC ACIDS RES	27	396	1999
HU JM	J BACTERIOL	181	469	1999
HATFULL GF	METHOD MICROBIOL	29	251	1999
DHAR N	FEMS MICROBIOL LETT	190	309	2000
ALLAND D	J BACTERIOL	182	1802	2000
BIGI F	MICROBIOL-UK	146	1011	2000
PARKER AE	MICROB PATHOGENESIS	28	135	2000
RAMASWAMY SV	ANTIMICROB AGENTS CH	44	326	2000
TYAGI AK	MULTI-DRUG RESISTANCE IN EMERG	10	9	2000
DASGUPTA N	TUBERCLE LUNG DIS	80	141	2000
GOMEZ M	MOL GEN MYCOBACTERIA	1	111	2000
OPPON E	PH.D. THESIS WESTERN CAPE			2000
	UNIVERSITY			
TYAGI A.K	MOL GEN MYCOBACTERIA	ASM	131	2000
		PRESS		
PARISH T	BMC MICROBIOL	1		2001
MOVAHEDZADEH F	MYCOBACTERIUM TUBERCULOSIS	54	105	2001
	PROTOCOLS			
TULLIUS MV	INFECT IMMUN	69	6348	2001
HARRIS NB	CLIN MICROBIOL REV	14	489	2001
INGLIS NF	MICROBIOL-SGM	147	1557	2001
TORRES A	MICROB PATHOGENESIS	30	289	2001
DASTUR A	TUBERCULOSIS	81	267	2001
SHAFI J	UNIVERSITY OF LEICESTER THESIS			2001
BAGCHI	FEMS MICROBIOLOGY	211:2	231	2002
BERGER	UNIVERSITY OF COLOGNE PH.D THESIS			2002
SIRAKOVA TD	J BACTERIOL	184	6796	2002
DASTUR A	ARCH MICROBIOL	178	288	2002

UNNIRAMAN S	J BACTERIOL	184	5449	2002
KALATE RN	BIOPHYS CHEM	99	77	2002
MAYURI	FEMS MICROBIOL LETT	211	231	2002
TYAGI JS	TRENDS MICROBIOL	10	68	2002
GICQUEL B	US PATENT US6436409 B1			2002
BERGER S	PH.D THESIS, UNIVERSITY OF COLOGNE			2002
LING X	FOREIGN MEDICINE: ANTIBIOTICS		198	2003
TYAGI AK	BIOTECHNOLOGY IN INDIA I: ADVANCES IN BIOHEMICAL ENGINEERING/BIOTECHNOLOGY	84	211	2003
MUSATOVOVA O	FEMS MICROBIOL LETT	229	73	2003
KALATE RN	COMPUT BIOL CHEM	27	555	2003
CHATTOPADHYAY C	J BIOCHEM MOL BIOL	36	586	2003
GOPAUL KK	J BACTERIOL	185	6005	2003
RECCHI C	J BIOL CHEM	278	33763	2003
PATEK M	J BIOTECHNOL	104	325	2003
SALA C	J BACTERIOL	185	5357	2003
BAGCHI G	MICROBIOL-SGM	149	2303	2003
AGARWAL N	FEMS MICROBIOL LETT	225	75	2003
UNNIRAMAN S	BIOTECHNIQUES	35	256	2003
SAVIOLA B	INFECT IMMUN	71	1379	2003
SATCHIDANANDAM V	FEMS MICROBIOL LETT	218	365	2003
LI DAWEI	FOREIGN MEDICINE 5 : ANTIBIOTICS	198		2003
ROBERTS	THE UNIVERSITY OF ARIZONA PHD THESIS			2004
ROY S	RES MICROBIOL	155	817	2004
SOHASKEY CD	FEMS MICROBIOL LETT	240	187	2004
SHARBATI-TEHRANI S	INT J MED MICROBIOL	294	235	2004
ROBERTS EA	J BACTERIOL	186	5410	2004
SAFI H	MOL MICROBIOL	52	999	2004
LEE BR	BIOTECHNOL LETT	26	589	2004
SAU S	J BIOCHEM MOL BIOL	37	254	2004
BASHYAM MD	INFECT GENET EVOL	4	301	2004
LUO Q	PH.D THESIS, THE BAVARIAN JULIUS-MAXIMILIANS-UNIVERSITAT, WURZBURG			2004
LEWIN A	HEALTH RESEARCH	48	1390	2005
JIANQIANG L	CURR BIOL	51	141	2005
GONZÁLEZ-DÍAZ	ECSOC-9, INTERNATIONAL CONFERENCE ON SYNTHETIC ORGANIC CHEMISTRY			2005
TEHRANI	PH.D THESIS, FREE UNIVERSITY OF BERLIN			2005
BAGCHI G	MICROBIOL-SGM	151	4045	2005
JAIN V	GENE	351	149	2005
LEI J	CURRENT MICROBIOLOGY	51:3	141	2005
SHARBATI	FREIE UNIVERSITÄT BERLIN DISSERTATION			2005
BURONI S	ANTIMICROB AGENTS CH	50	4044	2006
HERNANDEZ-ABANTO SM	ARCH MICROBIOL	186	459	2006
AGARWAL N	NUCLEIC ACIDS RES	34	4245	2006
EHRT S	FUTURE MICROBIOL	1	177	2006
GUPTA R	BIOCHEM BIOPH RES CO	343	1141	2006
FABOZZI G	MICROB PATHOGENESIS	40	211	2006
GONZALEZ-DIAZ H	BIOORG MED CHEM LETT	16	547	2006
JAIN V	J MICROBIOL	44	1	2006
HILLMANN D	PH.D THESIS, FRIEDRICH-ALEXANDER UNIVERSITY, NUREMBERG			2006

	DAWSON LF	PHD THESIS UNIVERSITY OF LONDON			2006
	AGARWAL	NUCLEIC ACIDS RESEARCH	34:15	424	2006
	BURONI S	*ANTIMICROB. AGENTS CHEMOTHER*	50:12	4044	2006
	TOUZAIN	NANCY UNIVERSITY THESIS			2007
	SCHNEIDER,	UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL PHD THESIS			2007
	ANDREU MARTÍN	UNIVERSITAT DE BARCELONA THESIS			2007
	YAN YU	CHINESE JOIURNAL OF ZOONOSES	23	286	2007
	CHOWDHURY RP	J BACTERIOL	189	8973	2007
	SEO JG	MICROBIOL-SGM	153	4174	2007
	HALBEDEL S	J MOL BIOL	371	596	2007
	BYRNE GA	J BACTERIOL	189	5082	2007
	RICHTER L	GENE	395	22	2007
	SUBBIAN S	CAN J MICROBIOL	53	599	2007
	GONZALEZ-DIAZ H	CHEMOMETR INTELL LAB	85	20	2007
	CHURCHILL PF	J ENVIRON SCI HEAL B	43	698	2008
	KIM SY	J BACTERIOL VIROL	38	1	2008
	JAIN S	AMER J BIOC BIOTECH	4	226	2008
	SINGH A K	THESIS,CSIR-CDRI	S-241		2009
	GONZALES M	MOL BIOL REP	36	1225	2009
	SHARMA D	NUCLEIC ACIDS RES	37	W193	2009
	KAUR P	PLOS ONE	4	E5923	2009
	NASH KA	ANTIMICROB AGENTS CH	53	1367	2009
	VALLECILLO AJ	MICROB PATHOGENESIS	46	119	2009
	JOON M	BMC MICROBIOL	10	128	2010
	SACHDEVA P	FEBS J	277	605	2010
	TYAGI AK	TUBERCULOSIS	91	469	2011
	KIM H	J BACTERIAL VIROL	41	237	2011
	ROY S	OPEN MICROBIOLOGY J	5	43-53	2011
	BHARATI BK	GENE	528	99	2013
	NEWTON-FOOT M	TUBERCULOSIS	93	60	2013
	NEWTON FOOT	PH.D THESIS, STELLENBOSCH UNIVERSITY			2013
	PASCA	MICROBIAL EFFLUX PUMPS: CURRENT RESEARCH			2013
	SHARROCK	UNIVERSITY OF WAIKATO MSC THESIS			2013
	ANDREWS	TUBERCULOSIS			2015
1997	JAIN S	GENE	190	37	
	BARKER LP	MOL MICROBIOL	29	1167	1998
	DASGUPTA SK	BIOCHEM BIOPH RES CO	246	797	1998
	ROWLAND B	FEMS MICROBIOL LETT	179	317	1999
	VERMA A	J BACTERIOL	181	4326	1999
	GUPTA S	FEMS MICROBIOL LETT	172	137	1999
	HATFULL GF	METHOD MICROBIOL	29	251	1999
	TIMM J	MYCOBACTERIA: MOLECULAR BIOLOGY AND VIRULENCE CH-4			1999
	COLLINS	MOL GEN MYCOBACTERIA		265	2000
	JAIN S	MOL MICROBIOL	38	971	2000
	PINEIRO SA	CURR MICROBIOL	40	302	2000
	TYAGI AK	MULTI-DRUG RESISTANCE IN EMERG	10	9	2000
	DASGUPTA N	TUBERCLE LUNG DIS	80	141	2000
	CHATTOPADHYAY C	J BIOCHEM MOL BIOL	36	586	2003
	SINGH A	FEMS MICROBIOL LETT	227	53	2003
	KIM AI	MOL MICROBIOL	50	463	2003
	BAGCHI G	MICROBIOL-SGM	149	2303	2003
	AGARWAL N	FEMS MICROBIOL LETT	225	75	2003
	SHARMA M	BIOTECHNOLOGY IN INDIA: ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84	1	2003

	TK GHOSE	ADV BIOCHEM ENGIN BIOTECHNOL		84:1	2003
	TYAGI AK	BIOTECHNOLOGY IN INDIA I: ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84	211	2003
	GANGULY T	J BIOCHEM MOL BIOL	37	709	2004
	SAU S	J BIOCHEM MOL BIOL	37	254	2004
	SINGH R	TUBERCULOSIS	85	325	2005
	JAIN V	GENE	351	149	2005
	RAGHUNAND TR	MICROBIOL-SGM	152	2735	2006
	AGARWAL N	MICROBIOL-SGM	152	2749	2006
	AGARWAL N	NUCLEIC ACIDS RES	34	4245	2006
	GANGULY T	PROTEIN PEPTIDE LETT	13	793	2006
	CHOWDHURY RP	J BACTERIOL	189	8973	2007
	MANDAL S	MICROBIOL-SGM	153	80	2007
	ENDO WB	ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84		2007
	JAIN S	AMER J BIOC BIOTECH	4	226	2008
	JAIN R	PLOS ONE	3	E3869	2008
	MALHOTRA M	ENVIRON MICROBIOL	10	1365	2008
	JAIN R	PLOS ONE	3(12): E3869		2008
	DEY B	VACCINE	28	63	2009
	DAM B	APPL ENVIRON MICROB	75	4362	2009
	MORTON MJ	J BIOL CHEM	285	33737	2010
	RAO T	FEMS MICROBIOL LETT	310	24	2010
	JOON M	BMC MICROBIOL	10	128	2010
	PARUA PK	ARCH BIOCHEM BIOPHYS	493	175	2010
	PARUA PK	J GEN VIROL	91	306	2010
	ARNAB C	MICROBIOLOGY	156	1942	2010
	JAIN R	VACCINE	29	8118	2011
	TYAGI AK	TUBERCULOSIS	91	469	2011
	DEY B	PLOS ONE	6	E18773	2011
	DAM B	PLASMID	65	185	2011
	TARE P	PLOS ONE	7	E43900	2012
	BANDYOPADHYAY B	J BACTERIOL	194	4688	2012
	MANDAL S	ARCH MICROBIOL	194	737	2012
	MANDAL S	CURR MICROBIOL	64	259	2012
	BHARATI BK	GENE	528	99	2013
	RATHOR N	TUBERCULOSIS	93	389	2013
	CHINA A	*MICROBIOLOGY*	156:7	1942	2010
1998	BASHYAM MD	J BACTERIOL	180	2568	
	PARISH A	MOL BIOTECHNOL	13	191	1999
	FERNANDES ND	J BACTERIOL	181	4266	1999
	BARKER LP	FEMS MICROBIOL LETT	175	79	1999
	BURNS HD	NUCLEIC ACIDS RES	27	2051	1999
	MADSEN SM	MOL MICROBIOL	32	75	1999
	BOWN JA	J BIOL CHEM	274	2263	1999
	STOLT P	NUCLEIC ACIDS RES	27	396	1999
	TIMM J	MYCOBACTERIA: MOLECULAR BIOLOGY AND VIRULENCE CH-4			1999
	MGOMEZ	*MOLCULAR GENETICS OF MYCOBACTERIA AMERICAN SOCIETY FOR MICROBIOLOGY*		111	2000
	TYAGI A.K	MOL GEN MYCOBACTERIA		131	2000
	NARAYANAN S	FEMS MICROBIOL LETT	192	263	2000
	GIARD JC	J BACTERIOL	182	4512	2000
	TYAGI AK	MULTI-DRUG RESISTANCE IN EMERG	10	9	2000
	DASGUPTA N	TUBERCLE LUNG DIS	80	141	2000
	LI MS	MICROBIOL-SGM	147	2293	2001
	HARRIS NB	CLIN MICROBIOL REV	14	489	2001
	INGLIS NF	MICROBIOL-SGM	147	1557	2001

	GAL-MOR O	J BACTERIOL	184	3823	2002
	BERGER S	PH.D THESIS, UNIVERSITY OF COLOGNE			2002
	SHARMA M	BIOTECHNOLOGY IN INDIA I: ADVANCES IN BIOCHEMICAL ENGINEERING/ BIOTECHNOLOGY	84	1-48	2003
	TYAGI AK	BIOTECHNOLOGY IN INDIA I: ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY		211	2003
	CHATTOPADHYAY C	J BIOCHEM MOL BIOL	36	586	2003
	RECCHI C	J BIOL CHEM	278	33763	2003
	MITCHELL JE	NUCLEIC ACIDS RES	31	4689	2003
	AGARWAL N	FEMS MICROBIOL LETT	225	75	2003
	UNNIRAMAN S	BIOTECHNIQUES	35	256	2003
	HAYASHI K	PLANT CELL PHYSIOL	44	334	2003
	SATCHIDANANDAM V	FEMS MICROBIOL LETT	218	365	2003
	NÚÑEZ C	J BACTERIOL	187	534	2004
	SMITH I	TUBERCULOSIS AND THE TUBERCLE BACILLUS	ASM PRESS	219	2005
	LEI J	CURR BIOL	51	141	2005
	MENENDEZ MD	J BACTERIOL	187	534	2005
	PASHLEY CA	MICROBIOL-SGM	152	2727	2006
	AGARWAL N	NUCLEIC ACIDS RES	34	4245	2006
	EHRT S	FUTURE MICROBIOL	1	177	2006
	DOHERTY N	J BACTERIOL	188	2885	2006
	BIRGE EA	BACTERIAL AND BACTERIOPHAGE GENETICS CH-4		107	2006
	HILLMANN D	PH.D THESIS, UNIVERSITY OF ERLANGEN-NUREMBERG			2006
	JEONG DW	FOOD MICROBIOL	23	82	2006
	ENDO WB	ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84		2007
	RICHTER L	GENE	395	22	2007
	AGARWAL N	NUCLEIC ACIDS RESEARCH	34:15		2007
	DANILCHANKA O	ANTIMICROB AGENTS CH	52	2503	2008
	MICK V	J ANTIMICROB CHEMOTH	61	39	2008
	NEŠVERA J	CORYNEBACTERIA: GENOMICS AND MOLECULAR BIOLOGY		113	2008
	KOO BM	MOL MICROBIOL	72	815	2009
	SACHDEVA P	FEBS J	277	605	2010
	JEONG DW	J BACTERIOL	193	4672	2011
	SCHUESSLER DL	PLOS ONE	7	E34471	2012
	SREEJIT G	PH.D THESIS MANIPAL UNIVERSITY			2012
	PÁTEK M	MICROBIOLOGY MONOGRAPHS: *CORYNEBACTERIUM GLUTAMICUM*: BIOLOGY AND BIOTECHNOLOGY	23		2013
	LIGON LS	J BACTERIOL	195	4456	2013
	NEWTON-FOOT M	TUBERCULOSIS	93	60	2013
	TK GHOSE	ADV BIOCHEM ENGIN BIOTECHNOL	84:1		2003
	NEIL DOHERTY	*J BACTERIOL*	188:8	2885	2006
	PATHAK	GENE	560:1	57	2015
	OJHA AK	JNU PHD THESIS			2014
1998	DASGUPTA SK	BIOC BIOP RES COMM	246	797	
	VERMA A	J BACTERIOL	181	4326	1999
	CHAWLA M	PLASMID	41	135	1999
	JAIN S	MOL MICROBIOL	38	971	2000
	DHAR N	FEMS MICROBIOL LETT	190	309	2000
	OJHA AK	INFECT IMMUN	68	4084	2000
	TYAGI AK	MULTI-DRUG RESISTANCE IN EMERG	10	9	2000

TYAGI AK	MOL GEN MYCOBACTERIA		131	2000
UNNIRAMAN S	J BACTERIOL	184	5449	2002
MEDEIROS MA	MICROBIOL-SGM	148	1999	2002
BASU A	J BACTERIOL	184	2204	2002
AL-ZAROUNI M	TUBERCULOSIS	82	283	2002
SINGH R	MOL MICROBIOL	50	751	2003
SINGH A	FEMS MICROBIOL LETT	227	53	2003
RAO V	SCAND J IMMUNOL	58	449	2003
DHAR N	IMMUNOL LETT	88	175	2003
VENKATESH J	J BIOL CHEM	278	24350	2003
SATCHIDANANDAM V	FEMS MICROBIOL LETT	218	365	2003
TYAGI AK	BIOTECHNOLOGY IN INDIA	84	211	2003
	ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY			
SHARMA M	BIOTECHNOLOGY IN INDIA I: ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84	1	2003
TK GHOSE	ADV BIOCHEM ENGIN BIOTECHNOL	84:1		2003
BASU A	J BACTERIOL	186	335	2004
SHENOY AR	BIOCHEMISTRY-US	44	15695	2005
MATHEW R	J BACTERIOL	187	6565	2005
SINGH A	J BACTERIOL	187	4173	2005
RAO V	SCAND J IMMUNOL	61	410	2005
DENNEHY M	VACCINE	23	1209	2005
SAID P	PH.D THESIS, UNIVERSITAT DE BARCELONA			2005
SINGH A	J. BACTERIOL.	187:12	4173	2005
YU JS	CLIN VACCINE IMMUNOL	13	1204	2006
RAO A	APPL ENVIRON MICROB	73	1320	2007
SALLAM KI	GENE	386	173	2007
ENDO WB	ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84		2007
JAIN S	AMER J BIOC BIOTECH	4	226	2008
JAIN R	PLOS ONE	3	E3869	2008
DEY B	VACCINE	28	63	2009
SESHADRI A	TUBERCULOSIS	89	453	2009
LU L	VACCINE	27	972	2009
FAN XY	PLASMID	61	39	2009
ZHANG H	SCAND J IMMUNOL	72	349	2010
GUPTA AK	INDIAN J MED RES	132	176	2010
MALSHETTY VS	MICROBIOLOGY	156	940	2010
STAR FU	CHINESE JOURNAL OF BIOLOGICALS	10	1050	2010
CSANÁD	PH.D THESIS, UNIVERSITY OF SZEGED			2010
FALUDI I	PH.D THESIS, UNIVERSITY OF SZEGED			2010
QING ZH	CHINESE JOURNAL OF BIOLOGICALS	10	1043	2010
KERNODLE DS	US PATENT 8021671 B2			2011
TYAGI AK	TUBERCULOSIS	91	469	2011
BANDYOPADHYAY B	J BACTERIOL	194	4688	2012
ZHAO SM	PLOS ONE	7	E31908	2012
LIN CW	APMIS	120	72	2012
ROY S	MICROB BIOTECHNOL	5	98	2012
KERNODLE DS	US PATENT 8481056 B2			2012
REDDY PV	J INFECT DIS	208	1255	2013
COSTA ACD	FRONT IMMUNOL	5		2014
ANDRIES K	PLOS ONE	9(7):E102135		2014
DEY B	NATURE MEDICINE	21	401	2015
OJHA AK	JNU PHD THESIS			2014

1999	GUPTA S	FEMS MICROB LETT	172	137	
	TYAGI AK	MULTI-DRUG RESISTANCE IN EMERG	10	9	2000
	MEHROTRA J	INT J MED MICROBIOL	291	171	2001
	COLLINS DM	TUBERCULOSIS	81	97	2001
	SINGH A	FEMS MICROBIOL LETT	227	53	2003
	RECCHI C	J BIOL CHEM	278	33763	2003
	FROTA CC	INFECT IMMUN	72	5483	2004
	MOSTOWY S	J BACTERIOL	186	104	2004
	MARRI PR	FEMS MICROBIOL REV	30	906	2006
	TALAAT AM	J BACTERIOL	189	4265	2007
	HOMOLKA S	PLOS PATHOG	6	E1000988	2010
	NDE CW	APPL MICROBIOL BIOT	90	277	2011
	COLLINS DM	MOLECULAR GENETICS OF MYCOBACTERIA,			2000
	TK GHOSE	DV BIOCHEM ENGIN BIOTECHNOL		84:1	2003
	SHARMA M	ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY		84 1	2003
	JAIN S	*AMERICAN JOURNAL OF BIOCHEMISTRY AND BIOTECHNOLOGY*	*4:3*	*226*	
	GHOSE TK	ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY		84	2003
	LEE SU-MIN	UNIVERSITY OF LEICESTER PH.D THESIS			
	TYAGI AK	THE MYCOBACTERIAL CELL ENVELOPE ASM PRESS,			2008
	BINJOMAH	UNIVERSITY OF LEICESTER P.H D THESIS			
2000	DHAR N	FEMS MICROBIOL LETT	190	309	
	CHOUDHARY RK	INFECT IMMUN	71	6338	2003
	SINGH A	FEMS MICROBIOL LETT	227	53	2003
	RAO V	SCAND J IMMUNOL	58	449	2003
	DHAR N	IMMUNOL LETT	88	175	2003
	SHARMA M	BIOTECHNOLOGY IN INDIA I: ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84	1	2003
	TYAGI AK	BIOTECHNOLOGY IN INDIA I: ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84	211	2003
	TK GHOSE	ADV BIOCHEM ENGIN BIOTECHNOL	84:1		2003
	BOYLE SM	US PATENT 6811787 B1			2004
	DHAR N	MED MICROBIOL IMMUN	193	19	2004
	KHERA A	VACCINE	23	5655	2005
	RAO V	SCAND J IMMUNOL	61	410	2005
	DENNEHY M	VACCINE	23	1209	2005
	SAID P	PH.D THESIS, UNIVERSITAT DE BARCELONA			2005
	GUI L	J IMMUNOL		20	2005
	GUI L	JOURNAL OF PATHOGEN BIOLOGY		148	2006
	SAHOO S	INDIAN J PHARM EDU RES	40		2006
	JOSEPH J	EXPERT REV VACCINES	5	827	2006
	FAN XL	ACTA BIOCH BIOPH SIN	38	683	2006
	SHARMA K	J BACTERIOL	188	2936	2006
	WANG LM	CHINESE MED J-PEKING	120	1220	2007
	ENDO WB	ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84		2007
	CHOUDHARY RK	US PATENT 7238359 B2			2007
	HASNAIN	US7238359 B2			2007
	JAIN R	PLOS ONE	3	E3869	2008
	FARHANA A	PLOS ONE	3	E2087	2008
	DEY B	VACCINE	28	63	2009
	SHI C	SCAND J IMMUNOL	69	140	2009
	FAN XY	PLASMID	61	39	2009
	LORENZI JCC	BMC BIOTECHNOL	10	77	2010

	LORENZI JCC	REC ADV BIOL BIOMED	42	6	2010
	DENG YH	MICROBIOL IMMUNOL	55	798	2011
	JAIN R	VACCINE	29	8118	2011
	DEY B	PLOS ONE	6	E18773	2011
	MOUSTAFA D	VACCINE	29	784	2011
	RUIBO W	LIFE'S CHEMISTRY	598		2011
	COLER RN	UNDERSTANDING TUBERCULOSIS: ANALYZING THE ORIGIN OF MYCOBACTERIUM TUBERCULOSIS PATHOGENICITY CH-16			2012
	SIDDIQUI	PH.D THESIS, JNU			2014
	HASNAIN	US7238359 B2			
	JAIN R	PLOS ONE	3(12): E3869		
	SIDDIKI	COMBINATORIAL CHEMISTRY & HIGH THROUGHPUT SCREENING	17:7	630	2014
2000	KOUL A	J BACTERIOL	182	5425	
	KENNELLY PJ	CHEM REV	101	2291	2001
	KOUL A	MICROBIOL-SGM	147	2307	2001
	BARRY CE	TRENDS MICROBIOL	9	237	2001
	VAN HUIJSDUIJNEN RH	DRUG DISCOV TODAY	7	1013	2002
	BATONI G	SCAND J IMMUNOL	56	43	2002
	COWLEY SC	RES MICROBIOL	153	233	2002
	PRENETA R	COMP BIOCHEM PHYS B	131	103	2002
	LI RH	J BACTERIOL	185	6780	2003
	CHOPRA P	BIOCHEM BIOPH RES CO	311	112	2003
	SINGH R	MOL MICROBIOL	50	751	2003
	SINHA I	FEMS MICROBIOL LETT	227	141	2003
	BOITEL B	MOL MICROBIOL	49	1493	2003
	ANAYA-RUIZ M	INT J PARASITOL	33	663	2003
	CHOPRA P	INDIAN J MED RES	117	1	2003
	DEWANG PM	CURR ORG CHEM	8	947	2004
	PRENETA R	MICROBIOL-SGM	150	2135	2004
	SHARMA K	EXPERT OPIN THER TAR	8	79	2004
	COZZONE AJ	ARCH MICROBIOL	181	171	2004
	KOUL A	NAT REV MICROBIOL	2	189	2004
	TYAGI JS	CURR SCI INDIA	86	93	2004
	SHI L	MICROBIOLOGY	150	2247	2004
	MØLLER NPH	HANDBOOK OF EXPERIMENTAL PHARMACOLOGY	167	215	2005
	BELISLE JT	TUBERCULOSIS AND THE TUBERCLE BACILLUS		235A	2005
	CASTANDET J	RES MICROBIOL	156	1005	2005
	GRUNDNER C	STRUCTURE	13	1625	2005
	MANGER M	CHEMBIOCHEM	6	1749	2005
	SAXENA K	J BIOMOL NMR	33	136	2005
	LEI JQ	CURR MICROBIOL	51	141	2005
	SINGH R	TUBERCULOSIS	85	325	2005
	VERGNE I	P NATL ACAD SCI USA	102	4033	2005
	MADHURANTAKAM C	J BACTERIOL	187	2175	2005
	PRABHAKAR S	J IMMUNOL	174	1003	2005
	BIALY L	ANGEW CHEM INT EDIT	44	3814	2005
	DEWANG PM	CURR MED CHEM	12	1	2005
	GREENSTEIN AE	J MOL MICROB BIOTECH	9	167	2005
	COZZONE AJ	J MOL MICROB BIOTECH	9	198	2005
	BACH H	INFECT IMMUN	74	6540	2006
	LESCOP E	J BIOL CHEM	281	19570	2006
	XU HM	J BACTERIOL	188	1509	2006
	WEIDE T	BIOORG MED CHEM LETT	16	59	2006
	VOHRA R	RECENT PATENTS ON ANTI-INFECTIVE DRUG DISCOVERY	1	95	2006

MUKHOPADHYAY A	PH.D THESIS THE FACULTY OF VIRGINIA POLYTECHNIC INSTITUTE ANDSTATE UNIVERSITY			2006
MURILLO AC	INFECT DISORD DRUG TARGETS	7	127	2007
GRUNDNER C	STRUCTURE	15	499	2007
JONGE MD	BACTERIAL PATHOGENOMICS		49	2007
XINGJI Z	MSC THESIS, UNIVERSITY OF BRITISH COLUMBIA			2007
POOK SH	ONCOL REP	18	1315	2007
BERESFORD N	BIOCHEM J	406	13	2007
DEGHMANE AE	J CELL SCI	120	2796	2007
SOELLNER MB	J AM CHEM SOC	129	9613	2007
HOLTON SJ	CURR PROTEIN PEPT SC	8	365	2007
AGUIRRE-GARCIA MM	PARASITOL RES	101	85	2007
JANIN YL	BIOORGAN MED CHEM	15	2479	2007
O'SHEA DJ	ANAL CHIM ACTA	583	349	2007
GRANGEASSE C	TRENDS BIOCHEM SCI	32	86	2007
CORREA IR	CHEM-ASIAN J	2	1109	2007
TABERNERO L.	BIOCHEM J	406:1	13	2007
N BERESFORD,				2007
OKU T	J BIOL CHEM	283	28918	2008
GRUNDNER C	FEMS MICROBIOL LETT	287	181	2008
BACH H	CELL HOST MICROBE	3	316	2008
MADHURANTAKAM C	PROTEINS	71	706	2008
WEHENKEL A	BBA-PROTEINS PROTEOM	1784	193	2008
ALZARI P	US PATENT 7364856			2008
MÜLLER	PH.D THESIS,UNIVERSITY OF DORTMUND			2008
TYAGI AK	MYCOBACTERIAL CELL ENVELOP	ASM PRESS	323	2008
AMPNUHRIAWANGSA	JOURNAL OF THE INDONESIAN TROPICAL ANIMAL AGRICULTURE	34	265	2009
MASCARELLO	GRADUATE THESIS,FEDERAL UNIVERSITY OF SANTA CATARINA			2009
RAWLS KA	BIOORG MED CHEM LETT	19	6851	2009
MUKHERJEE S	INT J BIOL MACROMOL	45	463	2009
COZZONE AJ	TRENDS MICROBIOL	17	536	2009
AMLABU E	PARASITOL INT	58	238	2009
BLOBEL J	FEBS J	276	4346	2009
BACH H	BIOCHEM J	420	155	2009
BERESFORD NJ	J ANTIMICROB CHEMOTH	63	928	2009
IRANDOUST M	ANTI-CANCER AGENT ME	9	212	2009
HENEBERG P	CURR MED CHEM	16	706	2009
HE RJ	CHEMMEDCHEM	5	2051	2010
CHANDRA K	BIOORGAN MED CHEM	18	8365	2010
BERESFORD NJ	BMC GENOMICS	11	457	2010
SILVA APG	FUTURE MED CHEM	2	1325	2010
MASCARELLO A	BIOORGAN MED CHEM	18	3783	2010
MEENA LS	FEBS J	277	2416	2010
CHAO J	BBA-PROTEINS PROTEOM	1804	620	2010
ECCO G	CHEM COMMUN	46	7501	2010
RAHMAT	PH.D THESIS NATIONAL UNIVERSITY OF SINGAPORE			2010
KASTNER	PH.D THESIS,UNIVERSITY OF VIENNA			2010
WARBURG	PH.D THESIS, UNIVERSITY OF DORTMUND AND AT THE MAX PLANCK INSTITUTE FOR MOLECULAR PHYSIOLOGY, DORTMUND			
WARBURG	UNIVERSITÄT DORTMUND			2010
TYAGI AK	US PATENT 7943361 B2			2011
BOTTIJEN R	MSC THESIS, UNIVERSITY OF			

	GEORGIA, ATHENS, GEORGIA			2011
XIN L	CHINESE MED		138	2011
LI W	J CELL BIOCHEM	112	2688	2011
VINTONYAK VV	TETRAHEDRON	67	6713	2011
SHAPLAND EB	J BACTERIOL	193	4361	2011
MUKHOPADHYAY A	J BIOCHEM	149	551	2011
PEREIRA SFF	MICROBIOL MOL BIOL R	75	192	2011
STEHLE T	J BIOL CHEM	287	34569	2012
EITSON JL	APPL ENVIRON MICROB	78	6829	2012
JAYACHANDRAN R	EXPERT REV ANTI-INFE	10	1007	2012
DONG LH	J MOL MODEL	18	3847	2012
RAHMAT JN	UROLOGY	79	1411.E15	2012
HENEBERG P	CURR MED CHEM	19	1530	2012
WHITMORE SE	INT J ORAL SCI	4	1	2012
CHIARADIA LD	J MED CHEM	55	390	2012
NIR-PAZ R	FEMS MICROBIOL LETT	326	151	2012
PAYRASTRE B	PHOSPHOINOSITIDES AND CELLULAR PATHOGENS PHOSPHOINOSITIDES II	59	363	2012
BAFICA A	CONTROL OF INNATE AND ADAPTIVE IMMUNE RESPONSES DURING INFECTIOUS DISEASES:CH-2		23	2012
VOLTOLINI BG	DISCIPLINESUPERVISED INTERNSHIP THE FEDERAL UNIVERSITY OF SANTACATARINA			2012
MATIOLLO C	MSC THESIS UNIVERSIDA DE FEDERAL DESANTACATARINA			2012
YANG Y	SOFT MATTER	9	11054	2013
KOBIR MA	PH.D THESIS, ECOLE DOCTORALE GÈNES, GÉNOMES, CELLULES			2013
HUFENG Z	PH.D THESIS, NATIONAL UNIVERSITY OF SINGAPORE			2013
OTEVREL J	MOLECULES	18	10648	2013
RODRIGUEZ BL	PH.D THESIS UNIVERSITY OF THE REPUBLIC OF URUGUAY			2013
CHAUHAN P	PLOSONE	8E77930		2013
ZHOU H	J BIOINFORM COMPUT BIOL	11		2013
WONG D	TRENDS MICROBIOL	21	100	2013
RAI R	PARASITOL RES	112	147	2013
HE RJ	CHEM COMMUN	49	2064	2013
MATIOLLO C	BBA-PROTEINS PROTEOM	1834	191	2013
FORRELLAD MA	VIRULENCE	4	3	2013
GUNAWAN	CHEM. COMMUN.	49	2064	2013
BANSAL A	IEEE TRANSACTIONS ON KNOWLEDGE AND DATA ENGINEERING	15	883	2003
HANXIANG LI	J NAT PROD	77	800	2014
CANTON J	J LEUKOC BIOL	1MR0114		2014
HUFENG Z	BIOLOGY DIRECT	9		2014
SHARMA V	MEDICINAL CHEMISTRY	23	3593	2014
KUSEBAUCH U	PNAS	111	9265	2014
SOHONI SV	ENZYME ENGINEERING	3	2329	2014
MAJA	DORTMUND UNIVERSITY THESIS			2005
MARGENAT M	SCIENTIFIC REPORTS	5	8819	
PRISIC	MICROBIOL SPECTR			2014
SHERMAN	MOLECULAR MICROBIOLOGY 94:2	231		2014
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FOSHENG HSU	(BBA)	1851:6	698	2015
MENEGATTI	JBIC JOURNAL OF BIOLOGICAL INORGANIC CHEMISTRY	20:1	61	2015
JING WANG	*NATURE IMMUNOLOGY*	16	237	2015

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	HOTTER GS	FEMS MICROBIOL LETT	200	151	2001
	HOBSON RJ	MICROBIOL-SGM	148	1571	2002
	SMITH I	CLIN MICROBIOL REV	16	463	2003
	CLARK-CURTISS JE	ANNU REV MICROBIOL	57	517	2003
	SHARMA M	BIOTECHNOLOGY IN INDIA I: ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84	1	2003
	TYAGI AK	BIOTECHNOLOGY IN INDIA I: ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84	211	2003
	TK GHOSE	ADV BIOCHEM ENGIN BIOTECHNOL		84:1	2003
	DELOGU G	MOL MICROBIOL	52	725	2004
	MACHOWSKI EE	INT J BIOCHEM CELL B	37	54	2005
	ENDO WB	ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84		2007
2001	KOUL A	MICROBIOLOGY	147	2307	
	PALLEN M	TRENDS MICROBIOL	10	556	2002
	MADEC E	MOL MICROBIOL	46	571	2002
	CHABA R	EUR J BIOCHEM	269	1078	2002
	MOLLE V	BIOCHEMISTRY-US	42	15300	2003
	CHOPRA P	BIOCHEM BIOPH RES CO	311	112	2003
	SINGH R	MOL MICROBIOL	50	751	2003
	SINHA I	FEMS MICROBIOL LETT	227	141	2003
	VERMA A	INFECT IMMUN	71	5772	2003
	MOLLE V	BIOCHEM BIOPH RES CO	308	820	2003
	BOITEL B	MOL MICROBIOL	49	1493	2003
	ORTIZ-LOMBARDIA M	J BIOL CHEM	278	13094	2003
	YOUNG TA	NAT STRUCT BIOL	10	168	2003
	CHOPRA P	INDIAN J MED RES	117	1	2003
	SHARMA M	BIOTECHNOLOGY IN INDIA I: ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84	1	2003
	TYAGI AK	BIOTECHNOLOGY IN INDIA I: ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84	211	2003
	TK GHOSE	ADV BIOCHEM ENGIN BIOTECHNOL		84:1	2003
	POMPEO F	J BIOL CHEM	278:15	13094	2003
	NANDI T	IN SILICO BIOL	4	573	2004
	PULLEN KE	STRUCTURE	12	1947	2004
	PRENETA R	MICROBIOL-SGM	150	2135	2004
	GOPALASWAMY R	PROTEIN EXPRES PURIF	36	82	2004
	WALBURGER A	SCIENCE	304	1800	2004
	KUMARI S	DRUGS TODAY	40	487	2004
	COWLEY S	MOL MICROBIOL	52	1691	2004
	GOOD MC	J MOL BIOL	339	459	2004
	MOLLE V	FEMS MICROBIOL LETT	234	215	2004
	SHARMA K	EXPERT OPIN THER TAR	8	79	2004
	SHARMA K	FEMS MICROBIOL LETT	233	107	2004
	KOUL A	NAT REV MICROBIOL	2	189	2004
	TYAGI JS	CURR SCI INDIA	86	93	2004
	FONTAN PA	CURR SCI INDIA	86	122	2004
	DURAN R	BIOCHEM BIOPH RES CO	333	858	2005
	CURRY JM	INFECT IMMUN	73	4471	2005
	PAPAVINASASUNDARAM KG	J BACTERIOL	187	5751	2005
	KANG CM	GENE DEV	19	1692	2005
	DEOL P	J BACTERIOL	187	3415	2005
	BELISLE JT	TUBERCULOSIS AND THE TUBERCLE BACILLUS		235A	2005
	GAY Y	TUBERCULOSIS AND		359	2005

	THE TUBERCLE BACILLUS			
GREENSTEIN AE	J MOL MICROB BIOTECH	9	167	2005
CURRY	INFECT. IMMUN	73:8	4471	2005
KANG	GENES & DEV	19	1692	2005
MOLLE	PROTEOMICS	6:13	3754	2006
MOLLE V	J BIOL CHEM	281	30094	2006
SHARMA K	FEBS J	273	2711	2006
NIEBISCH A	J BIOL CHEM	281	12300	2006
DASGUPTA A	MICROBIOL-SGM	152	493	2006
SINGH A	TUBERCULOSIS	86	28	2006
BOKAS D	APPL MICROBIOL BIOT	76	773	2007
COX RA	CURR MOL MED	7	231	2007
DOVER LG	CURR MOL MED	7	247	2007
ZHENG XJ	BIOCHEM BIOPH RES CO	355	162	2007
NARAYAN A	PHYSIOL GENOMICS	29	66	2007
PENG G	FOREIGN MEDICINE: ANTIBIOTICS		50	2007
ENDO WB	BIOTECHNOLOGY IN INDIA I: ADVANCES IN BIOCHEMICAL ENGINEERING/BIOTECHNOLOGY	84		2007
Y SINGH	PHYSIOL. GENOMICS	29:66		2007
CANOVA	UNIVERSITÉ CLAUDE BERNARD THESIS			
O'HARE HM	MOL MICROBIOL	70	1408	2008
HEGYMEGI-BARAKONYI B	CURR MED CHEM	15	2760	2008
FIUZA M	J BIOL CHEM	283	18099	2008
THAKUR M	J BIOL CHEM	283	8023	2008
HETT EC	MICROBIOL MOL BIOL R	72	126	2008
CANOVA MJ	PROTEOMICS	8	521	2008
WEHENKEL A	BBA-PROTEINS PROTEOM	1784	193	2008
LOMBANA TN	PH.D THESIS, FLORIDA STATE UNIVERSITY			2008
ALZARI P	US PATENT 7364856 B2			2008
SCHULTZ	HEINRICH-HEINE-UNIVERSITY DUSSELDORF			2008
AK TYAGI	THE MYCOBACTERIAL CELL ENVELOPE, ASM PRESS			2008
WOLFF	ANTIMICROBIAL AGENTS AND CHEMOTHERAPY		3515	2009
CHAURASIYA SK	*BMC MICROBIOL*	9		2009
DEMPSEY	M.SC THESIS VICTORIA UNIVERSITY OF WELLINGTON			2009
NARAYAN A	PHYSIOL. GENOMICS	29	66	2009
CANOVA M	PH.D THESIS,UNIVERSITY OF LONDON			2009
WOLFF KA	ANTIMICROBIAL AGENTS AND CHEMOTHERAPY		3515	2009
TIWARI D	J BIOL CHEM	284	27467	2009
WOLFF KA	ANTIMICROB AGENTS CH	53	3515	2009
SCHERR N	J BACTERIOL	191	4546	2009
GUPTA MK	J PROTEOME RES	8	2319	2009
SILVESTRONI A	J PROTEOME RES	8	2563	2009
KUMAR P	J BIOL CHEM	284	11090	2009
LIN WJ	MOL MICROBIOL	71	1477	2009
MEENA LS	FEBS J	277	2416	2010
JANG J	MICROBIOL-SGM	156	1619	2010
ARORA G	PLOS ONE	5	E10772	2010
BAER CE	PH.D THESIS UNIVERSITY OF CALIFORNIA, BERKELEY			2010
BOTTIJEN RC	M.SC THESIS, UNIVERSITY OF GEORGIA, ATHENS, GEORGIA			2011
BURNSIDE K	J BIOL CHEM	286	44197	2011
CHAKRABORTI PK	TUBERCULOSIS	91	432	2011

	ARORA G	J BIOL CHEM	287	26749	2012
	WOLFF K	PH.D THESIS,CASE WESTERN RESERVE UNIVERSITY			2012
	KANG H	JOURNAL OF MICROBES AND INFECTIONS	7	56	2012
	WOUDE ADV	PH.D THESIS,VU UNIVERSITY AMSTERDAM			2013
	STOOP	PH.D THESIS, VU UNIVERSITY AMSTERDAM			2013
	FORRELLAD MA	VIRULENCE	4	3	2013
	ANIEK	WOUDE CELL MICROBIOL	16	280	2014
	TIWARI D	PH.D THESIS JAWAHARLAL NEHRU UNIVERSITY			2014
	KANDASAMY S	J MOL GRAPH MODEL	4	11	2014
	BAER CE	J BIOL CHEM	PUBD ONLINE		2014
	SWANEPOEL	DISEASE MARKERS	124218		2014
	SINGH DK	APPL MICROBIOL BIOTECHNOL			2014
	VIRGINIE MOLLE	THE JOURNAL OF BIOLOGICAL CHEMISTRY	381	30094	
	GUPTA	J. BACTERIOL	196:14	2646	2014
2003	TYAGI AK	SR ADV BIOCHEM ENGG	84	211	
	TYAGI AK	TUBERCULOSIS	91	469	2011
	TYAGI AK	TUBERCULOSIS	91	469	2011
	TYAGI AK	TUBERCULOSIS	91:5	469	2011
2003	SINGH R	MOLECUL MICROBIOL	50	751	
	SAINI AK	J BIOL CHEM	279	50142	2004
	ALZARI PM	STRUCTURE	12	1923	2004
	SHARMA K	EXPERT OPIN THER TAR	8	79	2004
	KOUL A	NAT REV MICROBIOL	2	189	2004
	ZHONG Q	FOREIGHN MEDICAL SCIENCES EPIDEMIOLOGY LEMOLOGY	31	235	2004
	LAZAREVIC V	BSC THESIS, UNIVERSITY OF NOTTINGHAM			2004
	HORNEF M	MECHANISMS OF EPITHELIAL DEFENSE	86		2005
	BELISLE JT	TUBERCULOSIS AND THE TUBERCLE BACILLUS		235	2005
	SAMUEL LP	PH.D THESIS, UNIVERSITY OF ARIZONA			2005
	CASTANDET J	RES MICROBIOL	156	1005	2005
	GRUNDNER C	STRUCTURE	13	1625	2005
	MANGER M	CHEMBIOCHEM	6	1749	2005
	SINGH R	TUBERCULOSIS	85	325	2005
	VILLARINO A	J MOL BIOL	350	953	2005
	SINGH A	J BACTERIOL	187	4173	2005
	RAO V	SCAND J IMMUNOL	61	410	2005
	MADHURANTAKAM C	J BACTERIOL	187	2175	2005
	GREENSTEIN AE	J MOL MICROB BIOTECH	9	167	2005
	COZZONE AJ	J MOL MICROB BIOTECH	9	198	2005
	MUSTELIN T	NAT REV IMMUNOL	5	43	2005
	SZOOR B	J CELL BIOL	175	293	2006
	MULLER D	J MED CHEM	49	4871	2006
	TAUTZ L	EXPERT OPIN THER TAR	10	157	2006
	MUSTELIN T	ADV EXP MED BIOL	584	53	2006
	SEIBERT SF	ORG BIOMOL CHEM	4	2233	2006
	VOHRA R	RECENT PATENTS ON ANTI-INFECTIVE DRUG DISCOVERY	1	35	2006

MURILLO AC	INFECT DISORD DRUG TARGETS	7	127	2007
BRENCHLEY R	BMC GENOMICS	8	434	2007
BERESFORD N	BIOCHEM J	406	13	2007
SOELLNER MB	J AM CHEM SOC	129	9613	2007
GRUNDNER C	STRUCTURE	15	499	2007
PRUIJSSERS AJ	J VIROL	81	1209	2007
CORREA IR	CHEM-ASIAN J	2	1109	2007
TABERNERO L	BIOCHEM J.	406:1	13	2007
N BERESFORD	BIOCHEMICAL JOURNAL	J20070670		2007
PRUIJSSERS	WAGENINGEN UNIVERSITY THESIS			2008
JAIN R	PLOS ONE	3	E3869	2008
OKU T	J BIOL CHEM	283	28918	2008
GRUNDNER C	FEMS MICROBIOL LETT	287	181	2008
WALTHER T	ORG LETT	10	3199	2008
SHI M	VIRUS GENES	36	595	2008
NOREN-MULLER A	ANGEW CHEM INT EDIT	47	5973	2008
WEHENKEL A	BBA-PROTEINS PROTEOM	1784	193	2008
LOMBANA	STRUCTURAL AND FUNCTIONAL CHARACTERIZATION OF THE REGULATION OF PKNB, AND ESSENTIAL SERINE/THREONINE PROTEIN KINASE OF MYCOBACTERIUM TUBERCULOSIS			2008
TYAGI AK	THE MYCOBACTERIAL CELL ENVELOPE	ASM PRESS	323	2008
PRUIJSSERS AJ	PH.D THESIS, WAGENINGEN UNIVERSITY			2008
VINTONYAK VV	CURR OPIN CHEM BIOL	13	272	2009
BERESFORD NJ	J ANTIMICROB CHEMOTH	63	928	2009
LILIENKAMPF A	J MED CHEM	52	2109	2009
MUSA TL	ADV PROTEIN CHEM STR	77	41	2009
GAY Y	METHODS AND PRINCIPLES IN MEDICINAL CHEMISTRY:CH-11			2009
THILO W	PH.D THESIS, MAX PLANCK INSTITUTE OF MOLECULAR PHYSIOLOGY			2009
WALTHER T	DORTMUND UNIVERSITY OF TECHNOLOGY PHD THESIS			2009
HE RJ	CHEMMEDCHEM	5	2051	2010
CHEN L	ACS MED CHEM LETT	1	355	2010
EUM JH	INSECT BIOCHEM MOLEC	40	690	2010
BERESFORD NJ	BMC GENOMICS	11	457	2010
SILVA APG	FUTURE MED CHEM	2	1325	2010
FLYNN EM	J AM CHEM SOC	132	4772	2010
ZHOU B	P NATL ACAD SCI USA	107	4573	2010
CHAO J	BBA-PROTEINS PROTEOM	1804	620	2010
VINTONYAK VV	ANGEW CHEM INT EDIT	49	5902	2010
ASHFORTH EJ	NAT PROD REP	27	1709	2010
RAWLS KA	ORG BIOMOL CHEM	8	4066	2010
KARIN W	PH.D THESIS, MAX PLANCK INSTITUTE OF MOLECULAR PHYSIOLOGY			2010
RAHMAT	PH.D THESIS, NATIONAL UNIVERSITY OF SINGAPORE			2010
LI W	J CELL BIOCHEM	112	2688	2011
VINTONYAK VV	TETRAHEDRON	67	6713	2011
SHAPLAND EB	J BACTERIOL	193	4361	2011
DE OLIVEIRA KN	MEDCHEMCOMM	2	500	2011
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MANNHOLD R	METHODS *AND PRINCIPLES IN MEDICINAL CHEMISTRY*	*48*		*2011*
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	SINGH A	J. BACTERIOL.	187:12	4173	2012
	JAIN R	BMC GENOMICS	13	520	2012
	EITSON JL	APPL ENVIRON MICROB	78	6829	2012
	LIU XT	ANTON LEEUW INT J G	102	447	2012
	CHAWLA M	MOL MICROBIOL	85	1148	2012
	DONG LH	J MOL MODEL	18	3847	2012
	HE YT	BIOORGAN MED CHEM	20	1940	2012
	ARORA N	MINI-REV MED CHEM	12	187	2012
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	GAO JM	CHEM REV	113	4755	2013
	ZENG LF	CHEMMEDCHEM	8	904	2013
	HUANG XS	ORG LETT	15	721	2013
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	WONG D	TRENDS MICROBIOL	21	100	2013
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	HE RJ	CHEM COMMUN	49	2064	2013
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	ALESSANDRA	CHEMICAL COMMUNICATIONS	49	2064	2013
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	JAIN R	PLOS ONE	3(12): E3869		
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	SHARMA K	EXPERT OPIN THER TAR	8	79	2004
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SHARMA K	FEBS J	273	2711	2006
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	RAHMAN MT	VET MICROBIOL	110	131	2005
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	CHANGSHENG	FOREIGN MEDICAL: MICROBIOLOGY	1	25	2005
	SKEIKY YAW	VACCINE	23	3937	2005
	TSENOVA L	INFECT IMMUN	74	2392	2006
	CUIYING Z	INFECT DIS INFO	19	194	2006
	QINGFENG S	CHIN J INFECT DIS	24	100	2006
	SIMSOVA M	BORDETELLA: MOLECULAR MICROBIOLOGY			2007
	GUPTA UD	VACCINE	25	3742	2007
	ZHANG M	FEMS IMMUNOL MED MIC	49	68	2007
	JAIN R	PLOS ONE	3	E3869	2008
	TANG C	J INFECT DIS	197	1263	2008
	LEI G	CHIN J CELL MOL IMMUNOL	25	122	2008
	BORSUK	FEDERAL UNIVERSITY OF			
	PELOTAS	PG THESIS			2008
	JAIN R	PLOS ONE	3:12	E3869	2008
	JIN L	CHINA TROPICAL MEDICINE		160	2009
	YAN Z	CHINESE JOURNAL OF MODERN MEDICINE	13	1945	2009
	YING L	JOURNAL OF MICROBIOLOGY	29	22	2009
	LINGXIA Z	CHINESE JOURNAL OF MODERN MEDICINE	13	1948	2009
	BIT H	CHINA TROPICAL MEDICINE		46	2009
	JIA X	INTERNATIONAL JOURNAL OF IMMUNOLOGY	2	85	2009
	YANGFANG LI	JOURNAL OF MICROBIOLOGY	6	36-40	2009
	DEY B	VACCINE	28	63	2009
	BASTOS RG	VACCINE	27	6495	2009
	WANG JL	MED MICROBIOL IMMUN	198	5	2009
	WANG DA	VACCINE	28	3134	2010
	CATALDI A	STRATEGIES FOR NEW			2010

		GENERATION VACCINE DEVELOPMENT CH5.3			
	LINGXIA Z	PRACTICAL JOURNAL OF MEDICINE	12	2115	2011
	RUI X	J IMMUNOL		98	2011
	JIANG X	BIOINFORMATICS AND BIOMEDICAL ENGINEERING:5TH INTERNATIONAL CONFERENCE			2011
	JIE H	PROGRESS IN MODERN BIOMEDICINE		1810	2011
	JAIN R	VACCINE	29	8118	2011
	TYAGI AK	TUBERCULOSIS	91	469	2011
	ZHANG P	INT IMMUNOPHARMACOL	14	252	2012
	HOU S	APPLIED MECHANICS AND MATERIALS	421	308	2013
	LIU X	ADVANCED MATERIALS RESEARCH	498	884	2014
	JOSE S	PLANT CELL TISS ORGAN CULT			2014
	CATALDI A	STRATEGIES FOR NEW GENERATION VACCINE DEVELOPMENT CH-5.3			
	CABRERA	VACCIMONITOR	23:3		2014
2004	TYAGI AK	CURR SCI	86	154	
	RONNETT S	UNIVERSITY OF CAPE TOWN MSC THESIS			
	CABRERA A	FINLAY INSTITUTION PHD THESIS			
2005	SINGH R	TUBERCULOSIS	85	325	
	RANJAN S	BMC BIOINFORMATICS	7	S9	2006
	SOELLNER MB	J AM CHEM SOC	129	9613	2007
	STINEAR TP	GENOME RES	18	729	2008
	SINGH A	ICCES	6	119	2008
	GUTIERREZ MC	MICROBIAL PATHOGENOMICS	6		2009
	KUMAR P	J BIOL CHEM	284	11090	2009
	ARORA A	TUBERCULOSIS	91	456	2011
	SHAN T	ERROR			2011
	ANDERSSON CS	STRUCTURE	20	1062	2012
	PELOSI A	PLOS ONE	7	E31788	2012
	ZENG LF	CHEMMEDCHEM	8	904	2013
	HE YT	J MED CHEM	56	832	2013
	HE RJ	FEBS J	280	731	2013
	FORRELLAD MA	VIRULENCE	4	3	2013
	XIA G	MAR DRUGS	12	2953	2014
	EVANGELOPOULOS	TUBERCULOSIS	94:6	664	2014
	SINGH P	INTERNATIONAL JOURNAL OF MYCOBACTERIOLOGY	3:3	168	2014
	XIAO Z	MARS DRUG	13:1	366	2015
	A. A. PROZOROV	RUSSIAN JOURNAL OF GENETICS	50:8	775	2015
2005	KHERA A	VACCINE	23	5655	
	HUYGEN K	FUTURE MICROBIOL	1	63	2006
	LI H	VACCINE	24	1315	2006
	MEHER AK	VACCINE	25	6098	2007
	MITSUYAMA M	TUBERCULOSIS	87	S10	2007
	WALKER KB	CURR MOL MED	7	339	2007
	GUPTA UD	VACCINE	25	3742	2007
	TINGFEN Z	CHINESE JOURNAL OF ZOONOSES	23	964	2007
	STRONG P	CHINESE JOURNAL OF VETERINARY SCIENCE	37	61	2007
	STRONG P	CHINA BIOTECHNOLOGY	27	47	2007
	GULANI J	PHD THESIS PURDUE UNIVERSITY			2007

	STRONG P	ANIMAL HUSBANDRY AND VETERINARY MEDICINE	8	7	2008
	STRONG P	CHINESE JOURNAL OF BIOLOGICALS	7	565	2008
	WANG S	CHINESE JOURNAL OF CLINICAL REHABILITATIVE TISSUE ENGINEERING RESEARCH	24	4705	2008
	STRONG P	JIANGSU AGRICULTURAL SCIENCES	5	63	2008
	ZVI A	BMC MED GENOMICS	1	18	2008
	LIU SG	IMMUNOL LETT	117	136	2008
	DEY B	VACCINE	28	63	2009
	DEY A	VACCINE	27	5152	2009
	GUMBER S	VET MICROBIOL	137	290	2009
	HAITAO L	SPECIALTY RESEARCH		10	2009
	HAITAO L	SPECIALTY RESEARCH	2	5	2009
	WEI Y	CHINESE JOURNAL OF ZOONOSES	10	953	2010
	RAHMAN	PH.D THESIS STOCKHOLM UNIVERSITY SWEDEN			2010
	HUANG JM	VACCINE	28	7523	2010
	SHI CW	VACCINE	28	5237	2010
	OKADA M	HUM VACCINES	6	297	2010
	DEENADAYALAN A	MOL CELL PROTEOMICS	9	538	2010
	JAIN R	VACCINE	29	8118	2011
	TYAGI AK	TUBERCULOSIS	91	469	2011
	DEY B	PLOS ONE	6	E23360	2011
	DEY B	PLOS ONE	6	E18773	2011
	JEON BY	MICROBES INFECT	13	284	2011
	WEN D	CHINA BIOTECHNOLOGY		14	2011
	LIJUN WU	NORTH AGRICULTURAL SCIENCES	2	1	2011
	LVBO T	CHINESE JOURNAL OF ZOONOSES		138	2011
	RONGNA	CHINESE JOURNAL OF BIOLOGICALS			2012
	FAN SY	CHINESE JOURNAL OF TUBERCULOSIS	8		2012
	YOU Q	SCAND J IMMUNOL	75	77	2012
	CHAUHAN P	SCI REP-UK	3	1821	2013
	PRASAD TS	CLINICAL PROTEOMICS	10	8	2013
	DONG Y	BRAZ ARCH BIOL TECHNOL	56		2013
	MTEA DA	PH.D THESIS, FEDERAL UNIVERSITY OF GOIA			2013
	VASCONCELOS	VACCINES & VACCINE TECHNOLOGIES			2014
	SOUSA	FEDERAL UNIVERSITY OF GOIÁS	PHD THESIS		2013
	FENGYING LIU	MOLECULAR & CELLULAR PROTEOMICS	13:3352		2014
	VILLARREAL DO	HUMAN VACCINES & IMMUNOTHERAPEUTICS	10	8	2014
	XUEJUAN B	CHIN J ANTITUBERC MARCH		36	32014
	COSTA CD	INTERNATIONAL JOURNAL OF INFECTIOUS DISEASES	32		52015
	SARANYA B	INTERDISCIP SCI COMPUT LIFE SCI		7	12015
	SIDDIQUI, K	CLINICAL & EXPERIMENTAL IMMUNOLOGY	DOI: 10.1111/CEI.12634		
	CATALDI A	THE ART & SCIENCE OF TUBERCULOSIS VACCINE DEVELOPMENT2ND EDITION CHAPTER 5.3			
2005	DEOL P	J BACTERIOL	187	3415	
	GREENSTEIN AE	J MOL MICROB BIOTECH	9	167	2005
	COZZONE AJ	J MOL MICROB BIOTECH	9	198	2005

FERNANDEZ P	J BACTERIOL	188	7778	2006
PEREZ J	BIOCHEM BIOPH RES CO	348	6	2006
RAGHUNAND TR	MICROBIOL-SGM	152	2735	2006
CASHIN P	FEMS MICROBIOL LETT	261	155	2006
MOLLE V	PROTEOMICS	6	3754	2006
SHARMA K	FEBS J	273	2711	2006
ALDERWICK LJ	P NATL ACAD SCI USA	103	2558	2006
PIMENTEL-SCHMITT	J MOL MICROBIOL BIOTECHNOL	12	75	2006
JUN YJ	J FOURTH MIL MED UNIV	27	396	2006
SCARPARI ML	PH.D THESIS CAMPINAS STATE UNIVERSITY			2006
JUN Z	JOURNAL OF THE FOURTH MILITARY MEDICAL UNIVERSITY	27	G	2006
PENG G	FOREIGN MEDICINE: ANTIBIOTICS		50	2007
DOVER LG	CURR MOL MED	7	247	2007
NARAYAN A	PHYSIOL GENOMICS	29	66	2007
RAO A	APPL ENVIRON MICROB	73	1320	2007
PIMENTEL-SCHMITT EF	J MOL MICROB BIOTECH	12	75	2007
NARAYAN A	PHYSIOL GENOMICS	29	66	2007
LEWIN A	BMC MICROBIOL	8	91	2008
LAKSHMINARAYAN H	PROTEIN EXPRES PURIF	58	309	2008
HETT EC	MICROBIOL MOL BIOL R	72	126	2008
CANOVA MJ	PROTEOMICS	8	521	2008
WEHENKEL A	BBA-PROTEINS PROTEOM	1784	193	2008
GOPALASWAMY R	FEMS MICROBIOL LETT	278	121	2008
LEE	MSC THESIS UNIVERSITY OF BRITISH COLUMBIA			2008
AV-GAY Y	PROTEIN KINASES AS DRUG TARGETS:PROSPECTS FOR TB THERAPEUTICS TARGETING MYCOBACTERIUM TUBERCULOSIS PHOSPHOSIGNALING NETWORKS			2009
SCHERR	MYCOBACTERIUM: GENOMICS AND MOLECULAR BIOLOGY			2009
CANOVA M	PH.D THESIS UNIVERSITY OF LYON			2009
TIWARI D	J BIOL CHEM	284	27467	2009
GUPTA MK	J PROTEOME RES	8	2319	2009
KUMAR P	J BIOL CHEM	284	11090	2009
CANOVA MJ	J BACTERIOL	191	2876	2009
VEYRON-CHURLET R	J BIOL CHEM	284	6414	2009
PARIKH A	J MOL BIOL	386	451	2009
SHARBATI S	BMC MICROBIOL	9	31	2009
COOK GM	ADV MICROB PHYSIOL	55	81	2009
SATHEKGE M	Q J NUCL MED MOL IM	54	698	2010
KHAN S	J BIOL CHEM	285	37860	2010
MALHOTRA V	MICROBIOL-SGM	156	2829	2010
JANG J	MICROBIOL-SGM	156	1619	2010
TYAGI N	PLOS ONE	5	E10608	2010
ARORA G	PLOS ONE	5	E10772	2010
SATHEKGE M	NUKLEARMED-NUCL MED	49	35	2010
BAER CE	PH.D DEGREE UNIVERSITY OF CALIFORNIA, BERKELEY			2010
MANNHOLD R	METHODS AND PRINCIPLES IN MEDICINAL CHEMISTRY	49		2011
JONG-RYOOL	NUCL MED MOL IMAGING	45	177	2011
BACKUS KM	NATURE CHEMICAL BIOLOGY	7	228	2011
CHAKRABORTI PK	TUBERCULOSIS	91	432	2011
SPIVEY VL	J BIOL CHEM	286	26198	2011
MESZAROS B	PLOS COMPUT BIOL	7	E1002118	2011
DANILENKO VN	CURR TOP MED CHEM	11	1352	2011
KUMARI R	MOL CELL BIOCHEM	369	67	2012

	KUNISCH R	BMC MICROBIOL	12	165	2012
	KIRSEBOM LA	ADV APPL MICROBIOL	80	81	2012
	ZOU Z	AUTOPHAGY	8		2012
	HAN K	JOURNAL OF MICROBES AND INFECTION	7	56	2012
	SPIVEY VL	FEMS MICROBIOL LETT	347	107	2013
	KUMARI R	MOL CELL BIOCHEM	374	149	2013
	KHATRI B	PLOS ONE	8	E52673	2013
	FORRELLAD MA	VIRULENCE	4	3	2013
	KUMAR D	ARCH MICROBIOL	195	75	2013
	BHADURI A	PLOS ONE	9E88090		2014
	LIU M	CRITICAL REVIEWS IN EUKARYOTIC GENE EXPRESSION	24		2014
	KANDASAMY S	J MOL GRAPH MODEL	4	11	2014
	DK SINGH	APPL MICROBIOL BIOTECHNOL			2014
	CHAWLA Y	J BIOL CHEM	289	13858	2014
	PARANDHAMAN DK	LIFE SCIENCES	IN PRESS		2014
	CHANDOLIA A	MICROBIOLOGICAL RESEARCH	IN PRESS		2014
	SPIVEY VL	10.1074/JBC.M111.246132			2011
	XIANG	CRITREVEUKARYOTGENEEXPR DOI: 10.1615	269		2014
	PRISIC S	MICROBIOL SPECTR	2(5)		2014
	ADVANI M	*SCIENTIFIC REPORTS* 4	6861		
	PM ALZARI	ERROR			
	NAGARAJAN SN	THE JOURNAL OF BIOLOGICAL CHEMISTRY	290	9626	
	NAKEDI KC	FRONT MICROBIOL.	6	237	2015
2005	SINGH A	J BACTERIOL	187	4173	
	RICHTER L	GENE	395	22	2007
	CHERUVU M	TUBERCULOSIS	87	12	2007
	KRUH NA	J BIOL CHEM	283	31719	2008
	RUSSELL-GOLDMAN E	INFECT IMMUN	76	4269	2008
	LAM THJ	MICROB PATHOGENESIS	45	12	2008
	GOUDE R	FUTURE MICROBIOL	3	299	2008
	TOBIN DM	CELL MICROBIOL	10	1027	2008
	IBARRA JA	GENETICA	133	65	2008
	FONTAN P	INFECT IMMUN	76	717	2008
	JAIN S	AMER J BIOC BIOTECH	4	226	2008
	TYAGI AK	THE MYCOBACTERIAL CELL ENVELOPE		323	2008
	KHARE G	PLOS ONE	4	E8387	2009
	NOMOTO M	MICROBIOL IMMUNOL	53	550	2009
	GONZALES M	MOL BIOL REP	36	1225	2009
	DEB C	PLOS ONE	4	E6077	2009
	KUMAR P	J BIOL CHEM	284	11090	2009
	SHELINE KD	TUBERCULOSIS	89	114	2009
	NGUYEN L	ANNU REV PHARMACOL	49	427	2009
	BEAULIEU AM	PLOS ONE	5	E15120	2010
	STALLINGS CL	MICROBES INFECT	12	1091	2010
	MALHOTRA V	MICROBIOL-SGM	156	2829	2010
	HOMOLKA S	PLOS PATHOG	6	E1000988	2010
	VEYRON-CHURLET R	J BIOL CHEM	285	12714	2010
	DUTTA NK	PLOS ONE	5	E10069	2010
	MOLLE V	MOL MICROBIOL	75	1064	2010
	SAVIOLA B	ALL STRESSED OUT: MYCOBACTERIAL RESPONSES TO STRESS. CURRENT RESEARCH	2	545	2010
	JATANA N	J MOL MODEL	17	301	2011
	LAMRABET O	TUBERCULOSIS	92	365	2012
	ANDERSSON CS	STRUCTURE	20	1062	2012
	SAVIOLA B	UNDERSTANDING TUBERCULOSIS		89	2012

		DECIPHERING THE SECRET LIFE OF THE BACILLI,CH-4			
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	HAN K	JOURNAL OF MICROBES AND INFECTION	7	56	2012
	SIKRI K	CURR SCI INDIA	105	607	2013
	GOPINATH K	OPEN BIOL	3	120175	2013
	FORRELLAD MA	VIRULENCE	4	3	2013
	ROSE G	GENOME BIOL EVOL	5	1849	2013
	SMITH T	CURRENT TOPICS IN MICROBIOLOGY AND IMMUNOLOGY	374	55	2013
	MCKINNEY	OPEN BIOL	3	120175	2013
	SAVIOLA B	TUBERCULOSIS – CURRENT ISSUES IN DIAGNOSIS AND MANAGEMENTCH-11			2013
	CHOO SW	SCI REP	4	4061	2014
	SINGH G	MOL BIOL REP	41	285	2014
	KREMER L	THE JOURNAL OF BIOLOGICAL CHEMISTRY	285:17	12714	2010
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	PORTEVIN	MICROBIOLOGYOPEN 3:6	823		2014
	EVANGELOPOULOS	TUBERCULOSIS	94:6	664	2014
2005	RAO V	SCAND J IMMUNOL	61	410	
	ARAVINDHAN V	FEMS IMMUNOL MED MIC	47	45	2006
	HOVAV AH	MICROBES INFECT	8	1750	2006
	JUNG SB	INFECT IMMUN	74	2686	2006
	CUIYING Z	INFECT DIS INFO	19	194	2006
	HWANG	TUBERCULOSIS	89	S49	2006
	SB JUNG	INFECT. IMMUN	74:5	2686	2006
	FONSECA	IMMUNOLOGY	121	508	2007
	HENAO-TAMAYO M	VACCINE	25	7153	2007
	DA FONSECA DM	IMMUNOLOGY	121	508	2007
	HERNANDEZ-PANDO R	CURR MOL MED	7	365	2007
	HUNG CY	ANN NY ACAD SCI	1111	225	2007
	BONATO	IMMUNOLOGY	121:4	508	2007
	ZVI A	BMC MED GENOMICS	1	18	2008
	BASTIAN M	J IMMUNOL	180	3436	2008
	SALI M	INFECT IMMUN	78	5202	2010
	AL-ATTIYAH R	FEMS IMMUNOL MED MIC	59	177	2010
	RAHMAN	PH.D THESIS,STOCKHOLM UNIVERSITY SWEDEN			2010
	TULLIUS M	REPLICATING VACCINES BIRKHAUSER ADVANCES IN INFECTIOUS DISEASES	2011	119	2011
	FLORES C	LICENTIATE THESIS STOCKHOLM UNIVERSITY			2011
	TYAGI AK	TUBERCULOSIS	91	469	2011
	KOVACS-SIMON A	INFECT IMMUN	79	548	2011
	WANG C	CLIN DEV IMMUNOL	563	838	2012
	SAKTHI S	MICROBIOL RES	168	407	2013
	REBA SM	EUR J IMMUNOL	44	1410	2014
2005	CHAUDHARY VK	PROT EXP PURIF	40	169	
	KULSHRESTHA A	PROTEIN EXPRES PURIF	44	75	2005
	ACHKAR JM	CLIN VACCINE IMMUNOL	13	1291	2006
	BENABDESSELEM C	J CLIN MICROBIOL	44	3086	2006
	ABEBE F	SCAND J IMMUNOL	66	176	2007
	ZHANG HM	CLIN MICROBIOL INFEC	13	139	2007

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LIGHTER J	CURR PROBL PEDIATR ADOLESC			2009
PARKASH O	SCANDINAVIAN JOURNAL OF IMMUNOLOGY	70:4	345	2009
HAIBO W	CLINICAL LABORATORY SCIENCE 3	170		2009
ZHANG GUANGYU	ERROR			2009
GOMES	UNIVERSITY OF PRETORIA MSC THESIS			2009
LEE JS	RESPIROLOGY	13	432	2008
STEINGART KR	CLIN VACCINE IMMUNOL	16	260	2009
BISEN PS	REC ADV BIOL BIOMED	3	81	2010
ROTHERHAM LS	PLOS ONE	E 7(10): E46862		
KALRA M	DIAGNOSTIC MICROBIOLOGY AND INFECTIOUS DISEASE	66:2	153	2010
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XIAOJUAN Z	CHINESE MEDICINE	7	13	2010
HEMMATI M	IRAN RED CRESCENT MED J	13:8	556	2011
SHANGWU L	CHINESE LUNG DISEASE	5	30	2011
ROTHERHAM LS	PLOS ONE	7	E46862	2012
CHIM N	INFECT DISORD DRUG TARGETS			2012
RAJER	BACHELOR THESIS MEDICAL AND HEALTH SCIENCES			2012
YING J	PRACTICAL PREVENTIVE MEDICINE	1		2012
PRASAD TS	CLINICAL PROTEOMICS	10		2013
D'SOUZA	INDIAN J CLIN BIOCHEM	28	309	2013
SAVIOLA B	TUBERCULOSIS CURRENT ISSUES IN DIAGNOSIS AND MANAGEMENT:CH-1			2013
HAMAD M	MEDICAL HYPOTHESES	81	1130	2013
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CHAUHAN P	PLOS ONE	8E77930		2013
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CHAVES	MSC THESIS INSTITUTO DE QUÍMICA			2013
GOUZY A	PH.D THESIS,UNIVERSITY OF TOULOUSE			2013
WEI LI	CHIN J MOL IMMUNOL	29		2013
LI W	PLOS ONE	9E94418		2014
CONTRERAS H	J BIOL CHEM			2014
PEGOS VR	J PROTEOMICS	108C	78	2014
MDLULI K	ANN N Y ACAD SCI			2014
PURI RV	PLOS ONE	9E920353		2014
RYNDAK MB	PLOS ONE	9E94939		2014
PÉREZ-PORCUNA	PLOS ONE	9	97992	2014
MENG Y	PRACTICAL JOURNAL OF DIABETES		54	2014
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HEMMATIIRAN	RED CRESCENT MED J.	13:8	558	2011
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WANGRUI H	WORLD -DATE MEDICAL INFORMATION ABSTRACTS		38	2013

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	JUAN L	WORLD -DATE MEDICAL INFORMATION ABSTRACTS		60	2013
	ED PARE	ERROR			
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	FUJII Y	PLOS NEGL TROP DIS	8(7):	E3040	2014
	TANG XL	JOURNAL OF INFECTION	69:6	569	2014
	HWANG WH	PROTEIN EXPRESSION AND PURIFICATION	95	77	2014
	TONG WEI	GUANGZHOU INTERNATIONAL SOCIETY OF JAPAN DIABETES SOCIETY			2015
2006	AGARWAL N	NUCL ACID RES	34	4245	
	CHOWDHURY RP	J BACTERIOL	189	8973	2007
	FIELDS CJ	J BACTERIOL	189	6236	2007
	HALBEDEL S	J MOL BIOL	371	596	2007
	CHEN SC	J BACTERIOL	189	5108	2007
	PIMENTEL-SCHMITT EF	J MOL MICROB BIOTECH	12	75	2007
	GEBHARD S	MICROBIOL-SGM	154	2786	2008
	PAWARIA S	APPL ENVIRON MICROB	74	3512	2008
	CHAUHAN S	J BACTERIOL	190	4301	2008
	GEBHARD S	J BACTERIOL	190	1335	2008
	TOUZAIN F	BMC BIOINFORMATICS	9	73	2008
	DAVIS SL	PLOS ONE	4	E6297	2009
	NASH KA	ANTIMICROB AGENTS CH	53	1367	2009
	SONG T	MICROBIOL-SGM	156	999	2010
	SACHDEVA P	FEBS J	277	605	2010
	CHAUHAN S	FEMS MICROBIOL LETT	303	190	2010
	DICHIARA JM	NUCLEIC ACIDS RES	38	4067	2010
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	BHATTACHARYA M	BIOCHEM BIOPH RES CO	415	17	2011
	TYAGI AK	TUBERCULOSIS	91	469	2011
	GUPTA RK	FEBS J	278	2131	2011
	HUNT DM	J BACTERIOL	194	2307	2012
	NEWTON-FOOT M	TUBERCULOSIS	93	60	2013
	KHARE G	ANTIMICROB AGENTS CHEMOTHER	57	126372	2013
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		PHD THESIS			
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	VLACK	METHODS IN ENZYMOLOGY	550:251		2015
	HML PEREZ	ERROR			
2007	AHMED N	PLOS ONE	2	E968	
	AHMED N	NAT REV MICROBIOL	6	387	2008
	SALAH IB	CLIN MICROBIOL INFEC	15	894	2009
	SAINI V	PLOS ONE	4	E6263	2009
	AHMED N	PLOS ONE	4	E5831	2009
	STAVRUM R	PLOS ONE	4	E4540	2009
	AHMED N	INFECT GENET EVOL	9	142	2009
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	RANI PS	GUT PATHOG	2	1	2010
	AHMED N	TUBERCULOSIS	91	407	2011
	DJELOUADJI Z	LANCET INFECT DIS	11	641	2011
	TALWAR GP	AM J REPROD IMMUNOL	66	26	2011
	MEDIE FM	PLOS ONE	6	E20499	2011
	SAINI V	NUCLEIC ACIDS RES	40	10832	2012
	LAMRABET O	PLOS ONE	7	E34754	2012
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	RANI PS	INT J MED MICROBIOL.	304	620	2014
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	MDRANCOURT	MICROB PATHOG			2014
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	KUMAR P	J BIOL CHEM	284	11090	2009
	DUBEY GP	ARCH MICROBIOL	191	241	2009
	KATEETE DP	BMC MICROBIOL	10	272	2010
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	JANG J	MICROBIOL-SGM	156	1619	2010
	ARORA G	PLOS ONE	5	E10772	2010
	MOLLE V	MOL MICROBIOL	75	1064	2010
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	COX RA	PLOS ONE	8	E59883	2013
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	DP M	IJBPAS	2	1513	2013
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	SHI CW	VACCINE	28	5237	2010
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	JAIN R	VACCINE	29	8118	2011
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	JAIN R	BMC GENOMICS	13	520	2012
	GUPTA A	VACCINE	30	6198	2012
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	PURI RV	PLOS ONE	8	E70514	2013
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	ZHANG L	DNA CELL BIOL.	2	179	31
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	PURI RV	PLOS ONE	9	E92035	2014
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	LIN TY	MOL BIOSYST	6	1454	2010
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	HALL G	PROTEIN SCI	20	210	2011
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	AGARWAL R	J PROTEOMICS	73	976	2010
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	COOK GM	ADV MICROB PHYSIOL	55	81	2009
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	RYNDAK MB	J BACTERIOL	192	861	2010
	BANERJEE S	INFECT GENET EVOL	11	825	2011
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	MOHAREER K	J MOL MICROB BIOTECH	21	97	2011
	TAKATSUKA M	PLOS ONE	6E20985		2011
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	LI W	CELL PHYSIOL BIOCHEM	31	1	2013
	FORRELLAD MA	VIRULENCE	4	3	2013
	PEPPERELL CS	PLOS PATHOG	9E1003543		2013
	SZUMOWSKI	CURR TOP MICROBIOL IMMUNOL	374	81	2013
	LAMONT EA	*BMC GENOMICS*	14		2013
	PENWELL WF	PH.D THESIS MIAMI UNIVERSITY			2013
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	REYNOLDS RC	TUBERCULOSIS	92	72	2012
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	ZHOU T	*AMERICAN JOURNAL OF PHARMACOLOGY AND TOXICOLOGY*	*5:3*	*125*	
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	GRIMES KD	ANAL BIOCHEM	417	264	2011
	JATANA N	J MOL MODEL	17	301	2011
	MOHN WW	J BACTERIOL	194	6712	2012
	ANDERSSON CS	STRUCTURE	20	1062	2012
	ANAND S	BMC STRUCT BIOL	12	10	2012
	DUCKWORTH BP	CURR TOP MED CHEM	12	766	2012
	XIONG XM	CURR DRUG TARGETS	14	676	2013
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	ARORA A	TUBERCULOSIS	91	456	2011
	TAKATSUKA M	PLOS ONE	6	E20985	2011
	ARDEJANI MS	BIOCHEMISTRY-US	50	4029	2011
	KHARE G	PLOS ONE	6	E18570	2011
	MOURA DF	EUR J IMMUNOL	42	2925	2012
	WAHLGREN WY	PLOS ONE	7	E46992	2012
	PANDEY R	INFECT IMMUN	80	3650	2012
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	MOURA DF	EUR J IMMUNOL	42	2925	2012
	MCMATH LM	J PORPHYR PHTHALOCYA	17	229	2013

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	STALLINGS CL	MICROBES INFECT	12	1091	2010
	THAKUR KG	PROTEIN EXPRES PURIF	74	223	2010
	SCHRODER J	FEMS MICROBIOL REV	34	685	2010
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	PATEK M	J BIOTECHNOL	154	101	2011
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	SALAZAR	PH.D THESIS UNIVERSITY OF SUSSEX			2012
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	GIOVANNINI D	MICROB PATHOGENESIS	53	135	2012
	VASHISHT R	PLOS ONE	7	E39808	2012
	KIM MS	MOL MICROBIOL	85	326	2012
	ZHANG B	FUTURE MED CHEM	4	1273	2012
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	HUNT DM	J BACTERIOL	194	2307	2012
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	BURIAN J	J BIOL CHEM	287	299	2012
	KIRSEBOM LA	ADV APPL MICROBIOL	80	81	2012
	GAUDION A	TUBERCULOSIS	93	482	2013
	SHELL SS	PLOS PATHOG	9	E1003419	2013
	NAMBU T	ARCH ORAL BIOL	58	681	2013
	GHOSH P	INFECT IMMUN	81	2242	2013
	PETTERSSON BMF	FEMS MICROBIOL LETT	342	98	2013
	JAISWAL RK	NUCLEIC ACIDS RES	41	3414	2013
	FORRELLAD MA	VIRULENCE	4	3	2013
	LI SK	RNA	19	74	2013
	RATH S	J ACT MED	3	93	2013
	RAMIREZ MV	*BMC MICROBIOL*	13		2013
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	HUQ S	BIOSCI BIOTECH BIOCH	74	2273	2010
	CEHOVIN A	INFECT IMMUN	78	3196	2010
	B HENDERSON	TUBERCULOSIS	90	119	2010
	GE R	GENOMICS PROTEOMICS BIOINFORMATICS	9	119	2011
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	LUO HB	BIOCHEM BIOPH RES CO	413	389	2011
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	NOENS EE	BMC BIOTECHNOL	11	27	2011
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	AHMAD F	PLOS ONE	6	E254242011	
	PURSWANI S	J REPROD IMMUNOL	91	24	2011
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	NAND KN	AMERICAN JOURNAL OF REPRODUCTIVE IMMUNOLOGY DOI: 10.1111/AJI.12388			2015
	RAHMAN SA	MBIO	6:2E00352		2015
2009	BASU D	NUCLEIC ACID RES	DOI 10.1093		
	BROWNING DF	CURR OPIN MICROBIOL	13	773	2010
	HENDERSON B	J LEUKOCYTE BIOL	88	445	2010
	SIELAFF B	ACTA CRYSTALLOGR F	66	418	2010
	HENDERSON B	TUBERCULOSIS	90	119	2010
	HENDERSON B	INFECT IMMUN	79	3476	2011
	PILAK O	ENVIRON MICROBIOL	13	2232	2011
	KUMAR CMS	CURR SCI INDIA	100	1646	2011
	NOENS EE	BMC BIOTECHNOL	11	27	2011
	GHATAK P	PLOS ONE	6	E16019	2011
	SIELAFF B	J MOL BIOL	405	831	2011
	GOYAL M	NUCLEIC ACIDS RES	40	1174	2012
	HENDERSON B	BIOL REV	88	955	2013
	MISHRA A	PLOS ONE	8	E69985	2013
	WEIGOLDT M	MICROBIOL-SGM	159	380	2013
	DELMAS S	MOL MICROBIOL	87	168	2013
	LEI	JOURNAL OF MICROBES AND INFECTION	5	186	2010
	XIANGYU F	CHINESE JOURNAL OF BIOCHEMISTRY AND MOLECULAR BIOLOGY	27	403	2011

	BRADSHAW EH	PH.D THESIS UNIVERSITY OF EAST ANGLIA			2012
	SMANDE SC	MOONLIGHTING CELL STRESS PROTEINS IN MICROBIAL INFECTIONS HEAT SHOCK PROTEINS	7	101	2013
	GULTEN G	STRUCTURE	21	1859	2013
	COLACO CA	FEMS MICROBIOL LETT	350	20	2014
	YOU LI	PH,D THESIS NATIONAL UNIVERSITY OF SINGAPORE			2014
	HAO	JOURNAL OF MICROBES AND INFECTION		14	2014
	CHETNANI B	JOURNAL OF MOLECULAR BIOLOGY	400:2	171	2010
2009	ARORA P	NAT CHEM BIOL	5	166	
	KHARE G	PLOS ONE	4	E8387	2009
	SCHMELZ S	CURR OPIN STRUC BIOL	19	666	2009
	GULICK AM	ACS CHEM BIOL	4	811	2009
	BARKAN D	CHEM BIOL	16	499	2009
	LÉGER M	CHEM BIOL	16	510	2009
	ALDRICH CC	BURGERS MEDICINAL CHEMISTRY, DRUG DISCOVERY AND DEVELOPMENT	7	713	2010
	WITTMANN M	PH.D THESIS PHILIPPS UNIVERSITY MARBURG			2010
	POPPVIC VB	PH.D THESIS UNIVERSITY OF ZAGREB			2010
	WILSON DJ	ANAL BIOCHEM	404	56	2010
	ZIEBART KT	J MED CHEM	53	3718	2010
	LU XQ	J AM CHEM SOC	132	1748	2010
	KHURANA P	BMC BIOINFORMATICS	11	57	2010
	LEE TV	J BIOL CHEM	285	2415	2010
	GRIMES KD	ANAL BIOCHEM	417	264	2011
	SELVI BR	ACS CHEM BIOL	6	982	2011
	HAYASHI T	CHEMBIOCHEM	12	2166	2011
	MOHANTY D	TUBERCULOSIS	91	448	2011
	BHARDWAJ A	TUBERCULOSIS	91	479	2011
	HOTTER GS	VET MICROBIOL	151	91	2011
	ZHANG ZN	J MOL BIOL	406	313	2011
	ARORA A	TUBERCULOSIS	91	456	2011
	MCBRIDE	PH.D THESIS UNIVERSITY OF CAMBRIDGE			2012
	MCCARTHY	PH.D THESIS UNIVERSITY OF MICHIGAN			2012
	CHIM N	INFECT DISORD DRUG TARGETS			2012
	BALSKUS	J AM CHEM SOC		134	18518
2012					
	REDWAN N	PH.D THESIS,UNIVERSITY OF GOTHENBURG			2012
	VELUTHOOR S	STUDIES IN NATURAL PRODUCTS CHEMISTRY	38		2012
	NAKAMURA H	J AM CHEM SOC	134	18518	2012
	ANAND S	FEBS J	279	3214	2012
	VATS A	J BIOL CHEM	287	30677	2012
	VASHISHT R	PLOS ONE	7	E39808	2012
	REDWAN IN	EUR J ORG CHEM	36	65	2012
	ANDERSSON CS	STRUCTURE	20	1062	2012
	HAMILTON JJ	PLOS ONE	7	E34670	2012
	CHHABRA A	P NATL ACAD SCI USA	109	5681	2012
	DUCKWORTH BP	CURR TOP MED CHEM	12	766	2012
	GOYAL A	J MOL BIOL	416	221	2012

	LU XQ	CHEMBIOCHEM	13	129	2012
	ANAND S	MOL BIOSYST	8	1157	2012
	STANLEY SA	P NATL ACAD SCI USA	110	11565	2013
	LIU Z	J BIOL CHEM	288	18473	2013
	HERBST DA	J BIOL CHEM	288	1991	2013
	CASABON I	MOL MICROBIOL	87	269	2013
	BENCHELL	PH.D THESIS UNIVERSITY OF MICHIGAN			2013
	RIDLEY CP	US PATENT 8580542 B2			2013
	NAKAMURA H	SYNLETT	24	1464	2013
	CHANDRA N	SYSTEMS BIOLOGY OF TUBERCULOSIS		179	2013
	MURTHY D	CURR OPIN BIOTECHNOL	24	11296	2013
	PENG T	J INT MED RES	42	3728	2014
	KICKA S	PLOS ONE	9E87834		2014
	QUADRI	CURRENT REVIEWS IN BIOCHEMISTRY AND MOLECULAR BIOLOGY	49	179	2014
	PRIYADARSHAN K	JOURNAL OF THE INDIAN INSTITUTE OF SCIENCE	84		2014
	GOKHALE RS	JOURNAL OF MOLECULAR BIOLOGY	416:2	221	2011
	ANDERSSON	STOCKHOLM UNIVERSITY			2012
	OSLER W	STUDIES IN NATURAL PRODUCTS CHEMISTRY38 CH15			2012
	SACCHETTINI1 JC	J BIOL CHEM	288:2518473		2013
	EISMAN EB	UNIVERSITY OF MICHIGAN PHD THESIS			2013
	BELD J	CHEMISTRY & BIOLOGY	21:10	1293	2014
	TONY D. DAVIS	*ACS CHEM. BIOL*	*9:11*	*2535*	*2014*
	OBOLBEK TURAPOV	THE JOURNAL OF BIOLOGICAL CHEMISTRY	289	25241	2014
	TURAPOV O	J BIOL CHEM. 289:36	25241		2014
	MIYANAGA A	THE JOURNAL OF BIOLOGICAL CHEMISTRY	289	31448	2014
	DANIEL J	PLOS ONE	9(12): E114877		
2010	GUPTA AK	INDIAN J MED RES	132	176	
	DA SILVA PEA	FEMS IMMUNOL MED MIC	63	1	2011
	GUPTA AK	INFECT GENET EVOL	12	853	2012
	MACHADO D	PLOS ONE	7	E34538	2012
	RODRIGUES	RECENT PAT ANTIINFECT DRUG DISCOV	6	118	2011
	ADAMS	PH.D THESIS, UNIVERSITY OF WASHINGTON			2012
	MARGARETHA D	PH.D THESIS STELLENBOSCH UNIVERSITY			2013
	PASCA MR	MICROBIAL EFFLUX PUMPS: CURRENT RESEARCH			2013
	LI CL	LABORATORY MEDICINE	28	726	2013
	GUILIAN LI	CHINESE JOURNAL OF ZOONOSES	29	762	2013
	HENGDE LI	PROGRESS IN MODERN BIOMEDICINE	11	2175	2013
	HOSHIDE	J CLIN MICROBIOL 52	513321329		2014
	BLACK PA	ANTIMICROB AGENTS CHEMOTHER	58	2461	2014
	CAMACHO LG	PH.D THESIS UNIVERSITY OF BARCELONA			2014
	PADIADPU P	SYSTEMS AND SYNTHETIC BIOLOGY	4:4	311	2010
	CAMACHO G	UNIVERSITY OF BARCELONA PH.D THESIS			2013
	VOS MD	STELLENBOSCH UNIVERSITY			2013
	RUI J	CHINESE JOURNAL OF EPIDEMIOLOGY			2013

	CHAUHAN, R.S	CURRENT PHARMACEUTICAL DESIGN	20:27	4319	2014
	PAL R	INT.J.CURR.MICROBIOL.APP.SCI	3:8	528	2014
	KUSHAL G	TUBERCULOSIS	95:2	155	2015
	LI G	PLOS ONE	10(2): E0119013		
	YU G	TUBERCULOSIS	95:3	303	2015
	ZHANG Z	*BMC INFECTIOUS DISEASES*	15:153		2015
2010	GUPTA V	PLOS ONE	5	E9222	
	DUCKWORTH BP	CHEM BIOL	18	1432	2011
	ARORA A	TUBERCULOSIS	91	456	2011
	LOMBARD J	BMC EVOL BIOL	11	232	2011
	RUSSI S	J STRUCT BIOL	175	236	2011
	FENG J	PLASMID	68	105	2012
	ADIKARAM PR	J MOL BIOL	419	223	2012
	DA COSTA TPS	J BIOL CHEM	287	17823	2012
	PETERS-WENDISCH P	APPL MICROBIOL BIOT	93	2493	2012
	WHEELER MJ	ACTA CRYSTALLOGR F	68	111	2012
	PENDINI NR	PROTEIN SCI	22	762	2013
	TIEU W	CHEM SCI	4	3533	2013
	COSTA TS	MOLECULAR MICROBIOLOGY	91	110	2014
	Q MA	PROTEIN SCIENCE	23	932	2014
	ADIKARAM	UNIVERSITY OF MARYLAND PH.D THESIS			2012
	GOETHE	*J. CHEM. THEORY COMPUT 11:1 351*		*251*	*2015*
2010	DEY B	VACCINE	28	63	
	TYAGI AK	TUBERCULOSIS	91	469	2011
	LU J	CLIN DEV IMMUNOL	2011	617892	2011
	PIRSON C	VET MICROBIOL	148	232	2011
	BRENNAN MJ	VACCINE	30	2811	2012
	YOU Q	CLIN DEV IMMUNOL	2012	563838	2012
	WANG C	SCAND J IMMUNOL	75	77	2012
	X YU	CELL SIGNAL	24	1841	2012
	GUPTA A	VACCINE	30	6198	2012
	MIAO K	CHINESE JOURNAL OF MICROBIOLOGY AND IMMUNOLOGY	12		2013
	AGHABABA H	MOL BIOTECHNOL	56	487	2014
	NAN Z	CHINESE JOURNAL OF BIOLOGICALS			2014
	COSTA ACD	FRONT IMMUNOL. 5: 152			2014
	AGHABABA, H	MOLECULAR BIOTECHNOLOGY 56:6 487			2014
	CATALDI, A	THE ART & SCIENCE OF TUBERCULOSIS VACCINE DEVELOPMENT2ND EDITION			
	VILLALBA	UNIVERSITY OF SOUTH FLORIDA PHD THESIS			2013
2011	JAIN R	VACCINE	29	8118	
	KERNODLE DS	VACCINE	30	6013	2012
	JAIN R	VACCINE	30	6015	2012
	LEVERSEN NA	SCAND J IMMUNOL	75	489	2012
	KERNODLE DS	J INFECT DIS	205	1186	2012
	OZTURK P	J DERMATOL	40	114	2013
	LEVERSEN NA	PH.D THESIS UNIVERSITY OF BERGEN			2012
	JAIN R	VACCINE	30	6015	2012
	FAN SY	CHINESE JOURNAL OF TUBERCULOSIS	8		2012
	BRIKEN V	ADV EXP MED BIOL	783	93	2013

	SHOEN CM	VACCINES	1	34	2013
	BHATTACHARYYA R	ADV BIOSCI BIOTECHNOL	4	10	2013
	PATRICK KW	UNIVERSITY OF MARYLAND PHD THESIS			2014
2011	DEY B	PLOS ONE	6	E23360	
	TAYLOR JL	IMMUNOL CELL BIOL	90	945	2012
	BILLESKOV R	PLOS ONE	7	E39909	2012
	KAO FF	PLOS ONE	7	E34991	2012
	LEUNG CC	RESPIROLOGY	18	1047	2013
	TYNE AS	VACCINE	31	4322	2013
	CHAUHAN P	SCI REP-UK	3	1821	2013
	VAN HELDEN PD	COMP IMMUNOL MICROB	36	287	2013
	WANG CC	RESPIROLOGY	18	412	2013
	LAKSHMI PS	PLOS ONE	8	E54708	2013
	ZHAI YZ	CELL IMMUNOL	281	1	2013
	DALMIA N	*EXPERT REV VACCINES*	11	1221	2012
	BIXIA J	GUANGDONG MEDICINE	33	1675	2012
	CHEN G	CHINESE PRACTICAL JOURNAL OF RURAL DOCTOR	2		2012
	HOANG T	PLOS ONE	8E80579		2013
	HELDEN VPD	COMP IMMUNOL MICROBIOL INFECT DIS	36		2013
	MRILEKAR B	INDIAN J LEPR	85	65	2013
	DEVASUNDARAM S	IMMUNOL INVEST	43	137	2014
	KANG H	IMMUNOLOGY `	DOI: 10.1111 IMM.12348		2014
	MA H	J IMMUNOL RES	2014	196124	2014
	TRENTINI	VACCINE	32	4324	2014
	COSTA ACD	FRONT IMMUNOL	5		2014
	SIDDIQUI	CLINICAL & EXPERIMENTAL DOI: 10.1111/CEI.12634 IMMUNOLOGY			2015
	BELAY M	PLOS ONE	10(4):	E0124134	
	BRENNAN MJ	THE ART & SCIENCE OF TUBERCULOSIS VACCINE DEVELOPMENT2ND EDITION			
	JINGXIAN W	CHONGQING MEDICAL UNIVERSITY			2013
	SOUSA EM	FEDERAL UNIVERSITY OF GOIÁS THESIS			2013
2011	KHARE G	PLOS ONE	6	E22441	
	NODWELL MB	CHEMBIOCHEM	13	1439	2012
	GUPTA A	J ANTIMICROB CHEMOTH	67	1380	2012
	ANUSUYA S	EXPERT OPIN DRUG DIS	8	1239	2013
	SHAPIRO S	J ANTIBIOT	66	371	2013
	EKINS S	IN SILICO MODELS FOR DRUG DISCOVERYMETHODS IN MOLECULAR BIOLOGY CH-16	993	245	2013
	SEIDIK	JOURNAL OF MEDICAL HYPOTHESES AND IDEAS	7	69	2013
	ALLEN WJ	JOURNAL OF COMPUTATIONAL CHEMISTRY	36:15	1132	2015
2011	DEY B	PLOS ONE	6	E18773	
	REECE ST	VACCINE	29	8740	2011
	DEY B	PLOS ONE	6	E23360	2011
	DALMIA N	EXPERT REV VACCINES	11	1221	2012
	GUPTA A	VACCINE	30	6198	2012
	CHAUHAN P	SCI REP-UK	3	1821	2013
	VAN HELDEN PD	COMP IMMUNOL MICROB	36	287	2013
	PINTO R	J INFECT DIS	207	778	2013

	RONGNA L	CHINESE JOURNAL OF BIOLOGICALS	2		2012
	NANDI SK	FEBS J	280	5994	2013
	SINGH	VACCINE	326	712	2014
	PARANDHAMAN	LIFE SCIENCES	109	116	2014
	COSTA	FRONT IMMUNOL	5		2014
	YIHAO D	INFECTIOUS DISEASES	47:3	168	2015
	HELDEN	COMPARATIVE IMMUNOLOGY, MICROBIOLOGY AND INFECTIOUS DISEASES	36	287	2013
	BELAY M	PLOS ONE	10(4)	E0124134	
2011	KHARE G	PLOS ONE	6	E18570	
	MCDEVITT ME	BBA-PROTEINS PROTEOM	1814	1854	2011
	LI CH	PLOS ONE	7	E51428	2012
	PANDEY R	INFECT IMMUN	80	3650	2012
	CABAN-HERNANDEZ K	MOL BIOCHEM PARASIT	182	54	2012
	REDDY PV	J BACTERIOL	194	567	2012
	KHARE G	BIOCHEMISTRY-US	52	1694	2013
	CHIM N	INFECT DISORD DRUG TARGET	14		2012
	DEJESUS MA	*BMC BIOINFORMATICS*	14		2013
	CONTRERAS	J BIOL CHEM			2014
	RUVINSKY	J. CHEM. PHYS.	140	115104	2014
	BRITO C	PROTEIN J	33	211	2014
	STEPHAN	REPORT FOR LATENT INFECTION OF HOMO SAPIENS WITH			2009
	DUTTA T	APPLIED BIOCHEMISTRY AND BIOTECHNOLOGY	168:8	2358	2012
	SALINAS MA	BIOCHIMIE MYCOBACTERIUM TUBERCULOSIS	106	39	2014
	STEVE G. WONG	10.1074/JBC.M114.623082JBC.M114.623082			2014
	NEYROLLES GM	MICROBIOL SPECTRUM	2:3		2014
		TRENDS IN FOOD SCIENCE & TECHNOLOGY			2015
2011	PURUSHOTHAMAN S	PLOS ONE	6	E16850	
	FISHER DJ	PLOS ONE	7	E46052	2012
	PETERS-WENDISCH P	APPL MICROBIOL BIOT	93	2493	2012
	ISHIDA K	PLOS ONE	9E95166		2014
	WANG Z	ENGINEERING IN LIFE SCIENCES	15:1	73	2015
2011	JATANA N	J MOL MODEL	17	301	
	EKINS S	TRENDS MICROBIOL	19	65	2011
	SANCHITA	J BIOMOL STRUCT DYN	31	874	2013
	NAMBI S	J BIOL CHEM	288	14114	2013
	PRIYADARSHINI V	BIOCHEM ANAL BIOCHEM	1		2011
	UMAMAHESWARI A	BIOCHEM & ANAL BIOCHEM	1	101	2011
	ANDERSSON CS	STRUCTURE	20	1062	2012
	SHANKAR KG	IJERA	3	23	2012
	PRIYADARSHINI V	J CLIN SCIRES	2	72	2013
	MOBEEN A	J CLIN SCI RES	2	139	2013
	PRADHAN D	J BIOMOL STRUCT DYN	32	175	2014
	PRIYADARSHINI V	J BIOMOL STRUCT DYN	32	876	2014
2011	TYAGI AK	TUBERCULOSIS	91	469	
	SIMMONS DS	PH.D THESIS CASE WESTERN RESERVE UNIVERSITY			2011
	WEI Z	PROGRESS IN MODERN BIOMEDICINE	10	1868	2012
	PENGFEI	CHINESE JOURNAL OF INFECTIOUS DISEASES	30		2012

	RAWAT DS	MED RES REV	33	693	2012
	BEENA	MED RES REV	33	693	2013
	LAKSHMI PS	PLOS ONE	8	E54708	2013
	LAKSHMI	PLOS ONE	8	E54708	2013
	MONARCH A	CHIN J ANTITUBER	35	835	2013
	BAGHANI	INT J OF ANALYTICAL PHARMACEUTICAL AND BIOMEDICAL SCIENCES	4:3		2015
	SIMMONS	WESTERN RESERVE UNIVERSITY PH.D THESIS			2011
	REGINA F	FEDERAL UNIVERSITY OF SANTA CATARINA PH.D THESIS			
	A KING	CHIN J ANTITUBERC		35:1	2013
2011	ARORA P	TUBERCULOSIS	91 (5)	456	
	CHANDRAN AV	BIOPHYSICAL REVIEWS	5:3	249	2013
	A. PAUL	*ACTA CRYST*	*F-69*	*1422*	*2013*
	SELVARAJ M		38:5	845	2013
	ZHUO FANG	TUBERCULOSIS	95:2	131	2015
	VIJAYAN M 2015	CURRENT SCIENCE		108 5	
2012	REDDY PV	J BACTERIOL	194	567	
	PANDEY R	INFECT IMMUN	80	3650	2012
	YAO HL	J AM CHEM SOC	134	13470	2012
	BAHR A	REPROD DOMEST ANIM	47	59	2012
	REDDY PV	J INFECT DIS	208	1255	2013
	PURI RV	PLOS ONE	8	E71535	2013
	PURI RV	PLOS ONE	8	E70514	2013
	KHARE G	BIOCHEMISTRY-US	52	1694	2013
	MCMATH LM	J PORPHYR PHTHALOCYA	17	229	2013
	VL ROCHA	MEDICINA			2004
		MYCOBACTERIUM TUBERCULOSIS			2009
	NICHOLAS CHIM	INFECT DISORD DRUG TARGETS	PMC3695056		2012
	DIEDRICH CR	UNIVERSITY OF PITTSBURGH PH.D THESIS			2012
	CHAVES	UNIVERSITY OF CHEMISTRY MSC THESIS			2012
	HAMAD M	MEDICAL HYPOTHESES	81:6	1130	2013
	PRASAD K	CLINICAL PROTEOMICS	10:8		2013
	WU LI	PLOS ONE	9(4): E94418.		
	BENEDICTA D'SOUZA,	INDIAN JOURNAL OF CLINICAL BIOCHEMISTRY	28: 3	309	2013
	RAJER F	UPPSALA UNIVERSITY BSC THESIS			
	GENGENBACHER M	MICROBIOL SPECTRUM	2(2)		2013
	CHIN LW	J MOL CELL MOL IMMUNOL	29:7		2013
	BYERS BR	SPRINGERBRIEFS IN MOLECULAR SCIENCE		41	2013
	QUN	CHINESE JOURNAL OF GENERAL PRACTICE	11:10		2013
	ROCHA	FEDERAL UNIVERSITY OF GOIÁS			2014
	RAI K	CURRENT PHARMACEUTICAL BIOTECHNOLOGY	15:12	1095	2014
	CONTRERAS H	THE JOURNAL OF BIOLOGICAL CHEMISTRY	289	18279	2014
	K MDLULI	ANTIMICROBIAL THERAPEUTICS REVIEWS132356	132	356	2014 2014
	SAVIOLA B	TUBERCULOSIS - CURRENT ISSUES IN DIAGNOSIS AND MANAGEMENT CH-1			

	PEGOS	JOURNAL OF PROTEOMICS	108	78	2014
	LI F	ANALYTICAL BIOCHEMISTRY 465	148		2014
	NAMWAT	SOUTHEAST ASIAN J TROP MED	45:3		2014
	RODRIGUEZ M	MICROBIOLSPEC 2 : 3			2014
	UMR	INSTITUTE OF PHARMACOLOGY AND STRUCTURAL BIOLOGY (IPBS)	5089		2014
	MINCHELLA PA	TUBERCULOSIS	95:3	288	2015
	ROCHA L	MSC THESIS FEDERAL UNIVERSITY OF GOIÁS			
	SINGH A	INDIAN J MED RESEARCH	141	27	2015
	GARCIA K	PLOS ONE	9(7)	E103811	
	CHAUHAN P	PLOS ONE	8(10)	E77930	
	PÉREZ TM	PLOS ONE	9(5)	E97992	
	YANG M	EXPERIMENTAL AND THERAPEUTIC MEDICINE	9:5	1739	2015
	ROLDÁN	FOLIA MICROBIOLOGICA	60:1	21	2015
	STEPHAN	REPORT FOR LATENT INFECTION OF HOMO SAPIENS WITH			
	PURI RV	PLOS ONE	9(5)	E92035	
	YAO H	*BIOCHEMISTRY*	*54* (8)	1611	2015
	SCHREUDER	PLOS ONE	9(9)	E107283	
	ZIMBLER	MIAMI UNIVERSITY PH.D THESIS			
	SICAIROS NL	BIOMED RESEARCH INTERNATIONAL	476534		2015
	MENG Y	PRACTICAL DIABETOLOGY	54		2015
	DANIELA	UNIVERSITY OF THE REPUBLIC (URUGUAY) THESIS			
2012	SAINI V	NUCLEIC ACID RES	40	10832	
	KUMAR P	IMMUNOLOGY	DOI: 10.1111 IMM.12306		2014
	SINGH Y	INT J MED MICROBIOL	304(5)	742	2014
	LAHIRI A	FEBS LETTERS	588(21)	3906	2014
	TORTOLI E	*CLIN. MICROBIOL. REV.*	27(4)	4727	2014
	KUMAR P	JLB.1A0714-361RJLB.1A0714-361RDOI:10.1189			2015
	XIAOJINGLI	FRONT. MICROBIOL DOI.ORG /10.3389/FMICB.2014.00800			2015
	RAHMAN SA	MBIO	6 (2)	E00352	2015
2012	JAIN R	BMC GENOMICS	13	520	
	DAVIDSEN P	GENOME MEDICINE	6(59)	2014	
	VESELENAK RL	MOLECULAR BIOTECHNOLOGY	57(2)	172	2015
	AIYAZ M	TUBERCULOSIS	94(6)	606	2014
	JULIA A. TREE	JOURNAL OF IMMUNOLOGY RESEARCH	2014	237043	2014
	WONG Y	MICROARRAYS	3(4)	263	2014
	WALI S	PLOS ONE	9(12):	E114261	
2013	CHAUHAN P	SCI REP	3	1821	
	CHEN BAO-WEN	CHINESE JOURNAL OF MICROBIOLOGY AND IMMUNOLOGY	12		2014
	DUTTA NK	MICROBIOL. MOL. BIOL. REV.	78(3)	3343	2014
	BELAY M	PLOS ONE	10(4):	E0124134.	
2013	CHAUHAN P	PLOS ONE	8	E77930	
	LEUDA A	VACCINES	2(2)	463	2014
	SHINTARO S	JAPAN BACTERIOLOGY	69(3)	513	2014
	MARGENAT M	*SCIENTIFIC REPORTS*	*5(8819)*		*2015*

2013	PURI RV	PLOS ONE	8	E71535	
	PURI RV	PLOS ONE	9E92035		2014
	BDLEISHANGTHEM	STUDIES ON RESPIRATORY DISORDERSOXIDATIVE STRESS IN APPLIED BASIC RESEARCH AND CLINICAL PRACTICE	85		2014
	VEEN SVD	*NATURE REVIEWS MICROBIOLOGY*	13	83	2015
	KHANAM T	BIOCHIMICA ET BIOPHYSICAACTA	1854(5)	5	2015
2013	REDDY PV	J INFECT DIS	250		
	SERAFINI A	PLOS ONE	8E78351		2013
	SILVA-GOMES	FRONT CELL INFECT MICROBIOL	3		2013
	KHARE G	SCI REP	3	3527	2013
	CHAUHAN P	PLOS ONE	8E77930		2013
	JONES CM	J INFECT DIS	209		2014
	JONES CM	PROC NATL ACAD SCI U. S. A.	111	1945	2014
	VICKERY	ACS CHEM BIOL			2014
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