

Manish Kumar, Ph.D.

Professor of Instruction, Texas State University,

340 Mary Max Cir, San Marcos -TX-78666. Email m_k135@txstate.edu: Phone +1-352-214-4735

1. Educational qualification

Degree	Year	Field of Study	University
Ph. D.	2005	Microbiology	Dr. RML Avadh University Faizabad, India
M. Sc.	1998	Microbiology	M.D.S. University Ajmer, India
B. Sc.	1996	Chemistry, Botany. Zoology	M.D.S. University Ajmer, India

2. University experience

- Professor of Instruction, Texas State University, San Marcos, Texas-2024-till date
- Senior lecturer, Texas State University, San Marcos, Texas. 2014 – 2024.
- Postdoctoral fellow, University of Texas at Arlington, Texas. 2012-2014.
- Postdoctoral research associate, University of Florida, Gainesville. 2008-2012.
- DBT-Post doctoral fellow, Indian Institute of Science, Bangalore. 2005- 2008.

3. Awards/fellowships

- Presidential Distinction Award for Excellence in Teaching at Texas State University (2024).
- Judge Travel Award recipient: Annual Biomedical Research Conference for Minority Students (ABRCMS) held at Anaheim, California (2022).
- Nominated Favorite Professor by Alpha Chi National Honor Society in 2021.
- Fellowship Recipient: Post-doctoral fellowship, Department of Biotechnology (DBT)/Government of India. 2005 – 2010.
- Award Recipient: (SBRI- USA, Bursaries award, International Symposium on New Frontiers in Tuberculosis Research. 2006
- Award Recipient: Dr. R.S. RANA memorial award, 44th Annual Conference of Association of Microbiologists of India (AMI). 2003

4. Teaching experience

Courses taught: A diversity of undergraduate and graduate level microbiology and Cell and Molecular Biology courses Biology (total -14) at Texas State University. Teaching an average of 800 students per year.

Microbiology (Bio-2400): every summer, 2018 onwards.

Principle of Microbiology (Bio-2440): spring 2025

Medical Microbiology (Bio-4366/5366): every fall since 2014

Bacterial Genetics (Bio-4448/5448): every spring, 2016 onwards.

Microbial Biotechnology (Bio-4376/5376) : spring and fall 2016 onwards
Introduction to Biotechnology (Bio-3376) every summer 2018 onwards.
Cell and Molecular Biology (Bio-3300): every summer, 2018 onwards.
Functional biology (Bio-1330): spring and fall 2014 onwards,
Undergraduate Research (Bio-4299): every fall and spring, 2016 onwards.

Curriculum development:

Designed, developed, and taught **four new courses** to expand the curriculum of Microbiology at Texas State University. These courses alleviated the bottleneck for the microbiology curriculum and provided new pathways and marketable skills to our students at Texas State.

- a. Introduction to Biotechnology (Bio-3376), New course. Taught: 2019 onwards
- b. Microbial Biotechnology Lab (Bio-4176/5176) New course, Texas State University. Taught: 2018 onwards.
- c. Bacterial Genetics (Bio-4448/5448), New Course, Taught: 2016 onwards. A laboratory component of 1 credit hour was added in 2018.
- d. Microbial Biotechnology (Bio-4376/5376), New Course, Taught: 2016 onwards.

Other courses taught

Organismal Biology (Bio-1331): summer 2018-2022, spring 2019.
Modern Biology –II (Bio-1321): spring 2015, every summer 2015 onwards,
Introduction to Biotechnology (Bio-3376) : every summer-2019 onwards
University Seminar (US1100): every fall from 2017 to 2019.
Internship in Bio Lab Technology (Bio 4481): fall 2016, spring and fall 2018.
Cell Physiology (Bio-4441/5441): spring 2021.
Problems in Bio Sci. (Bio-5390): summer 2021 onwards

Lab coordinator:

Medical Microbiology Lab Bio-4166/5166: every fall and spring, 2015 onward.
Microbial Biotechnology Lab (Bio-4176/5176): every fall 2018 onwards.
Bacterial Genetics lab (Bio-4448/5448): every spring 2018-2024.
Modern Biology –II (Bio 1321): every summer 2015 onwards, fall 2017 & spring 2018, 2026.
Microbiology (Bio-2400): every summer, 2018 onward.

Online/hybrid courses:

Functional Biology (Bio-1330): every summer 2021 onwards
Introduction to Biotechnology (Bio-3376): every summer, 2019 onward)
Organismal Biology (Bio-1331): every summer, 2018 onward)
Microbial Biotechnology (Bio-4376/5376): every spring and fall 2016 onwards

Courses taught at the University of Texas, Arlington:

Bio 2460 - Nursing Microbiology. Spring-2014
Bacterial Pathogenesis (Bio 4317/5317). Fall -2012 & 2013 Shared classes with Dr. Julian Hurdle

- 5. Research interests:** Antibiotics resistance and regulation of biofilms formation in bacteria. Identification of novel drug target in *Clostridioides difficile*. Bioremediation of pollutants and wastewater treatment.
- 6. Publications:** Highlighted in bold are the publications that resulted from writing-intensive courses with undergraduate students as primary authors. (*corresponding author)

A. Research publications

- Thornhill SG[‡], Kianarsi S[‡], Packard CA[‡], Kumar M, Lewis KA, and McLean RJC. (2025) Anaerobic growth alters *Chromobacterium violaceum* quorum and motility inhibition by cobalt (II) chloride. *Applied and Environmental Microbiology*, (in preparation). (‡joint first authors)
- Pujara DS, Kim S, Nam JC, Mayorga J, Elmore I, Kumar M, Koiwa H, and Kang HG (2021) Imaging-based resistance assay using enhanced luminescence-tagged *Pseudomonas syringae* reveals a complex epigenetic network in plant defense signaling pathways" *Mol. Plant-Microbe Interactions* 34(9):990-1000.
- Sapkota M, Marreddy KRR, Wu X, Kumar M, and Hurdle J (2020). The early-stage peptidoglycan biosynthesis Mur enzymes are antibacterial and antispore drug targets for recurrent *Clostridioides difficile* infection. *Anaerobe* 61:102129.
- Thornhill S and Kumar M*** (2018) Biological filters and their use in potable water filtration systems in spaceflight conditions. *Life Sciences in Space Research*. 17:40-43.
- Thornhill S, Kumar M, Vega L and McLean R (2017) Cadmium ion inhibition of quorum signaling in *Chromobacterium violaceum*. *Microbiol*. 163:1429-35. This paper was selected as Editor's choice.
- Kumar, M., Adhikari, S., Hurdle, J. G. (2014). The action of nitroheterocyclic drugs against *Clostridium difficile*. *Int. J. Antimicrobial Agents*, 44(314).
- Shen, L., Maddox, M. M., S., Bruhn, D. F., Kumar, M., Lee, R. E., Hurdle, J. G., Lee, R. E., Sun, D. (2013). "Syntheses and evaluation of macrocyclic engelhardone analogs as antitubercular and antibacterial agents". *J. Antibiotics*, 66, 319-325.
- Bharati, B. K., Sharma, I. M., Kasetty, S., Kumar, M., Mukherjee, R., Chatterji, D. (2012). A full length bifunctional protein involved in c-di-GMP turnover is required for long term survival in *Mycobacterium smegmatis*. *Microbiol*, 158, 1415-1427.
- Kumar, M., Gupta, S. K., Garg, S. K., Kumar, A. (2006). Biodegradation of hexachlorocyclohexane-isomers in contaminated soils. *Soil Biol. Biochem*, 38, 2318-2327.
- Choudhary, P., Kumar, M., Khangarot, B. S., Kumar, A. (2006). Degradation and detoxification of HCH isomers by *Pseudomonas aeruginosa* ITRC-5. *International Biodeterioration & Biodegradation* (vol. 57, pp. 107-113).
- Jain, V., Kumar, M., Chatterji, D. (2006). ppGpp: Stringent Response and Survival. *J. Microbiol* 44, 1-10.
- Kumar, M., Chaudhary, P., Dwivedi, M., Kumar, R., Paul, D., Jain, R. K., Garg, S. K., Kumar, A. (2005). Enhanced biodegradation of beta- and delta-hexachlorocyclohexane in the presence of alpha- and gamma-isomers in contaminated soils. *Env Sci Tech* (vol. 39, pp. 4005-4011).

B. Book chapters

Osbon Y and Kumar M* (2019) Biocatalysis and Strategies for Enzyme Improvement. In Mohammed Khalid (ed) Biophysical Chemistry -Advance Applications. DOI: 10.5772/intechopen.85018.

McLellan J. and Kumar M* (2019) Feasibility of using bacterial-microalgal consortium for the bioremediation of organic pesticides: Application constraints and prospects. In Sanjay Gupta and Faizal Bux (ed) Application of Microalgae in Wastewater Treatment: Domestic and Industrial Wastewater Treatment. Springer Nature, Switzerland (Volume 1), pp341-362.

Letry KA, Castro ED, Gupta SK and Kumar M* (2019) Industrial waste water based algal biorefineries: Application constraints and future prospects. In Sanjay Gupta and Faizal Bux (ed) Application of Microalgae in Wastewater Treatment: Domestic and Industrial Wastewater Treatment. Springer Nature, Switzerland (Volume 2), pp-371-392.

McLellan J, Thornhill SG, Shelton S, and Kumar M* (2018) Keratin-Based Biofilms, Hydrogels, and Biofibers. In Swati Sharma and Ashok Kumar (ed.) Keratin as a protein Biopolymer. Springer Nature, Switzerland. Chapter-7, pp 187-200

Chabukdhara M, Gupta SK, Ansari FA, Bajhaiya AK, Kumar M (2017) Bioremediation of organic xenobiotics from wastewater: a review In Microbial Biodegradation of Xenobiotic Compounds, Science Publisher (CRC Press), Boca Raton, FL. pp 111-134.

Gupta SK, Roy S, Chabukdhara M, Hussain J, Kumar M (2017) Risk of metal contamination in agriculture crops by reuse of wastewater: An Ecological and Human health risk perspectives. In Rajeev P Singh, Alan Kolok, Shannon L. Bartelt-Hunt (ed.) Water Conservation, Recycling and Reuse: Issues and Challenges, Springer international.

C. Lab Manual: Medical Microbiology digital Lab manual on the TopHat publishing platform.

D. Posters/Oral Presentation at Professional Meetings: Highlighted in bold is work done by undergraduates and graduate students under my mentorship.

Ball J, Hwang S, Gurav R, Kumar M, Song I, Chang Ji (2023). Biodegradation of Trichloroethylene (TCE) using sediment microbes, and impact of climate change on microbial degradation performance. DOE TXST Symposium, Nov 17.

Widmer J, Kumar M, Spinler J and McLean RJC (2020). The Effect of *Debaryomyces hansenii* on *Clostridium difficile* Sporulation. ASM Texas branch Meeting. Nov 5-7, Virtual.

McLellan J, Julia Widmer, and Kumar M* (2018). Induction of *C. difficile* Sporulation by Next Generation Probiotics. Oral presentation at 2nd Antimicrobial Resistance and Gut Health Symposium, Houston June 15th. Presenting author (JM).

- Faulkner M and Kumar M*** (2018). Development of CRISPR-Cas Nickase tool for genetic manipulation in *Clostridium difficile*. Poster presented at American Society of Microbiology (ASM) Texas branch. Spring meeting March 23. New Braunfels, TX.
- Castro E, McLellan J, Faulkner M and Kumar M*** (2017). Development of *in-vitro* assay for screening of peptide deformylase inhibitors against *Clostridium difficile*. Annual Biomedical Research Conference for Minority Students (ABRCMS), Nov 1-4. Phoenix, AZ. The presenting author (EC) received a Travel Award for attending the conference.
- Kumar, M.*, Lewis, T., Hurdle, J. G.,(2016)**. Expression and purification of two peptide deformylase from *C. difficile* in *E. coli* for in vitro assays. Poster presented at American Society of Microbiology (ASM) Texas branch. fall meeting, University of Texas, Dallas, Richardson, TX, United States. (November 10-12).
- Kumar, M., (2014). In vitro perspectives on *Clostridium difficile*. Invited talk at The *Clostridium difficile* Gulf Coast Collaborative conference, Houston, TX, United States. (June 21).
- Kumar, M., (2012) "Regulation of β -1,6-N-acetyl-D-glucosamine synthesis and biofilm formation in *Escherichia coli* by c-di-GMP," Oral presentation at Genomic Biology Group seminar University of Texas, Arlington, TX. (November 2012).
- Kumar, M., Chatterji, D., (2008) "SBRI-GID Infectious disease workshop," Hyderabad, India. (January).
- Kumar, M., Bharati, B. K., Chatterji, D.,(2006). Role of c di-GMP in biofilm formation of *Mycobacterium smegmatis*. Poster presented at International Symposium on New Frontiers in Tuberculosis Research, International Centre for Genetic Engineering and Biotechnology, New Delhi, India. (December).
- Kumar, M., Choudhary, P., S. K., Kumar, A., (2003) "Biodegradation and detoxification of an industrial muck consisting of hexachlorocyclohexane (HCH) isomers. Poster presented at 44th annual conference of Association of Microbiologists of India (AMI)" Dharwar, India. (November).
- Kumar, M., Kumar, A.,(2003) "Flasks to Field' Studies on the Biodegradation of Chlorinated Pesticide Hexachlorocyclohexane, Oral presentation at "International symposium on molecular toxicology and environmental health, Industrial Toxicology Research Centre, Lucknow, India. (November).
- Kumar, M., Kumar, A., Soil- Elixir of Life" (2003). Microbial degradation of an industrial muck consisting of hexachlorocyclohexane (HCH) isomers, Poster presentation at National conference of Indian Network of Soil Contamination research (INSCR), " Thapar Institute. (February).
- Kumar, M., Singh, A. K., Manickam, N., Kumar, A., (2002). Microbial degradation of an industrial muck consisting of hexachlorocyclohexane (HCH) isomers. Poster presented at A mini symposium by Indo-Swiss Collaboration in Biotechnology (ISCB), "Utilization of Microbes for Development of Bioremediation Technologies," Delhi University, New Delhi, India. (December).
- Kumar, M., Awasthi, N., Kumar, A., (2002). Bioremediation of hexachlorocyclohexane and endosulfan-contaminated soils by isolated bacterial cells. Poster presented at First National conference of Indian Network of Soil Contamination Research (INSCR) on "Soil Contamination and Bio-diversity, Industrial Toxicology Research Centre, Lucknow, India. (February).

7. Research mentorship:

- Chair of the committee for two non-thesis Master's students (2024-2025).
- Co-advisor Master's Thesis, "An Evaluation of Enriched Aerobic Bacterial Communities Capable of Biodegrading TCE Under Different pH and Temperature", Completed. (2023-2024). Biology, Texas State University. Student(s): Joseph Ball, Graduated, MS
- Co-Chair, Master's Thesis, "The Effect of *Debaryomyces hansenii* on *Clostridioides difficile* Sporulation", Status: Completed. (September 2019 - July 15, 2021). Biology, Texas State University. Student(s): Julia Widmer, Graduated, MS.
- Committee member on seven Master's Thesis committees (2016-2023).
- Research mentor for three undergraduate researchers for three years in the SURE program. The STEM Undergraduate Summer Research Experience (SURE) Program provides a holistic approach to undergraduate summer student research to increase student success at Texas State University (TXST), a Hispanic-serving institution.
- Mentored twelve undergraduate students for their research projects.
- Generated \$7000 in research funding in the form of Undergraduate Research Fellowships (URF) and Francis Rose fellowship, awarded to five of my undergraduate research students working under my direct supervision (2018-2021).

8. Teaching Professional Development Activities

- Participated in a Biology course transformation project to redesign and transform the Functional biology (Bio-1330) course during summers of 2023-2024.
- Participating in the Faculty Student STEM Community project to implement the Learning Assistant program for the functional biology course (Bio-1330). (2021 onward).
- Attended a One-week Summer STEM teaching workshop for COSE Faculty to "Strengthen your pedagogical expertise and learn about student's experiences" at Texas State University, May 18-22, 2020.
- Attended 'Quality Matters Workshop' on 'How to design online courses'. Texas State University, San Marcos, TX Aug 22, 2019.
- Attended two-day workshop 'TopHat Engage summit' and earned level -1 certification at Chicago, IL. Oct 1-2, 2017.
- Completed semester-long "Advance of Online Course Design and Development," Texas State University, San Marcos, TX. (January 4, 2016 - May 6, 2016). This course meets the SACSCOC requirements for online instructors.
- Workshop, "University Seminar and PACE," Texas State University, San Marcos, TX. (November 16, 2016).
- Foundations of Online Course Design and Development course," Texas State University San Marcos, TX. (May 2015).
- Online Webinar, "Strategies for Lecturing to Large-Enrollment Classes," Texas State University, San Marcos, TX. (March 5, 2015).
- A Hands-on Workshop for Faculty New to the Teaching Profession," Texas State University, San Marcos, TX, (January 13, 2015).

9. Service

A. State /Institutional

- Serving on the Texas Higher Education Coordinating Board as a member of the Biology Field of Study Advisory (FOS) Committee. The committee is composed of 12 members from all the public universities across Texas and 12 members from community colleges. (2017-till date).
- Chair of the committee tasked with developing a rubric for peer evaluation for the non-tenure (APF) faculty seeking promotion (2025).
- Served as a Member on the pre-health interview committee at Texas State University, (2025 till date)
- Team Leader for Faculty-Student STEM Communities project (2025).
- Served on Piper Professor Award Selection Committee, Texas State University, 2025.
- Served as a panelist for a university-level workshop conducted by TopHat on Student engagement (Nov. 10th 2025).
- Served as a committee member for Microbiology cluster hire for Assistant and Associate professors (2023-2024).
- Panelist to facilitate the discussion “How to Teach Online and Still Have a Life”. (2017-2021, 3-4 times a year). This discussion is the part of Foundation/Advance course for faculties to develop and teach online courses offered by Texas State University.
- Chair of the Vaccine Storage subcommittee of the COVID-19 Vaccination Task Force. Responsible for receiving, storage, and transporting Pfizer and Moderna Covid vaccines to the vaccination site (2021).
- Judge for poster presentations “Women in Science and Engineering (WISE) conference” at Texas State University, 2018 & 2019.
- Judge annual Undergraduate Research poster competition, Texas State University. 2019-2020, 2024.
- Panelist on Active learning and hybrid course development for Health and Human Performance (HHP) department faculty. Nov 22. 2019.
- Panelist on National Distance Learning Week webinar series: Student Misconduct in Online Courses Nov-09, 2018.
- Panel chair (Biology) at the 10th Annual International Research Conference for Graduate Students held at Texas State University. Nov. 13-14, 2018.
- Served as Undergraduate Marshal, Commencement Ceremony. (December 16, 2016).
- Poster Respondent, in 6th, 7th, and 8th International Research Conference for Graduate Students at Texas State Univ. (2014-16).
- Representative faculty, Commencement ceremony. (August 12, 2016).
- Volunteered to assist the Department of Housing and Residential Life with move-in. Friday, August 14, 2015, from 10:30 am – Noon.
- Judge, Annual Biology Students Colloquium for presentation at Texas State University Biology Colloquium. (2016, 2019-20, 2023, 2025).
- Judge, Annual Biology Students Colloquium for presentation and poster sessions at Texas State University. (April 17, 2015).

B. Professional

- Judge for oral and poster presentation for the Annual Biomedical Research Conference for Minority Students (ABRCMS) held in Anaheim, California (2022). Selected for Judge Travel award of \$1000.
- Session chair and host: American Society of Microbiology (Texas Branch), Virtual meeting organized by Texas State University, San Marcos TX, United States. (November 4-5, 2021).
- Reviewer for poster abstract for Annual Biomedical Research Conference (for Minority Students (ABRCMS)). (2022, 2019 & 2015)
- PhD Thesis examiner/evaluator “Elucidating The Involvement Of Multiple Drug Resistant, High Biofilm Forming Staphylococcus aureus In Bacterial Pneumonia Among HIV Patients In Eastern U.P’ Submitted to Dr. APJ Kalam Technical University, India (2019).
- Grant Reviewer: Phi Sigma grant program, UT Arlington, TX. (2019, 2014 -2016). I have reviewed 3-grant proposals every semester (up to \$3000 for each grant).
- Session chair (medical microbiology), American Society of Microbiology (Texas Branch), Richardson, TX, United States. (November 11, 2016).
- Judge at the Science fair, Texas preparatory school San Marcos -TX. (January 28, 2015).
- Books reviewed: Reviewed a total of three book proposals, two for Elsevier and one for Springer publishing company
 1. Pilot Scale Microalgae Cultivation, Techno-Economic Challenges and Prospects (2021)
 2. Recent trends in solid waste management: Waste management (2021).
 3. Phytoremediation Potential of Bioenergy Plants” Bioenergy: A sustainable approach for a cleaner environment (2015) published by Springer Nature.
- Reviewer for scientific journals: Reviewed manuscripts for the following Journals (2015-2024)
 American Chemical Society Journals Chemosphere, Industrial & Engineering Chemistry Research. Sustainable Chemistry & Engineering, Pharmaceutical, Water, Antibiotics, Journal of Cleaner Production, Sustainability, Energies, International Journal of Molecular Science, Marine Drug, Antibiotic, Toxic, IJERPH, JFuel, Environmental Science & Pollution Research, Asian Journal of Medical Science, Infectious Diseases in Obstetrics and Gynecology. Current Issues in Molecular Biology.

10. Organization Memberships and leadership

- Member, American Society of Microbiology (ASM). (2014 –2019, 2021-2023).
 - Vice president, Microcenoos’ Alumni Association of Microbiologists of MDS University, Ajmer, India (2004).
 - Member, The Nu Biophysical Society, Molecular Biophysics Unit, Bangalore. (2005 - 2008).
 - Member Association of Microbiologists of India (AMI). (2003).
 - Vice president, student union of Government Bangur P.G. College, Pali-(Rajasthan) India. (1995 - 1996).
-

End of the document