

## TEXAS STATE VITA

### I. Academic/Professional Background

A. Name: Dr. Manish Kumar

Title: Senior Lecturer

#### B. Educational Background

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

#### C. University Experience

- Senior lecturer, Texas State University, San Marcos Sept-01, 2014 – till date
- 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.

## II. TEACHING

#### A. Courses Taught:

At Texas State University:

Functional biology (Bio1330), Organismal Biology (Bio-1331)

Modern Biology –II (Bio 1321), Microbiology (Bio-2400)

Cell and Molecular Biology (Bio-3300), Medical Microbiology (Bio 4366/5366)

Cell Physiology (Bio-4441/5441)

Undergraduate Research (Bio 4299), Internship in Bio Lab Technology (Bio 4481)

University Seminar (US1100)

#### New courses developed and taught to expand the Microbiology curriculum

Introduction to Biotechnology (Bio-3376)

Bacterial Genetics (Bio-4448/5448) formerly (Bio 4350L/5350L)

Microbial Biotechnology (Bio-4376/5376) formerly (Bio 4350R/5350R)

Microbial Biotechnology Lab (Bio-4176/5176)

At University of Texas, Arlington:

Bio 2460 - Nursing Microbiology. Spring-2014

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

#### B. Funds generated:

- a) Generated \$7000 in research funding in form of Undergraduate Research Fellowships (URF) and Francis Rose fellowship, awarded to five of my undergraduates research students working under my direct supervision (2018-

2020).

#### Grants applied but not funded

- a) Department of interior grant (2018), (\$175,000) Crystal Clear: A dual purpose smart desalination and atmospheric water generator system based on the solar evaporation system and solar-powered thermoelectric cooler condensation. a collaborative, multi-investigator grant with Dr. Bahram Asiabanpour, as PI
- b) Research enhancement program (REP) grant at Texas State university (2018 and 2017).
- c) Biology Leadership Community Catalytic Grant (2017)  
 “Productive Difficulty: It’s Okay to Be Wrong!”. This multi-institutional grant also involving University of Maryland and Salisbury University, was aimed to collect a combination of quantitative and qualitative measures of mindset and classroom behavior to determine if a mindset intervention can improve student learning in introductory biology course.

#### C. Courses Prepared and Curriculum Development:

- Introduction to Biotechnology (Bio-3376 , formerly 4351C) New Course, Texas State University. Taught: 2019 onwards.
- Microbial Biotechnology Lab (Bio-4176/5176) New course, Texas State University. Taught: 2018 onwards.
- Bacterial Genetics (Bio-4448/5448, formerly-4350L/5350L), New Course, Texas State University. Taught: 2016 onwards. Laboratory component of 1 credit hour was added in 2018.
- Microbial Biotechnology (Bio-4376/5376 , formerly 4350R/5350R), New Course, Texas State University. Taught: 2016 onwards.

#### D. Teaching Professional Development Activities Attended

- Attended One-week long Summer STEM teaching workshop for COSY 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 course. Texas State University, San Marcos, TX Aug 22, 2019.
- Attended ‘Engage’ A conference for higher education innovators at Chicago, organized by TopHat Monocle Oct 26-27, 2018.
- Attended ‘Mastering Learning Summit’ organized by Pearson Publishers at Orlando, FL, Feb 22-24, 2018 .
- Attended two-day workshop ‘TopHat Engage summit’ and earned level -1 certification at Chicago, IL. Oct 1-2, 2017.
- Attended workshop “An Overview of the Research Enhancement Program (REP)” at Texas State University, San Marcos, TX. Sep 25, 2017.
- Attended workshop for US 1100 Faculty Development Texas State University, San Marcos, TX. Aug 14, 2017.
- Attended Biology Leadership Community conference organized by Pearson Publishers at Tucson, AZ. Feb 24-26, 2017.
- Attended Honors College Series (1): Developing an Honors College Course Texas State University, San Marcos, TX. Feb 8, 2017

- Attended Antimicrobial Resistance and Gut Health Symposium at Rice University, Houston-TX. Jan 16, 2017.
- Attended 'Quality Matters Workshop' to Improve online teaching. Texas State University, San Marcos, TX Jan 12, 2017.
- Workshop, "University Seminar and PACE," Texas State University, San Marcos, TX. (November 16, 2016).
- Completed semester long "Advance of Online Course Design and Development," Texas State University, San Marcos, TX. (January 4, 2016 - May 6, 2016).
- Workshop, "Majors Biology Teaching Forum and Focus Group," McMillan Publishers, Pheonix, AZ, (March 11, 2016 - March 13, 2016).
- Workshop on Student outcome analysis at Texas State University, San Marcos, TX (April 2016)
- Workshop, "Improving STEM outcomes through learning science in Major biology," McGrawHill, Austin, TX, (February 12, 2016).
- Workshop on Effective faculty hiring, Texas State University, San Marcos, TX. August 12, 2015
- 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 Workshop on Developing Alternative Assessments and Rubrics, Texas State University, San Marcos (February 5, 2015), -TX
- A Hands-on Workshop for Faculty New to the Teaching Profession," Texas State University, San Marcos, TX,. (January 13, 2015).

### III. SCHOLARLY/CREATIVE

#### A. Research publications (\*corresponding author)

- 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 engelhardione 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 (\* corresponding author)

- 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-microbial 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. (in press).

#### Reports in media:

- Kumar, M. (2014). Findings from University of Texas Broaden Understanding of Clostridium Infections (Action of Nitroheterocyclic Drugs against Clostridium Difficile). *HighBeam Research Article*.

Kumar, M. (2014). *Researchers study antibiotic resistance for bacteria.*

Kumar, M. (2013). Investigators at University of Texas Report Findings in Antibiotics. *HighBeam Research Article.*

C. Papers Presented at Professional Meetings: \*corresponding author

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

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

Faulkner M and **Kumar M\*** (2018). Development of CRISPR-Cas Nickase tool for genetic manipulation in *Clostridium difficile*. 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. Presenting author (EC) received Travel Award for attending the conference.

Kumar, M.\*, Lewis, T., Hurdle, J. G., American Society of Microbiology (ASM) Texas branch. fall meeting, "Expression and purification of two peptide deformylase from *C. difficile* in *E. coli* for in vitro assays," ASM Texas branch, University of Texas, Dallas, Richardson, TX, United States. (November 10-12, 2016).

Kumar, M., Chatterji, D., "SBRI-GID Infectious disease workshop," Hyderabad, India. (January 2008).

Kumar, M., Bharati, B. K., Chatterji, D., International Symposium on New Frontiers in Tuberculosis Research, "Role of c di-GMP in biofilm formation of *Mycobacterium smegmatis*," International Centre for Genetic Engineering and Biotechnology, New Delhi, Indonesia. (December 2006).

Kumar, M., Choudhary, P., S. K., Kumar, A., 44th annual conference of Association of Microbiologists of India (AMI), "Biodegradation and detoxification of an industrial muck consisting of hexachlorocyclohexane (HCH) isomers," Dharwar, India. (November 2003).

Kumar, M., Kumar, A., International symposium on molecular toxicology and environmental health, "Flasks to Field? Studies on the Biodegradation of Chlorinated Pesticide Hexachlorocyclohexane," Industrial Toxicology Research Centre, Lucknow, India. (November 2003).

Kumar, M., Kumar, A., Soil- Elixir of Life" National conference of Indian Network of Soil Contamination research (INSCR), "Microbial degradation of an industrial muck consisting of hexachlorocyclohexane (HCH) isomers," Thapar Institute. (February 2003).

Kumar, M., Singh, A. K., Manickam, N., Kumar, A., A mini symposium by Indo-Swiss Collaboration in Biotechnology (ISCB), "Microbial degradation of an industrial muck consisting of hexachlorocyclohexane (HCH) isomers/Utilization of Microbes for Development of Bioremediation Technologies," Delhi University, New Delhi, India. (December 2002).

Kumar, M., Awasthi, N., Kumar, A., First National conference of Indian Network of Soil Contamination research (INSCR) on "Soil Contamination and Bio-diversity, "Bioremediation of hexachlorocyclohexane and endosulfan contaminated soils by

isolated bacterial cells," Industrial Toxicology Research Centre, Lucknow, India. (February 2002).

#### D. Invited Talks, Lectures, and Presentations:

- Kumar, M., The *Clostridium difficile* Gulf Coast Collaborative conference, "In vitro perspectives on *Clostridium difficile*," Houston, TX, United States. (June 21, 2014).  
 Kumar, M., Genomic Biology Group seminar, "Regulation of  $\beta$ -1,6-N-acetyl-D-glucosamine synthesis and biofilm formation in *Escherichia coli* by c-di-GMP," University of Texas, Arlington, TX. (November 2012).

#### E. Scholarly / Creative Fellowships, Awards, Honors:

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

#### F. Scholarly / Creative Professional Development Activities Attended:

- a) Conference Attendance, 2<sup>nd</sup> Antimicrobial Resistance and Gut Health Symposium, Houston, TX. (June 15<sup>th</sup> 2018).
- b) Conference Attendance, "Gulf coast collaborative meeting on *Clostridium difficile*," Baylor College of Medicine, Houston, TX, United States. (December 3, 2016).
- c) Conference Attendance, "American Society of Microbiology (ASM) Texas branch meeting," University of Texas , Dallas, Richardson, TX, United States. (November 10, 2016 - November 12, 2016).
- d) Conference Attendance, "The *Clostridium difficile* Gulf Coast Collaborative conference," Houston, TX, United States. (December 2015).
- e) Conference Attendance, "The *Clostridium difficile* Gulf Coast Collaborative conference," Houston, TX, United States. (June 2013).
- f) Workshop: Seattle Biomedical Research Institute-GID Infectious disease workshop," Hyderabad, India. (January 2008)

## IV. SERVICE

### A. Institutional

#### 1. University:

- a) Appointed by Texas Higher Education Coordinating Board as a member of the Biology Field of Study Advisory (FOS) Committee. The committee composed of 12 members from all the public universities across Texas and 12 members from community colleges. (2017-2020).
- b) Invited Panelist to facilitate the discussion "How to Teach Online and Still Have a Life". (2017-2019, 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.

- c) Judge for poster presentations “WISE conference” at Texas State university, 2018 & 2019.
- d) Judge annual Undergraduate Research poster competition, Texas State University. 2019 & 2020.
- e) Invited panelist on Active learning and hybrid course development for Health and Human Performance (HHP) department faculty. Nov 22. 2019.
- f) Invited panelist on National Distance Learning Week webinar series: Student Misconduct in Online Courses Nov-09, 2018.
- g) Panel chair (Biology) at the 10th Annual International Research Conference for Graduate Students held at Texas State University. Nov. 13-14, 2018.
- h) Served as Undergraduate Marshal, Commencement Ceremony. (December 16, 2016).
- i) Poster Respondent, in 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> International Research Conference for Graduate Students at Texas State Univ. (2014-16).
- j) Representative faculty, Commencement ceremony. (August 12, 2016).
- k) Volunteered to assist the Department of Housing and Residential Life with move-in. Friday, August 14, 2015, from 10:30 am – Noon.

### 3. Department/School:

Judge, Annual Biology Students Colloquium for presentation at Texas State University Biology Colloquium. ( 2016, 2019, 2020).

Judge, Annual Biology Students Colloquium for presentation and poster sessions at Texas State University. (April 17, 2015).

### B. Professional:

Reviewer : Reviewed manuscripts for the following Journals (2015-2020)

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.

Reviewer for poster abstract for Annual Biomedical Research Conference for Minority Students. (2019 & 2015)

Books reviewed: Bioenergy: A sustainable approach for a cleaner environment (2015) published by Springer nature.

- Host and sessions chair (medical microbiology) American Society of Microbiology (Texas Branch), Texas State university , TX, United States. (November 05, 2021).
- Reviewer: Phi Sigma grant program, UT Arlington, TX. (2019, 2014 -2016). I have reviewed 3-grant proposal every semester (up to \$3000 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).

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).

C. Community:

Vice president, Microcenoos' alumni association of microbiologist of MDS University, Ajmer, India (2004).

Member, Association of Microbiologists of India. (2002 - 2004).

Vice president, student union of Government Bangur P.G. College, Pali-(Rajasthan) India. (1995 - 1996).

D. Organization Memberships:

Member, American society of microbiology. (2014 –2019).

Member, The Nu Biophysical Society, Molecular Biophysics Unit, Bangalore. (2005 - 2008).

Association of Microbiologists of India (AMI). (2002 - 2004).