

| BIOGRAPHICAL SKETCH                           |        |                 |                           |
|---|--------|-----------------|---------------------------|
| Name  |        | Position        |                           |
| Kodumudi S. Venkateswaran                     |        | Chief Scientist |                           |
| Education / Training                          |        |                 |                           |
| Institution and Location                      | Degree | Year            | Field of Study            |
| University of Madras, India                   | B.Sc.  | 1979            | Chemistry                 |
| University of Madras, India                   | M.Sc.  | 1981            | Biochemistry              |
| Indian Institute of Science, Bangalore, India | Ph.D.  | 1993            | Biochemistry / Immunology |

### Positions and Honors:

#### Positions and Employment

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|--------------|--|
| 1981-1983    | UGC/CSIR Junior Research Fellow at Molecular Radiation Biophysics Laboratory, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, India. |
| 1983-1988    | Scientist "B", Defence Research and Development Establishment, Gwalior, India.   |
| 1988-1993    | Scientist "C", Defence Research and Development Establishment, Gwalior, India  |
| 1993-1997    | Scientist "D", Defence Research and Development Establishment, Gwalior, India.   |
| 1994-1997    | Visiting Post-Doctoral Fellow, University of California, San Francisco, CA.  |
| 1997-1999    | Post-Doctoral Staff Research Member, Lawrence Livermore National Laboratory, CA  |
| 1999-2001    | Senior Biomedical Scientist, Lawrence Livermore National Laboratory (LLNL), CA.  |
| 2001-2005    | Biophysicist, Lawrence Livermore National Laboratory, Livermore, CA.   |
| 2003-2005    | Group Leader, Advanced Diagnostics Group, LLNL, Livermore, CA.   |
| 2004-2005    | Principal Investigator, University of California Davis NSF Center for Bio Photonics Science and Technology, Sacramento, CA.                                    |
| 2004-2005    | Member, Integrated Cancer Center, University of California Davis, Sacramento, CA.  |
| 2005-2012    | Vice President, Radix BioSolutions, Georgetown, TX.  |
| 2012-2018    | Chief Executive Officer, Omni Array Biotechnology, Rockville, MD   |
| 2019-Present | Chief Scientist, Tetracore, Inc. Rockville, MD   |

#### Honors and Awards:

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|---------|--|
| 1982-83 | Awarded Council of Scientific and Industrial Research Junior Research Fellowship.            |
| 1985    | Member of the team honored with DRDO Cash Award for Outstanding Contributions in Toxicology. |

- 1993 National Institute of Immunology Young Scientist Award at XIX Annual Conference of Indian Immunology Society and National Symposium on molecular basis of allergy and autoimmunity at Bangalore, India.
- 1993 National Institute of Immunology Young Scientist Award at XX Annual Conference of Indian Immunology Society and National Symposium on Immunodiagnosis in Blood Transfusion at Bhopal, India
- 1993-94 Mrs. C.V. Hanumantha Rao Medal by the Council of Indian Institute of Science, Bangalore, India, for the Ph.D thesis entitled "Biochemical and Immunological Studies on Methyl Isocyanate Exposure"
- 1996 Research grant by Center for Molecular Cytometry, University of California, San Francisco for the project on "Flow cytometric typing of ABO and Rh(D) blood groups and antibody screening in immunohematology".
- 1999 NAI Directorate Award Lawrence Livermore National Laboratory for successful demonstration of an autonomous biodetection system.
- 2002 Physics and Advanced Technologies Directorate Award at Lawrence Livermore National Laboratory, Livermore for the development and field demonstration of Autonomous Pathogen Detection System.
- 2004 Member of the "R&D 100 Award" team for the development of Autonomous Pathogen Detection System to detect the airborne release of biological threat agents.
- 2004-2007 Member of National Institute of Allergy and Infectious Diseases Special Emphasis Panels for reviewing Biodefense proposals.

**i. Patents:**

**United States**

1. Vyas GN and Venkateswaran KS. Simultaneous human ABO and Rh(D) blood typing or antibody screening by flow cytometry. US Patent # 5,776,711 issued on July 7, 1998.
2. Miles RR, Venkateswaran KS, and Fuller CK. Impedance measurements for detecting pathogens attached to antibodies. US Patent # 6,835,552 issued on December 28, 2004.
3. Miles RR, Venkateswaran KS, and Fuller CK. Method for detecting pathogens attached to specific antibodies. US Patent # 6,846,639 issued on January 25, 2005.
4. Colston BW, Everett M, Milanovich FP, Brown SB, Venkateswaran KS and Simon JN. Portable Pathogen detection system. US Patent # 6,905,885 issued on June 14, 2005.

**International**

5. Vyas GN and Venkateswaran KS. Simultaneous human ABO and Rh(D) blood typing or antibody screening by flow cytometry. International application published under Patent Cooperation Treaty PCT # WO 98/21593 on May 22, 1998.
6. Langlois RG, Milanovich FP, Colston BW, Brown SB, Masquelier D, Mariella RP and Venkateswaran KS. System for autonomous monitoring of bioagents. International application published under Patent Cooperation Treaty PCT # WO 2005/001435 on January 06, 2005.

**ii. Selected peer-reviewed publications**

1. Krishnan VV, Selvan SR, Parameswaran N, Venkateswaran N, Luciw PA, Venkateswaran KS. Proteomic profiles by multiplex microsphere suspension array. J Immunol Methods. 2018;461:1-14.
2. Thirunavukkarasu N, Johnson E, Pillai S, Hodge D, Stanker L, Wentz T, Singh B, Venkateswaran K, McNutt P, Adler M, Brown E, Hammack T, Burr D, Sharma S. Botulinum Neurotoxin Detection Methods for Public Health Response and Surveillance. Front Bioeng Biotechnol. 2018;6:80.
3. Ramage JG, Prentice KW, DePalma L, Venkateswaran KS, Chivukula S, Chapman C, Bell M, Datta S, Singh A, Hoffmaster A, Sarwar J, Parameswaran N, Joshi M, Thirunavukkarasu N,

- Krishnan V, Morse S, Avila JR, Sharma S, Estacio PL, Stanker L, Hodge DR, Pillai SP. Comprehensive Laboratory Evaluation of a Highly Specific Lateral Flow Assay for the Presumptive Identification of *Bacillus anthracis* Spores in Suspicious White Powders and Environmental Samples. *Health Secur.* 2016;14(5):351-65.
4. Kwon Y, Hara CA, Knize MG, Hwang MH, Venkateswaran KS, Wheeler EK, Bell PM, Renzi RF, Fruetel JA, Bailey CG. Magnetic bead based immunoassay for autonomous detection of toxins. *Anal Chem.* 2008;80(22):8416-23.
  5. Khan IH, Mendoza S, Yee J, Deane M, Venkateswaran K, Zhou SS, Barry PA, Lerche NW, Luciw PA. (2006) Simultaneous detection of antibodies to six nonhuman-primate viruses by multiplex microbead immunoassay. *Clin Vaccine Immunol.* 13(1):45-52.
  6. Hindson BJ, McBride MT, Makarewicz AJ, Henderer BD, Setlur US, Smith SM, Gutierrez DM, Metz TR, Nasarabadi SL, Venkateswaran KS, Farrow SW, Colston, Jr. BW, and Dzenitis JM. (2005) Autonomous detection of aerosolized biological agents by multiplexed immunoassay with polymerase chain reaction confirmation. *Anal. Chem.* 77: 284-289.
  7. McBride MT, Masquelier D, Hindson BJ, Makarewicz AJ, Brown S, Burris K, Metz T, Langlois RG, Tsang KW, Bryan R, Anderson DA, Venkateswaran KS, Milanovich FP and Colston Jr. BW. (2003) Autonomous detection of aerosolized *Bacillus anthracis* and *Yersinia pestis*. *Anal Chem.* 75: 5293.
  8. Bates TW, Thurmond MC, Hietala SK, Venkateswaran KS, Wilson TM, Colston BW Jr., Trebes JE, Milanovich FP. (2003) Surveillance for detection of foot-and-mouth disease. *J Am Vet Med Assoc*, 223(5): 609-14
  9. McBride MT, Gammon S, Pitesky M, O'Brien TW, Smith T, Aldrich J, Langlois RG, Colston B, Venkateswaran KS. (2003) Multiplexed liquid arrays for simultaneous detection of simulants of biological warfare agents. *Anal Chemistry* 75(8): 1924-30.
  10. Belgrader P, Hansford D, Kovacs GT, Venkateswaran K, Mariella R Jr., Milanovich F, Nasarabadi S, Okuzumi M, Pourahmadi F, Northrup MA. (1999) A minisonicator to rapidly disrupt bacterial spores for DNA analysis. *Anal Chemistry* 71(19): 4232-6.
  11. Venkateswaran KS, Masquelier D, et al. (1998) Development of flow cytometric methods for simultaneous detection of multiple microbial agents. *Cytometry, Suppl.* 8: 151-152.
  12. Dorenbaum A, Venkateswaran KS, Yang G, Comeau AM, Wara D, and Vyas GN. (1997) Transmission of HIV-1 in infants born to seropositive mothers: PCR-amplified proviral DNA detected by flow cytometric analysis of immunoreactive beads. *J AIDS and Human Retrovirology*, 15 (1): 35-42.
  13. Rai GP, Chandran CP, Phadake S, Belapurkar KM, and Venkateswaran KS. (1997) Detection of *Neisseria meningitidis* in cerebrospinal fluid of meningococcal patients by competitive-inhibition enzyme linked immunosorbent assay. *Biomedical Letter*, 55 (217), 57-63.
  14. Venkateswaran KS, Hazari N, et al. (1996) Flow cytometric analysis of red cells for ABO and Rh(D) antigens and serum isoantibody screening. *Molecular Biology of the Cell*, 7: 147a
  15. Vyas GN, Arnold AB, and Venkateswaran KS. (1996) Edited the Special issue of *Biologicals on Molecular Methods in Laboratory Diagnosis* 24 (3).
  16. Vyas GN, Arnold AB, and Venkateswaran KS (1996) Editors' Note. *Biologicals*, 24(3): 147-148.
  17. Arnold AB, Venkateswaran KS, and Vyas GN (1996) Editorial summary of pre-symposium workshop on the contemporary assessment of technologies. *Biologicals*, 24(3): 177-186.

18. Shadi AS, Venkateswaran KS, et al. (1995) Simultaneous ABO and Rh blood typing by flow cytometry using a three color fluorescence detection system. *Blood*, 86 (10): 609a.
19. Rai GP, Chandran CP, Phadake S, Belapurkar KM, and Venkateswaran KS (1995) Comparison of sandwich enzyme linked immunosorbent assay and latex agglutination test for detection of meningococcus group A antigen in cerebrospinal fluid. *Medical Microbiol Lett.* 4 (1): 14-21.
20. Venkateswaran KS, Neeraja V, Neeraja V, Sugendran K, Gopalan N, Vijayaraghavan R, Pant SC, Prakash AO, Malhotra RC. (1994) Dose dependent changes following dermal intoxication of mice with sulphur mustard. *Human Experimen. Toxicol.*, 13 (4): 247-251.
21. Neeraja Venkateswaran, Malhotra RC and Venkateswaran KS. (1994) Degradation of bacteriophage deoxyribonucleic acid in vitro by sulfur mustard. *Biochem. Mol. Biol. Intl.* 34 (3), 429-435.
22. Verma RD, Venkateswaran KS, Sharma JK, and Agarwal GS. (1994) Potency of partially purified malleo-proteins for mallein test in the diagnosis of glanders in equines. *Vet. Microbiol.* 41 (4): 391-397.
23. Venkateswaran KS, Neeraja V, and Rai GP (1992) Time-Resolved Fluorescence assay in diagnostic microbiology. *Applied Fluores. Technol.* 4 (4): 14-16.
24. Venkateswaran KS and Venkateswaran N (1992) Antibodies to Sulfur mustard. *Immunol. Lett.* 34 (2): 173-176.
25. Venkateswaran KS, Raghuvveeran CD, KS, Gopalan N, Agarwal GS, Kaushik MP, Vijayaraghavan R. (1992) Monitoring of hemoglobin-methyl isocyanate adduct using diode array detector by high performance liquid chromatography. *Biochem. International*, 28 (4): 745-750.
26. Rai GP, Agarwal GS, and Venkateswaran KS (1992) Indirect hemagglutination test using stabilized sheep red blood cells for the serodiagnosis of brucellosis. *Zbl. Bakt. Hyg.* 277 (2): 188-192.
27. Venkateswaran N and Venkateswaran KS (1992) Modified Spot hybridization test using biotinylated DNA probe. *Acta Microbiologica Hungarica*, 39 (2): 169-173.
28. Venkateswaran KS and Ramachandran PK (1990) Long-Term effects of Methyl Isocyanate exposure. *Proc. Ann. Topical Seminar Genet. Carcinogen. Effect Ionizing Radiation, AERB-CRPS- SM, 1/18: 1-5.*
29. Verma RD, Sharma JK, Venkateswaran KS and Batra HV (1990) Development of an avidin-biotin dot enzyme linked immunosorbent assay and its comparison with other serological tests for diagnosis of glanders in equines. *Vet. Microbiol.* 25: 77-85.
30. Selvan RS, Venkateswaran KS, and Ramesha Rao A (1989) Influence of arecoline on immune system: I. Short-term effects on general parameters and on the adrenal and lymphoid organs. *Immunopharmacol. Immunotoxicol.*, 11 (2&3): 347-377.
31. Ramachandran PK, Gandhe BR, Venkateswaran KS, et al. (1988) Gas chromatographic studies of the carbamylation of Hemoglobin by methyl isocyanate in Rats and Rabbits. *J. Chromatography*, 426: 239-246.