

Curriculum Vitae



Dr. G. Vijay Anand, PhD

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EDUCATION

PhD (Microbiology), Sri Krishnadevaraya University, Anantapur, India.
MSc (Microbiology), Sri Krishnadevaraya University, Anantapur, India.

POSITIONS HELD

- Postdoctoral Fellow, Colorado State University, Fort Collins, USA.
- APHL-CDC EID Postdoctoral Fellow, Centre for Disease Control and Prevention (CDC), Fort Collins, USA.
- Postdoctoral Fellow, Université de la Méditerranée, Marseille, France.

FELLOWSHIPS/HONORS/AWARDS/OTHERS

- Publication highlight of the month: Inhibition of mycolic acid transport across the *Mycobacterium tuberculosis* plasma membrane. Newsletter, Department of Microbiology, Immunology & Pathology, Colorado State University, Fort Collins, USA (Volume 9, Issue 3, April 2012).
- University News: Diversity in Radiation Research: International efforts in fight against Tuberculosis, E-News, Colorado State University, Fort Collins, USA.
- Awarded Travel Grant by the American Society for Rickettsiology (ASR), USA.
- Awarded Emerging Infectious Diseases (EID) Postdoctoral Fellowship sponsored by Association of Public Health Laboratories-Coordinating Centre for Infectious Diseases/Centres for Disease Control and Prevention (APHL-CCID/CDC), Atlanta, USA.
- Awarded Senior Research Fellowship by the University Grants Commission (UGC), New Delhi, India.
- Awarded Junior Research Fellowship by the UGC, New Delhi, India.
- Qualified at the National Eligibility Test (NET).
- Qualified in the Graduate Aptitude Test in Engineering (GATE).

AREAS OF RESEARCH

Infectious Diseases, Microbial Genomics & Phylogenetics, Microbial Biodegradation

MAJOR RESEARCH FOCUS

Developing Diagnostics and Drugs for Multiple or Extremely Drug-Resistant *Mycobacterium tuberculosis*: *Mycobacterium tuberculosis* (*M.tb*), the causative agent of tuberculosis (TB) in humans, remains a leading cause of death in developing countries. Infections by *M. tb* have been estimated at 9.2 million new cases during 2006 and TB claims about 1.7 million lives annually. Approximately 2% of new TB cases in the world (13% among patients with histories of treatment) are attributed to MDR strains, defined as *M.tb* isolates resistant to at least isoniazid and rifampicin, the two most powerful anti-TB drugs. The emergence of multi-drug- and extremely drug-resistant strains of *M.tb* has highlighted the urgent public health need for new drugs with bactericidal mechanisms different from those of presently available agents and capable of reducing treatment duration. We have identified an adamantyl urea compound that shows potent bactericidal activity against *M.tb* and a unique mode of action, namely the abolition of the translocation of mycolic acids from the cytoplasm.

Molecular Detection, Isolation and Description of *Bartonella*: *Bartonella* species are zoonotic and vector-borne bacteria associated with an increasing array of emerging infections in humans and animals. These bacteria are responsible for a wide range of clinical manifestations, including trench fever, cat-scratch disease, and endocarditis in immunocompetent patients, and bacillary angiomatosis and peliosis hepatitis in immunocompromised patients. Bartonellae typically parasitize the erythrocytes of mammalian hosts, resulting in longlasting infections. Several new *Bartonella* species have been isolated recently from a wide range of wild mammals, including rodents, lagomorphs, carnivores, and ruminants. The close association between rodents and humans throughout the world, especially in rural environments and in the overcrowded metropolis, makes the study of rodent-borne *Bartonella* essential to determine the extent to which rodents may serve as a source of human infections. We have detected, isolated and described known and novel *Bartonella* species in different animals of various geographical locations around the world.

Developing Molecular Tools for Identification and Genotyping of *Acinetobacter*: *Acinetobacter* are strictly aerobic, oxidase-negative, non-fermenting, non-motile, Gram-negative, coccobacillary bacteria, present ubiquitously in the environment. Over the last 4 decades, particular *Acinetobacter* species have emerged as opportunistic pathogens that are associated with severe hospital-acquired infections including pneumonia, bloodstream infections and wound infections. A propensity to tolerate drying and resistance to many commonly used antibiotics are key factors in enabling the organism to survive and spread epidemically in the nosocomial environment. Furthermore, *Acinetobacter* species may serve as reservoirs of antibiotic-resistant genes, particularly in hospital environments. We have developed an PBRS method for easy and rapid identification of *Acinetobacter* strains.

RESEARCH ACCOMPLISHMENTS

- Involved in identifying novel drug [(1-(2-adamantyl)-3-(2,3,4-trifluorophenyl)urea] against *Mycobacterium tuberculosis* (*Nat Chem Biol* 2012).
- Described novel bacterial species viz., *Bartonella rattimassiliensis* sp. nov., *Bartonella phoceensis* sp. nov., *Bartonella rattaaustraliansi* sp. nov., *Bartonella queenslandensis* sp. nov., and *Bartonella cooperplainsensis* sp. nov. (*J Clin Microbiol* 2004, *Int J Syst Evol Microbiol* 2009).

- Developed new molecular tool for rapid and easy identification of *Acinetobacter* species (*J Clin Microbiol* 2006, *Microbiology* 2009). This work led to obtain an US Patent.

SELECTED PUBLICATIONS

- Grzegorzewicz AE, Pham H, **Gundi VA**, Scherman MS, North EJ, Hess T, Jones V, Gruppo V, Born SE, Korduláková J, Chavadi SS, Morisseau C, Lenaerts AJ, Lee RE, McNeil MR, Jackson M (2012) Inhibition of mycolic acid transport across the *Mycobacterium tuberculosis* plasma membrane. *Nature Chemical Biology*, 8: 334–341.
- Grzegorzewicz AE, Kordulakova J, Jones V, Born SEM, Belardinelli JM, Vaquie A, **Gundi VA**, Madacki J, Slama N, Laval F, Vaubourgeix J, Crew RM, Gicquel B, Daffe M, Morbidoni HR, Brennan PJ, Quemard A, McNeil MR, Jackson M (2012) A common mechanism of inhibition of the *Mycobacterium tuberculosis* mycolic acid biosynthetic pathway by isoxyl and thiacetazone. *Journal of Biological Chemistry*, 287: 38434-38441.
- **Gundi VA**, Kosoy MY, Makundi RH, Laudisoit A (2012) Identification of diverse *Bartonella* genotypes among small mammals from Democratic Republic of Congo and Tanzania. *American Journal of Tropical Medicine & Hygiene*, 87: 319-326.
- **Gundi VA**, Billeter SA, Rood M, Kosoy MY (2012) *Bartonella* spp. in rats and zoonoses, Los Angeles, California, USA. *Emerging Infectious Diseases*, 18: 631-633.
- Bitam I, Rolain JM, Nicolas V, Tsai YL, Parola P, **Gundi VA**, Chomel BB, Raoult D (2012) A multi-gene analysis of diversity of *Bartonella* detected in fleas from Algeria. *Comparative Immunology, Microbiology & Infectious Diseases*, 35: 71-76.
- Billeter SA, **Gundi VA**, Rood MP, Kosoy MY (2011) Molecular detection and identification of *Bartonella* species in *Xenopsylla cheopis* (Siphonaptera: Pulicidae) collected from *Rattus norvegicus* in Los Angeles, California. *Applied & Environmental Microbiology*, 77: 7850-7852.
- **Gundi VA**, Kosoy MY, Myint KS, Shrestha SK, Shrestha MP, Pavlin JA, Gibbons RV (2010) Prevalence and genetic diversity of *Bartonella* species detected in different tissues of small mammals in Nepal. *Applied & Environmental Microbiology*, 76: 8247-8254.
- **Gundi VA**, Taylor C, Raoult D, La Scola B (2009) *Bartonella rattaaustraliani* sp. nov., *Bartonella queenslandensis* sp. nov., and *Bartonella coopersplainsensis* sp. nov. from Australian rats. *International Journal of Systematic & Evolutionary Microbiology*, 59: 2956-2961.
- **Gundi VA**, Dijkshoorn L, Burignat S, Raoult D, La Scola B (2009) Validation of partial *rpoB* gene sequence analysis for the identification of clinically important and emerging *Acinetobacter* species. *Microbiology*, 155: 2333-2341.
- La Scola B, **Gundi VA**, Khamis A, Raoult D (2006) Sequencing of the *rpoB* gene and flanking spacers for molecular identification of *Acinetobacter* species. *Journal of Clinical Microbiology*, 44: 827-832.
- **Gundi VA**, Davoust B, Bourry O, Raoult D, La Scola B (2004) *Bartonella clarridgeiae* and *Bartonella henselae* in dogs, Gabon. *Emerging Infectious Diseases*, 10: 2261-2262.
- **Gundi VA**, Desbriere R, La Scola B (2004) *Leptotrichia amnionii* and the female reproductive tract. *Emerging Infectious Diseases*, 10: 2056-2057.
- **Gundi VA**, Davoust B, Khamis A, Boni M, Raoult D, La Scola B (2004) Isolation of *Bartonella rattimassiliensis* sp. nov. and *Bartonella phoceensis* sp. nov. from European *Rattus norvegicus*. *Journal of Clinical Microbiology*, 42: 3816-3818.