

# Scientist Profile

Name: Dr. A.R. Anand  
Designation: Scientist D and DBT-Ramalingaswami fellow  
Date of birth: 17/04/1971  
Date of joining: 01/05/2015  
Date of joining present post: 01/05/2015  
Discipline: Immunology/Virology  
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## Educational qualifications

| Degree | Institution and Location  | Year(s) | Field of Study                      |
|--------|---|---------|-------------------------------------|
| Ph.D.  | (Medical Research Foundation, Sankara Nethralaya) The Tamil Nadu Dr. MGR Medical University, Chennai, India | 2001    | Bio-medical Sciences (Microbiology) |
| M.Sc.  | Kasturba Medical College, Mangalore University, India   | 1994    | Medical Microbiology                |
| B.Sc.  | St. Josephs College of Arts & Science, Bangalore University, Bangalore, India                               | 1991    | Micriobiology/Chemistry/Zoology     |

## 1. Research Experience

| Designation                             | Institute and Location                                      | Topic               | Year(s)       |
|---|---|---------------------|---------------|
| Scientist D & DBT-Ramalingaswami fellow | National Inst. For Research in Tuberculosis (NIRT), Chennai | Immunology/Virology | 2015- Present |

|                                |   |   |             |
|--------------------------------|---|---|-------------|
| Senior Assistant Professor     | School of Bio-technology, SASTRA University, Thanjavur, Tamil Nadu                                      | Immunology/Virology/Microbiology  | 2013 - 2015 |
| Assistant Professor (Research) | Department of Pathology, College of Medicine, Ohio State University Medical Center, Columbus, Ohio, USA | Immunology/Virology (Host factors in HIV pathogenesis; HIV/HCV co-infection; Chemokines in vascular inflammation) | 2010 - 2013 |
| Instructor (faculty)           | Department of Pathology, College of Medicine, Ohio State University Medical Center, Columbus, Ohio, USA | Immunology/Virology (HIV pathogenesis- Signaling mechanisms in dendritic cells)                                   | 2007 - 2010 |
| Postdoctoral Research Fellow   | Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, Massachusetts, USA                | Immunology/Virology (Chemokine receptor signaling in HIV- and Gram-negative bacterial infection)                  | 2002 - 2007 |

## 2. **Membership/Fellowship of Professional Societies/Associations :**

Indian Association of Medical Microbiologists: Life member (1999-present)  
International CCN Society: full member (2013-present)  
American Society for Virology (2007-2012)

## 3. **Workshops/Conferences/Symposiums**

### **Papers presented at Conferences/Symposia (selected)**

1. Anand AR, Zhao H, Nagaraja T, Ganju RK. The N-terminal Slit2 inhibits HIV infection by regulating the actin cytoskeleton pathway. Cold Spring Harbor Meeting on Retroviruses, USA (2012).(poster)
2. Anand AR, Nagaraja T, Ganju RK. The neuronal repellent Slit2 inhibits HIV-1 replication in T-cells. Keystone symposia on Protection from HIV: Targeted Intervention strategies, Whistler, British Columbia, Canada (2011). (poster)
3. Anand AR, Bradley RR, Prasad A, Terwilliger EF, Ganju RK. HIV-1 Macrophage-tropic gp120-induced migration of Dendritic cells is regulated by the tyrosine kinase, Pyk2. Keystone symposia on HIV pathogenesis, Banff, Alberta, Canada (2008). (poster)
4. Anand AR and Ganju RK. The membrane phosphatase, CD45, modulates HIV-1 envelope-induced apoptosis of T cells via the Akt pathway. Ganju Annual meeting of the American Association of Immunologists, Boston, Massachusetts, USA (2006). (poster)
5. Anand AR, and Ganju RK. Akt Regulates the Activation-Induced Apoptosis of T Cells Mediated by HIV-1 gp120. 47th Annual meeting of the American Society of Hematology, San Diego, California, USA (2004).(poster)
6. Anand AR, RK Ganju. The membrane tyrosine phosphatase CD45 regulates HIV-1 gp120-induced apoptosis. 46th Annual meeting of the American Society of Hematology, San Diego, USA (2003). (poster)
7. Anand AR, Sudha NV, Therese KL, Madhavan HN. Diagnostic value of PCR for detection of fungal genome in the intraocular fluids of suspected cases of fungal endophthalmitis. Indian Eye Research Group (IERG) Annual meeting, Hyderabad (2000). (oral)

8. Anand AR, Sudha NV, Therese KL, Madhavan HN. Polymerase chain reaction in the diagnosis of Aspergillus endophthalmitis. National Congress of Indian Association of Medical Microbiologists, Belgaum (2000). (oral)
9. Anand AR, Therese KL, Madhavan HN. Spectrum of aetiological agents of postoperative endophthalmitis and antibiotic susceptibilities of the aerobic bacterial isolates. Indian Eye Research Group (IERG) Annual meeting, Hyderabad (1999).(oral)
10. Anand AR, Priya K, Therese KL, Madhavan HN. Evaluation of polymerase chain reaction (PCR) in the detection of Herpes simplex virus ocular infections. National Congress of Indian Association of Medical Microbiologists, Manipal (1998). (oral)
11. Anand AR, Therese KL, Madhavan HN. Role of polymerase chain reaction (PCR) in detection of M. tuberculosis in ocular specimens. Indian Eye Research Group (IERG) Annual meeting, Hyderabad (1998). (oral)
12. Anand AR, Therese KL, Madhavan HN. PCR in the detection of M.tuberculosis in intraocular specimens. National Congress of Indian Association of Medical Microbiologists, Sholapur (1997). (oral)
13. Anand AR, Therese KL, Madhavan HN. Use of polymerase chain reaction in the diagnosis of P. acnes endophthalmitis. Indian Eye Research Group (IERG) Annual meeting, Hyderabad (1997). (oral)
14. Anand AR, Therese KL, Madhavan HN. Spectrum of aetiological agents of endogenous endophthalmitis. Indian Eye Research Group (IERG) Annual meeting, Hyderabad (1997). (oral)
15. Anand AR, Therese KL, Madhavan HN. Polymerase chain reaction in the diagnosis of bacterial endophthalmitis. National Congress of Indian Association of Medical Microbiologists, Agra (1996).(oral)

#### 4. Awards

- DBT-Ramalingaswami re-entry fellowship (2014), Dept. of Biotechnology
- Swarnalata Punshi Award (awarded to the best Research Fellow of the year), Medical Research Foundation, Sankara Nethralaya, Chennai, India (2001)
- Best Poster Award XXV National Congress of Indian Association of Medical Microbiologists (IAMM), Chandigarh, India (1999)
- CCLRU Travel Fellowships, Indian Eye Research Group Meeting- Years-1997, 1999 and 2000
- Junior/Senior Research Fellowship, University Grants Commission, India (1995-2000) by qualifying the National Eligibility Test (NET) for JRF/ Lectureship

#### 5. Miscellaneous

##### Invited oral presentations/talks:

1. Immunodeficiency: AIDS, a prototype. CME in Immunology , NJILD, Agra, April, 2016.
2. HIV pathogenesis: recent advances. Medical Education Series, Kempegowda Institute of Medical Sciences, Bangalore, January, 2014.
3. Molecular pathogenesis of viral infections. Indian Institute of Science, Education and Research, (IISER) Trivandrum, March 2013.
4. Host factors in HIV pathogenesis. International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi, February, 2013.
5. Host factors regulating HIV replication in target cells: potential implications for therapeutic interventions. Translational Health Science and Technology Institute, Faridabad, February 2013.
6. Molecular mechanisms of HIV pathogenesis. International Association of Medical & Pharmaceutical Virologists Meeting, CLRI, Chennai, India, November 2012.
7. Role of TGF-beta and CTGF in promoting Hepatitis C virus -induced liver fibrosis. Nationwide Children's Hospital Research Week, Columbus OH, USA, April 2010.
8. Macrophage-tropic gp120-induced migration of Dendritic cells is regulated by the tyrosine kinase, Pyk2. Keystone symposia on HIV pathogenesis, Banff, Alberta, Canada, May, 2008.

## 6. List of publications

1. Ramana LN, **Anand AR**, Sethuraman S, Krishnan UM. Targeting strategies for delivery of anti-HIV drugs. *J Control Release*.(2014) 192:271-83. Review.
2. Zhao H, **Anand AR**, Ganju RK. Slit2-Robo4 Pathway Modulates Lipopolysaccharide-Induced Endothelial Inflammation and Its Expression Is Dysregulated during Endotoxemia. *Journal of Immunology*. (2014) Jan 1;192(1):385-93.
3. **Anand AR**, Helong Zhao, Nagaraja T, Robinson LA and Ganju RK. N-terminal Slit2 regulates HIV-1 replication in T-cells by modulating the actin cytoskeleton. *Retrovirology* (2013) 10:2 (7 January 2013).
4. Nagaraja T, Chen L, Balasubramanian A, Groopman JE, Brigstock D, **Anand AR (co-corresponding author)**, Ganju RK. Connective Tissue Growth Factor Mediates Transforming Growth Factor  $\beta$ -Induced Fibrosis in Hepatitis C Virus-Infected Hepatocytes. *PLoS ONE* (2012) 7(10):e46526. Epub 2012 Oct 4.
5. Nagaraja T, **Anand AR (co-first author)**, Zhao H, and Ganju RK. The adaptor protein SLP-76 regulates HIV-1 release and cell to cell transmission in T-cells. *Journal of Immunology* (2012) 188(6):2769-77.
6. **Anand AR**, Nagaraja T, and Ganju RK. A novel role for Slit2/Robo1 axis in modulating HIV-1 replication in T-cells. *AIDS* (2011) 13;25(17):2105-11.
7. **Anand AR**, Prasad A, Bradley RR, Deol YS, Nagaraja T, Ren X, Terwilliger EF, Ganju RK. HIV-1 gp120-induced migration of dendritic cells is regulated by a novel kinase cascade involving Pyk2, p38 MAP kinase and LSP1. *Blood* (2009) 114(17):3588-600.
8. **Anand AR**, Cucchiari M, Terwilliger EF, Ganju RK. The Tyrosine kinase, Pyk2 mediates LPS-induced IL-8 Expression in Human Endothelial Cells. *Journal of Immunology* (2008) 180(8):5636-44.
9. **Anand AR**, Bradley R, Ganju RK. LPS-induced MCP-1 expression in human microvascular endothelial cells is mediated by the tyrosine kinase, Pyk2 via the p38 MAPK/NF-kappaB-dependent pathway. *Molecular Immunology* (2009) 46(5):962-8.
10. Lane HC, **Anand AR**, Ganju RK Cbl and Akt regulate CXCL8-induced and CXCR1- and CXCR2-mediated chemotaxis. *International Immunology* (2006) 18(8):1315-25.
11. Kuehne JJ, Yu AL, Holland GN, **Anand AR** (Ramaswamy A), Taban R, Mondino BJ, Yu F, Rayner SA, Giese MJ. Corneal pharmacokinetics of topically applied azithromycin and clarithromycin. *American Journal of Ophthalmology* (2004) 138(4): 547-53.
12. **Anand AR**, Ganju RK. HIV-1 gp120-mediated Apoptosis of T Cells Is Regulated by the Membrane Tyrosine Phosphatase CD45. (2006) *Journal of Biological Chemistry* 281(18): 12289-99.
13. Wang JF, Liu ZY, **Anand AR**, Zhang X, Brown LF, Dezube BJ, Gill P, Ganju RK. Alpha-chemokine-mediated signal transduction in human Kaposi's sarcoma spindle cells. *Biochim Biophys Acta. Molecular cell research* (2004) 691(2-3): 129-39.
14. Gopal L, **Anand AR** (Ramaswamy AA), Madhavan HN, Battu RR, Sharma T, Shanmugam MP, Bhende PS, Bhende M, Ratra D, Shetty NS, Rao MK. Endophthalmitis caused by *Acinetobacter calcoaceticus*. A profile. *Indian Journal of Ophthalmology* (2003) 51(4): 335-40.
15. **Anand AR**, Madhavan HN, Sudha NV, Therese KL. Polymerase chain reaction in the diagnosis of *Aspergillus* endophthalmitis. *Indian Journal of Medical Research* (2001) 114:133-40.
16. Fogla R, Rao SK, **Anand AR**, Madhavan HN. Insect wing case: unusual foreign body. *Cornea* (2001) 20: 119-121.
17. **Anand AR**, Madhavan HN, Neelam V, Therese KL. Use of polymerase chain reaction in the diagnosis of fungal endophthalmitis. *Ophthalmology* (2001) 108: 326-330.

18. Pasricha G, Anand AR, Therese KL, Madhavan HN. Use of Polymerase chain reaction (PCR)-Restriction Fragment Length Polymorphism to trace the source of *Alcaligenes xylosoxidans* containing ocular clinical specimens. *Indian Journal of Applied Microbiology*. (2001) 1: 1 (41-45).
19. Samanta TK, Biswas J, Gopal L, Anand AR, Kumarasamy N, Solomon S. Panophthalmitis due to *Rhizopus* in an AIDS Patient-A Clinicopathological study. *Indian Journal of Ophthalmology* (2001) 49:49-51.
20. Anand AR, Madhavan HN, Therese KL. Use of polymerase chain reaction (PCR) and DNA probe hybridization to determine the Gram reaction of the infecting bacterium in intraocular fluids of patients with endophthalmitis. *Journal of Infection* (2000) 41: 221-226.
21. Anand AR, Therese KL, Madhavan HN. Spectrum of etiological agents of postoperative endophthalmitis and antibiotic susceptibility of the bacterial isolates. *Indian Journal of Ophthalmology* (2000) 48: 123-128.
22. Gopal L, Anand AR (Ramaswamy AA), Madhavan HN, Saswade M, Battu RR. Postoperative endophthalmitis caused by sequestered *Acinetobacter calcoaceticus*. *American Journal of Ophthalmology* (2000) 129: 388-390.
23. Anand AR (Ramaswamy AA), Biswas J, Bhaskar V, Gopal L, Rajagopal R, Madhavan HN. Postoperative *Mycobacterium chelonae* endophthalmitis after extracapsular cataract extraction and posterior chamber intraocular lens implantation. *Ophthalmology* (2000) 107: 1283-1286.
24. Madhavan HN, Anand AR, Therese KL. Infectious endophthalmitis (Review article) *Indian Journal of Medical Microbiology* (1999) 17:108-115.
25. Madhavan HN, Priya K, Anand AR, Therese KL. Detection of Herpes simplex virus (HSV) genome using polymerase chain reaction (PCR) in clinical samples- Comparison of PCR with standard laboratory methods for the detection of HSV. *Journal of Clinical Virology* (1999) 14: 145-151.
26. Therese KL, Anand AR, Madhavan HN. Polymerase chain reaction in the diagnosis of bacterial endophthalmitis. *British Journal of Ophthalmology* (1998) 82:1078-1082.
27. Therese KL, Anand AR, Madhavan HN. Spectrum of bacterial and fungal agents isolated from patients with endogenous endophthalmitis. *Indian Journal of Medical Microbiology* (1997) 15: 187-190.
28. Patil SA, Gouri-Devi M, Anand AR, Vijaya N, Pratima N, Neelam K, Chandramukhi A. Significance of Mycobacterial Immune Complexes [IgG] in the Diagnosis of Tuberculous Meningitis. *Tubercle and Lung Disease* (1996) 77: 164-167.
29. Shenoy S, Samaga M, Urs S, Anuradha KM, Kurian MM, Augustine A, Anand AR, Prasad A. Intravenous catheter related *Candida rugosa* fungaemia: Case Report. *Tropical Doctor* (1996) 26: 31.
30. Shalini S, Ganesh P, Anand AR. *Actinobacillus actinomycetomcomitans* septicaemia during pregnancy (Letter) *International Journal of Gynecology and Obstetrics* (1995)51: 57 - 58.

## 7. Research Support (ongoing)

- DBT- Ramalingaswami re-entry fellowship from Dept. of Bio-technology. (2015-2020)  
Project Title: Molecular pathogenesis of HIV in T cells and endothelial cells.
- Pilot grant from Dept. of Bio-technology. (2015-2018)  
Project Title: Role of microenvironment in the pathogenesis of HCV and HCV/HIV-associated hepatocellular carcinoma.