

Curriculum Vitae

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Citizenship: USA
Education:

1972	B.Sc. (Biology)	University of Poona, Pune, India.
1974	M.Sc. (Biology)	University of Poona, Pune, India.
1980	Ph.D. (Biochemistry/Physiology)	University of Poona, Pune, India.

Research and Professional experience:

1980-82	Assistant Professor (teaching) Post-Graduate Center, Ahmadnagar, India
1982-92	Research Scientist, MACS Research Institute, Pune, India.
1988-89	Research Associate, Japan Society for the Promotion of Sciences Fellowship, Jikei University School of Medicine, Tokyo, Japan.
1992-94	Research Associate, Department of Pharmacology, State University of New York at Stony Brook (Laboratory of Prof. Craig C Malbon).
1994-97	Instructor (Research), Department of Pharmacology, State University of New York at Stony Brook, New York.
1997- 2000	Research Assistant Professor of Medicine, Division of Nephrology, MUSC
2000-	Assistant Professor of Medicine, Division of Nephrology, MUSC

Research Interests:

RNA Metabolism in Human Disease: Posttranscriptional Control in Normal and Disease-associated G Protein-Coupled Receptors.

My research goal is to establish the mechanisms by which the expression of G protein-coupled receptors (GPCR) are regulated, so that their functions in health and pathogenesis of diseases can be better understood. Supporting the biomedical significance of beta adrenergic receptor regulation are studies suggesting that development of heart failure, asthma and many neurodegenerative diseases may be associated with abnormal regulation of β_1 and β_2 adrenergic receptor sub-types. Astrocytes of multiple sclerosis patients lack β_2 -AR expression; a defect proposed to contribute to inflammation and tissue degeneration in CNS. In addition, widespread disruption in β -adrenergic receptor G protein-coupling and loss of high affinity agonist binding β -adrenergic receptors are reported in Alzheimer's disease and schizophrenia. Our study demonstrated the importance of post-transcriptional regulatory mechanisms in G protein-coupled receptor expression and function. **Studies in progress will significantly advance our understanding of the role of messenger**

ribonucleoproteins in GPCR expression and function. Using RNA affinity method, we have purified, identified and functionally characterized RNA binding proteins involved in beta adrenergic receptor expression and function. RNA interference mediated knockdown of β_2 -AR mRNA binding proteins identified critical role for these proteins in GPCR expression and function. Current work in the laboratory is focused on RNA/protein interactions in sub-cellular targeting of GPCR mRNAs.

Selected Publications

- **Tholanikunnel BG**, Malbon CC. A 20-nucleotide A+U-rich element of β_2 -adrenergic receptor mRNA mediates binding to β ARB protein and is obligate for agonist-induced destabilization of receptor mRNA. *J. Biol. Chem.* 1997; 273: 11471-11479
- **Tholanikunnel BG**, Raymond JR, Malbon CC. Analysis of the AU-rich elements in the 3'-untranslated region of β_2 -adrenergic receptor mRNA by mutagenesis and identification of the homologous AU-rich region from different species. *Biochemistry* 1999; 38: 15564-15572
- **Tholanikunnel BG** and Malbon CC. The analysis of the post-transcriptional regulation of the expression of G protein-coupled receptors. In: Regulation of G protein-Coupled Receptor Function and Expression. JL Benovic eds. Wiley-Liss, Inc. 1999; 273-292
- Mukhin YV, Vlasova T, Jaffa AA, Collinsworth G, Bell JL, **Tholanikunnel BG**, Pettus T, Fitzgibbon W, Ploth DW, Raymond, JR, Garnovskaya, MN. Bradykinin B2 receptors activate Na⁺/H⁺ exchange in mIMCD-3 cells via Janus Kinase 2 and Ca²⁺/calmodulin. *J. Biol. Chem.* 2001; 276: 17339-17346
- Joseph K, **Tholanikunnel BG**, Kaplan, AP. Heat shock protein 90 catalyzes activation of the prekallikrein-kininogen complex in the absence of factor X11. *Proc. Natl. Acad. Sci., USA* 2002; 99: 896-900
- Joseph K, **Tholanikunnel BG**, Kaplan AP. Activation of the bradykinin-forming cascade on endothelial cells: a role for heat shock protein 90. *International Immunopharmacology* 2002; 2 1851-1859
- Ullian ME, Gantt BJ, Ford AK, **Tholanikunnel BG**, Spicer EK, Fitzgibbon WR. Potential importance of glomerular citrate synthase activity in remnant nephropathy. *Kidney International* 2003; 63, 156-164
- Joseph K, **Tholanikunnel BG**, Ghebrehiwet B, Kaplan AP. Interaction of high molecular weight kininogen binding proteins on endothelial cells. *Thromb. Haemost.* 2004; 91, 61-70
- Garnovskaya MN, Mukhin YV, Vlasova T, Grewal JS, Ullian ME, **Tholanikunnel BG**, Raymond JR. Mitogen-induced Rapid Phosphorylation of Serine 795 of the Retinoblastoma Gene Product in Vascular Smooth Muscle Cells Involves ERK Activation. *J. Biol. Chem.*, 2004; 279: 24899 – 24905
- Subramaniam K, Chen, K, Joseph K, Raymond JR, **Tholanikunnel BG**. The 3'-untranslated Region of the β_2 -Adrenergic Receptor mRNA Regulates Receptor Synthesis. *J. Biol. Chem.*, 2004; 279: 27108 – 27115
- Kandasamy K, Joseph K, Subramaniam K, Raymond JR, **Tholanikunnel BG**. Translational control of β_2 -adrenergic receptor mRNA by T-cell-restricted intracellular antigen-related protein. *J. Biol. Chem.*, 2005; 280: 1931-1943
- Subramaniam K, Kandasamy K, Joseph K, Raymond JR, Spicer, EK and **Tholanikunnel BG**. The 3'-untranslated region length and AU-rich RNA location modulate RNA-protein interaction and translational control of β_2 -adrenergic receptor

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