

CURRICULUM VITAE

Ratna Bhattacharyya Ray

Current position and address:

2005-present Professor, Department of Pathology, Saint Louis University, St. Louis, Missouri 63110.

Previous Professional Experience:

1990-1991 Research Assistant Professor, Department of Internal Medicine and Biochemistry, University of Alabama at Birmingham, Birmingham, Alabama.

1991-1992 Research Scientist, International Centre for Genetic Engineering Biotechnology (UNIDO), New Delhi, India.

1992-1993 Research Assistant Professor, Department of Internal Medicine and Biochemistry, University of Alabama at Birmingham, Birmingham, Alabama.

1993-1996 Assistant Research Professor, Department of Internal Medicine and Institute for Molecular Virology, Saint Louis University, St. Louis, Missouri 63110.

1997-2000 Assistant Professor, Department of Pathology, Internal Medicine and Institute for Molecular Virology, Saint Louis University, St. Louis, Missouri 63110.

2000-2005 Associate Professor, Departments of Pathology and Internal Medicine, Saint Louis University, St. Louis, Missouri 63110.

2005-Present Professor, Departments of Pathology, Saint Louis University, St. Louis, Missouri 63104.

Honorary Societies, Honors and Awards:

1982-1984 Junior Research Fellowship Award from the Indian Council of Medical Research, New Delhi, India.

1984-1985 Senior Research Fellowship Award from the Indian Council of Medical Research, New Delhi, India.

1985-1986 Postdoctoral Research Fellow, Department of Microbiology, University of Alabama at Birmingham, Birmingham, Alabama.

1986-1990 Postdoctoral Research Fellow, Department of Internal Medicine and Biochemistry, University of Alabama at Birmingham, Birmingham, Alabama.

1989 Henry Christian Memorial Award from American Federation of Cancer Research

Professional Society Memberships:

1992-Present American Society for Microbiology
1993-Present American Association for Cancer Research
1999-Present American Society for Virology

REVIEWED FOR

Clinical and Diagnostic Laboratory and Immunology, FEBS Letter , Gene, Journal of General Virology, Journal of Infectious Disease, Journal of Virology, Journal of Viral Hepatitis, Journal of Hepatology, Nucleic Acid research, Virology Journal Oncogene, PLoS Pathogen, Gastroenterology, Hepatology, Apoptosis (Editorial Board Member), Cancer Research (Associate Editor,2007-2009), Journal of Carcinogenesis (Editorial Board Member), Cancer Research (Editorial Board Member)

CONSULTANT

Wyeth-Ayerst Research, Pearl River, NY (2000-2002)

SERVICE (at SLU)

1999-2009 Graduate Council, Saint Louis University
2002-Present Animal Care Committee, Saint Louis University
2007-present Core graduate Program Admission Committee
2006-Present Space Review Committee
2005- 2007 Pathology Department promotion Committee
Member, Internal Review Committee for Physiology/pharmacology Department
Graduate Student Association Research Day Judge (2002-present)
Interviewed prospective students for admittance to graduate program in Biomedical Science
Committee member for minor proposal of Anita Schnapp
Committee member for minor proposal of Maria Thomas
Chairperson, Julie Fortier's Ph. D. Thesis Committee
Chairperson, Elise Ambrose's Ph. D. Thesis Committee
Committee member for Ph. D. Thesis of Rick Finger

SERVICE (outside SLU)

Ad Hoc Reviewer for NIH Hepatobiliary Pathophysiology Study Section
Ad Hoc Reviewer for NIH Drug Discovery and Molecular Pharmacology Study Section
Ad Hoc Reviewer for NIH Tumor Cell Biology Study Section
Ad Hoc Reviewer for NIH ZRG1 IDM-R (2) SEP (Chair) and ZDK1 GRB-R (03)
Ad Hoc Reviewer for DOD breast and prostate cancer study sections
Member of NIH Drug Discovery and Molecular Pharmacology Study Section (2005-2009)
The Wellcome Trust (United Kingdom)
Yorkshire Cancer Research (United Kingdom)
Breast cancer Study Section (Department of Defense)

Prostate cancer Study Section (Department of Defense)
Ad Hoc Reviewer for CRFS/NIH Study Section (Oct, 2009, June 2010)
Ad Hoc Reviewer for OBT/NIH Study Section (Nov, 2009, Oct, 2010)

CURRENT RESEARCH SUPPORT

Principal Investigator. Developing an in vitro system for HCV propagation. Research Award (R21AI065535) from the National Institute of Allergy and Infectious Diseases , NIH, 07/14/2008-06/30/2011.

Principal Investigator. Innate Immunity and Hepatitis C Virus Infection. Research Award (R01 DK080817) from the National Institute of Allergy and Infectious Diseases, NIH, 08/01/2009-06/30/2014.

Principal Investigator. Bitter melon and chemoprevention of prostate cancer. Research Award (1R21CA137424) from the National Cancer Institute, NIH, 04/01/2010 – 03/31/2012.

Co-Principal Investigator. HCV genetic variation and hepatocellular carcinoma, Principal Investigator: John Tavis (R01 CA126807), NIH/NIDDK -Duration: 01/14/08 – 12/31/12

Co-Principal Investigator. Role of HCV sequence variation in pathology, Principal Investigator: John Tavis (R01 DK074515), NIH/NIDDK -Duration: 07/15/07 – 06/30/11

Co-Principal Investigator. Cell Culture System for Hepatitis C Virus Genotype 1a, Cell Culture System for Hepatitis C Virus Genotype 1a, Principal Investigator: Adrian M. Di Bisceglie Research Award (R21AI076834) from the National Institute of Allergy and Infectious Diseases , NIH, 09/25/08 - 08/31/10.

PUBLICATIONS

1. **Ray R**, Gangly U: Factors affecting the adsorption of cholera phage 0149 to its host *Vibrio cholerae* 154. *Indian Journal of Medical Research* 82:251-256, 1986.
2. **Ray R**, Gangly U: The protein receptor for cholera bacteriophage 149. *FEBS Letters* 213:81-84, 1987.
3. Gangly U, **Ray R**: The identification of lipopolysaccharide as receptor for cholera phage 163 and 138. *Med. Sci. Res.* 15:779, 1987.
4. Shippen-Lentz D, **Ray R**, Scaife JG, Langsley G, Vezza AC: Characterization and complete nucleotide sequence of a 5.8s ribosomal RNA gene from *Plasmodium falciparum*. *Molecular and Biochemical Parasitology* 22:223-231, 1987.
5. Miller DM, Polansky DA, Thomas S, **Ray R**, Campbell VW, Sanchez JD, Koller CA:

- Mithramycin selectively inhibits transcription of G-C containing DNA. *Am. J. Med. Sci.* 294:388-394, 1987.
6. **Ray R**, Snyder R, Thomas S, Koller CA, Miller DM: Mithramycin block the protein bindings and function of the SV40 early promoter. *J. Clin. Invest.* 83:2003-2007, 1989.
 7. **Ray R**, Thomas S, Miller DM: Mouse fibroblasts transformed with the human c-myc gene express a high level of mRNA but a low level of c-myc protein and are non-tumorigenic in nude mice. *Oncogene* 4:593-600, 1989.
 8. Miller DM, Sanchez JD, **Ray R**, Snyder RC, Blume S, Shrestha K, Bailey FA, Bounelis P, Thomas S, Pezzementi M, Rigsby D, Hunter D, Koller CA: Selective modulation of gene expression a new approach to drug resistant tumors. *Accomplishments in Oncology* 3:119-135, 1989.
 9. **Ray R**, Thomas S, Miller DM: Mithramycin selectively inhibits the transcriptional activity of the human c-myc gene. *Am. J. Med. Sci.* 299:203-208, 1990.
 10. Rodu B, Christian C, Snyder RC, **Ray R**, Miller DM: Simplified PCR-based detection and typing strategy for human papillomaviruses utilizing a single oligonucleotide primer set. *Biotechniques.* 10:632-635, 1991.
 11. **Ray R**, Miller DM: Cloning and characterization of a human c-myc promoter binding protein. *Mol. Cell. Biol.* 11:2154-2161, 1991.
 12. Snyder R, **Ray R**, Blume S, Miller DM: Mithramycin blocks transcriptional initiation of the c-myc P1 and P2 promoters. *Biochemistry* 30:4290-4297, 1991.
 13. Blume S, Snyder R, **Ray R**, Thomas S, Koller CA, Miller DM: Mithramycin inhibits Sp1 binding and transcriptional activity of the DHFR gene *in vitro* and *in vivo*. *J. Clin. Invest.* 88:1613-1621, 1991.
 14. **Ray RB**, Jameel S, Venkatasamy M, Ray R: Indian hepatitis E virus shows a major deletion in the small open reading frame. *Virology* 189:3359-362, 1992.
 15. Gee J, Blume S, Snyder R, **Ray R**, Miller DM: Triplex formation prevents Sp1 binding to the dihydrofolate reductase promoter. *J. Biol. Chem.* 267:11162-11167, 1992.
 16. **Ray R**, Shrestha K, Miller DM: Cloning and characterization of a c-myc promoter binding protein (MBP-2). *International J. Oncology* 5:111-115, 1994.
 17. **Ray R**, Sheikh MS, Fontana JF, Miller DM. Human breast carcinoma cells show correlation in expression of c-myc oncogene and the c-myc binding protein (MBP-1). *Int. J. Oncology* 5: 1433-

1436, 1994.

18. **Ray, RB**, Lagging LM, Meyer K, Steele R, Ray R. Transcriptional regulation of cellular and viral promoters by the hepatitis C virus core protein. *Virus Res*, 37:209-220, 1995.
19. **Ray RB**. Induction of cell death in murine fibroblasts by a c-myc promoter binding protein. *Cell Growth & Differ*, 6:1089-1096, 1995.
20. **Ray RB**, Steele R, Seftor E, Hendrix M. Human breast carcinoma cells transfected with the gene encoding c-myc promoter binding protein (MBP-1) shows tumor suppression in nude mice. *Cancer Res*, 55:3747-3751, 1995.
21. **Ray RB**, Lagging LM, Meyer K, Ray R. Hepatitis C virus core protein cooperates with ras and transform primary rat embryo fibroblasts to tumorigenic phenotype. *J. Virol*, 70:4438-4443, 1996.
22. Srinivas RV, **Ray RB**, Meyer K, Ray R. Hepatitis C virus core protein inhibits human immunodeficiency virus type 1 replication. *Virus Res*. 45:87-92, 1996.
23. **Ray RB**, Meyer K, Ray R. Suppression of apoptotic cell death by hepatitis C virus core protein. *Virology*, 226:176-182, 1996.
24. **Ray RB** and Srinivas RV. Inhibition of human immunodeficiency virus type 1 (HIV-1) replication by a cellular protein (MBP-1). *J. Cellular Biochemistry*. 64:565-572, 1997.
25. **Ray RB**. and Steele R. Separate domains of MBP-1 involved in c-myc promoter binding and growth suppressive activity. *Gene*. 186:175-180, 1997.
26. White RA, Adkinson LR, Dowler LL and **Ray RB** . Chromosomal Localization of the human gene encoding c-myc promoter-binding protein (CMBP1) at Chromosome 1p35-pter. *Genomics*.39:406-408, 1997.
27. **Ray RB**, Steele R, Meyer K, Ray R. Transcriptional repression of p53 by hepatitis C virus core protein. *J. Biol. Chem*. 272:10983-10986, 1997.
28. Ray **RB**, Steele R, Meyer K, Ray R. Hepatitis C virus core protein represses p21^{waf1/cip1/Sid1} promoter activity. *Gene* 208:331-336, 1998.
29. **Ray RB**, Meyer K, Steele R, Shrivastava A, Aggarwal B, Ray R. Inhibition of tumor necrosis factor (TNF α) mediated apoptosis by hepatitis C virus core protein. *J Biol Chem*.273:2256-2259, 1998.
30. **Ray RB**, Ghosh AK, Meyer K, Ray, R. Functional analysis of a transrepressor domain in the

- hepatitis C virus core protein. *Virus Res.* 59:211-217, 1999.
31. Ghosh AK, Steele R, **Ray RB**. Functional domains of MBP-1 involved in transcriptional repression and cell growth regulation. *Mol. Cell. Biol.* 19:2880-2886, 1999.
 32. Ghosh AK, Steele R, Meyer, K, Ray R, **Ray RB**. Hepatitis C virus NS5A protein modulates cell cycle regulatory genes and promotes cell growth. *J. General Virol.* 80:1179-1183, 1999.
 33. Ghosh AK, Grigorieva I, Steele R, Hoover RG, **Ray RB**. PTEN transcriptionally modulates c-myc gene expression in human breast carcinoma cells and is involved in cell growth regulation. *Gene* 235:85-91, 1999.
 34. Ghosh AK, Steele, R, **Ray RB**. MBP-1 physically associates with histone deacetylase for transcriptional repression. *Biochemical and Biophysical Res. Com.* 260:405-409, 1999.
 35. Ghosh AK, Majumder M, Steele R, Yaciuk P, Chrivia J, Ray R, **Ray RB**. Hepatitis C virus NS5A protein modulates transcription through a novel cellular transcription factor SRCAP. *J. Biol. Chem* 275:7184-7188, 2000.
 36. Ghosh AK, Majumder M, Steele R, Meyer, K, Ray R, **Ray RB**. Hepatitis C virus NS5A protein protects against TNF- α mediated apoptotic cell death. *Virus Res.* 67:173-178, 2000.
 37. **Ray RB**, Meyer K, Ray, R. Hepatitis C virus core protein promotes immortalization of primary human hepatocytes. *Virology* 271:197-204, 2000.
 38. Majumder M, Ghosh AK, Steele R, Ray R, **Ray RB**. Hepatitis C virus NS5A physically associates with p53 and regulates p21/waf1 gene expression in p53-dependent manner. *J. Virol.* 74:1401-1407, 2001.
 39. Ghosh AK, Majumder M, Steele R, White RA, **Ray RB**. A novel 16-kilodalton cellular protein physically interacts with and antagonizes the functional activity of c-myc promoter binding protein 1. *Mol Cell Biol.* 21:655-662, 2001.
 40. Fan X, Solomon H, Schwarz K, Kew MC, **Ray RB**, Di Bisceglie AM.. Expression of c-myc promoter binding protein (MBP-1), a novel eukaryotic repressor gene, in cirrhosis and human hepatocellular carcinoma. *Dig Dis Sci.* 46:563-6, 2001.
 41. Basu A, Meyer K, **Ray RB**, Ray R. Hepatitis C virus core protein modulates the interferon-induced transacting factors of Jak/Stat signaling pathway but does not affect the activation of downstream IRF-1 or 561 gene. *Virology.*288(2):379-90, 2001.
 42. Zhang HG, Wang Y, Xie JF, Liang X, Liu D, Yang P, Hsu HC, **Ray RB**, Mountz

- JD. Regulation of tumor necrosis factor alpha-mediated apoptosis of rheumatoid arthritis synovial fibroblasts by the protein kinase Akt. *Arthritis Rheum.* 44(7):1555-67, 2001.
43. Majumder M, Ghosh AK, Steele R, Zhou XY, Phillips NJ, Ray R, **Ray RB**. Hepatitis C Virus NS5A Protein Impairs TNF-Mediated Hepatic Apoptosis, but Not by an Anti-FAS Antibody, in Transgenic Mice. *Virology.* 294(1):94-105, 2002.
 44. Ghosh AK, Majumder M, Steele R, **Ray RB**. MBP-1 Induces Apoptosis by Down-regulating Bcl-xL Gene Transcription and Releasing Cytochrome c from Mitochondria. *Oncogene.* 21:2775-2784, 2002.
 45. Basu A, Meyer K, **Ray RB**, Ray R. HCV core protein is necessary in early stage of immortalization of primary human hepatocytes. *Virology*, 298, 53-62, 2002.
 46. **Ray RB**, Steele R, Basu A, Meyer K, Majumder M, Ghosh AK, Ray R. Distinct functional role of Hepatitis C virus core protein on NF-kappaB regulation is linked to genomic variation. *Virus Res.* 87:21-29, 2002.
 47. Grunwald V, DeGraffenried L, Russel D, Friedrichs WE, **Ray RB**, Hidalgo M. Inhibitors of mTOR reverse doxorubicin resistance conferred by PTEN status in prostate cancer cells. *Cancer Res.* 62:6141-6145, 2002.
 48. Ghosh AK, Majumder M, Steele R, Ray R, **Ray RB**. Modulation of interferon expression by hepatitis c virus ns5a protein and human homeodomain protein ptx1. *Virology.* 306:51-59, 2003.
 49. Ghosh, A.K., Steele, R., and **Ray, R.B.** Modulation of human luteinizing hormone β gene transcription by MIP-2A. *J. Biol. Chem.*, 278, 24033-24038, 2003.
 50. Sen, A., Steele, R., Ghosh, A.K., Basu, A., Ray, R., and **Ray, R.B.** Inhibition of hepatitis C virus protein expression by RNA interference. *Virus Res.*, 96, 27-35, 2003.
 51. Majumder, M., Steele, R., Ghosh, A.K., Zhou, X.Y., Thornburg, L., Ray, R., Phillips, N.J., and **Ray, R.B.** Expression of hepatitis C virus non-structural 5A protein in the liver of transgenic mice. *FEBS Lett.*, 555, 528-532, 2003.
 52. Sarcar, B., Ghosh, A.K., Steele, R., Ray, R., and **Ray, R.B.** Hepatitis C virus NS5A mediated STAT3 activation requires co-operation of Jak1 kinase. *Virology*, 322, 51-60, 2004.
 53. **Ray RB**, Basu A, Steele R, Beyene A, McHowat J, Meyer K, Ghosh AK, Ray R. Ebola virus glycoprotein-mediated anoikis of primary human cardiac microvascular endothelial cells. *Virology.* 321(2):181-8, 2004.
 54. Basu A, Steele R, Ray R, **Ray RB**. Functional properties of a 16 kDa protein translated from an

- alternative open reading frame of the core-encoding genomic region of hepatitis C virus. *J Gen Virol.* 85:2299-306, 2004.
55. DeGraffenried LA, Fulcher L, Friedrichs WE, Grunwald V, **Ray RB**, Hidalgo M. Reduced PTEN expression in breast cancer cells confers susceptibility to inhibitors of the PI3 kinase/Akt pathway. *Ann Oncol.* 15(10):1510-1516, 2004.
 56. Ghosh, A.K., Steele, R., and **Ray, R.B.** Carboxy-terminal repressor domain of MBP-1 is sufficient for regression of prostate tumor growth in nude mice. *Cancer Res.* 65:718-21, 2005.
 57. Meyer K, Basu A, Saito K, **Ray RB**, Ray R. Inhibition of hepatitis C virus core protein expression in immortalized human hepatocytes induces cytochrome c-independent increase in Apaf-1 and caspase-9 activation for cell death. *Virology.* 336:198-207 2005.
 58. Ghosh AK, Steele R, **Ray RB.** c-myc Promoter-binding protein 1 (MBP-1) regulates prostate cancer cell growth by inhibiting MAPK pathway. *J Biol Chem.* 280:14325-30, 2005.
 59. Kanda T, Basu A, Steele R, Wakita T, Jan S. Ryerse, Ray R, **Ray RB.** Generation of infectious hepatitis C virus in immortalized human hepatocytes. *J Virol.* 80(9):4633-9, 2006.
 60. Basu A, Saito K, Meyer K, **Ray RB**, Friedman SL, Chang YH, Ray R. Stellate cell apoptosis by a soluble mediator from immortalized human hepatocytes. *Apoptosis.* 11(8):1391-400, 2006.
 61. Basu A, Meyer K, Lai KK, Saito K, Di Bisceglie AM, Grosso LE, **Ray RB**, Ray R. Microarray analyses and molecular profiling of Stat3 signaling pathway induced by hepatitis C virus core protein in human hepatocytes. *Virology.* 349(2):347-58, 2006.
 62. Saito K, Meyer K, Warner R, Basu A, **Ray RB**, Ray R. Hepatitis C virus core protein inhibits tumor necrosis factor alpha-mediated apoptosis by a protective effect involving cellular FLICE inhibitory protein. *J Virol.* 80(9):4372-9, 2006.
 63. Ghosh AK, Steele R, **Ray RB.** Knockdown of MBP-1 in human prostate cancer cells delays cell cycle progression. *J Biol Chem.* 281(33):23652-7, 2006.
 64. Basu, A., Saito, K., Meyer, K., **Ray, RB.**, Friedman, SL., Chang, Y-H., Ray, R. Stellate cell apoptosis by a soluble mediator from immortalized human hepatocytes. *Apoptosis*, 11:1391-400, 2006.
 65. Kanda, T., Steele, R., Ray, R., and **Ray, R. B.** Small interfering RNA targeted to hepatitis C virus 5' nontranslated region exerts potent antiviral effect. *J. Virology*, 81:669-676, 2007.

66. Kanda T, Steele R, Ray R, **Ray RB**. Hepatitis C virus infection induces interferon- β signaling pathway in immortalized human hepatocytes. *J Virol.*81(22):12375-81. 2007.
67. Ait-Goughoulte M, Kanda T, Meyer K, Ryerse JS, **Ray RB**, Ray R. Hepatitis C virus genotype 1a growth and induction of autophagy. *J. Virol.* 82: 2241-2249, 2008
68. Banerjee S, Saito K, Ait-Goughoulte M, Meyer K, **Ray RB**, Ray R. Hepatitis C virus core protein upregulates serine phosphorylation of IRS-1 and impairs downstream Akt/Pkb signaling pathway for insulin resistance. *J. Virol.* 82: 2606-2612, 2008.
69. Saito K, Ait-Goughoulte M, Truscott SM, Meyer K, Blazevic A, Abate G, **Ray RB**, Hoft DF, Ray R. Hepatitis C virus inhibits cell surface expression of HLA-DR, prevents dendritic cell maturation and induces IL-10 production. *J. Virol.* 82: 3320-3328, 2008
70. Ghosh AK, Kanda T, Steele R, **Ray RB**. Knockdown of MBP-1 in human foreskin fibroblasts induces p53-p21 dependent senescence. *PLoS ONE*, 2008, 3:e3384.
71. Kanda T, Steele R, Ray R, **Ray RB**. Hepatitis C virus core protein augments androgen-receptor mediated signaling. *J. Virol.* 82: 11066-11072, 2008
72. Kanda T, Steele R, Ray R, **Ray RB**. INHIBITION OF INTRAHEPATIC IFN- γ PRODUCTION BY HEPATITIS C VIRUS NON-STRUCTURAL PROTEIN 5A IN TRANSGENIC MICE. *J Virol.* 83:8463-9, 2009.
73. Banerjee A, Saito K, Meyer K, Banerjee S, Ait-Goughoulte M, **Ray RB**, Ray R. Hepatitis C virus core protein and cellular protein HAX-1 promote 5-fluorouracil-mediated hepatocyte growth inhibition. *J Virol.* 83:9663-71, 2009.
74. **Ray RB**, Kanda T. Inhibition of HCV replication by small interfering RNA. *Methods Mol Biol.* 510:251-62, 2009.
75. Kanda T, Raychoudhuri A, Steele R, Sagartz JE, West C, **Ray RB**. MBP-1 inhibits breast cancer growth and metastasis in immunocompetent mice. *Cancer Res.* 69:9354-9, 2009.
76. **Ray RB**, Raychoudhuri A, Steele R, Nerurkar P. Treatment of bitter melon extract in cancer cells induces apoptosis. *Cancer Res.* 70:1925-31, 2010
77. Nerurkar P, **Ray RB**. Bitter melon: antagonist to cancer. *Pharm Res.* 27 :1049-53, 2010.
78. Banerjee A, Meyer K, Mazumdar B, **Ray RB**, Ray R. Hepatitis C virus differentially modulates activation of forkhead transcription factors and insulin-induced metabolic gene expression. *J Virol.* 84:5936-46, 2010.

79. Steele R, Mott JL, **Ray RB**. MBP-1 upregulates miR-29b that represses Mcl-1, collagens, and matrix-metalloproteinase-2 in prostate cancer cells. *Genes Cancer*. 1:381-387, 2010.
80. Ait-Goughoulte M, Banerjee A, Meyer K, Mazumdar B, Saito K, **Ray RB**, Ray R. Hepatitis C virus core protein interacts with fibrinogen-beta and attenuates cytokine stimulated acute-phase response. *Hepatology*. 51(5):1505-13, 2010
81. Banerjee A, Meyer K, Mazumdar B, **Ray RB**, Ray R. Hepatitis C virus differentially modulates activation of forkhead transcription factors and insulin-induced metabolic gene expression. *J Virol*. 2010, 84(12):5936-46
82. Raychoudhuri A, Shrivastava S, Steele R, Dash S, Kanda T, Ray R, **Ray RB**. Hepatitis C virus infection impairs IRF-7 translocation and interferon- α synthesis in immortalized human hepatocytes. *J Virol*. 2010 Nov;84(21):10991-8.
83. Banerjee A, **Ray RB**, Ray R. Oncogenic Potential of Hepatitis C Virus Proteins. *Viruses* 2010, 2(9), 2108-2133
84. Shrivastava S, Raychoudhuri A, Steele R, Ray R, **Ray RB**. Knockdown of autophagy enhances the innate immune response in hepatitis C virus-infected hepatocytes. *Hepatology*. 2011 53(2):406-414.

Community Service Volunteer for Punascha (An Indian Association)