S. RAJASUBRAMANIAM Ph. D

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Date of birth December 7, 1963.

Nationality INDIAN

Sex Male

Education **MSc, PhD (Biosciences)**

Training: Workshop on Radio-immunoassay, Enzyme-immunoassay, Hormone receptor immunoassay (1990), National Institute of Health and Family Welfare, New Delhi.

Evaluating the Impact of Public, Health Programmes in India (July 2011), ICMR-NIE, SAATHIò ï ICMR, WHO-TDR and University of California, Berkley

ñIPR and WTO issuesò (August, 2011), Department of Science & Technology and TIFAC (Technology information forecasting & assessment Council), New Delhi

Molecular Analysis and Prenatal Diagnosis of Haemoglobinopathiesò (October, 2011), ICMR- National Institute of Imunohaematology (NIIH)

ñNewborn Screening (NBS) for Sickle Cell Disease and providing comprehensive care to understand the natural history of Sickle Cell Disease in Tribal Populations in

Madhya Pradesh and Gujarat" and "Micro mapping of G6PD deficiency among the tribals of India and its importance for antimalarial therapyò. (March, 2013). ICMR-NIIH, Mumbai

Basic Course in Biostatistics, (June, 2013), ICMR-National Institute of Epidemiology, Chennai.

Research Experience

***Research Associate*,** Department of Hematology/Oncology, School of Medicine, Indiana University, Indianapolis, IN 46202. **July 2006 – October 2010**.

Post-doctoral fellow, Department of Hematology/Oncology, School of Medicine, Indiana University, Indianapolis, IN 46202. **October 2003 - June 2006**.

Work: (i) Characterization of gene(s) under the control of NF-HB pathway related to tumorigenesis, metastasis and angiogenesis in Prostate, Bladder and Lung cancer.

(ii) Developing analogues of Parthenolide, a novel anti-cancer drug and studying its role in inhibition of tumor progression in prostate, bladder and lung cancer.

(iii) Facilitating the movement of this drug into clinical trials as a new anti-cancer agent.

Research Associate, Department of Plant Molecular Biology, University of Delhi South Campus, New Delhi. Work: Development of Transgenic Rice containing genes from Indian isolates of Rice Tungro Spherical Virus and Rice Tungro Bacilliform Virus. **December 1999- October 2003**.

Research Associate, Genetic Engineering Unit, Jawaharlal Nehru University, New Delhi. Work: (1) Characterization of the gene(s) encoding the putative repressor for the *nifLA* promoter in *Klebsiella pnuemoniae*, (2) Identification of the gene responsible for early/late flowering in *Cicer aritenum*. **February 1996 – December 1999**.

Senior Research Fellow, Genetic Engineering Unit, Jawaharlal Nehru University, New Delhi. Work : (1) Characterization of the gene(s) encoding the putative repressor for the *nifLA* promoter in *Klebsiella pnuemoniae.* **January 1995 - February 1996**

Research scholar, Center for Biosciences, Jamia Millia Islamia, New Delhi. Doctoral student under Dr. P. Pardha Saradhi. Work : In vitro studies on *Phyllanthus fraternus.* **November 1989 – September 1995**

Senior Research Fellow, Department of Environment project: Effect of pesticides on Rhizobium-legume association (Laboratory and Field experiments). Sri Venkateswara College, University of Delhi, New Delhi. **December 1988- November 1989**.

Dissertation in partial fulfillment of Masters degree in Biosciences, Center for Biosciences, Jamia Millia Islamia, New Delhi. Work : Determination of genetic markers `ABOô, `MNô, `Rhôand sickle cell trait in Lambaddas of Mehboob nagar District, Andhra Pradesh, India. 1987.

Fellowship

Qualified UGC-CSIR National Eligibility Test and JRF examination. 1989. Availed Junior Research Fellowship from November 1989 ï October 1991. Availed Senior Research Fellowship from November 1991 ï November 1994.

Qualified CSIR Research associateship 1995. Availed from February 1996 ï January 1999.

Teaching experience

Guest lecturer, Department of Biosciences, Jamia Millia Islamia, New Delhi. Courses: Genome biology and Molecular Biology for M.Sc Biosciences and M. Sc. Biotechnology. **January 2002 – October 2003**.

Counsellor Indira Gandhi National Open University, Jesus & Mary College study center, New Delhi. Courses: (1) Foundation course in Science and Technology, (2) Applied course in Human Environment and (3) Applied course in Nutrition. **September 1994 - October 2003.**

Publication

Presented in conferences

Harsha Lad, Purushottam Patel, Anil Gwal and **S. Rajasubramaniam** (2017) Molecular characterization of rare and uncommon hemoglobin mutations in Tribal and Non-tribal populations in Madhya Pradesh. International conference on ñRevolution of laboratory Medicine in Modern Biology, Mumbai. February 15-17, 2017.

S. Rajasubramaniam (2017). Experience with Screening for Sickle Cell Disorders in remote areas in Madhya Pradesh. 3rd Global Congress on Sickle Cell Disease, Odisha, February 21-24, 2017

Ranjan Preet, **Rajasubramaniam S,** Purusottam Mohapatra, Dipon Das, Shakti R.Satapathy,Michael D.Wyatt and Chanakya N.Kundu. Lycopene synergistically enhances quinacrine action to inhibit Wnt-TCF signaling inbreast cancer cells through APC. ***Annual Meeting of American Association for Cancer Research, Denver, Colarado*** **(2014)**

Hamid Sayar, Larry Cripe, Mary Cangany, Jill Weisenbach, RN, Katie J. Sargent, Chirayu Goswami, Lang Li, Annique Wilson-Weekes, **Rajasubramaniam Shanmugam**, and H. Scott Boswell. Cyclic Administration of Combination of Sorafenib and Vorinostat In Poor-Risk AML: A Pharmacodynamically-Oriented Extended Phase I Trial. ***Annual Meeting of American Society of Hematology, Florida, USA (2010).***

Tareq Al Baghdadi, Chirayu Goswami, Hamid Sayar, Katie J. Sargent, Larry Cripe, Lang Li, **Rajasubramaniam Shanmugam** and H. Scott Boswell. A Pathway-¬focused GSEA Platform In AML That Interrogates Interaction of Flt3ITD and tMLL with Their Epigenetic Targets (p16INK4a, DAPK1, and RUNX3), While Accurately Reporting Broad-¬based AML Prognosis and Targeting-agent Sensitivity. ***Annual Meeting of American Society of Hematology, Florida, USA (2010).***

Rajasubramaniam Shanmugam, Annique Wilson-Weekes, Padmaja Gade, Hamid Sayar, Attaya Suvannasankha, Angelo Cardoso, Katie J Sargent , Larry D Cripe, Dhan V Kalvakolanu, and Scott H Boswell. Transcriptional repression of DAPK1 characterizes a resistant phenotype of AML enforced by Flt3 signaling and exclusive nuclear abundance of non-canonical NFəB2/p52: synergistic activity for Flt3 inhibition along with HDAC inhibition, for potentiating ER stress Apoptosis. ***Annual Meeting of American Society of Hematology, New Orleans, USA (2009).***

Rajasubramaniam Shanmugam, Zhu Wei, Peter Crooks, Harikrishna Nakshatri, and Christopher Sweeney. Dimethylaminoparthenolide targets apoptotic machinery in Glioblastoma through ROS generation and NFəB inhibition. ***Annual Meeting of American Association for Cancer Research, Denver, Colarado*** **(2009)**

Hahn NM, Zon RT, Jones T Dugan W, Whalen C, Yu M, **Shanmugam R** and Sweeney CJ. A Multicellular Phase II study of Pemetrexed for the treatment of hormone refractory prostate cancer (HRPC) with reduced folate carrier 1 (RFC1) Pharmacogenetic analysis: HOG GU0-367. ***Annual Meeting of American Society of Clinical Oncology*** **(2008)**

Rajasubramaniam S, Praveen Kusumanchi, Peter Crooks, James Klaunig, Craig Jordan, Harikrishna Nakshatri, Christopher Sweeney. An orally bioavailable parthenolide analogue inhibits both subcutaneous and metastatic xenograft growth in lung and bladder cancer cell lines and is independent of p53 status. ***Annual Meeting of American Association for Cancer Research, San Diego*** **(2008)**

Praveen Kusumanchi, **Rajasubramaniam S**, Peter Crooks, Craig Jordan, Harikrishna Nakshatri, Christopher Sweeney. Dimethylaminoparthenolide (DMAPT) anti-cancer activity is mediated by ROS generation and inhibition of Nuclear Factor ə B. ***Annual Meeting of American Association for Cancer Research, San Diego*** **(2008).**

C. Sweeney, **R. Shanmugam**, P. Kusumanchi, S. Neelakantan, W. Matthews, C. T. Jordan, P. A. Crooks, H. Nakshatri. A water soluble analogue of parthenolide has anti-cancer in vitro and in-vivo activity by generation of reactive oxygen species and inhibition of nuclear factor kappa B. ***Genitourinary Cancers Symposium GUASCO* (2008)**

Rajasubramaniam S, Sundar Neelakantan, Vetrichelvan Jayaprakasan, Peter Crooks, Harikrishna Nakshatri and Christopher J Sweeney. N-acetylcysteine (NAC) abrogates the anti-cancer activity of the parthenolide analogue, dimethylaminoparthenolide (DMAPT), in Bladder Cancer Cells. ***Indiana University Cancer Center Annual Cancer Research Day, Indianapolis, U.S.A. (2007).***

Praveen Kusumanchi, **Rajasubramaniam S, Sundar Neelakantan, Peter Crooks, Harikrishna Nakshatri and Christopher Sweeney. The anti-prostate cancer activity of the parthenolide analogue, dimethyl-aminoparthenolide (DMAPT), is mediated by both inhibition of Nuclear factor kappa B (NFHB) and activation of JNK. ***Indiana University Cancer Center Annual Cancer Research Day, Indianapolis, U.S.A. (2007).***

**Best Poster in Translational Research in Post-Doctoral and Clinical Fellows category for the Year 2007.

Rajasubramaniam S,** Sundar Neelakantan, Vetrichelvan Jayaprakasan, Peter Crooks, Harikrishna Nakshatri and Christopher J Sweeney. Parthenolide analogue LC-1 induces apoptosis in p53 mutant bladder cancer cell lines by modulating apoptotic genes and enhanced p73 and p21 activation. ***Indiana University Cancer Center Annual Cancer Research Day, Indianapolis, U.S.A. (2006).

*Best Poster in Translational Research in Post-Doctoral and Clinical Fellows category for the Year 2006.

Rajasubramaniam S, Sundar Neelakantan, Vetrichelvan Jayaprakasan, Peter Crooks, Harikrishna Nakshatri and Christopher J Sweeney. Water Soluble analogue of parthenolide LC-1 inflences apoptosis in bladder cancer cell lines by modulating pro-apototic and anti-apoptotic genes and promtes p21 activity. ***97th Annual Meeting of American Association for Cancer Research, Washington D.C. USA (2006).***

Rajasubramaniam S, Wei Zhu, Vetrichelvan Jayaprakasan, Poornima Bhat-Nakshatri, Peter Crooks, Harikrishna Nakshatri and Christopher J Sweeney. Water soluble analogues of parthenolide retain anti-cancer activity and are more orally bioavailable. ***96th Annual Meeting of American Association for Cancer Research, Anaheim, USA, 2005***.

Uma G, Suri SS, **Rajasubramaniam S**, Dasgupta I and Rajam MV (2005). Genetic Engineering of Indica Rice for Tungro Resistance. ***9th National Rice Biotechnology Network Meeting. India. (2005).***

Rajasubramaniam S, Vetrichelvan Jayaprakasan, Liang Cheng, Lee Ann Baldridge, Thomas Gardner, Timothy DeGrado, Gary Hutchins, Poornima Bhat-Nakshatri, Harikrishna Nakshatri and Christopher J Sweeney. Parthenolide restores sensitivity of Androgen independent prostate cancer cells to chemotherapy and hormonal therapy. Abstract. ***Walther Cancer Institute Annual Scientific Retreat, Notre Dame, USA. August (2004).***

Rajasubramaniam S, Vetrichelvan Jayaprakasan, Liang Cheng, Lee Ann Baldridge, Thomas Gardner, Timothy DeGrado, Gary Hutchins, Poornima Bhat-Nakshatri, Harikrishna Nakshatri and Christopher J Sweeney. Parthenolide restores sensitivity of Androgen independent prostate cancer cells to chemotherapy and hormonal therapy. Abstract. ***Annual Retreat of Department of Biochemistry, Indiana University school of Medicine, Indianapolis, USA November (2004)***

Basavaprabhu L. Patil, **S. Rajasubramaniam** and Indranil Dasgupta. Both Indian cassava mosaic virus and Sri Lankan cassava mosaic virus occur in India and exhibit high genetic variability as analyzed by polymerase chain reaction-restriction fragment length polymorphism. ***4th International Gemini Virus Symposium, Cape Town, South Africa- February 2004.***

Rajasubramaniam S, Himani Tyagi and Indranil Dasgupta. RNA interference: a new strategy against Tungro disease of Indica rice. National Symposium on Plant Biotechnology: Role in Sustainable Development and 25th Meeting of Plant Tissue Culture Association (India), Jaipur - February 2003.

G. Uma, **S. Rajasubramaniam**, Himani Tyagi, S.S. Suri, I.Dasgupta and M.V.Rajam. Genetic Engineering of Indica Rice for Tungro Virus Resistance. Abstract. ***National Sympiosium on Plant Biotechnology and Molecular Biology. New Delhi 2001***.

Nandita Nath, Rekha Joshi, Saloni Mathur, **S. Rajasubramaniam**, Himani Tyagi and Indranil Dasgupta. Molecular Organisation of Rice Tungro Bacilliform Virus and Rice Tungro Spherical Virus from India and development of Transgenic Rice for Viral Resistance. Abstract. ***National Symposium on Plant Biotechnology and Molecular Biology. New Delhi 2001.***

Nandita Nath, Rekha Joshi, Saloni Mathur, **S. Rajasubramaniam**, Himani Tyagi and Indranil Dasgupta. Investigations on the Molecular Organization of Rice Tungro Bacilliform Virus and rice tungro spherical virus from India and development of transgenic rice for viral resistance. Abstract. ***8th National Rice Biotechnology Network Meeting, Aurangabad, 2001.***

G. Uma. **S. Rajasubramaniam**, R. Kumria, B. Waie, S.S.Suri, I. Dasgupta and M.V. Rajam. Genetic Engineering of Rice for Tungro Virus Resistance. Abst. ***National Symposium on Plant Biochemistry and Biotechnology, Madurai 2001.***

Rajasubramaniam S, Prashanta K. Pal and Pardha Saradhi P. Some InVitro Studies on *Phyllanthus*. Abst. ***ISMAP international conference on recent advances in Medicinal, aromatic and Spice crops, New Delhi, 1989.***

Publication in Journals

Manu Asthana, Sushil Kumar Sahu, Amit Kumar, Suchitra Mohanty, Sudipta Chakrabarti, Piyanki Das, Nabanita Roy Chattopadhya, Koustav Chatterjee, Shivaram Prasad Singh, **Shanmugam Rajasubramaniam** and Tathagata Choudhuri (2017). Role of Interleukin 28B polymorphisms in response to Interferon based therapy for hepatitis C virus clearance. **Accepted,** Current Drug Metabolism **(BSP-CDM-2017-HT20-9) (IF 2.847).**

Harsha Lad, Pawan Ghanghoria, Rajiv Yadav, Purushottam Patel, Anil Gwal, **Rajasubramaniam Shanmugam** (2017). A compound heterozygous Asian Indian inversion deletion Gɔ(Aɔŭƃ)0 with ƃ-thalassemia in Central India: A case report. Indian J of Hematol and Blood Trans. **DOI 10.1007/s12288-017-0806-z.**

R Devendra R Shanmugam, MPSS Singh, CP Vishwakarma, S Godbhole, N Singh, V Gupta, P Kedar, MB Mukherjee (2017). Identification of a novel S184F mutation causing glucose-6-phosphate-dehydrogenase deficiency in a tribal family of Madhya Pradesh, Central India. **Meta Gene 12 (2017) 130–133.**

Rajiv Yadav, Monica Lazarus#, Pawan Ghnaghoria#, MPSS Singh, RB Gupta, S Kumar, RK Sharma, **S. Rajasubramaniam (2016)** Sickle Cell Disease in Madhya Pradesh, Central India: a comparison of Clinical profile of Sickle Cell Homozygote Vs Sickle-beta thalassemia individuals. Hematology Oct;21(9):558-63. doi: 10.1080/10245332.2016.1148893

Singh MPSS, Gupta RB, Yadav R, Sharma RK and **Rajasubramaniam S (2016).** Prevalence of Ŭ+-thalassaemia among Scheduled tribe and Scheduled caste populations of Damoh district in Madhya Pradesh (Central India). **Hemoglobin** 40(4): 285-8. doi: 10.3109/03630269.2016.1170031.

SK Sahu, S Chakrabarti, SD Roy, N Baishya, RR Reddy, S Suklabaidya, A Kumar, S Mohanty, S Maji, A Suryanwanshi, S Rajasubramaniam, M Asthana, AK Panda, SP Singh, S Ganguly, OP Shaw, AK Bichhwalia, PK Sahoo, NR Chattopadhyay, K Chatterjee, CN Kundu, AK Das, R Kannan, Zorenpuii, E Zomawia, SA Sema, YI Singh, SK Ghosh, K Sharma, BS Das and T Choudhuri1,7 **(2016)** Association of p53 codon72 Arg>Pro polymorphism with susceptibility to nasopharyngeal carcinoma : evidence from a case-control study and meta-analysis. **Oncogenesis. 2016 May 9;5:e225. doi: 10.1038/oncsis.2016.31**

Singh, M.P.S.S., G. Sudhakar and **Rajasubramaniam, S.** (**2016**). Prevalence of Thalassaemia Mutations in Sickle Cell Disease Population of Madhya Pradesh, Central

India.**Int.J.Curr.Microbiol.App.Sci.5(7):768-777.**Doi-
http://dx.doi.org/10.20546/ijcmas. 2016.507.088.

Surendra Kumar, M. Muniyandi, Dinesh Kumar, Maya Pandey, Visheshwar Soan and **S. Rajasubramaniam. (2016)**. Chronic Obstructive Pulmonary Disease: Understanding and Promoting Healthy Lifestyle among Gond Tribe in Madhya Pradesh. ***Int. J. Curr.Microbiol.App.Sci.*5(10):27-32.**doi:
http://dx.doi.org/10.20546/ijcmas.2016.510.005

Dinesh Kumar, Ajay Kumar Goel and **Rajasubramaniam Shanmugam** (**2016)** Determinants of utilization of maternal health care services among Baiga community in Dindori district, Madhya Pradesh, India. Global J Multidisciplinary Studies: 5 (7), 72-84.

Amit Kumar, Sushil Kumar Sahu, Suchitra Mohanty, Sudipta Chakrabarti, Santanu Maji, R. Rajendra Reddy, Asutosh K. Jha, Chandan Goswami, Chanakya N. Kundu, **Shanmugam Rajasubramaniam,** Subhash C. Verma and Tathagata Choudhuri ***(2014).*** Kaposi Sarcoma Herpes Virus latency associated Nuclear Anitigen protein release the G2/M cell cycle blocks by modulating ATM/ATR mediated checkpoint pathway. Plos One. Jun 27;9(6):e100228. doi: 10.1371/journal.pone.0100228.

Rajasubramaniam Shanmugam, Padmaja Gade, Annique Wilson-Weekes, Hamid Sayar, Attaya Suvannasankha, Chirayu Goswami, Lang Li, Sushil Gupta, Angelo A. Cardoso, Tareq Al Baghdadi, Katie J. Sargent, Larry D. Cripe, Dhananjaya V. Kalvakolanu, H. Scott Boswell (2012). A non-canonical Flt3ITD/NF-əB signaling pathway represses *DAPK1* in acute myeloid leukemia (AML). ***Clinical Cancer Research.* 18: 360-369.**

Vidhu Verma, Shweta Sharma, S. Vimla Devi**, S. Rajasubramaniam** and Indranil Dasgupta (2012) Delay in virus accumulation and low virus transmission from transgenic rice plants expressing Rice tungro spherical virus RNA. ***Virus Genes. 45:350–359***

Rajasubramaniam Shanmugam, Praveen Kusumanchi, Liang Cheng, Peter Crooks, Sundar Neelakantan, Tyler Peat, James Klaunig, William Matthews, Harikrishna Nakshatri, Christopher J Sweeney (2011). A water soluble parthenolide analogue suppresses in vivo tumor growth of two tobacco associated cancers, lung and bladder cancer, by targeting NF-əB and generating reactive oxygen species. ***International Journal of Cancer 128: 2481–2494.***

Rajasubramaniam Shanmugam, Praveen Kusumanchi, Liang Cheng, Sundar Neelakantan, Peter Crooks, William Matthews, Harikrishna Nakshatri, and Christopher J Sweeney (2010). A water soluble parthenolide analogue suppresses in vivo prostate cancer growth by targeting NF-əB and generating reactive oxygen species. ***Prostate. 70:1074-1086***

Noah M. Hahn, Robin T. Zon, Menggang Yu, Foluso Ademuyiwa, Thomas Jones, William Dugan, Charles Whalen, **Rajasubramaniam Shanmugam**, Todd Skaar, Christopher J. Sweeney (2009). A Multicenter Phase II Study of Pemetrexed as Second-

Line Chemotherapy for the Treatment of Metastatic Castrate Resistant Prostate Cancer (CRPC); Hoosier Oncology Group GU03-67. ***Annals of Oncology.20(12):1971-6.***

Ganesan U, Suri SS**, Rajasubramaniam S,** Rajam MV, Dasgupta I (2009). Transgenic expression of coat protein gene of Rice tungro bacilliform virus in rice reduces the accumulation of viral DNA in inoculated plants. ***Virus Genes. 39(1):113-9***

Tyagi H**, Rajasubramaniam S,** Rajam MV, Dasgupta I (2008). RNA-interference in rice against Rice tungro bacilliform virus results in its decreased accumulation in inoculated rice plants. ***Transgenic Research 17(5):897-904***

Attaya Suvannasankha, Colin D. Crean, **Rajasubramaniam S**, Sherif S. Farag, Rafat Abonour, H. Scott Bosewell and Harikrishna Nakshatri (2008). Antimyeloma Effects of a Sesquiterpene Lactone Parthenolide; Overcoming Drug Resistance and Ameliorating the Protective Effects of the Bone Marrow Microenvironment. ***Clinical Cancer Research 14(6): 1814-1822.***

Bryan Holocomb, Michele T Yip-schneider, Jesus M Matos, Jennifer Dixon, Jason Kennard, Julie Mahomed, **Rajasubramaniam Shanmugam**, Judith Sebolt-Leopold and C Max Schmidt (2008). Pancreatic cancer cell genetics and signaling response to treatment correlate with efficacy of gemcitabine-based molecular targeting strategies. ***Journal of Gastrointestinal Surgery 12(2): 288-96***

Himani Tyagi**, S. Rajasubramaniam** and Indranil Dasgupta (2007). Regeneration and agrobacterium-mediated transformation of a popular indica rice variety, ADT39. ***Current Science 93(5): 678-683.***

Rajasubramaniam S, Vetrichelvan Jayaprakasan, Yesim Gokmen-Polar, Stephanie Kelich, Kathy D Miller, Michele Yip-Schneider, Liang Cheng, Poornima Bhat-Nakshatri, George W Sledge, Harikrishna Nakshatri, Michael A. Miller, Timothy DeGrado, Gary D. Hutchins and Christopher J Sweeney (2006) Restoring chemotherapy and hormone therapy sensitivity by parthenolide in a xenograft hormone refractory prostate cancer model. ***Prostate 66(14):1498-511.***

Patil BL**, Rajasubramaniam S,** Bagchi C and Dasgupta I **(**2005**).** Both Indian cassava mosaic virus and Sri Lankan cassava mosaic virus are found in India and exhibit high variability as assessed by PCR-RFLP. ***Archives of Virology 150(2): 389-397.***

Christopher J Sweeney, Lang Li, **Rajasubramaniam S**, Poornima Bhat-Nakshatri, Vetrichelvan Jayaprakasan, Lee Ann Baldridge, Thomas Gardner, Martin Smith, Harikrishna Nakshatri and Liang Cheng (2004). Nuclear Factor-HB is Constitutively Activated in Prostate cancer in vitro and is Overexpressed in Prostatic Interaepithelial Neoplasia and Adenocarcinoma of the Prostate. ***Clinical Cancer Research 10: 5501-5507***

Rajasubramaniam S and Pardha Saradhi P. (1997) Rapid multiplication of *Phyllanthus fraternus* ; A plant with anti-hepatitis virus activity. ***Industrial Crops and Products (Elsevier) 6: 35-40.***

Rajasubramaniam S and Pardha Saradhi P (1994). Organic nitrogen stimulates caulogenesis from hypocotyls callus of *Phyllanthus fraternus*. ***Plant Cell Reports 13: 619-622.***

Publication in indexed Journals

Rajiv Yadav, M P S S Singh, Surendra Kumar, CK Dolla, VK Bharadwaj and **S. Rajasubramaniam** (2011). Morbidity profile of sickle cell disease in tribals of Madhya Pradesh, Central India. Tribal Health Bulletin 17 (1-2):37-43.

Rohit Shrivastava and S. Rajasubramaniam (2013). Harnessing potential of nanotechnology in Malaria. Tribal Health Bulletin 19(1-2): 13-29.

M P S S Singh, RB Gupta, Rajiv Yadav, Vijay Gadge, S. Godbole, Anil Gwal, Ashok Gupta, CP Vishwakarma, RL Neelkar and S. Rajasubramaniam (2013). Heamoglobin disorders and G6PD deficiency among some tribals of Chhattisgarh area of undivided Madhya Pradesh. Tribal Health Bulletin 19(1-2): 41-45.

M.P.S.S.Singh, RB Gupta, Rajiv Yadav, Surendra Kumar, S Godbole, **S. Rajasubramaniam** (2014). Haemoglobin disorders among Scheduled caste and Scheduled tribe populations of two adjoining districts of Madhya Pradesh. **Tribal Health Bulletin: Vol. 21 (1) 36-45**

M.P.S.S.Singh, RB Gupta, Rajiv Yadav and S Rajasubramaniam (2015). Study on the prevalence of haemoglobinopathies and GPD deficiency among scheduled tribe and scheduled caste populations of Chindwara district, Madhya Pradesh. **Tribal Health Bulletin: Vol. 22 (1&2) 59-63.**

<u>Manuscripts communicated</u>

Rohit Shrivastava and S. Rajasubramaniam (2015) Host - Plasmodium interaction: Role of RNAi. Acta parasitological. **(Reference No.AP-D-15-00128).**

Manu Asthana, Sushil Kumar Sahu, Amit Kumar, Aditya K. Panda, Sudipta Chakarbarti, Suchitra Mohanty, S. P. Singh, **S. Rajasubramaniam** and Tathagata Choudhuri (2015). Role of IL-28B polymorphism on SVR in HCV patients receiving PEG-IFN-RBV treatment in Asian population: a meta-analysis. **Virus Disease (Reference number INJV-D-15-00083).**

Rati Devendra; Rajasubramaniam Shanmugam; MPSS Singh; Chandrika Vishwakarma; Subhash Godbhole; Neeru Singh; Vinodkumar Gupta; Prabhakar Kedar and Malay

Mukherjee (2016). Identification of a novel S184F mutation causing glucose-6-phosphate-dehydrogenase deficiency in a tribal family of Madhya Pradesh, central India**.** **Meta Gene**

Annique Wilson-Weekes, Amy D. Hartman*, Emily Keller Blue*, Shu-yue Ren*, Magdalena Czader*, Padmaja Gade*, **Rajasubramaniam Shanmugam***, Larry D. Cripe, Priyadarshini Vallanda, Yasumichi Hitoshi, Brian J. Druker, Linda M. Boxer, Thomasz Skorski, Patricia J. Gallagher, Dhanajaya Kalvakolanu, and H. Scott Boswell (2016). B Cell Receptor Survival Signaling to bcl-2 through JNK, the c-jun N-terminal kinase, interplays with Epigenetic Regulation Of Death Kinases in zap70+ CLL. ***Blood.***

***** equal contribution

Membership of Societies

Member, American Association for Cancer Research (USA).

Life member, Indian Society for Medicinal and Aromatic Plants. (ISMAP)

Research Projects Undertaken

Project	Agency	Duration	Value in Lakhs
Pilot studies for Rapid Molecular detection and Characterization of Bacterial vaginosis.	ICMR	24 months May 2012-April 2014 **Completed**	10.35
Newborn Screening (NBS) for Sickle Cell Disease and providing comprehensive care to understand the natural history of Sickle Cell Disease in Tribal Populations in Madhya Pradesh and Gujarat	ICMR	36months September 2013-August 2016 **Ongoing**	25
Establishment of Prenatal Diagnosis of β-Thalassemia Syndromes and Sickle Cell Disorders in Madhya Pradesh, Assam and the Andaman and Nicobar Islands	ICMR	Aproved march 2014, **36 months** **Ongoing**	50
Micro mapping of G6PD deficiency among the tribals of India and its importance for anti-malarial therapy	ICMR Approved Feb 2014	36 Months **Ongoing**	34
Prevention & Management of Sickle cell in Barwani District	M P State Health Dept	12 months **Ongoing**	4
Screening of Tribal School Children, Dindori District, MP.	M P Tribal Welfare Dept.	24 months **Ongoing**	10

Prevention & Management of Sickle cell in Mandsaur Mamdsaur Dist,	MP State Govt	12 Months **Ongoing**	4.5
Prevention & Management of Sickle cell in Rewa Rewa Dist.	MP State Govt	6 Months **Ongoing**	1.5
Prevention & Management of Sickle cell in Shadol Shadol Dist.	MP State Govt	12 months **Ongoing**	1.5

Summary of Previous and Present work

In my current position since joining RMRCT (ICMR) on November 1, 2010, I have been working to improve the living conditions of the Tribals of Central India as per the mandate. Oral cancer is a major problem in Tribal populations in which alcohol and tobacco use is prevalent and causes considerable morbidity and is associated with a 5-year survival rate of less than 50%. Oral cancer, like other cancers in many other sites, is often preceded by the development of premalignant lesions of the oral mucosa. Among these premalignant lesions are leukoplakia, erythroplakia, hyperplasia, and dysplasia with leukoplakia being the most common. To date, there are no effective treatments documented in randomized controlled clinical trials to prevent malignant transformation of leukoplakia. As **a cancer biologist** I am pursuing investigations and approaches for inhibiting incidence of Cancer either directly by identifying novel/natural drugs or indirectly by developing intervention studies. Novel/Natural drug therapeutics will allow investigators to ascertain how specific targets are affected by therapy. These approaches include new classes of cytotoxic agents, agents acting via immune-stimulatory effects, agents that inhibit angiogenesis and metastasis or alter signaling pathways, and agents targeted specifically to novel cancer cell targets. Role of traditional and tribal medicines/therapies, unconventional pharmacological and biological interventions, dietary supplements will also be investigated. Finally, efforts will be made to bridge gap between discovery and clinical testing for efficient translation of promising discoveries. In addition, my group is involved developing non-invasive diagnostic procedures based miRNA markers. MiRNAs are small, non-coding, endogenous molecules which regulates gene expression by either suppressing the translation or destabilizing the mRNA. Some miRNAs have been found to be nuclear localizing where they target promoter regions of gene, in sequence complimentary fashion, causing gene silencing. They exert a subtle effect but are capable of influencing an entire network of genes as they have multiple mRNA targets. Furthermore, miRNAs exhibits unique tissue specificity and physiological state of the cell corresponds to the miRNA expression profile. These characteristics make microRNA system as a potential target to provide better diagnostic and therapeutic applications that will arrest or reduce the progression of cancer. As a molecular biologist, I have been working to develop culture independent molecular diagnosis for an important Gynecological ailment ôBacterial vaginosisô in collaboration

with NSCB Medical College, Jabalpur. Presently a pilot study to this diagnostic method is underway.

As in charge of the Genetics Department, I am responsible for providing molecular diagnostics for Hemoglobinopathies for neonates and patients referred from various medical college hospitals in and around Jabalpur. At present 2 Masters students and 2 Ph.D students are pursuing their research work under my guidance. I am also responsible for training physicians and laboratory technicians of Madhya Pradesh state health facilities on laboratory diagnosis of Hemoglobinopathies and their management

Research Associate, 2003- 2010: The work involves characterization of the gene(s) that are under the control of NF-HB and are responsible for tumor associated angiogenesis in prostrate cancer and bladder cancer. Efforts are being made to evaluate a novel anti-cancer drug called parthenolide and define its role in prostate cancer and bladder cancer. As this drug has low bioavailability, several water soluble analogues have been made. Currently we are evaluating a new version of this drug that is more suitable for use in patients. With the collaborations of National Cancer Institute and Department of Defense this drug is being moved into clinical trials as a new anti-cancer agent.

Research Associate 1999-2003: Development of transgenic rice containing genes from Indian isolates of Rice Tungro Spherical Virus (RTSV) and Rice Tungro Bacilliform Virus (RTBV). The work involved cloning of genes coding for coat protein, movement protein, Replicase, Protease and tRNA binding site etc of both RTSV and RTBV in plasmid vectors and to subcloning them in Binary vectors suited for rice transformation and transform popular Indian rice varities and to produce virus resistant transgenic rice.

Genes responsible for production of coat protein, movement protein, protease, replicase and tRNA binding site of RTBV (West Bengal and Andhra Pradesh isolate) and RTSV coat protein have been cloned in plasmid, expression and binary vectors. In addition to the above constructs carrying inverted repeats of viral genes, capable of imparting RNAi mediated resistance have also been made. At present all the above constructs are being used for transformation of Indica Rice Pusa Basmati 1, White Ponni and ADT 39. Several putative transgenic plants of tRNA binding site, RTBV and RTSV coat protein gene are being analyzed for their viral resistance. In addition efforts are on to express replicase and coat protein of RTBV for immunological studies.
Research Associate: 1995-1999.(1) Characterisation of the gene(s) encoding the putative repressor for the nifLA promoter in *Klebsiella pnuemoniae*.
(2) Identification of gene(s) responsible for early/late flowering in Cicer aritenum.

The *nifLA* of *Klebsiella pneumoniae* is a transcriptional activator of nif operons and is under the *nifLA* promoter subject to regulation by ntrC in response to NH_4 status. Very little is known about the mechanism by which the *nifLA* promoter is down regulated by oxygen. It is suspected that a putative repressor binds to nifLA promoter or upstream and somehow controls its regulation. The study was aimed at characterizing the putative

repressor that could help in further understanding of nif genetics in *K. pneumoniae*. Protein HU is suggested to be associated with nif regulation. Therefore, efforts were made to clone the gene(s) coding for HU like proteins in *K. pneumoniae*.

Further additional work of identification of gene(s) responsible for early/late flowering in Cicer aritenum was also inducted.

Ph.D Thesis **(1995)**. Hepatitis is one of the most prevalent viral diseases all over the world and yet it remains unconquered. Traditional Indian Medicinal Plant *Phyllanthus fraternus, P. amarus* used for treatment of jaundice and other liver ailments have recently been shown to possess anti-hepatitis B and anti-HIV viral activity. Several properties such as inhibition of reverse transcriptase, anti-viral DNA polymerase, anti-tumor, regulation of transcription, analgesic, gentotoxic, repression of hepatitis surface antigens have also been identified with aqueous and alcoholic extracts of this plant. However, the active medicinal principle is yet to be identified.

The herbaceous plants of *Phyllanthus* used for treatment of viral hepatitis are predominantly tropical annual found growing in summer months in India. Keeping in view the above facts studies was initiated with main emphasis on making its availability year around through plant tissue culture and characterize the active principle present.

Secondary metabolites (medicinal principle) have often been associated with female flowers. Further, the technique of tissue culture could essentially be used to identify and produce the cell lines capable of producing higher levels of secondary metabolites. Thus the work involved procedures for standardization of micropropagation through organogenesis, shoot-tip and nodal cultures. Studies were also carried out on identifying the various nutrient and environmental factors responsible for shoot organogenesis in *Phyllanthus fraternus*. The associated biochemical, histological, histochemical and scanning microscopic studies were also carried out. Effect of growth regulators on in vitro flowering was also studied. Finally a preliminary trial of active principle on in vitro raised plants was also carried out.

Techniques

Standard techniques involved in animal cell tissue culture, transformation, plant tissue culture and plant transformation. Biochemical analysis of organic solutes, histochemical, histological (light and electron microscopic) studies. Cancer biology, target identification, Western blotting, Gene Arrays, siRNA, Flow cytometry, ELISA, MTT and BRDU assays, Xenograft mouse model.

Standard techniques involved in Molecular biology (plasmid isolation, cloning, EtBr-CsCl density gradient, Sucrose gradient of plasmid, RNA and genomic DNA, agarose and acrylamide gel electrophoresis, transformation etc.), Construction of genomic library, Southern and Colony hybridization analysis. RTPCR, Restriction mapping

Reference

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