Sandeep Singh, PhD

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Education

2001 - 2007 : PhD in Biotechnology, National Centre for Cell Science, Pune; obtained degree from University of Pune, India
Thesis: *Studies on the Molecular Mechanism(s) of Apoptosis Induced by Various DNA Damaging 'Chemotherapeutic Drugs' in High-Risk HPV E6-Positive Carcinoma*

1999 - 2001 : M.Sc. in Biotechnology from Himachal Pradesh University, Shimla, India

1996 - 1999 : B.Sc. (Zoology, Botany, and Chemistry) from Udai Pratap College, Varanasi (Affiliated to Purvanchal University, Jaunpur)

Employment : February2012- current; Assistant Professor, NIBMG

: March 2007- January 2012; Postdoctoral fellow in the laboratory of Dr. Srikumar Chellappan, H. Lee Moffitt Cancer Center, Tampa, Florida, USA

Honors or Awards

2013- : Intermediate Fellow; Wellcome Trust-DBT India Alliance, India.

2007-2012 : Awarded postdoctoral fellowship from H. Lee Moffitt Cancer Center, Tampa, FL, USA.

2001-2007 : Research fellowship was awarded by NCCS, Pune, India.

1999-2001 : Studentship was awarded by Department of Biotechnology, Government of India.

Presentations

1. 2012; Delivered lecture in 3rd International Conference on Stem Cells and Cancer, at Dr. Ram Manohar Lohia Hospital, New Delhi, India.
2. 2011; Delivered oral presentation in Moffitt Scientific Symposium, at H. Lee Moffitt Cancer Center, Tampa, FL.
3. 2010; Presented poster in Annual meeting of National Functional Genomics Center (NFGC) at Clearwater, Florida, USA.
4. 2010; Presented poster in Annual meeting of American Association of Cancer Research (AACR) at Washington DC, USA.
5. 2009; Delivered oral presentation in Annual meeting' of American Association of Cancer Research (AACR) at Colorado, USA.
6. 2005; Presented poster in International symposium on Translational Research: Apoptosis and Cancer at Rajiv Gandhi Centre for Biotechnology, Tiruvanantpuram, India.
7. 2005; Delivered oral presentation Graduate Students Meet: Trends in Life Sciences at Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), Navi Mumbai, India.
8. 2005; Delivered oral presentation session in Annual Convention of Indian Association for Cancer Research and International Symposium at Institute of Cytology and Preventive Oncology, Noida, India. ,.
9. 2004; Presented Poster in 27th All India Cell Biology Conference and International Symposium: Frontiers in Biomedical Research and Technology at University of Pune, India.

List of Publications

1: Singh S, Kroeger J, Laklai H, Chellappan SP. ßArrestin and Mcl-1 modulates self-renewal growth of cancer stem-like side population cells in non-small cell lung cancer. PLoS One. 2013;8(2):e55982. doi: 10.1371/journal.pone.0055982. PMID: 23418490

2: Trevino JG, Pillai S, Kunigal S, Singh S, Fulp WJ, Centeno BA, Chellappan SP. Nicotine Induces Inhibitor of Differentiation-1 in a Src-dependent PathwayPromoting Metastasis and Chemoresistance in Pancreatic Adenocarcinoma. Neoplasia. 2012 Dec;14(12):1102-14. PubMed PMID: 23308043; PubMed Central PMCID: PMC3540937.

3: Singh S, Trevino J, Bora-Singhal N, Coppola D, Haura E, Altiok S, Chellappan SP. EGFR/Src/Akt signaling modulates Sox2 expression and self-renewal of stem-like side-population cells in non-small cell lung cancer. Mol Cancer. 2012 Sep 25;11:73. doi: 10.1186/1476-4598-11-73. PubMed PMID: 23009336; PubMed Central PMCID: PMC3497614.

4: Perumal D, Singh S, Yoder SJ, Bloom GC, Chellappan SP. A novel five gene signature derived from stem-like side population cells predicts overall and recurrence-free survival in NSCLC. PLoSOne. 2012;7(8):e43589. doi: 10.1371/journal.pone.0043589. Epub 2012 Aug 29. PubMed PMID: 22952714; PubMed Central PMCID: PMC3430700.

5: Alamanda V, Singh S*, Lawrence NJ, Chellappan SP. Nicotine-mediated induction of E-selectin in aortic endothelial cells requires Src kinase and E2F1 transcriptional activity. Biochem Biophys Res Commun. 2012 Feb 3;418(1):56-61. doi: 10.1016/j.bbrc.2011.12.127. Epub 2012 Jan 3. PubMed PMID: 22240023; PubMed Central PMCID: PMC3273677. *Equal author

6: Singh S, Pillai S, Chellappan S. Nicotinic acetylcholine receptor signaling in tumor growth and metastasis. J Oncol. 2011;2011:456743. doi: 10.1155/2011/456743. Epub 2011 Mar 30. PubMed PMID: 21541211; PubMed Central PMCID: PMC3085312.

7: Singh S*, Davis R, Alamanda V, Pireddu R, Pernazza D, Sebti S, Lawrence N, Chellappan S. Rb-Raf-1 interaction disruptor RRD-251 induces apoptosis in metastatic melanoma cells and synergizes with dacarbazine. Mol Cancer Ther. 2010 Dec;9(12):3330-41. doi: 10.1158/1535-7163.MCT-10-0442. Epub 2010 Dec 7. PubMed PMID: 21139044; PubMed Central PMCID: PMC3058238. *Equal author

8: Ajay AK, Upadhyay AK, Singh S, Vijayakumar MV, Kumari R, Pandey V, Boppana R, Bhat MK. Cdk5 phosphorylates non-genotoxically overexpressed p53 following inhibition of PP2A to induce cell cycle arrest/apoptosis and inhibits tumor progression. Mol Cancer. 2010 Jul 31;9: 204. doi: 10.1186/1476-4598-9-204. PubMed PMID: 20673369; PubMed Central PMCID: PMC2922192.

9: Singh S, Johnson J, Chellappan S. Small molecule regulators of Rb-E2F pathway as modulators of transcription. Biochim Biophys Acta. 2010 Oct-Dec;1799(10-12):788-94. doi: 10.1016/j.bbagrm.2010.07.004. Epub 2010 Jul 15. Review. PubMed PMID: 20637913; PubMed Central PMCID: PMC2997897.

10: Upadhyay AK, Ajay AK, Singh S, Bhat MK. Cell cycle regulatory protein 5 (Cdk5) is a novel downstream target of ERK in carboplatin induced death of breast cancer cells. Curr Cancer Drug Targets. 2008 Dec;8(8):741-52. PubMed PMID: 19075597.

11: Singh S, Upadhyay AK, Ajay AK, Bhat MK. p53 regulates ERK activation in carboplatin induced apoptosis in cervical carcinoma: a novel target of p53 in apoptosis. FEBS Lett. 2007 Jan 23;581(2):289-95. Epub 2006 Dec 29. PubMed PMID: 17208232.

12: Singh S, Upadhyay AK, Ajay AK, Bhat MK. Gadd45alpha does not modulate the carboplatin or 5-fluorouracil-induced apoptosis in human papillomavirus-positive cells. J Cell Biochem. 2007 Apr 1;100(5):1191-9. PubMed PMID: 17063488.

13: Upadhyay AK, Singh S, Chhipa RR, Vijayakumar MV, Ajay AK, Bhat MK. Methyl-beta-cyclodextrin enhances the susceptibility of human breast cancer cells to carboplatin and 5-fluorouracil: involvement of Akt, NF-kappaB and Bcl-2. Toxicol Appl Pharmacol. 2006 Oct 15;216(2):177-85. Epub 2006 May 19. PubMed PMID: 16806341.

14: Singh S, Chhipa RR, Vijayakumar MV, Bhat MK. DNA damaging drugs-induced down-regulation of Bcl-2 is essential for induction of apoptosis in high-risk HPV-positive HEp-2 and KB cells. Cancer Lett. 2006 May 18;236(2):213-21. Epub 2005 Jul 5. PubMed PMID: 15996812.

15: Vijayakumar MV, Singh S, Chhipa RR, Bhat MK. The hypoglycaemic activity of fenugreek seed extract is mediated through the stimulation of an insulin signalling pathway. Br J Pharmacol. 2005 Sep;146(1):41-8. PubMed PMID: 15980869; PubMed Central PMCID: PMC1576255.

16: Chhipa RR, Singh S, Surve SV, Vijayakumar MV, Bhat MK. Doxycycline potentiates antitumor effect of cyclophosphamide in mice. Toxicol Appl Pharmacol. 2005 Feb 1;202(3):268-77. PubMed PMID: 15667832.

17: Singh S, Bhat MK. Carboplatin induces apoptotic cell death through downregulation of constitutively active nuclear factor-kappaB in human HPV-18 E6-positive HEp-2 cells. Biochem Biophys Res Commun. 2004 May 28;318(2):346-53. PubMed PMID: 15120608.

Book Chapter:

Singh S, Chellappan S. The Biology of Lung Cancer Stem Cells. (Chapter in a book entitled "Stem Cells and Human Diseases" Published by Springer 2012).

Professional Associations: Life member; Society of Biological Chemist (SBC), India
Life member; Indian Society of Human Genetics (ISHG), India

Area of Research

Stem-like cancer cells (SLCCs) are thought to be responsible for cancer initiation, propagation, metastasis, recurrence and resistance to therapy in a variety of cancers. These cells are found to be present as a sub-population of cells within the tumor. The existence of SLCCs is relatively unexplored and is inadequately understood in oral cancers.
I am currently involved in-

(a) Establishing the platform for isolation, purification and characterization of SLCCs from oral tumors

(b) Understanding the genomic makeup of Oral-SLCCs and its functional consequences

(C) Identification of the genes that govern deregulated self-renewal and differentiation of SLCCS

Funding

NIBMG

Wellcome Trust DBT India Alliance (from Oct 2013)