Senthil Radhakrishnan, PhD

Associate Professor of Pathology
Associate Professor of Biochemistry and Molecular Biology
Associate Professor of Human and Molecular Genetics
Member Scientist, Massey Cancer Center
Department of Pathology Virginia
Commonwealth University
Office:804-828-7973
Senthil.Radhakrishnan@vcuhealth.org

Education

Graduate Education

MS and PhD from University of Illinois at Chicago, Chicago, IL

Undergraduate Education

B.Tech from Anna University, Chennai, India

Virginia Commonwealth University and Medical Center Appointments

Associate Professor of Pathology

Recent Grants

Ongoing Research Support

NIH/NIGMS
R01GM132396 (PI: Radhakrishnan) 04/01/2019 - 3/31/2024
Nrf1-dependent Proteotoxic Stress Response

American Cancer Society (ACS)
RSG-21-036-01-TBE (PI: Radhakrishnan) 07/01/2021 – 06/30/2025
Understanding and Targeting Nrf1 Pathway in Triple-negative Breast Cancer

NIH/NIA
R03AG073884 (PI: Radhakrishnan) 05/15/2022 – 04/30/2024
Analysis of Nrf1 pathway in Alzheimer's Disease

Department of Defense (DoD) Rare Cancers Research Program (RCRP)
W81XWH-22-1-0938 (PI: Radhakrishnan) 09/30/2022 – 09/29/2023
Targeting the Sumoylation Pathway in Synovial Sarcoma

Completed Research Support

Grace Science Foundation Award 2/01/2018 – 1/31/2020
PI: Radhakrishnan
Investigating the autophagy pathway in NGLY1 deficient cells

NIH/NCI
R00CA154884 (PI: Radhakrishnan) 07/01/2014 – 06/30/2018
K99/R00 Pathway to Independence Award – Independent Phase Understanding and targeting Nrf1-mediated proteasome recovery pathway in cancer

VCU Massey Cancer Center ACS-IRG
(PI: Radhakrishnan) 08/01/2017 – 07/31/2018

Targeting SWI/SNF complex to improve efficacy of proteasome inhibitor therapy

Grace Science Foundation Award
PI: Radhakrishnan 10/01/2016 – 09/30/2017
A strategy to identify compounds that can restore the Nrf1 pathway in NGly1-deficient cells

NIH/NCI
K99CA154884 (PI: Radhakrishnan) 08/03/2011 – 06/30/2014
K99/R00 Pathway to Independence Award – Mentored Phase
Understanding and targeting Nrf1-mediated proteasome recovery pathway in Cancer.

The Leukemia & Lymphoma Society
3264-12 (PI: Radhakrishnan) 07/01/2011 – 07/31/2011
Special Fellow Award
Understanding and targeting Nrf1-mediated proteasome recovery pathway in MM
(Award terminated in Jul 2011 in order to activate the NIH K99/R00 award)

Department of Defense Breast Cancer Research Program
W81XWH-07-1-0641 (PI: Radhakrishnan) 08/30/2007 – 11/29/2010
Multidisciplinary Postdoctoral Award

Identification of ubiquitin system components involved in ligand-dependent turnover of estrogen receptor

Recent Publications

Peer Reviewed Publications

Trash Talk: Mammalian Proteasome Regulation at the Transcriptional Level. Kamber Kaya HE, **Radhakrishnan SK**. Trends Genet. 2021 Feb;37(2):160-173. doi: 10.1016/j.tig.2020.09.005. Epub 2020 Sep 25.

Regulation of NRF1, a master transcription factor of proteasome genes: implications for cancer and neurodegeneration. Northrop A, Byers HA, **Radhakrishnan SK**. Mol Biol Cell. 2020 Sep 15;31(20):2158-2163. doi: 10.1091/mbc.E20-04-0238.

BET Inhibitors Synergize with Carfilzomib to Induce Cell Death in Cancer Cells via Impairing Nrf1 Transcriptional Activity and Exacerbating the Unfolded Protein Response. Vangala JR, Potluri A, **Radhakrishnan SK**. Biomolecules. 2020 Mar 26;10(4):501. doi: 10.3390/biom10040501.

Northrop A, Vangala JR, Feygin A and **Radhakrishnan SK***. Disabling the protease DDI2 attenuates the transcriptional activity of NRF1 and potentiates proteasome inhibitor cytotoxicity. *Int J Mol Sci*, 2020; 21 https://www.mdpi.com/1422-0067/21/1/327

Vangala, JR and **Radhakrishnan SK***. Nrf1-mediated transcriptional regulation of the proteasome requires a functional TIP60 complex. *J Biol Chem*, 2019; 294, 2036-2045. PMCID: PMC6369275. (*Corresponding Author). http://www.jbc.org/content/294/6/2036.long

Tomlin F, Gerling-Driessen U, Liu Y, Flynn R, Vangala JR, Lentz C, Clauder-Muenster S, Jakob P, Mueller WF, Ordoñez-Rueda D, Paulsen M, Matsui N, Foley D, Rafalko A, Suzuki T, Bogyo M, Steinmetz LM, **Radhakrishnan SK**, and Bertozzi C. Inhibition of NGLY1 inactivates the transcription factor Nrf1 and potentiates proteasome inhibitor cytotoxicity. ACS Central Science, 2017; 3, 1143-1155. PMCID: PMC5704294. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5704294/

Vangala JR, Sotzny F, Krüger E, Deshaies RJ, and **Radhakrishnan SK*.** Nrf1 can be processed and activated in a proteasome-independent manner. Current Biology, 2016; 26, R834-R835. PMCID: PMC6156719 (*Corresponding Author). https://www.sciencedirect.com/science/article/pii/S0960982216309204

Radhakrishnan SK, den Besten W and Deshaies RJ. p97-dependent retrotranslocation and proteolytic processing govern formation of active Nrf1 upon proteasome inhibition. *eLife*, 2014; 3,e01856. http://elifesciences.org/content/3/e01856

Radhakrishnan SK, Lee CS, Young P, Beskow A, Chan JY and Deshaies RJ. Transcription factor Nrf1 mediates the proteasome recovery pathway after proteasome inhibition in mammalian cells. *Mol. Cell*, 2010; 38, 17-28. *PMCID: PMC20385086* https://www.sciencedirect.com/science/article/pii/S1097276510002406

Radhakrishnan SK and Gartel AL. FOXM1: The Achilles' heel of cancer? *Nat Rev Cancer*, 2008; 8 (3), Published Online. http://www.nature.com/nrc/journal/v8/n3/full/nrc2223-c1.html

Radhakrishnan SK, Bhat UG, Halasi M and Gartel AL. P-TEFb inhibitors interfere with activation of p53 by DNA-damaging agents. *Oncogene,* 2008; 27 (9), 1306-1309. http://www.nature.com/onc/journal/v27/n9/full/1210737a.html

Radhakrishnan SK*, Halasi M*, Bhat UG, Kurmasheva RT, Houghton PJ and Gartel AL. Proapoptotic compound ARC targets Akt and N-myc in neuroblastoma cells. *Oncogene,* 2008; 27 (5), 694-699. (*Contributed equally). http://www.nature.com/onc/journal/v27/n5/full/1210692a.html

Radhakrishnan SK, Bhat UG, Hughes DE, Wang IC, Costa RH and Gartel AL. Identification of a chemical inhibitor of the oncogenic transcription factor Forkhead Box M1. *Cancer Research*, 2006; 66 (19), 9731-9735. (Featured in the section *Cancer Research Highlights: Selected articles from this issue*). http://cancerres.aacrjournals.org/content/66/19/9731.long

Radhakrishnan SK and Gartel AL. A novel transcriptional inhibitor induces apoptosis in tumor cells and exhibits anti-angiogenic activity. *Cancer Research*, 2006; 66 (6), 3264-3270. (Featured in the section *Cancer Research Highlights: Selected articles from this issue*).
http://cancerres.aacrjournals.org/content/66/6/3264.long

Radhakrishnan SK and Gartel AL. CDK9 phosphorylates p53 on serine residues 33, 315 and 392. *Cell Cycle*, 2006; 5 (5), 519-521.
http://www.landesbioscience.com/journals/cc/radhakrishnanCC5-5.pdf

Radhakrishnan SK* and Kamalakaran S. Pro-apoptotic role of NF-kB: Implications for cancer therapy. *Biochim Biophys Acta – Rev on Cancer*, 2006; 1766 (1), 53-62. (*Corresponding Author). *PMCID: PMC16563635*.
https://www.sciencedirect.com/science/article/pii/S0304419X06000072

Radhakrishnan SK* and Kamalakaran S. Time to harness the pro-apoptotic property of NFkB? *Nat Rev Cancer*, 2006; 6 (1), Published Online. (*Corresponding Author).
http://www.nature.com/nrc/journal/v6/n1/full/nrc1588-c1.html

Radhakrishnan SK, Gierut J and Gartel AL. Multiple alternate p21 transcripts are regulated by p53 in human cells. *Oncogene*, 2006; 25 (12), 1812-1815.
http://www.nature.com/onc/journal/v25/n12/full/1209195a.html

Gartel AL and **Radhakrishnan SK**. Lost in Transcription: p21 repression, mechanisms and consequences. *Cancer Research*, 2005; 65 (10), 3980-3985.
http://cancerres.aacrjournals.org/content/65/10/3980.long

Radhakrishnan SK and Gartel AL. The PPAR-g agonist Pioglitazone post-transcriptionally induces p21 in PC3 prostate cancer but not in other cell lines. *Cell Cycle*, 2005; 4 (4), 582-584.
http://www.landesbioscience.com/journals/cc/radhakrishnanCC4-4.pdf

Kamalakaran S*, **Radhakrishnan SK*** and Beck WT. Identification of estrogen-responsive genes using a genome-wide analysis of promoter elements for transcription factor binding sites. *J Biol Chem* 2005; 280 (22), 21491-21497. (*Contributed equally). http://www.jbc.org/content/280/22/21491.long

Gartel AL, **Radhakrishnan SK**, Serfas MS, Kwon YH and Tyner AL. A novel p21WAF1/CIP1 transcript is highly dependent on p53 for its basal expression in mouse tissues. *Oncogene* 2004; 23 (49), 8154-8157. http://www.nature.com/onc/journal/v23/n49/full/1207820a.html