

Curriculum Vitae

Sujit Kumar Bhutia, PhD
Associate Professor
Department of Life Science
National Institute of Technology Rourkela
Rourkela-769008, Odisha, India
Tel:91-6612462686, Fax: 0661-2472926
E-mail: sujitb@nitrkl.ac.in, bhutiask@gmail.com



Specialization/Research Areas

Autophagy, Apoptosis, Cancer, Phytotherapeutics

Research Interest

Our group is focusing to understand the role of autophagy and autophagy-dependent cell death in cancer for development of novel therapeutics. We are identifying the crucial factors governing the crosstalk between autophagy and apoptosis to describe the mechanisms controlling cell survival and death.

Teaching (Current)

Biology for Engineers, Cell Biology, Cell Signaling, Genomics and Proteomics, Cell Biology laboratory

Academic Background

PhD, Cell Biology and cell death, IIT Kharagpur, 2009

MSc, Botany with Biochemistry, Utkal University, Bhubaneswar, 2003

BSc, Botany, Government college Angul, Utkal University, Bhubaneswar, 2001

Professional Experience

Postdoctoral Fellow, Virginia Commonwealth University, USA, 2008 – 2010

Assistant Professor, Department of Life Science, National Institute of Technology, Rourkela
6th August 2008-1st Feb 2028

Associate Professor, Department of Life Science, National Institute of Technology, Rourkela
2nd Feb 2018-Present

Administrative Experience

Head of the Department, Department of Life Science, National Institute of Technology Rourkela, 01st
Jul 2014 -30th Jun 2017

Honors and Fellowships

- ICMR International Fellowship for Young Indian Biomedical Scientist 2015-16
- Odisha Bigyan Academy Young Scientist Award 2015
- BD Biosciences winner for the research grant program 2013
- National Doctoral Fellow-2005, All Indian Council of Technical Education, India
- Junior Research Fellow-2004, Council for Scientific and Industrial Research, India
- Qualified GATE- 2004 with 99.25 percentile

Details of ongoing/completed projects as PI

Sl. no.	Title of Project	Funding Agency	From Date	To Date	Approved Cost
1	Autophagic cell death with Abrus agglutinin	DBT	24/06/2011	23/06/2014	31,06000
2	DNA damage-induced p73 mediated apoptosis with Abrus agglutinin in oral cancer	CSIR	07/10/2013	06/10/2016	3560000.00
3	Deciphering role of cancer stem cells to therapy resistance in oral cancer	SERB	12/08/2013	11/08/2016	4110000.00
4	Autophagy induced by cellular Stress switches to apoptosis	DBT	07/05/2015	06/05/2018	3621600.00
5	Molecular profiling of apoptotic pathway in cancer stem cells of oral squamous cell carcinoma and its modulating by plant lectins for potential cancer therapeutics	DST, Odisha	01/04/2016	31/03/2019	909000.00
6	Protective autophagy by secretory clusterin associated with cell survival and chemoresistance in oral cancer	BRNS	30/03/2017	29/03/2020	3338400.00
7	Stonin-2 regulated Beclin-1 dependent autophagy and autophagic lysosome Reformation	SERB	29/03/2017	28/03/2020	4572200.00
8	Deciphering role of autophagy in stemness and therapy resistance in oral cancer stem cells	DBT	05/06/2018	04/06/2021	4477200.00
9	Stress induced clearance of dysfunctional mitochondria through PUMA dependent mitophagy	CSIR	11/12/2018	31/03/2023 (ongoing)	2104000.00

10	Analysis of Pax9 methylation in oral carcinogenesis and its reactivation leading to lethal autophagy for potential cancer therapeutics	ICMR	01/03/2021	28/02/2024 (ongoing)	3067200.00
11	Deciphering MTP18 as an inner membrane mitophagy receptor in clearance of damaged mitochondrial subdomains and its relevance in mitoptosis	SERB	29/12/2021	28/12/2024 (ongoing)	53,06,400
12	Analysis of role of MTP18-dependent mitophagy in oral carcinogenesis and its targeting to activate mitochondrial apoptosis for potential cancer therapeutics	BRNS	12/12/2022	11/12/2025 (ongoing)	30,94,500

Publications

125. Mahapatra KK, Mishra SR, Dhiman R **Bhutia SK***. Stonin 2 activates lysosomal-mTOR axis for cell survival in oral cancer. *Toxicol In Vitro* 2022 (in Press)

124. Patra S, Patil S, Klionsky DJ, **Bhutia SK***. Lysosome signaling in cell survival and programmed cell death for cellular homeostasis. *J Cell Physiol.* 2022 (in Press)

123. Panigrahi DP, Patra S, Behera BP, Behera PK, Patil S, Patro BS, Rout L, Sarangi I, **Bhutia SK***. MTP18 inhibition triggers mitochondrial hyperfusion to induce apoptosis through ROS-mediated lysosomal membrane permeabilization-dependent pathway in oral cancer. *Free Radic Biol Med.* 2022;190:307-319.

122. Tangelloju A, Chakravarti R, Singh R, Bhattacharya B, Ghosh A, **Bhutia SK**, Ravichandiran V, Ghosh D. A Review on the Current Status of Homeopathy in the Clinical Management of Cancer. *Curr Drug Targets.* 2022;23:1252-1260.

121. Patra S, Patil S, Das S, **Bhutia SK***. Epigenetic dysregulation in autophagy signaling as a driver of viral manifested oral carcinogenesis. *Biochim Biophys Acta Mol Basis Dis.* 2022;1868:166517.

120. Bhol CS, Mishra SR, Patil S, Sahu SK, Kirtana R, Manna S, Shanmugam MK, Sethi G, Patra SK, **Bhutia SK***. PAX9 reactivation by inhibiting DNA methyltransferase triggers antitumor effect in oral squamous cell carcinoma. *Biochim Biophys Acta Mol Basis Dis.* 2022;1868(9):166428.

119. Prakash R, Fauzia E, Siddiqui AJ, Yadav SK, Kumari N, Shams MT, Naeem A, Praharaj PP, Khan MA, Bhutia SK, Janowski M, Boltze J, Raza SS. Oxidative Stress-induced Autophagy Compromises

Stem Cell Viability. *Stem Cells*. 2022;40(5):468-478.

118. Panda S, Bhol CS, **Bhutia SK**, Mohapatra S. DSPE-PEG-Coated Uniform Nitrogen-Doped Carbon Capsules for NIR-Mediated Synergistic Chemophototherapy of Skin Cancer. *ACS Appl Bio Mater*. 2021;4(9):7059-7069.

117. Mahapatra KK, Mishra SR, Behera BP, Patil S, Gewirtz DA, **Bhutia SK***. The lysosome as an imperative regulator of autophagy and cell death. *Cell Mol Life Sci*. 2021 Dec;78(23):7435-7449.

116. Mukhopadhyay S, Mahapatra KK, Praharaj PP, Patil S, **Bhutia SK***. Recent progress of autophagy signaling in tumor microenvironment and its targeting for possible cancer therapeutics. *Semin Cancer Biol*. 2022;85:196-208

115. Prakash R, Fauzia E, Siddiqui AJ, Yadav SK, Kumari N, Singhai A, Khan MA, Janowski M, Bhutia SK, Raza SS. Oxidative Stress Enhances Autophagy-Mediated Death Of Stem Cells Through Erk1/2 Signaling Pathway - Implications For Neurotransplantations. *Stem Cell Rev Rep*. 2021 Dec;17(6):2347-2358.

114. **Bhutia SK**. Vitamin D in autophagy signaling for health and diseases: Insights on potential mechanisms and future perspectives. *J Nutr Biochem*. 2022;99:108841.

113. Patra S, Praharaj PP, Klionsky DJ, Bhutia SK. Vorinostat in autophagic cell death: A critical insight into autophagy-mediated, -associated and -dependent cell death for cancer prevention. *Drug Discov Today*. 2022;27(1):269-279.

112. Patra S, Pradhan B, Nayak R, Behera C, Das S, Patra SK, Efferth T, Jena M, **Bhutia SK***. Dietary polyphenols in chemoprevention and synergistic effect in cancer: Clinical evidences and molecular mechanisms of action. *Phytomedicine*, 2021;90:153554.

111. Naik PP, Panigrahi S, Parida R, Praharaj PP, Bhol CS, Patil S, Manjunath NML, Ghosh D, Patra SK, **Bhutia SK***. Metabostemness in cancer: Linking metaboloepigenetics and mitophagy in remodeling cancer stem cells. *Stem Cell Rev Rep (In Press)*.

110. Mishra A, Behura A, Kumar A, Naik L, Swain A, Das M, Sarangi SS, Dokania P, Dirisala VR, **Bhutia SK**, Mishra A, Singh R, Dhiman R. P2X7 receptor in multifaceted cellular signalling and its relevance as a potential therapeutic target in different diseases. *Eur J Pharmacol*. 2021;906:174235.

109. Patra S, Nayak R, Patro S, Pradhan B, Sahu B, Behera C, **Bhutia SK**, Jena M. Chemical diversity of dietary phytochemicals and their mode of chemoprevention. *Biotechnol Rep (Amst)*. 2021;30:e00633.

108. Mishra SR, Mahapatra KK, Behera BP, Patra S, Bhol CS, Panigrahi DP, Praharaj PP, Singh A, Patil S, Dhiman R, **Bhutia SK***. Mitochondrial dysfunction as a driver of NLRP3 inflammasome

activation and its modulation through mitophagy for potential therapeutics. *Int J Biochem Cell Biol.* 2021;136:106013.

107. Bhol CS, Patil S, Sahu BB, Patra SK, **Bhutia SK***. The clinical significance and correlative signaling pathways of paired box gene 9 in development and carcinogenesis. *Biochim Biophys Acta Rev Cancer.* 2021;1876(1):188561.

106. Panda S, Bhol CS, **Bhutia SK**, Mohapatra S. PEG-PEI-modified gated N-doped mesoporous carbon nanospheres for pH/NIR light-triggered drug release and cancer phototherapy. *J Mater Chem B.* 2021 May 5;9(17):3666-3676.

105. Patra S, Pradhan B, Nayak R, Behera C, Panda KC, Das S, Jena M, **Bhutia SK***. Apoptosis and autophagy modulating dietary phytochemicals in cancer therapeutics: Current evidences and future perspectives. *Phytother Res.* 2021 Mar 22.

104. Prahara PP, Patro BS, **Bhutia SK***. Dysregulation of mitophagy and mitochondrial homeostasis in cancer stem cells: Novel mechanism for anti-cancer stem cell-targeted cancer therapy. *Br J Pharmacol.* 2021 Feb 1.

103. Patra S, Mahapatra KK, Prahara PP, Panigrahi DP, Bhol CS, Mishra SR, Behera BP, Singh A, Jena M, **Bhutia SK***. Intricate role of mitochondrial calcium signalling in mitochondrial quality control for regulation of cancer cell fate. *Mitochondrion.* 2021;57:230-240.

102. Prahara PP, Patra S, Panigrahi DP, Patra SK, **Bhutia SK***. Clusterin as modulator of carcinogenesis: A potential avenue for targeted cancer therapy. *Biochim Biophys Acta Rev Cancer.* 2021;1875(2):188500.

101. Mishra A, Behura A, Kumar A, Ghosh A, Naik L, Mawatwal S, Mohanty SS, Mishra A, Saha S, **Bhutia SK**, Singh R, Dhiman R. Soybean lectin induces autophagy through P2RX7 dependent activation of NF- κ B-ROS pathway to kill intracellular mycobacteria. *Biochim Biophys Acta Gen Subj.* 2020;1865(2):129806.

100. Pradhan B, Patra S, Behera C, Nayak R, Patil S, **Bhutia SK**, Jena M. *Enteromorpha compressa* extract induces anticancer activity through apoptosis and autophagy in oral cancer. *Mol Biol Rep.* 2020;47(12):9567-9578.

99. Prahara PP, Panigrahi DP, Bhol CS, Patra S, Mishra SR, Mahapatra KK, Behera BP, Singh A, Patil S, **Bhutia SK***. Mitochondrial rewiring through mitophagy and mitochondrial biogenesis in cancer stem cells: A potential target for anti-CSC cancer therapy. *Cancer Lett* 2021 ;498:217-228.

98. Naik PP, Mukhopadhyay S, Prahara PP, Bhol CS, Panigrahi DP, Mahapatra KK, Patra S, Saha S, Panda AK, Panda K, Paul S, Aich P, Patra SK, **Bhutia SK***. Secretory clusterin promotes oral cancer

cell survival via inhibiting apoptosis by activation of autophagy in AMPK/mTOR/ULK1 dependent pathway. *Life Sci.* 2021;264:118722.

97. Patra S, Pradhan B, Nayak R, Behera C, Rout L, Jena M, Efferth T, **Bhutia SK***. Chemotherapeutic efficacy of curcumin and resveratrol against cancer: Chemoprevention, chemoprotection, drug synergism and clinical pharmacokinetics. *Semin Cancer Biol.* 202;73:310-320.

96. Mishra SR, Mahapatra KK, Behera BP, Bhol CS, Praharaj PP, Panigrahi DP, Patra S, Singh A, Patil S, Dhiman R, Patra SK, **Bhutia SK***. Inflammasomes in cancer: Effect of epigenetic and autophagic modulations. *Semin Cancer Biol.* (In Press)

95. Pradhan B, Patra S, Nayak R, Behera C, Dash SR, Nayak S, Sahu BB, **Bhutia SK***, Jena M. Multifunctional role of fucoidan, sulfated polysaccharides in human health and disease: A journey under the sea in pursuit of potent therapeutic agents. *Int J Biol Macromol.* 2020;164:4263-4278.

94. Mukhopadhyay S, Praharaj PP, Naik PP, Talukdar S, Emdad L, Das SK, Fisher PB, **Bhutia SK***. Identification of Annexin A2 as a key mTOR target to induce roller coaster pattern of autophagy fluctuation in stress. *Biochim Biophys Acta Mol Basis Dis.* 2020;1866(12):165952.

93. Patra S, Praharaj PP, Panigrahi DP, Panda B, Bhol CS, Mahapatra KK, Mishra SR, Behera BP, Jena M, Sethi G, Patil S, Patra SK, **Bhutia SK***. Bioactive compounds from marine invertebrates as potent anticancer drugs: the possible pharmacophores modulating cell death pathways. *Mol Biol Rep.* 2020;47(9):7209-7228.

92. Patra S, Bhol CS, Panigrahi DP, Praharaj PP, Pradhan B, Jena M, **Bhutia SK***. Gamma irradiation promotes chemo-sensitization potential of gallic acid through attenuation of autophagic flux to trigger apoptosis in an NRF2 inactivation signalling pathway. *Free Radic Biol Med.* 2020;160:111-124.

91. Patra S, Mishra SR, Behera BP, Mahapatra KK, Panigrahi DP, Bhol CS, Praharaj PP, Sethi G, Patra SK, **Bhutia SK***. Autophagy-modulating phytochemicals in cancer therapeutics: Current evidences and future perspectives. *Semin Cancer Biol.* (In Press)

90. Saha S, Mahapatra KK, Mishra SR, Mallick S, Negi VD, Sarangi I, Patil SG, Patra SK, **Bhutia SK***. Bacopa monnieri inhibits apoptosis and senescence through mitophagy in human astrocytes. *Food Chem Toxicol.* 2020:111367.

89. Patra S, Panda PK, Naik PP, Panigrahi DP, Praharaj PP, Bhol CS, Mahapatra KK, Padhi P, Jena M, Patil S, Patra SK, **Bhutia SK***. Terminalia bellirica extract induces anticancer activity through modulation of apoptosis and autophagy in oral squamous cell carcinoma. *Food Chem Toxicol.* 2020;136:111073.

88. Panigrahi DP, Bhol CS, R N, Nagini S, Patil S, Maiti TK, **Bhutia SK***. Abrus agglutinin inhibits

oral carcinogenesis through inactivation of NRF2 signaling pathway. *Int J Biol Macromol.* 2020;155:1123-1132.

87. Das RK, Panda S, Bhol CS, **Bhutip SK**, Mohapatra S. N-Doped Carbon Quantum Dot (NCQD)-Deposited Carbon Capsules for Synergistic Fluorescence Imaging and Photothermal Therapy of Oral Cancer. *Langmuir.* 2019;35(47):15320-15329.

86. Panda PK, Patra S, Naik PP, Praharaj PP, Mukhopadhyay S, Meher BR, Gupta PK, Verma RS, Maiti TK, **Bhutip SK***. Deacetylation of LAMP1 drives lipophagy-dependent generation of free fatty acids by Abrus agglutinin to promote senescence in prostate cancer. *J Cell Physiol.* 2020;235(3):2776-2791.

85. Panigrahi DP, Praharaj PP, Bhol CS, Mahapatra KK, Patra S, Behera BP, Mishra SR, **Bhutip SK***. The emerging, multifaceted role of mitophagy in cancer and cancer therapeutics. *Semin Cancer Biol.* 2020;66:45-58.

84. Bhol CS, Panigrahi DP, Praharaj PP, Mahapatra KK, Patra S, Mishra SR, Behera BP, **Bhutip SK***. Epigenetic modifications of autophagy in cancer and cancer therapeutics. *Semin Cancer Biol.* 2020;66:22-33.

83. Mahapatra KK, Panigrahi DP, Praharaj PP, Bhol CS, Patra S, Mishra SR, Behera BP, **Bhutip SK***. Molecular interplay of autophagy and endocytosis in human health and diseases. *Biol Rev Camb Philos Soc.* 2019, 94(4):1576-1590.

82. Patra S, Panigrahi DP, Praharaj PP, Bhol CS, Mahapatra KK, Mishra SR, Behera BP, Jena M, **Bhutip SK***. Dysregulation of histone deacetylases in carcinogenesis and tumor progression: a possible link to apoptosis and autophagy. *Cell Mol Life Sci.* 2019;76(17):3263-3282.

81. **Bhutip SK***, Panda PK, Sinha N, Praharaj PP, Bhol CS, Panigrahi DP, Mahapatra KK, Saha S, Patra S, Mishra SR, Behera BP, Patil S, Maiti TK. Plant lectins in cancer therapeutics: Targeting apoptosis and autophagy-dependent cell death. *Pharmacol Res.* 2019; 144:8-18.

80. Das CK, Parekh A, Parida PK, **Bhutip SK**, Mandal M. Lactate dehydrogenase A regulates autophagy and tamoxifen resistance in breast cancer. *Biochim Biophys Acta Mol Cell Res.* 2019;1866(6):1004-1018.

79. Sinha N, Meher BR, Naik PP, Panda PK, Mukhopadhyay S, Maiti TK, **Bhutip SK***. p73 induction by Abrus agglutinin facilitates Snail ubiquitination to inhibit epithelial to mesenchymal transition in oral cancer. *Phytomedicine.* 2019; 55:179-190.

78. Praharaj PP, Naik PP, Panigrahi DP, Bhol CS, Mahapatra KK, Patra S, Sethi G, **Bhutip SK***. Intricate role of mitochondrial lipid in mitophagy and mitochondrial apoptosis: its implication in

cancer therapeutics. *Cell Mol Life Sci.*76:1641-1652.

77. Das CK, Jena BC, Banerjee I, das S, Parekh A, **Bhutip SK**, Mandal M. Exosome as a Novel Shuttle for Delivery of Therapeutics across Biological Barriers. *Mol Pharm.* 2018. 16(1):24-40.

76. Das DN, **Bhutip SK***. Inevitable dietary exposure of Benzo[a]pyrene: carcinogenic risk assessment an emerging issues and concerns. *Curr Opin Food Sci.* 2018; 24:16-25.

75. Sophia J, Kowshik J, Dwivedi A, **Bhutip SK**, Manavathi B, Mishra R, Nagini S. Nimbolide, a neem limonoid inhibits cytoprotective autophagy to activate apoptosis via modulation of the PI3K/Akt/GSK-3 β signalling pathway in oral cancer. *Cell Death Dis.* 2018;9(11):1087.

74. Naik PP, Birbrair A, **Bhutip SK***. Mitophagy-driven metabolic switch reprograms stem cell fate. *Cell Mol Life Sci.* 2018; 76(1):27-43.

73. Saha S, Panigrahi DP, Patil S, **Bhutip SK***. Autophagy in health and disease: A comprehensive review. *Biomed Pharmacother.* 2018; 104:485-495.

72. Sena IFG, Paiva AE, Prazeres PHDM, Azevedo PO, Lousado L, **Bhutip SK**, Salmina AB, Mintz A, Birbrair A. Glioblastoma-activated pericytes support tumor growth via immunosuppression. *Cancer Med.* 2018;7(4):1232-1239.

71. Panda PK, Naik PP, Praharaj PP, Meher BR, Gupta PK, Verma RS, Maiti TK, Shanmugam MK, Chinnathambi A, Alharbi SA, Sethi G, Agarwal R, **Bhutip SK***. Abrus agglutinin stimulates BMP-2-dependent differentiation through autophagic degradation of β -catenin in colon cancer stem cells. *Mol Carcinog.* 2018;57(5):664-677.

70. Praharaj PP, **Bhutip SK**, Nagrath S, Bitting RL, Deep G. Circulating tumor cell-derived organoids: Current challenges and promises in medical research and precision medicine. *Biochim Biophys Acta.* 2018;1869(2):117-127.

69. Panda PK, Naik PP, Meher BR, Das DN, Mukhopadhyay S, Praharaj PP, Maiti TK, **Bhutip SK***. PUMA dependent mitophagy by Abrus agglutinin contributes to apoptosis through ceramide generation. *Biochim Biophys Acta.* 2018;1865(3):480-495.

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67. Das DN, Naik PP, Mukhopadhyay S, Panda PK, Sinha N, Meher BR, **Bhutip SK***. Elimination of dysfunctional mitochondria through mitophagy suppresses Benzo[a]pyrene-induced apoptosis. *Free Radic Biol Med.* 112:452-463.

66. Das DN, Panda PK, Sinha N, Mukhopadhyay S, Naik PP, **Bhutip SK***. DNA damage by 2,3,7,8-

tetrachlorodibenzo-p-dioxin-induced p53-mediated apoptosis through activation of cytochrome P450/aryl hydrocarbon receptor. *Environ Toxicol Pharmacol* 2017; 55:175-185.

65. Sinha N, Panda PK, Naik PP, Das DN, Mukhopadhyay S, Maiti TK, Shanmugam MK, Chinnathambi A, Zayed ME, Alharbi SA, Sethi G, Agarwal R, **Bhutia SK***. Abrus agglutinin promotes irreparable DNA damage by triggering ROS generation followed by ATM-p73 mediated apoptosis in oral squamous cell carcinoma. *Mol Carcinog.* 2017;56(11):2400-2413.

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mediated LV(V)O₂(-) (L(2-) = tridentate ONO ligands) species: DNA binding, photo-induced DNA cleavage and cytotoxic activities. Dalton Trans. 2014;43(26):10139-56.

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