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SENGOTTUVELAN MURUGAN, M.Phil., Ph.D.,

Curriculum Vitae

EDUCATIONAL QUALIFICATIONS

2006	**Ph.D. Biochemistry** Department of Biochemistry and Biotechnology, Annamalai University, Tamilnadu, India.
2001	**M.Phil. Biochemistry** Department of Biological Sciences, Pondicherry University, Pondicherry, India.
1999	**M.S. Biochemistry** Department of Biochemistry and Biotechnology, Annamalai University, Tamilnadu, India.
1997	**B.S. Biochemistry** Department of Biochemistry, Kongunadu Arts & Science College (Bharathiar University), Coimbatore, Tamilnadu, India.

RESEARCH EXPERIENCE

Feb 2017 to Present	**Research Associate** Department of Animal Sciences, Rutgers University, New Brunswick, New Jersey
Feb 2015 to 2017	**Post-Doctoral Fellow** Perelman School of Medicine, Division of Hematology/Oncology, University of Pennsylvania, Philadelphia, Pennsylvania
Nov 2009 to Jan 2015	**Post-Doctoral Research Associate** Department of Animal Sciences, Rutgers University, New Brunswick, New Jersey
Sep 2007 to Sep 2009	**JSPS Post-Doctoral Fellow** Laboratory of Proteoglycan Signaling and Therapeutics, Hokkaido University, Sapporo, Japan.
Aug 2006 to Sep 2007	**Assistant Researcher** Laboratory of Proteoglycan Signaling and Therapeutics, Hokkaido University, Sapporo, Japan.
Oct 2002 to Aug 2006	**Ph. D. Research Fellow** Department of Biochemistry and Biotechnology, Annamalai University, Tamilnadu, India.
July 2003	**Project Fellow** Department of Biochemistry, Annamalai University, Supported by University Grants Commissions (UGC), Government of India, New Delhi, India.

ACADEMIC AND PROFESSIONAL HONORS/AWARDS

Sep 2014	**Best Poster Award** for recognition of excellence in research, Awarded by Rutgers Endocrine Program.
May 2013	**Gallo Award** for outstanding cancer research, Awarded by the Cancer Institute of New Jersey (CINJ) and the New Jersey Commission on Cancer Research (NJCCR), New Jersey, U.S.A.
May 2012	**Gallo Award** for outstanding cancer research, Awarded by CINJ and the NJCCR, New Jersey, U.S.A.
Sep 2007 - Sep 2009	**Post-Doctoral Fellowship** from Japan Society for the Promotion of Science (JSPS). Laboratory of Proteoglycan Signaling and Therapeutics, Hokkaido University, Sapporo, Japan.
Aug 2003 - Aug 2005	**Senior Scholarship from Lady Tata Memorial Trust (LTMT).** Department of Biochemistry and Biotechnology, Annamalai University, Tamilnadu, India.

RESEARCH GRANTS/FUNDING

April 1 2008 to March 31, 2009 ¥ 5,000,000 (USD 60, 000)	**Co-Investigator:** Project entitled "**Nanotechnology based synthesis, detection, and analysis of glycosaminoglycans/carbohydrate polymers using small molecules as probes**" funded by **INSA** (Indian National Science Academy)-**JSPS** program to Prof. K. S. Rangappa (India) and Prof. K. Sugahara (Japan). Project. No. 07039211-000121.

INVITED SPEAKER

February 24, 2012	1. Entitled ***"Role of hypothalamic β-endorphin neurons in the regulation of immune function, cancer growth and metastasis"***, Lecture Series on Biosciences 2012 at Centre for Pheromone Technology, Department of Animal Science, Bharathidasan University, Thiruchupalli, Tamilnadu, India.

PH.D DISSERTATION EXAMINER

1. Thesis titled *"Potential Therapeutic Applications of Biosynthesized Silver Nanoparticles: Antimicrobial Hepatoprotective and Antitumor applications"* Bharathidasan University, Thiruchupalli, Tamil Nadu, India. **(October 2015)**.
2. Thesis titled *"Hepatoprotective and proteomic mechanism of Sphaeranthus indicus L. in paracetamol induced hepatotoxicity in Wistar Rats"*. PRIST University, Thanjavur, Tamil Nadu, India. **(February 2014)**.
3. Thesis titled *"Antioxidant mediated ameliorative steroidogenesis by Commelina benghalensis L. and Cissus quadrangularis L. against pollutants (Quinalphos, Anthracene and Carbamazepine) induced male reproductive toxicity"*. Bharathidasan University, Thiruchupalli, Tamil Nadu, India. **(November 2013)**.

PUBLICATIONS

Research Articles

1. Rebecca VW, Nicastri MC, McLaughlin N, Fennelly C, McAfee Q, Ronghe A, Nofal M, Lim CY, Witze E, Chude CI, Zhang G, Alicea GM, Piao S, **Murugan S**, Ojha R, Levi SM, Wei Z, Barber-Rotenberg JS, Murphy ME, Mills GB, Lu Y, Rabinowitz J, Marmorstein R, Liu Q, Liu S, Xu X, Herlyn M, Zoncu R, Brady DC, Speicher DW, Winkler JD, Amaravadi RK. **A Unified Approach to Targeting the Lysosome's Degradative and Growth Signaling Roles**. *Cancer Discov. 2017 Nov; 7(11):1266-1283.*

2. **Murugan S**, Dave Y, Rakhit A, Sarkar DK. Hypothalamic beta-endorphin neurons suppress preneoplastic and neoplastic lesions development in 1,2-dimethylhydrazine induced rat colon cancer model. *J Cancer 2017; 8(16):3105-3113.*

3. Zhang C, **Murugan S**, Boyadjieva N, Jabbar S, Shrivastava P, Sarkar DK. Beta-endorphin cell therapy for cancer prevention. *Cancer Prev Res (Phila). 2015 Jan; 8(1):56-67.*

4. **Murugan S**, Boyadjieva N, Sarkar DK. Protective effects of hypothalamic beta-endorphin neurons against alcohol-induced liver injuries and liver cancers in rat animal models. *Alcohol Clin Exp Res. 2014 Dec;38(12):2988-97. doi: 10.1111/acer.12580.*

5. Agapito MA, Zhang C, **Murugan S**, Sarkar DK. Fetal alcohol exposure disrupts metabolic signaling in hypothalamic proopiomelanocortin neurons via a circadian mechanism in male mice. *Endocrinology. 2014 Jul;155(7):2578-88.*

6. **Murugan S**, Zhang C, Mojtahedzadeh S, Sarkar DK. Alcohol exposure in utero increases susceptibility to prostate tumorigenesis in rat offspring. *Alcohol Clin Exp Res. 2013 Nov;37(11):1901-9.*

7. Sarkar DK, Sengupta A, Zhang C, Boyadjieva N, **Murugan S**. Opiate antagonist prevents μ- and δ-opiate receptor dimerization to facilitate ability of agonist to control ethanol-altered natural killer cell functions and mammary tumor growth. *J Biol Chem. 2012 May 11;287(20):16734-47.* **(Cover Page article)**

8. Logan RW, Zhang C, **Murugan S**, O'Connell S, Levitt D, Rosenwasser AM, Sarkar DK. Chronic shift-lag alters the circadian clock of NK cells and promotes lung cancer growth in rats. *J Immunol. 2012 Mar 15;188(6):2583-91.* Sarkar DK, Zhang C, **Murugan S**, Dokur M,

9. Boyadjieva NI, Ortigüela M, Reuhl KR, Mojtehedzadeh S. Transplantation of β-endorphin neurons into the hypothalamus promotes immune function and restricts the growth and metastasis of mammary carcinoma. *Cancer Res. 2011 Oct 1;71(19):6282-91* **(Cover Page article)**

10. Sadashiva MP, Basappa S, Nanjundaswamy S, Li F, Manu KA, **Sengottuvelan M**, Prasanna DS, Anilkumar NC, Sethi G, Sugahara K, Rangappa KS. Anti-cancer activity of novel dibenzo[b,f]azepine tethered isoxazoline derivatives. *BMC Chemical Biology. 2012; 12:5.*

11. Basappa, **Murugan S***, Kavitha CV, Purushothaman A, Nevin KG, Sugahara K, Rangappa KS. A small oxazine compound as an anti-tumor agent: a novel pyranoside mimetic that binds to VEGF, HB-EGF, and TNF-α. *Cancer Lett. 2010 Nov 28;297(2):231-43.* **(* Joint first authors)**

12. Basappa, **Murugan S***, Sugahara KN, Lee CM, ten Dam GB, van Kuppevelt TH, Miyasaka M, Yamada S, Sugahara K. Involvement of chondroitin sulfate E in the liver tumor focal formation of murine osteosarcoma cells. *Glycobiology. 2009 Jul;19(7):735-42.* **(* Joint first authors)**

13. Li F, Ten Dam GB, **Murugan S**, Yamada S, Hashiguchi T, Mizumoto S, Oguri K, Okayama M, van Kuppevelt TH, Sugahara K. Involvement of highly sulfated chondroitin sulfate in the metastasis of the Lewis lung carcinoma cells. *J Biol Chem. 2008 Dec 5;283(49):34294-304.*

14. **Sengottuvelan M**, Deeptha K, Nalini N. Influence of dietary resveratrol on early and late molecular markers of 1,2-dimethylhydrazine-induced colon carcinogenesis. *Nutrition. 2009 Nov-Dec;25(11-12):1169-76.*

15. Sengottuvelan M, Deeptha K, Nalini N. Resveratrol ameliorates DNA damage, prooxidant and antioxidant imbalance in 1,2-dimethylhydrazine induced rat colon carcinogenesis. *Chem Biol Interact. 2009 Oct 7;181(2):193-201.* **(Top 25 Hottest Articles)**

16. **Sengottuvelan M**, Deeptha K, Nalini N. Resveratrol attenuates 1,2-dimethylhydrazine (DMH) induced glycoconjugate abnormalities during various stages of colon carcinogenesis. Phytother Res. 2009 Aug;23(8):1154-8.

17. Srihari T, **Sengottuvelan M**, Nalini N. Dose-dependent effect of oregano (Origanum vulgare L.) on lipid peroxidation and antioxidant status in 1,2-dimethylhydrazine-induced rat colon carcinogenesis. *J Pharm Pharmacol. 2008 Jun;60(6):787-94.*

18. Deeptha K, Kamaleeswari M, **Sengottuvelan M**, Nalini N. Dose dependent inhibitory effect of dietary caraway on 1,2-dimethylhydrazine induced colonic aberrant crypt foci and bacterial enzyme activity in rats. *Invest New Drugs. 2006 Nov;24(6):479-88.*

19. **Sengottuvelan M**, Senthilkumar R, Nalini N. Modulatory influence of dietary resveratrol during different phases of 1,2-dimethylhydrazine induced mucosal lipid-peroxidation, antioxidant status and aberrant crypt foci development in rat colon carcinogenesis. *Biochim Biophys Acta. 2006 Aug;1760(8):1175-83.*

20. Kamaleeswari M, Deeptha K, **Sengottuvelan M**, Nalini N. Effect of dietary caraway (Carum carvi L.) on aberrant crypt foci development, fecal steroids, and intestinal

alkaline phosphatase activities in 1,2-dimethylhydrazine-induced colon carcinogenesis. *Toxicol Appl Pharmacol. 2006 Aug 1;214(3):290-6.*

21. **Sengottuvelan M**, Nalini N. Dietary supplementation of resveratrol suppresses colonic tumour incidence in 1,2-dimethylhydrazine-treated rats by modulating biotransforming enzymes and aberrant crypt foci development. *Br J Nutr. 2006 Jul;96(1):145-53.*

22. **Sengottuvelan M**, Viswanathan P, Nalini N. Chemopreventive effect of trans-resveratrol--a phytoalexin against colonic aberrant crypt foci and cell proliferation in 1,2 dimethylhydrazine induced colon carcinogenesis. *Carcinogenesis. 2006 May;27(5):1038-46.*

23. Senthilkumar R, **Sengottuvelan M**, Nalini N. Protective effect of glycine supplementation on the levels of lipid peroxidation and antioxidant enzymes in the erythrocyte of rats with alcohol-induced liver injury. *Cell Biochem Funct. 2004 Mar-Apr;22(2):123-8.*

Review Articles

1. Sarkar DK, Murugan S, Zhang C, Boyadjieva N. Regulation of cancer progression by β-endorphin neuron. *Cancer Res. 2012 Feb 15;72(4):836-40.*

Book Chapters

1. Murugan S, Amaravadi RK. Methods for Studying Autophagy Within the Tumor Microenvironment. *Adv Exp Med Biol. 2016; 899:145-66.*

2. Gangisetty O, **Murugan S***. Epigenetic Modifications in Neurological Diseases: Natural Products as Epigenetic Modulators a Treatment Strategy. *Adv Neurobiol. 2016; 12:1-25.* **(* Joint first authors)**

3. **Sengottuvelan Murugan**, Deeptha Kumaraswmay. Resveratrol and its Derivatives for the Prevention and Treatment of Gastrointestinal Disorders: A Review. In: Disorders of Gastrointestinal Systems and Clinical Manifestations, *2016; Chapter 2: Page 13-24*. Nova Science Publishers Inc. (ISBN: 978-1-63485-366-8).

4. **Sengottuvelan Murugan**, Deeptha Kumaraswmay. Potential Role of Polyphenols on Liver Health and Diseases. In: Hepatotoxicity: Symptoms, Management and Health Implications, *Chapter 2: Page 23-40.* Nova Science Publishers Inc. (ISBN: 978-1-63482-650-1).

5. **Sengottuvelan Murugan**. Resveratrol and its Derivatives in Brain Health and Disease. In: Food and Brain Health, *Chapter 20: Page 443-456.* Nova Science Publishers Inc. (ISBN: 978-1-63117-734-7).

6. **Sengottuvelan Murugan** and Nalini Namasivayam. Fisetin – A Flavonoid in Health and Disease. In: Food as Medicine, *Chapter 23: Page 425-440.* Nova Science Publishers Inc. (ISBN: 978-1-62417-782-8).