

Dr. Suraj Unniappan is a tenured full professor at the Department of Veterinary Biomedical Sciences, Western College of Veterinary Medicine (WCVM), University of Saskatchewan, Canada. He also serves as the Director of the Endocrine Service Core Lab at the WCVM. During 2007-2012, Suraj was an assistant and then associate professor at the Department of Biology, York University. Suraj obtained BSc and MSc (both in Zoology) from University of Kerala, India, followed by his Ph.D. in Cell Biology and Physiology in 2004 from the University of Alberta, Canada under the supervision of late Dr. Richard (Dick) E. Peter.

He then completed a Canadian Institutes of Health Research (CIHR) funded post-doctoral training in biomedical research from the University of British Columbia in 2006, mentored by Dr. Timothy Kieffer.

His Laboratory of Integrative Neuroendocrinology focuses on three research themes: (i) the endocrine regulation of energy homeostasis in mammals, (ii) the neuroendocrine integration of reproduction and metabolism in fish, and (iii) the endocrine basis of diseases in domestic animals of commercial importance. More recently, he is leading a team to characterize the metabolic and glucoregulatory actions of nesfatin-1 and nesfatin-1-like peptide, two naturally occurring, biologically active, orphan ligands.

His research program received peer-reviewed funding from several agencies including the Natural Sciences and Engineering Research Council (NSERC) of Canada, CIHR and Canada Foundation for Innovation. He mentors a large number of trainees, and has authored about 70 peer-reviewed articles with them.

Suraj is a recipient of several awards including the Pickford Medal in Comparative Endocrinology, inaugural Early Researcher Award from the US Endocrine Society, Bob Boutilier Award from the Canadian Society of Zoologists, Discovery Accelerator Award from the NSERC, CIHR New Investigator Award, Zoetis Animal Health Research Excellence Award, Saskatchewan Health Research Foundation (SHRF) Top Biomedical Researcher Award, Ontario Ministry of Research and Innovation (MRI) Early Researcher Award, York University Early Researcher Award, Elsevier Top Reviewer and Top Cited Awards, and fellowships from the CIHR, Canadian Diabetes Association and the Michael Smith Foundation for Health Research. He is currently an associate editor of *General and Comparative Endocrinology*, and served as an editor for *Frontiers in Cellular Endocrinology* and *Frontiers in Experimental Endocrinology*. Suraj also serves as a reviewer for numerous journals, and national and international funding agencies.

Dr. Unniappan's research using fishes made several seminal discoveries that led to multidimensional future research, and growth of the field. His major contributions to fish endocrinology as an independent investigator within the first 10 years of appointment comprise of many "firsts". These include: the characterization of ghrelin and ghrelin acyl-O-transferase sequences in fishes, a role for ghrelin on fish feeding, glucose transport, digestive enzymes, and reproduction; identification of galanin, nesfatin-1, and a nesfatin-1-like peptide in fish, characterization of metabolic, reproductive and cardiovascular functions of nesfatin-1, and irisin regulation of fish feeding and cardiovascular physiology.

**Selected key publications on fish endocrinology (as an independent investigator):**

Blanco AM, Bertucci JI, Ramesh N, Delgado MJ, Valenciano AI, Unniappan S. 2017. Ghrelin Facilitates GLUT2-, SGLT1- and SGLT2-mediated Intestinal Glucose Transport in Goldfish (*Carassius auratus*). Scientific Reports. 45024. doi: 10.1038/srep45024.

Sundarrajan L, Unniappan S. 2017. Small Interfering RNA Mediated Knockdown of Irisin Suppresses Food Intake and Modulates Appetite Regulatory Peptides in Zebrafish. General and Comparative Endocrinology. Accepted – In Press.

Blanco AM, Bertucci JI, Sánchez-Bretaña A, Delgado MJ, Valenciano AI, Unniappan S. 2017. Ghrelin modulates gene and protein expression of digestive enzymes in the intestine and hepatopancreas of goldfish (*Carassius auratus*) via the GHS-R1a: Possible roles of PLC/PKC and AC/PKA intracellular signaling pathways. Molecular and Cellular Endocrinology. 442:165-181.

Sundarrajan S, Blanco AM, Bertucci J, Ramesh N, Canosa LF, Unniappan S. 2016. Nesfatin-1-Like Peptide Encoded in Nucleobindin-1 in Goldfish is a Novel Anorexigen Modulated by Sex Steroids, Macronutrients and Daily Rhythm. Scientific Reports. 2016 Jun 22;6:28377. doi: 10.1038/srep28377.

Nair N, Gerger C, Hatef H, Weber LP, Unniappan S. 2016. Ultrasonography reveals *in vivo* dose dependent inhibition of end systolic and diastolic volumes, heart rate and cardiac output by nesfatin-1 in zebrafish. General and Comparative Endocrinology. 234:142-50.

Gonzalez R, Unniappan S. 2015. Mass Spectrometry Assisted Confirmation of the Inability of Dipeptidyl Peptidase 4 to Cleave Goldfish Peptide YY(1-36), and the Lack of Anorexigenic Effects of PYY(3-36) in Goldfish (*Carassius auratus*). Fish Physiology and Biochemistry.

Hatef A, Yufa R, Unniappan S. 2015. Ghrelin O-Acyl Transferase in Zebrafish Is an Evolutionarily Conserved Peptide Upregulated During Calorie Restriction. Zebrafish. 12(5):327-38.

Gonzalez R, Shepperd E, Thiruppugazh V, Lohan S, Grey CL, Chang JP, Unniappan S. 2012. Nesfatin-1 regulates the hypothalamo-pituitary-ovarian axis of fish. Biology of Reproduction. 87:84.(1-11).

Kerbel A, Unniappan S. 2011. Nesfatin-1 Suppresses Energy Intake, Co-localizes Ghrelin and Inhibits Brain Preproghrelin and Ghrelin Receptor mRNA Expression in Goldfish. Journal of Neuroendocrinology 24:366-77.

Gonzalez R, Kerbel B, Chun A, Unniappan S. 2010. Molecular, Cellular and Physiological Evidences for the Anorexigenic Actions of Nesfatin-1 in Goldfish. PLoS ONE 5(12): e15201.