




Faculty Details proforma for DU Web-site

Title	Prof.	First Name	Neeta	Last Name	Sehgal	Photograph												
Designation		Professor																
Address		Fish Endocrinology Lab Department of Zoology University of Delhi Delhi – 110007																
Phone No Office		27667212 Ext. 135 27667725 Ext. 1325 27667443																
Residence Mobile		27662258																
		9810784839																
Email		neetasehgal.du@gmail.com ; nsehgal@zoology.du.ac.in																
Web-Page																		
Educational Qualifications																		
Degree		Institution			Year													
Ph.D.		Ph.D. (Zoology), University of Delhi.			1990													
PG		M.Sc. (Zoology), Miranda House, University of Delhi.			1982													
UG		B.Sc. (Hons. Zoology), Miranda House, University of Delhi.			1980													
Career Profile																		
2008 – till date: Professor, Department of Zoology, University of Delhi.																		
2000 – 2008: Reader, Department of Zoology, University of Delhi.																		
1992 – 2000: Lecturer, Department of Zoology, University of Delhi.																		
Administrative Experience																		
<table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">Proctor, University of Delhi</td> <td style="width: 5%; text-align: center;">:</td> <td style="width: 35%;">Jan, 2017- till date</td> </tr> <tr> <td>Head, Department of Zoology</td> <td style="text-align: center;">:</td> <td>Three years</td> </tr> <tr> <td>Warden of University Hostel for Women</td> <td style="text-align: center;">:</td> <td>Thirteen years</td> </tr> <tr> <td>Resident Tutor of University Hostel for Women:</td> <td></td> <td>Two years & six months</td> </tr> </table>							Proctor, University of Delhi	:	Jan, 2017- till date	Head, Department of Zoology	:	Three years	Warden of University Hostel for Women	:	Thirteen years	Resident Tutor of University Hostel for Women:		Two years & six months
Proctor, University of Delhi	:	Jan, 2017- till date																
Head, Department of Zoology	:	Three years																
Warden of University Hostel for Women	:	Thirteen years																
Resident Tutor of University Hostel for Women:		Two years & six months																
Administrative Assignments																		
<ul style="list-style-type: none"> Convener of Expert Consultation, CIFE, Mumbai Board member of National Talent Search Scheme, NCERT Member of Courses Committee, DU Member of Governing Body of Colleges, DU 																		

Areas of Interest / Specialization

Our Fish Biology Unit is recognized as a major centre of research on fish physiology and allied areas. Working on several aspects of reproductive physiology of freshwater fishes using murrel and catfish as models. Our studies have established that estrogens regulate the synthesis of vitellogenin and choriogenin in the liver. There is a differential expression of Vg (A and B) genes on exposure of murrel to estrogenic compounds. We have shown existence of three *vg* genes (*vga*, *vgb* and *vgc*) in the murrel which transcribe and translate three vitellogenins.

To gain a further insight into the hormonal control of the synthesis of these two proteins, we have developed and standardized enzymatic and non-enzymatic techniques for isolation of viable hepatocytes and their short-term culture. These techniques have enabled us to investigate cell metabolism and biosynthetic activities in the liver cells. The techniques have also been employed to study the interaction between estrogens and several non-estrogenic hormones during vitellogenesis.

We have also initiated studies on the effects of xenoestrogens on the hepatic synthesis of vitellogenin and choriogenin in Indian freshwater fishes. We have developed and validated highly specific enzyme-linked immunosorbent assays for detection of extremely small amounts of vitellogenin and choriogenin in the blood of fishes. These homologous ELISAs can be used as biomarkers for pollutants in the aquatic environment. We have designed a protocol to quantify expression of these proteins at transcription level. In addition, other genes viz. heat shock protein and estrogen receptor, associated with the synthesis of vitellogenin have been investigated.

We have shown that H₂O₂ plays a significant role during spermatogenesis and have proposed a model for regulation of spermatogenesis at the intracellular level. Similar studies have been extended to investigate the phenomenon of oxidative stress during gametogenesis in the catfish.

Subjects Taught

- Comparative Animal Physiology
- Evolution and Functional Anatomy of Fishes
- Aquatic Resources and their Conservation
- Aquaculture
- Gamete Biology of Fish

Research Guidance

Supervision of awarded/ submitted Doctoral Thesis: Nineteen

Dwivedi, Satyam. 2017. Physiological stress response in the murrel, *Channa punctatus* in relation to seasonal variation in water quality of Yamuna river catchment from Delhi.

Panwar, Deepak. 2016. Studies on Protein-Protein Interactions Regulating Granulosa Cell Apoptosis in *Bubalus bubalis*.

Verma, Vipin Kumar. 2016. Immuno-stimulatory effects of supplemented feed against *Aeromonas hydrophila* and development of ELISA to evaluate health status of the African catfish, *Clarias gariepinus* and the murrel, *Channa punctatus*.

Khandelwal, Preeti. 2016. Studies on expression of estrogen responsive genes & precursor product profiling of Vitellogenin in the Indian freshwater catfish, *Heteropneustes flossilis*.

Shrivastava, Nitisha. 2015. Repurposing of pharmacopoeia for identifying novel radioprotectors using zebrafish as organism model.

Rawal, Leena. 2014. Molecular mining of repeat tagged transcribing genes in water buffalo *Bubalus bubalis*.

Vikas Kumar. 2013. Designing of novel heterocyclic scaffolds as potential therapeutic agents against Neurodegenerative disorders: A computational approach.

Supriya Pipil. 2013. Expression of Genes (*vga*, *vgb*, *hsp*, *era*) on Exposure to Estrogens and Characterization of Vitellogenin c in the Indian Freshwater Murrel, *Channa punctatus* (Bloch).

Luni. 2012. Cytoplasmic Reorganization and Hydration in the Oocytes of the African Catfish, *Clarias gariepinus*, during Meiotic Resumption.

Kumari Vandana Rani. 2012. Induction, Characterization and Expression of Proteins Synthesized by Primary Hepatocytes of Murrel, *Channa punctatus* (Bloch) on Exposure to Natural Estrogens and Xenoestrogens.

Archana Aggrawal. 2012. Role of N-acetylcysteine, an Oxidant in Mitigating the Adverse Effects Associated with Persistent Stimulation of Rat Leydig Cells with hCG.

Santosh Kumar. 2011. Diversity and Ecology of Ciliated Protozoa from Select Biotopes and A Recombinant Cell Line of *Tetrahymena thermophila* as Potential Model for Toxicological Assays.

Rawat, Varunendra Singh. 2010. Vitellogenins (A and B) and estrogen receptors (α and β) as indicators of exposure to estrogenic compounds: Gene expression analysis in the Indian freshwater murrel, *Channa punctatus* (Bloch). University of Delhi.

Kaushik, Mahesh. 2009. Studies on expression of Androgen and Estrogen receptor- α in specific organs during hypo-spermatogenesis in the rat following hormonal intervention. University of Delhi.

Om Prakash. 2008. Development of ELISAs for Vitellogenin and Choriogenin and Experimental Studies on the Induction of Egg-yolk Precursor Proteins in the Freshwater Murrel, *Channa punctatus* (Bloch). University of Delhi.

Phartyal, Rajendra. 2008. Vitellogenin in the African Catfish, *Clarias gariepinus* (Burchell): *In vivo* and *in vitro* Induction, Estimation and Partial Characterization. University of Delhi.

Gautam, Dinesh Kumar. 2007. Role of Oxidative Stress in the Regulation of Spermatogenesis in Rats. University of Delhi.

Diwedi, Meenakshi. 2006. Genetics of Radio-adaptive response in *Saccharomyces cerevisiae*. University

Pipil, Supriya. 2008. Electrophoretic, Immunological and Solubility Characteristics of the Egg-chorion of the African catfish, *Clarias gariepinus*. University of Delhi.

Raj Kumar. 2008. Effect of Estradiol on Superoxide Dismutase and Lipid Peroxidation in Gonads of the African catfish, *Clarias gariepinus*. University of Delhi.

Dabral, Sanyam. 2007. Effect of Estradiol 17 β on Reactive Oxygen Species in Different Tissues of *Clarias gariepinus*. University of Delhi.

Kumari Vandana Rani. 2007. Partial Sequence of Vitellogenin Gene in the Indian Freshwater Murrel, *Channa punctatus* (Bloch). University of Delhi.

Aggarwal, Archana. 2007. Molecular Markers in Fishes with Special Reference to Selective Breeding. University of Delhi.

Rawat, Varunendra Singh. 2003. Immunological Detection of Vitellogenin and Choriogenin in the Plasma of Murrel, *Channa punctatus*. University of Delhi.

Giri, Shibashish. 2003. Polycyclic Aromatic Hydrocarbons (PAH): Sources, Bioaccumulation, Metabolism and Effects on Fish Reproduction with Special Reference to Gametogenesis. University of Delhi.

Jyoti. 2000. Functional Anatomy of Fish Hepatocytes in Relation to Oogenesis. University of Delhi.

Thaosen, Sarbojit. 1999. Egg-yolk Proteins in Fishes with Special Reference to Phosvitins. University of Delhi.

Luke, Reena. 1997. Cryopreservation of Fish Gametes. University of Delhi.

Books/Monographs (Authored/Edited)

Sehgal, Neeta, A Kumar and S K Sharma. 2004. *Biosensors: Technique & Applications*. Place of publisher: D K Publishers.

Sehgal, Neeta, S K Sharma, A Khanduri and A Kumar. 2002. *Disposable strips for detection of alkaline phosphatase in pasteurized milk*. Place of publisher: Allied Publishers.

Research papers published in Refereed/Peer Reviewed Journals

1. Dwivedi, S., & Sehgal, N. (2017). Scale of murrel: A non-invasive approach to monitor heavy metals in freshwater. *Journal of Biological Sciences and Medicine*, 3(3), 15-23.
2. Shrivastava, N., Joshi, J., Sehgal, N., & Kumar, I. P. (2017). Cyclooxygenase-2 identified as a potential target for novel radiomodulator scopolamine methyl bromide: An *in silico* study. *Informatics in Medicine Unlocked*.
3. Verma, V. K., Rani, K., Sehgal, N., & Prakash, O. (2016). Prevention of histopathological damages in the liver, spleen and kidney of *Channa punctata* infected with *Aeromonas hydrophila*. *Prevention*, 2(1), 227-232.

4. Verma, V. K., Sehgal, N., & Prakash, O. (2015). Characterization and screening of bioactive compounds in the extract prepared from aerial roots of *Ficus benghalensis*. *International Journal of Pharmaceutical Sciences and Research*, 6(12), 5056.
5. Joshi, J., Dimri, M., Ghosh, S., Shrivastava, N., Chakraborti, R., Sehgal, N., ... & Kumar, I. P. (2015). Ligand and Structure Based Models for the Identification of Beta 2 Adrenergic Receptor Antagonists. *Current computer-aided drug design*, 11(3), 222-236.
6. Verma, V. K., Kumar, S. R., Rani, K. V., Sehgal, N., & Prakash, O. (2015). Compound profiling in methanol extract of *Kalanchoe blossfeldiana* (Flaming katy) leaves through GC-MS analysis and evaluation of its bioactive properties. *Global Journal of Advanced Biological Sciences*, 1, 38-49.
7. Panwar, D., Rawal, L., Sehgal, N., & Ali, S. (2015). Cross Talk between KGF and KITLG proteins implicated with ovarian folliculogenesis in Buffalo *Bubalus bubalis*. *PLoS one*, 10(6), e0127993.
8. Rawal, L., Pathak, D., Sehgal, N., & Ali, S. (2015). Transcriptional Dynamics of Homeobox C11 Gene in Water Buffalo *Bubalus bubalis*. *DNA and cell biology*.
9. Dimri, M., Joshi, J., Chakrabarti, R., Sehgal, N., Sureshbabu, A., & Prem Kumar, I. (2015). Todralazine Protects Zebrafish from Lethal Effects of Ionizing Radiation: Role of Hematopoietic Cell Expansion. *Zebrafish*.
10. Verma, V. K., Rani, K. V., Sehgal, N., & Prakash, O. (2015). Enhanced disease resistance in the Indian snakehead, *Channa punctata* against *Aeromonas hydrophila*, through 5% feed supplementation with *F. benghalensis* (aerial root) and *L. leucocephala* (pod seed). *Aquaculture International*, 1-14.
11. Pipil, S., Kumar, V., Rawat, V. S., Sharma, L., & Sehgal, N. (2014). *In silico* and *in vivo* analysis of binding affinity of estrogens with estrogen receptor alpha in *Channa punctatus* (Bloch). *Fish physiology and biochemistry*, 1-10.
12. Pipil, S., Rawat, V. S., Sharma, L., & Sehgal, N. (2014). Characterization of incomplete vitellogenin (*VgC*) in the Indian freshwater murrel, *Channa punctatus* (Bloch). *Fish physiology and biochemistry*, 1-11.
13. Sharma, M., Rawal, L., Panwar, D., Sehgal, N., & Ali, S. (2014). Differential expression of Homeobox C11 protein in water buffalo *Bubalus bubalis* and its putative 3D structure. *BMC genomics*, 15(1), 638.
14. Kumar, V., Chadha, N., Tiwari, A.K., Sehgal, N., Mishra, A.K. (2014). Prospective atom-based 3D-QSAR model prediction, pharmacophore generation, and molecular docking study of carbamate derivatives as dual inhibitors of AChE and MAO-B for Alzheimer's disease. *Medicinal Chemistry Research*, 23: 1114-1122.
15. Aggarwal, N., Goswami, S.V., Khandelwal, P., Sehgal, N. (2014). Aromatase activity in brain and

- ovary: Seasonal variations correlated with circannual gonadal cycle in the catfish, *Heteropneustes fossilis*. *Indian Journal of Experimental Biology*, 52: 527-537.
16. Rawal, L., Sehgal, N., & Ali, S. (2013). Genome Analysis and Human Health: A Critical Appraisal. *Global Journal of Human Genetics & Gene Therapy*, 1(1), 16-37.
 17. V.K. Verma, K. V. Rani, N. Sehgal and O. Prakash. (2013). Immunostimulatory effect of artificial feed supplemented with indigenous plants on *Clarias gariepinus* against *Aeromonas hydrophila*. *Fish and Shellfish Immunology*, 35 (3): 1924- 1931.
 18. V.S. Rawat, S. Pipil, L. Sharma, N. Sehgal. (2013). Purification, characterization and expression of two vitellogenins in the Indian freshwater murrel *Channa punctatus*. *General and Comparative Endocrinology*, 189: 119–126.
 19. Om Prakash, Neeta Sehgal, Kumari Vandana Rani, and N Aggarwal. (2013). Isolation purification and characterization of the egg-yolk proteins from the oocytes of the Indian freshwater murrel *Channa punctatus*. *Indian Journal of Experimental Biology*, 51: 411-420.
 20. Sharma, K.K., Shrivastava, B., Sastry, V.R.B., Sehgal, N., Kuhad, R.C. (2013). Middle-redox potential laccase from *Ganoderma* sp.: Its application in improvement of feed for monogastric animals. *Scientific Reports*: 3, Article number 1299.
 21. Sehgal, Neeta, V S Rawat, K V Rani and R Phartyal. (2013). Vitellogenin genes in fish: Differential expression on exposure to estradiol. *Fish Physiology and Biochemistry*, 39: 39-46.
 22. Aggarwal, N, Goswami, S V and Sehgal, N. (2012). A stereotaxic atlas and technique for nuclei of the diencephalon of catfish, *Heteropneustes fossilis* (Bloch). *J. Env. Bio-Sci*, 26 (1): 15-16.
 23. V.K. Verma, K. V. Rani, N. Sehgal and O. Prakash. (2012). Immunostimulatory response induced by supplementation of *Ficus benghalensis* root powder, in the artificial feed the Indian freshwater murrel, *Channa punctatus*. *Fish and Shellfish Immunology*, 33 (3): 590-596.
 24. Tiwari, A.K., Rathore, V.S., Sinha, D., Datta, A., Sehgal, N., Chuttani, K., Mishra, A.K. (2012). Design and docking studies of [diethylenetriaminepentaacetic acid-(amino acid)₂] with acetylcholine receptor as a molecular imaging agent for single-photon emission computed tomographic application. *Molecular Imaging*, 11 (3): 240-250.
 25. Sehgal, Neeta, Aggarwal, A., Misro, M.M. and Maheshwari, A. (2012). Differential modulation of apoptotic gene expression by N-acetyl-L-cysteine in Leydig cells stimulated persistently with hCG in vivo. *Molecular and Cellular Endocrinology*, 348: 155-164.
 26. Sehgal, Neeta, Sharma, K.K. , Shrivastava, B., Nandal, P., Sastry, V.R.B., Kalra, A. and Kuhad, R.C.

- (2012). Nutritional and Toxicological Assessment of White-Rot Fermented Animal Feed. *Indian Journal of Microbiology*. 52 (2): 185-190.
27. Kaushik, M. C., Misro, M. M., Sehgal, N., & Nandan, D. (2010). Effect of chronic oestrogen administration on androgen receptor expression in reproductive organs and pituitary of adult male rat. *Andrologia*, 42(3), 193-205.
28. Sehgal, Neeta, Archana Aggarwal, M M Misro, A Maheshwari and D Nandan. (2010). N-acetylcysteine counteracts oxidative stress and prevents hCG-induced apoptosis in rat Leydig cells through down regulation of caspase-8 and JNK. *Molecular Reproduction and Development*. 77(10): 900-909.
29. Sehgal, Neeta, K V Rani, Om Prakash and S V Goswami. 2010. Relative potencies of natural estrogens on vitellogenin and choriogenin levels in the Indian freshwater spotted snakehead, *Channa punctata*: in vivo and in vitro studies. *Fish Physiology and Biochemistry* 36: 587-595.
30. Sehgal, Neeta, M C Kaushik, M M Misro and D Nandan. 2010. AR versus ER (α) expression in the testis and pituitary following chronic estrogen administration in adult rat. *System Biology in Reproductive Biomedicine*, 56 (6): 420-430.
31. Sehgal, Neeta, M C Kaushik, M M Misro and D Nandan. 2010. Effect of chronic estrogen treatment on AR expression in reproductive organs and pituitary of male adult rats. *Andrologia*. 42(issue): 3: 193-205.
32. Sehgal, Neeta, Archana Aggarwal, M M Misro, A Maheshwari and D Nandan. 2009. Adverse Effects Associated With Persistent Stimulation of Leydig Cells With hCG in Vitro. *Molecular Reproduction and Development*. 76(11): 1076-1083.
33. Sehgal, Neeta, M Dwivedi and M Bala. 2008. Effects of ⁶⁰Co-gamma-ray low dose on radioresistance, mutagenesis, gene conversion, cell cycle and transcriptome profile in *Saccharomyces cerevisiae*. *International Journal of Low radiation*. 9, 496-498.
34. Sehgal, Neeta, S K Sharma and A Kumar. 2007. Lactase from *Clarias gariepinus* and its application in development of lactose sensor. *Sensors & Transducers Journal*. 82(8): 1458-1469.
35. Sehgal, Neeta, Om Prakash and S V Goswami. 2007. Establishment of ELISA for murrel vitellogenin and choriogenin, as biomarkers of potential endocrine disruption. *Comparative Biochemistry and Physiology- C Toxicology and Pharmacology*. 146(issue 4): 540-551.
36. Sehgal, Neeta, D K Gautam, M M Misro, S P Chaki and M Chandra. 2007. hCG treatment raises H₂O₂ levels and induces germ cell apoptosis in rat testis. *Apoptosis*. 12(7): 1173-1182.
37. Sehgal, Neeta, S K Sandeep, A Kumar, R Chaudhary, S Pundir, C S Pundir. 2007. Lactose biosensor based on lactase and galactose oxidase immobilized in polyvinyl formal. *Artificial*

Cells, Blood Substitutes and Biotechnology. 35(issue 4): 421–430.

38. Sehgal, Neeta, S K Sharma, Suman, C S Pundir and A Kumar. 2006. Galactose sensor based on galactose oxidase immobilized in polyvinyl formal. *Sensors and Actuators B: Chemical*. 119(1): 15-19.
39. Sehgal, Neeta, D K Gautam, M M Misro and S P Chaki. 2006. H₂O₂ at physiological concentrations modulates Leydig cell function inducing oxidative stress and apoptosis. *Apoptosis*. 11(issue 1): 39-46.
40. Sehgal, Neeta, R Phartyal, Bibekananda, L Singh and S V Goswami. 2005. *In vitro* induction of vitellogenin by estradiol-17 β in isolated hepatocytes of catfish, *Clarias gariepinus*. *Fish Physiology and Biochemistry*. 31(2-3): 241-245.
41. Sehgal, Neeta and S V Goswami. 2005. Vitellogenin exists as charge isomers in the Indian freshwater murrel, *Channa punctatus* (Bloch). *General and Comparative Endocrinology*. 141(1): 12-21.
42. Sehgal, Neeta, K Acharia and S V Goswami. 2004. Role of lipid sources on reproductive activity on male African catfish, *Clarias gariepinus*, during spermatogenesis. *Applied Fisheries & Aquaculture*. 4(2): 24 -26.
43. Sehgal, Neeta, S K Sharma, R Singhal and A Kumar. 2004. Biostrip technique for detection of galactose in diary foods. *Food Chemistry*. 88 (issue 2): 299-303.
44. Sehgal, Neeta, S K Sharma, R Singhal, B D Malhotra and A Kumar. 2004. Langmuir-Bloggett film based biosensor for estimation of galactose in milk. *Electrochimica Acta*. 49(issue 15): 2479-2485.
45. Sehgal, Neeta, S K Sharma, R Singhal, B D Malhotra and A Kumar. 2004. Biosensor based on Langmuir-Bloggett films of poly (3-hexyl thiophene) for detection of galactose in human blood. *Biotechnology Letters*. 26(issue): 645-647.
46. Sehgal, Neeta, S K Sharma, R Singhal, B D Malhotra and A Kumar. 2004. Lactose biosensor based on Langmuir-Bloggett film of poly (3-hexyl thiophene). *Biosensors & Bioelectronics*. 20(issue 3): 651-657.
47. Sehgal, N. and Goswami, S.V. 2003. Ultrastructural changes in the liver of the Indian freshwater murrel, *Channa punctatus* (Bloch) during estradiol-induced vitellogenin synthesis. *J. Aqua*. 11: 41-48.
48. Sharma S.K., Rajnee, Sehgal, N. and Kumar A. 2003. Biomolecules for development of biosensors and their applications. *Curr. Appl. Phys. (USA)* 3: 307-316.
49. Sharma, S.K., Sehgal, N. and Kumar A. 2003. Dry reagent strips for testing milk pasteurization.

Lebensmittel-Wissenschaft und-Technologie (Zurich). 36: 567-571.

50. Sehgal, N. and Goswami, S.V. 2003, Fine structure of the egg envelopes of the oocyte of the Indian freshwater murrel, *Channa punctatus* during vitellogenesis. *J. Aqua Trop.* 18 (4): 265-274.
51. Sharma, S.K., Sehgal, N. and Kumar, A. 2002. A quick and simple biostrip technique for detection of lactose. *Biotechnology Letters* 24: 1737 - 1739.
52. Sehgal, N. and Goswami, S. V. 2002. Immunological identification of two female-specific proteins in the plasma of the Indian freshwater murrel, *Channa punctatus* (Bloch). *Ind. J. Exp. Biol.* 40: 288-295.
53. Sehgal, N. and Goswami, S. V. 2002. Identification of Egg-Chorion Precursor, Choriogenin, in the Indian Freshwater murrel, *Channa punctatus*, (Bloch). *Applied Fisheries & Aquaculture* 2002 Vol. II (1): 35 -38.
54. Sharma, S.K., Khanduri, A., Sehgal, N. and Kumar, A. 2002. Disposable strips for detection of alkaline phosphatase in pasteurized milk. *In: Sensor Technology*. A.K. Kapoor, J.C. Kapoor and D.B. Singh (eds.) Allied Publishers, New Delhi. Pp. 159-163.
55. Sharma S.K., Bala Madhu, Tulsani N.B., Sehgal N. and Kumar A. 2002. Albumin test strip for quick detection of albunuria in human. *Ind. J. Chem. Tech.* Vol. 9: 496-498.
56. Sehgal, N. and Goswami, S.V. 2001. Purification of vitellogenin from the plasma of Indian freshwater murrel, *Channa punctatus* (Bloch) by different methods: A comparative study. *Ind. J. Biochem. Biophys.*, 38: 263-269.
57. Sehgal, N. and Goswami, S.V. 2001. Biochemical changes in the liver of the Indian freshwater murrel, *Channa punctatus* (Bloch) during estradiol-induced vitellogenin synthesis. *Fish Physiology and Biochemistry*, 24 (2): 149-155.
58. Sehgal, N. and Goswami, S.V. (1994). Steroidal effects on plasma vitellogenin levels in intact and hypophysectomized Indian freshwater murrel, *Channa punctatus* (Bloch). *Ind. J. Exp. Biol.*, 32: 387-392.
59. Sehgal, N. and Goswami, S.V. (1991). Isolation and characterization of female-specific plasma proteins of the Indian freshwater murrel, *Channa punctatus* (Bloch). *Proc. Natl. Sym. Gen. Comp. Endocrinol.*, p. 44.

60. Sehgal, N. and Goswami, S.V. (1991). Immunological identification of two female-specific plasma proteins in the plasma and their localization in the oocytes of the murrel, *Channa punctatus* (Bloch). In: *Curr. Themes Comp. Endocrinol.*, R.N. Saxena *et al.* (eds.), 283-284.
61. Sehgal, N. and Goswami, S.V. (1988). Alterations in enzyme activities in the liver of murrel *Channa punctatus* (Bloch). *Proc. Natl. Sym. Curr. Status Gen. Comp. Endocrinol.*, pp. 111-113.
62. Goswami, S.V., Gupta, N., Sehgal, N. and Kanwal, V. (1987). Role of testosterone in reproduction in the female catfish, *Heteropneustes fossilis* (Bloch), In: *Proc. Ist Int. Congr. Asia and Oceania Society for Gen. Comp. Endocrinol.* (E. Ohinishi, Y. Nagahama and H. Ishizaki eds.), Nagoya University Corp., pp. 191-192.

Conference Organization/ Presentations

Participation as Paper/Poster Presenter

1. Sehgal Neeta. Evaluation of estrogenic potential of Genistein administration in Indian freshwater catfish, *Heteropneustes fossilis*. Poster presented in INSCR Conference on Role of microbe- plant animal interaction in human health held at University of Delhi, **Delhi, India**. September 26-28, 2017.
2. Sehgal Neeta. Expression of Heat Shock protein in liver under the influence of Estradiol-17 β in fish. Poster presented in the IndoUS Workshop & International Symposium on Biological Timing and Health Issues in the 21st Century held at University of Delhi, **Delhi, India**. February 21-24, 2017.
3. Sehgal Neeta. Characterization of Lipovitellin from Vitellogenic Oocytes of freshwater fish. Poster presented in the IndoUS Workshop & International Symposium on Biological Timing and Health Issues in the 21st Century held at University of Delhi, **Delhi, India**. February 21-24, 2017.
4. Sehgal Neeta. Induction of Vitellogenin Synthesis in the African Catfish *Clarias gariepinus* by Steroid Hormones. Poster presented in the International Conference on Comparative Endocrinology and Integrative Physiology, held at Park Centre, Technopark, Thiruvananthapuram, **Kerala, India**. August 4-7, 2015.
5. Sehgal Neeta. Dopaminergic control of meiotic oocyte maturation in the fish. Poster presented in the International Conference on Comparative Endocrinology and Integrative Physiology, held at Park Centre, Technopark, Thiruvananthapuram, **Kerala, India**. August 4-7, 2015.
6. Sehgal Neeta. A comparative study on murrel during different seasons maintained in water of river Yamuna, Delhi NCR. Paper presented in the International Conference on Comparative Endocrinology and Integrative Physiology, held at Park Centre, Technopark,

Thiruvananthapuram, **Kerala, India**. August 4-7, 2015.

7. Sehgal Neeta. Apoptosis in Testis and Liver during Synthesis of Vitellogenin in Murrel and Catfish. Poster presented in the 10th Indian Fisheries and Aquaculture Forum, held at ICAR-National Bureau of Fish Genetic Resources, **Lucknow, India**. November 12-15, 2014.
8. Sehgal Neeta. Identification of D2 Receptors and Distribution of Putative Dopaminergic Neurons in the Brain of Fish. Poster presented in the 10th Indian Fisheries and Aquaculture Forum, held at ICAR-National Bureau of Fish Genetic Resources, **Lucknow, India**. November 12-15 2014.
9. Sehgal Neeta. Protein profiling of Vitellogenin in the African catfish *Clarias gariepinus*. Paper presented in the 10th Indian Fisheries and Aquaculture Forum, held at ICAR-National Bureau of Fish Genetic Resources, **Lucknow, India**. November 12-15 2014.
10. Sehgal Neeta. Vitellogenin: A novel protein for defense in the Indian freshwater murrel, *Channa punctatus*. Paper presented at International Conference on Comparative Endocrinology and Physiology, 22.10.2013, **Nagpur, India**.
11. Sehgal Neeta. Proteolysis of yolk proteins and aquaporin play an essential role during oocyte maturation and hydration in freshwater catfish, *Clarias gariepinus*. Paper presented at 7th Asia Oceania Society for Comparative International Symposium on Reproductive Physiology of Fish (7th AOSCE) March 03-07, 2012, **Kuala Lumpur, Malaysia**.
12. Paper entitled "Differential Expression of Vitellogenin Genes (VgA & VgB) by Hepatocytes of the Indian Freshwater Murrel, *Channa punctatus*, on Exposure to Estradiol" presented at 9th International Symposium on Reproductive Physiology of Fish (9th ISRPF) August 09-14, 2011, **Trissur, Kochi, India**.
13. UGC sponsored National Seminar on New Trends in Fishery Development in India held at **Chandigarh, India** presented an invited lecture on "Isolation and partial characterization of vitellogenin in the Indian freshwater murrel, *Channa punctatus* (Bloch)" during February 2005.
14. 3rd Indian Fisheries Science Congress held at **New Delhi, India** presented a paper entitled "Role of dietary fatty acids on reproductive activity of the male African catfish, *Clarias gariepinus* during spermatogenesis" during November 2004.
15. 3rd Indian Fisheries Science Congress held at **New Delhi, India** presented a paper entitled "Plasma levels of vitellogenin and choriogenin in the Indian freshwater murrel, *Channa punctatus* during reproduction and in response to estradiol-17 β " during November 2004.
16. 3rd Indian Fisheries Science Congress held at **New Delhi, India** presented a paper entitled "Optimal conditions for *in vitro* induction of vitellogenin synthesis by primary cultures of non-enzymatically isolated hepatocytes of *Clarias gariepinus*" during November 2004.
17. 30th Annual Conference of association of Clinical Biochemists of India held at **Bangalore, India** presented a poster entitled "Biosensor for estimation of lactose in food" during January 2004.

18. 30th Annual Conference of association of Clinical Biochemists of India held at **Bangalore, India** presented a poster entitled "A quick and economical test for estimation on galactose" during January 2004.
19. National Symposium on Current Trends in Comparative Endocrinology: Impact of Molecular Biology and Biotechnology held at **Nagpur, India** presented a paper entitled "Vitellogenesis in the Indian Freshwater murrel, *Channa punctatus* (Bloch)" during November 2003.
20. National Symposium on Current Trends in Comparative Endocrinology: Impact of Molecular Biology and Biotechnology held at **Nagpur, India** presented a paper entitled "Identification and isolation of vitellogenin and choriogenin in the plasma of the Indian freshwater murrel, *Channa punctatus* (Bloch)" during November 2003.
21. National Symposium on Current Trends in Comparative Endocrinology: Impact of Molecular Biology and Biotechnology held at **Nagpur, India** presented a paper entitled "Isolation and identification of lipovitellin and phosvitin, in the Indian freshwater murrel, *Channa punctatus*, (Bloch)." during November 2003.
22. Annual Conference of Association of Clinical Biochemists of India held at **Jaipur, India** presented a paper entitled "Langmuir-Blodgett films application in biosensor for prevention of galactosemia" during February 2003.
23. Annual Conference of Association of Clinical Biochemists of India held at **Jaipur, India** presented a paper entitled "Langmuir-Blodgett films and their application in diagnosis of diseases" during February 2003.
24. National Conference on Sensor Technology held at **Delhi, India** presented a paper entitled "Disposable strips for detection of alkaline phosphatase in pasteurized milk" during September 2002.
25. Asian Pacific Congress of Clinical Biochemistry held at **New Delhi, India** presented a paper entitled "Quick detection of lactose by enzymatic test strip" during March 2002.
26. 71st Meeting of Society of Biological Chemists held at **Ludhiana, India** presented a paper entitled "Lactase membrane and its application in food industries" during November 2002.
27. 70th Annual Meeting of Society of Biological Chemists held at **Hyderabad, India** presented a paper entitled "Quick detection of lactose in milk and milk products" during December 2001.
28. India-Japan Workshop on New Advanced Materials in Molecular Electronics held at **New Delhi, India** presented a paper entitled "Biomolecules for biosensors and their application" during

November 2001.

29. Fourth International Symposium on Fish Endocrinology held at **Seattle, Washington**, presented a paper entitled "Biochemical and ultrastructural changes in the liver of the Indian freshwater murrel, *Channa punctatus*, during vitellogenin synthesis." during August 2000.
30. The First Indian Fisheries Science Congress held at **Chandigarh, India** presented a paper entitled "Identification of egg-chorion precursor, choriogenin, in the Indian freshwater murrel, *Channa punctatus* (Bloch)" during September 2000.
31. Fourth Congress of Asia and Oceania Society for Comparative Endocrinology held at **Taipei, Taiwan**, presented a paper entitled "Identification of two female-specific proteins in the plasma of the Indian freshwater murrel, *Channa punctatus* (Bloch)" during May 2000.
32. National Symposium on Current Status of General and Comparative Endocrinology held at **Santiniketan, West Bengal**, resented a paper entitled "Isolation and characterization of female-specific plasma proteins of the Indian freshwater murrel, *Channa punctatus* (Bloch)" during January 1991.
33. Second Congress of the Asia and Oceania Society for Comparative Endocrinology held at **New Delhi, India**, presented a paper entitled "Immunological identification of two female-specific plasma proteins in the plasma and their localization in the oocytes of the murrel, *Channa punctatus* (Bloch)" during December 1991.
34. National Symposium on Current Status of General and Comparative Endocrinology held at **Delhi, India**, paper presented entitled "Alterations in enzyme activities in the liver of murrel *Channa punctatus* (Bloch)" during November 1988.
35. First International Congress of the Asia and Oceania Society for Comparative Endocrinology held at **Nagoya University, Japan**, presented a paper entitled "Role of testosterone in reproduction in the female catfish, *Heteropneustes fossilis* (Bloch)" during November 1987.

Research Projects (Major Grants/Research Collaboration)

Name of Project: Hormonal and molecular mechanisms of preovulatory water influx in the oocytes of a freshwater fish

Position in Project: Principal Investigator

Period: 2010 – 2013

Funding Agency: Department of Science and Technology

Grant: Rs 35,00,000

Name of Project: Development of Indicators for Anthropogenic, Environmental and Chemical Stress on Urban Ecosystem: A Study of Aquatic and Terrestrial Ecosystems of Yamuna River Catchments from

National Capital Region (Delhi).
Position in Project: Principal Investigator
Period: 2009 -2013
Funding Agency: PURSE scheme of University of Delhi and Department of Science and Technology
Grant: Rs 2,00,00,000

Name of Project: Yolk proteolysis and oocyte hydration in the Indian freshwater fish

Position in Project: Principal Investigator
Period: 2006 – 2009
Funding Agency: Department of Science and Technology
Grant: Rs 18,16,822/-

Name of Project: Molecular mechanisms of egg cell organization and egg hardening in fish.
Position in Project: Principal Investigator
Period: 2001 -2004
Funding Agency: Indian Council of Agriculture Research
Grant: Rs 16,81,720/-

Name of Project: Hepatic biosynthesis of vitellogenin and its incorporation by fish oocytes.
Position in Project: Principal Investigator
Period: 2001 -2004
Funding Agency: University Grants Commission
Grant: Rs 6,21,920/-

Name of Project: Structural, Physiological and Biochemical Processes of Fish Chorionogenesis.
Position in Project: Principal Investigator
Period: 1990 -1993
Funding Agency: Department of Science & Technology
Grant: Rs 2,90,000

Awards and Other Recognition

Merit certificate in central Science Fair	1976
Special prize in Inter College Science Fair	1978
ISGCE award for Best Platform Presentation	1991

Association With Professional Bodies

Committees and Boards

Expert Consultation, CIFE, Mumbai.

Memberships

Member, Indian Fisheries Association, India.

Member, Indian Society of Ichthyologists, India.

Member, Indian Society for Comparative Endocrinology, India.

Member, Asia Oceania Society for Comparative Endocrinology, Japan.

Member, General and Comparative Endocrinology, USA.

Signature of Faculty Member