

University of Delhi
Department of Zoology
Annual Report
(2017-2018)

1. Major activities and achievements,

Department of Zoology is one of the premier research intensive Department in the country. Research is conducted in diverse areas ranging from microbes to human. Faculty members in the last one year have published approximately 62 research papers in peer reviewed journals of high impact. They have also presented their findings in various National and International conferences. Many of them have been conferred with prestigious honours and have received substantial funding from various funding agencies both from National and International. The Department of Zoology has been recognized for DST-FIST, UGC-SAP/CAS and DU-DST PURSE schemes. Department imparts M.Sc. teaching and training in advanced areas of Zoology to approximately 180 students. In addition, 8 M. Phil. and 26 Ph.D. degree has been awarded to the students in last one year.

2. Honours/Distinctions:

Faculty:

Prof. Rup Lal

- Ambassador of ISME (International Society for Microbial Ecology), The Netherlands (March 2017 onwards)
- Endeavour Executive Fellowship Award by Government of Australia, 2018
- Received Kuldeep Dhatwalia Excellence Award-2017 from ChamanSevaSansthan, Himachal Pradesh for exemplary work, achievements, commitment and contributions in the development of nation.

Prof. Rina Chakarabarty

- Serving as member of the Task Force Committee on “Aquaculture and Marine Biotechnology” of Department of Biotechnology since October, 2017.

Prof. D.K. Singh

- Member, Training, Research and Academic Council (TRAC) of Wildlife Institute of India, with effect from 10.5.2018 for three years.
- Member, Wildlife Institute of India - Society for three years with effect from September 25th, 2017

Prof. Shibnath Mazumder

- Visited Rajiv Gandhi Central University as INSA-Teacher Fellow March 5- 8, 2018.

Prof. R. K. Seth

- Advisor, Ministry of Environment and Forests, Govt. of India
- UGC Nominee for CAS/SAP programme in Zoology Department, Annamalai University, Tamil Nadu
- UGC Nominee for CAS/SAP programme in Zoology Department, Punjabi University, Patiala
- UGC Nominee for CAS/SAP programme in Zoology Department, Panjab University, Chandigarh
- Chaired a technical session in “Third FAO–IAEA International Conference on Area-wide Management of Insect Pests: Integrating the Sterile Insect and Related Nuclear and Other Techniques”, (IAEA-CN-248), Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, IAEA, Vienna, Austria (22–26 May 2017).

- Chaired a technical session in II FAO/IAEA Research Co-ordination Meeting on CRP, “Improved Field Performance of Sterile Male Lepidoptera to Ensure Success in SIT Programmes”, Palmerston North, New Zealand (March 12-16, 2018).

Prof. Alok C. Bharti

- Recipient of international travel grant from Indian National Science Academy, New Delhi to visit Chinese Academy of Science, China under Bilateral Exchange programme 2018.

Editor / Member, Editorial Board of Scientific Journals

Editor:

Prof. Rup Lal, mSystems, published by American Society for Microbiology (ASM), USA; Indian Journal of Microbiology (INJM).

Prof. Y. Singh; Indian Journal of Microbiology, Springer Press.

Editorial Board Member:

Prof. Rup Lal, Journal of Bioscience & Bioengineering (JBB); Environmental Microbiology (EM); Environmental Microbiology Reports (EMIR); Microbial Biotechnology Journal BMC Biotechnology; OA Biotechnology.

Prof. M. M. Chaturvedi, Journal of Oncolytic Virology; Indian J. of Experimental Biology (IJEB).

Prof. Vinod Kumar, Current Science.

Prof. Yogendra Singh, Journal of Biological Chemistry (JBC).

Editorial Advisory Board member:

Prof. Y Singh, Recent Patents on Anti-infective Drug Discovery, (Bentham Science Publishers).

R. . Seth, Indian Journal of Entomology; J. Nuclear Agric. Biol.

Students:

- Ms. Amrita Bakshi who is pursuing PhD under the supervision of Prof. Umesh Rai has been honoured with **2nd prize** for her oral presentation of research work at International Symposium on Recent Advances in Comparative Endocrinology, held at Madras Christian College, Chennai, India, from 29-11-2017 to 01-12-2017.

3. Publications (in APA format i.e Authors Year, Title, Journal Volume, Page nos.)

2018

Agarawal, N., Mishra, I., Rani, S. and **V. Kumar** (2018) Temporal Expression of Clock Genes in Central and Peripheral Tissues of Spotted Munia under Varying Light Conditions: Evidence for Circadian Regulation of Daily Physiology in a Non-photoperiodic Circannual Songbird species. *Chronobiology International*, doi: 10.1080/07420528.2017.1422742

Bharti AC, Singh T, Bhat A, Pande D, Jadli M. (2018) Therapeutic strategies for human papillomavirus infection and associated cancers. *Front Biosci* (Elite Ed). 1;10:15-73.

Datta. D, Khatri. P, Singh. A, Saha. D.R. Verma. G, Raman. R, **Mazumder. S** (2018). *Mycobacterium fortuitum*-induced ER-Mitochondrial calcium dynamics promotes calpain/caspase-12/caspase-9 mediated apoptosis in fish macrophages. *Cell Death Discov.* (Springer-Nature), DOI 10.1038/s41420-018-0034-9.

Gautam, M., Bhattacharya, I., **Rai, U.**, Majumdar, S.S.(2018) Hormone induced differential transcriptome analysis of Sertoli cells during postnatal maturation of rat testes. *PLoS ONE*, 13 (1): e0191201.

Khangembam, B. K. and **Chakrabarti, R.**(2018) Viscera of *Labeorohita*: a potential source of trypsin for industrial application. *Journal of Aquatic Food Product Technology* (Taylor & Francis, accepted).

- Khangembam, C. D., Singh, S. P., **Chakrabarti, R.** and Sharma, J. G. (2018) The study of effect of various temperatures on the abundance of ammonia oxidizing archaea and bacteria. *Indian Journal of Animal Sciences (Indian Council of Agricultural Research, I.C.A.R.)* 88: 626-632.
- Kunnumakkara AB, Sailo BL, Banik K, Harsha C, Prasad S, Gupta SC, **Bharti AC**, Aggarwal BB. (2018) Chronic diseases, inflammation, and spices: how are they linked? *J Transl Med.* 25;16(1):14. doi: 10.1186/s12967-018-1381-2.
- Lohia, R., Jain, P., Jain, M., Mishra, H., Burma, P., **Shrivastava, A.** and Shweta Saran (2018) Deletion of *Dictyostelium discoideum* Sir2A impairs cell proliferation and inhibits autophagy. *Journal of Biosciences* 43(2):351-364.
- Maji, A., Misra, R., Dhakan, D. B., Gupta, V., Mahato, N. K., Saxena, R., Mittal, P., Thukral, N., Sharma, E., Singh, A., Virmani, R., Gaur, M., Singh, H., Hasija, Y., Arora, G., Agrawal, A., Chaudhry, A., Khurana, J. P., Sharma, V. K., **Lal, R. and Singh, Y.** (2018). Gut microbiome contributes to impairment of immunity in pulmonary tuberculosis patients by alteration of butyrate and propionate producers. *Environmental microbiology*, 20, 402-419.
- Mishra, I., Singh, D. and **V. Kumar** (2018) Temporal expression of c-fos and genes coding for neuropeptides and enzymes of amino acid and amine neurotransmitter biosynthesis in retina, pineal and hypothalamus of a migratory songbird: Evidence for circadian rhythm dependent seasonal responses. *Neuroscience*, 371:309-324.
- Pandey, A., Tripathi, S. C., Shukla, S., Mahata, S., Vishnoi, K., Misra, S. P., Misra, V., Mitra, S., Dwivedi, M. and **Bharti, A. C.** (2018). Differentially Localized Survivin and STAT3 as Markers of Gastric Cancer Progression: Association with *H. pylori*. *Cancer Rep (In Press)*
- Priyam M, Tripathy M, **Rai U**, Ghorai SM (2018) Divergence of protein sensing (TLR 4,5) and nucleic acid sensing (TLR 3,7) within the reptilian lineage. *Molecular Phylogenetics and Evolution*, 119, 210-224.
- Rachappa, V, Hanchinal, S.G., Shekhara, C., Surpur, S, Patil, B.V., **Seth, R.K.** and Yelshetty, S. (2018) Refinement and evaluation of artificial diet for rearing of legume pod borer, *Maruca vitrata* Geyer (Lepidoptera: Crambidae). *Legume Research* 41(3): 461-467.
- Sharma, A., Singh D., Das, S. and **V. Kumar** (2018) Hypothalamic and liver transcriptome from two critical life-history stages in a migratory songbird. *Experimental Physiology*, doi: 10.1113/EP086831.
- Shishodia, G., Verma G, Das BC, **Bharti AC.** (2018) miRNA as viral transcription tuners in HPV-mediated cervical carcinogenesis. *Front Biosci.*, 1;10:21-47.
- Taufique, S. K. T., Prabhat, A. and **V. Kumar** (2018) Constant light environment suppresses maturation and reduces complexity of new born neuron processes in the hippocampus and caudal nidopallium of a diurnal corvid: Implication for impairment of the learning and cognitive performance. *Neurobiology of Learning and Memory*, 147: 120-127.
- 2017
- Agarawal, N., I. Mishra, R. Komal, S. Rani and **V. Kumar** (2017) Circannual testis and moult cycles persist under photoperiods that disrupt circadian activity and clock gene cycles in spotted munia. *Journal of Experimental Biology*, 220: 4162-4168.
- Anina James, **Dileep K. Singh**, P. J. Khankhane, R. Kaur (2017) Enhanced atrazine removal by hydrophyte-bacterium associations and in vitro screening of the isolates for their plant growth promoting potential. *International Journal of Phytoremediation*
- Chakrabarti, R.**, Ngasainao, M. R. and Sharma, J. G. (2017) Embryonic and larval development of snow trout *Schizothorax richardsonii*. In: Larvi'17, *Fish and Shellfish Larviculture Symposium* (Hendry, C. I. ed.), Book of Abstract and Short Communication pp. 87-90.
- Charu, T., Harshita, M., Himani, K., Vatsala, D., Komal K., **Negi, R.K. Lal, Rup** (2017) Complete Genome Analysis of *Thermus parvatiensis* and Comparative Genomics of *Thermus* spp. Provide Insights into Genetic Variability and Evolution of Natural Competence as Strategic Survival Attributes. *Frontiers in microbiology*, Doi:10.3389/fmico.2017.01410.

Deepika Rashmi, Pallee Shree and **Dileep K. Singh** (2017) Stable isotope ratio analysis in determining the geographical traceability of Indian wheat, JFCO5526, Food Control, DOI information : 10.1016/j.foodcont.2017.03.025

Guo, H., Cheng, T., Chen, Z., Jiang, L., Guo, Y., Liu, J., Li, S., Taniai, K., Asaoka, K., Kadono-Okuda, K., Arunkumar, K.P., Wu, J., Kishino, H., Zhang, H., **Seth, R.K.**, Gopinathan, K.P., Montagné, N., Jacquin-Joly, E., Goldsmith, M.R., Xia, Q. and Mita, K. (2017) Expression map of a complete set of gustatory receptor genes in chemosensory organs of *Bombyxmori*. *Insect Biochemistry and Molecular Biology*, 82: 74-82.

Jha, M., Sandesh Kumar Patel, Abhimanyu Kumar Jha and **Anju Shrivastava** (2017) Promoter hypermethylation of FHIT and P14 genes in OSCC patients among north Indian population. *Cancer Therapy and Oncology International Journal*, 5 (2) doi: 10.19080/CTOIJ.2017.05.555660.

Jha, N. A. and **V. Kumar** (2017) Effect of no-night light environment on behaviour, learning performance and personality in zebra finches. *Animal Behaviour*, 132: 29-47.

Khangembam, C. D., Sharma, J. G. and **Chakrabarti, R.** (2017) Diversity and abundance of ammonia-oxidizing bacteria and archaea in a freshwater recirculating aquaculture system. *Hayati. Journal of Biosciences (Elsevier)* 24: 215-220.

Kumar, A., Manisha, Sangha GK, **Shrivastava A**, Kaur J. (2017) The immunosuppressive effects of a novel recombinant LipQ (Rv2485c) protein of Mycobacterium tuberculosis on human macrophage cell lines. *MicrobPathog.*, 107:361-367. doi: 10.1016/j.micpath.2017.04.015.

Kumar, R., Verma, H., Haider, S., Bajaj, A., Sood, U., Ponnusamy, K., Nagar, S., **Shakarad, M., Negi, R. K., Singh, Y.**, Khurana, J. P., Gilbert, J.A., **Lal, R.** (2017) Comparative Genomic Analysis Reveals Habitat-Specific Genes and Regulatory Hubs within the Genus *Novosphingobium*. *mSystems* 2, e00020-17.

Kumar, Roshan, Helianthous Verma, Shazia Haider, Abhay Bajaj, Utkarsh Sood, Kalaiarasan Ponnusamy, Shekhar Nagar, **Mallikarjun N. Shakarad, Ram Krishan Negi, Yogendra Singh, J. P. Khurana, Jack A. Gilbert, Rup Lal.** (2017) Comparative Genomic Analysis Reveals Habitat-Specific Genes and Regulatory Hubs within the Genus *Novosphingobium*. *mSystems. American Society of Microbiology*. 21 (3) e00020-17

Kumari, R., Rawat K, Kumari A, **Shrivastava A.** (2017) Amelioration of Dalton's lymphoma-induced angiogenesis by melatonin. *Tumor Biology*, 39(6):1010428317705758. doi: 10.1177/1010428317705758.

Kumari. U, Singh. R, **Mazumder. S** (2017). Chronic endosulfan exposure impairs immune response rendering *Clarias gariepinus* susceptible to microbial infection. *AquatToxicol.*, 191. 42-49. DOI: [10.1016/j.aquatox.2017.07.018](https://doi.org/10.1016/j.aquatox.2017.07.018).

Mahato, N., Gupta, V., Singh, P., Kumari, R., Verma, H., Tripathi, C., Rani, P., Sharma, A., Singhvi, N., Sood, U., Hira, P., Kohli, P., Nayyar, N., Puri, A., Bajaj, A., Kumar, R., Negi, V., Talwar, C., Khurana, H., Nagar, S., Sharma, M., Mishra, H., Singh, A.K., Dhingra, G., **Negi R.K., Shakarad, M., Singh, Y., Lal, R.** (2017) Microbial Taxonomy in the era of OMICS: application of DNA sequences, computational tools and techniques. *Antonie van Leeuwenhoek* 110, 1357-1371.

Mahato, Nitish Kumar, Vipin Gupta, Priya Singh, Rashmi Kumari, Helianthous Verma, Charu Tripathi, Pooja Rani, Anukriti Sharma, Nirjara Singhvi, Utkarsh Sood, Princy Hira, Puneet Kohli, Namita Nayyar, Akshita Puri, Abhay Bajaj, Roshan Kumar, Vivek Negi, Chandni Talwar, Himani Khurana, Shekhar Nagar, Monika Sharma, Harshita Mishra, Amit Kumar Singh, Gauri Dhingra, **Ram Krishan Negi, Mallikarjun Shakarad, Yogendra Singh and Rup Lal** (2017). Microbial taxonomy in the era of OMICS: application of DNA sequences, computational tools and techniques, *Antonie Leewenhoek*, 110, Issue 10, pp 1357–1371

Maji, Abhijit, Richa Misra, Darshan B Dhakan, V. Gupta, N.K. Mahato, R. Saxena, P. Mittal, N. Thukral, E. Sharma, A. Singh, R. Virmani, M. Gaur, H. Singh, Y. Hasija, G. Arora, A. Agrawal, A. Chaudhry, J.P. Khurana, V.K. Sharma, **R. Lal, and Yogendra Singh** (2017) Gut microbiome contributes to impairment of immunity in pulmonary tuberculosis patients by alteration of butyrate and propionate producers. *Environmental Microbiology*, doi:10.1111/1462-2920.14015.

Mishra, I. and **V. Kumar** (2017) Circadian basis of seasonal timing in higher vertebrates. *Biological Rhythm Research*, 48: 723-738. DOI. 10.1080/09291016.2017.1345447.

Negi, R. K., Joshi, B.D., Johnson, J. A., De Rahul, and Goyal, S.P. (2017) Phylogeography of freshwater fish *Puntius sophore* in India. *Mitochondrial DNA Part A*. 24:1-13 [http:// dx. doi. org/ 10.1080/24701394.2016.1275598](http://dx.doi.org/10.1080/24701394.2016.1275598), Print ISSN: 2470-1394 Online ISSN: 2470-1408

Negi, V., **Lal, R.** (2017) Metagenomic Analysis of a Complex Community Present in Pond Sediment. *Journal of Genomics* 5, 36-47.

Pandey, M, Ghorai SM, **Rai U** (2017) Bisphenol A mediated effects on innate immunity in freshwater teleost spotted snakehead *Channa punctatus* murrel. *Fisheries Science*, 84, 25-31.

Rani, P., Mahato, N.K., Sharma, A., Rao, D.L.N., Kamra, K., **Lal R.** (2017) Genome Mining and Predictive Functional Profiling of Acidophilic Rhizobacterium. *Pseudomonas fluorescens* Pt14. *Indian Journal of Microbiology* 57, 155-161.

Roy, A., Basak R, **Rai U** (2017) De novo sequencing and comparative analysis of testicular transcriptome from different reproductive phases in freshwater spotted snakehead *Channa punctatus*. *PLoS One*, 12(3): e0173178.

Sharma, J. G., Khan, N. A. and **Chakrabarti, R.** (2017) Effect of light intensity on the physiology of *Catla catla* larvae. In: Larvi'17, *Fish and Shellfish Larviculture Symposium* (Hendry, C. I. ed.), Book of Abstract and Short Communication pp.396-398.

Sharma, J. G., Singh, S.P. and **Chakrabarti, R.** (2017) Effect of temperature on digestive physiology, immune-modulatory parameters, and expression level of Hsp and LDH genes in *Catla catla* (Hamilton, 1822). *Aquaculture (Elsevier B.V.)* 479: 134-141.

Singh V, Priyam M, Tripathy M, & **Rai U** (2017). Purification and identification of 25-hydroxycholesterol in a reptile: Seasonal variation and hormonal regulation. *General and comparative endocrinology*, 247, 130-137.

Singh, A. K., Kohli, P., Mahato, N. K., & **Lal, R.** (2017). Paracoccussordidisol sp. nov., isolated from an agricultural field contaminated with hexachlorocyclohexane isomers. *International Journal of Systematic and Evolutionary microbiology*, 67, 4365-4371.

Singh, P., Kumari, R., & **Lal, R.** (2017). Bedaquiline: fallible hope against drug resistant tuberculosis. *Indian Journal of Microbiology*, 57, 371-377.

Singh, P., Kumari, R., Nayyar, N., **Lal, R.** (2017) *Pontibacter aurantiacus* sp. nov. isolated from hexachlorocyclohexane (HCH) contaminated soil. *International Journal of Systematics and Evolutionary Microbiology* 67, 1400-1407.

Singh. R, Hussain, M. A, Kumar. J, Kumar. M, Kumari. U, **Mazumder. S** (2017). Chronic fluoride exposure exacerbates head kidney pathology and causes immune commotion in *Clarias gariepinus*. *Aquat Toxicol.*, 192. 30-39. DOI:10.1016/j.aquatox.2017.09.006 .

Sood, U., **Singh, Y., Shakarad, M., Lal, R.** (2017) Highlight on Engineering *Mycobacterium smegmatis* for testosterone production. *Microbial Biotechnology* 10, 73-75.

Soumya, D., Sreenivas, A.G., Patil, B.V., Rachappa, V, Doddagoudar, S. R. and **Seth, R.K.** 2017. Effect of gamma radiation on pulse beetle, *Callosobruchus chinensis* (L.) *J. Farm Sci.*, 30 (3): 370-374.

Srivastava. N, Shelly. A, Kumar. M, Pant. A, Das. B, Majumdar. T, **Mazumder. S** (2017). *Aeromonas hydrophila* utilizes TLR4 topology for synchronous activation of MyD88 and TRIF to orchestrate anti-inflammatory responses in zebrafish. *Cell Death Discov* (Springer-Nature), DOI:10.1038/cddiscovery.2017.09.006.

Stevenson, T. J. and **V. Kumar** (2017) Neural control of daily and seasonal timing of songbird migration. *Journal of Comparative Physiology, A* 203: 399-409.

Swati Bajaj, Sunil Khare and **Dileep K. Singh** (2017) Biodegradation of γ -hexachlorocyclohexane (lindane) by halophilic bacterium *Chromohalobacter* sp. LD2 isolated from HCH dumpsite. *International Biodeterioration & Biodegradation* , Article reference: INBI4290

Tanvi Singh and **Dileep K. Singh** (2017) Phytoremediation of organochlorine pesticides: Concept, method, and recent developments. *International Journal of Phytoremediation* 17 : 834-843.

Tripathi, C., Mishra, H., Khurana, H., Dwivedi, V., Kamra, K., Negi, R. K., **Lal, R.** (2017) Complete genome analysis of *Thermusparvatiensis* and comparative genomics of *Thermus* spp. provide insights into genetic variability and evolution of natural competence as strategic survival attributes. *Frontiers in Microbiology*, 8, 1410.

Tripathy, M. and **Rai U** (2017) Temporal expression and gonadotropic regulation of aromatase and estrogen receptors in the ovary of wall lizard, *Hemidactylusflaviviridis*: Correlation with plasma estradiol and ovarian follicular development. *Steroids*, 128, 23-31.

Tripathy, M., Priyam M, **Rai U**(2017) Repertoire of bone morphogenetic proteins and growth/differentiation factors in ovary of the Indian wall lizard (*Hemidactylusflaviviridis*) with emphasis on differential expression and gonadotropic regulation of *bmp15* and *gdf9*. *General and Comparative Endocrinology*, 253, 13-24.

Tyagi A, Vishnoi K, Kaur H, Srivastava Y, Roy BG, Das BC, **Bharti AC.** (2017) Cervical cancer stem cells manifest radioresistance: Association with upregulated AP-1 activity. *Sci Rep.*, Jul 6;7(1):4781.

V. Kumar (2017) Introduction: special issue on Rhythms, Calendar and Biological Processes. *Biological Rhythm Research*, 48: 673-676. doi10.1080/09291016.2017.1345423.

V.A.Walvekar, Swati Bajaj, **Dileep K. Singh** and Shilpi Sharma (2017) Ecotoxicological assessment of pesticides and their combination on rhizospheric microbial community structure and function of *Vigna radiate* Environ Sci Pollut Res DOI 10.1007/s11356-017-9284-y

Venkateswaran, K., Verma A, Bhatt AN, **Shrivastava A**, Manda K, Raj HG, Prasad A, Len C, Parmar VS, Dwarakanath B. (2017) Emerging roles of calreticulin in cancer: implications for therapy". *Current Protein & Peptide Science*, 14: 2495-2507. PMID:28079009.

Verma G, Vishnoi K, Tyagi A, Jadli M, Singh T, Goel A, Sharma A, Agarwal K, Prasad SC, Pandey D, Sharma S, Mehrotra R, Singh SM, **Bharti AC.** (2017) Characterization of key transcription factors as molecular signatures of HPV-positive and HPV-negative oral cancers. *Cancer Med.*, 6(3):591-604.

Verma, H., Bajaj, A., Kumar, R., Kaur, J., Anand, S., Nayyar, N., Puri, A., Singh, Y., Khurana, J.P., **Lal, R.** (2017) Genome Organization of *Sphingobiumindicum* B90A: An Archetypal Hexachlorocyclohexane (HCH) Degrading Genotype. *Genome Biology and Evolution*, 9, 2191-2197.

Yadav, A., R. Kumar, J. Tiwari, **V. Kumar** and S. Rani (2017) Sleep in birds: Lying on the continuum of activity and rest. *Biological Rhythm Research*, 48: 805-814. doi.org/10.1080/09291016.2017.1346850.

3B. Book Chapter

Chakrabarti, R. 2017. Culture of zooplankton and aquatic macrophytes as non-conventional livelihood. In: Aquaculture for Nutritional and Livelihood Security (Eds. Dhanze, R., Ninawe, A. S. and Dhanze, J. R.), Narendra Publishing House, New Delhi, India pp. 189-203. ISBN 978-93-86110-74-9 .

Bharti, A. C., Vishnoi, K., Singh, S. M. and Aggarwal, B. B. (2017) Pathways Linked to Cancer Chemoresistance and Their Targeting by Nutraceuticals. In Role of Nutraceuticals in Chemoresistance to Cancer (2017), Editors: Bharti AC and Aggarwal BB. Elsevier, USA. (In press)

Bharti, A. C. and Rajan, P. (2017) Berberine as an Adjuvant and Sensitizer to Current Chemotherapy. In Role of Nutraceuticals in Chemoresistance to Cancer (2017), Editors: Bharti AC and Aggarwal BB. Elsevier, USA. (In press)

Shishodia, G., Das, B. C. and **Bharti, A. C.** (2017). Micro RNA-based Regulation during HPV Infection and Cervical Carcinogenesis: Where Do We Stand? In Human Genomics and Applications. Eds. Sobti R.C., Puri S., Sharma V.L. and Bhanwer A.J.S.. Publisher Narendra Publishing House, Delhi, India, pp 21-37.

Dileep K. Singh and N. Sarat Singh, Endosulfan a Cyclodiene Organochlorine Pesticide: Possible Pathways of its Biodegradation, Springer : January 2017 DOI: 10.1007/978-3-319-45156-5_5 , In book: Microbe-Induced Degradation of Pesticides, pp.105-130

4. Journals

- Books Edited – Role of Nutraceuticals in Chemoresistance to Cancer (2017), Editors: **Bharti AC** and Aggarwal BB. Elsevier, USA

5. Research Projects (Funding Agency, Year/period, Title, Amount Sanctioned)

<u>Funding Agency</u>	<u>Period</u>	<u>Title of the project</u>	<u>Grant</u>	<u>PI/Co PI</u>
International Atomic Energy Agency (IAEA), Vienna	2016-2021	“Quality improvement of mass reared moths and assessment of competitiveness of radio-sterilized lepidopteran pest, <i>Spodopteralitura</i> and its F ₁ progeny in field simulated cages for pest suppression through ‘Inherited sterility technique’ under FAO/IAEA CRP (D41026) on “ <i>Improved Field Performance of Sterile Male Lepidoptera to Ensure Success in SIT Programmes</i> ” (IAEA Contract No. 20565/RB)	€ 40,000	Prof. R. K. Seth
Department of Biotechnology (DBT)	March, 2018- March, 2020	“Remediation and reclamation of HCH dumpsite by using microbial bioremediation technology	113 Lacs	Prof. Rup Lal(PI) Dr. RK Negi (CO PI)
AMAAS and NBAIM	April, 2017- March, 2020.	“To study the microbial diversity associated with fish gut by using culture dependent and independent approaches”.	19.5 Lacs	Prof. Rup Lal (PI) Dr. RK Negi (CO PI)
Department of Biotechnology (DBT)	February, 2017- January, 2020.	Exploring diversity, functional dynamics and biotechnological applications of bacterial communities inhabiting hot water spring atop the Himalayan ranges at Manikaran, Himachal Pradesh, India.”.	52.2 Lacs	Prof. Rup Lal (PI)
Department of Biotechnology (DBT)	2017-2019	Understanding signaling mechanism of inflammation in teleost <i>Channapunctatus</i> ,	35.84Lacs	Prof. UmeshRai (CO-PI)
DST -SERB	2017-2019	Understanding the mechanism of onset of reproductive activity in seasonally breeding reptile <i>Hemidactylusflaviviridis</i> : an emphasis	42.25Lacs	Prof. UmeshRai (CO-PI)

		on the role of the kisspeptin system		
Department of Biotechnology (DBT), New Delhi	2018-2021	Dissemination and Demonstration of Fish Culture Technology among Women Self Help Groups in NCR Region of Delhi as a Self Employment Activity In collaboration: Delhi Technological University, Delhi		Prof. RinaChakarabarty
Department of Biotechnology (DBT), New Delhi	2015-19	Development of Pelleted Diet for <i>Labeorohita</i> and <i>Clariasbatrachus</i> Using <i>Achyranthesaspera</i> and Evaluation of Its Immunostimulatory Properties in Pond Culture System In collaboration: Central Institute of Fisheries Education(CIFE), Rohtak, Haryana, Delhi Technological University, Delhi		Prof. RinaChakarabarty
Department of Biotechnology (DBT), India	2016-2018	"Investigation of Host Transcription Factors that Predispose Head and Neck Cancers to HPV16 infection"	25 Lakh	Prof. Alok C. Bharti
Indian Council of Medical Research (ICMR)	2018-2021	"Investigation of molecular mechanism(s) of STAT3-mediated regulation of HPV infection and cervical carcinogenesis"	39.6 Lakh	Prof. Alok C. Bharti
NASF (ICAR)	2018-2021	"Bioremediation of chemical contaminants and their complexes present in drainage waste water with high dynamic flux used for irrigation in urban and <i>peri</i> -urban agriculture", Delhi University, Delhi, (Lead Centre).	Total Budget : Rs. 170.84 (Lakh), DU Budget : Rs. 95.46 (Lakh).	Prof. D.K. Singh
IAEA/FAO	2017-2021	Field-Deployable Analytical Methods to Assess the Authenticity, Safety and Quality of Food in India	EURO 30,000	Prof. D.K. Singh

6. Patent filed/ Granted: None

7. Seminar organized:

- **2018:** Organized ISME Ambassador Meet and Workshop -2018 on “Hands on to Computational Biology for (Meta) Genomics Analysis” under the aegis of Kalinga Institute of Industrial Technology and International Society for Microbial Ecology (ISME) at KIIT, Bhubaneshwar on May 3, 2017.
- **2017:** Organized ISME-AMI-INSCR Pre-conference workshop -2017 on “Hands on Computational Biology for (Meta) Genomics Analysis” under the aegis of Association of Microbiologists of India (AMI), Indian Network for Soil Contamination Research (INSCR), and International Society for Microbial Ecology (ISME) at Baba sahib Bhimrao Ambedkar University, Lucknow on November 16, 2017.
- **2017:** Organized a workshop on “Hands on to Computational Biology for (Meta) Genomics Analysis” jointly organized under the aegis of Department of Environmental Studies and Department of Zoology at Department of Zoology University of Delhi on November 22, 2017.
- **2017:** Organized AMI-INSCR Workshop on “Beginner’s Computational Tools for Genome and Metagenome Analysis” under the aegis of Association of Microbiologists of India (AMI) and Indian Network for Soil Contamination Research (INSCR) at Department of Zoology University of Delhi on October 13, 2017.
- **2017:** Organized Pre-conference workshop on “Hands on to Computational Biology for (Meta) Genomic analysis” under the aegis of International Society for Microbial Ecology (ISME), Department of Zoology University of Delhi and Indian Network for Soil Contamination Research (INSCR) at Department of Zoology University of Delhi on September 26, 2017.
- **2017:** Organized “Women Health and Cancer Awareness Workshop” with AOGIN-India at Miranda House, University of Delhi. Delhi, April 7, 2017, Funded by AOGIN-India(ACB)

8. Conference/workshop organized (conference title, Dates, Funding agencies)

- Organized INSCR International Conference 2017 (IIC-2017) on “Role of Microbe-Plant-Animal Interactions in Human Health” under the aegis of Department of Zoology University of Delhi, Indian Network for Soil Contamination Research (INSCR) and Amity University, Noida at Department of Zoology University of Delhi from September 26-28, 2017.(RL)
- Organised workshop entitled, “Develop a Best Practice Manual on Field Performance of Sterile Male Moths”. Joint FAO/IAEA Programme of Nuclear Techniques in Food and Agriculture, held at Palmerston North, New Zealand. 17 March, 2018(RC)
- Indo-US workshop and international symposium on Biological timing and health issues in the 21st century organized by Department of Zoology, University of Delhi from February 22-24, 2017.(Negi)
- Organized Workshop on “Cervical Cytology and HPV Testing” during AOGIN-India Annual Conference, at Hotel Clarks Awadh, September 8, 2017.(ACB)

8B. Chaired session:

- Dr. Negi.- Himachal Pradesh science congress on science & Technology for sustainable livelihood in Indian Himalaya region organized by Himachal Pradesh Council for Science and Technology and Environment from 20-21 November 2017.
- Dr. Negi.- INSCR International Conference(IIC-2017) on role of microbe-plant-animal interaction in human organized by Department of Zoology, University of Delhi under banner INSCR from 26-28 September 2017.

9. Seminar/conference presentations

- **Prof. Alok C. Bharti**- "Cervical Cancer – a success story from an immunologist viewpoint: Even a small star shines in the dark", on The World Immunology Day Symposium on 'Nurturing Immunobiology and Beyond' Department of Zoology, University of Delhi on May 11, 2018 .
- Singh, A., Aditi, K. and **Agrawal, N.** "Deciphering the role of key metabolic genes regulating lipid homeostasis in *Drosophila* model of Huntington's disease". (2018). 59th Annual *Drosophila* Research Conference, April 11-15, Philadelphia, USA.
- **Lal, R.** "From ciliate protozoans to bacterial diversity, genomics and metagenomics" presented as inaugural lecture in International Symposium on Ciliate Biology (ISCB-2018) at Indian Habitat Centre organized by Khalsa College, University of Delhi on April 4, 2018.
- **Lal, R.** "A new science of Microbiome: Implications in health, environment cleaning and industry" presented as guest lecture at SardarBhagwan Singh Post Graduate Institute of Biomedical Science and Research, Dehradun on March 30, 2018.
- **Lal, R.** "The Emergent Microbiome: A Revolution in Biological Sciences" presented as resource person in "Recent Trends in Biology- 2018" organized by Department of Zoology, SavitribaiPhule Pune University, Ganeshkhind, Pune- 411007, (M.S.) India on March 23, 2018.
- **Seth, R.K.,** Singh, Khyati, Singh, C.K. and Lanbiliu, P. 2018. Ascertaining certain parameters that may influence reproductive fitness of moths to be employed in radio-genetic F1 Sterility technique for suppression of a noctuid pest, *Spodopteralitura* (Fabr.). In : II FAO/IAEA Research Co-ordination Meeting on CRP, "Improved Field Performance of Sterile Male Lepidoptera to Ensure Success in SIT Programmes", Palmerston North, New Zealand (March 12-16, 2018).
- **Prof. Alok C. Bharti**- "Role of Viral Oncoproteins in Maintenance of Cervical Cancer Stem Cells and Chemoresistance", Regenerative Medicines and Chronic Degenerative Diseases and Role of Omics and Biomarkers in Health (3.0 Edition) 2018 at Department of Zoology, University of Kerala, Thiruvananthapuram, March 10, 2018.
- **Lal, R.** "Beyond DNA Barcoding: Microbial Fingerprints through Genomics and Metagenomics" presented as inaugural lecture in "Hands on Training on "DNA Barcoding in Assessment of Faunal Diversity" organized by Zoological Survey of India, Headquarters, Kolkata on March 5, 2018.
- **Anju Shrivastava** (2018) Resource person in a two-day seminar/workshop on "Immunology at a Glance" scheduled on 01.03.2018 to 03.03.2018 at the Department of Zoology under MHRD's scheme of teaching and learning center of S. P. Pune University, Pune.
- **RinaChakarabarty**- Attended and presented project report in the Second Annual Meeting of the International collaborative project of DBT, India & BBSRC, UK held at Sokoine University of Agriculture, Morogoro, Tanzania (March 1 - 2, 2018).
- **Prof. Alok C. Bharti**-Invited lecture on "Animal Cell Culture: Cell Culture Based Assays" at DBT Workshop on "Recent techniques in DNA and Protein analysis" held at SOS in Biotechnology, Jiwaji University, Gwalior from Feb24 – March11, 2018" (Lecture on March 3, 2018).
- **Lal, R.** "Management of Research, Laboratory, and Students: Our Experience." presented in Symposium on "Safety measures and Laboratory Ethics", organized by Acharya Narendra Dev College, under DBT Star College scheme on February 21-22, 2018.
- **Lal, R.** "Microbiome: Exploring the role of microbiota in environmental cleaning, bio- product formation and Human health" presented as invited lecture in 30th All India Congress of Zoology and National Seminar on 'Advances in Zoology for Sustainable Development' organized by Department of Zoology, Kurukshetra University, Kurukshetra on February 16, 2018.

- **Lal, R.** "Role of Computational Tools in Biology: Can we do biology without Computational Tools and Microbiology?" presented in the workshop titled "Computational biology and its role in genomics and metagenomics" organized by Life Sciences Society by Hansraj College, University of Delhi, Delhi on February 15, 2018.
- **Lal, R.** "Microbiome: Exploring the role of microbiota in environmental cleaning, bio-product formation and human health" presented as plenary talk in UGC National Conference on "Current Trends in Biological Sciences-II (CTBS-2018)" organized by Post Graduate Department of Biosciences, Sardar Patel University, Gujarat on February 9, 2018.
- **Prof. Alok C. Bharti**- "Targeting Radioresistance in Cervical Cancer by Curcumin through Combating AP-1 Activity in Cancer Stem Cells" in Trends in Biochemical and Biomedical Research: Advances and Challenges (TBRR-2018) organized by Department of Biochemistry, Institute of Science, Banaras Hindu University Varanasi, INDIA, February 13-15, 2018.
- **Prof. Alok C. Bharti**- Guest faculty lecture on "Antibodies - Structure and Type, Nature of Antigens, Antigen-Antibody based Applications- Basic and Advanced" at School of Biotechnology, Banaras Hindu University, Varanasi. February 10-12, 2018.
- **Prof. Alok C. Bharti**- "Cervical Cancer – A Preventable Lifestyle Disease but NOT YET Prevented: Molecular Targets as Avenues for Potential Therapeutics" at National Conference on Diseases and Drugs: Emerging Trends and Challenges" NCDD2018 Plenary Session 2: Physiological and Molecular Mechanism of Lifestyle Diseases at Zakir Hussain Delhi College, University of Delhi, Delhi, Jan 31-Feb 1, 2018.
- **Anju Shrivastava** (2018) "Crosstalk between cancer and immune system: a link with great potential" at National Conference on "Diseases and Drugs: Emerging Trends and Challenges" Department of Zoology, Zakir Husain Delhi College (University of Delhi) J.L.N. Marg, New Delhi from 31st January to 1st February, 2018.
- Rani Kumari, Kavita Rawat and **Anju Shrivastava** (2018) "Melatonin attenuates parameters involved in cancer progression including angiogenesis: a study in murine model" at National Conference on "Diseases and Drugs: Emerging Trends and Challenges" Department of Zoology, Zakir Husain Delhi College (University of Delhi) J.L.N. Marg, New Delhi from 31st January to 1st February, 2018.
- Kavita Rawat, Rani Kumari and **Anju Shrivastava** (2018) "Taming cancer with *Tinospora*-mediated immunomodulation: potential role of neutrophils" at National Conference on "Diseases and Drugs: Emerging Trends and Challenges" Department of Zoology, Zakir Husain Delhi College (University of Delhi) J.L.N. Marg, New Delhi from 31st January to 1st February, 2018.
- Meenakshi Rana and **S. Basu-Modak** (2018) Immunohistochemical analysis of angiogenic factors in mid- and late- gestation mouse embryos and placenta International Congress of Cell Biology meeting held in Hyderabad from Jan 27th to 31st, 2018
- Pooja Choubey, Meenakshi Rana, Divya Bajaj and **S. Basu-Modak** (2018) Heme metabolizing enzymes in the developing mouse embryo at International Congress of Cell Biology meeting held in Hyderabad from Jan 27th to 31st, 2018.
- **Prof. Alok C. Bharti**- Invited lecture on "Animal Tissue Culture: Contributions to Modern/Medical Science" at National Workshop on "Animal Cell Culture: Techniques and Applications" held at Guru Ghasidas University, Bilaspur, from January 18-24, 2018.
- Komal Saxena, **Anju Shrivastava**, Rama Kant (2018) "Chiral analysis of ascorbic acid in bovine serum using ultrathin molecular imprinted polyaniline/graphite electrode" at International Conference in Emerging trends in Drugs development & Natural products (ETDNNP-2018) on January 12-14, 2018 organised by Department of Chemistry, University of Delhi.

- **Lal, R.** "Exploring the Unseen and Unreached through Genomics and Metagenomics" presented as inaugural lecture in a training course on "Microbial Systematics V2.0" organized by Microbial Type Culture Collection and Gene Bank (MTCC) located at CSIR-Institute of Microbial Technology (CSIR-IMTECH) on December 11, 2017.
- **Kumari, B, Bakshi, A and Rai, U (2017).** "Sex-related and tissue-specific variation in expression of kisspeptin and its receptors in spotted snakehead" presented at International Symposium on Recent Advances in Comparative Endocrinology, Madras Christian College, Chennai, India pp.8 dated 29-11-2017 to 01-12-2017.
- **Tripathy, M and Rai, U (2017).** "Growth/Differentiation factor 9 in the ovary of wall lizard: Its probable role in folliculogenesis." presented at International Symposium on Recent Advances in Comparative Endocrinology, Madras Christian College, Chennai, India dated 29-11-2017 to 01-12-2017.
- **Bakshi, A and Rai, U (2017).** "Sexual dimorphism in expression of leptin in *Channapunctatus*" presented at International Symposium on Recent Advances in Comparative Endocrinology, Madras Christian College, Chennai, India dated 29-11-2017 to 01-12-2017.
- **Lal, R.** "Exploring the Unseen and Unreached through Genomics and Metagenomics" presented in Continuing Education Program on "Genomics and Proteomics: Methods and Applications" at Department of Molecular Biology, Defence Institute of Physiology and Allied Sciences, DRDO, Delhi on November 28, 2017.
- **Lal, R.** "Role of Computational Biology and Bioinformatics in Microbiology" in workshop on "Hands on to Computational Biology for (Meta) Genomics Analysis" jointly organized under the aegis of Department of Environmental Studies and Department of Zoology at Department of Zoology University of Delhi on November 22, 2017.
- **Lal, R.** "Scientific Innovations that changed the world and India: Then (Before 1990) and Now" presented as invited lecture (Mentor) in 6th DST INSPIRE Internship Camp at Punjab University Campus, Chandigarh on November 21, 2017.
- **Lal, R.** "Reaching the Unreached through Genomics and Metagenomics" presented as plenary lecture in 2nd Himachal Pradesh Science Congress (HPSC) 2017-18. Science and Technology for Sustainable Livelihood in Indian Himalayan Region organized by Himachal Pradesh Council for Science, Technology and Environment (HIMCOSTE) at Shimla on November 20, 2017.
- **Lal, R.** "Genetic manipulation of polyketide synthase gene cluster of *Amycolatopsis mediterranei* S699 produce rifamycin B analogs" presented as keynote lecture in 86th Conference of Society of Biological Chemists at Convention Centre, Jawaharlal Nehru University, New Delhi on November 19, 2017.
- **Lal, R.** "Metagenomic approaches to evaluate soil biodiversity and productivity" presented as invited
- talk in 58th Annual Conference of Association of Microbiologists of India (AMI-2017) & International Symposium of Sustainable Development: Scope and Applications (MSDSA-2017) at Baba sahib Bhimrao Ambedkar University, Lucknow on November 18, 2017.
- **Lal, R.** "Role of Computational Biology and Bioinformatics in Microbiology" presented in ISME-AMI-INSCR Pre-conference workshop at BabasahebBhimraoAmbedkar University, Lucknow on November 16, 2017.
- **Lal, R.** "Reaching the Unreached through Genomics and Metagenomics" presented a lecture in DBT sponsored Short Term Training Course on "Application of metagenomic tools for bioremediation towards environmental restoration" at Amity Institute of Biotechnology on November 14, 2017.

- **Lal, R.** "Reaching the Unreached through Genomics and Metagenomics" presented as guest lecture in National Conference on Biotechnology: Exploring through Innovations (BETI)- 2017 at Department of Biotechnology, Central University of Haryana, Mahendergarh, on November 13, 2017.
- **Lal, R.** "Metagenomic analysis of stressed bacteria and genes from the hexachlorocyclohexane (HCH) dumpsite and Manikaran hot springs" presented as plenary lecture in INSCR International Conference 2017 at University of Delhi, on September 27, 2017.
- **Prof. Alok C. Bharti**-Guest faculty lecture on "Stem Cells in Regenerative Medicine and Cancer Research" at Miranda House, University of Delhi, Delhi, October 05, 2017.
- **Lakra, P., Aditi, K. and Agrawal, N.** "Emerging role of mutant huntingtin in metabolic activity in *Drosophila*". (2017). 25th European *Drosophila* Research Conference, September 22-25, London, UK.
- **Lal, R.** "Can we do biology without microbiology" delivered a lecture at Miranda House College, University of Delhi, on September 18, 2017..
- **Lal, R.** "New twist in microbiology in the light of metagenomics: Vision for Future" and "A journey from bacterial polyphasic approach to genomics and metagenomics" presented as in MSM Metagenome informatics workshop organized by the Malaysian Society for Microbiology from 13th -16th September, 2017 at the School of Biosciences and Biotechnology, University Kebangsaan, Malaysia.
- **Prof. Alok C. Bharti**- "Molecular Methods of HPV Testing in Cervical Scrapes: Options and Opportunities", AOGIN-India Workshop on "Cervical Cytology and HPV Testing" during AOGIN-India Annual Conference 2017, at Lucknow, September 8, 2017.
- **Prof. Alok C. Bharti**- "HPV infection, Cervical Cytology & Cervical Carcinogenesis: Basics", AOGIN-India Workshop on "Cervical Cytology and HPV Testing" during AOGIN-India Annual Conference 2017, at Lucknow, September 8, 2017.
- **Rina Chakarabarty**-Attended and presented paper in Fish and Shellfish Larviculture Symposium "Larvi 2017" organized by Artemia Reference Centre, Ghent University held at Ghent, Belgium (September 4 - 7, 2017).
- **Prof. Alok C. Bharti**- "Targeting Radioresistance in Cervical Cancer by Curcumin through Combating AP-1 Activity in Cancer Stem Cells" in Second International Conference on Nutraceuticals and Chronic Diseases organized by Indian Institute of Technology Guwahati at Goa. September 2, 2017.
- **Lal, R.** "Unlimited World of Microbes with Limitless Applications" presented as Chief Guest Address in Add on Course on "Biotechcellence: Insights and Innovations" at Gargi College, University of Delhi, on August 23, 2017.
- **Seth, R.K., Khan, Z., Rao, D.K. Zarin, M. and Seth, R.** 2017. Sperm behavior as a key tool ensuring operative efficiency of radio-genetic 'F₁ Sterility technique' for population suppression of an economically serious Indian pest, *Spodopteralitura* (Fabr.) (Lepidoptera: Noctuidae) in lab and field simulated cages. "Third FAO-IAEA International Conference on Area-wide Management of Insect Pests: Integrating the Sterile Insect and Related Nuclear and Other Techniques", (IAEA-CN-248), Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, IAEA, Vienna, Austria (22-26 May 2017).
- **Seth, R.K., Patil, B.V., Haveri, R. V., Hanchinal, S.G., Zarin, M., Khan, Z. and Seth, R.** 2017. Establishing a generic radiation dose as post harvest phyto-sanitary treatment against bruchid species (Coleoptera: Chrysomelidae) infesting legumes. "Third FAO-IAEA International Conference on Area-wide Management of Insect Pests: Integrating the Sterile Insect and Related

Nuclear and Other Techniques", (IAEA-CN-248), Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, IAEA, Vienna, Austria (22–26 May 2017).

- Patil, B.V., Hanchinal, S.G., Khan, Z., Zarin, M., Haveri, R. V., Chandrashekhar, Yelshetty, S. and **Seth, R. K.** 2017. Ascertaining the efficacy of gamma radiation on the flower webber, *Marucavitrata*(Fabr.) (Lepidoptera: Crambidae) to establish Inherited Sterility technique for the management of this pigeonpea pest in India. "*Third FAO–IAEA International Conference on Area-wide Management of Insect Pests: Integrating the Sterile Insect and Related Nuclear and Other Techniques*", (IAEA-CN-248), Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, IAEA, Vienna, Austria (22–26 May 2017).
- Haveri, R. V., Hanchinal, S.G., Chandrashekhar, Zarin, M., Khan, Z., Patil, B.V., Yelshetty, S. and **Seth, R. K.** 2017. Optimization of semi-synthetic diet for quality mass rearing of the legume pod borer, *Marucavitrata*(Fabr.) (Lepidoptera: Crambidae) towards employment of 'Inherited Sterility' technique for the pest suppression. "*Third FAO–IAEA International Conference on Area-wide Management of Insect Pests: Integrating the Sterile Insect and Related Nuclear and Other Techniques*", (IAEA-CN-248), Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, IAEA, Vienna, Austria (22–26 May 2017).
- **Lal, R.** "Role of Computational Biology in Microbiology" presented in ISME Ambassador Meet and Workshop -2018 on "Hands on to Computational Biology for (Meta) Genomics Analysis" at KIIT, Bhubaneshwar on May 3, 2017.
- **Lal, R.** "Combating antibiotic resistance against Tuberculosis" presented as Guest Lecture in one day ASM-CME on "Antibiotic Resistance: Renewed Fears" at Multipurpose Hall, India International Centre, New Delhi on April 16, 2017.
- **Lal, R.** "Biotechnology: Introduction, Advances and Career Options" presented as Expert lecture in National Conference on "Advances in Basic and Applied Sciences (ABAS-2017)" at School of Basic and Applied Science, Career Point University, Hamirpur on April 7, 2017.
- **Rina Chakarabarty**- Attended and presented paper in "Asian Pacific - Aquaculture 2017" organized by World Aquaculture Society (WAS, USA) held at Kuala Lumpur, Malaysia (July 24 - 27, 2017).
- Lakra, P., Aditi, K. and **Agrawal, N.** (2017). Detrimental effects of mutant huntingtin beyond neurons: Alteration of metabolic activity in *Drosophila*. 58th Annual *Drosophila* Research Conference, March 29-April 2, San Diego, CA, USA.
- Chatterjee, M. and **Agrawal, N.** (2017). "Phosphorylation of serine residues of mutant huntingtin contributes to metabolic function in Huntington's disease in *Drosophila*". (58th Annual *Drosophila* Research Conference, March 29-April 2, San Diego, CA, USA.

10. National/International MoUs Signed (Detail): None

11. Students under exchange program: Nil

12. Other Institutional collaborations:

- **Rup Lal**-DBT funded project in collaboration with The Energy and Resources Institute (TERI), National Botanical Research Institute (NBRI), Indian Institute of Toxicology Research (IITR), Ramjas College, University of Delhi.
- **Rina Chakarabarty**- DBT, India – BBSRC, UK (2016-2017) Development of alternative sustainable fish feeds to promote human health using novel non-conventional indigenous ingredients. Collaborators: India- Goa University, Kerala University of Fisheries, Delhi Technological University; UK: University of

Stirling, Scottish Association for Marine Science; Africa: Sokoine University of Agriculture, Aquacultural Association of Kenya, State Department of Fisheries.

13. Placement details:

14. Extension and outreach activities:

- **Prof. Shibnath Mazumder**-Conducted 1 day workshop on Fish Immunology under aegis of DBT-Star College Program on 4.3.2018 at Handique College, Guwahati.
- **Prof. Rina Chakarbarty** - Participated as a Fishery expert in the discussion on “Health Management of Fishes in Winter” on DD Kisan channel, Govt. of India on November 1, 2017.
- **Prof. Rina Chakarbarty**-Participated as a Fishery expert in the discussion on “Animal Health Management in Rainy Season” on DD Kisan channel, Govt. of India on July 21, 2017.
- **Prof. Alok C. Bharti** and **Prof. Anju Shrivastava**-Organized “Women Health and Cancer Awareness Camp” with AOGIN-India and Miranda House at Delhi University Women Association, University of Delhi. Delhi April 7, 2017.
- **Prof. Umesh Rai**- Hands-on training programme was organised for one day on animal (rodents) handling, maintenance and breeding. Also, endocrine glands were demonstrated and experiments were shown to understand the hormonal control of various physiological functions. Students of B.Sc. (H) Zoology from Maitreyi College and Zakir Husain Delhi College attended that programme under the leadership of Dr. Brototi Roy (Maitreyi College) and Dr. Sunil Kumar (Zakir Husain Delhi College).

15. M.Phil. / Ph.D. Awarded

M.Phil. – 8

Ph.D. – 26

16. Faculty Strength

Permanent – 18