

## 12. Evaluative Report of the Department

1. Name of the Department : **School of Studies in Zoology**
2. Year of establishment : **1971**
3. Is the Department part of a School/Faculty of the university? : **This itself is one of the School of the University.**
4. Names of programmes offered: **M.Sc., M.Phil., Ph.D., D.Sc.:**
5. Interdisciplinary programmes and departments involved:
6. Courses in collaboration with other universities, industries, foreign institutions, etc.:
7. Details of programmes discontinued, if any, with reasons:
8. Examination System: **Semester System**
9. Participation of the department in the courses offered by other departments
10. Number of teaching posts sanctioned, filled and actual

	<b>Sanctioned</b>	<b>Filled</b>	<b>Actual (including CAS &amp; MPS)</b>
Professor	<b>1</b>	<b>1</b>	<b>5 (MPS-02, CAS-03)</b>
Associate Professors	<b>3</b>	<b>0</b>	
Asst. Professors	<b>6</b>	<b>0</b>	
Others			

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

Name	Qualifications	Designation	Specialization	No. of Years of Experience	No. of Ph.D./ M.Phil. students guided for the last 4 years
Prof. A.K. Jain	Ph.D.	Professor	Pigment cell Biology Neuroendocrinology, Fish & Fisheries	36	1/6
Prof. O.P. Agrawal	Ph.D.	Professor	General & Applied Entomology, vermiculture Economic Zoology Environmental conservation	34	13
Dr. Sangeeta Shukla	Ph.D., D.Sc.	Professor	Environmental toxicology & Hepato- protection	26	13
Dr. I.K. Patro	Ph.D.	Professor	Neurobiology	26	7
Dr. P.K. Tiwari	Ph.D.	Professor	Cell & Molecular Biology	26	7
Dr. R.J. Rao	Ph.D.	Professor	Aquatic Biology & Conservation management	26	8

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors: **NIL**

13. Percentage of classes taken by temporary faculty - programme-wise information -

**Guest Faculty**

14. Programme-wise Student Teacher Ratio: **15:1**

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual: **03**

16. Research thrust areas as recognized by major funding agencies: **UGC, DST, DBT, ICMR, MPCST - SYSTEM BIOLOGY AND ENVIRONMENTAL TOXICOLOGY (UGC)**

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.

S.N.	Funding Agency	Title of Programme / Project	Coordinator	Duration
1.	UGC	SAP-DRS Phase III on Systems Biology and Environmental Toxicology	Dr. R.J. Rao	2013-18 (5 years)
2.	Jiwaji University	Vermicomposting Center (Recycling waste biomass of the campus)	Dr. O.P. Agrawal	(Self-sustained)
3.	UGC	Special infrastructure grant (Rs. 40 lakhs) for teaching & Research	Head	2007-12
4.	UGC	SAP-DRS Phase III Systems Biology and Environmental Toxicology (Rs. 73 lakhs)	Dr. R. J. Rao	2013-18
5.	FIST-DST	Instrumental grant (Rs170 lakhs)	Dr. Sangeeta Shukla	2013-18

18. Inter-institutional collaborative projects and associated grants received

a) National collaboration

b) International collaboration

S.N.	Funding Agency	Title of Programme / Project	PI / Coordinator	Duration
1.	MCBT	Gharial monitoring in the National Chambal Sanctuary	Dr. R.J. Rao	2006-2008
2.	DBT	Role of microglia in adult neurogenesis	Dr. I.K. Patro	2006-2009
3.	CCRUM, New Delhi	Ameliorative effect of natural product in liver regeneration against model hepatotoxicants	Dr. Sangeeta Shukla	2007-2009
4.	CCRUM, New Delhi	Hepatoprotective efficacy of few Unani medicines	Dr. Sangeeta Shukla	2007-2010
5.	DBT New Delhi	Genetic polymorphism in tribal population of north M.P. in relation to genomic diversity & susceptible to tuberculosis	Dr. P.K. Tiwari & Dr. R.N.K. Bamezai	2007-2010
6.	ICMR	Ageing of microglia	Dr. I.K. Patro	2007-2010
7.	DRDE Gwalior	A study on anti-coagulative, anti-inflammatory, anti-antioxidant antibacterial properties of crude & extracted fractions of earthworm <i>Eudrilus eugeniae</i> .	Dr. O.P. Agrawal	2008-2010
8.	DBT New Delhi	Phenotypic alteration in astroglia & microglia in the brain in response to tuberculous pathology.	Dr. I.K. Patro	2008-2010
9.	MPCOST Bhopal	A critical evaluation of occupational health hazards: role of trace elements and micronutrients	Dr. Sangeeta Shukla	2008-2011
10.	UGC New Delhi	Beryllium induced hepatic & renal manifestations: amelioration by natural	Dr. R. Mathur	2008-2011

		products		
11.	DRDE Gwalior	A study on the treatment of sewage sludge through culture of vermicomposting earthworms and its influence on community health.	Dr. O.P. Agrawal	2008-2012
12.	DST	Structural and Functional characterization of <i>hsp60</i> Chaperonin Related Gene Sequences in Sheep Blowfly, <i>Lucilia cuprina</i> during Development and Heat Stress	Dr. P.K. Tiwari	2009-2011
13.	ICMR	Genetic Diversity of HLA in the two Tribal Groups of North Madhya Pradesh: Association with pulmonary tuberculosis	Dr. P.K. Tiwari	2009-2011
14.	MPCST	Documentation of vertebrates in wetlands of North Madhya Pradesh.	Dr. R.J. Rao	2009-2012
15.	MPCST	Documentation of vertebrates in wetlands of North Madhya Pradesh.	Dr. R.J. Rao	2009-2012
16.	DRDE	Role of Spirulina fusiformis and Micronutrients against Beryllium Induced Toxicity.	Sangeeta & Dr. Mathur	2011-2013
17.	UGC	Antituberculosis drugs induced hepatic adverse effects: prevention by natural products	Dr. Sangeeta Shukla	2011-2013
18.	ICMR	Impact of maternal exposure to deltamethrin during geatation on cerebellar organization and cognitive development of the new born	I.K. Patro	2011-2013
19.	DAE	Epigenetic regulation of telomeres and expression of telomere growth regulating proteins in humon gall bladder carinema	Prof. P.K. Tiwari	2011-2014
20.	DST	Mutylation profiling of gall bladder cancer and gall stone diseases to identify potential biomarkers for early diseases diagnosis	Prof. P.K. Tiwari	2012-2015
21.	ICMR	Study on genetic polymorphism in Mycobacterium tuberculosis isolates from Sahariya tribes of North Central India	Prof. P.K. Tiwari	2010-2013

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22.	DST , WOS Scientist A	Reversal of aluminum induced toxicity in rats by combination therapy : a novel approach	Dr. Sadhana Shrivastava	2008-2011
23.	DST , WOS Scientist A	Influence of few polyphenolic compounds on signaling pathway in resurgence of acrylamide toxicity	Dr. Sadhana Shrivastava	2013-2016

19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received.

**The faculty members had received various research projects during last five years from UGC, DBT, DST, MPCST, MPETB, ICMR, MOEF and CCRUM. The total amount is approximately Rs. 155.75 lakhs for equipment, contingency and salaries of research students.**

20. Research facility / centre with

- state recognition
- national recognition
- international recognition

21. Special research laboratories sponsored by/ created by industry or corporate

bodies:

## 22. Publications:

### 2010

1. Agrawal, S and Jain, A.K. (2010). On the existence of Integumentary colour pattern in the three species of the fresh water fish, *Puntius*: A Cellular analysis.” National journal of Life Sciences 8(1) 47-53.
2. Agrawal, S and Jain, A.K. (2010). Effect of cAMP, adenosine and theophylline on the isolated scale melanophore preparation of three species of a fresh water teleost, *Puntius*. Proc. Nat. Acad. Sci. India (In Press).
3. Garg, R.K., Rao, R.J. and Saksena, D.N. (2010). Fish diversity, production potential, and commercial fisheries of Ramsagar reservoir, Datia, Madhya Pradesh, India.. J. Bombay Nat. Hist. Soc., 107(1): 24-29.
4. Garg, R.K., Rao, R.J., Uchchriya, D., Shukla, G. & Saksena, D.N. (2010). Seasonal variations in water quality and manor threats to Ramsagar reservoir, India. African Journal of Environmental Science & Technology, 4 (2): 061-076.
5. Joshi D, Nirala SK, Shrivastava S and Shukla, S. (2010). Role of micronutrients against dimethylmercury intoxication in male rats. Environmental Toxicology and Pharmacology 29: 97-103
6. Joshi, Deepmala, Mittal, Deepak Kumar, Shrivastava, Sadhana and Shukla, Sangeeta (2010). Protective Role of Thiol Chelators against Dimethylmercury Induced Toxicity in Male Rats. Bull of Environmental Contamination & Toxicology 84 (5): 613-617.
7. Khan Z., Khan, N., Tiwari, R.P., Patro, I.K., Prasad, G.B.K.S. and Bisen, P.S. (2010) Down-regulation of surviving by oxaliplatin diminishes radioresistance of head and neck squamous carcinoma cells. Radiotherapy and Oncology, doi: 10.1016 / j.radonc. 2010.06.005.
8. Mishra, B., Srivastava V.K., Chaudhry, R., Somvanshi, R.K., Singh, A.K., Gill, K., Somvanshi, R., Patro, I.K. and Dey, S. (2010) SD-8, a novel therapeutic agent active against multidrug-resistant Gram positive cocci. Amino Acids, DOI 10.1007/s00726-010-0618-z.
9. Parihar Deepa and Saksena D.N. (2010). The food, feeding habits and condition factor of three freshwater fishes from Tighra reservoir, Gwalior, J. Ecophysiol. Occup. Hlth., 10: 13-19.
10. Patro, I.K., Amit, Shrivastava, M., Bhumika, S. and Patro N. (2010) .Poly I:C induced microglial activation impairs motor activity in adult rats. Indian Journal of Experimental Biology 48: 104-109.
11. Patro, Nisha, Kushwaha, S. and Patro, I.K. (2010) Aging of microglia: Does it influence neuroprotection. Proc. Nat. Acad. Sci. India, Sect. B, 80 (1): 14-23.
12. Patro, Nisha, Nagayach, Arti and Patro, Ishan K. (2010). Iba1 expressing microglia in the dorsal root ganglia become activated following peripheral nerve injury in rats. Indian Journal of Experimental Biology 48: 110-116.
13. Rao, R.J. & Garg, R.K. (2010). Conservation of wetlands in Madhya Pradesh: A case study of Ramsagar Reservoir in Datia District, North Madhya Pradesh using GIS. www. GIS Dev.net /applications/environment/wetland 6 (5):1-7.
14. Sharma PR and Tiwari, PK (2010). Genetic diversity in Indian populations: implications for genetic susceptibility and mapping of complex genetic diseases. Recent

Trends in Biotechnology, Vol. 2, Chapter 10, Nova Science Publishers, USA

15. Sharma, P.R., Jain, S., Bamezai, R.N.K. & Tiwari, P.K. (2010). Increased prevalence of pulmonary tuberculosis in male adults of Sahariya tribe of India: A revised survey. *Indian Journal of Community Medicine*. 2010; 35 (2) 267-271.
16. Sharma, P.R., Jain, S., Bamezai, R.N.K. & Tiwari, P.K. (2010). Utility of serum LDH and its isoforms in the assessment of Mycobacterium tuberculosis induced pathology in TB patients of Sahariya tribe. *Ind. J. Clin Biochem* 25(1):57-63
17. Shrivastava Sadhana, Jadon Anjana, Singh Varsha and Shukla Sangeeta (2010). Effect of 4,5-dihydroxy-1,3-benzene disulphonic acid disodium salt with and without supplements against vanadyl sulphate intoxication. *Indian Drugs* 47(6): 49-57.
18. Singh, O.P., Dykes, C.L, Das, M.K, Pradhan, S., Bhatt, R.K., Agrawal, O.P. & Adak, T. (2010). Presence of two alternative kdr-like mutations, L1014F and L1014S, and a novel mutation, V1010L, in the voltage gated Na<sup>+</sup> channel of *Anopheles culicifacies* from Orissa, India. *Malaria Journal* 9: 146. Impact Factor: 3.40
19. Swarnkar, S., Singh, S., Mathur, R., Patro, I.K. and Nath, C. (2010). A study to correlate rotenone induced biochemical changes and cerebral damage in brain areas with neuromuscular coordination in rats. *Toxicology*, 272: 17–22.
20. Taigore, S.R. & Rao, R.J. (2010). Habitat features of Aquatic animals in the National Chambal Sanctuary, Madhya Pradesh, India. *Asian Journal of Experimental & Biological Sciences.*, 1 (2):409-414.
21. Tiwari Mohit, Nagpure N.S., Saksena, D.N. and Lakra, W.S. (2010). Time kinetic study of metallothionein mRNA expression due to cadmium exposure in freshwater murrel, *Channa punctata* (Bloch), *J. Ecophysiol. Occup. Hlth.*, 10: 85-96.
22. Varma Avnish and Saksena, D.N. (2010). Assessment of water quality and pollution status of Kalpi (Morar) river Gwalior, Madhya Pradesh with special reference to conservation and management plan, *Asian J. Exp. Biol. Sci.*, 1(2): 419-429.
23. Varma Avnish and Saksena, D.N. (2010). Impact of pollution on sewage collecting river Kalpi (Morar) Gwalior (M.P.) with special reference to water quality and macrozoobenthic fauna, *Asian J. Exp. Biol. Sci.*, 1: 155-161.
24. Varma Avnish and Saksena, D.N. (2010). Influence of pollutants and bottom sediments of sewage collecting Kalpi (Morar) river Gwalior, Madhya Pradesh, *J. Toxicol. Environ. Hlth. Sci.* 2(4): 38-49
25. Varma, Avnish and Saksena, D.N. (2010). Offline house hold water purifier with special reference to their chemical and microbiological efficacy. *Asian J. Exp. Biol. Sci.*, 1(4): 959-963.
26. Sharma, M., Vijayaraghavan, R. and Agrawal, O.P. (2010). Comparative toxic effect of nitrogen mustards (HN-1, HN-2 and HN-3) and sulfur mustard on hematological and biochemical variables, and their protection by DRDE-07 and its analogues. *International Journal of Toxicology*. 29: 391-401. Impact Factor: 1.34

## 2011

27. Dar, M.Y., Illahi, I., Agrawal, O.P., Mittal, V. and Ramegowda, G.K. (2011). Impact of mite infestation on mulberry leaf and silkworm, *Bombyx mori* L. *Indian Journal of Entomology* 73 (4): 378-381.
28. Irum Sehar, Harish C. Pal, Sangeeta Shukla, Bishan D. Gupta and Ajit K. Saxena (2011). Cytotoxic evaluation and induction of mitochondria-mediated apoptosis in human leukemia HL-60 cells by *Carissa spinarum* stem isolate. *Journal of Pharmacy and*

Pharmacology (JPP-D-10-00325R1 (15.12.2010).

29. Rawat M, Vijay S. Gupta Y, Dixit R, Tiwari PK and Sharma A (2011). Sequence homology and structural analysis of plsmepsin 4 isolated from Indian Plasmodium vivax isolates. *Infection Genetics and Evolution* 11(5): 924-33.
30. Rohilla M.S., Reddy P.V.J, Sharma S and P. K. Tiwari (2011). In vitro induction of the Ubiquitous 60 and 70 kD Heat Shock Proteins, by Pesticides Monocrotophos and Endosulphan in *Musca domestica*: A potential biomarker of Toxicity. *Cellular and Molecular Biology*, Issue 1:100-111
31. Reddy, P.V.J, Sharma S and Tiwari PK (2011). Genemoc structure and sequence analysis of *Lucilia cuprina* HSP90 gene. *Cellular and Molecular Biology* 1:112-121.
32. Shrivastava, Sadhana Deepmala Joshi, Monika Bhadauria, Sangeeta Shukla and Ramesh Mathur (2011). Cotherapy of Tiron and Selenium against vanadium induced toxic effects in lactating rats. *The Iranian Journal of Reproductive Medicine (In Press)*.
33. Shakya A and Shukla S. (2011). Evaluation of hepatoprotective efficacy of Majoon-e-Dabeed-ul-ward against acetaminophen-induced liver damage: A Unani herbal formulation. *Drug Dev Res* 72: 1-7.
34. Shakya A, Sharma N, Saxena M and Shukla S. (2011). Evaluation of the antioxidant and hepatoprotective effect of Majoon-e-Dabeed-ul-ward against carbon tetrachloride induced liver injury. *Experimental and Toxicologic Pathology* 64,7-8,767-773 2012 Impact Factor: 2.622
35. Singh TD, Barbhuiya MA, Gupta S, Jalaj V, Agrawal N, Shrivastav BR and Tiwari PK (2011). Quantitative assessment of lactate dehydrogenase and its isoforms 3 and 4 may serve as useful indicators in the progression of gallbladder cancer: A pilot study *Ind. J. Clin Biochem* (DOI.10.1007/s12291-011-0117-3)
36. Singh, O.P., Dykes, C.L, Agrawal, O.P. & Adak, T. (2011). Knock-down resistance (kdr)-like mutations in the voltage gated sodium channel of a malaria vector *Anopheles stephensi* and PCR assays for their detection. *Malaria Journal* 10: 59. Impact Factor: 3.40
37. Suman, D. S., Tikar, S.N. Mendki, M.J., Sukumaran, D., Agrawal, O. P., Parashar, B. D., and Prakash, S. (2011). Variation in life tables of geographically isolated strains of mosquito *Culex quinquefasciatus*. *Medical & Veterinary Entomology*, (2011), doi: 10.1111/j.1365-2915.2010.00939.x. Impact Factor: 2.20
38. Vinod V, Tiwari PK and Meshram GP (2011). Evaluation of mutagenic and antimutagenic activities of neem (*Azadirachta indica*) seed oil in the invitro Ames Salmonella/microsome assay and in vivo mouse bone marrow micronucleus test. *Journal of Ethnopharmacology* 139(3):931-937.
39. Mendki, M.J., Sharma, A.K., Vijay, Veer, Agrawal, O.P., ShriPrakash, Parashar, B.D. (2011) Population genetic structure of *Culex quinquefasciatus* in India by ISSR marker. *Asian Pacific Journal of Tropical Medicine*, 2011: 412-420. Impact Factor: 0.50
40. Mohit Tiwari, D.N. Saksena and N.S. Nagpure (2011). Sequencing of Metallothionein mRNA in Freshwater Teleost, *Channa punctata* (Bloch). *Proc. ICBAT.*, 169-178.
41. Mohit Tiwari, N. S. Nagpure , D. N. Saksena and W. S. Lakra. (2011). Metallothionein mRNA expression in freshwater teleost, *Channa punctata* (Bloch) under the influence of heavy metal, cadmium – a dose kinetic study. *Int. Aquat. Res.*, 3(1): 21-29.
42. Mohit Tiwari, N. S. Nagpure , D. N. Saksena, Ravindra Kumar, S. P. Singh, B. Kushwaha and W. S. Lakra. (2011). Evaluation of acute toxicity levels and ethological responses under heavy metal cadmium exposure in freshwater teleost, *Channa punctata* (Bloch). *Int. J. Aqu. Sci.*, 2(1): 36-47.
43. Swarnkar, S., Goswami, P., Kamat, P.K., Patro, I.K., Singh, Sarika and Nath, C.

- (2013) Rotenone induced neurotoxicity in rat brain areas: A study on neuronal and neuronal supportive cells. *Neuroscience*, 230,172–183. (Impact Factor – 3.458)
44. Swarnkar, Supriya, Singh, S., Goswami, P., Mathur, R., Patro, I.K. and Nath, C. (2012) Astrocyte activation: A key step in rotenone-induced cytotoxicity and DNA damage. *Neurochem. Res.*, 37(10):2178-89 (Impact Factor: 2.24, Cited by 2)
  45. Swarnkar, Supriya, Goswami, P., Kamat, P.K., Gupta, S., Patro, I.K., Singh, S. and Nath, C. (2012) Rotenone-induced apoptosis and role of calcium: a study on Neuro-2a cells. *Arch Toxicol.*, 86(9):1387-97. (Impact Factor: 4.041, Cited by 3)
  46. Dhanwani, Rekha, Khan, M., Bhaskar, A.S.B., Singh, Rajpriya, Patro, Ishan, Rao, P.V.L. and Parida, M. (2012) Characterization of Chikungunya virus infection in human neuroblastoma SH-SY5Y cells: Role of apoptosis in neuronal cell death. *Virus Res.*, 163: 417- 686. (Impact Factor: 2.905, Cited by 2)
  47. Patro, N., Sharma, Arpita, Karaya, K. and Patro I. (2011) *Spirulina platensis* protects neurons via suppression of glial activation and peripheral sensitization leading to restoration of motor function in collagen-induced arthritic rats. *Indian J. Exp. Biol.*, 49:739-748. (Impact Factor- 1.295, Cited by 1)
  48. Saxena, Gunjan, Patro, I.K. and Nath, C. (2011) ICV STZ induced impairment in memory and neuronal mitochondrial function: A protective role of nicotinic receptor. *Behav. Brain Res.*, 224(1): 50-57. (Impact Factor: 3.393, Cited by 8)
  49. Swarnkar, Supriya, Singh, Sarika, Sharma, S., Mathur, R, Patro, I.K. and Nath, C. (2011) Rotenone induced neurotoxicity in rat brain areas: A histopathological study. *Neuroscience Letters*, 495:178-182. (Impact Factor: 2.055, Cited by 5)
  50. Khan, M., Dhanwani, R., Patro, I.K., Rao, P.V.L. and Parida, M.M. (2011) Cellular IMPDH enzyme activity is a potential target for the inhibition of Chikungunya virus replication and virus induced apoptosis in cultured mammalian cells. *Antiviral Res.*, 89: 1-8. (Impact Factor: 4.439, Cited by 10)

## 2012

51. Dar, M.Y., Ramegowda, G.K., Mittal, V., Illahi, I. Dhar, Anil and Agrawal, O.P. (2012). A preliminary study on the mite damage assessment in mulberry. *Munis Entomology and Zoology* 7 (2): 899-903.
52. Ramegowda, G.K., Dar, M.Y., Mittal, V., Ahmad, S.N., Guruswamy, D., Illahi, I., Agrawal, O.P. and Dhar, A. (2012). Effect of mite infested mulberry leaves on rearing performance and reeling parameters of silkworm, *Bombyx mori* L. *Munis Entomology and Zoology* 7 (2): 926-930.
53. Satendra Kumar Nirala, Monika Bhadauria, Sangeeta Shukla, Asha Mathur and Ramesh Mathur. Propolis mediated therapeutic potential of HEDTA against beryllium induced toxicological consequences. *Beneficial Effects of Propolis on Human Health and Chronic Diseases-Vol 1*, Nova publishers, USA. 2012
54. Monika Bhadauria, Satendra Kumar Nirala, Amita Jaswal, Suchita Raghuvanshi, Renu Bhatt and Sangeeta Shukla. Propolis: therapeutic perspectives against silica induced toxic manifestations. *Beneficial Effects of Propolis on Human Health and Chronic Diseases-Vol 2*, Nova publishers, USA. 2012
55. Irshad Ahmad Ahangar, D.N. Saksena, M. Farooq Mir and M.A. Ahangar. Crustacean community in Anchar Lake, Srinagar. *BEPKS.*, 1 (7): 17-20. : Accepted
56. Irshad Ahmad Ahangar, D.N. Saksena, M. Farooq Mir and M.A. Ahangar. Seasonal Variation in Zooplankton Community Structure of Anchar lake, Kashmir. *International Journal of Lakes and Rivers*: Accepted

57. Irshad Ahmad Ahangar, D.N. Saksena, M. Farooq Mir and M.A. Ahangar. Seasonal Variation in Physico-chemical characteristics of Anchar Lake, Kashmir. I.J.A.B.R., 2 (2): 177-183 Accepted
58. Irshad Ahmad Ahangar, D.N. Saksena, M. Farooq Mir and M.A. Ahangar. Zooplankton diversity of Anchar Lake with relation to trophic status, Srinagar, Kashmir. Global Journal of Environmental Research: Accepted
59. Singh TD, Barbhuiya MA, Poojary S, Shrivastav BR, Tiwari PK (2012) The Liver function test enzymes and higher glucose level are positively correlated in gall bladder cancer from North Central India: A cancer Registry Data (CARD) Analysis. Indian J Can 49(1): 125-36
60. Barbhuiya MA, Singh TD, Poojary S, Jalaj V, Kakkar M, Gupta S, Shrivastav BR, Tiwari PK (2012) Gall bladder cancer incidence in Gwalior District of India: Five year registry of a Regional cancer centre Indian J. cancer (In Press)
61. Sharma PR, Prakash R, Mishra G, Singh TD, Poojary S, Mishra NK, Tiwari PK (2012) Prevalence of smear positive pulmonary tuberculosis in tribe and castes: Evaluation of public health. Putte; 126: 295-299
62. Singh TD, Sharma P, Gupta R, Barbhuiya MA, Poojary S, Shrivastav BR, Tiwari PK (2012) Methylation patterns of Maspin and Stratifin genes in gall bladder Cancer and gallstone diseases. J can Res Therapeutics. 8 (5) Supplement 1.545
63. Nandini AS, Barbhuiya MA, Pawar H, Singh TD, Subbamnaya T, Harsha HC, Shrivastav BR, Chaerkady R, Tiwari PK, Pandey A. Identification of potential biomarkers for gall bladder cancer using quantitative proteomic approach. J can Res Therapeutics (2012); 8(5) : Supplement 1,537
64. Marimuthu A, Sahasrabudhe N, Barbhuiya MA, Goel R, Murthy KR Tiwari PK, Pandey A. Body fluids- a rich resource of Cancer biomarkers (2012); 8(5) Supplement 1,533
65. Mishra G, Poojary S, Prithvi Raj, Tiwari PK. Genetic polymorphisms of CCL2, CCL5, CCR2 and CCR5 genes in Sahariya tribes in North Central India: An association study with pulmonary tuberculosis. (2012) Infect Genet Evolv; 12: 1120-7.
66. Uchchariya, Dinesh and Saksena Devendra Nath. (2012). Ecotourism in Tighra Reservoir: A case study of SAJTH., 5 (1) “ 61-72
67. Narwria, Y.S. and Saksena, D.N. (2012). Acute toxicity bioassay and behavioural responses induced by sodium fluoride in fresh water fish *Puntius sophore* (Bloch). Fluoride, 45(1): 7-12
68. Shailja Mishra and Saksena, D.N. (2012). Gonadosomatic Index and fecundity of an Indian major carp, ; *Labeo calbasu*, in Gohad reservoir. The Bioscan, 7(1): 41-46.
69. Saksena D.N. and Uchchariya, D.K. Primary productivity of Phytoplankton and its seasonal variations in Tighra Reservoir. J. Env. Biosci. , 26 (1): 1-7
70. Arvind Kumar Shakya, Monika Saxena, Neetu Sharma, Sadhana Shrivastava, Sangeeta Shukla. (2012) Hepatoprotective Efficacy of Sharbat-e-Deenar Against Carbon Tetrachloride–Induced Liver Damage. Journal of Environmental Pathology, Toxicology and Oncology, 31(2):131-141 (2012) Impact Factor: 1.2
71. Suchita Raghuvanshi and Sangeeta Shukla. (2012) Therapeutics associated with occupational exposure to silica, Journal of Trace Elements in Medicine and Biology 26, 205–209. Impact Factor: 2.671
72. Deepmala Joshi , Deepak Kumar Mittal, Sangeeta Shukla, Ajai Kumar Srivastav (2012) Therapeutic potential of N-acetyl cysteine with antioxidants (Zn and Se) supplementation against dimethylmercury toxicity in male albino rats. Experimental and Toxicologic Pathology 64 (2012) 103– 108. Impact Factor: 2.283
73. Satendra Kumar Nirala, Monika Bhadauria, Sangeeta Shukla, Asha Mathur and Ramesh Mathur. (2012) Propolis mediated therapeutic potential of HEDTA against beryllium

- induced toxicological consequences. Beneficial Effects of Propolis on Human Health and Chronic Diseases-Vol 1, Nova publishers, USA
74. Sadhana Shrivastava (2012) Combined effect of HEDTA and Selenium against aluminum induced oxidative stress in rat brain. *Journal of Trace Elements in Medicine and Biology*, Netherland 26, 210–214). Impact Factor: 2.176/2010
  75. Sadhana Shrivastava (2012) Protective evaluation of Zingiber officinale in aluminium induced toxicity in rats. *Trace Elements in Medicine*, Moscow, Russia 13(1)1-10.
  76. Monika Saxena and Sangeeta Shukla. Reversal of carbon tetrachloride induced hepatic injury by aqueous extract of Artemisiaabsinthium in Sprague dawley rats. *Journal of Environmental Pathology, Toxicology and Oncology* (2012) Impact Factor: 1.
  77. Monika Saxena, Arvind Kumar Shakya, Neetu Sharma, Sadhana Shrivastava, Sangeeta Shukla (2012). Therapeutic efficacy of Rosa damascena Mill. on acetaminophen induced oxidative stress in albino rats. *Journal of Environmental Pathology, Toxicology and Oncology*, 31(2):193-201 Impact Factor: 1.2/2010
  78. Suchita Raghuvanshi, Sadhana Shrivastava, Sonia Johri, Sangeeta Shukla (2012). Therapeutic associated with occupational exposure to silica. *Journal of Trace Elements in Medicine and Biology*, Netherland 26, 205–209. Impact Factor: 2.176/2010
  79. Shrivastava S, Jadon A, Shukla S, Mathur R. (2012) Reversal of Vanadium-induced Toxicity by Combination Therapy of Tiferron and  $\alpha$ -tocopherol in Rat during Pregnancy and their Fetuses. *Therapie*. 2012 Mar;67(2):173-182. Impact Factor: 0.307/2010
  80. Mohit Tiwari, N. S. Nagpure , D. N. Saksena and W. S. Lakra. (2012). Tissue specific metallothionein gene expression in air-breathing teleost, Channa punctata (Bloch). *Natl. Acad. Sci. Lett.*, 35(6): 517-523.
  81. Mohit Tiwari, N. S. Nagpure, D. N. Saksena and B. N. Paul. (2012). Sequencing and expression of metallothionein mRNA in freshwater murrel after cadmium exposure. *Natl. Acad. Sci. Lett.*, 35(4): 323-330.
  82. Swarnkar, Supriya, Singh, S., Goswami, P., Mathur, R., Patro, I.K. and Nath, C. (2012) Astrocyte activation: A key step in rotenoneinduced cytotoxicity and DNA damage. *Neurochem. Res.*, 37(10):2178-89 (Impact Factor: 2.24, Cited by 2)
  83. Swarnkar, Supriya, Goswami, P., Kamat, P.K., Gupta, S., Patro, I.K., Singh, S. and Nath, C. (2012) Rotenone-induced apoptosis and role of calcium: a study on Neuro-2a cells. *Arch Toxicol.*, 86(9):1387-97. (Impact Factor: 4.041, )
  84. Dhanwani, Rekha, Khan, M., Bhaskar, A.S.B., Singh, Rajpriya, Patro, Ishan, Rao, P.V.L. and Parida, M. (2012) Charecterization of Chikugunya virus infection in human neuroblastoma SH-SY5Y cells: Role of apoptosis in neuronal cell death. *Virus Res.*, 163: 417- 686. (Impact Factor: 2.905, )
  85. Sharma SK, Rohilla MS, Singh TD, Poojary S, Singh A, Lowalekar KB, Tiwari PK (2012). Analysis of Autosomal dominant spinocerebellar ataxia type I in an extended family of central India. *Indian J Hum Genet* 18(3):309-14.

## 2013

86. Y.S. Narwaria & D.N. Saksena (2013) Prevalence of Dental Fluorosis Among Primary School Children in Rural Areas of Karera Block, Madhya Pradesh. *Indian J Pediatr* (Accepted: 8 May 2013)
87. Kumar, R., Rajpoot, G.S., Mishra, R.C. and Agrawal, O.P. (2013). An assessment of duration of dearth period for honey bee colonies during dearth period under Gwalio ( India) conditions. *Munis Entomology and Zoology* 8 (1): 434-437

88. Kumar, R., Rajpoot, G.S., Mishra,R.C. and Agrawal, O.P.(2013). Effect of feeding various diet formulations on honey bees in Haryana, India. *Munis Entomology and Zoology* 8 (1): 267-272
89. Kumar, R., Mishra,R.C. and Agrawal, O.P.(2013). Effect of feeding artificial diets on honey bees during dearth period under panchkula (Haryana) conditions. *Journal of Entomological Research* 37 (1): 41-45.
90. Samta Sharma, Sadhana Shrivastava and Sangeeta Shukla. Reversal of lead-induced toxicity by antioxidants in rats: Role of reactive oxygen species *Journal of Environmental Pathology, Toxicology and Oncology* (Accepted) Impact Factor: 1.2
91. Deepmala J, Deepak M, Srivastav S, Sangeeta S, Kumar SA, Kumar SS. (2013) Protective effect of combined therapy with dithiothreitol, zinc and selenium protects acute mercury induced oxidative injury in rats. *J Trace Elem Med Biol.* 2013 Feb 18. Impact Factor: 2.176/2010
92. Sadhana Shrivastava (2013) Amelioration of Aluminium induced toxicity by *Allium sativum* *Scientific Research and Essays* Vol. 8(4), pp. 168-177, 25 Jan, 2013 Impact Factor: 0.445/2010
93. Amita Jaswal, Monika Bhadauria and Sangeeta Shukla. (2013). Therapeutic potential of thymoquinone against anti-tuberculosis drugs induced liver damage. *Environmental Toxicology and Pharmacology*, 36 (3): 779–786.
94. Asha Singh, Sangeeta Shukla and Sadhana Shrivastava. (2013) Combined administration of chelating agent and micronutrients in the Prevention and treatment of lead intoxication in rats *International Journal of Current Research* Vol. 5, Issue, 04, 801-806.
95. Deepmala J, Deepak M, Srivastav S, Sangeeta S, Kumar SA, Kumar SS. (2013) Protective effect of combined therapy with dithiothreitol, zinc and selenium protects acute mercury induced oxidative injury in rats. *J Trace Elem Med Biol.* (3):249-56. Impact Factor: 2.671
96. Kumar, R., Rajput, G. S., Ganai, S. A., Basheer, M. & Agrawal, O. P. (2013). Assessment of dearth periods for honey bees (*Apis mellifera*) in Gwalior (M.P.), India. *Munis Entomology & Zoology* 8 (2): 745-748.
97. Basheer, M., Kumar, R., Ganai, S. A. & Agrawal, O. P. (2013). Effect of various additives on vermicomposting of paper waste using epigeic earthworm, *Eudrilus eugeniae* (Annelida: Clitellata). *Munis Entomology & Zoology*, 8 (2): 726-733.
98. Basheer, M. & Agrawal, O.P. (2013). Management of paper waste by vermicomposting using epigeic earthworm, *Eudrilus eugeniae*, in Gwalior, India. *Int. Curr. Microbiol. App. Sci.* 2 (4): 42-47.
99. Ganai, S.A., Kumar, R., Basheer, M. and Agrawal, O.P. (2013). A study on sampling of mosquitos using eco-friendly mosquito trap in around Jiwaji University Campus (India). *Munis Entomology & Zoology*, 8 (2): 734-738.
100. Kumar, R. and Agrawal, O.P. (2013). Influence of feeding protein rich diets to *Apis mellifera* colonies during dearth periods in Gwalior, India. *Asian Journal of Experimental Biological Sciences* 4 (3) 462-468.
101. Kumar, R., Mishra, R.C. and Agrawal, O.P. (2013). A study on consumption of some artificial diet formulations by *Apis mellifera* colonies maintained at Panchkula and Gwalior. *Journal of Entomological Research* (In Press).
102. Bhat, R.A. and Agrawal, O.P. (2013). Simple mosquito ovitrap: an excellent and ecofriendly tool for surveillance and management of dengue and chikungunya vector. *Journal of Basic and Applied Biology* 7 (4): 77-84.
103. Puneeta Dandotiya and O.P. Agrawal (2013). Vermicomposting of food and household organic waste using epigeic earthworm (*Eudrilus eugeniae*). *International Journal of Current Research*, 5(10): 3016-3019.

104. Hemant Samadhia, Puneeta Dandotiya, Jaya Chaturvedi and O.P. Agrawal (2013). Effect of vermiwash on the growth and development of leaves and stem of tomato plants. *International Journal of Current Research*, 5(10): 3020-3023.
105. Rajpoot, G.S., Kumar, Rajesh and Agrawal, O.P. (2013). Analysis of various honey samples collected from different location of Madhya Pradesh. *International Journal of Current Research*, 5(10): 3029-3034.
106. Pragya Singh Pawaiya, G.S. Rajpoot, M.K. Agrawal and O.P. Agrawal (2013). Treatment of sewage sludge through vermicomposting using *Eisenia fetida*. *International Journal of Current Research*, 5(10): 3051-3057.
107. Patro, Nisha, Singh, Kavita and Patro, I. Differential microglial and astrocytic response to bacterial and viral infection in the developing hippocampus of neonatal rats. *Indian J. Exp. Biol.* (In Press, Impact Factor- 1.295)
108. Kumar, K., Patro, Nisha and Patro, I. (2013) Impaired Structural and Functional Development of Cerebellum Following Gestational Exposure of Deltamethrin in Rats: Role of Reelin. *Cell. Mol. Neurobiol.*, doi (Impact Factor: 2.423)
109. Sharma, Shashi, Joshi, G., Dash, P.K., Thomas, M., Athmaram, T.N., Kumar, J.S., Desai, A., Ravi, A., Patro, I.K., Rao, P.V., Parida, M.M. (2013) Molecular epidemiology and complete genome characterization of H1N1pdm virus from India. *PLOS ONE*, 8(2): e56364. doi:10.1371/journal.pone.0056364. (Impact Factor – 4.4)
110. Mishra, B, Leishangthem, G.D., Gill, K., Singh, A.K., Das, S., Singh, K., Xess, I., Dinda, A., Kapil, A., Patro, I.K. and Dey, Sharmistha (2013) A novel antimicrobial peptide derived from modified N-terminal domain of bovine lactoferrin: Design, synthesis, activity against multidrug-resistant bacteria and *Candida*. *Biochimica et Biophysica Acta*, 1828 (2013) 677–686. (Impact Factor – 4.66)
111. Priya, R., Dhanwani, R., Patro, I.K., Rao, P.V. and Parida, M.M. (2013) Differential regulation of TLR mediated innate immune response of mouse neuronal cells following infection with novel ECSA genotype of Chikungunya virus with and without E1:A226V mutation. *Infect. Genet. Evol.*, 20: 396- 406. (Impact Factor- 2.768)
112. Saxena D, Kumar JS, Parida M, Sivakumar RR, Patro IK. (2013) Development and evaluation of NS1 specific monoclonal antibody based antigen capture ELISA and its implications in clinical diagnosis of West Nile virus infection. *J Clin Virol.*, 58(3):528-34. (Impact Factor- 3.287)
113. Patro, N., Kumar, K. and Patro, I. (2013) Quick Golgi method: modified for high clarity and better neuronal anatomy. *Indian J. Exp. Biol.*, 51 (9): 685-693. (Impact Factor- 1.295)
114. Patro, Nisha, Singh, Kavita and Patro, I. Differential microglial and astrocytic response to bacterial and viral infection in the developing hippocampus of neonatal rats. *Indian J. Exp. Biol.*, 51(8): 606-614. (Impact Factor- 1.295)
115. Kumar, K., Patro, Nisha and Patro, I. (2013) Impaired Structural and Functional Development of Cerebellum Following Gestational Exposure of Deltamethrin in Rats: Role of Reelin. *Cell. Mol. Neurobiol.*, 33(5):731-46 (Impact Factor: 2.423, Cited by 1)
116. Swarnkar, S., Goswami, P., Kamat, P.K., Patro, I.K., Singh, Sarika and Nath, C. (2013) Rotenone induced neurotoxicity in rat brain areas: A study on neuronal and neuronal supportive cells. *Neuroscience*, 230, 172–183. (Impact Factor – 3.458, Cited by 1)
117. Rawat M, Vijay S, Gupta Y, Tiwari PK, Sharma A (2013). Imperfect Duplicate Insertions Type of Mutations in Plasmeprin V Modulates Binding Properties of PEXEL Motifs of Export Proteins in Indian *Plasmodium vivax*. *PLoS ONE* 8(3): e60077.
118. Barbhuiya MA, Singh TD, Poojary S, Gupta S, Kakkar M, Shrivastav BR, Tiwari PK (2013). Gallbladder cancer incidence in Gwalior district of India: five year trend based on the registry of a Regional Cancer Centre. *Indian J Cancer* (in press).

119. Aadil yaqoob, Ruhi Glzar and Ajai K. Jain “Peripheral adrenergic newromelanophore transmission with some basic observation on adrenergic receptors in melanophores of the fish, *Cyprinus carpio* Int. J. Recent Sci. Res. 4 (11): 1839 -1846 (2013)
120. Tyagi, V., Sharma,A.K. Yadav, Ruchi, Agrawal, O.P., Sukumaran, D. and Veer, V. (2013). Characteristics of the larval breeding sites of *Anopheles culicifacies* sibling species in Madhya Pradesh, India *International Journal of Malaria Research & Reviews. 1 (5) 47-53*.

## 2014

121. Suchita Raghuvanshi and Sangeeta Shukla. Therapeutic potential of jiggery against silica nano particles induced toxic manifestations in Sprague-Dawley rats. *Int Journal of Pharma and Bio Sciences. Impact Factor: 0.6*
122. Samta Sharma, Bhanu Pratap Singh Raghuvanshi and Sangeeta Shukla. Toxic Effects of Lead Exposure in Rats: Involvement of Oxidative Stress, Genotoxic Effect, and the Beneficial Role of N-Acetylcysteine Supplemented with Selenium. *Journal of Environmental Pathology, Toxicology and Oncology 33(1):19-32 Impact Factor: 1.2*
123. Joshi D, Mittal DK, Shukla S, Srivastav AK, Srivastav SK. N-acetyl cysteine and selenium protects mercuric chloride-induced oxidative stress and antioxidant defense system in liver and kidney of rats: A histopathological approach. *J Trace Elem Med Biol. 2014 Jan 8. Impact Factor: 2.671*
124. Sharma, S.K., Tyagi, P.K., Upadhyay, A.K. Haque, M.A. and Agrawal, O.P. (2014). Efficacy, Human Safety and Collateral Benefits of Alphacypermethrin Treated Long-Lasting Insecticidal Net (Interceptor ) in a Hyperendemic Tribal Area of Orissa, India.
125. Puneeta Dandotiya and O.P. Agrawal (2014). A Simple method for improvement of soil fertility through vermicomposting. *Oct. Jour. Env. Res. Vol. 2(2): 336-345*.
126. Joshi D1, Mittal DK, **Shukla S**, Srivastav AK, Srivastav SK. Methylmercury toxicity: amelioration by selenium and water-soluble chelators as N-acetyl cysteine and dithiothreitol. *Cell Biochem Funct. 2014 Jan 13. Impact Factor: 1.85*

## Chapters in Books \*

1. S.Nirala, M.Bhadauria, **S. Shukla**, A Mathur and R.Mathur. Propolis mediated therapeutic potential of HEDTA against beryllium induced toxicological consequences. *Beneficial Effects of Propolis on Human Health and Chronic Diseases-Vol 1, Nova publishers, USA.2012*
2. M.Bhadauria, S.Nirala, A. Jaswal, S Raghuvanshi, **S. Shukla**. Propolis:. *Beneficial Effects of Propolis on Human Health and Chronic Diseases-Vol 2, Nova publishers, USA.*
3. **Harwood Academic Publishers:** Contributed chapter five in a compendium entitled the genus *Pueraria* as a volume of Medicinal & Aromatic Plant series by Harwood Academic Publishers, UK (2002).
4. Johri S, **Shukla S** and Mathur R. Assessment of reproductive damage and therapeutics in female rats consequent upon beryllium exposure. In book entitled “*Reproductive Biology*” Section III “Environment & Reproduction” Chapter 17 (D.D. Science Publishers) 241-252.
5. **Shukla S**. Subchronic toxicological profile of *Pueraria tuberosa* DC a potent contraceptive plant. Published in book entitled "*Reproductive Biology*" (Section II) Reproductive Biology Chapter 16 (D.D. Science Publishers) 230-237.
6. **Shukla S** and Mathur R (2002) *Pueraria tuberosa* DC: contraceptive efficacy and toxicological profile Chapter 4 in the book *Pueraria "Medicinal and Aromatic Plants-Industrial profile"* series published by Taylor & Francis.70-82

7. **Shukla S**, Mathur R and Prakash AO (1988) Toxicological studies of an insecticide Embelin in adult rats. In: Environmental and Occupational Chemical Hazards (Ed. Kimlaki Sumino) published by ICMR, Kobe, Japan 569-575.

### Edited Books

- a. Manual – In vitro Techniques and Environmental Toxicology.
- b. Editor of book “Reproductive Biology” 2004 (D. D. Publishers)
- c. **Toxicogenomic Study in Freshwater Murrel. ISBN: 978-3-659-13480-7 Mohit Tiwari, D.N. Saksena and N.S. Nagpure. (2012).**
- d. Sadhana Shrivastava, H Nigotia and **Sangeeta Shukla**. Therapeutic Potential Of *Allium Sativum* (Garlic) Against Aluminium Induced Toxicity In Rats. Lambert Academic Publishing, Germany. (2014)

### \* Citation Index – range / average

#### Prof S Shukla:

	All	Since 2009
Citations	925	690
h-index	15	14
i10-index	25	18

### 23. Details of patents and income generated

- Patent has been filed for Indian and US patent entitled “Propolis extract: a potent antioxidant and hepatoprotective agent and the process for **preparation thereof**”.
  - Application No: 1827/DEL/2009 A
  - *Date of filing: 03/09/2009*
  - *Publication date 2010-04-23*
  - Name of inventors: Sangeeta Shukla, Monika Bhadauria, Satendra Kumar Nirala, Sadhana Shrivastava and Shamshad Ahmed.

24. Areas of consultancy and income generated : **Charak Udyan**

25. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad

#### (a) **Intra and Inter Departmental**

Collaborative research projects on environment, toxicity, apiculture, fisheries have been taken by the faculty members. In addition research programmes on environment have been taken with various Schools of studies in Botany, Chemistry, Environmental Sciences of the Jiwaji University. Some staff members are involved in teaching in School of Studies in Environmental Science and Biotechnology.

#### (b) **National Organizations**

Research programmes have been taken up with Salim Ali Centre for Ornithology and Natural History, Coimbatore on Wetland ecology in Madhya Pradesh and Chattisgarh; aquatic and biosphere management with Wildlife Institute of India, Dehradun, Cancer Research Institute, Teaching & research collaboration with faculty of Entomology Dept.

of Agriculture College, Gwalior, extension work for Apiculture with Farmers' Training Institute, Dept. of Agriculture, Gwalior. Prof. O.P. Agarwal has also taken up research programmes in collaboration with the Scientists in Indian Agricultural Research Institute, New Delhi, Agricultural University, Hissar and Department of Biotechnology, Bharatidasan University, Trichi. Prof. D.N. Saksena is working on aquatic animal biology in collaboration with OUAT, Berhampur and Central Institute of Freshwater Aquaculture, Bhubaneswar, Orissa and college of Fisheries, Ratnagiri, Maharashtra. Prof. Sangeeta Shukla is collaborating with IIM, CSIR Institute, Jammu for hepatoprotective studies.

**(c) Non-Government organization**

Environmental Awareness Programmes have been organised in collaboration with various NGOs like Centre for Integrated Development, Sambhav, Forester's Society, etc. in Gwalior. Watershed programmes are also carried out in collaboration with these Non-Government Organisations. Biodiversity studies haven been carried out in collaboration with Kalpavrikh, a Pune based NGO. Dr. A. K. Tiwari is working with Scientist from National Dope Testing Laboratory, New Delhi and with Scientist from DRDE, Gwalior.

**(d) International organizations**

1. UNESCO Trace Element study centre
2. GCA on crocodile studies
3. TSA on Turtle studies

**(e) Other Institutions**

The faculty members are working under collaborative programmes with Forest Departments of Madhya Pradesh, Rajasthan, Uttar Pradesh etc., extension programmes with Worldwide fund, New Delhi and Bhopal, Environmental Protection and Coordination Organisation, Bhopal etc. Research collaboration with Defense Research and Development Establishment, Gwalior in Toxicology, Entomology and Biochemistry Divisions

26. Faculty serving in
  - a) National committees
  - b) International committees
  - c) Editorial Boards
  - d) any other (please specify)
27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs).

S. No.	Name of the Faculty	Country Visited	Purpose	Year of Visit
1	Prof. A.K. Jain	Japan Italy	INSA/JSPS visiting research fellowship NATO fellowship	1980-81 1986
2	Prof. O.P. Agrawal	Germany Italy Germany France & Germany UK Germany & France	DAAD Fellowship Int. conference Int. Conference Int. Conference Int. conference DAAD re-invitation fellowship	1983-85 1985 1987 1989 1992 1993-94
3	Prof. Sangeeta Shukla	Germany Singapore Germany Thailand Leon, France Leon, France Sweden, Finland Crete, Greece	Int. conference Int. conference Int. conference Int. conference UNESCO Trace element meeting Int. conference Int. conference, Trace element meeting Int. conference, Trace element meeting	1986 1987 1996 2004 2005 2006 2007 2007
4	Prof. P.K. Tiwari	USA	DBT/GOI Overseas Associate ship	1995-96
5	Prof. I.K. Patro	UK Australia Singapore Germany	DBT/GOI Overseas Associate ship APSN Training fellowship Training in Singapore University INSA-DFG Fellowship	1996-97 1998 1998 2000-01
6	Prof. R.J. Rao	Canterbury, UK Florida, USA Darwin, Australia Singapore Gonfaron, France Follonica, Italy Singapore Nairobi, Kenya Lodz, Poland Vein, Austria Hungary Zagrab, Kris, Croatia Venice, Italy Saly, Senegal Dubai Colombo, Sri Lanka Bangkok, Thailand California, USA St. Louis, USA Chicago, USA Nigambo, Srilanka	Int. conference Int. conference Int. conference Singapore Zoo Visit Int. conference Tortoise captive facility Visit Int. conference Int. conference UNESCO Ecohydrology Training UNESCO Ecohydrology Training UNESCO Ecohydrology Training UNESCO Ecohydrology Training UNESCO Ecohydrology Training Int. conference National Museum Visit Int. conference Int. conference SCGIS Training fellowship International conference International conference International conference	1989 1990 1993 1993 1995 1995 1998 1999 1999 1999 1999 1999 1999 2003 2003 2003 2004 2005 2006 2008 2013

28. Student projects

- percentage of students who have done in-house projects including inter-departmental projects
- percentage of students doing projects in collaboration with other universities / industry / institute

29. Awards / recognitions received at the national and international level by

- Faculty

<b>Prof. D. N. Saksena</b>	<b>UGC-British Council Exchange Fellowship Indo-US Fellowship INSA-JSPS Fellowship Prof. J.S. Dutta Mushi Gold Medal</b>
<b>Prof. A. K. Jain</b>	<b>INSA-JSPS Visiting Fellowship, Japan NATO Fellowship Italy</b>
<b>Prof. O. P. Agrawal</b>	<b>DAAD (German Academic Exchange service) DAAD Re-invitation Fellowship GTZ (Germany) Material &amp; Equipment Grant Best Paper Award (DRDE)</b>
<b>Prof. Sangeeta Shukla</b>	<b>Member , Executive Committee of NAAC (2013-2016) Vice President for Asian Continent TEU, UNESCO, France Council Member of 'ISTERH, 2007-2013 Fellowship Welcome Trust Group, UK UNESCO- ROSTSCA, Young Scientists award ISCA Young Scientist M.P. Young Scientist IDMA Research award Scientist of the Year Gold Medal by STOX Teacher of the Year UGC BSR grant of Rs 7 lakh for academic excellence, 2011</b>
<b>Prof. I.K. Patro</b>	<b>Fellow of National Academy of Sciences (India) Fellow of the Indian Academy of Neurosciences Fellow of Collegium Inter. Neuro-psycopharmacologicum A.V. Tilak award DBT Overseas Associateship INSA-DFG Fellowship KT Shetty Memorial Oration, Indian Academy Neurosciences</b>
<b>Prof. P. K. Tiwari</b>	<b>DBT Overseas Associateship</b>
<b>Prof. R. J. Rao</b>	<b>UNESCO Ecohydrology Fellowship</b>

	<b>Member of International Union for Conservation of Nature, Switzerland</b>
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- Doctoral / post doctoral fellows
  - Students
1. **Mr. P.R. Sharma: Ist Prize for Best Poster Presentation in “International Conference on Medical and Community Genetics”. 13-14<sup>th</sup> February, 2008 PGIMER, Chandigarh.**
  2. **Ms. Varsha Singh: Best Contribution Award in XV<sup>th</sup> International Congress of Zoology Paris, France 26-29 August 2008.**
  3. **Dr. Satendra Kumar Nirala: Student Prize in XV<sup>th</sup> International Congress of Zoology Paris, France 26-29 August 2008.**
  4. **Dr. Monika Bhadauria: Student Prize in XV<sup>th</sup> International Congress of Zoology Paris, France 26-29 August 2008.**
  5. **Mr. P.R. Sharma: Young Scientist Award in 24<sup>th</sup> MP Young Scientist Congress, MP CST, Bhopal, March 2009**
  6. **Sharma, A.K., Mendaki, M.J., Tikar, S.N., Chandel, K., Sukumaran, D., Parashar, B.D., Veer, V., Agrawal, O.P. & Prakash, S. (2009) Genetic variability in geographical populations of *Culex quinquefasciatus* Say (Diptera: Culicidae) from India based on random amplified polymorphic DNA analysis. *Acta Tropical* 12: 71-76, Best Research Paper Award for Biological Sciences by DRDE, Gwalior.**
  7. **Rajesh Kumar, R.C. Mishra & O.P. Agrawal (2011). Third Best Poster Presentation (Requirement of Supplementary feeding during dearth periods for *Apis mellifera* beekeeping) award participated in Honey Festival & Experience Exchange Workshop at Punjab Agricultural University, Ludhiana, February 22-24, 2011.**
  8. **Mohit Tiwari first Prize for Oral Presentation in Seminar on Biodiversity characterization and Environment impact, September 28-29, 2011.**
  9. **Amita Jaswal prize for poster presentation in Seminar on biodiversity characterization and environmental impact ,sept 28-29,2011**
  10. **Niladri Das Gupta Prize for Oral Presentation in Seminar on biodiversity characterization and environmental impact ,sept 28-29,2011**
  11. **Suchita Raghuvanshi Prize for Oral Presentation in Seminar on biodiversity characterization and environmental impact ,sept 28-29,2011**
  12. **Praval Singh Chauhan, G.B.K.S.Prasad, O.P. Agrawal were awarded Best Poster Award for the poster entitled “Earthworms as a renewable source of food and medicine” presented in Seminar on Biodiversity Characterization and Environmental Impact, 28-29 September, 2011 organized by School of Studies in Zoology, Jiwaji University, Gwalior.**
  13. **Deepmala Joshi Young Scientist award in 26<sup>th</sup> MPCST Bhopal, 2011.**
  14. **Ravi Prakash: Awarded Best oral Presentation in Seminar on Biodiversity characterization and Environment impact, September 28-29, 2011.**
  15. **Shushruta Bhunia: Awarded best Poster Presentation in Seminar on Biodiversity characterization and Environment impact, September 28-29, 2011.**

16. **Tekcham Dinesh Singh: awarded best poster presentation in Life Science Symposium-2011(2011), DAE-BRNS, Mumbai, 12-24 October, 2012**
17. **M. Salim Reshi: I<sup>st</sup> Prize for Best Poster Presentation in National seminar on drug discovery and development theme : “Preformulation:its impact on drug delivery”,ITM University,Gwalior January 18, 2014**
18. **Narrotam Das Agrawal: II<sup>nd</sup> Prize for Best Poster Presentation in in National seminar on drug discovery and development theme : “Preformulation:its impact on drug delivery”,ITM University,Gwalior January 18, 2014.**
19. **Satyanarayan Rawat: Awarded best Poster Presentation during National conference on Recent Trends in Environmental Science, February 4-5, 2014.**
20. **Mohd Salim Reshi:Young Scientist Award in Life Sciences in 29th M.P. Young Scientist Congress Feb28-March 1, 2014 “Protection against acetaminophen induced hepatotoxicity by the treatment with gold nanoparticles in rats”**
21. **T Dinesh Singh: Young Scientist Award in Medical Science including AYUSH in 29th M.P. Young Scientist Congress Feb28-March 1, 2014**

30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any.  
/

	Number organized	
	National	International
	Organized	Organized
Conferences	1(RJ) 1(IKP) 1(SS)	-
Seminars	3 (RJ)	-
Workshops	4(RJ) 1(PKT) 1 (OPA)	-

31. Code of ethics for research followed by the departments
32. Student profile programme-wise:

Name of the Programme (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female

33. Diversity of students

Name of the Programme (refer to question no. 4)	% of students from the same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries

34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

**The total no of students: 2008: 2    2009: 3    2010: 3    2011:3    2012: 2    = 14**

35. Student progression

Student progression	Percentage against enrolled
UG to PG	
PG to M.Phil.	
PG to Ph.D.	
Ph.D. to Post-Doctoral	
Employed <input type="checkbox"/> Campus selection <input type="checkbox"/> Other than campus recruitment	
Entrepreneurs	

36. Diversity of staff

Percentage of faculty who are	
graduates of the same university	
from other universities within the State	
from universities from other States	

from universities outside the country

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period: **NIL**

38. Present details of departmental infrastructural facilities with regard to

a) Library

1. **Dept. Library : No. of available books in the: 3526**
2. **Journals in the Departmental library : Indian : 10 , Foreign : 3**
3. **Central library: JCCC@UGC-INFONET is available and is connected with the departmental internet**

• Internet facilities for staff and students

- ✓ **Internet facilities generated from DST/FIST funds are available in the Department and also connected with INFLIBNET with Central Library of the University.**
- ✓ **Process of University Networking is in progress.**

b) Total number of class rooms - 04

c) Class rooms with ICT facility -

d) Students' laboratories - 06

e) Research laboratories - 07

**Research laboratories**

**Animal House**

**Cold room**

**Tissue culture facility**

**Photography facilities including processing lab**

**Radiation Laboratory**

**Audio/visual teaching equipments**

**Department Seminar Hall**

**University Auditorium**

**University Science and Instrumentation Centre**

**Departmental or Library**

**University Library**

**Field equipment**

**Field station at National Chambal Sanctuary**

39. List of doctoral, post-doctoral students and Research Associates

a) from the host institution/university :

**PDF: WOS Scientists 01**

b) from other institutions/universities

40. Number of post graduate students getting financial assistance from the university:  
**One**

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.
42. Does the department obtain feedback from
- faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?
  - students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?
  - alumni and employers on the programmes offered and how does the department utilize the feedback?
43. List the distinguished alumni of the department (maximum 10)
- Dr. Arvind Kumar Shakya, Asst. Prof. IGNOU 2011  
Dr. Satendra Kumar Nirala, Asst. Prof. GGU, Bilaspur 2011  
Dr. Monika Bhadauria, Asst. Prof. GGU, Bilaspur 2011  
Monika Saxena, Asst. Prof. Banasthali Vidhya Peeth, 2010  
Dr. Meenakshi Saxena, Asst. Prof.  
Dr. Ved Prakash, Asst. Prof.  
Dr. Jasweer Singh, Asst. Prof.  
Dr. Dinesh Uchharia, Asst. Prof.  
Dr. Dheraj Agarwal, Asst. Prof.  
Dr. Ram Naresh Kushwah, Asst. Prof.  
Dr. Rajesh Kumar, Asstt. Professor  
Dr. Sita Agarwal, Contract teaching  
Dr. Punjab Rao Chandelkar, Principal, Govt. College, Chhindwara (M.P.)  
Dr. Shashi Patil, Asst. Prof., Boston College, Gwalior (M.P.)  
Dr. P.K. Dubey, Scientist- Forensic Science Laboratory, Gwalior (M.P.)
44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.
45. List the teaching methods adopted by the faculty for different programmes.
- Using conventional mode of black board and chalk sticks.
  - Using overhead projection facility.
  - Using computer assisted power point presentation.
  - Employing smart class facilities.
  - Conducting field visits, surveys ad excursions.
46. How does the department ensure that programme objectives are constantly met

and learning outcomes are monitored?

- a) By continuous course evaluation and evaluation of home assignments submitted by students.
- b) In IVth semester provision is made for student seminars attended by the faculty to monitor the learning by students.

47. Highlight the participation of students and faculty in extension activities.

- Celebration of Work Environment Day, Wildlife Week, Earth Day in the field
- Shumdan in the University campus
- Awareness programme and social work through NSS – Unit.

48. Give details of “beyond syllabus scholarly activities” of the department.

- Live demonstration of vermin composting units of several occasions including science fairs, exhibition, seminars, symposia, conferences etc.
- Exhibition of medicinal plants.

49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details.

**Project based evaluation is done by all funding agencies like UGC, DST, DBT etc.**

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

**Basic -**

- Dd

**Applied -**

- Development of simple method of recycling of household (food and kitchen) waste through vermi composting (OPA)
- Development of folding and transportable home vermin composting reactor (OPA)
- Development of artificial pollen substitute diet for beekeeping during dearth period (OPA)

51. Detail of five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

**5 major strengths -**

- Involvement of senior faculty (all 6 professors) for imparting teaching 4 specialised courses at PG and M.Phil. level.
- Focussed research work in thrust areas (UGC) since 2002 supported by SAP programme.

- International exposure of faculty under the various such schemes of exchange programmes, conferences, seminars and other academic activities.
- Good infrastructural facilities (water and electricity back-up, lab furnishing, establishing central instrument laboratory, cold room, networking lab) supported by UGC – SAP , DST – FIST and other project grants.
- Flexibility to re-orient our approach by Modernizing course curricular modifying research plans in changing priorities at regional and national level.

#### **5 major Weakness –**

- Shortage of younger teaching faculty.
- Poor placement of pass out students due to non professional subject.
- Hindrance of timely progress due to lack of autonomy.

#### **5 major Opportunities–**

- Availability of several scholarships, fellowships for PG Post G and Post Doctoral studies under several categories.
- Availability of enough funds for research projects.
- Availability of enough opportunities for refreshing knowledge for faculties through refresher courses, seminars, symposia, conference, workshops, exchange programme at national and international level.

#### **5 major Challenges–**

- To offer equal opportunity to students of various categories by organising remedial coaching in the school.
- To make available the literature in the desired language (Hindi/English) in the simplified manner .
- Regular updation of the course in relevance to the related interdisciplinary aspects of the subject.
- To maintain balance between basic and applied research work in order to fulfil the needs of the society.
- To gain faith of the parents & society with redesigning of the course as per policies of the Government.

#### 52. Future plans of the department.

- Recognition, evaluation and control of hazards.
- Impact of trace elements in human health.
- Environmental Impact assessment of habitats of animals due to pollution.
- Geoinformatic analysis of natural resources in Gwalior – Chambal region.
- Pollution studies on different ecosystems.
- Analysis of e-flow of rivers in the region particularly the Chambal River.
- Chronopharmacological studies with drugs influencing the autonomic regulation of colour changes.
- Melanophores as bio-indicator of aquatic pollution.
- Evaluation of maternal, placental or fetal immune system response to bacterial infection in pregnant females.

- Evaluation of perinatal immune response due to bacterial infection.
- To conduct research work on bee-hive products and to develop value added products for human welfare.
- To conduct research work on pharmaceutical significance (anti-inflammatory, anti-oxidant and antibacterial properties) of earthworm formulations.
- To conduct research work on health and healing properties of spirulina food products.
- Study of Inflammatory pathway, MAPK signalling pathway, Necrotic pathway, Apoptotic pathway, Oxidative stress and Fibrosis pathway.