

VII INSTITUTE

INSTITUTE OF SELF-ORGANISING SYSTEMS AND BIO-PHYSICS

The Institute is dedicated to pursue interdisciplinary research in newly emerging areas and to evolve an integrated vision of science. The current activities are in the areas of biophoton emission, consciousness, quantum information, hormonotoxins, drug targeting, acoustic communication in anurans, bio-diversity, conservation of amphibians in the eastern Himalayan belt, and nonlinear dynamics. It admits students to M.Phil. and Ph.D. programmes.

Faculty:

Professor R.P. Bajpai, M.Sc. (Alig), Ph.D (Glasgow)
Vinod Singh, M.Sc., Ph.D (Kanpur)
Satish Kumar, M.Sc. (BHU), Ph.D (Utkal)
Debjani Roy, M.Sc. (Gau), Ph.D (NEHU)

Student intake: a) Enrolment capacity: 5

Seminars/Conferences:

Attended

R.P. Bajpai attended the International Symposium on Biophotons followed by a summer school at the International Institute of Biophysics Germany in August - September 2001 and delivered two lectures: (i) Comparison of Photon Bursts Emitted Spontaneously by Normal and Viral-Infected Cells, and (ii) The Physical Basis of Life.

Debjani Roy: (i) Delivered a lecture entitled "Methods in collection, preservation and identification of amphibians" at the workshop organised by the Zoological Survey of India, Eastern Region, Shillong in June 2001. (ii) Gave a lecture entitled "Timing of development of the auditory structures during metamorphosis in anuran amphibians" at the DST sponsored workshop at the TIFR, Mumbai in November 2001. (iii) Delivered a lecture entitled "The burning issues for the conservation of the endangered salamanders of the Eastern Himalayas" at the 4th World Congress of Herpetology, Colombo, Sri Lanka in December 2001. (iv) Chaired the session on "Behavioural Biology and Evolutionary Ecology" at the 4th World Congress of Herpetology, Colombo, Sri Lanka in December 2001. (v) Gave a lecture entitled "Recent trends in Amphibian behavioural research" at the DST sponsored workshop on "Methods in Behavioural Ecology" at the Centre for Ecological Sciences, IISc, Bangalore in January 2002. (vi) Gave a lecture entitled "Amphibians - The living barometers of the earth" at the International Study Centre of Auroville, Pondicherry in January 2002.

Publications:

Alam, A., R.C.Singh and Vinod Singh. 2002. Design and synthesis of hormonotoxin for selective targeting of gonadal cells. Special issue on "Structure and Functions of Gonadotropin Hormones". *Indian J. Exp. Biol.*, 40: 477-485

Alam, A., L.K.Imliwati, C. Rapphap and Vinod Singh. 2001. Liposome encapsulated tumor-associated antigen elicited humoral and cellular response in mice bearing tumor. *Indian J. Exp. Biol.*, 39: 201-208.

Bajpai, R.P. 2002. Biophotons and the Quantum Vision of life. In H.P.Durr, F.A.Popp, and W. Schommers, ed. *What is life ?* Singapore: World Scientific, 307-328.

Butnev, V.Y., V.T.Nguyen, Vinod Singh, and G.R.Bousfield. 2002. Truncated beta, alpha asparagine⁵⁶-deglycosylated equine luteinizing hormone is a potent follicle-stimulating hormone antagonist. *J. Endocrinology*, 172: 545-555.

Rezina, Ahmed and D.Roy. 2001. Call behaviour of four common anurans. *Cobra*, 46: 9-16.

Roy, D. and Md.Mushahidunabbi. 2001. Courtship, mating and egg laying in *tylototriton verrucosus* from Darjeeling district of the eastern Himalaya. *Curr. Sci.*, 81(6): 693-695.

Singh, R.C., A. Alam, and Vinod Singh. 2001. Role of positive charge of lysine residue on ribosome-inactivating property of gelonin. *Indian J. Biochem. & Biophys.*, 38: 309-312.

Singh, R.C., Vinod Singh and A. Alam. 2002. Studies on chemical modification of ovine luteinizing hormone and its subunits with diferent heterobifunctional cross-linking agents. Special issue on "Structure and Fundtions of Gonadotropin Hormones". *Indian J. Exp. Biol.* 40: 456-466.

Walton, W.J., V.T. Nguyen, V.Y. Butnev, Vinod Singh, W.T.Moore and G.R.Bousfield. 2001. Characterisation of human follicle stimulating hormone isoforms reveals a non-glycosylated β -subunit in addition of the conventional glycosylated β -subunit. *J. Clin. Endocrinol. & Metab.*, 86: 3675-3685.

Thrust areas of research:

Holistic view of Biology, Non linear Dynamics, Biodiversity, Ethology, Immunology.

Research Programme/Project:

A joint 1-year project of Prof. Debjani Roy and Prof. Christina Giacoma, University of Torino, Italy on "Study of the endangered Himalayan salamanders" has been sanctioned by the IUCN and DATP in March 2002.

Other activities:

Professor R.P. Bajpai is an executive member of the International Institute of Biophysics, Germany.

Professor Satish Kumar gave Phys/411 course entitled "Classical Mechanics" to the students of the Department of Physics (Semester I).