

Dr. HARSIMRAN KAUR

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Academic Profile

Ph.D in Biotechnology from Panjab University, Chandigarh. Thesis entitled is 'Study of Actomyosin Based Biomolecular Motor for Nanorobotics'. My research is mainly focused on exploring molecular motors for drug delivery application.

M.Sc. (Hons. School) Microbiology with first class (64.8%) in 2000-2002 Panjab University, Chandigarh (India). Project undertaken was "The Biology and Applied Aspect of the Exopolysaccharide produced by a newly isolated Thermophilic *Bacillus* sp" under the supervision of Dr R. P Dikshit.

B.Sc. (Hons. School) Microbiology in 1997-2000 Panjab University, Chandigarh (India), with Microbiology, Biochemistry, Biophysics, Biostatistics, Immunology, Molecular biology and Biotechnology as major subjects.

Awards and Scholarship

- **Senior Research Fellowship (CSIR-SRF)** in Life Sciences from Council of Scientific and Industrial Research (CSIR), New Delhi, India from September 06, 2008 till date.
- **Junior Research Fellowship (CSIR-JRF)** from Council of Scientific and Industrial Research (CSIR), New Delhi, India from September 06, 2006 - 2008.
- International Travel Grant from Department of Science and Technology (DST) in 2008 to attend international conference in Singapore.

Professional Experience

- From **December 2011 till date** working as an Assistant Professor in **Sri Guru Granth Sahib World University, Fatehgarh Sahib, Punjab**. Here I am involved in teaching (B.Tech and M.Sc) as well research of the Institute.
- From **November 2010 till May 2011** worked as a Lecturer in **Amity Institute of Nanotechnology (AINT), Amity University**, Sector 125, Noida. Here I am involved in teaching (M.Tech and M.Sc) as well research of the Institute.
- **September 2006- September 2010** perused PhD in Nanotechnology from CSIR lab, **Central Scientific Instruments Organisation**, Sector- 30-C, Chandigarh. My work mainly focuses on Molecular Motors in which I am concentrating on the Drug Transportation and Delivery.
- From **November 2003- February 2006**, I was working at the **Institute of Microbial Technology (IMTECH)**, ([www.imtech.res.in.](http://www.imtech.res.in)) one of the premier research labs in India. I was a part of **MTCC (Microbial Type Culture Collections and Gene Bank)**. It is an International Depository Authority. Here my work was focused on Molecular Microbial Ecology and Molecular Biology of Hydrocarbon Degradation.

Professional Expertise

- **Microbiology:** Isolation, Screening, Preservation and Identification of Micro- organisms (Biochemical tests, Fatty Acid Profiling, 16s rRNA gene sequencing, ARDRA and RFLP) in addition to knowledge of basic microbiology techniques.
- **Molecular biology and Biochemistry:** - Isolation of Genomic and Plasmid DNA, Restriction Digestion, DNA Amplification, Ligation, Electroporation, Agarose Gel Electrophoresis, DNA Sequencing and Analysis, Hybridization Techniques (Southern, Dot/Slot-Blot).
- **Instrumentation:** Efficient enough to handle Confocal Microscope, Optical Tweezer & Microdissection Combi System cum Fluorescence Microscope, Field Emission Scanning Electron Microscope (FE-SEM)

Published Scientific Papers and Books

1. **Harsimran Kaur**, Suresh Kumar, Kashmir Singh and Lalit M Bharadwaj. Divalent Cation Induced Actin Ring Formation. *International Journal of Biological Macromolecules*. Jun 1;48 (5):793-7, 2011.
2. **Harsimran Kaur**, Archana Chaudhary, Inderpreet Kaur, Kashmir Singh and Lalit M Bharadwaj. Transportation of Drug-Gold Nanocomposites by Actinomyosin Motor System. *Journal of Nanoparticle Research* (2010) Volume 13, Number 6, 2295-2303.
3. **Harsimran Kaur**, Suresh Kumar, Inderpreet Kaur, Kashmir Singh and Lalit M Bharadwaj. Low-Intensity Magnetic Fields Assisted Alignment of Actin Filaments. *International Journal of Biological Macromolecules*. 47 (3), 371-374, 2010.
4. **Harsimran Kaur**, Suresh Kumar, Deepak Kukkar, Inderpreet Kaur, Kashmir Singh and Lalit M Bharadwaj. Transportation of Drug-(Polystyrene Bead) Conjugate by Actomyosin Motor System. *Journal of Biomedical Nanotechnology*. Vol (6), 1-8, 2010.
5. **Harsimran Kaur**, Tapan Das, Rajesh Madan, Ram Ajore, Lalit M. Bharadwaj (2008). Covalent Attachment of Actin filaments to Tween 80 Coated Polystyrene beads for Cargo Transportation. *Biosystem*, 92, 69-75. 2008.
6. **Harsimran Kaur**, Suresh Kumar, Inderpreet Kaur, Kashmir Singh and Lalit M. Bharadwaj (2009). In Vitro Transportation of 5-ASA by Actin Myosin Motor System. *IFMBE Proceedings*. Vol 23 902-905.
7. Suresh Kumar, **Harsimran Kaur**, Harkiran Kaur, Inderpreet Kaur, Keya Dharamvir and Lalit M Bharadwaj. Magnetic field-guided orientation of carbon nanotubes through their conjugation with magnetic nanoparticles. *Journal of Material Science*. DOI: 10.1007/s10853-011-5934-5
8. Deepak Kukkar, **Harsimran Kaur**, Inderpreet Kaur, Jagtar Singh, and Lalit M. Bharadwaj. Immobilization of Quantum Dots Encapsulated Polystyrene Microcapsules for Multianalyte Sensing, *Advanced Science Letters*, Vol. 5, 1–7, 2012.
9. Tapan Das, **Harsimran Kaur**, Ellis Bagga, Inderpreet Kaur, Rajesh Kumar

and Lalit M. Bharadwaj (2007). Actin Myosin Motors for Nanodevice Application. Proc. Seminar on Bioelectronics, March 27, 13-14.

10. Anuradha Ghosh, D. Paul, N.K. Sharma, Janmejy Pandey, Dhan Prakash, **Harsimran Kaur** Rajbir Singh, Abhineet Goyal, and Rakesh K. Jain. Microbial Diversity: Potential Applications in Bioremediation. In: Microbial Diversity: Current Perspectives and Potential Applications, (2005) pp 505-520. I.K. International Publishers. New Delhi. Edited by T. Satyanarayana and B.N. Johri (http://www.ikbooks.com/book_Details.asp?id=250&catId=3&subId=1) (:::I.K. International Pvt. Ltd. :::)

Conferences and Workshops

Oral Presentation:

1. **Harsimran Kaur**, Suresh Kumar, Inderpreet Kaur, Kashmir Singh and Lalit M. Bharadwaj (2008). In Vitro Transportation of 5-ASA by Actin Myosin Motor System (Symposium of ICBME 2008, International Conference on Biomedical Engineering, 3-6th December, SINGAPORE).
2. Deepak Kukkar, **Harsimran Kaur**, Suresh Kumar, Inderpreet Kaur and L M. Bharadwaj (2008). Nanocalorimetric Study of Myosin Catalyzed ATP Hydrolysis by Isothermal Titration Calorimetry. (International Conference on Nanomaterials And Devices: Processing and Applications, IIT Roorkee. 11-13th December, 2008).
3. Deepak Kukkar, Gagandeep Kaur. **Harsimran Kaur**, Suresh Kumar, Inderpreet Kaur, Parveen Kumar, Jagtar Singh and L M. Bharadwaj (2009). Preparation and characterization of polystyrene microreactors for drug delivery and diagnosis application. (Workshop cum conference on Nanoscience and nanotechnology; Ansal Institute of technology, Gurgaon 12-16th October, 2009).

Poster Presentation:

- **Harsimran Kaur**, Tapan Das, Inderpreet Kaur and Lalit M. Bharadwaj (2007). Motility of actin Myosin Motor Protein System in Microchannels for Nanorobotics. (Symposium of IUMAS-ICAM 2007, International Conference on Advance Materials, 8-13 October, BANGALORE).
- Suresh Kumar, **Harsimran Kaur**, Deepak Kukkar Inderpreet Kaur and Lalit M.

Bharadwaj (2008). Transport of Quantum Dots Using Biomolecular Motors for Diagnostic Applications. (NANOSENSORS 2008: National Workshop on Nano Sensors & Devices 22-23 December, IIT DELHI).

- Deepak Kukkar, **Harsimran Kaur**, Suresh Kumar, Inderpreet Kaur and L. M. Bharadwaj (2008). Nanocalorimetric Study of Actomyosin Motor System. (National Review and Co-Ordination Meeting-2009- NANOMISSION DST, Kolkata).
- Attended “**Nanotechnology Conclave 2010**” held in Taj palace at New Delhi organized by CII, India.