



**MHRD sponsored one-week GIAN Course on:  
Human Genomics: Computational Methods and Applications**

**Date: December 11-16, 2017**

**Venue: Computer Science and Engineering Department,  
Jadavpur University, Kolkata – 700032**

**Faculty: Prof. Dariusz Plewczynski**, Professor at the University of Warsaw in the Center of New Technologies CeNT, Warsaw, Poland, and head of the Laboratory of Functional and Structural Genomics.

**Course overview:** The course will cover recent advancements in the fields of Human Genomics with a wide coverage on computational studies, and introduction to real-life practical applications. The goal of lectures is to introduce participants to basic theoretical ideas of computational genomics with the special focus on algorithms. Lectures will be accompanied by tutorials and training that will allow participants to perform simple genomics tasks, including programming/statistical data processing at the scale of the whole Human genome. The participants will learn the use of structural information to enrich the sequential genomic analysis to better define the function of selected genomic regions that are important in the context of personalized medicine. For this purpose, firstly we propose to introduce to the participants a variety of large-scale computational tools for analysis of whole genome sequences, the identification of structural variants, determining the statistical significance of the observed number of copies of genomic regions in selected cohorts of patients etc. Secondly, we will show their uniqueness in comparing the observed changes with typical and natural genomic diversity that has been catalogued, for example, in the 1000 Genomes Project Consortium. Thirdly, we may infer the biological functions of these genomic regions using publicly available databases. Fourthly, we will identify unique local three-dimensional environment for selected sites, eg. regulatory ones. In the fifth step, we will analyze the impact of structural re-arrangements of those local neighborhoods on the gene expression profiles, which is related to the presence of transcription factories.

**Topics to be covered:** (1) Systems Biology and Human Genomics; (2) Computational Genomics Methods and Algorithms; (3) Next Generation Sequencing methods; (4) structural variants identification; (5) DNA sequence motifs analysis and identification; (6) Theory and applications of protein structure prediction; (7) Protein function prediction: theory and applications; (8) Genomics tools, resources and databases; and (9) Recent advances in human genome.

**Who can attend:**

- Scientist or researcher from bioinformatics and computational biology domains from Government organizations, R&D laboratories or other institutions.
- Student at of B.Sc./B.Tech./M.Sc./M.Tech./Ph.D or Faculty member from a reputed academic institution or technical institution.

**Registration Fees:**

- **Participants from abroad:** USD 200
- **Industry/ Research Organizations:** Rs.5000/-
- **Academic Institutions:** Rs.2000/-
- **Students/Research Scholars/ Ph.D. Scholars:** Rs.1000/-

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**Registration Details:**

- On **first-come-first-serve** basis (**limited seats available now, contact immediately**).
- Complete the online Registration Form at:
  - GIAN Registration: <http://www.gian.iitkgp.ac.in/GREGN> (**Course ID: 176025K01**)
  - Course Registration: <https://goo.gl/forms/2vTJEB3hLUgPefs03>
- Complete both the registration forms and send the demand draft in favour of “Registrar, JU”, payable at Kolkata, along with a signed hard-copy of the filled-in application forms to the following address and also email to [gian.genomics@gmail.com](mailto:gian.genomics@gmail.com)

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