



# BIJOY KRISHNA GIRLS' COLLEGE, HOWRAH

A NCTE and NAAC accredited (B<sup>++</sup>) College

5/3, MAHATMA GANDHI ROAD, HOWRAH – 711 101

**RESEARCH & DEVELOPMENT CELL, IQAC**

## Computational Biology

**Department of Zoology with Microbiology, Mathematics, Computer Science & RD Cell IQAC**

- Workshop/Seminar/Conference/Invited or Extension Lecture: Workshop
- Online/Offline: Offline
- Institutional/International/National/Regional: Institutional
- Title: Computational Biology
- Date: 1<sup>st</sup> to 8<sup>th</sup> April
- Organizer(s): **Department of Zoology**, Microbiology, Mathematics & Computer Science in association with R & D Cell, IQAC

**Funding (with proof):** Funded by DBT STAR College Scheme, IFD, DBT, vide their SAN No. Project no. **HRD-11011/26/2024-HRD-DBT: Dated 30.09.2024.**

- **Collaborators (with proof):** NIL
- **Resource Persons:**
- **External:**
  1. **Dr. Samudra Paul**, Assistant Professor; Department of Biotechnology, School of Life Sciences; Swami Vivekananda University
  2. **Dr. R. Das**, Associate Professor, Mathematics; Serampore college
- **Internal:**  
Biswajit Saha ; Dr. Susanto Sadhukhan ; Dr. Sayak Bhattacharria ; Dr. Saurav Dutta; Joy Adhikary

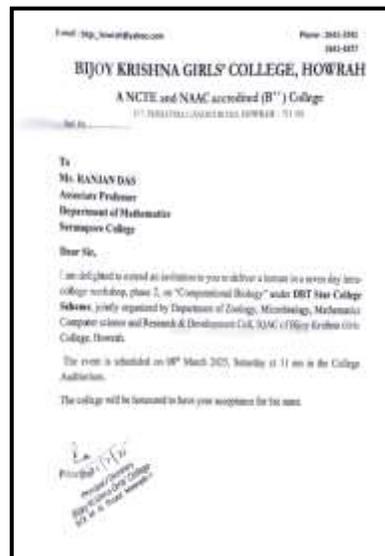


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- Number of Participants with proof: 28

SL No	Name	CU Roll No
1	Sanchari Nag	223411-11-0101
2	Antika Jana	223411-11-0087
3	Rimi Barick	23411-11-0144
4	Ratna Marick	223411-11-0156
5	Moitreyee pal	223411-11-0120
6	Pramisha panja	223411-11-0007
7	Sreemoyee Debnath	223411-11-0153
8	Esika Das	223411-11-0107
9	Koushani Poddar	223411-11-0094
10	Sohini Mandal	223411-11-0089



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11	Umme Habiba	223411-11-0154
SL No	Name	CU Roll No
13	Saswati Panja	223411-11-0053
14	SUSMITA BOSE	223411-11-0061
15	Rimita Jana	223411-11-0088
16	Rini Roy	223411-11-0015
17	Ahana Ghosh	223411110093
18	Shreeja Dey	223411-11-0102
19	MOUMITA BOGI	223411-11-0137
20	Arzoo parveen	223411-11-0160
21	Pratiskhya Maji	223411-11-0017
22	Disha Roy	223411-11-0124
23	RIMI BAR	223411-11-0134
SL No	Name	CU Roll No
24	Tiyasha Naskar	223411-11-0143
25	Debanjana Chaudhury	223411-11-0106
26	Tiyasha Naskar	223411-11-0143
27	Varsha Tiwari	213411-11-0062
28	Sayoni Das	223411-11-0100





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### Report on the programme:

A 7-day workshop on **Computational Biology** was successfully conducted to provide undergraduate students with hands-on exposure to modern bioinformatics tools and techniques. The program aimed to bridge the gap between theoretical biology and practical computational applications in genomics, proteomics, and drug discovery.

### Objectives:

- To familiarize participants with genome navigation and variant analysis
- To introduce protein structure analysis and ligand interaction studies
- To demonstrate molecular docking using AutoDock Vina
- To enhance understanding of bio-mathematics and its relevance to biological data interpretation

### Workshop Topics Covered:

1. **Navigating the Genome:**
  - Data browsing, variant identification, and primer designing using bioinformatics tools.
2. **Protein and Ligand Analysis:**
  - Structural analysis, database curation, and molecular visualization techniques.
3. **Molecular Docking Techniques:**
  - Precision binding and interaction modeling using **AutoDock Vina**.
4. **Basics of Bio-Mathematics:**
  - Quantitative approaches in biology, data interpretation, and model building.

### Methodology:

Each session included theoretical lectures followed by practical, hands-on sessions. Tools like **NCBI**, **PDB**, **AutoDock Vina**, **PyMOL**, and **primer design software** were actively used.

### Feedback:



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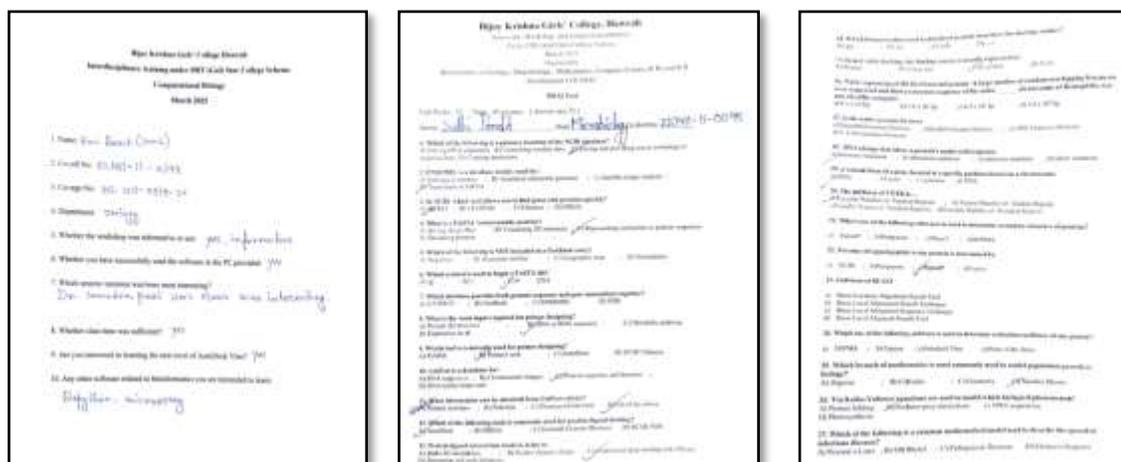
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The workshop received highly positive feedback. Students appreciated the balance between theory and practice, especially the sessions on protein-ligand interaction and molecular docking.

## Conclusion:

The 7-day workshop successfully achieved its objectives and equipped participants with essential skills in computational biology. It provided a strong foundation for further research and academic pursuits in bioinformatics and molecular modeling.



## Programme Outcome:

Upon successful completion of this course, students were able to:

### 1. Interpret and Analyze Genomic Data:

- Navigate genomic databases to browse and extract relevant data.
- Identify genetic variants and understand their biological significance.
- Apply bioinformatic tools for sequence analysis and design primers for experimental validation.

### 2. Explore and Characterize Protein-Ligand Interactions:

- Analyze protein structures and ligand properties using advanced visualization tools.
- Perform database curation to compile and evaluate structural and functional information of biomolecules.

### 3. Perform Molecular Docking Simulations:

- Understand the principles and applications of molecular docking.
- Use **AutoDock Vina** to predict and evaluate binding interactions between proteins and ligands with precision.

### 4. Apply Quantitative Reasoning in Biology:



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- Utilize basic mathematical concepts and statistical tools to model biological systems and interpret computational results.
5. **Integrate Computational Tools in Biological Research:**
- Demonstrate proficiency in integrating bioinformatics workflows across genomics and structural biology to address real-world biological problems.

### Poster/Brochure/Banner\

**Bijoy Krishna Girls' College Howrah**  
Interdisciplinary Training Under DBT (GoI) Star College Scheme  
**COMPUTATIONAL BIOLOGY**  
Phase 2 – Seven Days Intra-college Workshop , Hybrid Mode

**Organised by**  
Department of Zoology , Microbiology , Mathematics, Computer Science & Research & Development Cell, IQAC

**Resource Person: External**

- Dr. Samudra Pal, Assistant Professor, Department of Biotechnology, School of Life Sciences, Swami Vivekananda University
- Dr. R. Das, Associate Professor, Mathematics, Serampore college

**Resource Persons: Internal**

- Bhanujit Saha
- Dr. Susanta Sathukhan
- Dr. Sayak Bhattacharyya
- Dr. Saurav Dutta
- Joy Adhikary

1<sup>st</sup> - 8<sup>th</sup> March 2025  
12 noon - 4 pm  
College Auditorium ( lecture)  
Computer Centre ( hands on)

SCAN ME

**Bijoy Krishna Girls' College Howrah**  
Interdisciplinary Training Under DBT (GoI) Star College Scheme  
**COMPUTATIONAL BIOLOGY**

- ✓ Navigating the Genome: Data Browsing, variant identification, Bioinformatic Tools, and Primer Designing
- ✓ Exploring Proteins and ligands: Structure Analysis, Database Curation, and Visualization Tools
- ✓ Precision Binding: Understanding Molecular Docking Techniques with AutoDock Vina
- ✓ Basics of Bio Mathematics

<https://forms.gle/qjrMCpHBNjNmkNS8>

1<sup>st</sup> - 8<sup>th</sup> March 2025  
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SCAN ME

### Sample Certificate



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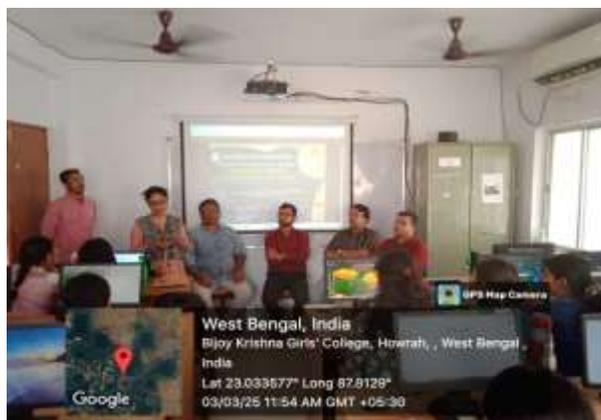
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## Geo-tagged pictures





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