# School of Engineering & Technology
## B Tech Biotechnology
## Department of Biotechnology
## BTY232: Immunology
## Session (2019-2020)

CO1: Demonstrate functions of cells and organs of the immune system
CO2: Test antibody-antigen interaction and examine the contribution of antigens towards generation of immune response
CO3: Show how MHC recognizes self and non-self-molecules and helps in generation of immune response.
CO4: Establish the role of cytokines in activation of immune response and antibody-dependent and macrophage-mediated cytotoxicity.
CO5: Examine the genetic and molecular mechanisms associated with autoimmunity and graft rejection and review clinical interventions required in organ transplantation.
CO6: Overall understanding of immune responses and methods of clinical diagnosis for identifying Ag-Ab interactions.

### Assignments List

| | | |
|---|---|---|
| Assignment 1: -<br>What is immunity and immune response? Explain haematopoiesis and organs of immune response. | CO1, CO6 | 21/8/19 |
| Assignment 2: -<br>What are antigens and antibodies? Explain about monoclonal antibodies. | CO2, CO6 | 15/9/19 |
| Assignment 3: -<br>What is ELISA? Discuss about immunofluorescence and radioimmunoassay | CO3, CO6 | 28/9/19 |
| Assignment 4: -<br>What are MHC? Explain the role of cytokines in immune regulation | CO4, CO6 | 15/10/19 |
| Assignment 5: -<br>What is autoimmunity? Difference between hypersensitivity and autoimmunity. | CO5, CO6 | 17/11/19 |

Monika Jain
**Name of Faculty Member**

**Signature**

# School of Engineering & Technology
## B Tech Biotechnology
## Department of Biotechnology
## BTY318: Bioprocess Engineering

## Session (2020-2021)

CO1: Comprehend the different types of microorganisms and techniques for their production.

CO2: Apply the different techniques used in upstream processing along the method for calculation of death kinetics of microorganisms.

CO3: Understand the concept of bioreactor design to achieve the desired results (i.e. specified cell concentration, production rates, etc) and apply the models for analysis of immobilized enzymatic bioreactors.

CO4: Calculate the heat and mass transfer, which is major component in efficiency of bioreactor.

CO5: Understand the industrial production of different biomolecules, organic compounds and solvents.

CO6: Be familiar with the different bioprocess engineering methods for the production of important microbial products. In addition, they will be able to design process/bioreactors for microbial production of different compounds.

| Quiz | Questions | Marks | CO | Date |
|---|---|---|---|---|
| 1 | A. Explain Bakers and brewer's yeast;<br>B. Discuss about food and fodder yeast | 10 | CO1, CO6 | 27-01-2021 |
| 2 | A. Explain different mode of fermentation | 10 | CO2, CO6 | 16-02-2021 |
| 3 | A. Discuss about five different types of bioreactors | 10 | CO3, CO6 | 09-03-2021 |
| 4 | A. Discuss about liquid-solid mass transfer mechanism<br>B. Write different steps involved in oxygen bubble mass transfer | 10 | CO4, CO6 | 30-03-2021 |
| 5 | A. What are the different steps involving in ethanol production?<br>B. What are the different steps involving in vitamin production | 10 | CO5, CO6 | 19-04-2021 |

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## Presentation Schedule

The following topics were given to the students for their BTY321: Bioinformatics presentation:

| S. No. | Student Name | System ID | Topics |
|---|---|---|---|
| 1. | Bushra Khan | 2016015933 | Sequence assembly, Clustal, phylogenetic: distance based approaches, parsimony |
| 2. | Jyotsana | 2016016003 | |
| 3. | Monika Singhal | 2016014743 | |
| 4. | Eva Rathi | 2016013986 | |
| 5. | Gulnaz Jahan | 2016011879 | |
| 6. | Ankit Kumar Singhania | 2016006743 | Representation of molecular structures (DNA, mRNA, protein), secondary structures, domains and motifs |
| 7. | Shubham Kant | 2016015566 | |
| 8. | Md Abdur Rahman | 2016014262 | |
| 9. | Shahil Alam | 2016014365 | |
| 10 | Govind Chaubey | 2016013174 | |
| 11 | Kamana Singh | 2016011260 | Global and Local alignment, Pairwise alignment and Multiple sequence alignment |
| 12 | Nisha | 2016012434 | |
| 13 | Sonu Jha | 2016011457 | |
| 14 | Surbhi | 2016014667 | |
| 15 | Swati Jena | 2016010871 | |
| 16 | Sweta Supriya | 2016002501 | |
| 17 | Neetesh Chauhan | 2016013399 | Major bioinformatics databases and tools |
| 18 | Shalu Mishra | 2016014076 | |
| 19 | Malika Agarwal | 2017009867 | |
| 20 | Sejal Sharma | 2016004341 | |
| 21 | Shweta Raghav | 2017010667 | |
| 22 | Rameez Jabeer Khan | 2017004032 | |
| 23 | Rishita Dwivedi | 2017003068 | BLAST |
| 24 | Rajat Kumar Jha | 2016010505 | |
| 25 | Aparna Srivastava | 2016014675 | |
| 26 | Hamza Nizamuddin | 2016015509 | |
| 27 | Ankita Singh | 2016014967 | |
| 28 | Shahreen Khan | 2016005674 | |
| 29 | Deep Gaur | 2016003435 | Sequence motif-based finding |
| 30 | Mohit Chhoker | 2016007980 | |
| 31 | Kunal Singh | 2016011874 | |
| 32 | Kritika Choudhary | 2016013657 | |
| 33 | Rhitambhara Singh | 2016013723 | |
| 34 | Sonali Srivastava | 2016014345 | |
| 35 | Mahima Bharti | 2016015970 | |

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|---|---|---|---|
| 36 | Ankit Verma | 2016015620 | Phylogenetic tree analysis |
| 37 | Manish Bhadana | 2016015699 | |
| 38 | Arvind Choudhary | 2016010873 | |
| 39 | Sakshi Yadav | 2016009408 | |
| 40 | Aakriti Kumari | 2016006469 | Information Flow and DNA sequencing |
| 41 | Ayushi Pandey | 2016003911 | |
| 42 | Prashansa Sharma | 2016004318 | |
| 43 | Vishakha | 2015005622 | |
| 44 | Shradha Garg | 2016009944 | |
| 45 | Simran Sahani | 2016007531 | Sequence alignment |
| 46 | Shiwangi Singh | 2016007863 | |
| 47 | Rishabh Agarwal | 2016015237 | |
| 48 | Ishwinder Kaur | 2016004696 | |
| 49 | Ria Chingakham | 2016004627 | |
| 50 | Chandni Kumari | 2016016313 | |
| 51 | Sannipalli Chandana Sree | 2016011925 | Nucleic acid protein interaction |
| 52 | Ruchi Rai | 2016013771 | |
| 53 | Pragati Mahur | 2016011680 | |
| 54 | Madhu Kriti | 2016014601 | |
| 55 | Pratiksha Kumari | 2016013190 | |
| 56 | Mayuri Garu | 2016011454 | Introduction to Metadata; File Storage; Boolean Search and Fuzzy Search |
| 57 | Abhishek Sharma | 2016007326 | |
| 58 | Tushita Bishnoi | 2016010133 | |
| 59 | Sonali Sharma | 2016005155 | |
| 60 | Pravesh Rawat | 2016013310 | |
| 61 | Alvira Fatima | 2016009473 | |

**Outcome of the presentation in the class**

4. It provided an active learning environment
5. Improved communication skills.
6. Students are able to build a deeper understanding in the subject.

J. Muthukumaran

**Name of Faculty Member**

J. Muthukumaran

**Signature**

**School of Engineering & Technology**
**Department of Biotechnology**
**Session 2018-19**
**BTY310: Recombinant DNA Technology**
**List of Assignments in Tutorials**

**Assignment no. 1**

Make a list of 30 RE with their source, sequence, name. Also mention which type of cutter they are.

**Assignment no. 2**

What are the laboratory requirements for RDT?
Also write about the various milestones of genetic engineering.

**Assignment no. 3**

Compare the DNA isolation from bacterial, plant and animal cells with help of diagrams.

**Assignment no. 4**

What is PCR? Explain the detailed process of PCR with the help of diagrams.

**Assignment no. 5**

Write a 20 nucleotide long DNA sequence and derive it with the help of Maxam-Gilbert method.

**Assignment no. 5**

Explain Next Generation Sequencing-Illumina

**Assignment no. 6**

Explain in detail DNA transformation techniques and screening techniques of transformants.

Dr. Monika Jain

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**BTY318 Bioprocess Engineering**

**Flipped classroom activity**

| S. No. | Student's Name | Roll No. | Presentation topics | Date |
|---|---|---|---|---|
| 1 | Aaushi kamti | 180108001 | Industrial production of amylase | 5/4/21 |
| 2 | Abhishek mishra | 180108002 | | |
| 3 | Akansha Yadav | 180108003 | | |
| 4 | Amitesh Srivastava | 180108004 | | |
| 5 | Anandu Nair | 180108005 | | |
| 6 | Ankita Kumari | 180108006 | Industrial production of vitamins | 5/4/21 |
| 7 | Anugrah bhardwaj | 180108007 | | |
| 8 | Ashraya Guggari | 180108008 | | |
| 9 | Ayushi Gupta | 180108009 | | |
| 10 | Debraj Sarkar | 180108010 | | |
| 11 | Dhananjay Kumar | 180108011 | Industrial production of antibiotics | 7/4/21 |
| 12 | Ekampreet Singh | 180108012 | | |
| 13 | Harshit Yadav | 180108013 | | |
| 14 | HridhikaB Pradeep | 1801125001 | | |
| 15 | Juhi kumari pandey | 180108014 | | |
| 16 | Juhi Shrivastav | 180108015 | Industrial production of citric acid | 7/4/21 |
| 17 | Mansi singh | 1801126001 | | |
| 18 | Muskan | 180108017 | | |
| 19 | neha khan | 180108018 | | |
| 20 | Nisha Akbar | 180108019 | | |
| 21 | Nivedita garg | 180108020 | Industrial production of ethanol | 12/4/21 |
| 22 | Payal Rawat | 180108021 | | |
| 23 | Piyush Batra | 180108022 | | |
| 24 | Prachi kalra | 180108023 | | |
| 25 | Pratham Sharma | 1801125002 | | |
| 26 | Priyanshu panchal | 180108024 | Industrial production of Biopolymers | 12/4/21 |
| 27 | Purna Bahadur Khadka | 180108046 | | |
| 28 | Rakshit Singh | 180108025 | | |
| 29 | Rama Kiran Peesa | 180108026 | | |
| 30 | Rishabh Pratap Singh | 180108027 | | |
| 31 | Ritesh Singh | 180108028 | Industrial production of microbial insecticides | 19/4/21 |
| 32 | Rittik Bhati | 180108029 | | |
| 33 | Riya Shukla | 180108030 | | |
| 34 | Riya Tiwari | 1801125003 | | |
| 35 | Riya Verma | 180108031 | | |
| 36 | Roshni Dubey | 180108032 | Industrial production of protease | 19/4/21 |
| 37 | Ruchika Sharma | 180108033 | | |

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|---|---|---|---|---|
| 38 | Rupal Sharma | 1801125004 | | |
| 39 | Sanaa Sangien | 180108034 | | |
| 40 | Saumya Verma | 180108035 | | 20/4/21 |
| 41 | Shalinee Roy | 180108036 | | |
| 42 | Shanaya Sharma | 180108045 | | |
| 43 | Sourabh Thakur | 180108037 | | |
| 44 | unnati anshu | 1801125005 | | |
| 45 | Vishwajeet gupta | 180108042 | | |
| 46 | Zeba tabassum | 180108043 | Industrial production of lipase | |

Dr. Arpita Roy

**Name of Faculty Member**

**Signature**