

# ANINDYA SUNDAR DEY

☎+91 9083186840 ✉ anindyadey98@iitkgp.ac.in ✉ anindyadey98@gmail.com

## EDUCATION

<b>Indian Institute of Technology, Kharagpur</b> <i>Dual Degree (BTech + MTech) in Biotechnology and Biochemical Engineering</i> CGPA: 8.41/10	Kharagpur, India July 2015 - July, 2020
<b>Bethuadahari J.C.M.High School, Bethuadahari</b> West Bengal Council of Higher Secondary Education West Bengal Board of Secondary Education	Percentage: 91.4% Percentage: 93.0% June, 2015 June, 2013

## PUBLICATION

**Dey AS**, Bose H, Mohapatra B and Sar P (2020). [Biodegradation of Unpretreated Low-Density Polyethylene \(LDPE\) by \*Stenotrophomonas\* sp. and \*Achromobacter\* sp., Isolated From Waste Dumpsite and Drilling Fluid](#). *Front. Microbiol.* 11:603210. doi: 10.3389/fmicb.2020.603210 (**IF-4.235**)

## EXPERIENCE

<b>Environmental Microbiology and Genomics Lab, IIT Kharagpur</b> <b>Summer Research Internship:</b> <b>Title:</b> <a href="#">Characterization of Microbial Communities from a Waste Dump-site and Exploring the Hydrocarbon Degrading Ability of These Microbes</a> <ul style="list-style-type: none"><li>Primarily looked into the Hydrocarbon utilizing ability of bacteria isolated from waste dump site using differential plating technique and PCR by identifying the genes related to Hydrocarbon degradation</li><li>Performed <b>DGGE</b> to differentiate plastic degrading bacteria from associated soil microbiome</li></ul>	<b>Guide:</b> <a href="#">Prof. Pinaki Sar</a> May, 2018-July, 2018
<b>Bachelor's and Masters' project:</b> <b>Title:</b> <a href="#">Evaluation of Low Density Polyethylene (LDPE) Biodegradation Potential of Natural Microbiome and Individual Strains</a> <ul style="list-style-type: none"><li>Successfully enriched the LDPE utilizing bacteria from waste dump-site and drilling fluid samples</li><li>Performed ATP estimation, protein estimation, lipase enzyme assay, phase contrast and fluorescence microscopy, substrate utilization test for characterization of LDPE biodegradation by the enriched bacteria</li><li>Observed the changes on the surface of LDPE as a result of biodegradation using high end microscopy (<b>SEM and AFM</b>) and confirmed the <b>degradation of LDPE</b> by analyzing the resultant products by <b>GC</b> and <b>GC-MS</b> and determining the chemical modifications incorporated due to biotic treatment using <b>FTIR</b></li><li>Isolated and identified the microbial communities, <i>Stenotrophomonas</i> sp. and <i>Achromobacter</i> sp. responsible for LDPE degradation and used the isolated organisms for efficient LDPE biodegradation</li></ul>	July, 2018-June, 2020
<b>National Center for Cell Science, Pune</b> <b>Summer Research Internship:</b> <b>Title:</b> <a href="#">Microorganisms Associated to Ethnic Fermented Food and Their Higher Potential to Probiotics</a> <ul style="list-style-type: none"><li>Carried out sequencing of 16S rRNA gene of 133 samples using the <b>NGS on Illumina Miseq</b> platform</li><li>Analyzed 16S rRNA gene and ITS gene amplicon data using <b>QIIME and DADA2</b> pipelines</li><li>Observed the microbial <b>community diversity</b> (Bacterial and Fungal) at different taxonomic level in ethnic fermented food and predicted their <b>probiotic potential</b> using <b>PICRUSt</b></li></ul>	<b>Guide:</b> <a href="#">Dr. Avinash Sharma</a> May, 2019-July, 2019
<b>Recombinant DNA Technology Laboratory, IIT Kharagpur</b> <b>Title:</b> <a href="#">Extraction of Aflatoxin from <i>Aspergillus flavus</i></a> <ul style="list-style-type: none"><li>Isolated <b>aflatoxin</b> produced by <i>Aspergillus flavus</i> grown on PDA agar</li><li>The toxin was ultimately used for the production of antibody against aflatoxin</li></ul>	<b>Guide:</b> <a href="#">Prof. A. K. Ghosh</a> December, 2017-January, 2018

## COURSEWORK

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Microbiology*	Introduction to Systems Biology	Gene Expression*
Environmental Biotechnology	Genetics	Bioinformatics*
Microbial Genomics and Metagenomics	Protein Engineering	Probability and Statistics
Biochemistry*	rDNA Technology*	Immunotechnology*
Cell and Molecular Biology*	Secondary Metabolites	Immunology
Bioprocess Technology*	Biochemical Reaction Engineering*	Partial Differential Equations
Programming & Data Structures*	Transgenic Technology	Downstream Processing

\*indicates courses with laboratory component

## SKILLS

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### Laboratory Related Skills:

- **Cell and Molecular Biology:** Microscopy, Confocal microscopy, Isolation and quantification of genomic DNA, plasmid and RNA, Preparation of competent cell, Transformation, Restriction Digestion, Ligation, Cloning, PCR, SDS PAGE and Agarose Gel Electrophoresis
- **Microbiology:** Bacterial cell culture techniques, Determination of MIC and antibiotic sensitivity of *E.coli*, Simple and Gram staining, Determination of cell size and number, Isolation of pure culture
- **Bioinformatics:** Protein structure homology modelling, Pairwise sequence alignment, Multiple Sequence alignment, Phylogenetic tree construction, Primer designing, BLAST
- **Analytical Biochemistry:** GC, HPLC, HPTLC, Rotary evaporator, Lyophiliser, Visible and UV Spectroscopy, Fluorescence and Atomic Absorption Spectroscopy, Centrifugation, Native PAGE
- **Biochemical Engineering:** Fermenter Operations, Cell growth Kinetics, Biohydrogen Production, Microbial Fuel Cell, Downstream processing of Biomass, Determination of thermal stability of enzyme
- **Biochemistry:** Qualitative and quantitative analysis of Protein and Amino Acids, Isolation and estimation of glycolipids and phospholipids, Study of enzyme actions and effects of different parameters
- **Enzyme Technology:** Different enzyme immobilization techniques, Determination of kinetic constants( $K_m$  and  $V_{max}$ ) of free and immobilized enzymes, Studying the performance of immobilized enzyme in a Continuous Stirred Tank Reactor and a Packed Bed Reactor

### Technical Skills:

- **Software:** Microsoft Office (Excel, Word, Power Point), Solidworks, PyMOL, MEGA, Snapgene, PAST
- **Programming Language:** C, MATLAB, Python

## ACHIEVEMENTS

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- Qualified National Eligibility Test conducted by the Council of Scientific and Industrial Research (CSIR), India for the Award of Junior Research Fellowship, 2021
- Secured 392 rank in Graduate Aptitude Test in Engineering (GATE), India, 2019
- JEE MAINS and JEE ADVANCED: Ranked among top 4% (1,300,000 candidates appeared), 2015
- Finished in top 0.15% among WBCHSE Exam (among 1,000,000 candidates), 2015

## EXTRA-CURRICULAR

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National Service Scheme(NSS), IIT Kharagpur   <i>Volunteer</i>	July, 2015-April, 2017
Led the Teaching Team of my NSS Unit, Organized Medical Camp and Cleanliness Drives in Villages	
Technology Dramatic Society(Druheen), IIT Kharagpur   <i>Member</i>	July, 2016-July, 2020
Participated in Inter-Hall Dramatics Competition (2016 and 2017)	