ARSEN ORAZBEK

SENIOR UNDERGRADUATE STUDENT IN BIOLOGICAL SCIENCES

CONTACT ME AT

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SKILLS SUMMARY

- Structural Bioinformatics (PyMol)
- Python, MatLab
- Microscopic imaging
- Protein expression and SDS-PAGE analysis
- Bacterial and eukaryotic cells culturing, aseptic techniques
- Molecular cloning

AWARDS RECEIVED

- Gold medal winner in IGEM 2021-2022 competition
- Silver and Bronze winner in Biology School Olympiads
- Winner of Republican grant for developing "RemiDuET" project

PERSONAL PROFILE

I am a 4th-year Undergraduate student in Biological Sciences at Nazarbayev University

WORK EXPERIENCE

Dry & Wet lab leader in IGEM2021-2022 NU_Kazkhstan team
Apr 2021 - Nov 2022 (More through these links [1],[2])

- Brainstormed the possible reasons for errors that happened in the laboratory
- Created mathematical models to predict the gene expression rates
- Developed the idea for the project by analyzing research articles
- Coordinated lab work; Management of Team Parts (Basic and Composite)

Organiser of first in Central Asia Biohackaton "Code-On"
Sept 2021 - Oct 2021 More about it here

- Created tasks & checked submitted work for Biohackaton

Research Assistant at National Laboratory Astana
Apr 2022 - present

- Working on studying effect of DNA-damaging chemotherapeutic drugs on different cancer cell lines

EDUCATIONAL HISTORY

Nazarbayev University
BA Biological Sciences | Aug 2018 - present

- cGPA: 3.60/4
- Studied courses like Genetics, Molecular Biology, Advanced Cell Biology, Integrated Cell Biology, Biological Anthropology, Structural Bioinformatics, and Organic Chemistry I and II.
- English Level: C1 (IELTS: 7.5)

Arsen Orazbek

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This year IGEM Safety Officer mentioned several biosafety risks that our project could encounter; thus, we worked a lot to tackle this issue. Moreover, our task was about supporting biosafety in laboratories by developing optic fiber-based biosensors. Therefore, I understand the importance of maintaining and developing biosafety measurements. As a Dry & Wet lab leader where I coordinated safety measurements in our laboratory, I also understand how it is important to control each experimental process to maintain safety of my fellow labmates and our environment. Having this experience, I wanted to apply for your offered job opportunities as Safety & Security Program Officer and Responsibility Program Manager.

EDUCATION

Nazarbayev University
Biological Sciences, 4th-year student

- cGPA 3.60
- IELTS: 7.5 (C1)

WORK EXPERIENCE

IGEM 2021 NU_Kazakhstan team
Project name: RemiDuET
Dry lab Leader *1.04.2021-15.11.2021*

IGEM (International Genetically Engineered Machine) is the international competition in synthetic biology. Our team was able to enter the Top 10 Projects and get the nomination in the "Best Environmental Project" category.

- Our team worked on constructing genetically modified *Pseudomonas putida* with dual expression of *nadE* and *rhlAB* genes in electrofermentative conditions. So, we planned to engineer *P. putida* to effectively produce rhamnolipids which can be used for oil bioremediation. Due to the tie constraints, however, we considered testing the effect on rhamnolipid production by overexpression of the *nadE* gene in another bacteria, which is *P. aeruginosa*. This experiment showed that overexpression of the *nadE* gene in electrofermentative conditions can increase the rhamnolipid production in *P. aeruginosa*. We concluded that this increase in rhamnolipid production can be possibly observed in *P. putida* too.
- I worked mainly on building the theoretical side of our project: researched the problems that we faced in the laboratory and constructed models for our project. Since our team faced some issues during faced several issues like failed gel electrophoresis results, I worked with my colleagues to brainstorm on the possible reasons for these errors. Moreover, I constructed models to predict the rhamnolipid production by using the Michaelis-Menten equation, built 3D models of RhlA and RhlB enzymes, and used a machine learning MATLAB program.
- Apart from the dry lab, I also worked in the laboratory. I was able to work with gel electrophoresis (both preparing gel and running DNA samples on it), PCR machine, and nanodrop spectrophotometer.

IGEM 2022 NU_Kazakhstan team
Project name: Viraless
Wet & Dry lab Leader *1.01.2022-30.10.2022*

- We planned to develop and test optic fiber-based optic fiber-based biosensors. Thus, our team focused on the synthesis of recombinant proteins (B5 protein) of the Vaccinia virus' envelope instead of using the dangerous virus directly. For this project, we proposed three different ways of B5R synthesis: only first ectodomain, whole protein, and whole protein with site mutagenesis. However, we failed to express the target protein in SDS-PAGE although sequencing showed successful results. Nonetheless, we worked with other available Vaccinia virus proteins for testing in optic fiber-based biosensors. The biosensor successfully demonstrated reasonable results for the detection of viral antigens at attomolar concentrations.
- For this project, I led both Wet and Dry lab teams, by coordinating lab experiments and dry lab computations. I assigned these teams tasks and controlled workflow.
- I received a ~7000USD grant from the Ministry of Information and Social Development of the Republic of Kazakhstan. This grant was used for this project's purposes.

Effect of DNA-damaging agents on cancer cell lines
Project name: EATTST

Research assistant *10.04.2022-present*

- I assist Dr. Ivan Vorobyev with his research project called "Enhance anti-tumor therapy efficiency by sequential checkpoint-specific treatment". In this research, we plan to study the combination of microtubule inhibitors with DNA-damaging agents in different cancer cell lines. My specific goal in this research was to define cytostatic concentrations (where cell proliferation decreases significantly) of different DNA-damaging drugs (i.e., Mitomycin-C) on different cancer cell lines. I am using time-lapse microscopy and flow cytometry to analyze our data. Currently, I am doing a graduation project on this research.

SKILLS & INTERESTS

Technical Skills:

- Cell culturing
- Gel electrophoresis
- PCR amplification
- Cell electroporation
- Basics in Python and MATLAB

Languages: Kazakh (native), Russian (fluent), English (fluent)

Extracurricular activities and Volunteering:

1) Organized first in Central Asia International BioHackaton called "Code-On" in 2021. I created tasks and checked the work of participants.
2) Won a grant from the Ministry of Information and Social Development of the Republic of Kazakhstan for IGEM project purposes.
3) Won a grant from Jas Social Impact for a project called "RemiSee". This project considers creating educational materials in the Kazakh language about biology for children with visual and hearing impairments.
4) Member of "Nomad" debating club. Participated and adjudicated in several debate tournaments.
5) Participated in ABC Incubation 2021. IGEM 2021 NU_Kazakhstan team prepared a business plan for the "RemiDuET" project. I prepared and presented this plan.
6) Volunteered in EXPO-2017 in Astana.