# Joint Cultivation Program Application Form

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| **Name** | Josep Phyto Napitupulu | **Gender** | Male | **Nationality** | Indonesia |
| **Date of Birth** | 07th September 2003 | **Place of Birth** | Parsoburan | **Place of Residence** | Toba |
| **Mobile Phone No.** | 082285393684 | | **E-mail Address** | josepnapitupulu9@gmail.com | |
| **ID Type** | KTP (ID Card) | | **ID No.** | 1212040709030002 | |
| **Intended Level of Program** | ☐ Joint Undergraduate Program ☐ Joint Postgraduate Program ☐ Joint Postdoctoral Program | | | | |
| **Intended Research Orientation** | This research aims to further explore the ongoing Global Pathogen Database Project. The focal point of the study revolves around harnessing the potential of this rich data platform, which has successfully compiled a global metatranscriptomic virome dataset. Utilizing artificial intelligence technology, the objective is to identify potential human-infecting pathogens. The research will delve into the origins, host ranges, ecological distributions, and transmission characteristics of various pathogens. It also seeks to comprehensively evaluate the threat levels of viruses and issue early warnings related to outbreak risks. Collaboration with leading research teams in the field of pathogenomics to further sequence thousands of pathogen samples is a key focus, with the aim of contributing to the continuous discovery of thousands of new viruses. | | | | |
| **Intended Project** | Global Pathogen Database (J24057) | | | | |
| **Intended Supervisor** | Hailong ZHAO | | | | |
| **English Certificate and Score** | （e.g., CET6, IELTS, TOEFL） | | | | |
| **Awards (Date, place and reason for award)** | Participant in the User Experience Design Category of GEMASTIK XV competition 2022 | | | | |
| **Academic research experience and achievements** | | | | | |

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| **Other skills or certificates (e.g., computer skills)** | ▪ Programming Languages : SQL (Structured Query Language), Golang, Java, PHP, Python, Kotlin, Flutter, C.<br>▪ Framework : Laravel, Flask, Django<br>▪ Web Development : MySQL, PostgreSQL, MongoDB , HTML, CSS, JavaScript, Bootstrap.<br>▪ Software Modeling : Data modeling, ERD, Bizagi Modeler, draw.io, Enterprise Architect.<br>▪ Platform : Apache Netbeans, Microsoft Office, JetBrains,<br>▪ UI/UX Design : Figma (Mockup). |

**Information of Referee (Please provide the information of at least two referees)**

| Name | Institute or Organization | Job Title | Email Address |
|---|---|---|---|
| Riyanthi Angrainy Sianturi, S.Sos., M.Ds. | Del Institute of Technology | Dean of Vocational Faculty Del Institute of Technology | riyanthi@del.ac.id |
| Ardiles Sinaga, S.T., M.T. | Del Institute of Technology | Lecturer of Vocational Faculty Del Institute of Technology | ardiles.sinaga@del.ac.id |

**Education Experience（from undergraduate）**

| Date | University | Major | Degree |
|---|---|---|---|
| From August/2021 to August/2025 (expected) | Del Institute of Technology | Applied Software Engineering Technology | Bachelor |

**Employment Experience**

| Date | Employer (Institute or Company) | Position |
|---|---|---|
| From October/2023 to present | Kampus Tutor | Backend Developer Intern |
| From September/2023 to December 2023 | PT.Solusi Rahayu Indonesia/Bank Sampah Bersinar | Frontend Developer |

**Motivation Letter (Additional pages can be attached)**

06th February 2024

Beijing Genomics Institute (BGI) Group

China

Dear Organizing Committee,

I am writing this letter to express my strong interest in participating in the Global Pathogen Database research program held by BGI Group, which is in line with this project's mission to develop a comprehensive pathogen data resource platform. The project's emphasis on utilizing metatranscriptomic virome data globally, coupled with artificial intelligence technologies, fits well with my academic background and aspirations in applied software engineering.

My name is Josep Pytho Napitupulu, I am a student of Applied Software Engineering Technology at Del Institute of Technology, North Sumatra. As a student who lives in an area far from the city center, it does not make me give up on seeking experiences outside the campus area. As an Applied Software Engineering Technology major, I am eager to contribute my programming skills to the field of biology and make a meaningful impact on global health challenges. The Global Pathogen Database's ultimate goal of sequencing and organizing metatranscriptomic virome data on a global scale intrigued me. My proficiency in database management, gained through my studies in Applied Software Engineering Technology, equips me with the necessary skills to effectively contribute to this initiative. I am eager to utilize my programming expertise to enhance the platform's ability to manage and analyze life science big data.

My interest in biology stems from a genuine curiosity about the intricacies of living organisms and their interactions. Although my academic background is rooted in computer science, I have always sought to bridge the gap between technology and life sciences. This interest led me to explore various programming projects during my college years, where I learned how to create solutions to real-world problems. One of my key experiences was an internship at "Kampu Tutor," a startup where I honed my programming and problem-solving skills in a dynamic environment. This experience reinforced my belief in the transformative power of technology and its potential to address complex challenges.

The Global Pathogen Database's focus on in-depth exploration of the origin, host range, ecological distribution, and transmission characteristics of pathogens greatly complemented my desire to apply technology to address real-world challenges. My experience in various programming projects during college, coupled with my internship at a startup where I was actively involved in problem-solving, has prepared me to think critically and contribute meaningfully to such explorations.

My work experience as a Backend Developer at Kampus Tutor Startup and Frontend Developer at PT. Solusi Rahayu Indonesia/Bank Sampah Bersinar has established a strong foundation in software development and system integration and the importance of system integration and data consistency, especially in the context of database usage. At Tutor Campus, I have collaborated closely with the frontend development team and other cross-functional teams to ensure seamless integration between the frontend and backend layers, with a focus on data consistency and integrity. In addition, I was also involved in designing and executing a comprehensive API testing strategy, as well as ensuring API security and scalability to support application growth. At PT Solusi Rahayu Indonesia/Bank Sampah Bersinar, I was responsible for ensuring consistency in interface design according to the company's design guidelines, I have also interacted directly with the database, including in designing schemas, optimizing queries, and manipulating data for efficient storage and retrieval according to application needs. In addition, I also helped develop responsive and aesthetically pleasing UIs using HTML, CSS, and JavaScript.

In addition to my work experience, the projects I have worked on also reflect my interest in innovating and solving problems with technology. For example, the project of creating a Flutter-based application for livestock distribution that I did during the Creativity and Innovation course, showed my ability to come up with the latest technological solutions. Also, the Machine Learning project I did in the NFL Big Data Bowl 2024 showed my interest in analyzing data to find patterns and effective strategies. In addition, in these projects, I have also used databases as an integral part of the

technology solutions I have developed. Understanding the database structure, constructing efficient queries, and ensuring data consistency were key in the successful development of these projects. The experience in these projects has broadened my horizons in managing databases and utilizing them effectively, software development and the use of the latest technology.

As an Applied Software Engineering Technology student, my curriculum has equipped me with a comprehensive understanding of various technologies, including database management, data structures, and algorithm design. These skills are aligned with the goals of the Global Pathogen Database initiative, where the integration of software engineering principles is essential for effective data management and analysis. The interdisciplinary nature of my program has provided me with a well-rounded education, fostering an appreciation of the interconnectedness between technology and other fields. I believe that collaboration between computer science and biology is essential to advancing infectious disease research, and I am eager to contribute to this synergy through the Global Pathogen Database project held by BGI Group..

In conclusion, my background in software engineering, coupled with my interest in biology and problem solving, positions me as a motivated and prepared candidate to contribute to the success of the Global Pathogen Database research program. I am excited at the prospect of applying my programming skills to contribute to global health research and address pressing issues in the field.

Thus I explain this motivation letter, I can be reached through my emails. I am looking forward to being able to join the Innovation Class Program by BGI Group. Thank you for your time and consideration.

Sincerely,

Josep Phyto Napitupulu

Josepnapitupulu9@gmail.com

+6282285393684

Toba, Indonesia

- **Brief introduction of yourself**

  My name is Josep Pytho Napitupulu, a student majoring in Applied Software Engineering technology at Del Institute of Technology. Throughout my college journey, I've actively participated in various organizations, including serving as the Head of the Science and Technology Department in the Student Executive Body. I discovered a passion for leadership, guiding both large and small groups, leading me to take on the role of department head. My interest extends beyond organizational communication to the broader field of communication. I volunteered in the online division of Radio Del Club by Radio Del FM, where I was responsible for creating and curating digital content related to radio activities. Beyond organizations, my interests also involve my academic research in the realm of Applied Software Engineering. These diverse experiences shape my colorful journey, where I continue to learn and contribute with enthusiasm to both campus communities and the academic world.

- **Why do you want to apply for the joint cultivation program and choose the intended research direction?**

  I am eager to apply for the joint cultivation program because of my profound interest in the intersection of Applied Software Engineering and the groundbreaking research conducted by the "Global Pathogen Database" project. The dynamic nature of this initiative, which aims to develop a comprehensive pathogen data resource platform using metatranscriptomic virome data and artificial intelligence, aligns perfectly with my academic background and aspirations. As a student in Applied Software Engineering, I am equipped with the technical skills necessary to

contribute to the implementation and optimization of software solutions essential for managing and analyzing vast sets of biological data. This program provides a unique opportunity to bridge the gap between software engineering and life sciences, allowing me to apply my expertise in a context that directly addresses global health challenges. By participating in this joint cultivation program, I am excited about the prospect of not only deepening my understanding of cutting-edge pathogenomics research but also contributing meaningfully to the development of solutions that can positively impact public health on a global scale.

- **Your future career plan**

  Plan after graduation: ☐ Education ☐ Work

  Intended Institute：☐ BGI ☐Other institutes (Please specify_____) ☐ Not decided yet

**I hereby declare that the above information and all application documents provided are true and valid, and I understand that any misrepresentation in the form or documents will result in disqualification of my application.**

Signature： Date: 06th February 2024

**(Opinions from University or Department/Faculty)** ☐ **Approved** ☐ **Not Approved**

Signature： Title: Date:

**(Opinions from Selection Committee)** ☐ **Approved** ☐ **Not Approved**

Signature： Title: Date: