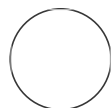# 🌐 Successes and Challenges

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ABSTRACT

This page outlines the successes and challenges encountered by PGC Mindanao during the PHA4GE subgrant.

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1   Abstract/Introduction

The PHA4GE subgrant with PGC Mindanao had its share of successes and challenges. The sections below outline these, starting with the successes (Section 2) followed by the challenges (Section 3) faced by the project.

2   Successes

One of the major successes of this grant is the assistance the PHA4GE group has extended to PGC Mindanao as its sub-grantee. The PHA4GE technical working group was always available for advice and open to answer any queries and address any challenges PGC Mindanao might have had in the duration of the project. Figure 1 shows a screenshot of the inception meeting on Zoom with the PHA4GE technical working group. These challenges are presented in more detail in the next section (Section 3). As an example, PHA4GE was able to present Protocols.io as a free alternative to document and publish PGC Mindanao's grant project activities since there was no remaining funding sufficient to purchase a paid subscription (which other platforms require for collaborative editing) for this purpose. As a result, this documentation on Protocols.io had been made possible and available to the public through this site.

The collaboration between PHA4GE and PGC Mindanao through the subgrant has also made possible sharing new knowledge and technologies, such as the PHA4GE contextual data package that enabled standardized processing, storage, and sharing of bioinformatics data within the center (please refer to the protocol "Establishing processes to capture standardized contextual data" for details). For example, the naming convention presented in the package is useful for standardizing naming of samples in the center.

Figure 1. Inception meeting with the PHA4GE technical working group (virtual meeting via Zoom)

Aside from the technical assistance extended by PHA4GE to PGC Mindanao, the funding grant was able to provide for the development of the PGC Mindanao digital infrastructure through provisions for structured LAN cabling for internet connectivity of the center's sequencers and computer workstations, as well as additional storage and memory devices in aid of bioinformatics analyses within the center (please refer to "Developments in PGC Mindanao Bioinformatics Digital Infrastructure" for details).

Another major success encountered in this project is the collaboration of PGC Mindanao with BugSeq through this grant. As presented in the protocol "Introduction and Lineage Assignment of Assembled Sequences" BugSeq's automated cloud-based online platform is comparable, if not better, to the existing PGC Mindanao workflow for SARS-CoV-2 genomic biosurveillance. Its

speed in delivering results for immediate actionable insights and ease of use makes it convenient and efficient to use especially when delivery of timely and accurate results is essential to an effective viral biosurveillance system. Figure 2 shows a screenshot of one of the several virtual meetings with BugSeq.

Figure 2. Screenshot of one of the virtual Zoom meetings with BugSeq

Aside from the successful running of BugSeq's bioinformatics platform, the two-way exchange of knowledge between BugSeq and PGC Mindanao was also invaluable to both institutions. With their experience in submitting sequence and contextual data to public sequence databases, BugSeq was able to orient PGC Mindanao in submitting sequence and corresponding contextual data/metadata to an INSDC database, particularly NCBI GenBank, which resulted in the successful release of generated sequences to this database (please refer to the protocol "Submission of sequence and contextual data to GISAID, INSDC repositories, or other databases" for details). On the other hand, PGC Mindanao was also able to contribute to BugSeq's knowledge such as in the cases of the former spotting a bug in the latter's system and testing the latter's system that led to improvements to BugSeq's bioinformatics workflow system.

Overall, these successes led to developments and knowledge exchanges that further enrich the experiences and research partnerships of all collaborating parties. At PGC Mindanao's end in particular, these successes led to improved bioinformatics infrastructure and more efficient bioinformatics workflows and analyses within the center. These also enable better handling of both current and future bioinformatics-related activities, projects, and initiatives in the center, such as the current SARS-CoV-2 sequencing and sequencing of other pathogens and organisms of importance and concern.

3 Challenges

Compute infrastructure within PGC Mindanao was one of the major challenges in this project. One specific aspect is the lack of stable internet connection. A stable internet connection is necessary for the implementation of the BugSeq and PGC Mindanao workflows and submission to online sequence databases. In another project of PGC Mindanao, the national SARS-CoV-2 biosurveillance project, the lack of internet connection slowed the workflow due to the necessity of internet connection for upload to BaseSpace. This lack also caused problems in data storage as the data cannot be uploaded to BaseSpace and hence necessitating storage in the sequencer itself which can disrupt subsequent runs or even corrupt the stored data.

To address these challenges, part of the funding for the PHA4GE subgrant was allotted to improve the infrastructure for bioinformatics at PGC Mindanao. Specifically, the funding was used to procure external HDDs (for increased storage for the voluminous data generated by bioinformatics workflows, and to serve as the data storage device for the sequencer) and RAM expansions (to increase memory and computational capacity of the current bioinformatics workstations). Part of this allotment was also used to contract structured cabling to be able to connect the sequencers inside the laboratory to the internet and solving the previously-stated problem. More details on this are found in the protocol "[Developments in PGC Mindanao Bioinformatics Digital Infrastructure](#)".