Task Team 21-03: Omics/eDNA Protocol Management

Progress Report

December 6th 2023

OBPS Website: https://www.oceanbestpractices.org/about/task-teams/obps-task-team-21-03-omics-edna-protocol-management/
Github BeBOP Workspace
https://github.com/BeBOP-OBON
Protocols.io Workspace
https://www.protocols.io/workspaces/better-biomolecular-ocean-practices-bebop/

2023 Presentations and Workshops
May 2023 POGO meeting: Dr Pitz presented an overview of the BeBOP project virtually.
September 2023 OBON: Dr Pitz presented the project in person at the OBON meeting in Plymouth UK.
October 2023 GEOBON : Dr Watts presented a poster at the GEOBON Meeting in Montreal in October. Numerous attendees expressed interest in adding protocols to the repository, and indicated that they would find the information useful for their work.
October 2023: A session was hosted at OBPS online workshop led by Dr Watts and Dr Pitz.

The Omics/eDNA Protocol Management TT now comprises the "**Be**tter **B**iomolecular **O**cean **P**ractices (**BeBOP**)" UN Ocean Decade endorsed project under the programme **OBON** (**O**cean **B**iomolecular **O**bserving **N**etwork). As part of BeBOP, we have worked in 2023 to further advance our **MIOP** metadata standard (**M**inimum **I**nformation about an **O**mics **P**rotocol) as well as create protocol templates that facilitate comparing protocols.

The MIOP standard is housed here (https://github.com/BeBOP-OBON/miop). We are applying for this standard to be maintained and become a project under the Genomics Standards Consortium (GSC) which houses other related genetic metadata standards such as "MIxS".

We have developed protocol templates for different stages of omics field and laboratory work housed on Github (https://github.com/BeBOP-OBON/0_protocol_collection_template) and also within a protocols.io workspace (https://www.protocols.io/workspaces/better-biomolecular-ocean-practices-bebop). Currently, there are 9 protocols in the BeBOP protocols.io workspace and there are three protocol collections (MBARI, UNESCO and TechOceanS) in the Github BeBOP Workspace.
One significant development during 2023 has been the decision to utilize a parallel protocol submission workflow within protocols.io in addition to the Github workspace. Within protocols.io, there are several capabilities that are attractive such as the ability to chain individual protocols together into a workflow that can then be assigned a unique DOI and a user-friendly GUI interface. We are planning to use the protocols.io workspace to expand our user base and encourage more groups to submit protocols using our MIOP and template infrastructure. Both protocols.io and Github platforms allow users to track changes in protocol documents and

improve the "machine readability" of protocols for automated comparisons. Currently the Github workspace is linked to the Ocean Data Information System (ODIS) where protocols submitted with the correctly formatted metadata can be found within this system. In the next year we will work to make our protocols.io workspace also findable within ODIS.

There are currently multiple groups discussing the development of standardized protocols for eDNA applications (e.g., The International eDNA Standardization Task Force, Canadian Standards Association). BeBOP has been noted as a potential repository and template for these standard protocols.

The West Coast OBON, a recently endorsed regional OBON on the west coast of North America, has committed to using BeBOP templates on protocols.io in their efforts to harmonize methods across biomolecular surveys. At their next virtual meeting in February 2024 the meeting organizers will demonstrate the use of the templates and encourage all participating members to use them within their own program.

During the upcoming year, our priority will be to add additional protocols from OBON projects. This will allow us to get feedback on our infrastructure and demonstrate the utility of MIOP and our protocol templates in comparing workflows across projects.

We have also submitted a proposal to host a Satellite event at the 2024 Ocean Decade Conference. In this session, we will introduce attendees to the use of omics in ocean discovery and management, and will invite discussion of the range of work currently in practice or proposed. We will discuss the value of shared protocols, and will recruit participants to share protocols and participate in the BeBOP project. We are particularly interested in feedback and participation from members from underrepresented or developing countries. We expect to receive confirmation of the Satellite event approval in the coming weeks.

- Summary prepared by TT members: Katie Pitz, Alison Watts, Nastassia Patin, Christina Pavloudi, Nick Jeffery