

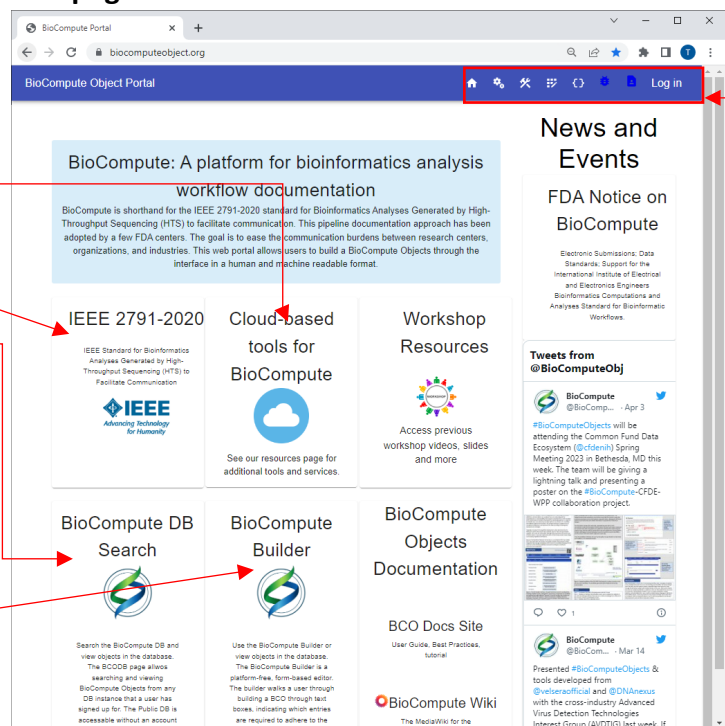
# BioCompute Tutorial

## I. What is BioCompute?

BioCompute (<https://www.biocomputeobject.org/>) is a platform for bioinformatics analysis workflow documentation. Its goal is to ease the communication burdens between research centers, organizations, and industries. Currently, this pipeline documentation approach was accepted by the Institute of Electrical and Electronics Engineers (IEEE) as IEEE 2791-2020 standard and has been adopted by a few FDA centers. The web portal allows users to build BioCompute Objects (BCOs) through the interface in both human and machine-readable formats. In addition, users can export workflow BCOs through third-party websites, including Galaxy, DNAnexus, Velsara, and CDFE-WPP.

## II. A walk-through of the BioCompute Homepage

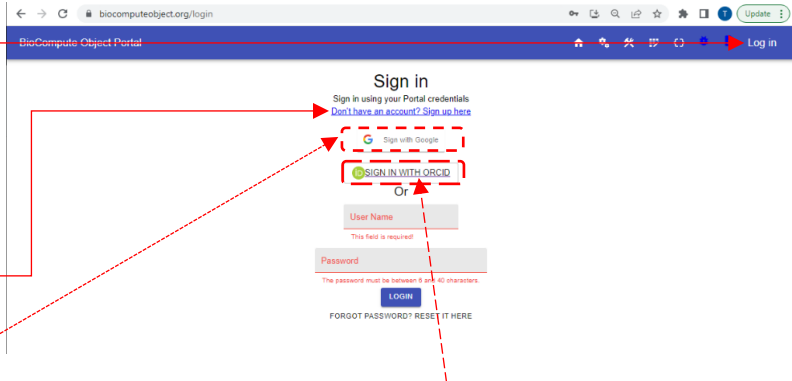
On the homepage, a user can easily navigate to various information about BioCompute through the 6 cards. The **IEEE** card takes to the full description of the standard. The “**Cloud-based tools for BioCompute**” takes users to additional tools and services. Users can be directed to the BCO Search page from the **BioCompute DB Search** card, which allows users to view existing BCOs and continue editing BCO drafts based on permission of the belonging group, see section V for more details about BCO search. Most importantly, the Builder page be reached with one click on the **BioCompute Builder** card. In addition, previous workshop slides, videos, and more documentation can be reached from the other cards.



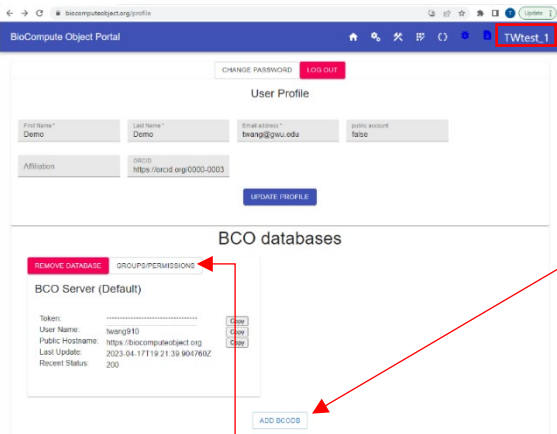
The short-cut icons on the top right of the homepage direct to major pages. From left to right, each is **Home**, **BCO Resources**, **BCO Builder**, **Prefix Registry**, **BioCompute Object DB**, **Bug Report**, **Contact Us**, and **Log in**. These icons help users quickly navigate through the site.

## III. Log in

BioCompute team encourages all users to log in before building a workflow. Users can simply click on the **log-in** button on the homepage. For first-time users, please click on **“Don’t have an account? Sign up”**, and fill out the required information to sign up or link to **Google**. In addition, BioCompute has enabled **ORCID** authentications. This means users can create and access their accounts by linking to Google and ORCID accounts. After logging in, the user’s name will appear on the page’s top right.

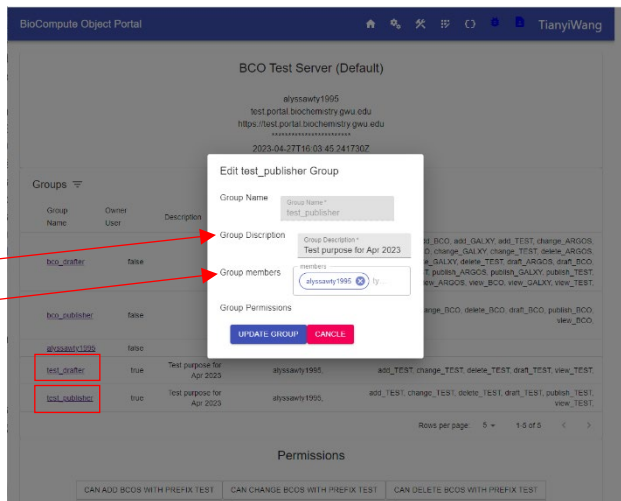


#### IV. Change profile information, groups, and permissions



Click on the username on the page’s top right corner if logged in. Users can edit personal information, change passwords, add ORCID, and modify account publicity on the profile page. Furthermore, all users can access the BCO server by default but additional BCO Databases (DB) can also be added by clicking on **ADD BCODB** and adding a token and Host Name (URL). BioCompute has set up a Sandbox Database for developers. To add the Sandbox Database, please contact DB admin for the necessary information. Groups/Permissions can also be modified based on

organization, projects, and roles by going to **GROUPS/PERMISSIONS**. Only prefix owners can modify groups and permission. For example, if the owner owns the prefix “TEST”, the user would see the groups of “user\_drafter” and “user\_publisher”. By clicking on them, the user can edit the **group description**, and **add group members** by entering the user names.



#### V. BioCompute Object DB

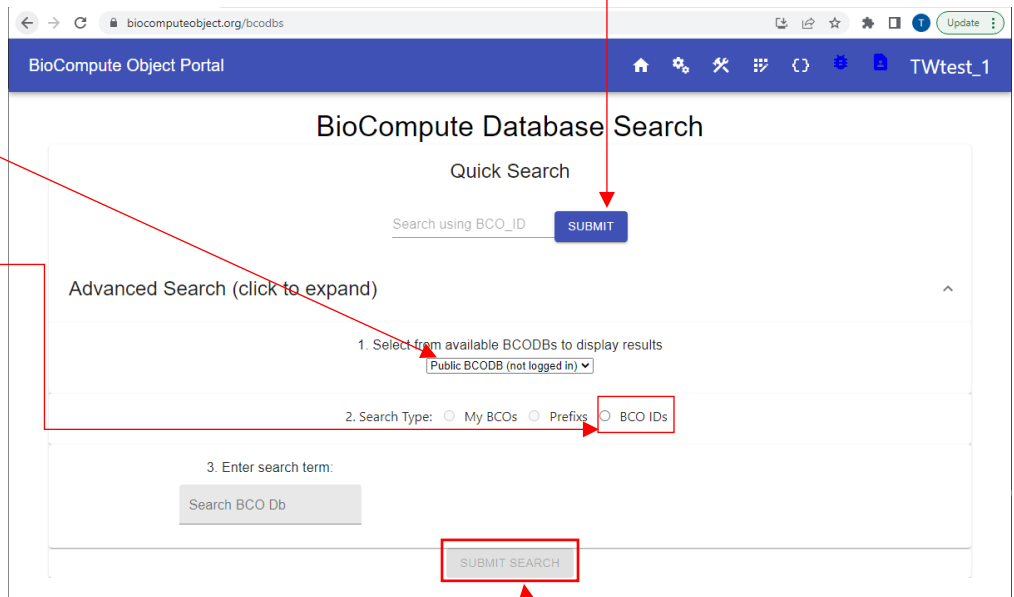
On this page, users can search existing BCOs, either drafts or published. Both quick search and advanced search are available.

**Simple Search:**

A simple search only recognizes keywords then click on **SUBMIT** to return results.

### Advanced Search:

First, choose a BCODB. If not logged in, only **Public BCODB** is available. In this case, only **BCO IDs** can be selected, this returns all available BCOs that are saved under the Public BCODB server. If logged in, choose the corresponding BCODB, for instance, the **BCO Server**.



After choosing desired BCODB, select a search type. **My BCOs** option only displays the BCOs owned by the user. If choose the **Prefixes** option, enter the prefix in the box below. For example, the user only wants to search for BCOs under the BCO prefix, then enter “BCO” in the search term box. All related BCOs should appear after clicking **SUBMIT SEARCH**. Lastly, if chose BCO IDs, all BCOs saved under BCO Server will be displayed.

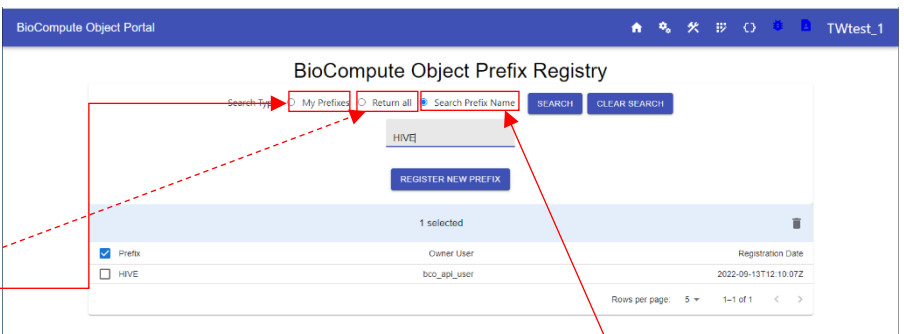
## VI. Prefix Registry

This site is for both prefix search and new prefix registration.

### Search Existing Prefix

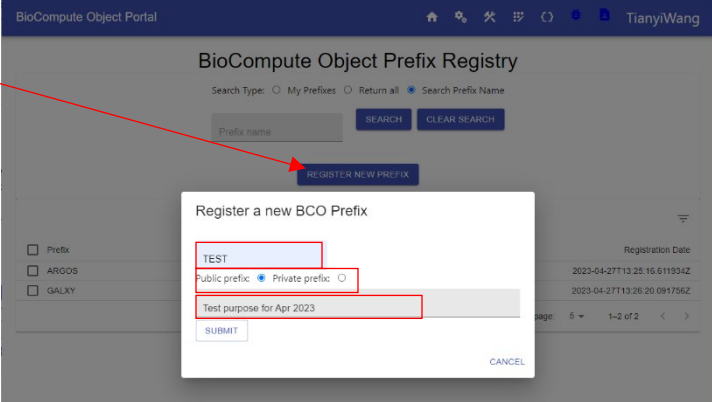
To search for a prefix owned by the user, select **My Prefixes**. The **Return All** option returns

all available prefixes. A specific prefix can also be searched by choosing **Search Prefix Name** and entering the name in the box below.



## Prefix Registration

Click on **Register New Prefix**, enter the prefix name and description, and also select either the public or private prefix in the pop-up window before submitting. Once submitted, the user should be able to see the prefix under My Prefixes. Users can modify group members and permission for the User-owned prefixes, see section IV.



The screenshot displays the BioCompute Object Portal interface. At the top, the user's name 'TianyiWang' is visible. The main heading is 'BioCompute Object Prefix Registry'. Below this, there is a search bar with 'Prefix name' and buttons for 'SEARCH' and 'CLEAR SEARCH'. A 'REGISTER NEW PREFIX' button is highlighted with a red arrow. A pop-up window titled 'Register a new BCO Prefix' is open, containing a form with the following fields:

- Prefix name: TEST
- Prefix type: Private prefix (selected)
- Description: Test purpose for April 2023

The form includes 'SUBMIT' and 'CANCEL' buttons. In the background, a table lists existing prefixes:

Prefix	Registration Date
<input type="checkbox"/> ARGOS	2023-04-27T13:28:16.611934Z
<input type="checkbox"/> GALXY	2023-04-27T13:26:20.091756Z