Collaboration with the Experiment Data Depot

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https://public-edd.jbei.org

Project Goals:

Although recent advances in synthetic biology allow us to produce biological designs more efficiently than ever, our ability to predict the end result of these designs is still nascent. Predictive models require a large corpus of high-quality data to be usefully parametrized and tested. Suitable datasets for these models are often not generally available. Here, we present the Experiment Data Depot (EDD), an online platform designed to act as a repository of experimental data and metadata. EDD provides a convenient way to upload a variety of data types, visualize these data, and export them in a standardized fashion for use with predictive algorithms. In this poster, we describe EDD and showcase its utility for three different use cases: the characterization of promoters for synthetic biology parts, leveraging proteomics data to improve biofuel yield, and the use of extracellular metabolite concentrations to predict intracellular metabolic fluxes.

JBEI Project Goals: Establish the scientific knowledge and new technologies to transform the maximum amount of carbon available in bioenergy crops into biofuels and bioproducts.

References

1. Morrell W, Birkel G, Forrer M, Lopez T, Backman T, Dussault M, Petzold C, Baidoo E, Costello Z, Ando D, Alonso Gutierrez J, George K, Mukhopadhyay A, Vaino I, Keasling J, Adams P, Hillson NJ*, Garcia Martin H*. (2017) "The Experiment Data Depot: a web-based software tool for biological experimental data storage, sharing, and visualization" *ACS Synthetic Biology* DOI: 10.1021/acssynbio.7b00204

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