ImmPort Galaxy, facilitating analysis and meta-analysis of flow cytometry data

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Project website: https://www.immportgalaxy.org

Source Code: https://github.com/ImmPortDB/immport-galaxy

ABSTRACT

Flow cytometry is generating increasingly massive multi-dimensional datasets. A range of simple to sophisticated analysis tools exist, but they can require extensive human intervention and are not readily scalable for the increasing size of the datasets. More recent tools integrate additional data facets to perform meta-analysis on aggregates of flow data from multiples sources.

We have taken advantage of the Galaxy framework to develop ImmPort Galaxy, a workspace for open source high-throughput flow cytometry data analysis that is more accessible to the average bench immunologist. We leveraged Galaxy’s innate ability to support multiple programming languages to develop a set of user-friendly analysis workflows allowing conversion and manipulation of flow cytometry binary data to text, clustering analysis, interactive visualization of the results and meta-data analysis capabilities. ImmPort Galaxy tools are written in R, C or Python and data interactive visualization tools in Javascript. ImmPort Galaxy seeks to expedite analysis of private and publicly shared data to reproduce existing results and increase their power and utility. By providing an intuitive GUI for high-throughput flow cytometry tools, ImmPort Galaxy empowers bench immunologists to analyze large volumes of high dimensional data using cutting-edge tools.