SWATHLib is an attempt at creating an automated workflow for creation of manually curated spectral library for SWATH downstream analysis. The program itself is composed of two main component, the front-end created using TypeScript with Electron and the Angular framework and the back-end created using Python with Tornado as the server implementation.

0.1 General Automated Workflow Summary

1. Input of user sequences and select parameters within the GUI (e.g SWATH windows, retention time (RT), modifications, result output format...).

2. Submission of user's queries to SWATHLib back-end.

3. Check whether there are any modifications and change the workflow settings accordingly.

4. The program attempt to generate possible combination of all the modifications from user query.

5. For each combination, transition sequences of Y and/or b and/or y-series would be created and their m/z values calculated.

6. Transition with m/z within **50-1800 m/z** range would be recorded for each combination of RT and window.

7. If oxonium ions were included within the queries, for each unique combination of precursor, RT and window, entries for oxonium ions would be recorded for them that combination.

8. The end results would be communicated to the user for retrieval.

0.2 GUI System Requirement

Windows

- Windows 7 or later
- Intel Pentium 4 processor or later with SSE2
- 512 MB of RAM

Mac

- OS X 10.9 and later
- 64-bit Intel processor
- 512 MB of RAM

Linux

- Debian 8, Fedora 21, Ubuntu 12.04 and later

- Intel Pentium 4 processor or later with SSE2

0.3   Back-end System Requirement

- Any system that can support Python 3.5+ with NumPy v1.15+, Pandas v0.23+, Tornado v5+ and Pyteomics v3.5.1+ packages.