QCPROT.V1 - Installation and Working Guide

Developed By - Sanjay S

Overview:

QCPROT.V1 is a dedicated quality control (QC) software developed for Label-Free Quantitative (LFQ) Proteomics datasets. It is designed to evaluate, visualize, and summarize raw proteomics data to ensure reliability before downstream analysis. The tool is available as both a Command-Line Interface (CLI) version for Linux users and a Graphical User Interface (GUI) version for Windows users. Both versions provide automated QC analysis, plot generation, and report compilation in a structured and reproducible manner.

Installation and Usage Instructions-

For CLI (Linux):

1. Download the installation package named “QCPROT.V1.deb” from the official GitHub releases page of QCPROT (https://github.com/thy-sanjay/QCPROT).
2. Open a terminal and navigate to the directory containing the downloaded file.
3. Install the software using the command:
   `sudo dpkg -i QCPROT.V1.deb`
4. Once installed, the program can be executed directly from the terminal using the command `qcprot`.
5. The tool accepts input and output directory paths as arguments:

- `-i` or `--input` specifies the input directory containing mzML files.
- `-o` or `--output` specifies the output directory where all plots, reports, and results will be saved.
- `-h` or `--help` displays all available command options.

6. A typical execution command is:
   `qcprot -i "Input Directory" -o "Output Directory"`
7. Upon completion, all generated results including sample wise plots, combined summaries, and PDF reports will be available in the user defined output directory.

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For GUI (Windows):

1. Download the installation package named “QCPROT.V1.exe” from the official GitHub releases page of QCPROT (https://github.com/thy-sanjay/QCPROT).
2. Locate the downloaded file and double click to launch the software. The GUI version is a standalone executable and does not require Python or additional installations.
3. **Function Panel (Left):**

- “Select Input Folder” allows browsing and selecting the directory containing mzML files.
- “Select Output Folder” allows specifying where the results should be stored.
- “Launch QCPROT.V1” begins the QC process.
- “Cancel” stops the current run.
- “New Task” clears the interface to prepare for a new analysis.

4. **Logs and Output Console (Center-Top):** This section displays real-time updates as each mzML file is parsed and processed. Users can monitor the generation of QC metrics and plots here. The console logs include the current sample being processed, the number of spectra parsed, and the paths of the generated QC plots.
5. **Task Summary Panel (Bottom Center):** Once the process is complete, this section summarizes the key results.
6. **Quick Actions Panel (Right)** - Provides direct access buttons for:

- “Open Results Folder” – opens the directory containing generated plots.
- “Open Reports (PDF)” – opens the compiled QC report.
- “Open Matrix (CSV)” – opens the QC results matrix file.

7. **Status Indicator (Top Right):** Displays the processing status in real-time.

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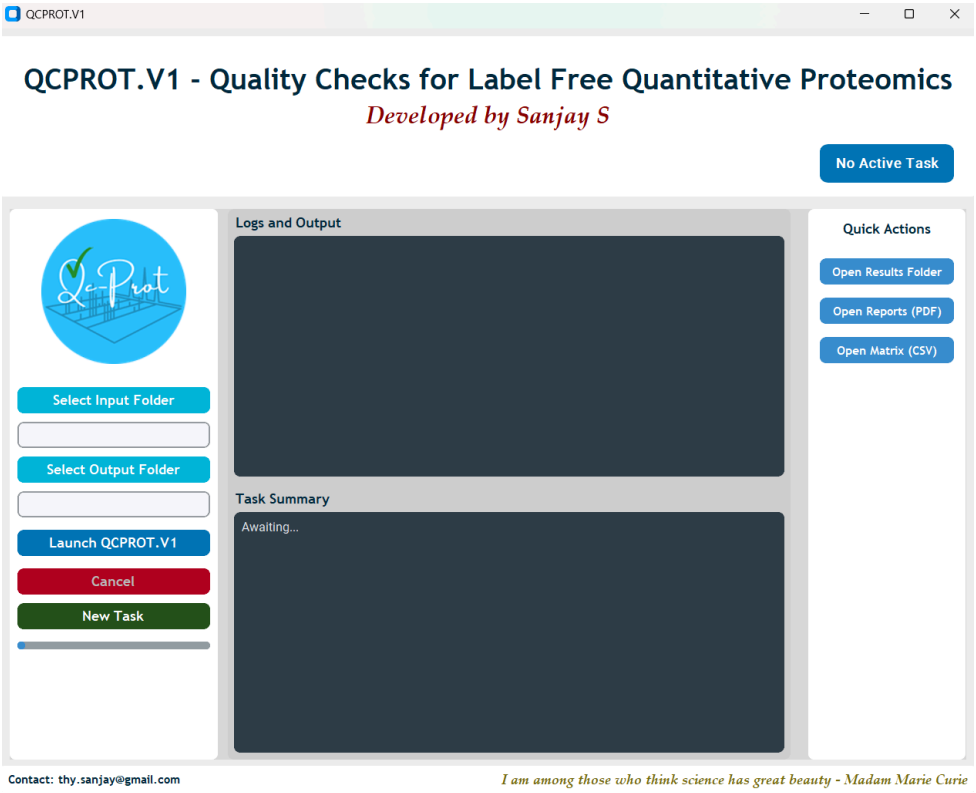

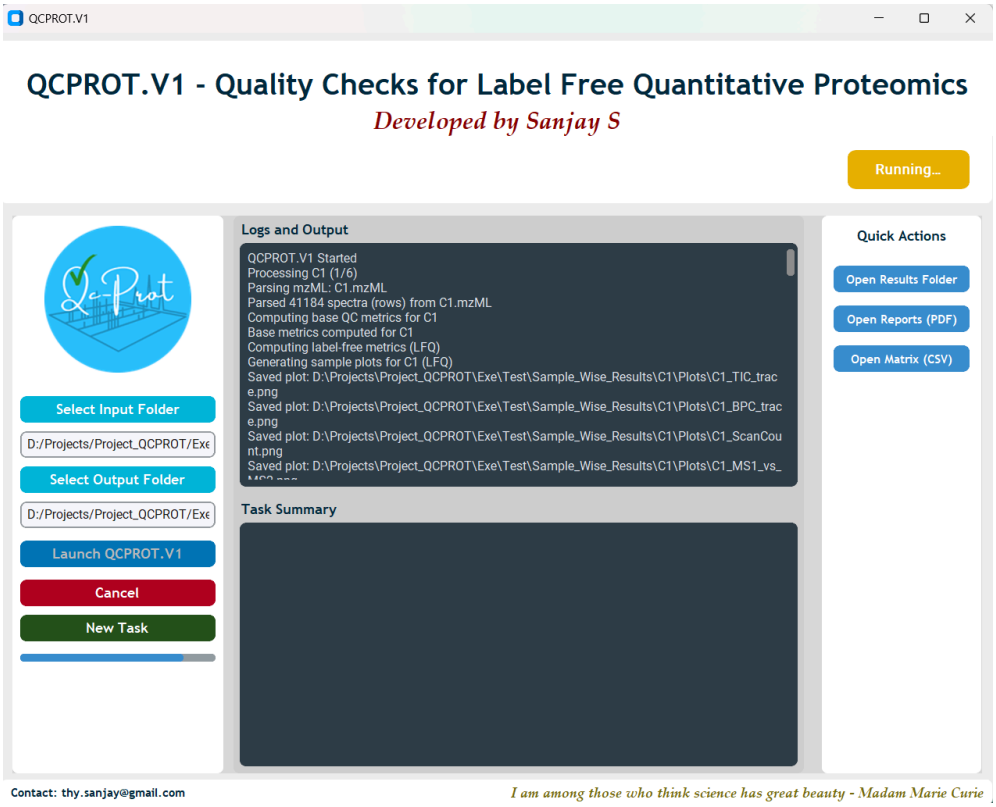

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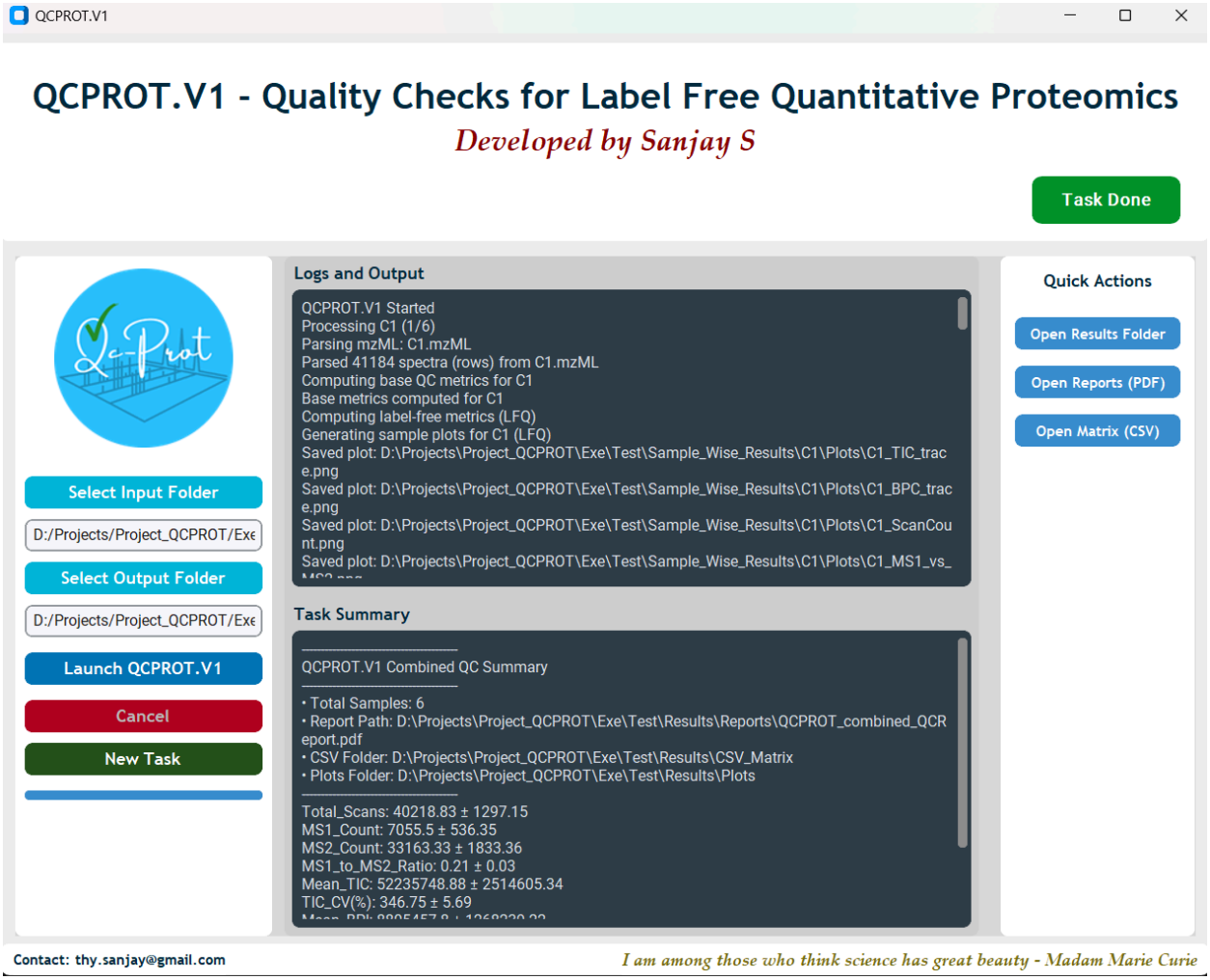

Output Description - After successful execution, QCPROT.V1 generates the following structured outputs in the user-defined output directory:

1. Results Folder - Containing comprehensive combined QC Assessment Results Plots, Matrix and Reports of all samples.

2. Sample_Wise_Results - Containing Sample Wise QC Assessment Results Plots, Matrix and Reports in respective sample based subfolders.

3. And a log file.