“System Suitability Evaluation” / Skyline Ecosystem for Statistical Process Control

Wednesday, May 3 – 11:00am session

Targeted Proteomics with Skyline

objectives

- Gain exposure to Skyline ecosystem tools for quality control
- Assess implementing this or a similar QC pipeline for your own group

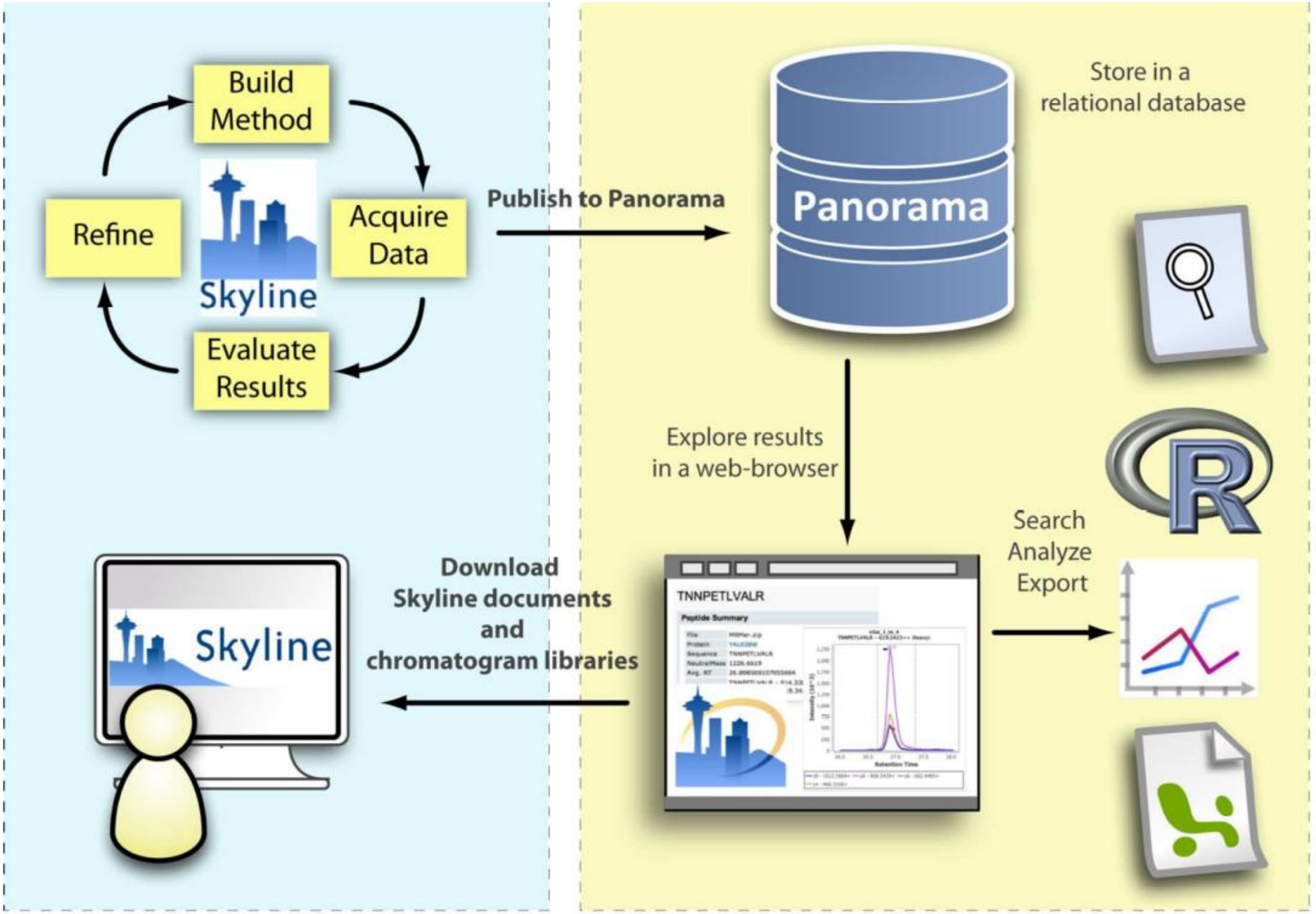
Agenda

- Panorama for storing, sharing, analyzing, and reusing Skyline-based targeted assays
- SProCop for statistical process control of targeted assay quality
- AutoQC for automated system performance monitoring together with visualization in Panorama

Panorama: web-based application for Skyline documents

www.panoramaweb.org

- **Problem**: time, effort, money poured into assay development is not usually "recycled" within labs, between labs, or across experiments
- **Solution**: a relational database storage system to aggregate and organize Skyline documents

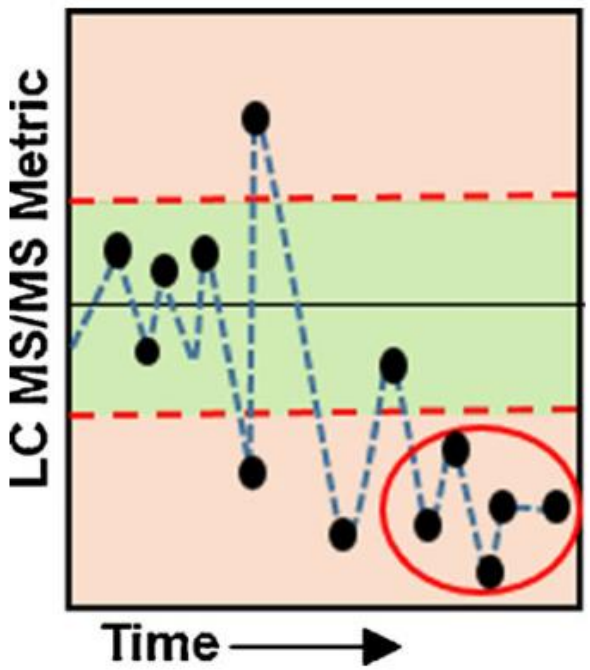

Build Method
Acquire Data
Evaluate Results
Refine
Skyline
Publish to Panorama
Panorama
Store in a relational database
Explore results in a web-browser
TNNPETLVALR
Peptide Summary
Search
Analyze
Export
Download Skyline documents and chromatogram libraries
Skyline

Sharma 2014

Agenda

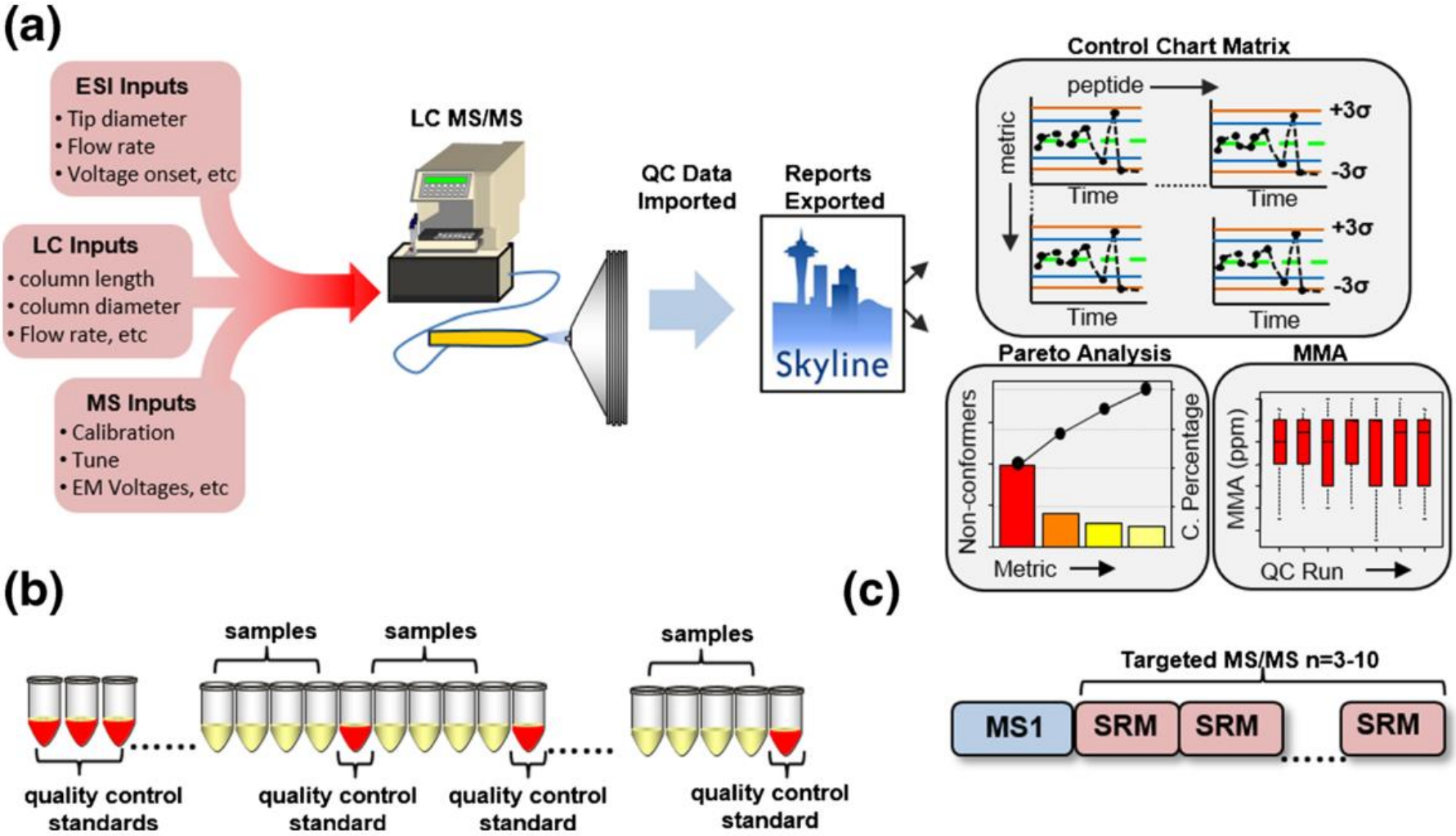
- Panorama for storing, sharing, analyzing, and reusing Skyline-based targeted assays
- **SProCop for statistical process control of targeted assay quality**
- AutoQC for automated system performance monitoring together with visualization in Panorama

Statistical Process Control in Proteomics (SProCop)



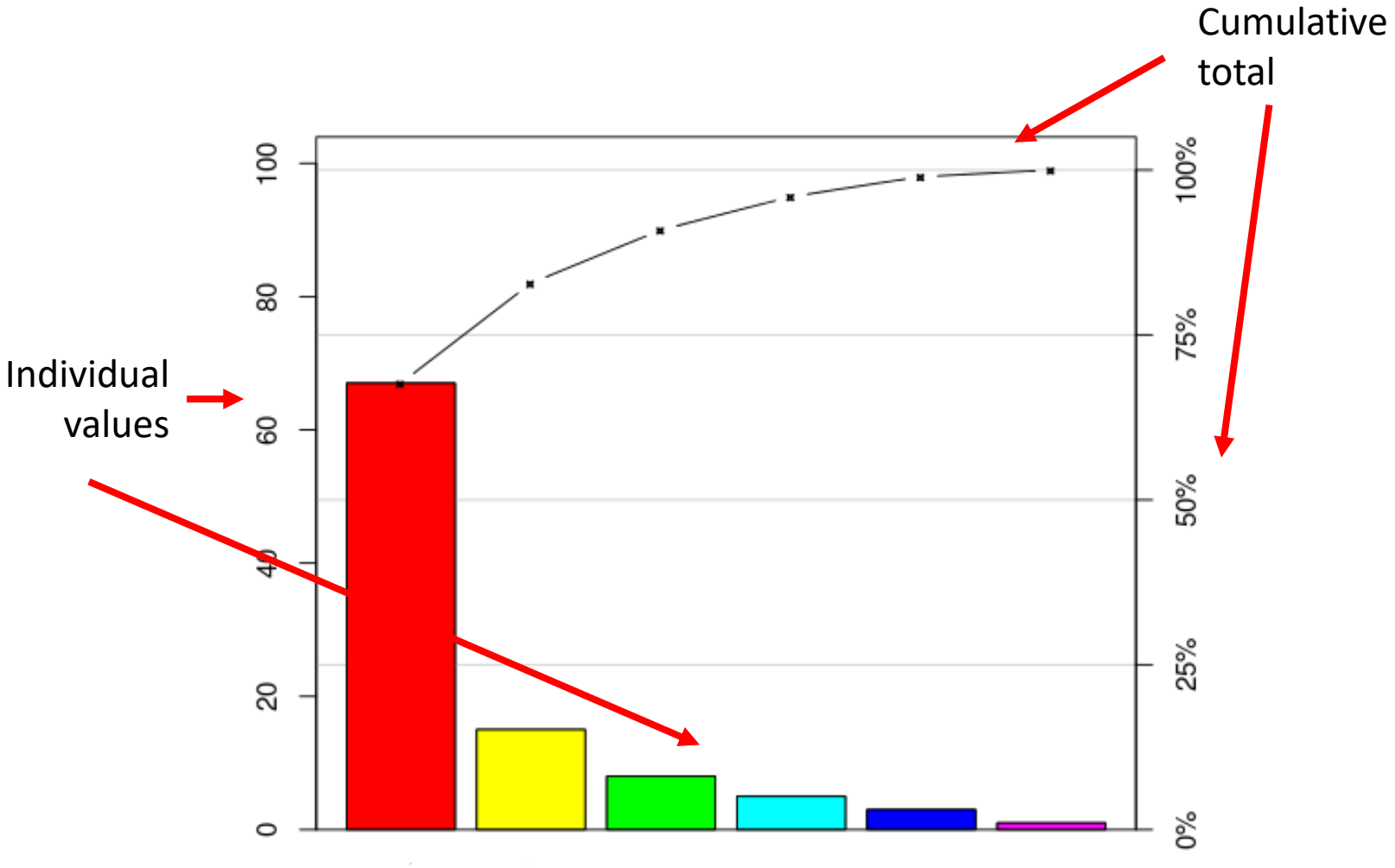
- **Problem**: data quality
- **Solution**: a relational database storage system to aggregate and organize Skyline documents

Bereman 2013



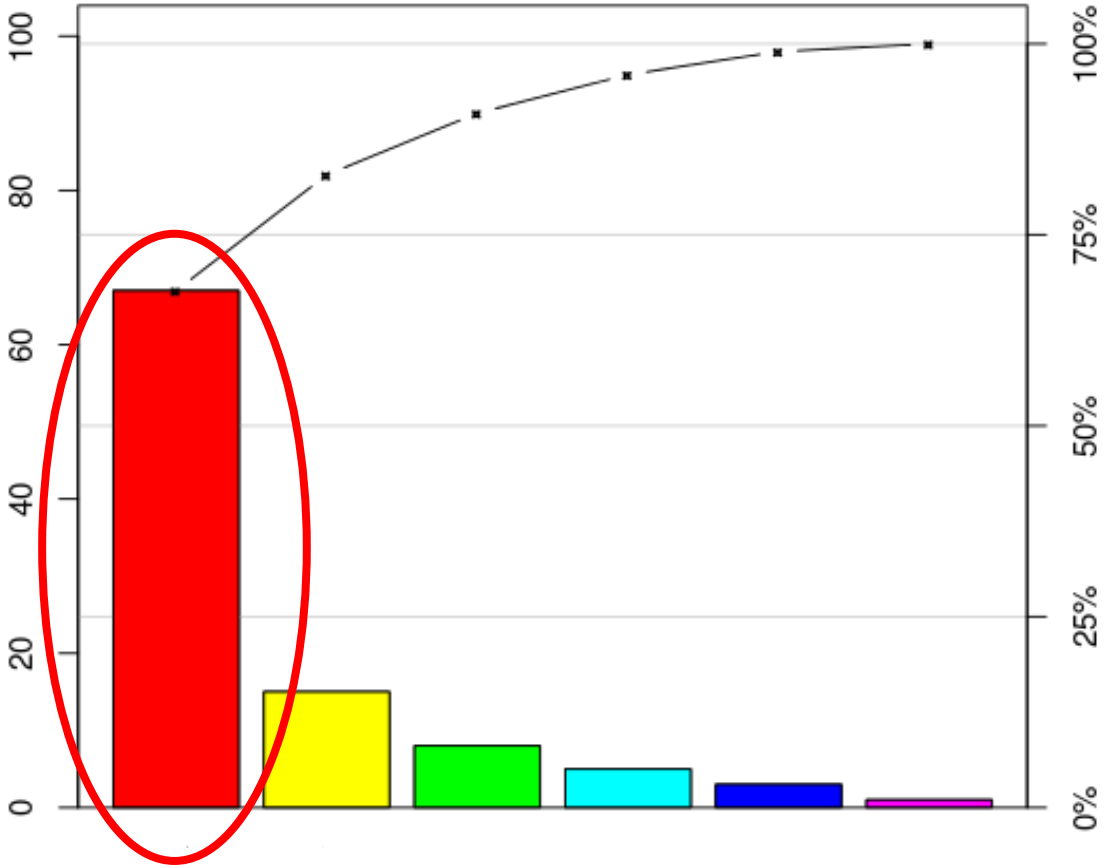
Bereman 2013

Viewing general Pareto plots



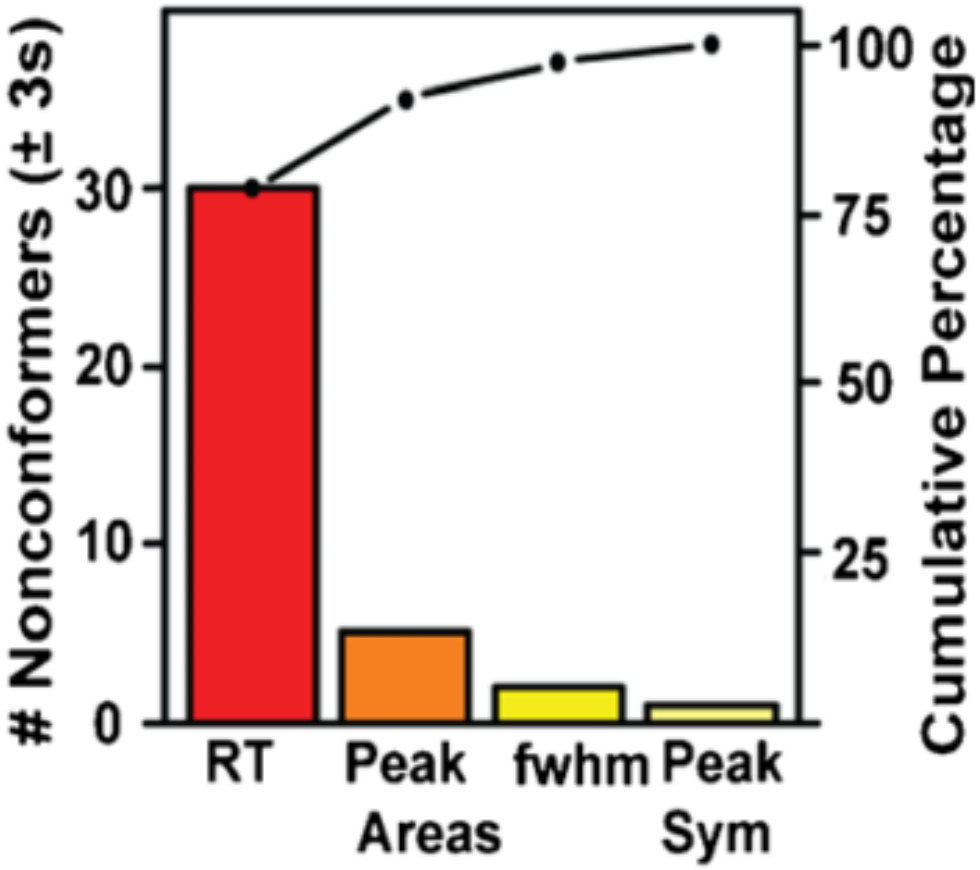
Wikipedia, ‘Pareto plots’

Viewing general Pareto plots



Wikipedia, ‘Pareto plots’

Viewing SProCop's Pareto plots

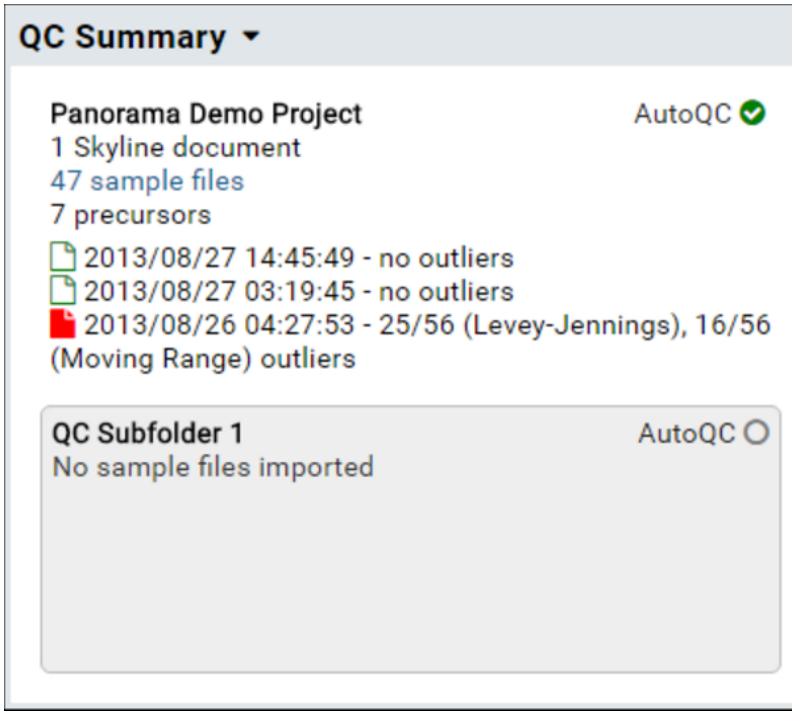


Bereman 2013

Agenda

- Panorama for storing, sharing, analyzing, and reusing Skyline-based targeted assays
- SProCop for statistical process control of targeted assay quality
- **AutoQC for automated system performance monitoring using SProCop analyses and stored in Panorama**

Panorama AutoQC



- **Problem**: data quality monitoring must be continuous for best QA
- **Solution**: a small program that automatically monitors a directory for QC acquisitions, analyzes the QC, and uploads the results to Panorama for visualization

For more information…

PanoramaQC pipeline:
https://www.labkey.org/Documentation/wiki-page.view?name=panoQCdash#summary

Hands on: Setting up AutoQC and viewing SProCop output

- Take home:
  - initializing an automated QC monitoring system
  - familiarizing with Levey-Jennings and Pareto plots