Columbus

HCS solution based on OMEKO

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Towards Full Integration of Image Management and Analysis

Starting Point – OME User Meeting 2008

OME User Meeting 2009

Now

Columbus: Integrated Solution for Image Data Management and Analysis
Columbus: Covering High Content Analysis Workflow

Import
Import screening data of imaging plate reader like Opera, Operetta and 3rd party reader.

Export
Browse the database and display results for Export.

Image Analysis
Browse the database and select images for Image Analysis.

Batch Analysis
Process multiple measurements as Batch Analysis and write back results.

Secondary Analysis
Visualize results as heatmaps and tables and calculate basic plate statistic.

Open Microscopy Environment
Webbased tools for image visualization Web Client and for account administration Web Admin

Settings
Job Status
Software Update
License Management
Server Administration

News:
09 Jun 2010
09:52:32 +0200
Background job 2 succeeded (Test Speed)

Status:
Acapella Server name: lashami011:8282
Acapella Server version: 2.3.4.51419
Number of connected users: 1
Number of running jobs: 0
Number of queued jobs: 0
Processor load: 0%
Total physical memory: 8 GB
Total swap: 2 GB
Physical memory usage: 18%
Swap file usage: 32%
Columbus Server name: lashami011:4063
Columbus Server version: Omero V4.1.1
Columbus database disk space usage: 76%
**Columbus: Covering High Content Analysis Workflow…and more**

**Import** most popular HCS images + meta-data + results Opera, Operetta, Arraysan, InCell, Biostation, Pathway, Discovery-1, ScanR,…

**Export** images (various formats incl. OME-TIF) + analysis + results incl. single cell results

Includes **OME Community Tools** WebAdmin, WebClient, Insight, Importer,…

**Image Analysis** using flexible scripting solutions and interactive assay analysis sequences

**Batch Analysis** applies image analysis solution to multiple measurements

**Secondary Analysis** displays results and plate statistics as heatmaps, scatter plots, fingerprints, tables,…
New in Columbus 2.1: Interactive Image Analysis using Assay Language

Scientific analysis with Visual Feedback for illustration and optimization

Easy access to Single Cell information
New in Columbus 2.1: Enhanced Result Visualization

Scientific analysis with **Visual Feedback** for illustration and optimization

Link between Results and Images
Columbus: Extendable by Open Source and Open Standards

Open Interface by SOAP/wsdl webservice technology allows integration by open source and closed source components.
**Stability / Speed**
- Scalability of image retrieval (Memory leaks, Table query overhead. Change pixels concept?)
- Better utilization of multi-core system

**OME-TIF/XML/Schema**
- clean up content from “reader point of view” (use cases)
- integrate orientation matrix
- support multidimensional data (FLIM, Spectral, Non-Imaging,…)
- More/flexible levels (User-Project-Screen-Plate-Measurement-Wells)

**Beta/Release?**
- remove partly working parts before “release” a “beta”

**Covered in OMERO 4.2?**
- Results (Well, Field, Frame as Table, Functional, Overlays-ROI)
- Plate Definition prepared for Assay Layout and Analysis Layout
- Replace Screen Acquisition by Plate Acquisition
- More granularity on and manageable user rights
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