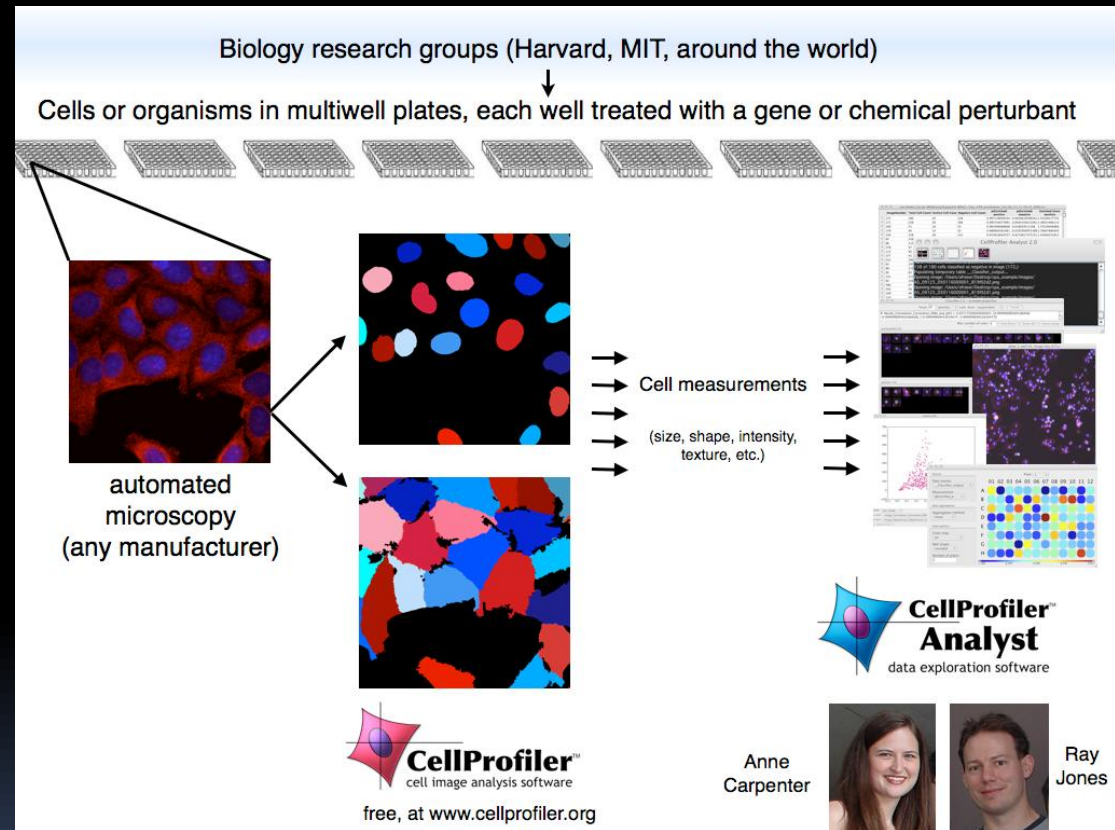


Lee Kamensky  
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[www.cellprofiler.org](http://www.cellprofiler.org)

# CELLPROFILER 2.0 FOR HCS

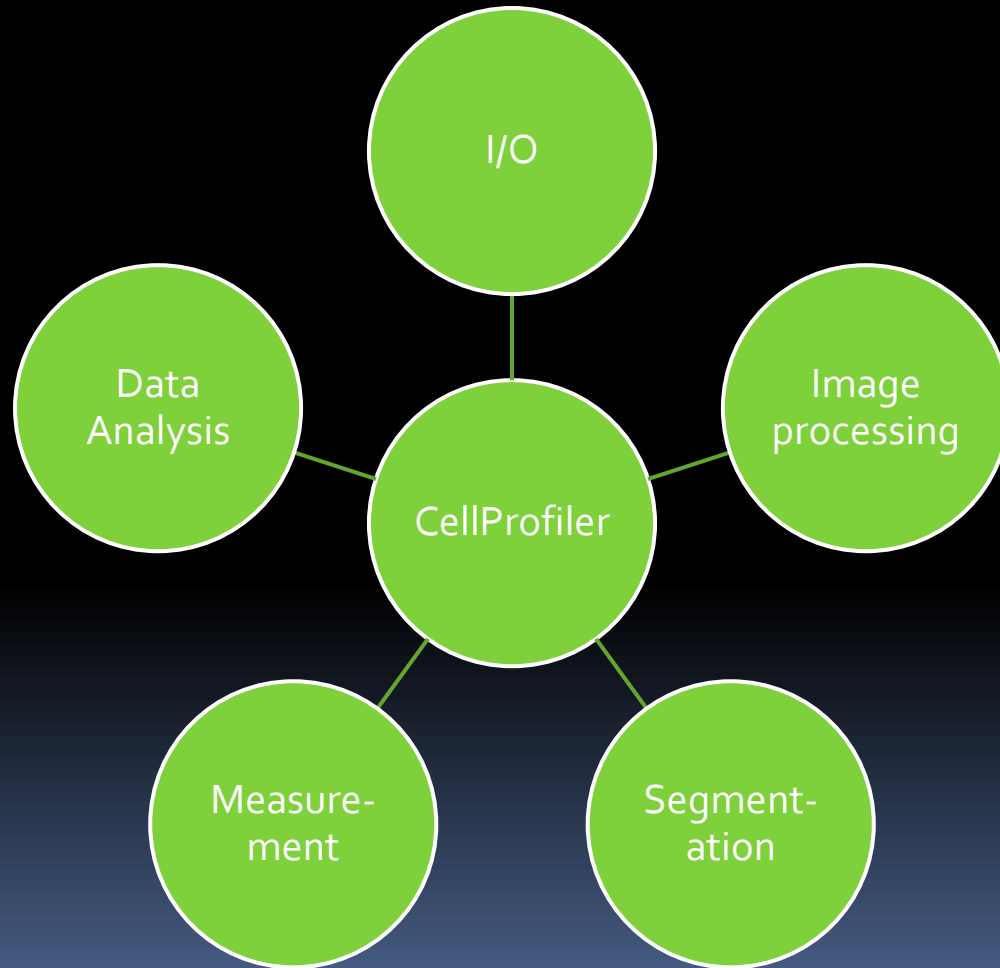
# CellProfiler

- Toolkit for quantitative image analysis
- Assays based on complex cell morphology

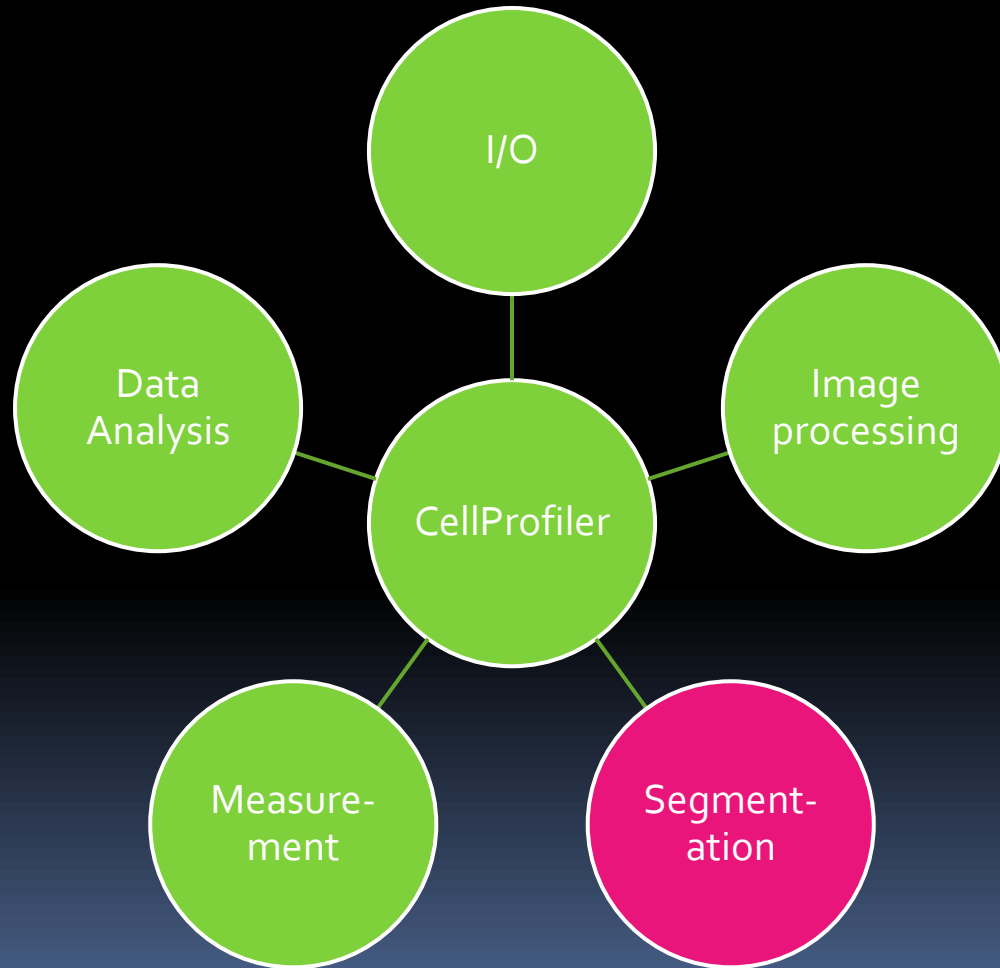


Carpenter AE, Jones TR, Lamprecht MR, Clarke C, Kang IH, Friman O, Guertin DA, Chang JH, Lindquist RA, Moffat J, Golland P, Sabatini DM (2006) CellProfiler: image analysis software for identifying and quantifying cell phenotypes. *Genome Biology* 7:R100. PMID: 17076895

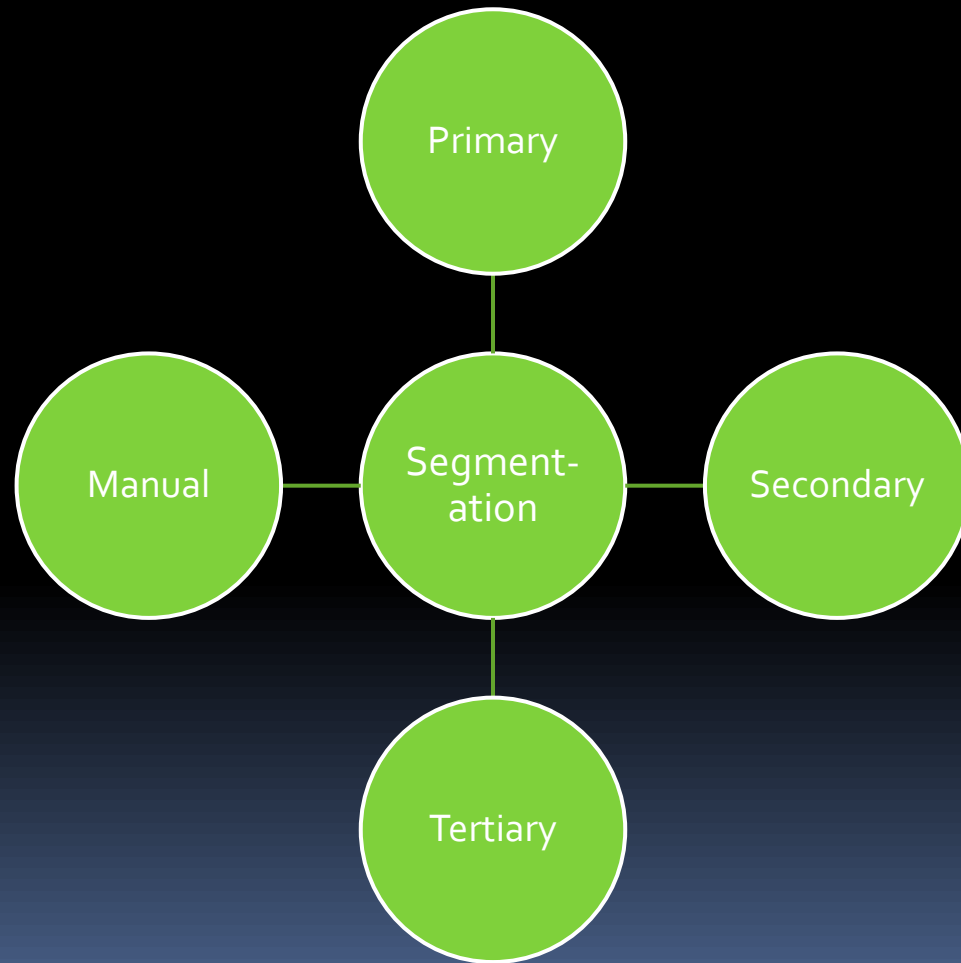
# Cell Profiler toolkit



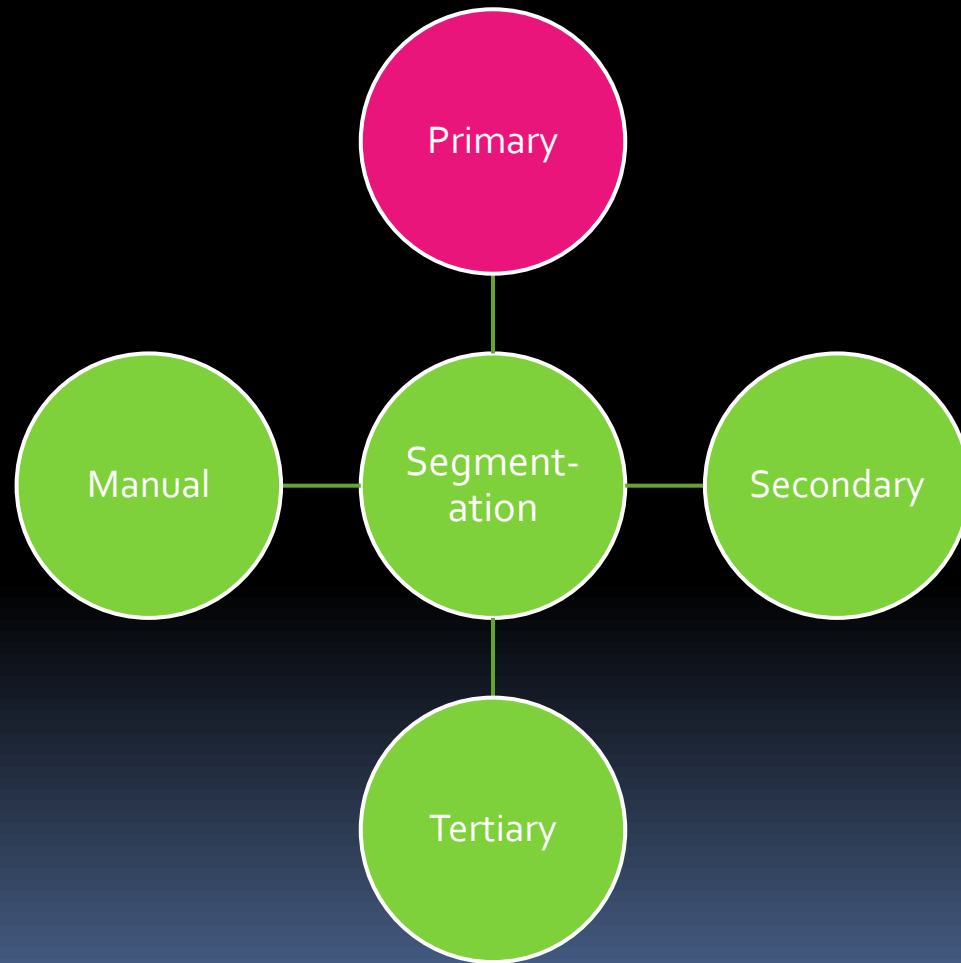
# Cell Profiler toolkit



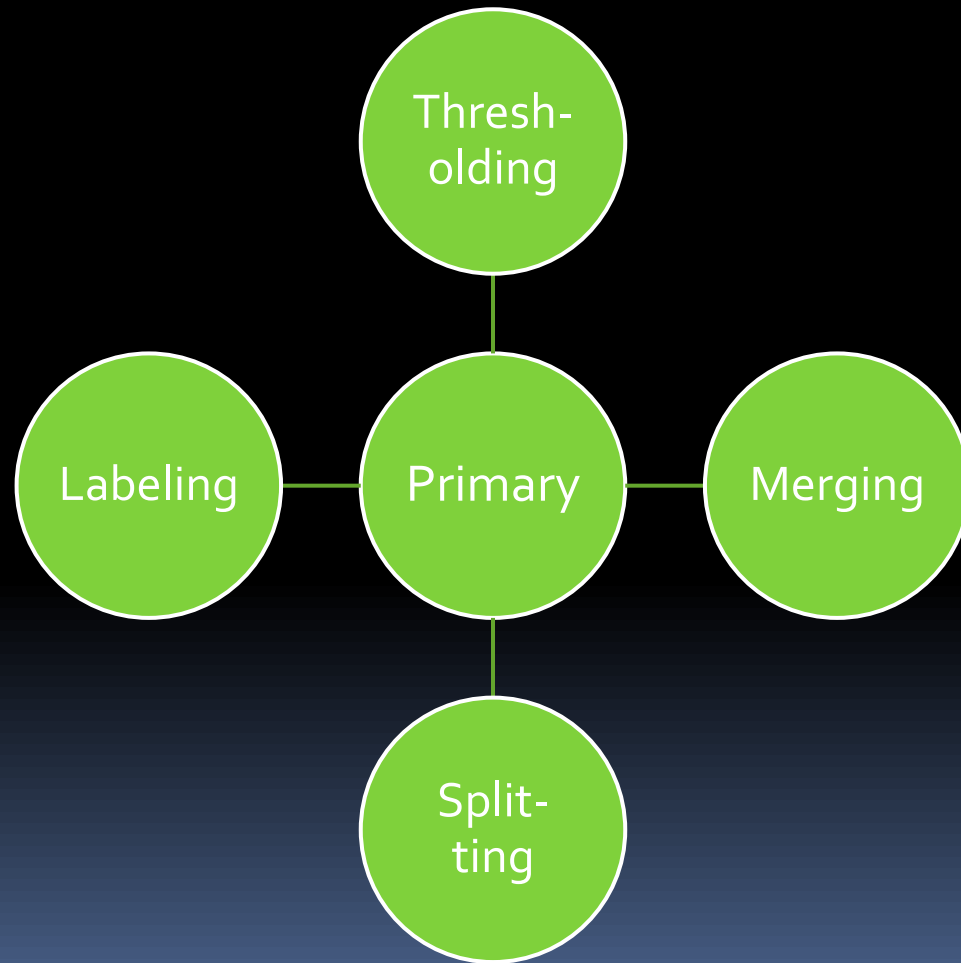
# CellProfiler Toolkit



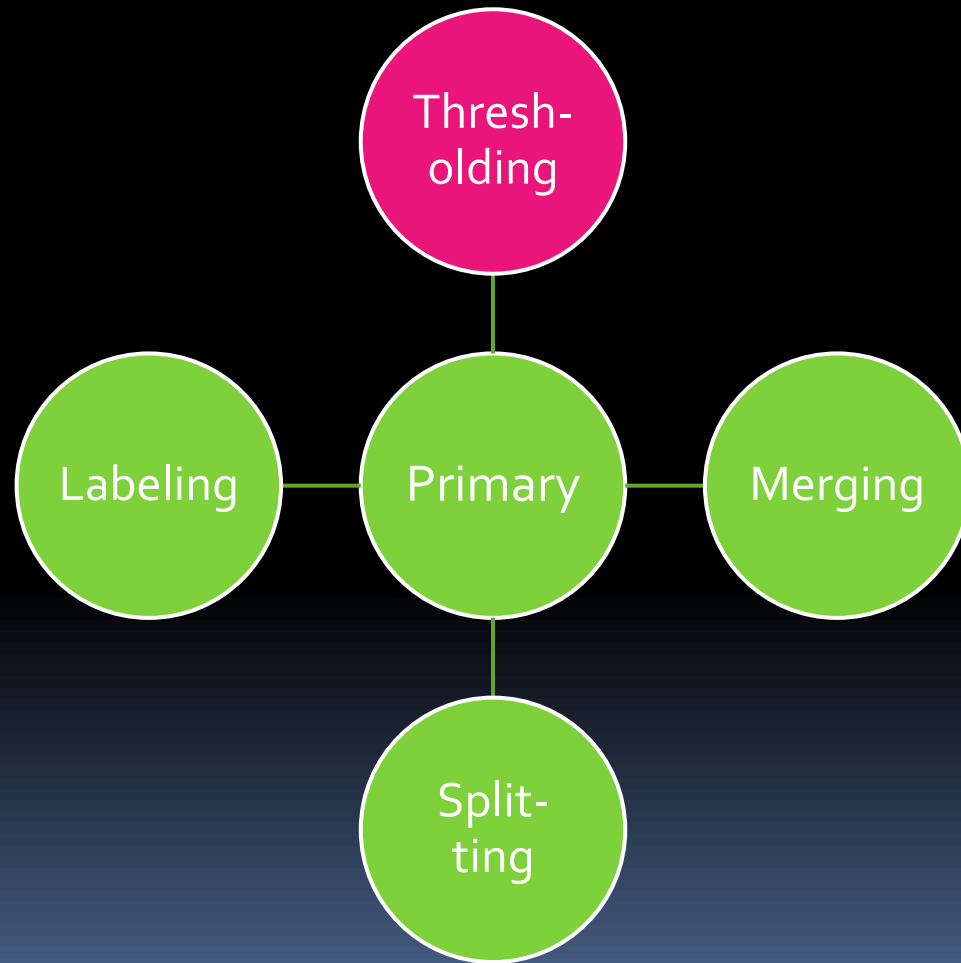
# CellProfiler Toolkit



# CellProfiler Toolkit

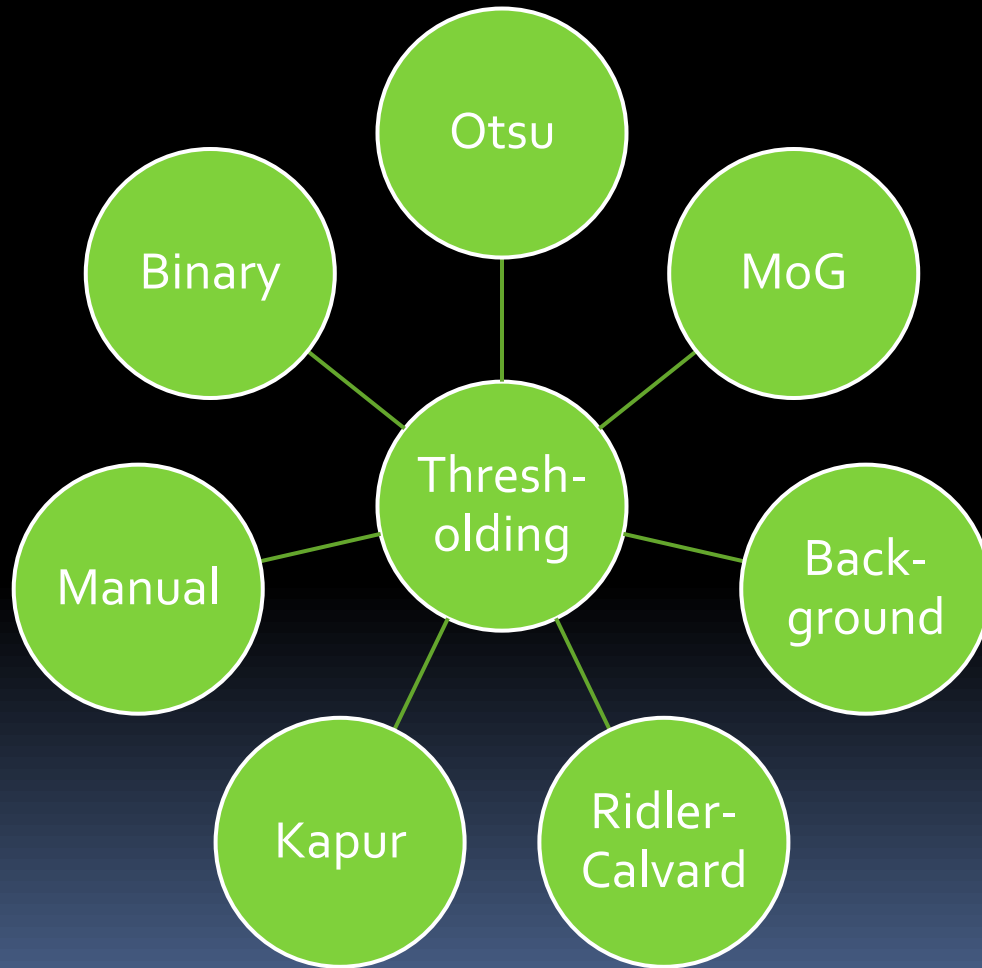


# CellProfiler Toolkit

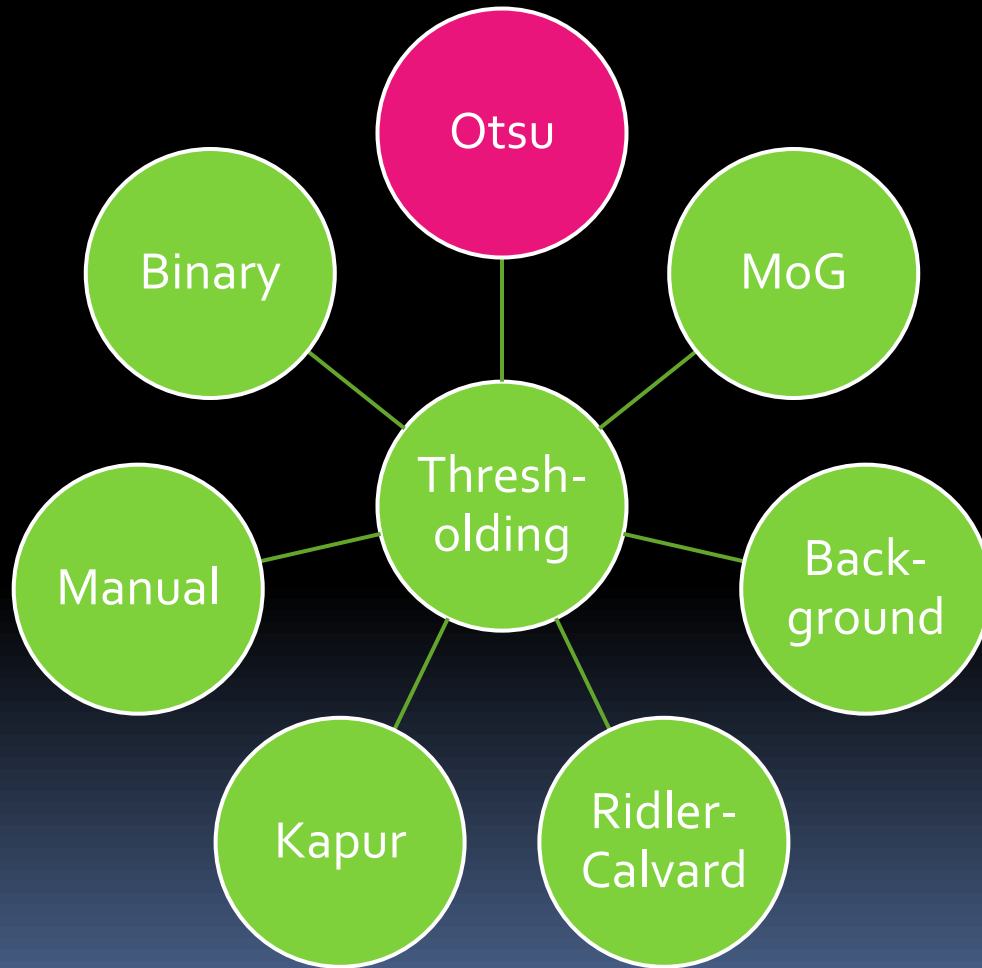




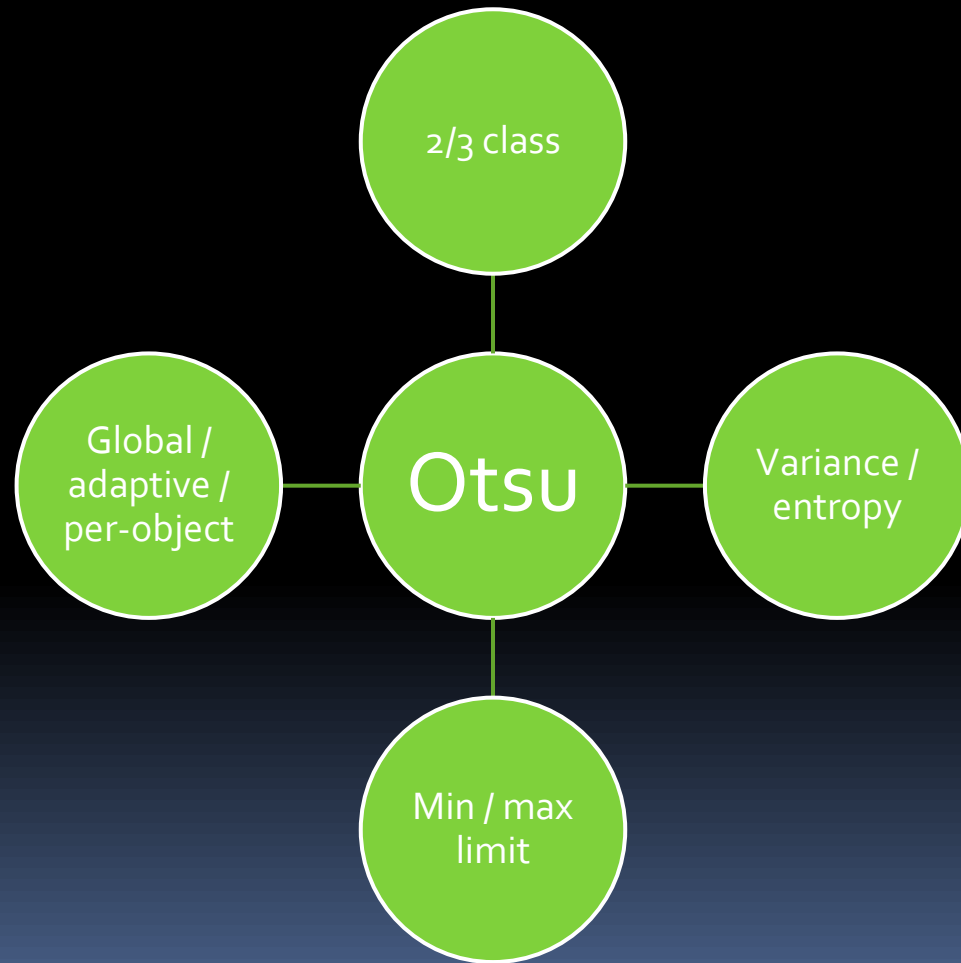
# CellProfiler Toolkit



# CellProfiler Toolkit

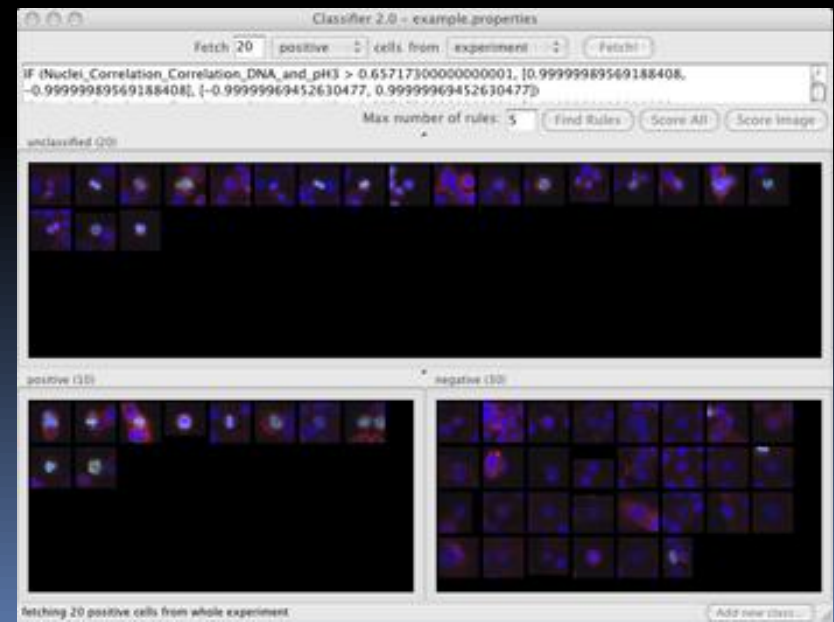
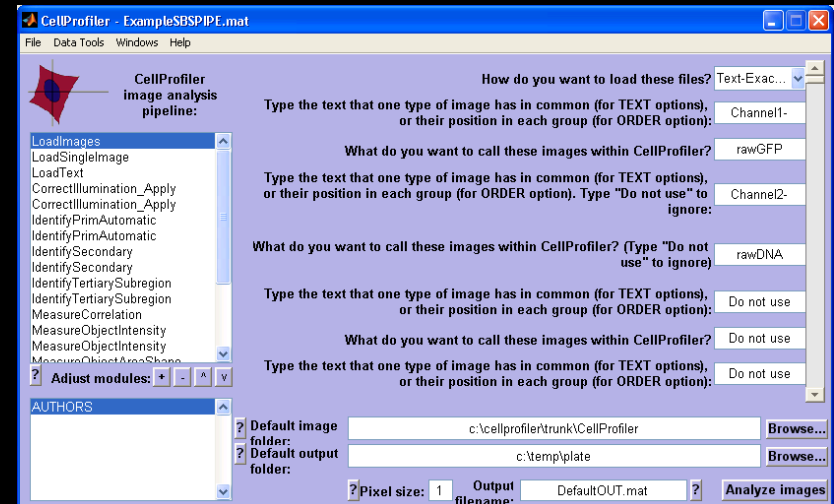


# CellProfiler Toolkit




# CellProfiler @ broadinstitute.org

- Imaging assay development
- HCS images processed on cluster
- Training & machine learning
- Assessment of penetrance





# Goals for CellProfiler 2.0

- Free and Open Source
  - Improved performance
    - Speed
    - Accuracy
  - New algorithms and methods
    - Neuron / tracking / 3-d / QC
  - Easier to use
  - High quality
- 

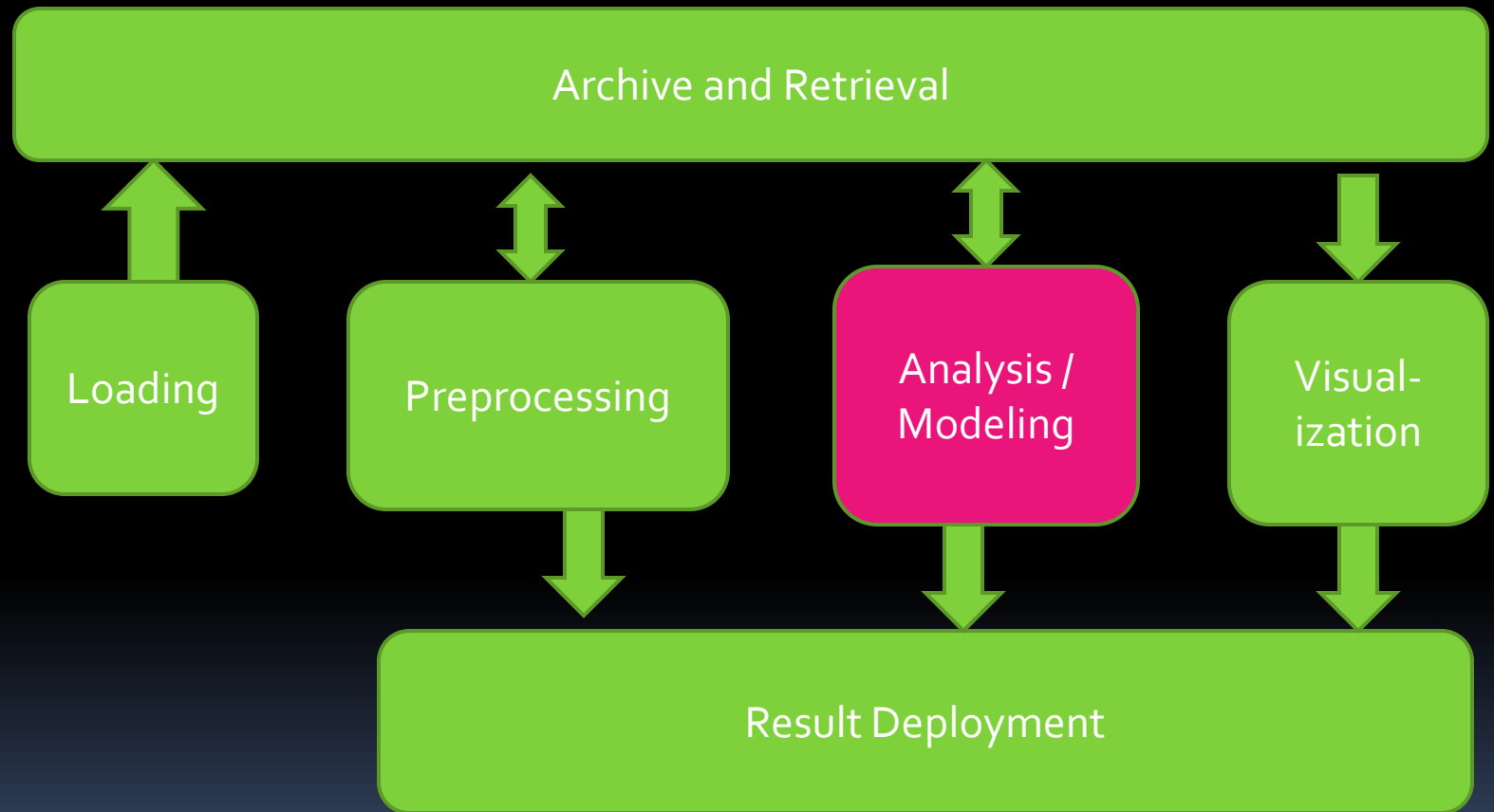
# CellProfiler / Python

- Free / Open-source / platform independent
- # 7 on TIOBE Programming index
- Numpy / Scipy array processing
  - Fast
  - Good notation for expressing mathematics
- Cython – compiled, high-performance
- Libraries / programming tools / testing

# CellProfiler 2.0 & HCS

- LIMS – friendly
  - Takes flat-file input of image file names
  - Integration of file metadata
  - Flat-file or database output
- Server farm
  - Command-line interface
  - URLs or file names
  - CellProfiler@Home: scalable deployment of CellProfiler image processing servers
  - Integration with other tools

# Knime & CellProfiler





# Knime & CellProfiler

- Workflows during CellProfiler processing
  - Image QC
  - Illumination correction
  - Image processing
- LIMS integration
  - Integration into lab workflow
  - Bridge between LIMS and CP data stream
- Analysis
- Future: Cellprofiler pipeline -> Knime nodes

# Getting CellProfiler

- Alpha release

- Windows & Mac install:

- [www.cellprofiler.org/wiki/index.php/CP\\_2.0\\_Alpha\\_release](http://www.cellprofiler.org/wiki/index.php/CP_2.0_Alpha_release)

- SVN:

- <https://svn.broadinstitute.org/CellProfiler/trunk/CellProfiler/pyCellProfiler/>

- Examples:

- <https://svn.broadinstitute.org/CellProfiler/trunk/ExampleImages>

- Team

- Anne Carpenter, Ray Jones, Vebjorn Ljosa, Adam Fraser, Carolina Wahlby, Mark Bray, Kate Madden, David Logan, Peggy Anthony