


















Symbols in Main GUI

Samples

	Create a new sample
	Load a saved sample
	Save selected sample
	Add selected sample to process queue
	Delete selected sample
	Edit description of selected sample
	View plots (distribution of dicentric chromosomes)
	View plots (filtering statistics)
	Export processed sample to .csv (Excel)
	Open metaphase image viewer and view selected sample

Curves

	Create a new curve
	Load a saved curve
	Save selected curve
	Remove selected curve from workspace
	Estimate dose using selected curve
	Plot selected curve using color in dropdown box above
	Remove selected curve from plot

Process Queue




	Process single selected sample in queue
	Process all samples in queue
	Remove selected sample from queue

Image Selection Models

Image selection models are used to exclude suboptimal images from dicentric frequency analysis. These models are comprised of six optional “image exclusion filters” and an optional “Image Ranking and Inclusion” method. First, suboptimal images are excluded based on the results of the 6 image exclusion filters. Remaining images are ranked using the specified Image Ranking and Inclusion method (if used). If images are ranked, a image count cutoff can be specified which includes only those images ranked in the top “x” images.

Image selection models can be applied at three points: 1) the curve calibration wizard, 2) the dose estimation wizard, and 3) manually within the metaphase image viewer. Several preset image selection models are available for use immediately after ADCI is installed. New models can be created within the metaphase image viewer.

Settings Menu

Change FP Filters	Statistics Options	ADCI Preferences
False positive (FP) filters further examine chromosomes flagged as dicentric by ADCI. DC chromosomes may be “downgraded” to monocentric if FP thresholds are met. These filters are applied in real time when querying DC frequencies of a sample, and thus can be changed at any time after a sample has been processed.	Calibration curves are fit to calibration sample data points using maximum-likelihood or least squares methods. Additionally, uncertainty related to the Poisson nature of dicentric yield and/or uncertainties related to the calibration curve can optionally be taken into account when performing dose estimation.	The username specified here is written to log files containing all major operations performed in a session. Laboratory name (if specified) can optionally be prepopulated into the description of newly created samples.












SVM Sigma Value

When a samples is processed, DC frequency is determined across 11 Sigma values (0.8-1.8). Sigma values effectively represent a tradeoff between increased sensitivity and reduced specificity in DC detection. A higher Sigma will generally find more DCs but will result in more false positives (FPs). A lower Sigma will generally result in a lower FP rate but may miss DCs. Internal testing has shown Sigma 1.4 or 1.5 balances these considerations.

Contents of Reports

Sample	Curve	Dose Estimation
<ol style="list-style-type: none"> 1) Table of contents 2) Dicentric distribution for all samples at each SVM Sigma value (plots and tabular data). 3) Filtering statistics for all samples across each specified statistic type (plots and tabular data). 	<ol style="list-style-type: none"> 1) Plot of all curves in report with legend. 2) A description of each curve. This information can also be found in console output when a curve is highlighted. 	<ol style="list-style-type: none"> 1) Description of all curves used 2) DC frequencies of each sample in tabular format 3) Dose estimation plot with legend 4) Estimated doses in tabular format

Starting Points

Task	Prerequisites	Shortcut
Create new sample	None	Click  → Browse to directory containing metaphase images
Process sample(s)	Unprocessed sample(s) in workspace	Highlight sample(s) to be processed → Click  → Highlight a sample in the process queue → click  OR click  to process all samples in the queue
View images in sample	A processed sample	Highlight sample → Click 
Create calibration curve	At least three processed samples	Wizards (menu bar) → Curve Calibration → Follow steps in wizard → Name curve in “Create a curve” dialog, click “Validate Data”, click “OK”
Estimate dose	Calibration curve, at least one test sample of unknown dose	Wizards (menu bar) → Dose Estimation → Follow steps in wizard → Click “OK” when prepopulated “Dose Calculator” dialog appears
Create and save sample report	At least one processed sample	Reports (menu bar) → Sample Report
Create and save curve report	At least one calibration curve	Reports (menu bar) → Curve Report
Create and save dose estimation report	Dose estimation results visible in plot	Reports (menu bar) → Dose Estimation Report
Open saved report	A previously saved report of any report type	Use Windows Explorer and browse to “Report Folder” specified during report creation → Enter appropriate “Report Name” directory → Open report.html.
Create a new image selection model	At least one processed sample	Highlight a sample → click  → Apply Image Filters (button)
Save sample	One processed sample	Highlight sample → click 
Save calibration curve	One calibration curve	Highlight calibration curve → click 
Save plot	Contents in plot display area	Click “Save As” button above plot area
Save content of console	Any console content	There is no built-in method to save console output to a text file. It is recommended to simply copy and paste console output to be saved, or create a report which will contain the desired console output.
Apply existing image selection model manually	One processed sample	Highlight sample → click  → Apply Image Filters (button) → Choose model from list → Click “OK” to apply. Note models applied in this way will be replaced by a new (or non-existent) selected model when using a wizard.
Apply image selection model using a wizard	At least 3 processed samples (curve calibration wizard) OR An existing curve and at least 1 test sample (dose estimation wizard)	When using either wizard, the image selection model chosen within it is applied to all samples selected in the wizard. Any previously applied image selection models will be replaced. Additionally, if no image selection model is chosen within the wizard, any previously applied image selection models will be removed.
Plot DC distribution of sample	One processed sample	Highlight sample → click  → Select SVM sigma value
Plot image filtering related statistics of sample	One processed sample	Highlight sample → click  → Select type of plot

This is a shortcut document which provides an overview of ADCI Version 1.2.

View full ADCI documentation: Adciwiki.CytoGnomix.com

