Curve calibration wizard

This wizard guides the user through the process of generating a calibration curve based on processed calibration samples. The wizard consists of a series of screens. To move forward to the next screen click "Next", and previous screens can be viewed and edited by clicking the arrow on the top left of the wizard dialog.

🥪 🐚 Curve Calibration Wizard

Introduction

You simply need to

prepared data

Step by Step guide

Open wizard

To open the wizard, click "Wizards" in the menu bar at the top of the software window and select "Curve Calibration".

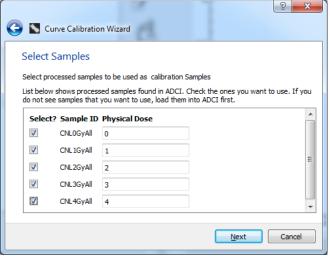
Introduction

Before proceeding to the next steps of the wizard, several prerequisites are necessary. Processed samples must be present within the main GUI. Make note of an appropriate image selection model and sigma value which will be chosen throughout the course of this wizard.

Select samples

Processed samples contained in the Sample list within the main GUI are listed here. If samples are present in the main GUI but the the list in this slide of the wizard is blank, the samples must first be processed. For each sample listed:

- Place a checkmark beside the sample if it should be included in the calibration curve.
- If Physical Dose has not been auto-filled, update it from "Unknown" to Grays (Gy) of radiation the sample was exposed to .
 Note it is only necessary to enter a number in this field, the unit (Gy) should be omitted.
- If Physical Dose has been auto-filled, check its correctness. Auto-filled dose may not be correct if its sample ID is not wellformed.



ADCI	
Samples Curves ADCI Process Queue	Wizards Settings Help
	Curve Calibration
Samples	Dose Estimation

This wizard will prepare data for curve calibration using samples loaded in ADCI.

When the wizard is finished successfully, it will lead you to the 'Create a Curve' dialog with

select samples for calibrations (processed samples only)

provide image selection model, if applicable
 specify a SVM sigma

? X

Cancel

Next

After these steps have been completed for all required samples, click "next" to move on to the next screen. If a value in the Physical Dose field is invalid, "Physical Dose" will be highlighed in red along with the ID of the sample in the offending line. offending line.

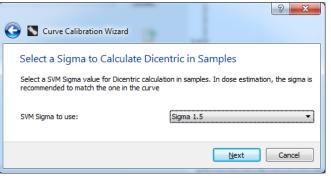
Apply image selection model

An image selection model may optionally be applied. If no image selection model is desired, click "next" to move on to the next screen. To use a model, highlight an entry within the list of "Available Image Selection Models". The description of the model, Image Exclusion Filters, and Image Ranking and Inclusion fields will be automatically populated using values from the selected image selection model. To clear a model, highlight "No image selection, using all images" and the fields on this screen of the wizard will be emptied.

	ation Wizard	
Apply Image S	election	
filter images in samp	les by using an image selection model	
	tion, specify a selection model file. Keep the input box empty o s will be used for dicentric calculation	otherwise.
Selection model to	use:	-
:ognomix/ADCIDE/	SelectionModels/TestCombinedModel250.adciimageselection	
Available Imag	ge Selection Models	
No image se	lection, using all images.	
TestCombine	edModel250, LW 1.5, CD 1.5, FD 1.5, Obj [0, Inf]	
TestFilterMor	del, LW 1.5, CD 1.5, FD 1.5, Obj [40, 60], Seg [3	
TestScoreMo	odel, Obj [0, Inf], Score Z 500	
Description of Description of in	the Image Selection Model nage model	
		E
Image Exclusio	on Filters	
Exclude Exclude	If Centromere Candidate Density z-score > 1.5	
Exclude	If Finite Difference z-score < -1.5	
Exclude	If Object Count < 40 🔿 or > 60 🚔	
Exclude	If Segmented Count < 35 🔷 or > 50 🜩	
Exclude	If Classified Object Ratio > 0.70 束	
Image Ranking Image quality rar Include if ranked		
Image quality rar	nking method: Group Bin Method	

Select an SVM sigma value

For more information on choosing an appropriate SVM sigma value to use please consult the SVM sigma page. As a general recommendation, we have found SVMs based on $1.4 \leftarrow \sigma \leftarrow 1.6$ maximize the combined true positive rate and positive predictive values compared to manual or ground truth scoring of dicentric chromosomes by experts ¹⁾.



Summary

Ensure your previous selections are correct on

this summary screen. Note values entered on previous screens can be edited by clicking the blue button on the top left of the wizard dialog. Click "Finish" to complete the wizard and bring up the prepopulated "Create a Curve" dialog.

📡 Curve Calil	bration Wizard		
Summary			
Please review vour	setting for Curve Calibration. Proceed if correct		
Samples to use:			
Sample ID	Physical Dose		
CNLOGyAll	0		
CNL 1GyAll	1		
CNL2GyAll	2		
CNL3GyAll	3		
CNL4GyAll	4		
Image selection r	model to use on samples:		
stCombinedModel250.adciimageselection			
SVM to use on Sa	amples: Sigma 1.5		
	Einish	Cancel	

Prepopulated create a curve dialog

The create a curve dialog has been prepopulated based on your selections during the wizard. To finalize the creation of the curve, it is only necessary to provide a unique ID for the curve, validate the data, and click "OK". Although it should not be necessary for completion of this dialog since it has been prepopulated by the wizard, more information on its contents can be found under the "Generate curve based on processed calibration samples" heading within the calibration curve page.

 Specify an unique identify for the new curve

A name for the curve to be created. This identifier will appear under "Curve identity" within the list of curves in the main GUI.

• Validate data

Data within the dialog must be validated before "OK" can be clicked. Click "Validate". All cells within the Dose-Response list should turn green. Click "OK" to finalize the creation of the curve.

Click "OK" and save curve
 The curve is now created and has been
 added to the workspace. If you would like
 to save the curve for future use after the
 current session, you can save it now.
 Alternatively, it can be saved later by
 clicking the icon.

Fit a curve								
·	TestCurve							
Add a	dd a brief description for the curve to be created							
Curv	ve fitting by Maximum-Li	kelihood						
SVN App	Curve fitting SVM: Sigma 1.5 Applied image selection model Dose-Response data							
	Dose	Response (DC/Cell)	Cells (Images)					
1	0	0.256892	798					
2	1	0.307967	841					
3	2	0.350402	996					
4	3	0.515993	1188					
5	4	0.538226	1635					
6	0.5	0.316580	1532 🚽					
⊕ Input mport Remove Validate osage Range (Gy): [0, 4] Degree of freedom: 3								

1)

Peter K. Rogan, Yanxin Li, Ruth C. Wilkins, Farrah N. Flegal, and Joan H. M. Knoll Radiation Dose Estimation by Automated Cytogenetic Biodosimetry Radiat Prot Dosimetry (2016) 172 (1-3): 207-217

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