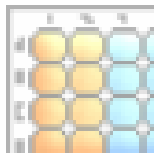


# ADAP 2.0: Measurement and Analysis Software for Biochrom Anthos Microplate Readers




ADAP

Tristana von Will

Microplate Instrumentation Applications Specialist

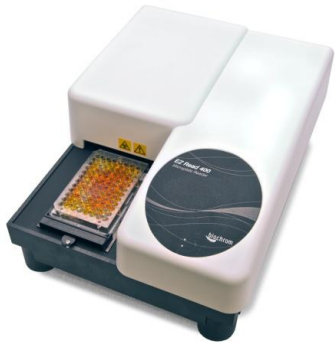
# Outline

- Key Features ADAP 2.0 Software
  
  - How to use ADAP 2.0 Basic for Basic Measurements
  
  - How to set up a method in ADAP 2.0 Plus Software
  
  - How to demonstrate ADAP 2.0 Basic and Plus Software
  
  - Your questions?
    - Use the chat function on Go To Meeting to ask questions. All questions will be addressed either at the end of the meeting or offline by email.
- 

# ADAP 2.0 Software

Software is used to remotely control readers for quick measurements with optional upgrade to Plus version for data analysis

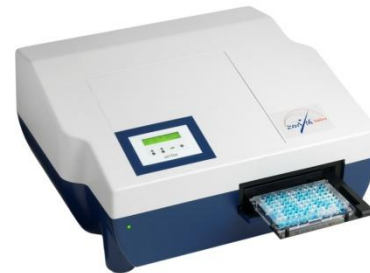
**EZ Read 400**



**Anthos 2020**



**Zenyth 340**



**Zenyth 200**



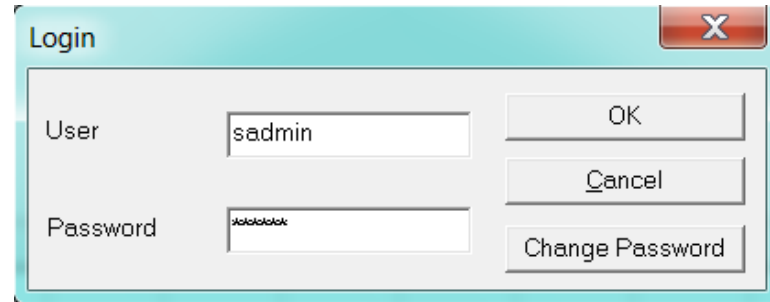


- A demo procedure exists to allow exploration of the features of ADAP software without connecting to an instrument.

# Starting up ADAP 2.0 Software



Login:  
Username: sadmin  
Password: sadmin

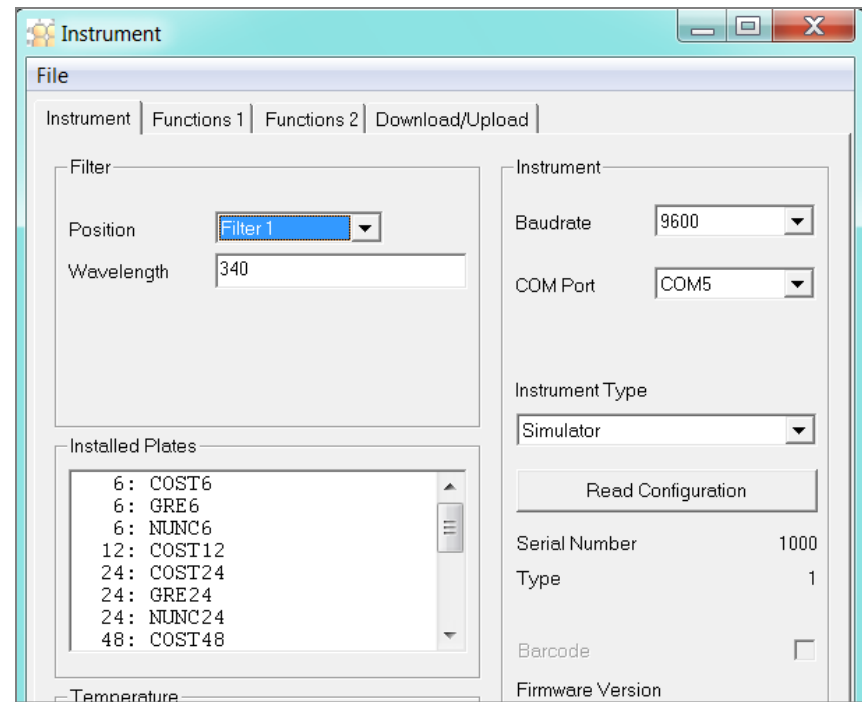
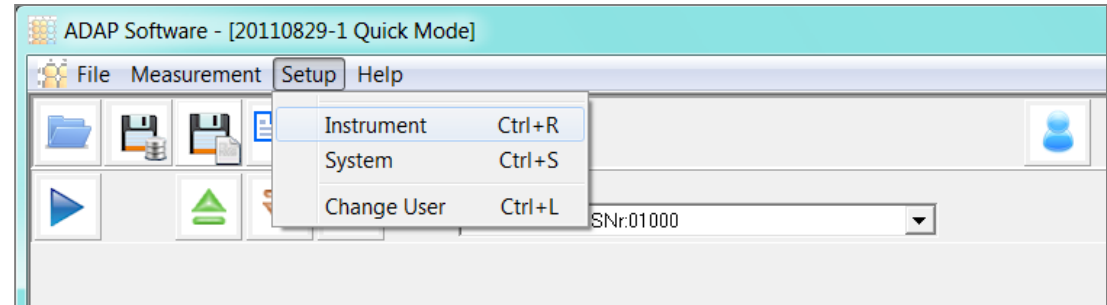
A screenshot of a 'Login' dialog box. The dialog has a title bar with 'Login' and a close button. It contains two input fields: 'User' with the text 'sadmin' and 'Password' with masked characters 'sadmin'. To the right of the input fields are three buttons: 'OK', 'Cancel', and 'Change Password'.

All ADAP 2.0 modules control user access at different authorisations levels allowing users to work within FDA 21 CFR, part 11 compliance.

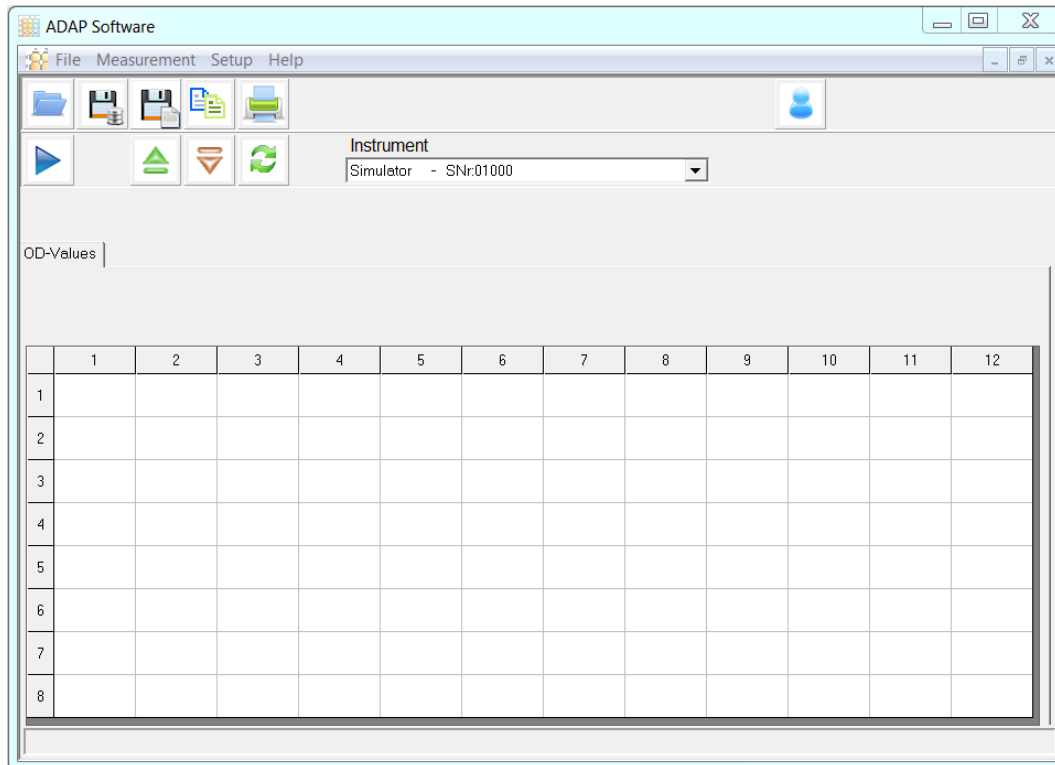
# Accessing the demonstration mode









1. Select Setup>Instrument
2. Select Simulator
3. Select File>Save

The features of ADAP Basic will be presented with an option to simulate random measurements




# ADAP 2.0 Basic Front page

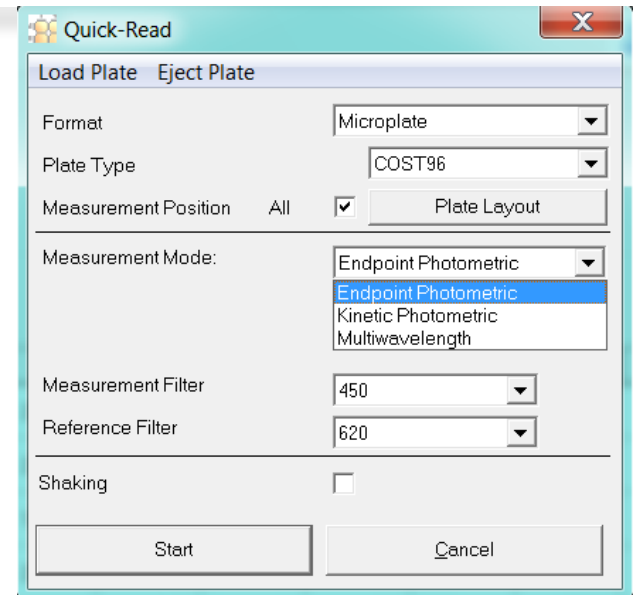


| Icon  | Function                         |
|---|----------------------------------|
|    | <i>Save data</i>                 |
|    | <i>Copy data</i>                 |
|    | <i>Print data</i>                |
|    | <i>Setup a quick measurement</i> |
|    | <i>Load plate</i>                |
|   | <i>Eject Plate</i>               |
|  | <i>Initiate reader</i>           |
|  | <i>Change users</i>              |



# Quick Measurements

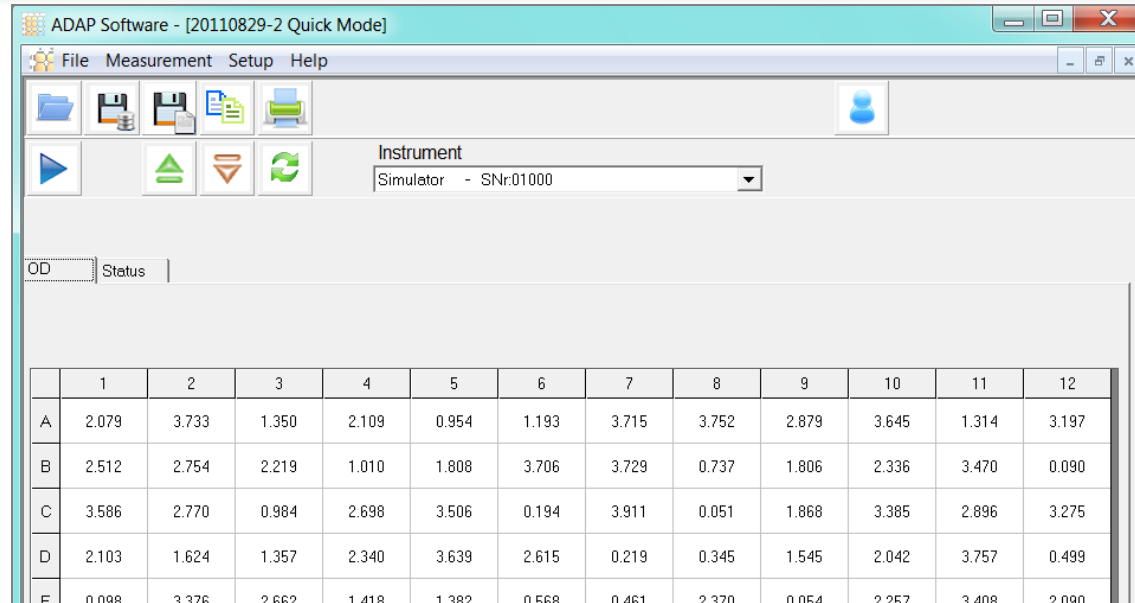
1. Select quick measurement icon 
2. Select **Plate Type**
3. Select **Measurement Position**
4. Select **Measurement Mode**
  - a) **Endpoint Photometric** for single endpoint wavelength measurements (with or without a reference filter\*)
  - b) **Kinetic Photometric** for a series of measurements over a specified length of time
  - c) **Multiwavelength** for one time measurement of more one wavelength
5. Select **Start**



# Why use a reference filter/wavelength?

- Like a spectrophotometer it is important to use a reference measurement.
- Reference measurements can be a blank within the plate layout (which is automatically subtracted from all the non-blank measurements on the plate).
  - Eliminates interference from other absorbing substances
- Or a reference wavelength/filter can be used. A wavelength is chosen where the sample of interest does not absorb. This measurement is automatically subtracted from the measurement wavelength/filter.
  - Eliminates interference from the plate, dust lint or other irregularities in the well.
- Good practice is to use both a blank and a reference wavelength.

# Presentation of Results



ADAP Software - [20110829-2 Quick Mode]

File Measurement Setup Help

Instrument: Simulator - SNr:01000

OD | Status

|   | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| A | 2.079 | 3.733 | 1.350 | 2.109 | 0.954 | 1.193 | 3.715 | 3.752 | 2.879 | 3.645 | 1.314 | 3.197 |
| B | 2.512 | 2.754 | 2.219 | 1.010 | 1.808 | 3.706 | 3.729 | 0.737 | 1.806 | 2.336 | 3.470 | 0.090 |
| C | 3.586 | 2.770 | 0.984 | 2.698 | 3.506 | 0.194 | 3.911 | 0.051 | 1.868 | 3.385 | 2.896 | 3.275 |
| D | 2.103 | 1.624 | 1.357 | 2.340 | 3.639 | 2.615 | 0.219 | 0.345 | 1.545 | 2.042 | 3.757 | 0.499 |
| E | 0.098 | 3.376 | 2.662 | 1.418 | 1.382 | 0.568 | 0.461 | 2.320 | 0.054 | 2.257 | 3.408 | 2.090 |

- OD represents absorbance measurements with reference measurements subtracted
- Status represents instrument error that may have occurred during the measurements during the measurement of specific wells



# Presentation of results

- Data can be printed using the print icon:





| ADAP Software 2.0                    |                    |                     |                     |                     |                     |                                      |                     |                     |                     |                     |                     |                     |
|--------------------------------------|--------------------|---------------------|---------------------|---------------------|---------------------|--------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Result-List: Quick Mode - 20110829-1 |                    |                     |                     |                     |                     |                                      |                     |                     |                     |                     |                     |                     |
| Name : Will                          |                    |                     |                     |                     |                     | Date of Meas. : 29 August 2011 16:56 |                     |                     |                     |                     |                     |                     |
| Date : 29 August 2011 16:56          |                    |                     |                     |                     |                     | Page : 1                             |                     |                     |                     |                     |                     |                     |
| Legend                               |                    |                     |                     |                     |                     | Information                          |                     |                     |                     |                     |                     |                     |
| Plate Layout / Sample-ID             |                    |                     |                     |                     |                     | Filter : 405 nm                      |                     |                     |                     |                     |                     |                     |
| OD                                   |                    |                     |                     |                     |                     | Instrument : Simulator - SNr:01000   |                     |                     |                     |                     |                     |                     |
| Status                               |                    |                     |                     |                     |                     |                                      |                     |                     |                     |                     |                     |                     |
|                                      | 1                  | 2                   | 3                   | 4                   | 5                   | 6                                    | 7                   | 8                   | 9                   | 10                  | 11                  | 12                  |
| A                                    | PR1<br>0.668<br>OK | PR9<br>0.348<br>OK  | PR17<br>3.905<br>OK | PR25<br>2.593<br>OK | PR33<br>0.988<br>OK | PR41<br>0.819<br>OK                  | PR49<br>3.115<br>OK | PR57<br>0.355<br>OK | PR65<br>1.759<br>OK | PR73<br>3.652<br>OK | PR81<br>1.210<br>OK | PR89<br>0.169<br>OK |
| B                                    | PR2<br>2.367<br>OK | PR10<br>2.628<br>OK | PR18<br>3.053<br>OK | PR26<br>2.836<br>OK | PR34<br>0.252<br>OK | PR42<br>3.883<br>OK                  | PR50<br>0.845<br>OK | PR58<br>1.919<br>OK | PR66<br>2.230<br>OK | PR74<br>2.465<br>OK | PR82<br>0.962<br>OK | PR90<br>1.736<br>OK |
| C                                    | PR3<br>3.001<br>OK | PR11<br>1.302<br>OK | PR19<br>3.546<br>OK | PR27<br>1.089<br>OK | PR35<br>2.478<br>OK | PR43<br>1.707<br>OK                  | PR51<br>3.483<br>OK | PR59<br>0.833<br>OK | PR67<br>3.566<br>OK | PR75<br>0.566<br>OK | PR83<br>3.381<br>OK | PR91<br>3.429<br>OK |
| D                                    | PR4<br>2.006<br>OK | PR12<br>3.248<br>OK | PR20<br>3.191<br>OK | PR28<br>2.600<br>OK | PR36<br>1.915<br>OK | PR44<br>3.577<br>OK                  | PR52<br>1.078<br>OK | PR60<br>3.206<br>OK | PR68<br>0.652<br>OK | PR76<br>3.649<br>OK | PR84<br>2.176<br>OK | PR92<br>1.476<br>OK |
| E                                    | PR5<br>0.622<br>OK | PR13<br>0.962<br>OK | PR21<br>1.855<br>OK | PR29<br>1.720<br>OK | PR37<br>3.655<br>OK | PR45<br>3.771<br>OK                  | PR53<br>0.115<br>OK | PR61<br>3.629<br>OK | PR69<br>1.578<br>OK | PR77<br>1.872<br>OK | PR85<br>1.746<br>OK | PR93<br>0.320<br>OK |
| F                                    | PR6<br>2.606<br>OK | PR14<br>1.921<br>OK | PR22<br>2.857<br>OK | PR30<br>1.219<br>OK | PR38<br>3.187<br>OK | PR46<br>2.419<br>OK                  | PR54<br>2.431<br>OK | PR62<br>3.923<br>OK | PR70<br>0.902<br>OK | PR78<br>1.489<br>OK | PR86<br>3.495<br>OK | PR94<br>1.169<br>OK |
| G                                    | PR7<br>2.074<br>OK | PR15<br>0.558<br>OK | PR23<br>2.562<br>OK | PR31<br>3.024<br>OK | PR39<br>3.695<br>OK | PR47<br>1.091<br>OK                  | PR55<br>3.947<br>OK | PR63<br>0.427<br>OK | PR71<br>3.287<br>OK | PR79<br>1.476<br>OK | PR87<br>1.594<br>OK | PR95<br>2.214<br>OK |
| H                                    | PR8<br>0.351<br>OK | PR16<br>3.209<br>OK | PR24<br>1.034<br>OK | PR32<br>3.733<br>OK | PR40<br>2.997<br>OK | PR48<br>1.484<br>OK                  | PR56<br>0.108<br>OK | PR64<br>3.196<br>OK | PR72<br>3.401<br>OK | PR80<br>1.330<br>OK | PR88<br>1.060<br>OK | PR96<br>3.882<br>OK |

# Presentation of Kinetic Data

- Data is presented as cycles equivalent to number of measurements
- Copy active window-copies only the shown matrix to the clipboard
- Copy – copies all measurements

| Status |  | Raw Data   Kinetic Graph |       |              |       |             |       |       |       |                |       |       |       |
|--------|--|--------------------------|-------|--------------|-------|-------------|-------|-------|-------|----------------|-------|-------|-------|
|        |  | ← Previous Cycle         |       | Next Cycle → |       | Cycle 1 / 5 |       |       |       | Print Raw Data |       |       |       |
|        |  | 1                        | 2     | 3            | 4     | 5           | 6     | 7     | 8     | 9              | 10    | 11    | 12    |
| A      |  | 0.207                    | 2.399 | 3.869        | 1.971 | 2.187       | 1.791 | 0.772 | 0.816 | 0.627          | 2.650 | 2.358 | 1.487 |
| B      |  | 0.587                    | 2.077 | 2.471        | 0.999 | 1.377       | 1.086 | 3.254 | 3.384 | 1.533          | 2.160 | 0.971 | 2.705 |
| C      |  | 0.281                    | 1.377 | 0.131        | 1.206 | 1.591       | 0.735 | 3.017 | 1.212 | 0.965          | 0.292 | 3.757 | 3.420 |
| D      |  | 1.072                    | 3.760 | 2.058        | 2.192 | 0.365       | 1.157 | 1.732 | 2.485 | 0.794          | 2.166 | 1.133 | 1.038 |
| E      |  | 2.750                    | 3.806 | 0.633        | 0.437 | 1.356       | 2.054 | 2.266 | 2.697 | 0.237          | 3.034 | 2.654 | 2.965 |
| F      |  | 0.894                    | 3.402 | 2.354        | 1.994 | 3.801       | 3.551 | 0.742 | 1.988 | 3.353          | 3.265 | 3.558 | 0.463 |
| G      |  | 0.797                    | 3.434 | 0.243        | 2.735 | 1.252       | 3.480 | 2.193 | 3.671 | 2.972          | 2.082 | 3.041 | 3.321 |
| H      |  | 0.947                    | 2.869 | 0.120        | 3.052 | 0.984       | 0.667 | 2.197 | 2.827 | 2.397          | 1.945 | 2.637 | 2.229 |


# Presentation of Kinetic Data

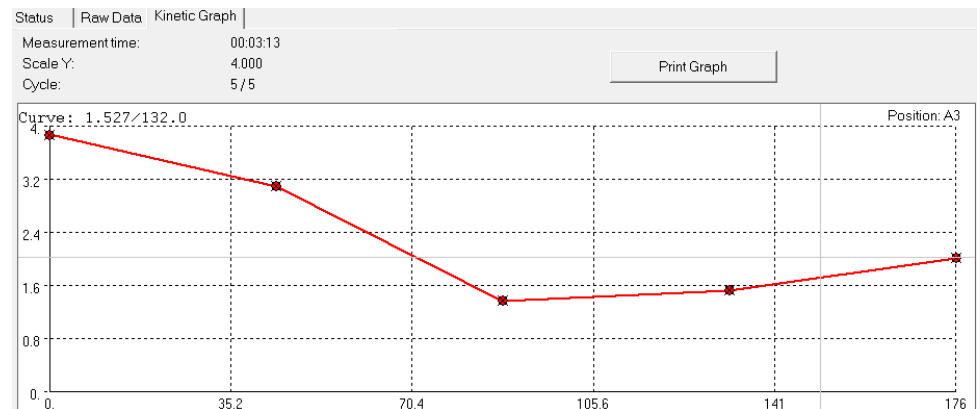
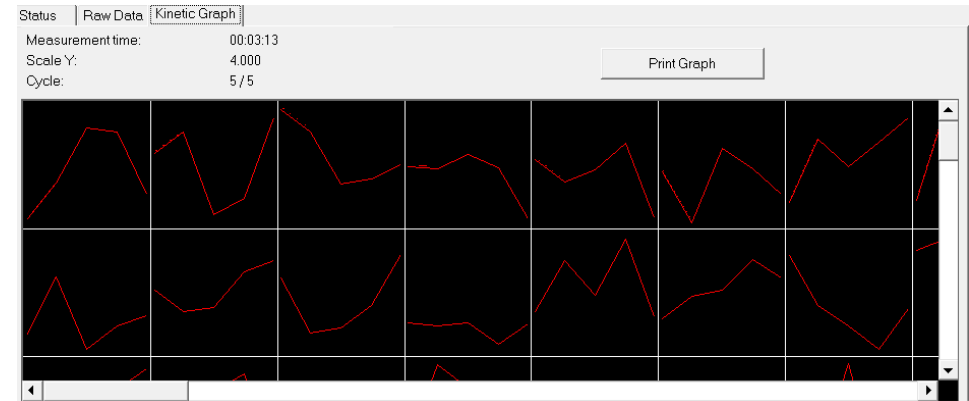
- Select  and **Copy** in order to copy all kinetic data to the clipboard as a list
- Select  and **Copy Active Window** to copy only selected cycle to the clipboard as a matrix

|          |                 |       |       |       |       |    |   |
|----------|-----------------|-------|-------|-------|-------|----|---|
| ANTHOS   | KF 5 30 450 620 |       |       |       | 8     | 12 | 5 |
|          |                 |       |       |       |       |    |   |
| Time     | 0               | 44    | 88    | 132   | 176   |    |   |
| Temp     | 0               | 0     | 0     | 0     | 0     |    |   |
| Well 1.1 | 0.207           | 1.411 | 3.231 | 3.091 | 1.041 |    |   |
|          | 0               | 0     | 0     | 0     | 0     |    |   |
| Well 1.2 | 2.399           | 3.087 | 0.343 | 0.892 | 3.584 |    |   |
|          | 0               | 0     | 0     | 0     | 0     |    |   |
| Well 1.3 | 3.869           | 3.092 | 1.37  | 1.527 | 2.011 |    |   |
|          | 0               | 0     | 0     | 0     | 0     |    |   |
| Well 1.4 | 1.971           | 1.877 | 2.344 | 1.902 | 0.206 |    |   |
|          | 0               | 0     | 0     | 0     | 0     |    |   |
| Well 1.5 | 2.187           | 1.432 | 1.814 | 2.744 | 0.256 |    |   |

|            |            |                 |       |       |  |
|------------|------------|-----------------|-------|-------|--|
| 30/08/2011 | 8:36:01 pm | ID-P20110830-19 |       |       |  |
| 0.207      | 2.399      | 3.869           | 1.971 | 2.187 |  |
| 0.587      | 2.077      | 2.471           | 0.999 | 1.377 |  |
| 0.281      | 1.377      | 0.131           | 1.206 | 1.591 |  |
| 1.072      | 3.76       | 2.058           | 2.192 | 0.365 |  |
| 2.75       | 3.806      | 0.633           | 0.437 | 1.356 |  |
| 0.894      | 3.402      | 2.354           | 1.994 | 3.801 |  |
| 0.797      | 3.434      | 0.243           | 2.735 | 1.252 |  |
| 0.947      | 2.869      | 0.12            | 3.052 | 0.984 |  |

# Presentation of Kinetic Data

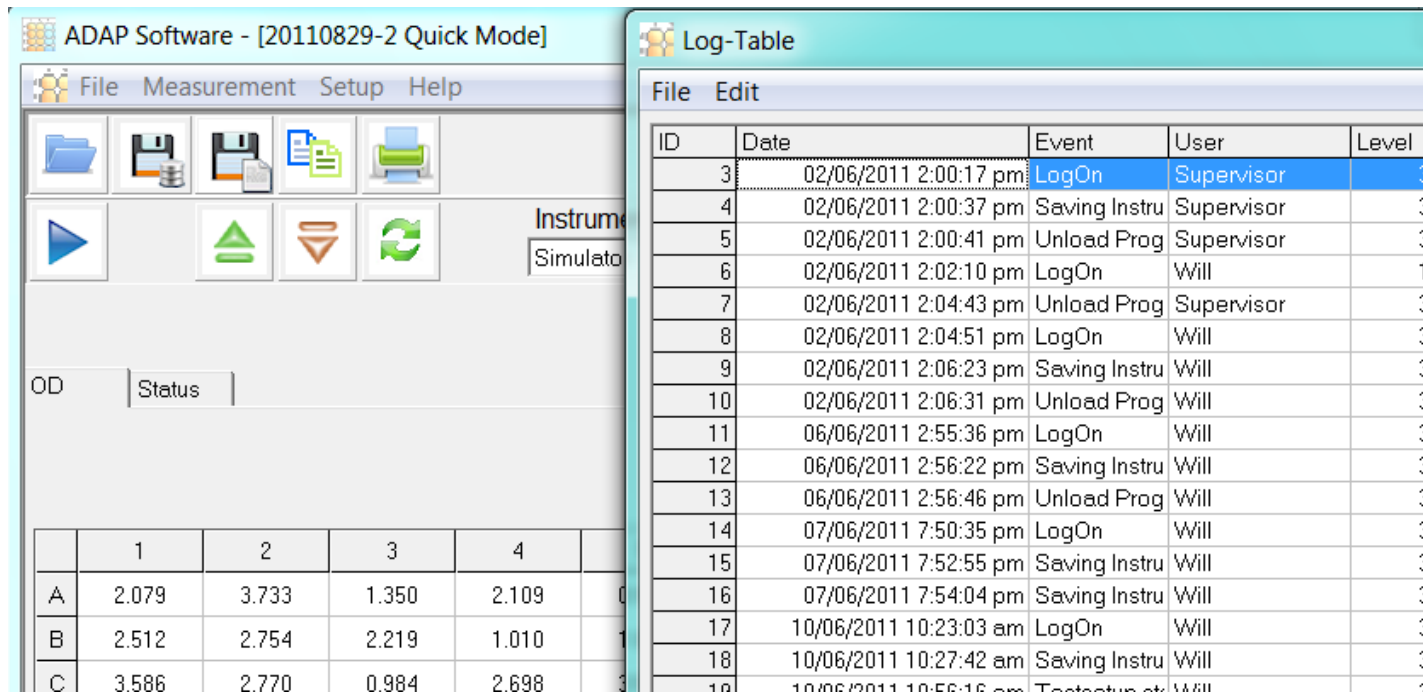
- Kinetic data is represented as a graph.
- Clicking on a specific well represents a detailed graph.
-  and Copy Active Window copies the graph(s) to the clipboard.





# Other features

- View log table File> View Log Table shows who, what and when software was used.



The screenshot shows the ADAP Software interface with a 'Log-Table' window open. The main window displays a table with columns 'OD' and 'Status', and rows A, B, and C. The 'Log-Table' window shows a list of events with columns 'ID', 'Date', 'Event', 'User', and 'Level'.

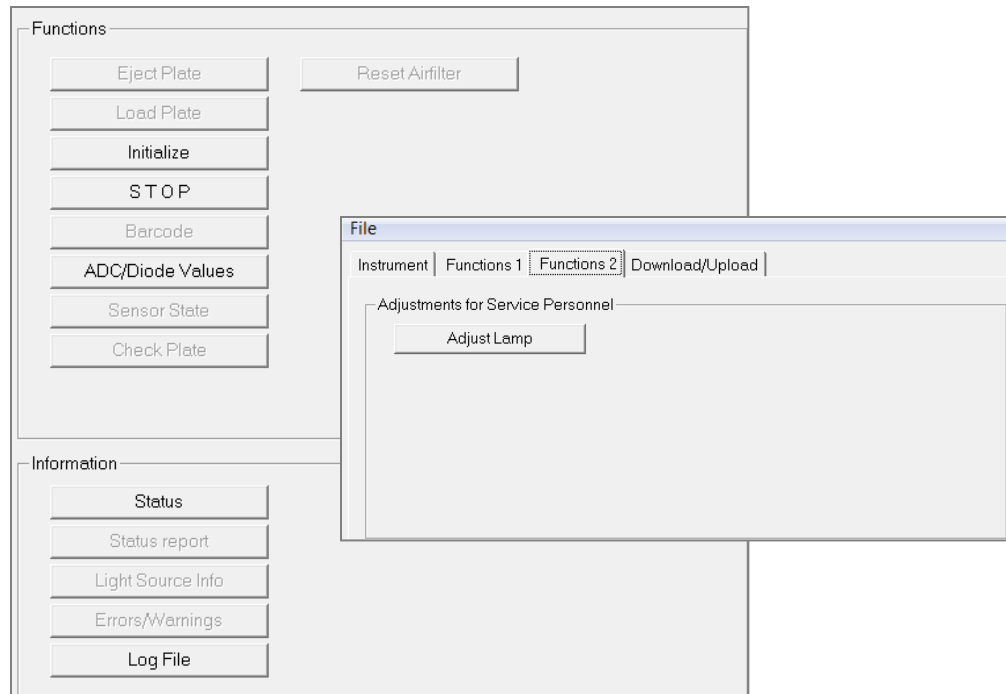
| ID | Date                   | Event         | User       | Level |
|----|------------------------|---------------|------------|-------|
| 3  | 02/06/2011 2:00:17 pm  | LogOn         | Supervisor | 3     |
| 4  | 02/06/2011 2:00:37 pm  | Saving Instru | Supervisor | 3     |
| 5  | 02/06/2011 2:00:41 pm  | Unload Prog   | Supervisor | 3     |
| 6  | 02/06/2011 2:02:10 pm  | LogOn         | Will       | 1     |
| 7  | 02/06/2011 2:04:43 pm  | Unload Prog   | Supervisor | 3     |
| 8  | 02/06/2011 2:04:51 pm  | LogOn         | Will       | 3     |
| 9  | 02/06/2011 2:06:23 pm  | Saving Instru | Will       | 3     |
| 10 | 02/06/2011 2:06:31 pm  | Unload Prog   | Will       | 3     |
| 11 | 06/06/2011 2:55:36 pm  | LogOn         | Will       | 3     |
| 12 | 06/06/2011 2:56:22 pm  | Saving Instru | Will       | 3     |
| 13 | 06/06/2011 2:56:46 pm  | Unload Prog   | Will       | 3     |
| 14 | 07/06/2011 7:50:35 pm  | LogOn         | Will       | 3     |
| 15 | 07/06/2011 7:52:55 pm  | Saving Instru | Will       | 3     |
| 16 | 07/06/2011 7:54:04 pm  | Saving Instru | Will       | 3     |
| 17 | 10/06/2011 10:23:03 am | LogOn         | Will       | 3     |
| 18 | 10/06/2011 10:27:42 am | Saving Instru | Will       | 3     |
| 19 | 10/06/2011 10:55:18 am | Test status   | Will       | 3     |

- Data can be saved or copied for printing

# Other features

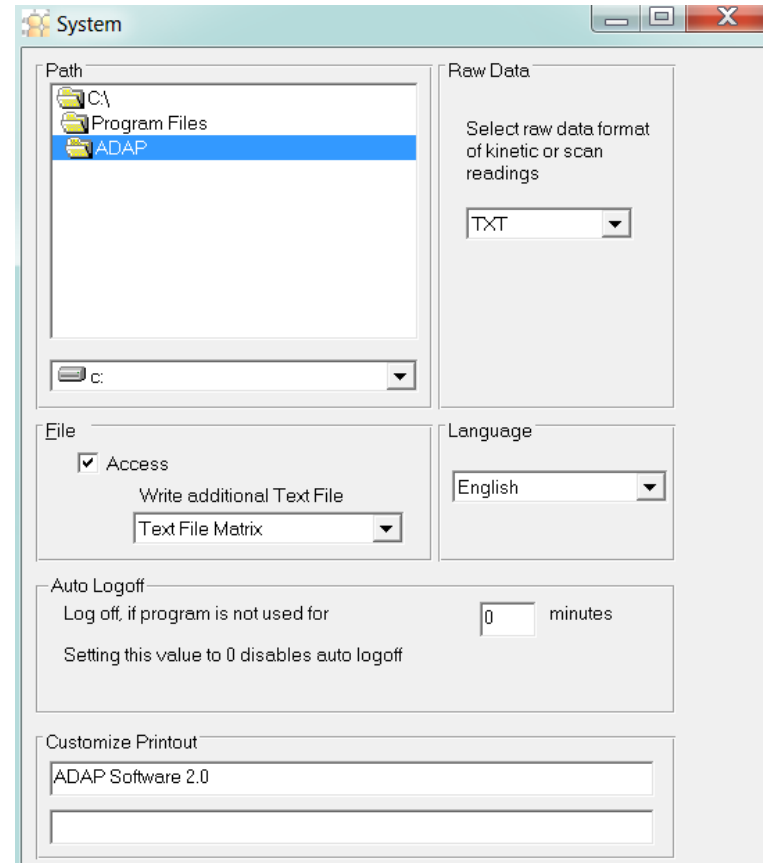
- In Setup> Instrument there are two tabs that can be used to assess the performance of the instrument:
- Function 1
- Function 2

Note: Functionality of the setup functions is dependent on the instrument in use.




# Other features

- Go to Setup>System to customize data export and printouts



## Summary: Features of ADAP 2.0 Basic

- User and password controlled data with log file
  - Intuitive interface
  - Easy setup of quick measurements: endpoint, kinetic and multiwavelength
  - Simple export of data into Excel
  - Detailed, customizable printout
- 
- Decorative blue wavy lines at the bottom of the slide, consisting of several overlapping, flowing curves in various shades of blue.

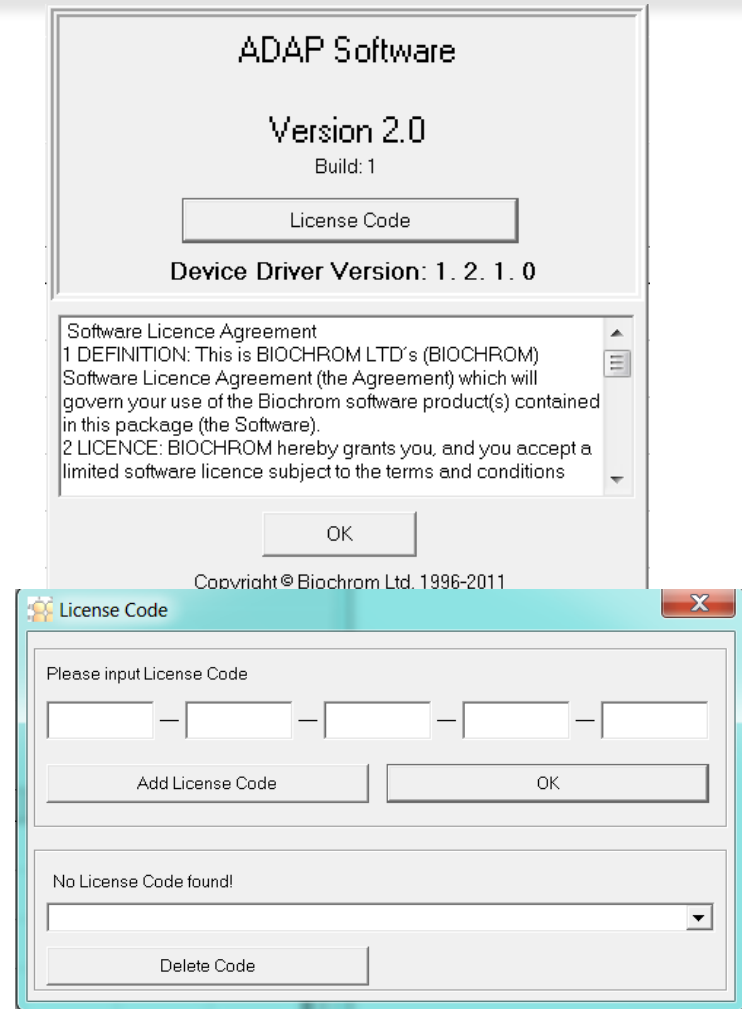
# ADAP 2.0 Levels are Accessed by License Codes

| ADAP 2.0 versions | License code                      | Features  | Instrument Compatibility                              |
|-------------------|-----------------------------------|---|---|
| Basic             | No code required                  | Reader control  | EZ Read 400<br>Zenyth 340/200<br>Anthos 2010/<br>2020 |
| Plus              | BRHPG-PIPEO-DOGNK-<br>KEKDL-DSGKA | Same as Basic AND: <ul style="list-style-type: none"><li>• Quantitative analysis (Using a standard curve)</li><li>• Qualitative analysis (using positive and negative controls)</li><li>• Quality control</li></ul> | EZ Read 400<br>Anthos 2010/<br>2020<br>Zenyth 340     |

# Accessing the features of ADAP 2.0 Plus in Demo Mode



- Select **Help>About** to enter a demo license code.
- Enter in the following license code:  
**BRHPG-PIPEO-DOGNK-KEKDL-DSGKA**
- Select **OK**
- Go to **Setup> Instrument> Read Configuration**

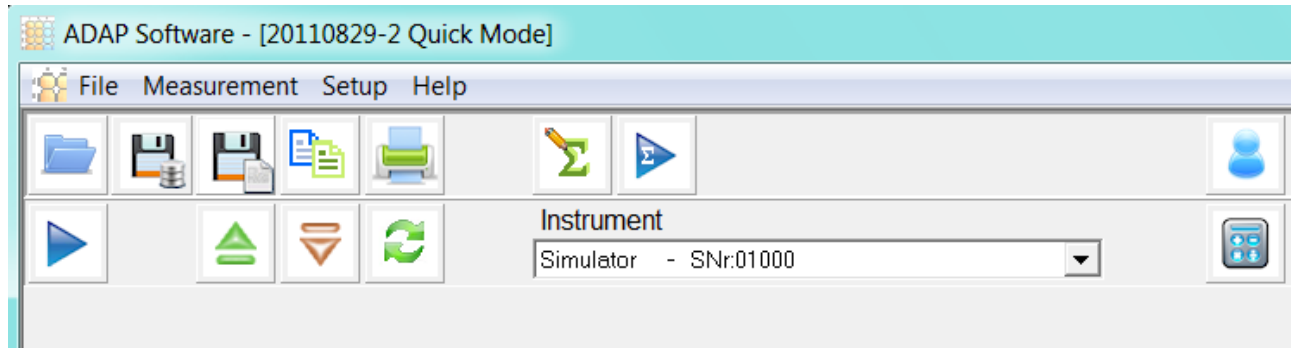





# Key Feature of ADAP 2.0 Plus

## Test Definition (Analysis method)

- Configure plate layout
- Quantitative with essential curve-fitting
- Qualitative with 5 categories
- Transformation formulas
- Replicate verification formulas
- Test validation formulas

# ADAP 2.0 Plus Front Page



| Icon  | Function   |
|---|--|
|    | <i>Opens method setup</i>  |
|   | <i>Runs a single test using a previously defined method</i>                      |
|  | <i>Recalculated results based on manual elimination or restoration of wells.</i> |



# Method Setup: General

- Name test
- Set measurement and reference filters
- Set instrument
- Define Plate Layout
- Set lot# dependent concentrations (e.g. antibody lots)
- Set test specific parameters (e.g. calibration factors)
- Set shaking (Zenyth 340 only)

General | Quantitative | Qualitative | Options | Rejection / Validation

**Test Name**

Edit / Define Layout

**Instrument**

Simulator - SNr:01000

Data Transfer Mode: Plates

**Lot#**

Lot# Dependent Concentration

Yes  No

**Shaking**

Yes

Time: 5

Low  Medium  High

**Measurement Filter / Reference Filter**

Measurement Filter:  nm

Reference Filter:  nm

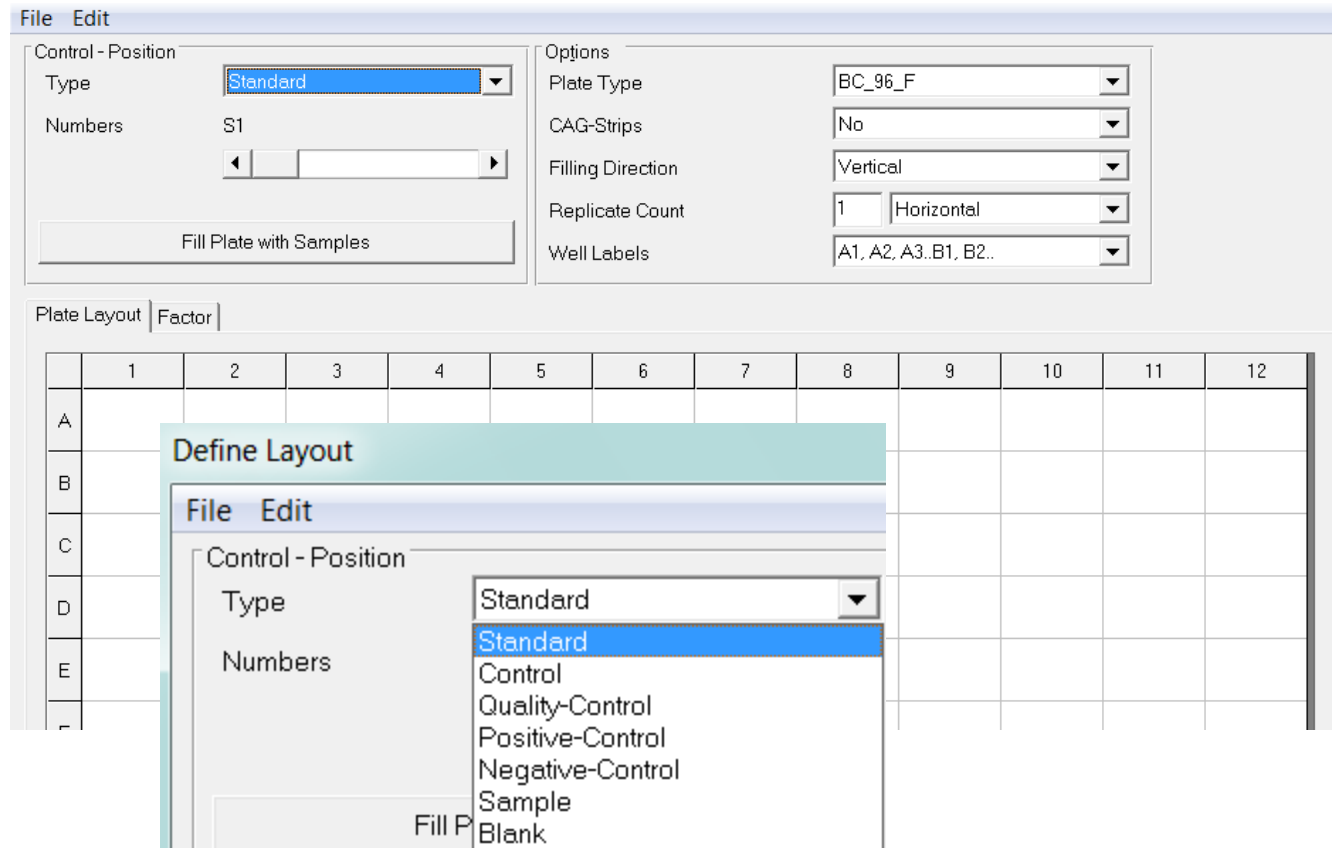
**Parameter**

|     |                      |     |                      |
|-----|----------------------|-----|----------------------|
| V1: | <input type="text"/> | V5: | <input type="text"/> |
| V2: | <input type="text"/> | V6: | <input type="text"/> |
| V3: | <input type="text"/> | V7: | <input type="text"/> |
| V4: | <input type="text"/> | V8: | <input type="text"/> |

Check Variables  Yes  No

# Plate Layout

- Place controls and samples in the plate
- Use dilution factors
- Preset replicates for easy plate filling



File Edit

Control - Position

Type

Numbers S1

Fill Plate with Samples

Options

Plate Type

CAG-Strips

Filling Direction

Replicate Count

Well Labels

Plate Layout | Factor

|   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|----|----|----|
| A |   |   |   |   |   |   |   |   |   |    |    |    |
| B |   |   |   |   |   |   |   |   |   |    |    |    |
| C |   |   |   |   |   |   |   |   |   |    |    |    |
| D |   |   |   |   |   |   |   |   |   |    |    |    |
| E |   |   |   |   |   |   |   |   |   |    |    |    |
| F |   |   |   |   |   |   |   |   |   |    |    |    |

Define Layout

File Edit

Control - Position

Type

Numbers

Fill Plate with Samples

Standard

Control

Quality-Control

Positive-Control

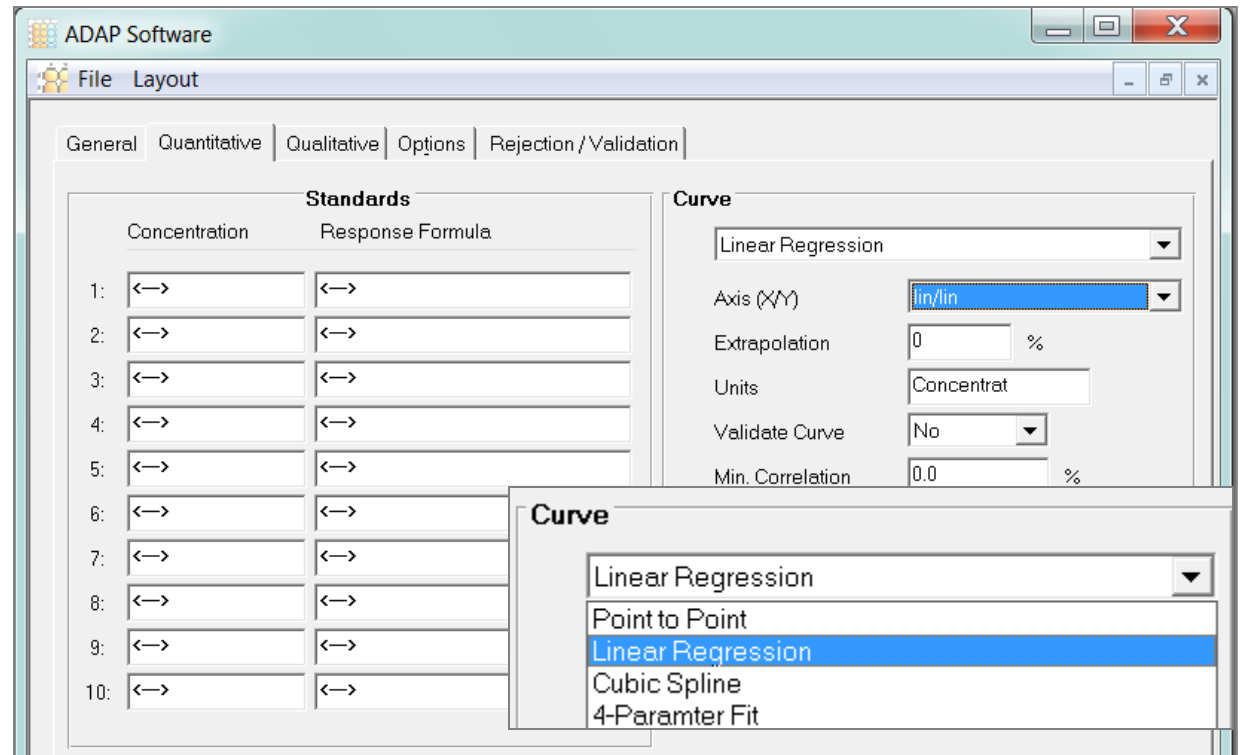
Negative-Control

Sample

Blank

# Quantitative Analysis

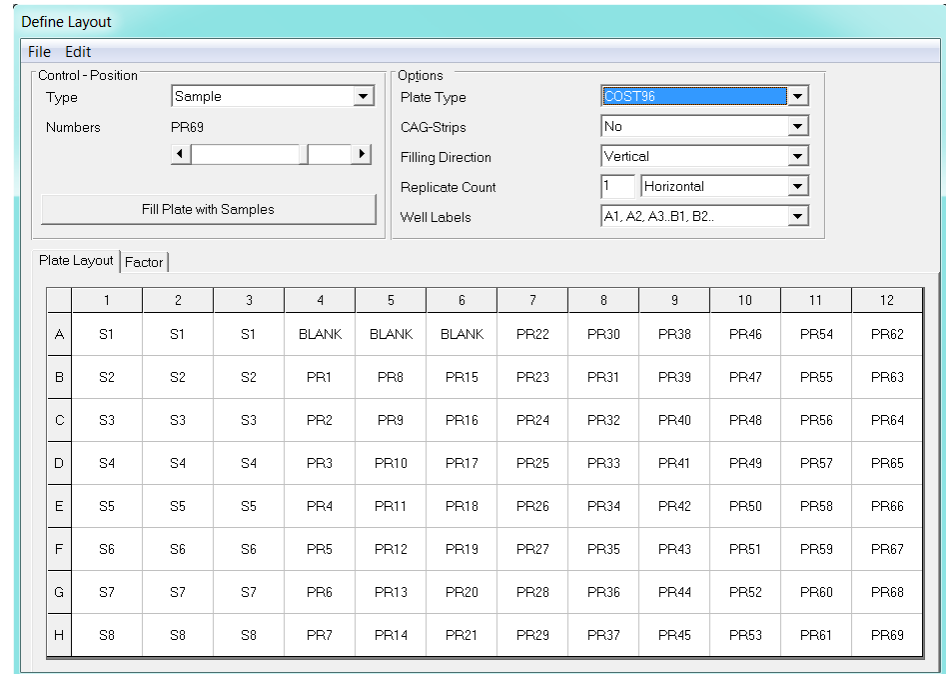
- Up to 10 standards can be defined
- Curve-fitting with four options
- Linear or log axes
- Curve validation
- Used for many assay types including total protein and ELISAs.



**Note:** 4- parameter fit is a key curve-fitting algorithm for many ELISA assays and other competitive binding assays

# Quantitative Analysis- An example: The Bradford Assay

- The Bradford Assay is a total protein assay used to determine the total amount of all protein in a sample.
- The Bradford assay uses known concentrations of bovine serum albumin (BSA) to draw a standard curve by which to calculate the concentrations of samples.



Define Layout

File Edit

Control - Position  
Type: Sample  
Numbers: PR69  
Fill Plate with Samples

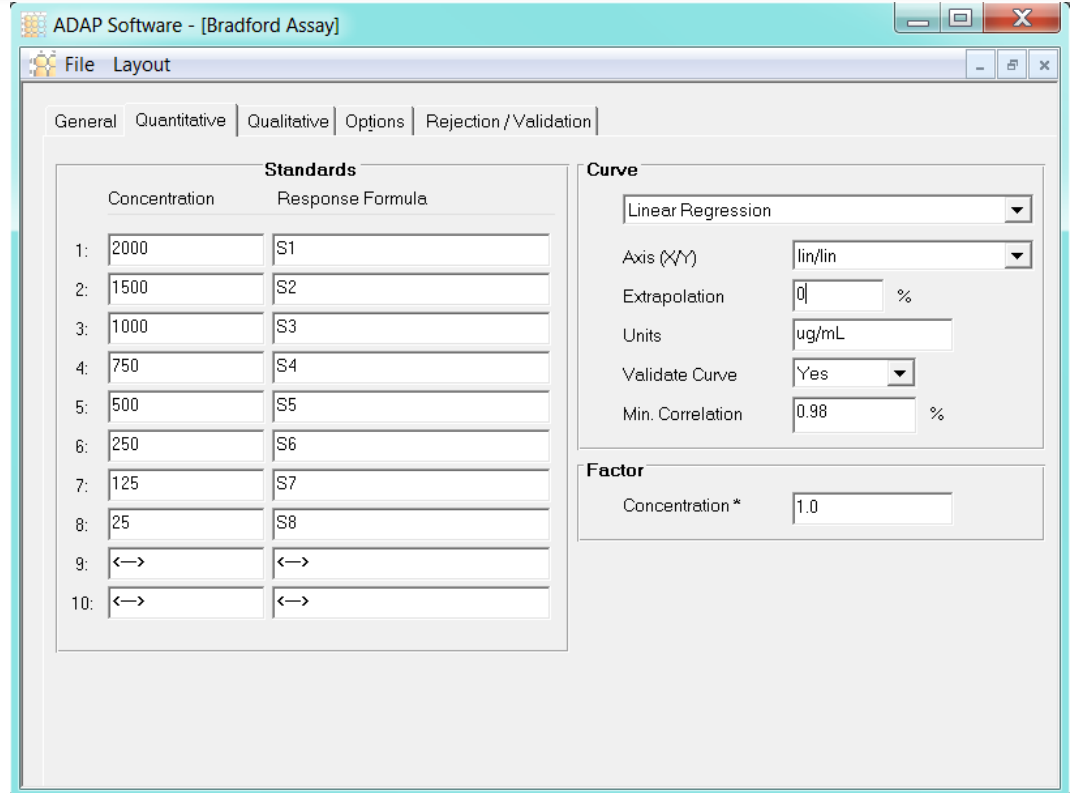
Options  
Plate Type: COST96  
CAG-Strips: No  
Filling Direction: Vertical  
Replicate Count: 1 Horizontal  
Well Labels: A1, A2, A3, B1, B2, ..

Plate Layout | Factor

|   | 1  | 2  | 3  | 4     | 5     | 6     | 7    | 8    | 9    | 10   | 11   | 12   |
|---|----|----|----|-------|-------|-------|------|------|------|------|------|------|
| A | S1 | S1 | S1 | BLANK | BLANK | BLANK | PR22 | PR30 | PR38 | PR46 | PR54 | PR62 |
| B | S2 | S2 | S2 | PR1   | PR8   | PR15  | PR23 | PR31 | PR39 | PR47 | PR55 | PR63 |
| C | S3 | S3 | S3 | PR2   | PR9   | PR16  | PR24 | PR32 | PR40 | PR48 | PR56 | PR64 |
| D | S4 | S4 | S4 | PR3   | PR10  | PR17  | PR25 | PR33 | PR41 | PR49 | PR57 | PR65 |
| E | S5 | S5 | S5 | PR4   | PR11  | PR18  | PR26 | PR34 | PR42 | PR50 | PR58 | PR66 |
| F | S6 | S6 | S6 | PR5   | PR12  | PR19  | PR27 | PR35 | PR43 | PR51 | PR59 | PR67 |
| G | S7 | S7 | S7 | PR6   | PR13  | PR20  | PR28 | PR36 | PR44 | PR52 | PR60 | PR68 |
| H | S8 | S8 | S8 | PR7   | PR14  | PR21  | PR29 | PR37 | PR45 | PR53 | PR61 | PR69 |

# Quantitative Analysis- An example: The Bradford Assay

- The concentration of standards are suggested by the assay kit manufacturer.
- Linear regression is used to draw a straight line through the concentrations so that the concentrations of the samples can be determined.
- Linear x and y axes will be used to draw the graph
- A minimum correlation or  $r^2$  value is set at  $>0.98$



ADAP Software - [Bradford Assay]

File Layout

General Quantitative Qualitative Options Rejection / Validation

| Standards     |                  |
|---------------|------------------|
| Concentration | Response Formula |
| 1: 2000       | S1               |
| 2: 1500       | S2               |
| 3: 1000       | S3               |
| 4: 750        | S4               |
| 5: 500        | S5               |
| 6: 250        | S6               |
| 7: 125        | S7               |
| 8: 25         | S8               |
| 9: <-->       | <-->             |
| 10: <-->      | <-->             |

**Curve**

Linear Regression

Axis (X/Y) lin/lin

Extrapolation 0 %

Units ug/mL

Validate Curve Yes

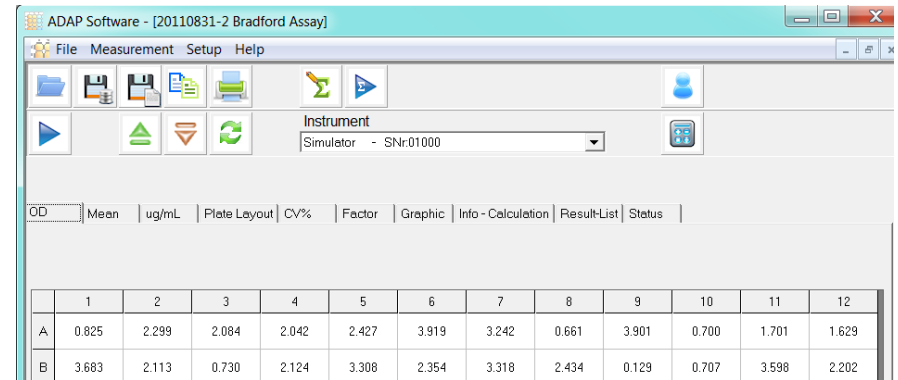
Min. Correlation 0.98 %

**Factor**

Concentration \* 1.0

# Results Presentation

- Data is presented in multiple tabs.
- Data can be copied to the clipboard for import into another software program, printed or saved.



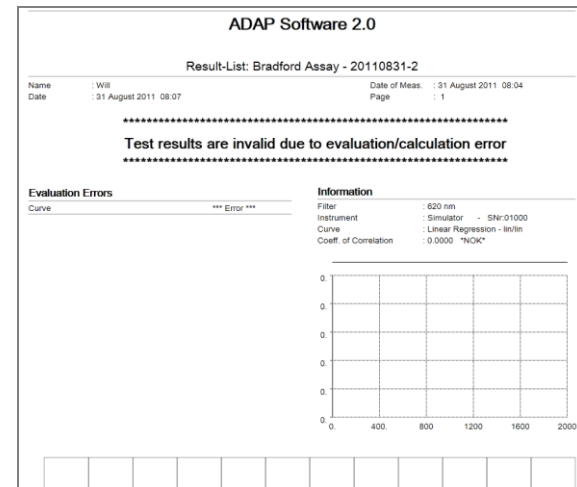
ADAP Software - [20110831-2 Bradford Assay]

File Measurement Setup Help

Instrument: Simulator - SNr:01000

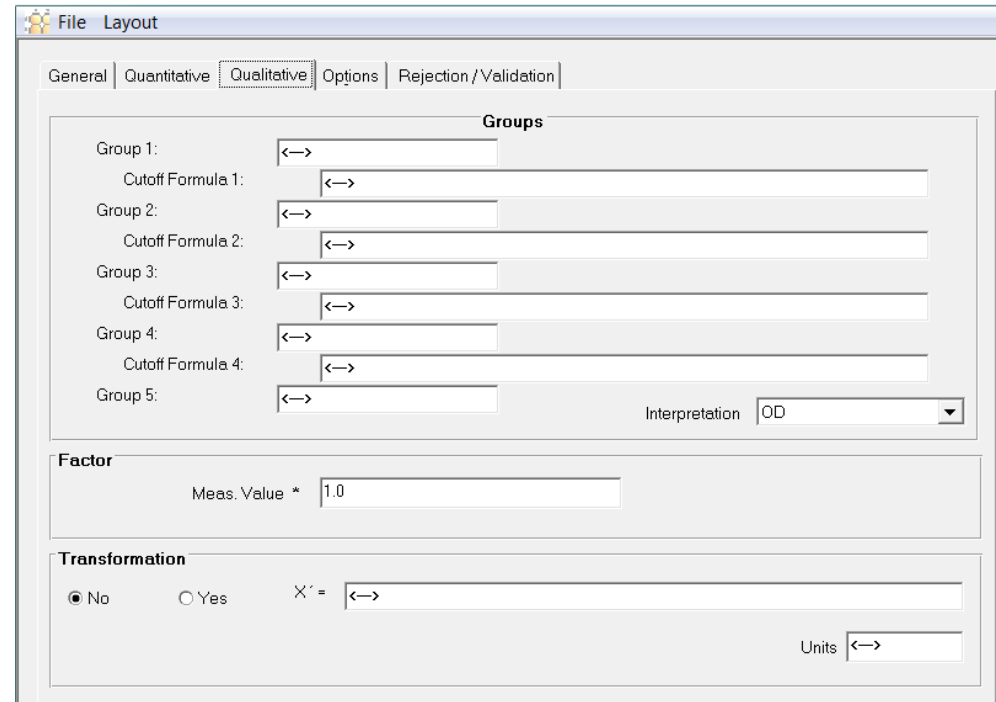
OD Mean ug/mL Plate Layout CV% Factor Graphic Info - Calculation Result-List Status

|   | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| A | 0.825 | 2.299 | 2.084 | 2.042 | 2.427 | 3.919 | 3.242 | 0.661 | 3.901 | 0.700 | 1.701 | 1.629 |
| B | 3.683 | 2.113 | 0.730 | 2.124 | 3.308 | 2.354 | 3.318 | 2.434 | 0.129 | 0.707 | 3.598 | 2.202 |



# Qualitative Analysis

- Define up to 5 categories
- A transformation formula can be applied to the sample absorbances
- Interpretation can be based on absorbance (OD), concentration or the transformed value.
- This analysis is used mostly with ELISA assays



The screenshot shows a software window titled "File Layout" with tabs for "General", "Quantitative", "Qualitative", "Options", and "Rejection / Validation". The "Qualitative" tab is active. The interface is divided into three main sections:

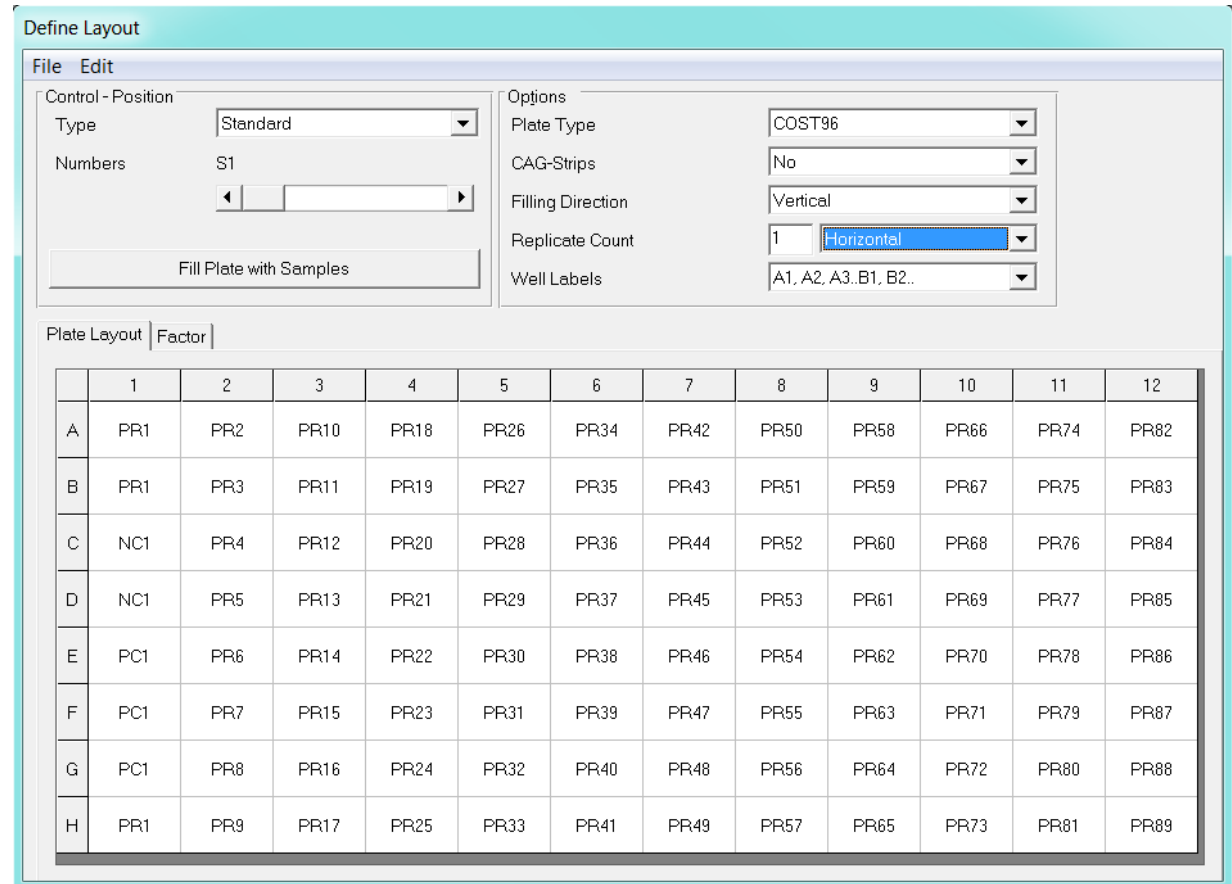
- Groups:** A section with five rows, each representing a group. Each row contains a label (Group 1 to Group 5), a dropdown menu with a double-headed arrow symbol, and a text input field for a "Cutoff Formula".
- Factor:** A section with a label "Meas. Value \*" and a text input field containing the value "1.0".
- Transformation:** A section with radio buttons for "No" (selected) and "Yes", a label "X' =", a text input field with a double-headed arrow symbol, and a "Units" dropdown menu with a double-headed arrow symbol.

At the bottom right of the "Groups" section, there is an "Interpretation" dropdown menu with "OD" selected.

*Note:* Group 1 has the highest absorbance values. Cutoff Formula 1 assumes a '>' in the formula so that absorbance values of samples in Group 1>Group 2>Group 3 ... How the groups distinguished must be defined in the formula box.

# Qualitative Analysis-An example HTLV I and II ELISA

- Qualitative analysis of an ELISA for the presence of HTLV infection
- Plate layout specified by assay kit manufacturer
- Assay measured at 450 nm. A reference measurement is also used at 620 nm



The screenshot shows the 'Define Layout' software interface. It includes a 'Control - Position' section with 'Type' set to 'Standard' and 'Numbers' set to 'S1'. The 'Options' section includes 'Plate Type' (COST96), 'CAG-Strips' (No), 'Filling Direction' (Vertical), 'Replicate Count' (1), and 'Well Labels' (A1, A2, A3, B1, B2..). A 'Fill Plate with Samples' button is also present. Below the options is a 'Plate Layout' section with a 'Factor' tab and a 12-well plate grid. The grid is labeled with columns 1-12 and rows A-H. The sample distribution is as follows:

|   | 1   | 2   | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   |
|---|-----|-----|------|------|------|------|------|------|------|------|------|------|
| A | PR1 | PR2 | PR10 | PR18 | PR26 | PR34 | PR42 | PR50 | PR58 | PR66 | PR74 | PR82 |
| B | PR1 | PR3 | PR11 | PR19 | PR27 | PR35 | PR43 | PR51 | PR59 | PR67 | PR75 | PR83 |
| C | NC1 | PR4 | PR12 | PR20 | PR28 | PR36 | PR44 | PR52 | PR60 | PR68 | PR76 | PR84 |
| D | NC1 | PR5 | PR13 | PR21 | PR29 | PR37 | PR45 | PR53 | PR61 | PR69 | PR77 | PR85 |
| E | PC1 | PR6 | PR14 | PR22 | PR30 | PR38 | PR46 | PR54 | PR62 | PR70 | PR78 | PR86 |
| F | PC1 | PR7 | PR15 | PR23 | PR31 | PR39 | PR47 | PR55 | PR63 | PR71 | PR79 | PR87 |
| G | PC1 | PR8 | PR16 | PR24 | PR32 | PR40 | PR48 | PR56 | PR64 | PR72 | PR80 | PR88 |
| H | PR1 | PR9 | PR17 | PR25 | PR33 | PR41 | PR49 | PR57 | PR65 | PR73 | PR81 | PR89 |

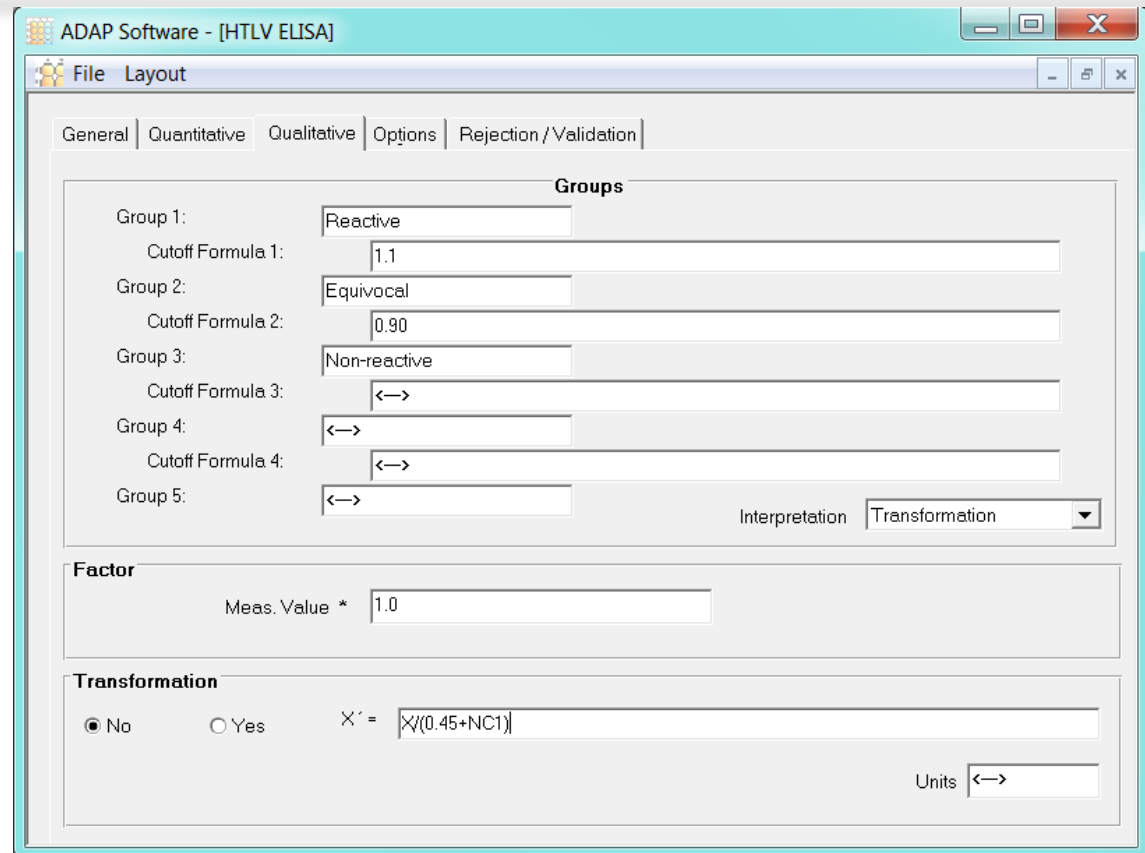
# Qualitative Analysis-An example HTLV I and II ELISA

- Analysis is specified by the manufacturer

- All absorbance measurements (X) are compared to the negative control using this formula:

$$\text{Index} = \frac{\text{Sample (OD)}}{\text{NC1(OD)+0.45}}$$

- The index value is used to categorize the samples.



ADAP Software - [HTLV ELISA]

File Layout

General | Quantitative | **Qualitative** | Options | Rejection / Validation

**Groups**

|                   |              |
|-------------------|--------------|
| Group 1:          | Reactive     |
| Cutoff Formula 1: | 1.1          |
| Group 2:          | Equivocal    |
| Cutoff Formula 2: | 0.90         |
| Group 3:          | Non-reactive |
| Cutoff Formula 3: | <—>          |
| Group 4:          | <—>          |
| Cutoff Formula 4: | <—>          |
| Group 5:          | <—>          |

Interpretation Transformation

**Factor**

Meas. Value \* 1.0

**Transformation**

No  Yes X' =  $\frac{X}{(0.45+NC1)}$

Units <—>

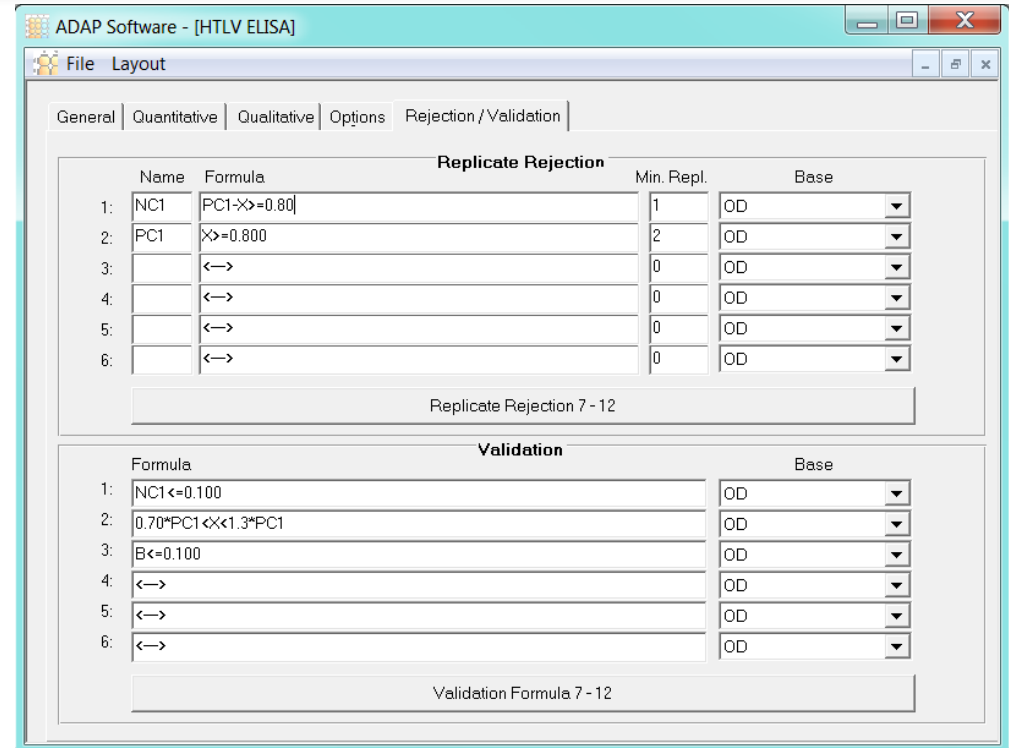
# Qualitative Analysis-An example HTLV I and II ELISA

## Replicate Rejection:

- Avg PC1-NC1 $\geq$ 0.800, 1 replicate
- PC1 $\geq$ 0.800, 2 replicates

## Validation Criteria:

- NC1 $\leq$  0.100
- Each PC1 must be within 30% of the average of PC1
- Blank  $\leq$  0.100 OD



ADAP Software - [HTLV ELISA]

File Layout

General | Quantitative | Qualitative | Options | Rejection / Validation

### Replicate Rejection

| Name   | Formula           | Min. Repl. | Base |
|--------|-------------------|------------|------|
| 1: NC1 | PC1-X $\geq$ 0.80 | 1          | OD   |
| 2: PC1 | X $\geq$ 0.800    | 2          | OD   |
| 3:     | $\leftrightarrow$ | 0          | OD   |
| 4:     | $\leftrightarrow$ | 0          | OD   |
| 5:     | $\leftrightarrow$ | 0          | OD   |
| 6:     | $\leftrightarrow$ | 0          | OD   |

Replicate Rejection 7 - 12

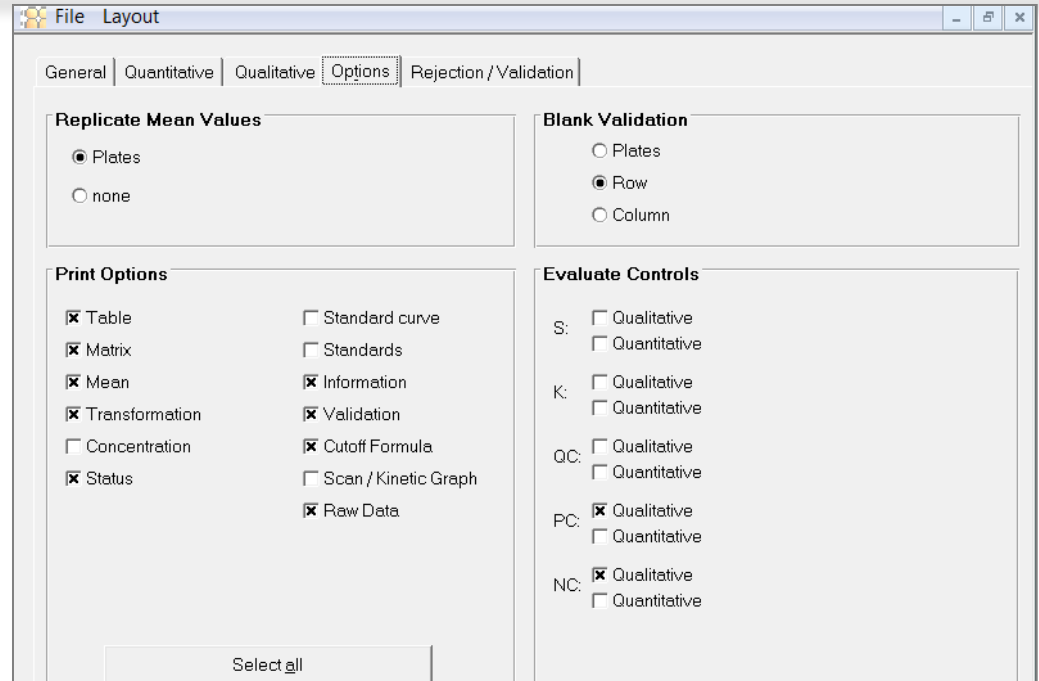
### Validation

| Formula                             | Base |
|-------------------------------------|------|
| 1: NC1 $\leq$ 0.100                 | OD   |
| 2: 0.70*PC1 $\leq$ X $\leq$ 1.3*PC1 | OD   |
| 3: B $\leq$ 0.100                   | OD   |
| 4: $\leftrightarrow$                | OD   |
| 5: $\leftrightarrow$                | OD   |
| 6: $\leftrightarrow$                | OD   |

Validation Formula 7 - 12

# Define Results Presentation

- Determine how mean values will be calculated
- Determine how the Blank will be used
- Configure print options
- Select evaluation method for controls



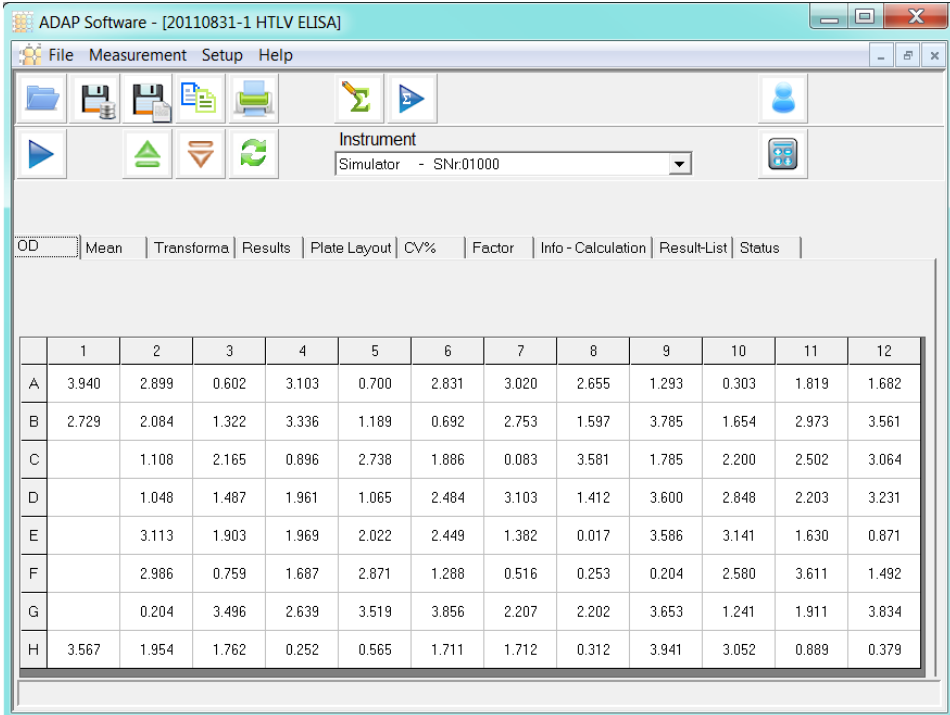
The screenshot shows a software window titled "File Layout" with a tabbed interface. The "Options" tab is active, showing four main sections:

- Replicate Mean Values:**
  - Plates
  - none
- Blank Validation:**
  - Plates
  - Row
  - Column
- Print Options:**
  - Table
  - Matrix
  - Mean
  - Transformation
  - Concentration
  - Status
  - Standard curve
  - Standards
  - Information
  - Validation
  - Cutoff Formula
  - Scan / Kinetic Graph
  - Raw Data
- Evaluate Controls:**
  - S:  Qualitative,  Quantitative
  - K:  Qualitative,  Quantitative
  - QC:  Qualitative,  Quantitative
  - PC:  Qualitative,  Quantitative
  - NC:  Qualitative,  Quantitative

A "Select\_all" button is located at the bottom of the window.

# Results Presentation

- Results are presented on multiple tabs
- Info Calculation and Results List show the results



ADAP Software - [20110831-1 HTLV ELISA]

File Measurement Setup Help

Instrument: Simulator - SNr:01000

OD | Mean | Transforma | Results | Plate Layout | CV% | Factor | Info - Calculation | Result-List | Status

|   | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| A | 3.940 | 2.899 | 0.602 | 3.103 | 0.700 | 2.831 | 3.020 | 2.655 | 1.293 | 0.303 | 1.819 | 1.682 |
| B | 2.729 | 2.084 | 1.322 | 3.336 | 1.189 | 0.692 | 2.753 | 1.597 | 3.785 | 1.654 | 2.973 | 3.561 |
| C |       | 1.108 | 2.165 | 0.896 | 2.738 | 1.886 | 0.083 | 3.581 | 1.785 | 2.200 | 2.502 | 3.064 |
| D |       | 1.048 | 1.487 | 1.961 | 1.065 | 2.484 | 3.103 | 1.412 | 3.600 | 2.848 | 2.203 | 3.231 |
| E |       | 3.113 | 1.903 | 1.969 | 2.022 | 2.449 | 1.382 | 0.017 | 3.586 | 3.141 | 1.630 | 0.871 |
| F |       | 2.986 | 0.759 | 1.687 | 2.871 | 1.288 | 0.516 | 0.253 | 0.204 | 2.580 | 3.611 | 1.492 |
| G |       | 0.204 | 3.496 | 2.639 | 3.519 | 3.856 | 2.207 | 2.202 | 3.653 | 1.241 | 1.911 | 3.834 |
| H | 3.567 | 1.954 | 1.762 | 0.252 | 0.565 | 1.711 | 1.712 | 0.312 | 3.941 | 3.052 | 0.889 | 0.379 |

# Results Presentation

## Results list

- Interpretation
- Test Validation
- Replicate Rejection

| OD   | Mean | Transforma | Results | Plate Layout | CV% | Factor | Info - Calculation | Result-List | Status |
|--|------|------------|---------|--------------|-----|--------|--------------------|-------------|--------|
| HTLV ELISA Plate-ID: 20110831-1  |      |            |         |              |     |        |                    |             |        |
| *****<br>Test results are invalid due to evaluation/calculation error<br>***** |      |            |         |              |     |        |                    |             |        |
| Interpretation (Transformation)  |      |            |         |              |     |        |                    |             |        |
| Reactive   |      |            | >       | 1.10         | 1.1 |        |                    |             |        |
| Equivocal  | 1.10 |            | -       | 0.90         | 0.9 |        |                    |             |        |
| Non-reactive   |      |            | <       | 0.90         |     |        |                    |             |        |
| Validation   |      |            |         |              |     |        |                    |             |        |
| NC1<=0.100   |      |            |         | *NOK*        | OD  |        |                    |             |        |
| 0.70*PC1<X<1.3*PC1   |      |            |         | *NOK*        | OD  |        |                    |             |        |
| B<=0.100   |      |            |         | *NOK*        | OD  |        |                    |             |        |
| Replicate Rejection  |      |            |         |              |     |        |                    |             |        |
| NC1 - min. 1   | OD   |            |         | PC1-X>=0.80  |     |        |                    |             |        |
| PC1 - min. 2   | OD   |            |         | X>=0.800     |     |        |                    |             |        |
| *****  |      |            |         |              |     |        |                    |             |        |





# Recalculate Options

- Right click on the results and select **Formula**. Cutoff and test validation formulas can be changed.
- Specific wells can be deleted or restored; data can then be recalculated by selecting



HTLV ELISA

**Cutoff Formula**

1: 1.1

2: 0.9

3: <->

4: <->

**Validation**

1:  $NC1 \leq 0.100$

2:  $0.70 * PC1 \lll 1.3 * PC1$

3:  $B \leq 0.100$

4: <->

5: <->

OK

Cancel

Bradford Assay

**Cutoff Formula**

1: <->

2: <->

3: <->

4: <->

**Validation**

1: <->

2: <->

3: <->

4: <->

5: <->

OK

Cancel

**Standards**

|     | Response Formula | Concentration |
|-----|------------------|---------------|
| 1:  | S1               | 2000          |
| 2:  | S2               | 1500          |
| 3:  | S3               | 1000          |
| 4:  | S4               | 750           |
| 5:  | S5               | 500           |
| 6:  | S6               | 250           |
| 7:  | S7               | 125           |
| 8:  | S8               | 25            |
| 9:  | <->              | <->           |
| 10: | <->              | <->           |

Curve: Linear Regression

Axis (X/Y): lin/lin

Formula


Delete Well

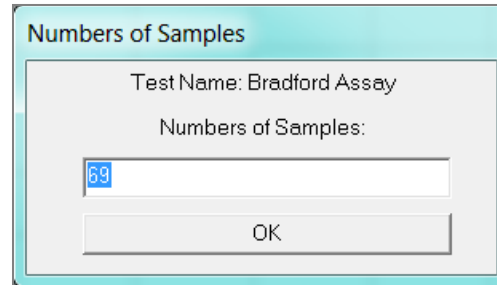
Restore Well

Copy

Copy active Window

# Running a test definition

- Select 
- A dialogue window will appear, select test to run and OK
- A window will open to prompt for the number of samples. The sample number defined in the test definition will appear. Select OK or change to new sample number.



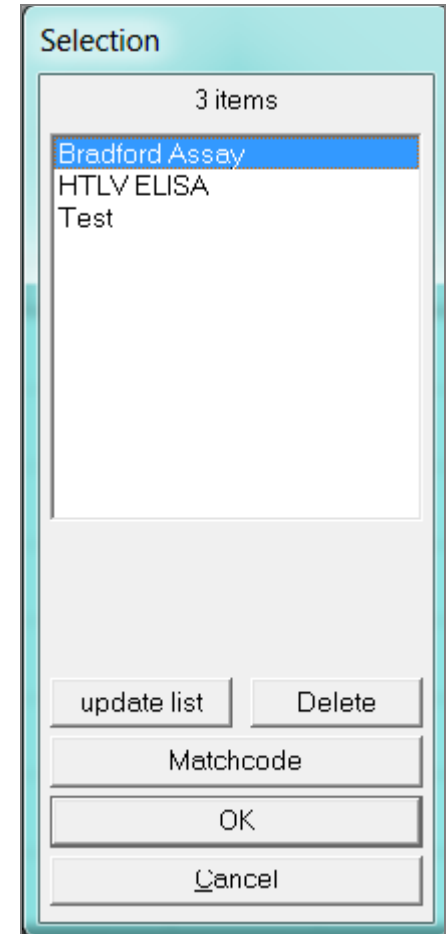
Numbers of Samples

Test Name: Bradford Assay

Numbers of Samples:

69

OK



Selection

3 items

Bradford Assay  
HTLV ELISA  
Test


update list    Delete

Matchcode


OK

Cancel

## Key Features of ADAP 2.0 Plus

- Quantitative and qualitative analysis- for most assays
  - Quality controls for replicate rejections and test validation
  - Recalculation Options
  - Options for printouts and data export
  - Quick method setup
- 
- Decorative wavy lines in shades of blue and teal at the bottom of the slide.

## Questions and Feedback

- More advanced analysis options are available for the Zenyth 340 and Zenyth 200 microplate readers. Requirement for an advanced ADAP 2.0 webinar?
  - Questions from the field?
  - Customer perception of ADAP 2.0?
  - Other suggestions for upcoming webinars?
- 
- Decorative blue wavy lines at the bottom of the slide, consisting of several overlapping, flowing curves in various shades of blue.