

## What's New in WinNonlin 5.2

### Objectives for version 5.2

The latest version of Pharsight® WinNonlin™ nonlinear modeling software was released to introduce the optional IVIVC (In Vivo In Vitro Correlation) Toolkit™ for WinNonlin®. The basic version of WinNonlin does not contain new features. Please continue reading this document to see cumulative enhancements since version 5.0.

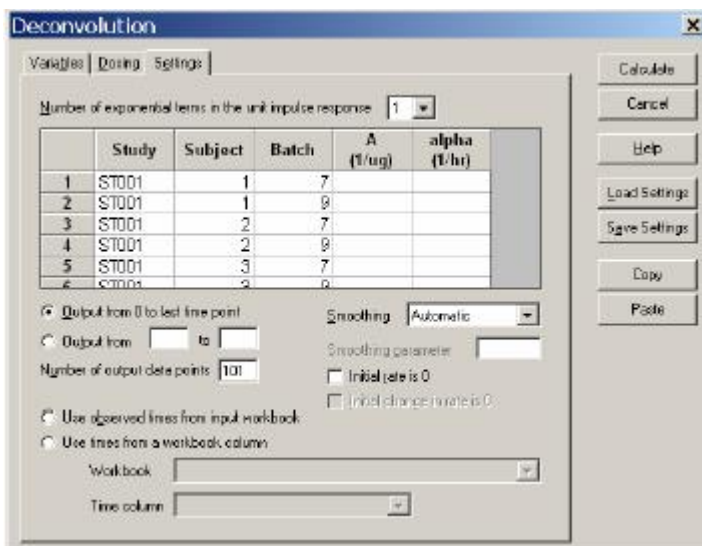
### Objectives for version 5.1

The latest version of Pharsight® WinNonlin™ nonlinear modeling software enhances Deconvolution and the Table Module. This is a minor update to version 5.0.1, and contains all of the new features and enhancements that WinNonlin version 5.0 provided.

### Enhancements in version 5.1

#### ► Multiple Unit Impulse Responses for Deconvolution

- It is now possible, when using deconvolution, to deconvolve multiple profiles using a unique unit impulse response (UIR) for each subject.



#### ► Table Module

- The Table Module has been enhanced to present alpha-numeric variables in all the templates. For example the table module can list variables (i.e. columns) that are comprised of both character values (e.g., BQL, <LLOQ, <0.01, ect.) and numeric values (e.g., concentrations). Note that all character values are considered *missing* for the calculation of summary statistics.

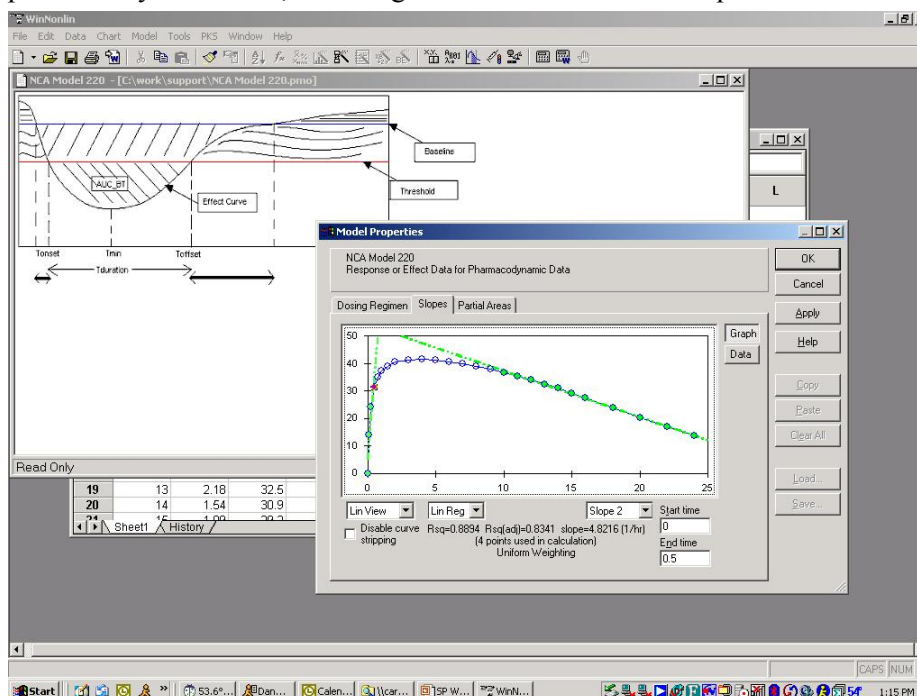
## Objectives for version 5.0

WinNonlin version 5.0 provided major enhancements to modeling, data transformations and integration with S-PLUS and Sigma Plot, as well as improved performance and capabilities when storing data and analysis in the Pharsight Knowledgebase Server. The noncompartmental analysis (NCA) engine has been expanded to support modeling of drug effect data as well as sparsely-sampled plasma and urine concentration data, such as that from toxicokinetic studies. The transformation capabilities now include an option to perform multiple, simultaneous transformations, including a rank transformation. Data export now includes facilities to launch operations in S-PLUS or Sigma Plot, and optionally return results to WinNonlin.

## Enhancements in version 5.0

### ➤ NCA for drug effect data

- By customer request, WinNonlin's noncompartmental analysis engine now supports analysis of pharmacodynamic data, including calculation of selected slopes and areas.



### ➤ NCA for sparse data

- For sparsely-sampled plasma or urine data, WinNonlin 5.0 computes the mean concentration (or rate) curve, as well as the area under the curve and its standard error.

### ➤ New workbook features

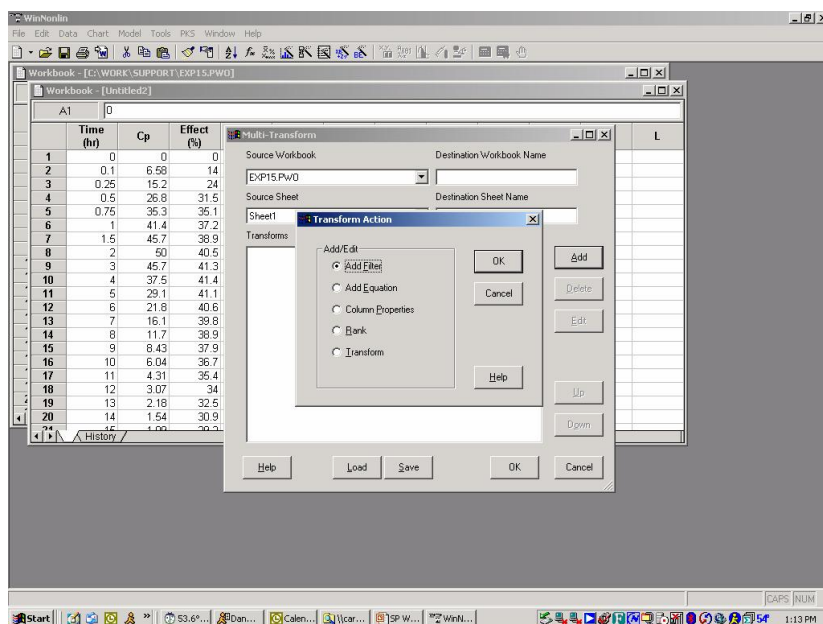
- Users can now copy and merge workbooks, tracking data history and dependencies.

### ➤ Residual normality test

- Descriptive statistics now include a Kolmogorov-Smirnov normality test, for use in testing residual normality in Linear Mixed Effects and Bioequivalence analyses.

### ➤ Enhanced data transformations

- The new multi-transformation tool simultaneously transforms data from multiple columns, producing a new workbook with any combination of transformed and untransformed data.
- Multi-transform can filter records to produce a subset of the original data set.
- It supports column transformations using free-form equations, rank transformations, as well as WinNonlin's original set of baseline and algebraic transformations.



### ➤ Integration with S-PLUS and Sigma Plot

- WinNonlin can pass output to Sigma Plot or S-PLUS, with an optional script to launch further operations, and the option to return output to WinNonlin.
- WinNonlin's *Refresh All* features quickly reproduces S-PLUS or Sigma Plot runs.
- WinNonlin 5.0 can integrate S-PLUS analyses into PKS.
- S-PLUS scripts can be stored as PKS Libraries.
- S-PLUS results are viewable from PKS, can be linked into a report using PKS Reporter.

### ➤ PKS enhancements

- Performance is improved for viewing data and working over a wide-area network.
- Library and Share Share features enable sharing of data and analyses across PKS studies.