
BioLogic DuoFlow™ Chromatography System 5.0 Software New Features

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The BioLogic DuoFlow version 5.0 software introduces three new features and several enhancements to BioLogic DuoFlow™ version 4.0 while maintaining the familiar intuitive and easy-to-use design.

New Features

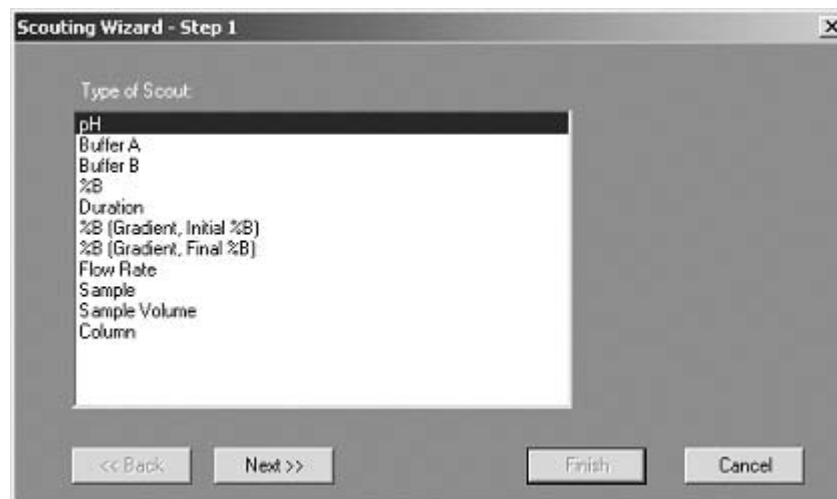
- Scouting Wizard
- Buffer Editor
- Method Templates

Enhanced Features

- Below Threshold Fraction Collection
- Rack & Tube # and Rack & Grid # BioFrac™ fraction collector numbering schemes
- Time and Volume based chromatograms
- New Buffer Blending buffer systems
- Improved High Flow non Buffer Blending feature
- Vertical chromatogram trace shifting in Trace Compare overlay view
- Trace Compare display settings saved
- Enhanced Online Help

New Features

Scouting Wizard



The Scouting Wizard is a feature that automates the setup of scouting experiments. Scouting is a procedure used to systematically optimize the purification conditions for a specific target molecule(s) (i.e. protein). Molecules such as proteins differ from one another in their charge, hydrophobicity, solubility, reactivity, substrate specificity and

intermolecular interactions. A purification protocol that is satisfactory for one molecule may not work for another molecule. Several factors influence the quality of a purification procedure. Some of these factors include: buffer composition (pH, ionic strength, co-solutes), elution type (gradient slope and gradient duration), flow rate, column chemistry and sample composition. In principle, each of these can be adjusted to produce the most efficient and effective purification procedure for a molecule. However, in practice, only a few of these are generally tested due to time and cost considerations. By performing Scouting as a set of automated runs, the time and resources required for protocol optimization can be significantly reduced.

Buffer Editor

The Buffer Editor is used to create new Buffer Blending buffer systems and to modify existing buffer systems. Buffer Blending is a feature of the BioLogic DuoFlow Maximizer™ and BioLogic DuoFlow Pathfinder™ systems that dynamically "blends" the conjugate acid and base of a buffer with water and salt to produce a solution with a specific salt concentration and pH. The Buffer Editor can be used to create new Buffer Blending buffer systems from user-supplied information. Each buffer system can include up to three buffers and each buffer can have up to three pKa's. The Buffer Editor also generates recipe text that describes how to make each Buffer Blending solution. The Buffer Editor requires information about the buffer (pKa(s), temperature coefficient(s), charge state, molecular weight and concentration) and the salt (charge state molecular weight and concentration). This information can also be supplemented with user determined 1 or 2 point pH corrections (entered in the Buffer Blending setup dialog). For multiple component buffers, pH corrections can be included for each buffer in the buffer system, to improve the pH accuracy over the entire buffer pH range. The Buffer Editor can also be used to copy and modify any of the 26 predefined Buffer Blending buffer systems. Each of these buffer systems can be modified to accommodate reagents that are readily available in your laboratory.

Method Templates

New Method

Method Identification
The select method template will be used to create the method.

User Name: Demo Chromatography 5.0
Project Name: DuoFlow and QuadTec System Demo Files
Method Name: Affinity with Auto Loop Fill & Rinse
Method Description:
Method Author: Demo Chromatography 5.0

Use Method Templates

Experiment Type:
Affinity Chromatography
Chromatofocusing
Hydrophobic Interaction with Buffer Blending
Hydrophobic Interaction
Hydroxyapatite
Ion Exchange

Templates:
Affinity with Auto Inject
Affinity with Auto Loop Fill Rinse
Affinity with Aux Pump Direct Inject
Affinity with Reverse Flow Elution

Template Selection

Template Description:
METHOD DESCRIPTION: Affinity with Auto Loop Fill & Rinse
This method is used to separate molecules on the basis of molecular affinity. Samples are selected using an SV5-4 Aux pump inlet valve, loaded with an Econo Gradient pump (EGP) and automatically injected with an AVR7-3 sample inject valve. The loop is automatically rinsed after injection.
COLUMN/SAMPLE: This method was written for use with a 1 ml affinity column (i.e. metal chelating, glutathione-agarose, amylose, etc) but can be scaled to work with columns of different sizes. Consult your column instructions for specific sample size and flow rate information.
REQUIRED DEVICES: BioFrac fraction collector, AVR7-3 sample inject valve (Port 10), SV5-4 Aux pump inlet valve (Port 7), conductivity monitor, standard UV detector, Econo Gradient pump and a sample loop (up to 5.0 ml)
METHOD PARAMETERS
Flow Rate: 1.0 ml/min
Sample Size + Rinse: 5.0 ml
Loop Fill: 5.0 ml
Loop Rinse: 5.0 ml

View Template Help

OK
Cancel

The BioLogic DuoFlow software provides a variety of method templates to simplify the method creation process. Templates for a variety of chromatography techniques such as affinity, chromatofocusing, gel filtration, hydrophobic interaction, hydroxyapatite and ion exchange can be loaded from the New Methods dialog box. Each template includes a brief method description with its application and the devices required to run it. Pressing "View Template Help" easily accesses a more detailed description. These templates can be used as is, or modified to fit experimental requirements. The templates that are available depend on the system configuration (BioLogic DuoFlow™, BioLogic DuoFlow QuadTec™, BioLogic DuoFlow Maximizer and BioLogic DuoFlow Pathfinder systems).

In addition to the Templates available from the New Method dialog, multi-dimensional chromatography templates have been included in a file named "Multi-D Chromatography Templates.ZIB" in the BioLogic directory on your hard disk. These templates are saved in the file according to the type of system they are designed for (BioLogic DuoFlow, BioLogic DuoFlow QuadTec, BioLogic DuoFlow Maximizer or BioLogic DuoFlow Pathfinder systems). Additional information is available in the BioLogic™ software online help Contents.

Enhanced Features

Below Threshold Fraction Collection

Threshold collection can now be set to occur below a defined threshold. This feature is especially valuable for desalting and chromatofocusing applications where it may be important to collect fractions below a set conductivity or pH reading.

Rack & Tube # and Rack & Grid # BioFrac fraction collector tube numbering

This software enhancement allows users to more easily identify fractions collected into grid numbered racks, such as microtiter plates. In "Rack & Tube #" mode, the racks and tubes are numbered in the order that they are filled. In "Rack & Grid #" mode the racks are numbered in the order that they are filled and the tubes are numbered by the grid position in the rack where the tube is located. Switching between the two modes is done from the View menu and can be done at any time.

Time and Volume based chromatograms

This feature allows users to view chromatograms in both time mode and volume mode. Users may switch between time and volume mode at any time. Volume mode displays the run chromatogram in units of ml and time mode displays units in "minute.tenth" or "HH:MM:SS". The default time unit is set in Options/Edit User Preferences. In Trace Compare, volume mode is useful when comparing runs collected at different flow rates.

New Buffer Blending buffer systems

Two new predefined Buffer Blending buffer systems have been included in the BioLogic DuoFlow 5.0 software. "N-methylpiperazine/Bis-Tris/Tris" is a broad range (pH 4.7 to 9.4) multi-component buffer for applications that require a broad buffer pH range, such as pH scouting. "Phosphate with Ammonium Sulfate" is a single component buffer for hydrophobic interaction chromatography that uses 2.4 M ammonium sulfate as the salt.

"High Flow Non-Buffer Blending (1x)" Buffer System

This buffer system is used to run buffers of fixed composition (non-blending) at the high flow rates available to Buffer Blending applications. When used, this buffer system allows flow rates up to 20 ml/min (F10 pump heads) and 80 ml/min (F40 pump heads). For this buffer system, buffers A and B are prepared at a 1x concentration rather than the 2x concentration required for Buffer Blending. Buffer A is plumbed into the BioLogic Maximizer A1 and B1 inlets, and Buffer B is plumbed into A2 and B2 inlets.

Trace Shifting in the Overlay View of Trace Compare

Shift Up and Shift Down functions have been added to the Trace Compare toolbar that are used to shift traces vertically with respect to each other. Shifting allows the features of individual chromatograms to be observed when comparing multiple chromatograms.

Trace Compare settings Retained

Trace Compare now retains display settings for each Compare. This facilitates the retrieval of saved "views" of the data.

Online Help

The BioLogic 5.0 software online help has several enhancements including more than 60 new help topics and a Contents view.



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