

DryLab® History

The increasing demand for **Quality by Design (QbD)** in analytical science is a logical consequence of the often-chaotic method development, that results from a trial and error approach, during which stumbling over new or disappearing peaks in the UHPLC validation process is a common pitfall. To ensure a higher standard of method quality, in 2002 the ICH and FDA started demanding solid and scientific work using Design of Experiments (DoE).

Molnár-Institute has been promoting this type of approach for over 27 years by contributing to the development of DryLab® software through cooperation with LC Resources, under the leadership of Lloyd R. Snyder. Using DryLab®, the systematic and accurate preparation of experiments was initiated, achieving useful and reproducible results. Better peak tracking in DryLab® ensured safe and precise data entry before the model was built.

Designed by UHPLC experts, **DryLab®4** offers chromatographers' unprecedented insight into how a substance can best be separated, and efficiently supports the success of their chromatographic work.

DryLab® is the **world standard** for chromatography modeling in both: method development and training applications. The following time schedule shows the long and well-documented development history of DryLab® — from the very beginning in 1986 to the essential UHPLC method development tool we have today.



The founders of DryLab® with Margareth Watkins at Pittsburgh Conference in 1992:
John W. Dolan, Lloyd R. Snyder, Tom Jupille and Imre Molnár

DryLab® Time Line

1986	DryLab® 1,2,3,4,5	- first HPLC method development software packages, programmed in Basic in "DOS" for RPC-modeling capacity factors, Rs-values, flow rate and column dimensions, column optimization in ion pair (2) and normal phase HPLC (3), %B optimization (4) or gradient modeling (5). In the first versions, chromatograms were plotted using stars ****.
1987	DryLab® I	- combination of DryLab® 1,2,3 and 4 with the addition of new graphics in DOS
	DryLab® G	- combination of DryLab® 1,2,3 and 5 + gradient modeling
1989	DryLab® I/plus, G/plus	- first versions of DryLab® programmed in "C" included a number of new features, such as peak name options, zoom and scale of chromatograms, resolution maps for partial peak sets, ASCII files for data storage, and the ability to import data system files
1992	DryLab® I/mp	- isocratic multiparameter versions with a wholly graphical interface for Windows® 1.0 operating system, including functions for the mouse control of the program - new features, such as automated peak matching (max. 8 peaks)
1998	DryLab® version 2.0	- first version with two-dimensional (2D) modeling capabilities, incorporating simultaneous modeling of two separation parameters, e.g. gradient time (t _G), and temperature (T) or %B vs. T. Also capable of modeling 6-7 additional method parameters as in all other versions
2000	DryLab® 2000 v. 3.0	- adjusted to Windows® 3.1 and NT for network applications. First version to be released in C++
2002	DryLab® 2000 plus v. 3.1	- 2D modeling for any combination of variables
2005	PeakMatch® v. 1.0	- the first peak tracking software introduced for DryLab for easier alignment of peaks in 4-6 different chromatograms, running on Windows® XP
2006	DryLab® & PeakMatch® v. 2.0	- DryLab® is acquired by Molnár-Institute and further developed in Berlin
2007	DryLab® 2000 plus v. 3.5	- automated generation of experiments with Agilent 1100
2009	DryLab® v. 3.9	- Introduction of "3D Cube": three-dimensional resolution mapping and simultaneous optimization of 3 critical parameters at HPLC 2009
2010	DryLab® 2010	- DryLab® 2010, including DryLab® v. 3.9 and PeakMatch® v. 3.5, running 3 tG-T-models automated for Shimadzu's HPLC line running on Windows® Vista
2012	DryLab® 4.0	- first version introduced in C# (C-sharp) with new user-friendly windows management and 3D cube , compatible from Windows® XP through Windows® 8
2013	DryLab® 4.1	- Introduction of Robustness Module and Knowledge Management Protocol
2015	DryLab® 4.2	- Automation of Shimadzu LabSolutions CDS
2017	DryLab® 4.3	- Column Comparison Module
2019	DryLab® 4.4	- Automation of Waters Empower CDS