



Press Release

Bio-Rad Releases KnowItAll 2018 Chemistry and Spectroscopy Software, Featuring Advanced Stereochemical Recognition

HERCULES, CA – April 19, 2018 – Bio-Rad Laboratories, Inc. (NYSE: BIO and BIOb), a global leader of life science research and clinical diagnostic products, today announced the 2018 release of its KnowItAll[®] software and spectral databases.

The KnowItAll 2018 software now offers advanced stereochemical recognition, which is able to interpret structures (drawn or imported) using traditional stereochemical drawing conventions that are not supported in other available solutions. KnowItAll's ability to understand and preserve the stereochemical intent of each structure is critical to building scientific databases containing structures and relating those records to one another. This release of KnowItAll also offers an additional 44,000 reference spectra in its KnowItAll Spectral Library of over 2.3 million spectra.

From chair and boat representations and Fischer and Haworth projections to pseudo-3D perspective drawings, chemists have drawn 2D versions of 3D molecules for over a century, but computer software has been less successful in creating such drawings. Software-based chemical structure “standardization” often removes or misinterprets implicit stereochemistry in the original structure. The KnowItAll software presents a more accurate approach with intelligent software-based interpretation that interprets the original 3D intent of 2D drawings, as a chemist would.

“The ability to relate records to one another is critical in large chemical databases and this is most often done through chemical structures,” said Gregory M. Banik, Ph.D., Bio-Rad General Manager, Informatics. “Whenever software interprets the stereochemistry in the original structure incorrectly, records cannot be related to one another and the connection is lost. However, the way KnowItAll is able to interpret implicit information in chemical structures is a game-changer for those working with large datasets of chemicals, including those in chemical and pharmaceutical information,” he said.

The new advanced stereochemistry feature is included in all editions of the KnowItAll software including the ChemWindow[®], Vibrational Spectroscopy, and Analytical editions.

It is compliant with the most recent IUPAC structure representation conventions as defined by the IUPAC *Nomenclature of Organic Chemistry* (Blue Book), 2013 Edition.

KnowItAll 2018 supported stereochemical descriptors include:

- Tetrahedral chirality centers (R/S), including spiro compounds
- Chirality axes such as those found in allenes and cumulenes with an even number of double bonds (M/P)
- Stereogenic axes such as found in some o-substituted biphenyls (M/P)
- Helical stereogenic axes (M/P)
- Chirality planes such as found in substituted cyclophanes (M/P)
- Pseudochiral (pseudoasymmetric) centers (r/s)
- Pseudochiral (pseudoasymmetric) centers (m/p)
- *Cis/trans* isomers as found for double bonds and cumulenes with an odd number of double bonds (Z/E or *seqcis/seqtrans*)
- Enantiomorphic *cis/trans* isomers as found for double bonds and cumulenes with an odd number of double bonds (*seqcis/seqtrans*)

Bio-Rad is offering a KnowItAll Stereochemical Toolkit (TK) to developers who wish to incorporate KnowItAll's advanced stereochemistry technology into their platform. Learn more at www.knowitall.com/stereochem.

About Bio-Rad's KnowItAll Software

Bio-Rad's KnowItAll chemistry and spectroscopy software solutions provide researchers with tools for database building/management, search, analysis, structure drawing, and reporting all within a single user interface. The company's award-winning KnowItAll Informatics System offers fully flexible and expandable solutions for Infrared (IR), Raman, Near IR (NIR), Nuclear Magnetic Resonance (NMR), Mass Spectrometry (MS), Ultraviolet-Visible (UV-Vis) spectroscopy, chromatography, and chemical structures.

About Bio-Rad

Bio-Rad Laboratories, Inc. (NYSE: BIO and BIOb) is a global leader in developing, manufacturing, and marketing a broad range of innovative products and solutions for the life science research and clinical diagnostic markets. With a focus on quality and customer service for over 65 years, our products advance the discovery process and improve healthcare. Our customers are university and research institutions, hospitals, public health and commercial laboratories, biotechnology, pharmaceutical, as well as applied research laboratories that include food safety and environmental quality testing. Founded in 1952, Bio-Rad is based in Hercules, California, and has a global network of operations with more than 8,000 employees worldwide. Bio-Rad had net sales exceeding \$2.1 billion in 2017. For more information, please visit www.bio-rad.com.

This release may be deemed to contain certain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These forward-looking statements include, without limitation, statements we make regarding our development and launch of new products and our expectations regarding our products. Forward-looking statements generally can be identified by the use of forward-looking terminology such as “plan”, “believe,” “expect,” “anticipate,” “may,” “will,” “can,” “intend,” “estimate,” “continue,” or similar expressions or the negative of those terms or expressions, although not all forward-looking statements contain these words. Such statements involve risks and uncertainties, which could cause actual results to vary materially from those expressed in or indicated by the forward-looking statements. These risks and uncertainties include our ability to develop and market new or improved products, product quality and liability issues, our ability to compete effectively, and international legal and regulatory risks. For further information regarding our risks and uncertainties, please refer to the “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operation” in Bio-Rad’s public reports filed with the Securities and Exchange Commission, including our most recent Annual Report on Form 10-K and our Quarterly Report on Form 10-Q. Bio-Rad cautions you not to place undue reliance on forward-looking statements, which reflect an analysis only and speak only as of the date hereof. We disclaim any obligation to update these forward-looking statements.

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