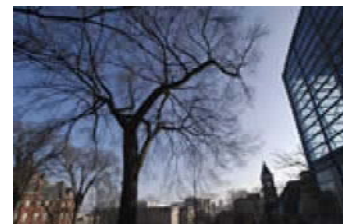


Sesame (LIMS)

PRINT

[| Sesame Website](#) | [Structure Request System](#) |

The SESAME Team, headed by Zsolt Zolnai, PhD, is responsible for developing and deploying CESG's software developed for data harvesting, organization, retrieval, and dissemination. Sesame is a well-developed Laboratory Information Management System (LIMS) and all online requests for CESG to work on solving a protein structure are entered through Sesame. It is available to scientists worldwide and is under continuous development to meet the evolving needs of researchers.



- [Bioinformatics](#)
- [Cell-Free](#)
- [Cloning](#)
- [Crystallography](#)
- [Expression Testing](#)
- [NMR](#)
- [Protein Production](#)
- [Protein Purification](#)
- [Quality Assurance](#)
- [Sesame](#)

Overview of Sesame

- Laboratory Information Management and Target Tracking System for Structural Genomics
- Available to Centers and Individual Investigators
- Single Database with Specialized Views: ORF, protein, solution, crystal, NMR, small molecule, structure deposition, sources (vendors), target submission
- Customizable: Laboratory resources, protocols, "actions"
- Captures Protocols and Results: Gel scans; NMR, MS, UV-VIS data; text
- Intuitive Query System
- Report Generation: XML, Excel input, Target DB, and PepcDB
- Supports Multiple Relational Database Management Systems: PostgreSQL 8+, Microsoft SQL Server 2005, or Oracle
- Users can maintain a free-standing version of Sesame on their own servers with their own relational database management system
- Tools for Managing Collaborative Projects
- Tools for Managing Shared Instruments

Sesame Collaborations

Sesame is a successful product of CESG. It has been exported to many laboratories, and over 1000 Sesame users are now registered world-wide.

- National Magnetic Resonance Facility at Madison (NMRFAM): Sesame support software for scheduling NMR spectrometers, for capturing information from users, and for generating annual reports to the National Institutes of Health.
- Medical College of Wisconsin (Brian Volkman, PhD): The Volkman group is a Sesame user for both their CESG projects and separately funded projects.
- University of Wisconsin-Madison Molecular Interactions Facility (MIF) (Eileen Maher, PhD) in the University of Wisconsin-Madison Biotechnology Center: A Sesame module supports data organization and user interactions for this facility.
- Structural Genomics of Pathogenic Protozoa (SGPP) (Wim Hol, PhD) in Seattle, Washington: This center utilizes a free-standing version of Sesame developed at CESG.
- BioMagResBank (Eldon Ulrich, Director): BMRB maintains a free-standing version of Sesame on their own servers with their own relational database management system, which provides users with access to software packages.
- Center for Biotechnology and Interdisciplinary Studies at RPI, maintains a free-standing version of Sesame.
- New York Consortium on Membrane Protein Structure (NYCOMPS) maintains a free-standing version of Sesame.
- Bio21 Molecular Science and Biotechnology Institute, University of Melbourne, Australia, maintains a free-standing version of Sesame.
- Promega Corporation in Madison, Wisconsin, maintains a free-standing version of Sesame.

Sesame Methodologies and Publications

+ Sesame Supports Structural Genomics Centers

Sesame is a Laboratory Information Management System designed to organize and record data relevant to complex scientific projects, to launch computer-controlled processes, and to help decide about subsequent steps on the basis of information available. The Sesame system is based on the multi-tier paradigm, and it consists of a framework and application modules that carry out specific tasks, and can support both high-throughput centers and small labs (down to individual users).

The Sesame LIMS consists of a series of web-based Java applet-applications designed to organize data generated by projects in structural genomics, structural biology, metabolomics, and shared laboratory resources. Sesame allows collaborators on a given project to enter, process, view, and extract relevant data, regardless of location, so long as web access is available. Sesame is a multi-tier system, with data residing in a relational database. As its associated relational database management system (RDMS), Sesame supports Oracle 8.1.7+, Microsoft SQL Server 2005, and PostgreSQL 8+ (an advanced open-source RDMS). Full details concerning the Sesame project can be found at <http://www.sesame.wisc.edu>.

Zolnai, Z. Lee, P.T., Li, J., Chapman, M.R., Newman, C.S., Phillips, G.N., Jr., Rayment, I., Ulrich, E.L., Volkman, B.F., Markley J.L. (2003) **Management system for structural and functional proteomics: Sesame**. *JSFG* 4(1):11-23. [12943363](#)

+ Sesame is a Well-Developed and Evolving LIMS

Regular Upgrades of the Software Released. Updates are based on new framework developments, user requests, and an issues list developed by the CESG administration in consultation with its pipeline team leaders. These issues are prioritized on the basis of needs for capturing information, making information available, saving time and effort, and providing automation. Members of the Sesame Team work with CESG team leaders and Sesame users in developing detailed specifications for new modules and upgrades to existing modules. Software bugs are communicated to a central site and are worked on continuously.

Upgraded To A Multi-Window Environment. In PSI-2, a general upgrade to the Sesame framework has simplified the development and use of the Sesame software by unifying the underlying structure of each module. A new multi-window environment, called the Board, allows users to display many records in a drag-and-drop environment. These windows can be cascaded, tiled, minimized, and maximized, much like a standard window environment. Sesame is now Java SE Development Kit (JDK) 1.4.2 compliant.

Barcode System. Sesame has the capability of printing and reading barcodes relevant to various parts of the pipeline. The barcode is sent to an IP address that specifies a specific barcode printer. Barcodes are attached to physical items, e.g., mass spectrometry samples, vials containing plasmids, NMR samples, and 96-well plates, to the electronic data record held inside the Sesame database. The Sesame Lab Master (a person designated to handle customization of Sesame within a laboratory) defines the barcode, which holds information such as the database ID, user name, the Sesame-defined barcode, and data defined when the barcode is printed.

Bulk Upload of ORFs and Target Scores. The Bulk Load View permits the bulk upload of ORFs and target scores as a .csv file. This facilitates the creation of new ORF records. Users can search by action in every Sesame Item, including ORF level. Sheherazade contains most of the Sesame Views, and is the proteomics master module. This enables users to work with a wider range of data from this single module.

Image Handling and Tracking. Well, the Sesame module for handling protein crystallization and NMR screens, has been modified to generate worklists for the Tecan and Gilson Robots. Users can attach crystal scores and images taken from, for example, the CrystalScore software. In addition, data transfer between Sesame and the Bruker CrystalFarm has been automated. A Mass Sample View is used to track mass spectrometry samples. For NMR samples, the Sample View has been modified so that it can provide a full definition of any solution sample.

Users can attach any number of files (gel scans, images of spectra, text files, etc.) to every Sesame Item defined within the system. The attached images and files can and viewed, manipulated, downloaded, and printed. The latest release of Sesame has increased reporting capabilities and has an improved amino acid calculator. Lab Masters can generate email, phone, and address reports for the labs they manage.

XML File Output. Sesame has the capability of exporting information on the CESG project in the form of XML files. These files have been designed to cover the full range of information required for deposition in the TargetDB and PepcDB, two

Center for Eukaryotic Structural Genomics - Sesame

databases organized by the NIGMS and made available on the Protein Data Bank website.

+ Information Management and Process Pipelining

Users interact with CESH's laboratory management system ('Sesame') through a series of web-based Java applet-applications designed to organize data generated by projects in structural genomics, structural biology, and shared laboratory resources. Sesame allows collaborators on a given project to enter, process, view, and extract relevant data, regardless of location, so long as web access is available. Sesame is a multi-tier system, with data that reside in an Oracle relational database. Sesame serves as a digital laboratory notebook and allows users to attach numerous files and images.

Sesame can launch computations that either utilize local computers or distributed computer clusters. The system has the capability of printing and reading barcodes relevant to various parts of the pipeline. Sesame can create reports and output data as XML files. It generates CESH's weekly contributions to the TargetDB and is capable of generating the full set of data to be deposited in the new PepcDN.

Sesame modules currently deployed (for molecular interaction screening) and under development with separate funding (for mass spectrometry proteomics, small molecule screening, and metabolomics) promise to enable seamless integration of structural genomics data with a larger domain of genome driven biology.

Full details about Sesame can be found at <http://www.sesame.wisc.edu>.

Sesame Team Members

- John Markley, PhD (PI)
- Zsolt Zolnai, PhD (Team Leader)

Center for Eukaryotic Structural Genomics (CESG), Department of Biochemistry
University of Wisconsin-Madison, 445 Henry Mall, Madison, WI 53706 | [Map](#) |
Telephone: 608.263.2183 Fax: 608.890.1942 Email: cesginfo@biochem.wisc.edu

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