



## MEDIA FAQs

The new DOE Systems Biology Knowledgebase, or KBase, is a collaborative, community-driven effort designed to accelerate our understanding of microbes, microbial communities, and plants.

### Q What is the Systems Biology Knowledgebase?

**A** KBase is a collaborative effort designed to accelerate our understanding of microbes, microbial communities, and plants. It will be a community-driven, extensible and scalable open-source software framework and application system. KBase will offer free and open access to data models and simulations, which will enable scientists and researchers to build new knowledge, test hypotheses, design experiments, and share their findings to accelerate the use of predictive modeling in biological research.

### Q Why do we need a KBase?

**A** Under the current research paradigm, consider how often the same work is replicated by different researchers either attempting to apply the same tool to different data or to apply different tools to the same data. Effort is spent implementing tools, installing tools, and testing tools; effort is spent repeatedly gathering and normalizing the same data and making that data interoperable by translating it into a single ID space; and effort is spent implementing methods for running tools in parallel on computational clusters. Often, the ideal methods are not used because investigators lack the expertise to implement and configure these methods. In addition, the tools (and disparate datasets) are often stand-alone and are not organized into coherent workflows. The KBase provides a solution to all of these issues: biological data are integrated into a single data model with a single namespace; methods are wrapped as KBase services and tied into the KBase data model; and all data and tools are backed by a stable and powerful computational infrastructure built to perform biological computations quickly and efficiently, and primed with all of the necessary data immediately on hand. There are no lengthy downloads to bring the data to the tools.

KBase is also an open development environment where new tool developers are invited and encouraged (and trained) to implement their methods as new KBase services. Tool developers are enthusiastic to do this, because it opens their tool to a wide user community, makes the use of their tool nearly effortless, and places a whole world of biological data at their fingertips for tool validation. KBase is an open data environment where new data producers are encouraged (and trained) to upload and integrate their data into the KBase data model. Data producers are enthusiastic to do this because all of the analysis and visualization tools available in KBase may immediately be applied to make sense of this data. In this way, KBase will serve as a catalyst for biological research, accelerating discovery for DOE missions and providing insights and benefits that can ultimately serve numerous application areas.

Driven by the ever-increasing wealth of data resulting from new generations of genomics-based technologies, systems biology is demanding a computational environment for comparing and integrating large, heterogeneous datasets and using this information to develop predictive models

## Q What are the potential impacts to research and to society?

A Initially, the impact of KBase is that it will integrate diverse data across the microbial, microbial community, and plant domains, enabling science and comparisons that were never before possible. KBase will connect this data with a diverse set of powerful computational tools, simulating and analyzing biological data to predict biological behavior, to test and generate hypotheses, and to propose new experiments. This will improve the knowledge of gene function and protein behavior in microbes, plants, and communities. In particular, it will enable users to predict interactions between plants and microbial communities. In the long term, KBase will be a popular computational environment, because it will empower computational methods developers, and it will equip data generators with powerful new analyses and models of their data. KBase will promote research collaboration and cooperation on a scale not previously possible. The benefit to society will be apparent as accelerated development of new biofuel microbes, new engineering enzymes and pathways, and a better understanding of plant growth and phenotypes that will translate into better and more productive crops.

## Q Who can use KBase?

A Anyone can use it. Use will be provided through a rich set of services that can be invoked remotely via web access.

## Q What training, such as tutorials and workshops, are available?

A The KBase team presents at various conferences and conducts workshops for end users and developers. Check out our calendar of events (<http://kbase.us/news/upcoming-events/>) or contact outreach ([outreach@kbase.us](mailto:outreach@kbase.us)) to find out when and where we will be.

## Q Do you have any tutorials and downloads?

A Yes we do. Educational materials and links can be found on our Resources page at <http://kbase.us/about/resources/>. Email lists are also available at the kbase site (<http://kbase.science.energy.gov>) for interaction with the community and the KBase team. In the future, a user forum will also be available.

## Q If I have any further questions about KBase, who do I contact?

A The KBase outreach team ([outreach@kbase.us](mailto:outreach@kbase.us)) can help answer your questions. For media-specific questions, please use [media@kbase.us](mailto:media@kbase.us).