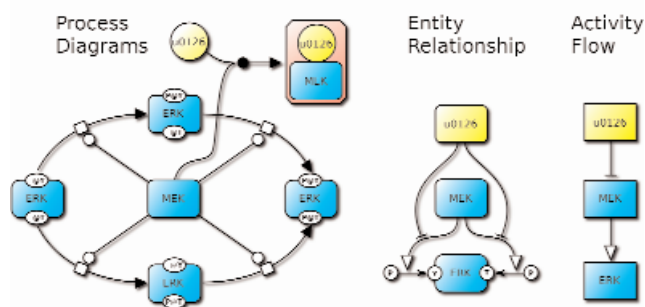


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Launch of the first standard graphical notation for biology



Graphic showing the catalysis of ERK (extracellular signal-regulated kinase) phosphorylation by the kinase MEK in the growth factors signalling pathway. This is illustrated by the three SBGN diagrams: process, entity relationship and activity flow.

Hinxton, 7 August 2009 – Researchers at the European Molecular Biology Laboratory's European Bioinformatics Institute (EMBL-EBI) and their colleagues in 30 labs worldwide have released a new set of standards for graphically representing biological information - the biology equivalent of the circuit diagram in electronics. This visual language should make it easier to exchange complex information, so that models are accurate, efficient and readily understandable. The new standard, called the Systems Biology Graphical Notation (SBGN), is published today in *Nature Biotechnology*.

Researchers use standardised visual languages to communicate complex information in a way that it is unambiguous and easy to understand. Such standard graphical representations are common to many scientific fields. But biology still lacks a standardised notation that describes all biological interactions, pathways

and networks, even though the discipline is dominated by graphical information.

The SBGN project was launched in 2005 as a united effort to specifically develop a new graphical standard for molecular and systems biology applications. The project was initiated by Hiroaki Kitano (Systems Biology Institute, Tokyo, Japan) and coordinated by Nicolas Le Novère (EMBL-EBI, Hinxton, UK) and Michael Hucka (California Institute of Technology, Pasadena, USA). The team comprises biochemists, modellers and computer scientists who have developed the SBGN in collaboration with the systems biology research community.

Le Novère said: "In the genomics era, especially since the emergence of high-throughput technologies, there have been massive increases in the amount of biological data. We believe that the SBGN will make it easier for researchers to understand each other's models and to share this data more effectively. This will benefit systems biologists working on a variety of biochemical processes, including gene regulation, metabolism and cellular signalling".

To ensure that this new visual language does not become too vast and complicated, the researchers decided to define three separate types of diagram that complement each other, describing molecular processes, relationships between entities and links among biochemical activities. This simplicity, combined with the extensive involvement of the community of researchers that will use SBGN, should ensure that the notation is rapidly adopted and widely used. ●

Source Article

Le Novère N, Hucka M, Mi H, Moodie S, Shreiber F, Sorokin A, Demir E, Wegner K, Aladjem M, Wimalaratne S, Bergman FT, Gauges R, Ghazal P, H Kawaji, Li L, Matsuoka Y, Villéger A, Boyd SE, Calzone L, Courtot M, Dogrusoz U, Freeman T, Funahashi A, Ghosh S, Jouraku A, Kim S, Kolpakov F, Luna A, Sahle S, Schmidt E, Watterson S, Goryanin I, Kell DB, Sander C, Sauro H, Snoep JL, Kohn K, Kitano H. The Systems Biology Graphical Notation. *Nature Biotechnology* (2009), 27

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About EMBL-EBI:

The European Bioinformatics Institute (EBI) is part of the European Molecular Biology Laboratory (EMBL) and is located on the Wellcome Trust Genome Campus in Hinxton near Cambridge (UK). The EBI grew out of EMBL's pioneering work in providing public biological databases to the research community. It hosts some of the world's most important collections of biological data, including DNA sequences (EMBL-Bank), protein sequences (UniProt), animal genomes (Ensembl), three-dimensional structures (the Protein Databank in Europe), data from gene expression experiments (ArrayExpress), protein-protein interactions (IntAct) and pathway information (Reactome). The EBI hosts several research groups and its scientists continually develop new tools for the biocomputing community.

About EMBL:

The European Molecular Biology Laboratory is a basic research institute funded by public research monies from 20 member states (Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom) and associate member state Australia. Research at EMBL is conducted by approximately 80 independent groups covering the spectrum of molecular biology. The Laboratory has five units: the main Laboratory in Heidelberg, and Outstations in Hinxton (the European Bioinformatics Institute), Grenoble, Hamburg, and Monterotondo near Rome. The cornerstones of EMBL's mission are: to perform basic research in molecular biology; to train scientists, students and visitors at all levels; to offer vital services to scientists in the member states; to develop new instruments and methods in the life sciences and to actively engage in technology transfer activities. EMBL's International PhD Programme has a student body of about 170. The Laboratory also sponsors an active Science and Society programme. Visitors from the press and public are welcome. www.embl.org

SBGN project website: <http://sbgn.org/>

For the details of the 30 participating institutions, see the paper published in the latest issue of Nature Biotechnology.

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