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Launch of the first standard graphical notation for biology — SBGN: Systems Biology Graphical Notation —

Japan, August 8, 2009—Researchers at the Systems Biology Institute, Okinawa Institute of Science and Technology, Keio University, and RIKEN in Japan, and their colleagues in 30 laboratories 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 biological models are accurate, efficient, and readily understandable.

The new standard, called the **Systems Biology Graphical Notation (SBGN)**, was published in the August 8 issue of the journal *Nature Biotechnology*.

Researchers use standardized 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, for example the circuit diagrams in electronics. But biology still lacks a standardized 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, which was initiated by Hiroaki Kitano (SBI, Sony Computer Science Laboratories, Inc. and Okinawa Institute of Science and Technology Promotion Corporation) and coordinated by Drs. Nicolas Le Novere (European Bioinformatics Institute) and Michael Hucka (California Institute of Technology). The international team of researchers that created SBGN is composed of biochemists, modelers, and computer scientists, who developed the notation in collaboration with the user community. (<http://www.sbgm.org/>)

"I am very pleased that we have made another important step for standardization of biological knowledge description. Systems Biology Graphical Notation (SBGN) defines visual representation of biological networks, just like circuit diagrams represent electronic circuits," says Kitano. "We can all agree there would be no electronics industry today without well-defined circuit diagrams. In this sense, this publication may represent a milestone in representation of information in biological science." "I would like to thank every member of the SBGN community and those who helped us working on this project as this is a result of a global collaborative effort over 5 years," adds Kitano.

Previous graphical notation in biology has tended to be ambiguous, used in different ways by different researchers and only suited to specific needs, for example to represent metabolic networks or signalling pathways. Even past efforts to create a more rigid notation failed to become accepted as a standard by the community. The researchers believe that the SBGN should be more successful because it represents a more concerted effort to establish a standard by engaging users.

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, which describe molecular process, relationships between entities and links among biochemical activities.

<Summary Information>

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- 4) Authors: Researchers at approximately 30 research institutions including the Systems Biology Institute, Sony Computer Science Laboratories, Inc., Okinawa Institute of Science and Technology Promotion Corporation, RIKEN, Keio University, EMBL European Bioinformatics Institute, California Institute of Technology, Stanford University, University of Edinburgh, IPK Gatersleben & MLU Halle, MSKCC Computational Biology Center, University of Hertfordshire, The University of Manchester, and Heidelberg University.

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