

WikiPathways: Curation, Visualization and Analysis of Biological Pathways

Martina-Summer Kutmon¹, Kristina Hanspers², Jonathan Melius¹, Ryan Miller¹, Nuno Nunes¹, Anders Riutta², Denise Slenter¹, Andra Waagmeester³, Egon Willighagen¹, Chris T. Evelo¹, Alexander Pico²

Maastricht University, Maastricht, the Netherlands¹, Gladstone Institutes, San Francisco, CA, USA², Micelio, Antwerp, Belgium³

WikiPathways (www.wikipathways.org) is a community curated pathway databases that enables researchers to capture rich, intuitive models of pathways. In this talk, I will highlight the latest developments, newest features and ongoing projects of WikiPathways and the associated tools pathvisio.js, PathVisio and the WikiPathways app for Cytoscape. The database and the associated tools are developed as open source projects with a lot of community engagement.

Tools: The interactive JavaScript-based pathway viewer, pathvisio.js, is integrated in the WikiPathways website and enables users to zoom in and click on pathway elements to show links to other databases. The standalone pathway editor, analysis and visualization tool, PathVisio provides easy-to-use drawing and annotation tools to capture identities, relationships, comments and literature references for each pathway element and interaction. The WikiPathways app for Cytoscape can be used to import biological pathways in Cytoscape for data visualization and network analysis.

Data: The WikiPathways database is improved by continuous data curation and updates through an expanding community: more than 630 individual contributors and more than 2,500 edits on nearly 900 pathways in 2017. In February 2018, we have reached a total number of pathways of 2,652 for 27 different species. Recently, we have decided to adopt the Creative Commons CC0 waiver for our content on WikiPathways. Our data is available for download from our website, through our REST webservice or in RDF format from our SPARQL endpoint. We are also in the progress of importing our content into WikiData.