

Biological Interactions Types for WikiPathways

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WikiPathways

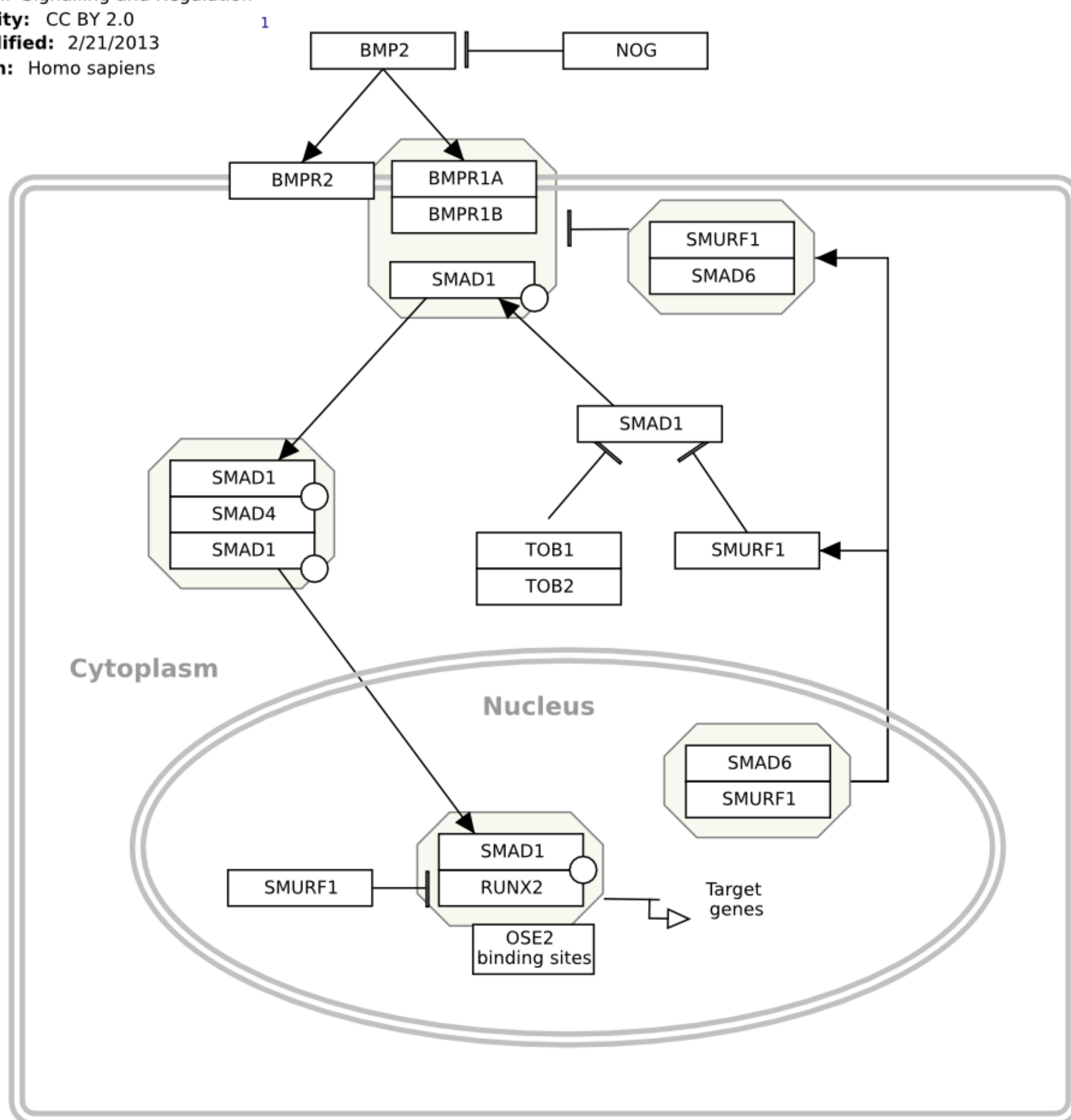
WikiPathways (www.wikipathways.org) is a wiki-based, community curated pathway database. It is an open, collaborative platform dedicated to the curation of biological pathways. Pathways have also become immensely useful for computational analysis and interpretation of large-scale experimental data when properly modeled.

WikiPathways RDF

RDF is the W3C data model for storage of semantic data. WikiPathways RDF is used, for instance, in the Open PHACTS project. The current RDF is converted from the GPML files of the pathways in WikiPathways.

In the future, the RDF needs to be able to handle storage of multiple data types and recognize their equivalency.

Title: BMP Signalling and Regulation
 Availability: CC BY 2.0
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 Organism: Homo sapiens



```
<http://rdf.wikipathways.org/Pathway/WP1425_r74390/DataNode/e2008>
a gpml:DataNode, skos:Concept, wp:GeneProduct;
rdfs:isDefinedBy gpml:DataNode;
rdfs:label "BMP2"@en;
rdfs:subClassOf <http://bio2rdf.org/ensembl:ENSG00000125845>;
dc:identifier <http://identifiers.org/ensembl/ENSG00000125845>;
dc:source "Ensembl"^^xsd:string;
dcterms:identifier "ENSG00000125845"^^xsd:string;
dcterms:isPartOf <http://rdf.wikipathways.org/Pathway/WP1425_r74390>;
gpml:centerx "263.0"^^xsd:float;
gpml:centerx "42.0"^^xsd:float;
gpml:centerx "e2008"^^xsd:string;
gpml:graphid "20.0"^^xsd:float;
gpml:height "80.0"^^xsd:float;
gpml:width "32768"^^xsd:string;
wp:bdbEnsembl <http://identifiers.org/ensembl/ENSG00000125845>;
wp:bdbEntrezGene <http://identifiers.org/ncbigene/650>;
wp:bdbHgncSymbol <http://identifiers.org/hgnnc.symbol/BMP2>;
wp:bdbUniprot <http://identifiers.org/uniprot/C8C060>, <http://identifiers.org/uniprot/P12643> .

<http://rdf.wikipathways.org/Pathway/WP1425_r74390/Line/fc3a0>
a gpml:Interaction;
dcterms:isPartOf <http://rdf.wikipathways.org/Pathway/WP1425_r74390>;
gpml:graphid "fc3a0"^^xsd:string;
gpml:graphref "b66d6"^^xsd:string, "e2008"^^xsd:string;
gpml:linethickness "1.0"^^xsd:float;
gpml:zorder "12288"^^xsd:long .

<http://rdf.wikipathways.org/Pathway/WP1425_r74390/Point/e3341334-b061-4937-91b7-25f9cb4770da>
a gpml:Point;
dcterms:isPartOf <http://rdf.wikipathways.org/Pathway/WP1425_r74390/Line/fc3a0>;
gpml:arrowHead "Arrow"^^xsd:string;
gpml:graphref "b66d6"^^xsd:string;
gpml:relX "0.0"^^xsd:float;
gpml:relY "-1.0"^^xsd:float;
gpml:x "0.0"^^xsd:float;
gpml:y "-1.0"^^xsd:float .

<http://rdf.wikipathways.org/Pathway/WP1425_r74390/group/fda35>
a gpml:Group;
dcterms:isPartOf <http://rdf.wikipathways.org/Pathway/WP1425_r74390>;
gpml:graphid "b5c25"^^xsd:string;
gpml:groupid "fda35"^^xsd:string .
```

Interaction Mappings

Suggestions for mappings between the various standards and their semantics. These are the current interaction types for Biopax, MIM, SBGN, SBO, GPML (WP) and Reactome.

Interaction Type	GPML	BioPAX	MIM	SBGN	SBO	Reactome
Interaction / Relationship / Undirected interaction	Line	Interaction	----	----	----	----
Conversion	Arrow	Conversion	Conversion/Modification	Production/Consumption	biochemical or transport reaction / production / consumption	Transition/ Process
Inhibition	TBar/ Inhibition	Control	Inhibition	Inhibition	inhibition	Inhibition
Catalysis	Arrow	Catalysis	Catalysis	Catalysis	catalysis	Catalysis
Stimulation	Arrow	Control	Stimulation	Stimulation	stimulation	Activation
Necessary stimulation	Arrow	Control	Necessary Stimulation	Necessary Stimulation	necessary stimulation / absolute stimulation	Activation
Binding	Arrow	Molecular Interaction/ Complex Assembly	Non-Covalent Reversible Binding	----	non-covalent binding	Association/Binding
Transport	Arrow	Transport/ Transport with Biochemical Reaction	----	----	----	Activation
Transcription-translation	Arrow	Template Reaction	Template Reaction	----	transcription / translation	----
Cleavage	Arrow	Degradation	Cleavage	Consumption	consumption / degradation / cleavage	Dissociation

WP vocabularies

The GPML and WP vocabularies are the two definition sets for pathways in WikiPathways. GPML is the graphical vocabulary while WP is the semantic vocabulary for the RDF.

