Supplementary Material

S1 Example CONSTRUCT query to translate from the GPML vocabulary to the WP vocabulary
# This CONSTRUCT query annotates WikiPathways Directed Interactions.
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX dc: <http://purl.org/dc/elements/1.1/> 
PREFIX dcterms: <http://purl.org/dc/terms/> 
PREFIX gpml: <http://vocabularies.wikipathways.org/gpml#> 
PREFIX wp: <http://vocabularies.wikipathways.org/wp#> 
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#> 

CONSTRUCT { 
    ?line rdf:type wp:Conversion . 
}
FROM <http://rdf.wikipathways.org/> 
WHERE { 
    # Get the pathway identifier 
    # An interaction is between 2 datanodes 
    # DataNode 1 
    ?datanode1 dc:identifier ?dn1Identifier . 
    ?datanode1 gpml:graphid ?dn1GraphId . 
    ?datanode1 rdf:type gpml:DataNode . 
    # DataNode 2 
    ?datanode2 rdf:type gpml:DataNode . 
    ?datanode2 gpml:graphid ?dn2GraphId . 
    # Some DataNodes don’t contain an identifier 
    FILTER ( !regex( str(?datanode2) , " noIdentifier" ) ) . 
    FILTER ( !regex( str(?datanode1), " noIdentifier" ) ) . 
    # The base of an interaction is the line of type gpml:Interaction 
    ! graphref . 
    ?line gpml:graphid ?lineGraphId . 
    # A line is linked to a DataNodes by it graphref. 
    ?line gpml:graphref ?dn1GraphId . 
    ?line gpml:graphref ?dn2GraphId . 
    FILTER ( ?datanode2 != ?datanode1 ) 
    # Directionality is captured in the Points attached to a line. Since both datanodes can be a target of a direction 
    # we need to use a UNION to capture both 
    ?point rdf:type gpml:Point . 
    ?point dcterms:isPartOf ?line . 
    ?point gpml:arrowHead "mim-conversion" ^ xsd:string . 
    {{?point gpml:graphref ?dn2GraphId .} UNION {?point gpml:graphref ?dn1GraphId .}} . 
}

Figure 1. A construct query is type of SPARQL query that enables the conversion of one graph pattern to another. Here an interaction described by its spatial properties is converted into a semantic representation reflecting its biological interpretation.