RESTful Web Services are implemented offering data access via HTTP requests following a Representational State Transfer (REST) approach. Data can be accessed using simple http GET requests to either retrieve a complete SBML model, or a BioPAX/SBPAX3 representation of the requested entries, or pieces of information in a tailored format (in plain text or XML). Entries can be requested directly by using the database entry ID or can be searched for using the same format query built in user interface advanced search.

http://sabiork.h-its.org/sabioRestWebServices/

**RESTful Web Services Search Keyword Vocabulary**

Queries are formed using one or more of the fields below and should be passed as a request parameter named "q". Fields may be combined using the boolean AND operator to form complex queries.

- **Entry**
  - EntryID - SABIO-RK entry ID (eg EntryID:123)

- **Reaction/Pathway**
  - Pathway - The name of the reaction pathway (eg, Pathway:urea Cycle)
  - KeggReactionID - KEGG ID for the reaction (eg KeggReactionID:R00782)
  - SabioReactionID- SABIO-RK ID for the reaction (eg SabioReactionID:14)

- **Compound**
  - AnyRole - Compound found in any role in a reaction eg (AnyRole:oxygen)
  - Substrate - Compound acting as a substrate in a reaction eg (Substrate:ATP)
  - Product - Compound acting as a product in a reaction
  - Inhibitor - Compound acting as an inhibitor modifier in a reaction
  - Catalyst - Compound acting as a catalyst modifier in a reaction
  - Cofactor - Compound acting as a cofactor in a reaction
  - Activator - Compound acting as an activator in a reaction
  - OtherModifier - Compound acting as a modifier not specified above, in a reaction
  - PubChemID - PubChem ID number of a compound
  - KeggID - KEGG ID number of a compound
- ChebiID - Chebi ID number of a compound
- SabioCompoundID

- **Enzyme**
  - Enzymename - An enzyme may included in the search parameters by name. (eg (Enzymename:Acetoin dehydrogenase)
  - ECNumber - An enzyme may included in the search parameters by EC Class number (eg. ECNumber:1.1.1.2)
  - UniProtKB_AC - Protein as listed in UniProtKB (eg UniProtKB_AC:A1VCV2)
  - EnzymeType - Type of the Enzyme, only valid queries are EnzymeType:mutant or EnzymeType:wildtype

- **Biological Source**
  - Tissue - The name of the tissue (eg. Tissue:liver)
  - Organism - The name of the organism (eg. Organism:homo sapiens)
  - CellularLocation - Location within the cell that a kinetic reaction takes place (eg. CellularLocation:leucoplast)

- **Kinetic Data**
  - Parametertype - Experimental parameter specified in the kinetic law entry (eg Parametertype:Vmax)
  - KineticMechanismType - Mechanism for the kinetic data (eg KineticMechanismType:rapid equilibrium)
  - AssociatedSpecies - Species which is associated with a parameter (AssociatedSpecies:ATP)

- **Publication**
  - Title - Publication within which the kinetic law data is published, by title
  - Author - Publication within which the kinetic law data is published, by author (eg Author:Shelton E)
  - Year - Year of publication eg Year:2010
  - PubMedID - Publication within which the kinetic law data is published, by PubMed ID (eg PubMedID:13538975)
  - InfosourceType - Source of the data, valid queries are InfosourceType:Journal or InfosourceType:direct submission
  - DateSubmitted - Earliest possible date from which the entry exists in SABIO-RK (eg DateSubmitted:27/10/2010)

- **Range options**
  - TemperatureRange - Range of temperatures (eg TemperatureRange:[36.9 TO 37.1]
  - pHValueRange - Range of pH values (eg pHValueRange:[6.9 TO 7.1]

- **Boolean options**
  - hasKineticData - Entry specifies a rate equation (eg hasKineticData:true)
  - IsRecombinant - Entry has recombinant data (eg IsRecombinant:false)
EXAMPLES

Description: Get a single kinetic law entry by SABIO entry ID
Example URLs:
http://sabiork.h-its.org/sabioRestWebServices/kineticLaws/123
http://sabiork.h-its.org/sabioRestWebServices/kineticLaws/123?level=2&version=3&annotation=miriam
Input: entry ID
Output: SBML model
Optional Parameters:
- level - SBML level, default value:3
- version - SBML version, default value:1
- normalized - Export parameters with normalized units, default:true
- annotation - The schema for the annotation, default:identifier

Description: Get kinetic law entries by SABIO entry IDs
Example URLs:
http://sabiork.h-its.org/sabioRestWebServices/kineticLaws?kinlawids=123,234
Input: list of SABIO entry IDs
Output: SBML model
Optional Parameters:
- level - SBML level, default value:3
- version - SBML version, default value:1
- normalized - Export parameters with normalized units, default:true
- annotation - The schema for the annotation, default:identifier

Description: Search for SABIO kinetic law entries by a query string
Example URLs:
http://sabiork.h-its.org/sabioRestWebServices/searchKineticLaws/sbml?q=Tissue:spleen AND Organism:"Homo sapiens"
Input: query string, please quota your search term if there is a space between. e.g. "Homo sapiens"
Output: SBML model
Optional Parameters:
- level - SBML level, default:3
- version - SBML version, default:1
- normalized - Export parameters with normalized units, default:true
- annotation - The schema for the annotation, default:identifier

Description: Search for SABIO kinetic law entries by a query string
Example URL:
http://sabiork.h-its.org/sabioRestWebServices/biopax?q=Tissue:spleen AND Organism:"Homo sapiens"
Input: query string
Output: BioPAX model

Description: Search for SABIO kinetic law entries by a query string, return only the number of the matching entries
Example URLs:
http://sabiork.h-its.org/sabioRestWebServices/count?q=Tissue:spleen AND Organism:"Homo sapiens"
Description: Get the list of SABIO kinetic law entries by a query string

Example URLs:
http://sabiork.h-its.org/sabioRestWebServices/searchKineticLaws/entryIDs?q=Tissue:spleen AND Organism:"Homo sapiens"
Or
http://sabiork.h-its.org/sabioRestWebServices/searchKineticLaws/kinlaws?q=Tissue:spleen AND Organism:"Homo sapiens"

Input: query string, please quota your search term if there is a space between. e.g. "Homo sapiens"
Output: XML or plain text
Optional Parameters:

- format - format for export "xml" or "txt", default:xml

Description: Search for SabioReactionIDs

Example URL (New style query): http://sabiork.h-its.org/sabioRestWebServices/reactions/reactionIDs?q=KeggReactionID:R00278

Input: query string
Output: XML or plain text list of all SabioReactionIDs which have entries matching search criteria
Optional Parameters:

- format - format for export "xml" or "txt", default:xml
- equation - if true export also reaction equations, default:false

Description: Search for SabioReactionIDs(sbml)

Example URL (New style query): http://sabiork.h-its.org/sabioRestWebServices/reactions/sbml?q=KeggReactionID:R00278

Input: query string
Output: SBML model
Optional Parameters:

- level - SBML level, default: 3
- version - SBML version, default: 1
- normalized - Export parameters with normalized units, default: true
- annotation - The schema for the annotation, default: identifier

Description: get suggestions

Example URL (uniProtKB_ACs, all results): http://sabiork.h-its.org/sabioRestWebServices/suggestions/uniProtKB_ACs

Input: field name and term to search for. No query string supplied results in results for the field being returned (eg, all uniProtKB_ACs used in SABIO entries)
Output: XML or plain text
Optional Parameters:

- format - format for export "xml" or "txt", default:xml