

Example SPANG commands compared with the corresponding plain SPARQL queries

1. Retrieve information about UniProt P02649.
2. Confine the results of query 1 to organism information.
3. Modify the query 2 to output the scientific name of the organism.
4. Retrieve annotation for UniProt P02649.
5. Search for classes matching a regular expression '^apolipoprotein'
6. Search MBGD for orthologs of UniProt K9Z723.
7. Search MBGD for orthologs of K9Z723, and then search UniProt for their annotations.
8. Search MBGD for orthologs of K9Z723, and then search UniProt for cross-references to PDB entries.
9. Search for classes matching a regular expression '^alzheimer'
10. Retrieve information about EFO_0000249 (Alzheimer's disease).
11. Retrieve differentially expressed genes in Alzheimer's disease, and then pick out proteins related to GO_0045202 (synapse).

SPANG commands	Corresponding plain SPARQL queries
1 spang uniprot -S uniprot:P02649	Endpoint http://sparql.uniprot.org/sparql Query <pre> PREFIX uniprot: <http://purl.uniprot.org/uniprot/> SELECT ?p ?o WHERE { uniprot:P02649 ?p ?o } </pre>
2 spang uniprot -S uniprot:P02649 -P up:organism	Endpoint http://sparql.uniprot.org/sparql Query <pre> PREFIX uniprot: <http://purl.uniprot.org/uniprot/> PREFIX up: <http://purl.uniprot.org/core/> SELECT ?o WHERE { uniprot:P02649 up:organism ?o } </pre>
3 spang uniprot -S uniprot:P02649 -P up:organism/up:scientificName	Endpoint http://sparql.uniprot.org/sparql Query <pre> PREFIX uniprot: <http://purl.uniprot.org/uniprot/> PREFIX up: <http://purl.uniprot.org/core/> SELECT ?o WHERE { uniprot:P02649 up:organism/up:scientificName ?o } </pre>
4 spang uniprot uniprot_annot P02649	Endpoint http://sparql.uniprot.org/sparql Query <pre> PREFIX uniprot: <http://purl.uniprot.org/uniprot/> PREFIX up: <http://purl.uniprot.org/core/> PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#> PREFIX skos: <http://www.w3.org/2004/02/skos/core#> SELECT ?gene ?organism ?function WHERE { uniprot:P02649 up:encodedBy/skos:prefLabel ?gene ; up:organism/up:scientificName ?organism ; up:annotation ?annot . ?annot a up:Function_Annotation ; rdfs:comment ?function . } </pre>
5 spang uniprot regex_class '^apolipoprotein'	Endpoint http://sparql.uniprot.org/sparql Query <pre> PREFIX owl: <http://www.w3.org/2002/07/owl#> PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#> SELECT DISTINCT ?class ?label WHERE { ?class a owl:Class ; rdfs:label ?label . FILTER regex(?label, "'apolipoprotein", "i") } </pre>
6 spang mbgd mbgd1:get_ortholog K9Z723	Endpoint http://sparql.nibb.ac.jp/sparql Query <pre> PREFIX uniprot: <http://purl.uniprot.org/uniprot/> PREFIX void: <http://rdfs.org/ns/void#> PREFIX orthology: <http://purl.org/net/orth#> PREFIX mbgd: <http://purl.jp/bio/11/mbgd#> PREFIX mbgdr: <http://mbgd.genome.ad.jp/rdf/resource/> SELECT ?uniprot WHERE { ?group a orthology:OrthologsCluster ; orthology:hasHomologous/mbgd:gene/mbgd:uniprot uniprot:K9Z723 ; orthology:hasHomologous/mbgd:gene/mbgd:uniprot ?uniprot ; void:inDataset mbgdr:default . } </pre>

7	spang mbgd mbgdI:get_ortholog K9Z723 spang uniprot -S 1 -P rdfs:label	Endpoint	http://sparql.nibb.ac.jp/sparql Query PREFIX uniprot: <http://purl.uniprot.org/uniprot/> PREFIX void: <http://rdfs.org/ns/void#> PREFIX orthology: <http://purl.org/net/orth#> PREFIX mbgd: <http://purl.jp/bio/11/mbgd#> PREFIX mbgdr: <http://mbgd.genome.ad.jp/rdf/resource/> PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#> SELECT ?uniprot ?label WHERE { ?group a orthology:OrthologsCluster ; orthology:hasHomologous/mbgd:gene/mbgd:uniprot uniprot:K9Z723 ; orthology:hasHomologous/mbgd:gene/mbgd:uniprot ?uniprot ; void:inDataset mbgdr:default . SERVICE <http://sparql.uniprot.org/sparql> { ?uniprot rdfs:label ?label . } }
8	spang mbgd mbgdI:get_ortholog K9Z723 spang uniprot uniprot_xref PDB	Endpoint	http://sparql.nibb.ac.jp/sparql Query PREFIX uniprot: <http://purl.uniprot.org/uniprot/> PREFIX void: <http://rdfs.org/ns/void#> PREFIX orthology: <http://purl.org/net/orth#> PREFIX mbgd: <http://purl.jp/bio/11/mbgd#> PREFIX mbgdr: <http://mbgd.genome.ad.jp/rdf/resource/> PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#> PREFIX up: <http://purl.uniprot.org/core/> SELECT ?uniprot ?xref WHERE { ?group a orthology:OrthologsCluster ; orthology:hasHomologous/mbgd:gene/mbgd:uniprot uniprot:K9Z723 ; orthology:hasHomologous/mbgd:gene/mbgd:uniprot ?uniprot ; void:inDataset mbgdr:default . SERVICE <http://sparql.uniprot.org/sparql> { ?uniprot rdfs:seeAlso ?xref . ?xref up:database <http://purl.uniprot.org/database/PDB> . } }
9	spang atlas regex_class ' ^alzheimer'	Endpoint	https://www.ebi.ac.uk/rdf/services/atlas/sparql Query PREFIX owl: <http://www.w3.org/2002/07/owl#> PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#> SELECT DISTINCT ?class ?label WHERE { ?class a owl:Class ; rdfs:label ?label . FILTER regex(?label, "^alzheimer", "i") }
10	spang atlas -S efo:EFO_0000249	Endpoint	https://www.ebi.ac.uk/rdf/services/atlas/sparql Query PREFIX efo: <http://www.ebi.ac.uk/efo/> SELECT ?p ?o WHERE { efo:EFO_0000249 ?p ?o }
11	spang atlas diff_expr EFO_0000249 > result cut -f1 result spang uniprot filter_by_go GO_0045202	Endpoint	https://www.ebi.ac.uk/rdf/services/atlas/sparql Query PREFIX efo: <http://www.ebi.ac.uk/efo/> PREFIX atlas: <http://rdf.ebi.ac.uk/terms/atlas/> PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#> PREFIX up: <http://purl.uniprot.org/core/> PREFIX obo: <http://purl.obolibrary.org/obo/> SELECT ?uniprot ?probe ?experiment ?pubmed ?expr_label WHERE { ?experiment atlas:pubmedid ?pubmed ; atlas:hasAnalysis/atlas:hasExpressionValue ?diff_expr . ?diff_expr rdfs:label ?expr_label ; atlas:hasFactorValue/a efo:EFO_0000249 ; atlas:isMeasurementOf ?probe . ?probe atlas:dbXref ?uniprot . ?uniprot a atlas:UniprotDatabaseReference . SERVICE <http://sparql.uniprot.org/sparql> { ?uniprot up:classifiedWith obo:GO_0045202 } }