**Q1 How many protein records are in UniProt?**

PREFIX up:<http://purl.uniprot.org/core/>

SELECT (COUNT (DISTINCT ?protein) AS ?proteincount)

WHERE {

?protein a up:Protein .

}

Result = 360157660

**Q2: How many Arabidopsis thaliana protein records are in UniProt?**

PREFIX up:<http://purl.uniprot.org/core/>

PREFIX taxon:<http://purl.uniprot.org/taxonomy/>

SELECT (COUNT(DISTINCT ?protein) AS ?count)

WHERE{

?protein a up:Protein .

?protein up:organism taxon:3702 . #select only A. thaliana proteins

}

Result = 136782

**Q3: retrieve pictures of Arabidopsis thaliana from UniProt?**

SELECT ?image

WHERE

{

taxon:3702 <http://xmlns.com/foaf/0.1/depiction> ?image .

}

**Q4: What is the description of the enzyme activity of UniProt Protein Q9SZZ8**

PREFIX up:<http://purl.uniprot.org/core/>

PREFIX uniprot:<http://purl.uniprot.org/uniprot/>

PREFIX rdfs:<http://www.w3.org/2000/01/rdf-schema#>

PREFIX label:<http://www.w3.org/2004/02/skos/core#>

SELECT ?description

WHERE {

uniprot:Q9SZZ8 a up:Protein ;

up:enzyme ?enzyme .

?enzyme up:activity ?activity .

?activity rdfs:label ?description

}

Result : Beta-carotene + 4 reduced ferredoxin [iron-sulfur] cluster + 2 H(+) + 2 O(2) = zeaxanthin + 4 oxidized ferredoxin [iron-sulfur] cluster + 2 H(2)O

**Q5: Retrieve the proteins ids, and date of submission, for proteins that have been added to UniProt this year (HINT Google for “SPARQL FILTER by date”)**

PREFIX up:<http://purl.uniprot.org/core/>

PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>

SELECT ?id ?date

WHERE

{

?protein a up:Protein .

?protein up:created ?date .

BIND (SUBSTR(STR(?protein),33) AS ?id)

FILTER (?date >= '202-01-01'^^xsd:date)

}

Tabla

Descripción generada automáticamente

Result : ID: A0A7H5I0J9 , date : 2021-02-10. Just an example. There are more results.

**Q6: How many species are in the UniProt taxonomy?**

PREFIX taxon:<http://purl.uniprot.org/taxonomy/>

PREFIX up:<http://purl.uniprot.org/core/>

SELECT (COUNT(DISTINCT ?taxon) AS ?count)

WHERE{

?taxon a up:Taxon .

?taxon up:rank up:Species

}

Result : 2029846

**Q7: How many species have at least one protein record? (this might take a long time to -execute, so do this one last!)**

PREFIX up:<http://purl.uniprot.org/core/>

SELECT (COUNT(DISTINCT ?species) AS ?speciesnum)

WHERE

{

?protein a up:Protein .

?protein up:organism ?species .

?species a up:Taxon .

?species up:rank up:Species .

}

Result : 1057158

**-Q8: Find the AGI codes and gene names for all Arabidopsis thaliana proteins that have a protein function annotation description that mentions “pattern formation”.**

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 DISTINCT ?AGI?name

WHERE

{

?protein a up:Protein ;

up:organism ? id ;

up:encodedBy ?g ;

up:annotation ?function\_annot .

? id a up:Taxon ;

up:scientificName "Arabidopsis thaliana" .

?g skos:prefLabel ?name .

?g up:locusName ?AGI\_name .

?protein up:annotation ?annotation .

?annotation rdfs:comment ?f\_annot .

FILTER REGEX (?f\_annot, "pattern formation", "i") .

}

Patrón de fondo

Descripción generada automáticamente

**Q9: What is the MetaNetX Reaction identifier (starts with “mnxr”) for the UniProt Protein uniprotkb:Q18A79**

PREFIX mtnx: <https://rdf.metanetx.org/schema/>

PREFIX up: <http://purl.uniprot.org/uniprot/>

SELECT DISTINCT ?id

WHERE{

?pept mtnx:peptXref up:Q18A79 .

?cata a mtnx:CATA ;

mtnx:pept ?pept .

?gpr mtnx:cata ?cata ;

mtnx:reac ?reac .

?reac a mtnx:REAC ;

mtnx:mnxr ?mnxr .

?mnxr rdfs:label ?id .

}

**Q10: What is the official Gene ID (UniProt calls this a “mnemonic”) and the MetaNetX Reaction identifier (mnxr…..) for the protein that has “Starch synthase” catalytic activity in Clostridium difficile (taxon 272563).**

PREFIX mnx: <https://rdf.metanetx.org/schema/>

PREFIX uniprotkb: <http://purl.uniprot.org/uniprot/>

PREFIX up: <http://purl.uniprot.org/core/>

PREFIX taxon: <http://purl.uniprot.org/taxonomy/>

SELECT DISTINCT ?ID ?MNXID ?activity

WHERE

{

service <http://sparql.uniprot.org/sparql> {

?protein a up:Protein ;

up:organism taxon:272563 ;

up:mnemonic ?ID ;

up:classifiedWith ?GO .

?GO rdfs:label ?activity .

filter contains(?activity, "starch synthase")

bind (substr(str(?protein),33) as ?prot\_ac)

bind (IRI(CONCAT(uniprotkb:,?prot\_ac)) as ?uniprotRef)

}

service <https://rdf.metanetx.org/sparql> {

?pept mnx:peptXref ?uniprotRef .

?cata mnx:pept ?pept .

?gpr mnx:cata ?cata ;

mnx:reac ?reac .

?reac rdfs:label ?MNXID .

}

}

