**LAB-3 - 6211**

Q1.

A1.

1. COUNT(\*) from gene;
2. SELECT DISTINCT chromosome from gene
3. SELECT DISTINCT gene\_type from gene
4. SELECT COUNT(\*) FROM gene where modification\_date BETWEEN DATE('2015-01-01') AND DATE('2021-12-31')

Q2.

A2.

1. SELECT gene.name,synonym.name from gene JOIN synonym ON gene.gene\_id = synonym.gene\_id;
2. SELECT DISTINCT COUNT(\*) name from synonym;
3. SELECT DISTINCT gene.chromosome, external\_identifier.identifier from gene JOIN external\_identifier ON gene.gene\_id = external\_identifier.gene\_id WHERE gene.chromosome = 1;
4. SELECT DISTINCT gene.gene\_type, synonym.name from gene JOIN synonym ON gene.gene\_id = synonym.gene\_id WHERE gene.gene\_type = "unknown";

Q3.

A3.

1)

1. select name,count(\*) from gene where species in ('homo sapiens','mus musculus') group by name order by count(\*) DESC, name ASC ;

2)

1. select name from gene where species in ('homo sapiens','mus musculus') group by name order by name DESC ;
2. SELECT gene.name,synonym.name from gene JOIN synonym ON gene.gene\_id = synonym.gene\_id;
3. SELECT DISTINCT gene.name, external\_identifier.identifier from gene JOIN external\_identifier ON gene.gene\_id = external\_identifier.gene\_id;

Q4.

A4.

1) Count for Part 1 Q4 is **95813**

2)

1. Do they come from different species? Find an example.

YES. These genes come from both humans and mice and thus they have the same names.

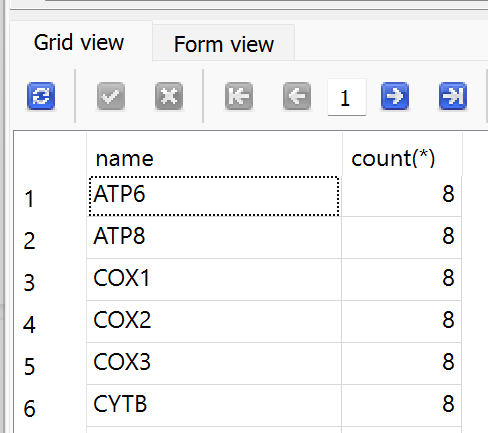


Fig 1: Multiple genes having same name as species are different

1. Do they have different synonyms? Find an example.

YES. The gene A1BG has 4 synonyms as shown in the figure proving multiple genes having the same name.

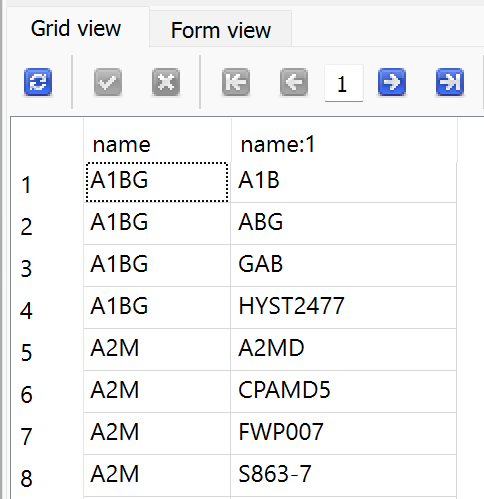


Fig 2: Multiple genes having same name as synonyms are different

1. Do they have different identifiers? Find an example.

YES. A1BG gene has 3 identifiers as shown in the figure below

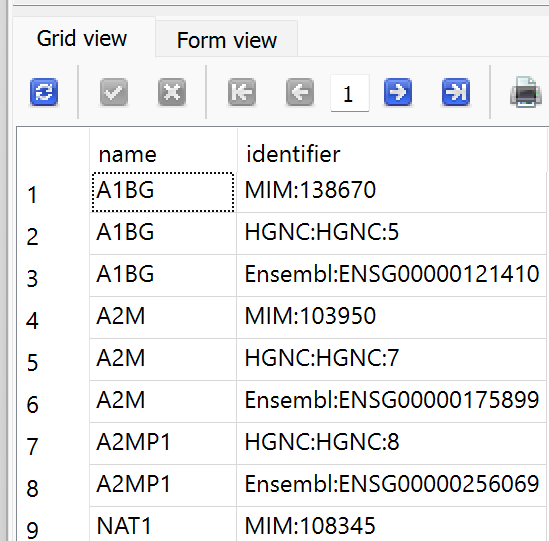


Fig 3: Multiple genes having same name as identifiers are different