***BGGN-213: FOUNDATIONS OF BIOINFORMATICS***

***Find-a-gene project assignment!***

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PID: A59000602

Q1

1. Protein name:   
   RAS guanyl-releasing protein 1 (RASGRP1) isoform b
2. Species:   
   Home sapiens (taxid:9606)
3. Accession number:   
   NP\_001122074.1
4. Function known:   
   RASGRP1 is guanine nucleotide exchange factor (GEF) that activates RAS small GTPase by converting GDP to GTP. It mediates MAPK signaling in T cells and is important for T cell activation and proliferation.

Q2

[Search Results]

1. Blast method:   
   TBLASTN

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|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Description | Scientific Name | Max Score | Query Cover | E-value | Per. Ident | Accession |
| 1  Picked | Egretta garzetta isolate BGI\_Z169 unplaced genomic scaffold, ASM68718v1 scaffold2 | Egretta garzetta | 145 | 89% | 1e-33 | 57.26% | NW\_009258894.1 |
| 2 | Egretta garzetta isolate BGI\_Z169 unplaced genomic scaffold, ASM68718v1 scaffold54 | Egretta garzetta | 94.4 | 41% | 7e-18 | 53.57% | NW\_009259313.1 |
| 3 | Egretta garzetta isolate BGI\_Z169 unplaced genomic scaffold, ASM68718v1  scaffold621 | Egretta garzetta | 70.9 | 6% | 9e-11 | 49.02% | NW\_009258687.1 |
| 4 | Egretta garzetta isolate BGI\_Z169 unplaced genomic scaffold, ASM68718v1  scaffold287 | Egretta garzetta | 68.6 | 6% | 5e-10 | 49.02% | NW\_009260435.1 |
| 5 | Egretta garzetta isolate BGI\_Z169 unplaced genomic scaffold, ASM68718v1  scaffold59 | Egretta garzetta | 67.0 | 7% | 2e-09 | 45.76% | NW\_009267230.1 |

1. Search output list (top 5 hits):
2. Database searched:   
   refseq\_genomes
3. Limits applied:   
   Organism limited to Egretta (taxid:56073)

1. Alignment of choice:   
   Egretta garzetta isolate BGI\_Z169 unplaced genomic scaffold, ASM68718v1 scaffold2

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Description automatically generated

1. E-value and other alignment stats:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| E-value | Score | Method | Identities | Positives | Gaps |
| 1e-33 | 145 bits (365) | Compositional matrix adjust | 79/124(64%) | 75% | 0% |
|  |  |  |  |  |  |

Q3  
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Description automatically generated

1. Protein sequence of choice matches Subject above:  
   VFNEMTELLSSYRNYDSYRRAYNECSNFKIPILGVHLKDLISLYEGMPDYLEDKKINIYK
2. Name in header:

Egretta garzetta isolate BGI\_Z169 unplaced genomic scaffold, ASM68718v1 scaffold2

1. Species:   
   Egretta garzetta

Q4

1. Blastp output list with identities and Evalue:  
   A screenshot of a computer

   Description automatically generated

A screenshot of a computer

Description automatically generated

1. Top alignment shown with alignment statistics:  
   A screenshot of a computer

   Description automatically generated
2. Results indicates a “novel” gene found:

My top match has 98.33% identity to a different species - Serinus canaria.

 “Hi! It’s me.”

Thus, this gene from NW\_009258894.1 and its corresponding protein are novel.