**GROUP 1: Alzheimer's- Presenelin 2 (Alzheimer disease 4) Isoform CRA\_a Homo sapien**

Savana Canary, Sam Hall, Tara Knott, Lily Harvey

**Assignment 1:** We picked an Alzheimer’s gene

**Assignment 2:**

**FASTA:**

*>gi|119590202|gb|EAW69796.1| presenilin 2 (Alzheimer disease 4), isoform CRA\_a [Homo* ***sapiens]***

MLAGTVRFARHCLKFFPAQKPACVDFGASRGRAMLTFMASDSEEEVCDERTSLMSAESPTPRSCQEGRQGPEDGENTAQWRSQENEEDGEEDPDRYVCSGVPGRPPGLEEELTLKYGAKHVIMLFVPVTLCMIVVVATIKSVRFYTEKNGQLIYTPFTEDTPSVGQRLLNSVLNTLIMISVIVVMTIFLVVLYKYRCYKFIHGWLIMSSLMLLFLFTYIYLGEVLKTYNVAMDYPTLLLTVWNFGAVGMVCIHWKGPLVLQQAYLIMISALMALVFIKYLPEWSAWVILGAISVYDLVAVLCPKGPLRMLVETAQERNEPIFPALIYSSAMVWTVGMAKLDPSSQGALQLPYDPEMEDSYDSFGEPSYPEVFEPPLTGYPGEELEEEEERGVKLGLGDFIFYSVLVGKAAATGSGDWNTTLACFVAILIGLCLTLLLLAVFKKALPALPISITFGLIFYFSTDNLVRPFMDTLASHQLYI

**Most Ancestral Species:** Scientific name: strongyloides ratti

* Common name: gastro-intestinal parasite of the rat
* Mutations in presenilin-1 are a major cause of early onset Alzheimer's disease. It has been found that presenilin-1 binds to beta-catenin in-vivo. This family also contains SPE proteins from C.elegans



*Picture found off internet because one was not provided*

* This parasite in rats might have developed so they were more able to control the rat so it could survive longer in the host.
* The most ancestral species in the new tree is again strongyloides ratti.

**Assignment 3:**

**Brainstorm:** We think the parasite in rats might have developed so they were able to control the rat so it could survive longer in its host.

**Protein Information & Image:** Presenilin 2 is best known for its role in processing amyloid precursor protein, which is found in the brain and other tissues.

**15 Organisms off the Organism Report: (We ran 2 iterations with 1,000 max.)**

*1. presenilin-2 [Macaca mulatta]*>gi|387763441|ref|NP\_001248546.1| presenilin-2 [Macaca mulatta]

MLTFMASDSEEEVCDERTSLMSAESPTPRSCQEGRQGPEDGENIAQWRSQENEEDGEEDPDRYVCSGVPGRPPGLEEELTLKYGAKHVIMLFVPVTLCMIVVVATIKSVRFYTEKNGQLIYTPFTEDTPSVGQRLLNSVLNTLIMISVIVVMTIFLVVLYKYRCYKFIHGWLIMSSLMLLFLFTYIYLGEVLKTYNVAMDYPTLLLTVWNFGAVGMVCIHWKGPLVLQQAYLIMISALMALVFIKYLPEWSAWVILGAISVYDLVAVLCPKGPLRMLVETAQERNEPIFPALIYSSAMVWTVGMAKLDPSSQGALQLPYDPEMEEDSYDSFGEPSYPEVFEPPLTGYPGEELEEEEERGVKLGLGDFIFYSVLVGKAAATGSGDWNTTLACFVAILIGLCLTLLLLAVFKKALPALPISITFGLIFYFSTDNLVRPFMDTLASHQLYI

*2. RecName: Full=Presenilin-2; Short=PS-2; Contains: RecName: Full=Presenilin-2 NTF subunit; Contains: RecName: Full=Presenilin-2 CTF subunit [Pongo abelii]*

>gi|75042205|sp|Q5RCN9.1|PSN2\_PONAB RecName: Full=Presenilin-2; Short=PS-2; Contains: RecName: Full=Presenilin-2 NTF subunit; Contains: RecName: Full=Presenilin-2 CTF subunit

MLTFMASDSEEEVCDERTSLMSAESPTPRSCQEGRQGPEDGENTAQWRSQENEEDGEEDPDRYICSGVPGRPPGLEEELTLKYGAKHVIMLFVPVTLCMIVVVATIKSVRFYTEKNGQLIYTPFTEDTPSVGQRLLNSVLNTLIMISVIVAMTIFLVVLYKYRCYKFIHGWLIMSSLMLLFLFTYIYLGEVLKTYNVAMDYPTLLLTVWNFGAVGMVCIHWKGPLVLQQAYLIMISALMALVFIKYLPEWSAWVILGAISVYDLVAVLCPKGPLRMLVETAQERNEPIFPALIYSSAMVWTVGMAKLDPSSQGALQLPYDPEMEEDSYDSFGEPSYPEVFEPPLTGYPGEELEEEEERGVKLGLGDFIFYSVLVGKAAATGSGDWNTTLACFVAILIGLCLTLLLLAVFKKALPALPISITFGLIFYFSTDNLVRPFMDTLASHQLYI

*3. presenilin-2 isoform 1 [Camelus ferus]*

>gi|530668236|gb|EQB78537.1| presenilin-2 isoform 1 [Camelus ferus]

MLTFMASDSEEEVCDERTSLMSAESPTPRSCQEGRQGLEDGESAAQWRSQDSEEDHEEDPDRYVCSGVPGRPPGLEEELTLKYGAKHVIMLFVPVTLCMIVVVATIKSVRFYTEKNGQLIYTPFTEDTPSVGQRLLNSVLNTLIMISVIVIMTIFLVVLYKYRCYKFIHGWLIMSSLMLLFLFTYIYLGEVLKTYNVAMDYPTLFLTVWNFGAVGMVCIHWKGPLVLQQAYLIMISALMALVFIKYLPEWSAWVILGAISVYAAMVWTVGMAKLDPSSQGALQLPYDPEMEEDSYDSFGEPSYPEVFEPPLPGYPGEDLEEEEERGVKLGLGDFIFYSVLVGKAAATGSGDWNTTLACFVAILIGLCLTLLLLAVFKKALPALPISITFGLIFYFSTDNLVRPFMDTLASHQLYI

*4. Presenilin-2, partial [Bos mutus]*

>gi|440907981|gb|ELR58054.1| Presenilin-2, partial [Bos mutus]

CAPFPGTSGGRAMLTFMASDSEEEVCDERTSLMSAESPTPRSCQDGRQGLEDGESAAQWRSQESEEDHEEEDPDRYVCSGVPGRPPGLEEELTLKYGAKHVIMLFVPVTLCMIVVVATIKSVRFYTEKNGQLIYTPFSEDTPSVGQRLLNSVLNTLIMISVIVTMTIFLVVLYKYRCYKFIHGWLIMSSLMLLFLFTYIYLGEVLKTYNVAMDYPTLFLTVWNFGAVGMVCIHWKGPLVLQQAYLIMISALMALVFIKYLPEWSAWVILGAISVYDLVAVLCPKGPLRMLVETAQERNEPIFPALIYSSAMVWTVGMAKLDPSSQGALQLPYDPEMEEDSYDSFGEPSYPDVFEPPLPGYPGEELEEEEERGVKLGLGDFIFYSVLVGKAAATGSGDWNTTLACFVAILIGLCLTLLLLAVFKKALPALPISITFGLIFYFSTDNLVRPFMDTLASHQLYI

*5. presenilin 2 (Alzheimer disease 4) [synthetic construct]*

>gi|123979438|gb|ABM81572.1| presenilin 2 (Alzheimer disease 4) [synthetic construct]

MLTFMASDSEEEVCDERTSLMSAESPTPRSCQEGRQGPEDGENTAQWRSQENEEDGEEDPDRYVCSGVPGRPPGLEEELTLKYGAKHVIMLFVPVTLCMIVVVATIKSVRFYTEKNGQLIYTPFTEDTPSVGQRLLNSVLNTLIMISVIVVMTIFLVVLYKYRCYKFIHGWLIMSSLMLLFLFTYIYLGEVLKTYNVAMDYPTLLLTVWNFGAVGMVCIHWKGPLVLQQAYLIMISALMALVFIKYLPEWSAWVILGAISVYDLVAVLCPKGPLRMLVETAQERNEPIFPALIYSSAMVWTVGMAKLDPSSQGALQLPYDPEMEEDSYDSFGEPSYPEVFEPPLTGYPGEELEEEEERGVKLGLGDFIFYSVLVGKAAATGSGDWNTTLACFVAILIGLCLTLLLLAVFKKALPALPISITFGLIFYFSTDNLVRPFMDTLASHQLYI

*6. RecName: Full=Presenilin-2; Short=PS-2; Contains: RecName: Full=Presenilin-2 NTF subunit; Contains: RecName: Full=Presenilin-2 CTF subunit [Sus scrofa]*

>gi|122143204|sp|Q0MS45.1|PSN2\_PIG RecName: Full=Presenilin-2; Short=PS-2; Contains: RecName: Full=Presenilin-2 NTF subunit; Contains: RecName: Full=Presenilin-2 CTF subunit

MLTFMASDSEEEVCDERTSLMSAESPTPRSCQEGRQGLEDGESAAQWRSQDSEEDHEEDPDRYVCSGVPGRPPGLEEELTLKYGAKHVIMLFVPVTLCMIVVVATIKSVRFYTEKNGQLIYTPFTEDTPSVGQRLLNSVLNTLIMISVIVVMTIFLVVLYKYRCYKFIHGWLITSSLMLLFLFTYIYLGEVLKTYNVAMDYPTLFLTVWNFGAVGMVCIHWKGPLVLQQAYLIMISALMALVFIKYLPEWSAWVILGAISVYDLVAVLCPKGPLRMLVETAQERNEPIFPALIYSSAMVWTVGMAKLDPSSQGALQLPYDPEMEEDSYDSFGEPSYPEVFEPPLPGYPGEELEEEEERGVKLGLGDFIFYSVLVGKAAATGSGDWNTTLACFVAILIGLCLTLLLLAVFKKALPALPISITFGLIFYFSTDNLVRPFMDTLASHQLYI

*7. RecName: Full=Presenilin-2; Short=PS-2; Contains: RecName: Full=Presenilin-2 NTF subunit; Contains: RecName: Full=Presenilin-2 CTF subunit [Bos taurus]*

>gi|115502442|sp|Q9XT96.2|PSN2\_BOVIN RecName: Full=Presenilin-2; Short=PS-2; Contains: RecName: Full=Presenilin-2 NTF subunit; Contains: RecName: Full=Presenilin-2 CTF subunit

MLTFMASDSEEEVCDERTSLMSAESPTPRSCQDGRQGLEDGESAAQWRSQESEEDHEEEDPDRYVCSGVPGRPPGLEEELTLKYGAKHVIMLFVPVTLCMIVVVATIKSVRFYTEKNGQLIYTPFSEDTPSVGQRLLNSVLNTLIMISVIVTMTIFLVVLYKYRCYKFIHGWLIMSSLMLLFLFTYIYLGEVLKTYNVAMDYPTLFLTVWNFGAVGMVCIHWKGPLVLQQAYLIMISALMALVFIKYLPEWSAWVILGAISVYDLVAVLCPKGPLRMLVETAQERNEPIFPALIYSSAMVWTVGMAKLDPSSQGALQLPYDPEMEEDSYDSFGEPSYPDVFEPPLPGYPGEELEEEEERGVKLGLGDFIFYSVLVGKAAATGSGDWNTTLACFVAILIGLCLTLLLLAVFKKALPALPISITFGLIFYFSTDNLVRPFMDTLASHQLYI

*8. Presenilin-2, partial [Heterocephalus glaber]*

>gi|351695186|gb|EHA98104.1| Presenilin-2, partial [Heterocephalus glaber]

KVMLTFMASDSEEEVCDERTSLMSAESPLPRSCQEGQQGEEDGDSAAQWRSQESEEDCEDDPDRYICSGVPGRPPGLEEELTLKYGAKHVIMLFVPVTLCMVVVVATIKSVRFYTEKNGQLIYTPFTEDTPSVGQRLLNSLLNTLIMISVIVVMTIFLVVLYKSRCYKFIHGWLIMSSLMLLFLFTYIYLGEVLKTYNVAMDSPTLFLTVWNFGAVGMVCIHWKGPLVLQQAYLIMISALMALVFIKYLPEWSAWVILGAISVYDLVAVLCPKGPLRMLVETAQERNEPIFPALIYSSAMVWTVGMAKLDPPSQGALQLPYDPEMEEDSYDSFGEPSYPDVFEPSLPGYPGEELEEEEERGVKLGLGDFIFYSVLVGKAAAAGSGDWNTTLACFVAILIGLCLTLLLLAVFKKALPALPISITFGLIFYFSTDNLVRPFMDTLASHQLYI

*9. presenilin-2 [Mus musculus]*

>gi|190684661|ref|NP\_035313.2| presenilin-2 [Mus musculus]

MLAFMASDSEEEVCDERTSLMSAESPTSRSCQEGRPGPEDGESTAQWRTQESEEDCEEDPDRYACSGAPGRPSGLEEELTLKYGAKHVIMLFVPVTLCMIVVVATIKSVRFYTEKNGQLIYTPFTEDTPSVGQRLLNSVLNTLIMISVIVVMTIFLVVLYKYRCYKFIHGWLIMSSLMLLFLFTYIYLGEVLKTYNVAMDYPTLFLAVWNFGAVGMVCIHWKGPLVLQQAYLIVISALMALVFIKYLPEWSAWVILGAISVYDLVAVLCPKGPLRMLVETAQERNEPIFPALIYSSAMVWTVGMAKLDPSSQGALQLPYDPEMEEDSYDSFGEPSYPEAFEAPLPGYPGEELEEEEERGVKLGLGDFIFYSVLVGKAAATGNGDWNTTLACFIAILIGLCLTLLLLAVFKKALPALPISITFGLIFYFSTDNLVRPFMDTLASHQLYI

*10. presenilin-2 [Canis lupus familiaris]*

>gi|459351542|dbj|BAM95349.1| presenilin-2 [Canis lupus familiaris]

MLTFMASDSEEEVCDERTSLMSAESPPPRCCQEARQGLEDGENAAQWRSQDSEEDFEDDADHYVCGGVPGQPSGLEEELTLKYGAKHVIMLFVPVTLCMIVVVATIKSVRFYTEKNGQLIYTPFTEDTPSVGQRLLNSVLNTLIMISVIVAMTIFLVVLYKYRCYKFIHGWLIMSSLMLLFLFTYIYLGEVLKTYNVAMDYPTLFLTVWNFGAVGMVCIHWKGPLVLQQAYLIMISALMALVFIKYLPEWSAWVILGAISVYDLVAVLCPKGPLRMLVETAQERNEPIFPALIYSSAMVWTVGMAKLDPSSQGALQLPYDPEMEEDSYDSFREPSYPEVFEPPLPGYPGDELEEEEERGVKLGLGDFIFYSVLVGKAAATGSGDWNTTLACFVAILIGLCLTLLLLAVFKKALPALPISITFGLIFYFSTDNLVRPFMDTLASHQLYI

*11. Presenilin-2 [Myotis brandtii]*

>gi|521034579|gb|EPQ16364.1| Presenilin-2 [Myotis brandtii]

MLTFMASDSEEDACNERTSLMSAESPVPRSCQEGRQGPEDGEDAAQWRSQGREEGQEEDPDRYVCSGVPGRLPGLEEELTLKYGAKHVIMLFVPVTLCMVVVVATIKSVRFYTEKNGQLIYTPFTEDTPSVGQRLLNSVLNTLIMLSVIVVMTIFLVVLYKYRCYKFIHGWLIMSSLMLLFLFTYIYLGEVLKTYNVAMDYPTLFLVVWNFGAVGMVCIHWKGPLVLQQAYLIMISALMALVFIKYLPEWSAWVILGAISVYDLMAVLCPKGPLRMLVETAQERNEPIFPALIYSSAMVWTVGMAKPDPSSQGALQLPYDPEMEEDSCDSLGESSYPEVLEPPLPGSPGEELEEEEERGVKLGLGDFIFYSVLVGKAAATGSGDWNTTLACFVAILIGLCLTLLLLAVFKKALPALPISIAFGLIFYFSTDNLVRPFMDTLASHQLHI

*12. Presenilin-1 [Fukomys damarensis]*

>gi|676268730|gb|KFO24232.1| Presenilin-1 [Fukomys damarensis]

MDSSELKGFALLSSTDLREALFSEEKYFCTVAPMTEIPAPLSYFQNAQMSEDSHLSNIVRSQNDSRERQEHSDRRRPGNPEPVSNGRPQGNSRQVVEQDEEEDEELTLKYGAKHVIMLFVPVTLCMVVVVATIKSVSFYTRKDGQLIYTPFTEDTETVGQRALHSVLNAAIMISVIVVMTILLVVLYKYRCYKVIHAWLIVSSLLLLFFFSFIYLGEVFKTYNVAMDYITVALLIWNFGVVGMISIHWKGPLRLQQAYLIMISALMALVFIKYLPEWTAWLILAVISVYDLVAVLCPKGPLRMLVETAQERNETLFPALIYSSTMVWLVNMAEGDPEAQRKVSKNSKYNA

QSAEREAQDTGRENDDGGFNEEWEAQRDSHLGPHRSTPESRAAVQELSSNTLASEDPEERGVKLGLGDFIFYSVLVGKASATASGDWNTTIACFVAILIGLCLTLLLLAIFKKALPALPISITFGLVFYFATDYLVQPFMDQLAFHQFYI

*13. presenilin 2, partial [Microcebus murinus]*

>gi|1845166|emb|CAA71228.1| presenilin 2, partial [Microcebus murinus]

MLTFMASDSEEEVCDERTSLMSAESPSPRSCQEGGQGPEDGDSTAQWRIQDSEEDGEEDPDRYVSSGVPGRPPGPEEELTLKYGAKHVIMLSVPVTLCMIVVVATIKSVRFYTEKNGQLIYTPFTEDTPSVSQRLLNSVLNTLIMISVIVVMTIFLVVLYKYRCYKFIHGWLIMSSLMLLFLFTYIYLGEVLKTYNVAMDYPTLVLTVWNFGAVGMVCIHWKGPLMLQQAYLIAISALMALVFIKYLPEWSAWVILGAISVYDLVAVLCPKGPLRMLVETAQERNEPIFPALIYSSAMVWTVGMAKLDPSSQGALQLPYDPEMEEDSYDSLGEPSYPEVFEAPLPGYPGEELEEEEERGVKLGLGDFIFYSVLVGKAAATGSGDWNTTLACFVAILIGLCLTLLLLAVFKKALPALPISITFGLVFYFSTDNLVRPFMDTLAYHQ

*14. presenilin-2 [Rattus norvegicus]*

>gi|2541898|dbj|BAA22832.1| presenilin-2 [Rattus norvegicus]

MLTFMASDSEEEVCDERTSLMSAESPTSRSCQDSRPGPEDGENTAQWRSQENEDDCEEDPDHYACSGVPGRPSGLEEELTLKYGAKHVIMLFVPVTLCMIVVVATIKSVRFYTEKNGQLIYTPFTEDTPSVGQRLLNSVLNTLIMISVIVVMTIFLVVLYKYRCYKFIHGWLIMSSLMLLFLFTYIYLGEVFKTYNVAMDYPTLFLAVWNFGAVGMVCIHWKGPLVLQQAYLIVISALMALVFIKYLPEWSAWVILGAISVYDLVAVLCPKGPLRMLVETAQERNEPIFPALIYSSAMVWTVGMAKLDPSSQGALQLPYDPEMEEDSYDSFGEPSYPEAFEAPQPGYPGEEPEEEEERGVKLGLGDFIFYSVLVGKAAATGNGDWSTTLACFIAILIGLCLTLLLLAVFKKALPALPISITFGLIFYFSTDNLVRPFMDTLASHQLYI

*15. presenilin-1 [Cricetulus griseus]*

>gi|537159497|gb|ERE73097.1| presenilin-1 [Cricetulus griseus]

MTEIPAPLSYFQNAQMSEDSHSSSTVRSQSDSQDRQQHHDRRRLDNPEPVSNGRPQSHSRQVVEQDEEEDEELTLKYGAKHVIMLFVPVTLCMVVVVATIKSVSFYTRKDGQLIYTPFTEDTETVGQRALHSILNAAIMISVIVVMTILLVVLYKYRCYKVIHAWLIVSSLLLLFFFSFIYLGEVFKTYNVAVDYITVALLIWNFGVVGMIAIHWKGPLRLQQAYLIMISALMALVFIKYLPEWTAWLILAVISVYDLVAVLCPKGPLRMLVETAQERNETLFPALIYSSTMVWLVNMAEGDPEAQRRVPKNPKYNAQRAERERQDSSTGNDDGGFSEEWEAQRDSHLGPHRSTPESRAAVQELSSSILTNEDPEERGVKLGLGDFIFYSVLVGKASATASGDWNTTIACFVAILIGLCLTLLLLAIFKKALPALPISITFGLVFYFATDYLVQPFMDQLAFHQFYI

**Group 2- Asthma Interleukin 13**

**ILP4 Superfamily**

Blakely McCalister & Boppa Godfrey

**Assignment 1**. We picked a gene for asthma.

**Assignment 2**:

ORNITHORHYCHUS ANATINUS

>gi|116138167|gb|AAH96141.2| Interleukin 13 [Homo sapiens]

MALLLTTVIALTCLGGFASPGPVPPSTALRELIEELVNITQNQKAPLCNGSMVWSINLTAGMYCAALESLINVSGCSAIEKTQRMLSGFCPHKVSAGQFSSLHVRDTKIEVAQFVKDLLLHLKKLFREGQFNRNFESIIICRDRT

• IL4 Superfamily

• Scientific Name: Ornithorhynchus anatinus

• Common name: Platypus

Assignment 3:

Brainstorm- We think the platypus potentially had asthma because of the bill could’ve mad it hard to breathe.



15 Organisms off the Organism Report

1. interleukin 13, partial [synthetic construct]

>gi|391852494|ref|NP\_001254683.1| interleukin-13 precursor [Callithrix jacchus]

MALWLTMVIALTCLGGLASPGPVPPYTALKELIEELVNITQNQKAPLCNGSMVWSINMTAGVYCAALESLINVSGCSAIEKTQRMLSGFCPHKVSAGQFSSLLVRDTKIEVAQFVKDLLRHLRKLFHQGTFN

2. interleukin 13 [Cercocebus atys]

>gi|109723018|gb|ABG43106.1| interleukin 13 [Cercocebus atys]

MALLLTMVIALTCLGGFASPSPVPPSTALKELIEELVNITQNQKAPLCNGSMVWSINLTAGVYCAALESLINVSGCSAIEKTQRMLNGFCPHKVSAGQFSSLRVRDTKIEVAQFVKDLLLHLKKLFREGQFN

3. interleukin 13 [Lama glama]

>gi|29603611|dbj|BAC75387.1| interleukin 13 [Lama glama]

MALWLTVVIAFTCIGGLASPVPTPSPKALKELIEELVNITQNQKAPLCNGSMVWSINLTTSMYCAARESLINITNCSVIQRTQRMLNALCPHKLSAKVSSEHVRDTKIEVTQFIKTLLQHSRNVFHYRSFNWSKKS

4. interleukin-13 precursor [Ovis aries]

>gi|128485474|ref|NP\_001076063.1| interleukin-13 precursor [Ovis aries]

MALFLTVVVVLTCFGGLASPNPVPSSSSLKELIEELVNITQNQKVPLCNGSMVWSLNLTSSMYCAALDSLISISNCSVIHRTKRMLSALCPHKPSAKHVSSEYVRDTKIEVAQFLKDLLRHSRIIFRNGSYN

5. interleukin-13, partial [Equus caballus]

>gi|114215583|gb|ABI54406.1| interleukin-13, partial [Equus caballus]

LNSTVIALSCLGGLASPAPLPSSMALKELIKELVNITQNQAPLCNGSMVWSVNLTADTYCRALESLSNVSTCSAIQNTRKMLTKLCPHQLSAGQVSSERARDTKIEVAEFV

6. interleukin 13, partial [Delphinapterus leucas]

>gi|193290624|gb|ACF17620.1| interleukin 13, partial [Delphinapterus leucas]

IALTCFGGLASLGPVPPSTALKELIEELVNITQNQKAPLCNGSMVWSVNLTANMYCSALEALINVSNCSAIQRTQRMLNALCLHKPSAAQVSSEHI

7. interleukin 13, partial [Bos indicus]

>gi|140417729|gb|ABO86821.1| interleukin 13, partial [Bos indicus]

VPLCNGSMVWSLNLTSSMYCAALDSLISISNCSVIQRTKRMLNALCPHKPSAKQVSSEYVRDTKIEVAQFLKDLLRHSRIVFRNERFN

8. interleukin 13, partial [Saimiri sciureus]

>gi|221327577|gb|ACM17459.1| interleukin 13, partial [Saimiri sciureus]

CNGSMVWSINMTAGVYCAALESLINVSRCSAIEKTQRMLSGFC

9. interleukin 13 [Sus scrofa]

>gi|189176151|gb|ACD81654.1| interleukin 13 [Sus scrofa]

MALWLTLVIALTCFGGLASPGPVPPHSTALKELIEELVNITQNQKTPLCNGSMVWSVNLTTSMYCAALESLINISDCSAIQKTQRMLSALCSHKPPSEQVPGKHIRDTKIEVAQFVKDLLKHLRMIFRHG

10. interleukin 13 [Macaca nemestrina]

>gi|109723036|gb|ABG43107.1| interleukin 13 [Macaca nemestrina]

MALLLTMVIALTCLGGFASPSPVPPSTALKELIEELVNITQNQKAPLCNGSMVWSINLTAGVYCAALESLINVSGCSAIEKTQRMLNGFCPHKVSAGQFSSLRVRDTKIEVAQFVKDLLLRLKKLFREGQFN

11. interleukin-13 [Macaca mulatta]

>gi|29725532|gb|AAO89232.1| interleukin-13 [Macaca mulatta]

MALLLTTVIALTCLGGFASPSPVPRSTALKELIEELVNITQNQKAPLCNGSMVWSINLTAGVYCAALESLINVSGCSAIEKTQRMLNGFCPHKVSAGQFSSLRVRDTKIEVAQFVKDLLVHLKKLFREGRFN

12. Interleukin-13 [Bos mutus]

>gi|440912188|gb|ELR61780.1| Interleukin-13 [Bos mutus]

MRLLLNSSCAVLGSMALLLTAVIVLICFGGLTSPSPVPSATALKELIEELVNITQNQKVPLCNGSMVWSLNLTSSMYCAALDSLISISNCSVIQRTKRMLNALCPHKPSAKQVSSEYVRDTKIEVAQFLKDLLRHSRIVFRNGRFN

13. interleukin 13 precursor [Bubalus bubalis]

>gi|595763386|ref|NP\_001277769.1| interleukin 13 precursor [Bubalus bubalis]

MALLLTAVIVLICFGGLASPSPVPSATALKELIEELVNITQNQKVPLCNGSMVWSLNLTSSMYCAALDSLISISNCSVIQRTKRMLNALCPHKPSAKQVSSEYVRDTKIEVAQFLKDLLRHSRIVFRNERFN

14. interleukin 13 precursor [Camelus bactrianus]>gi|745399087|ref|NP\_001290450.1| interleukin 13 precursor [Camelus bactrianus]

MALWLTVVIAFTCIGGLASPVPTPSPKALKELIEELVNITQNQKAPLCNGSMVWSINLTTSMYCAARESLINITNCSVIQRTQRMLNALCPHKLSAKVSSEHVRDTKIEVTQFIKTLLQHSRNVFHYRSFNWSKKS

15. Interleukin-13 [Myotis davidii]

>gi|432109531|gb|ELK33705.1| Interleukin-13 [Myotis davidii]

MALWLTLVIVLTCFGGLASPGPVRPLTVVKELIEELDNITQKAPLCNGSMVWSVNLTAGSYCAAFESLMNVSDCPAIQRTQRMLSALCPRQPSAGPASSPPVRDTKVEVTRLAKDLLQQLRKGVRQGKFE

**GROUP 6: Orexin Precursor (Homo Sapiens)**

**Assignment 1:** Our gene of interest is narcolepsy.

**Assignment 2:**

**FASTA**

>gi|4557635|ref|NP\_001515.1| orexin precursor [Homo sapiens]

MNLPSTKVSWAAVTLLLLLLLLPPALLSSGAAAQPLPDCCRQKTCSCRLYELLHGAGNHAAGILTLGKRR

SGPPGLQGRLQRLLQASGNHAAGILTMGRRAGAEPAPRPCLGRRCSAPAAASVAPGGQSGI



**Most Ancestral Species:** Scientific Name: Rhizoctonia Solani.

* Common Name:Plant fungus parasite that causes collar rot.
* Mutations in orexin protein creation cells in the brain are unable to produce orexin to cause narcolepsy.
* 
* After researching rhizoctonia solani, our idea is that the parasite when exposed to rhizoctonia solani for years during the earth’s early age, the parasite was too deadly so it maybe evolved to instead have less deadly symptoms and narcolepsy.
* The new ancestral in the third iteration is Nonomuraea Candida.

**Assignment 3**

**Brainstorm**

**Protein Information & Image:**



**15 Organisms & Sequences from the Organism Report**

1. >gi|302564989|ref|NP\_001181361.1| orexin precursor [Macaca mulatta]

MNLPSTKVCWAAVTLLLLLLLLPPALLSPGAAAQPLPDCCRQKTCSCRLYELLHGAGNHAAGILTLGKRRSGPPGLQGRLQRLLQASGNHAAGILTMGRRAGAEPAPRPCLGRHCPAAAATSVAPGGQSGI

2. >gi|195627030|gb|ACG35345.1| fiddlehead-like protein [Zea mays]

MAREEQALLSTEIVNRGVEPSGPDAGSPAFSVRVRRRLPDFLQSVNLKYVRLGYHYLISHGVYLATIPVIVLVCGAELGSLSRDELWRKVWGEATYDLATVLAFLAVLAFTISVYIMSRPRPVYLIDFACYKPADELKVSKAEFIDLARKSGKFDEDSLAFQSRLLAKSGIGDESYMPRCVFEPNASCATMKEGRAEASTAMFAALDELFDKCRVRPKDVGVLVVNCSLFNPTPSLSAMIVNHYKMRGNILSYNLGGMGCSAGVIAIDLARDMLQASGAGLAVVVSTEXVSFTWYPGKRRSMLIPNAFFRAGCAAVLLSNRRRDFHRAKYQLEHVVRTHKGADDRAFRSVYQEEDEQRIKGLSISRDLLEVGGHALKTNITTLGPLVLPFSEQAALLRGRAVPPPVPVQGLHAGAADHPRGRLGRRALHPGLQARVRALLHARGQPRRAGAPAEQPGPAQRRPGGLPRRAAPLRQHLKQQHLVRAGVPGGQGPRPPRRPRLAARLRVGLQVQQRGVARRPPRAPPRAQPLAGLRRPVPGAHGRLARTCNAVAAIYLSXASLPLPVQCCTSPMDDGSDMIWYRTRSVDLHACTSVSIPF

3, >gi|77404201|ref|NP\_001029166.1| orexin precursor [Canis lupus familiaris]

MNPPSTKVPWAAVTLLLLLLLPPALLSPGAAAQPLPDCCRQKTCSCRLYELLHGAGNHAAGILTLGKRRPGPPGLQGRLQRLLQASGNHAAGILTMGRRAGAEPAPRPCPGRRCPVVAVPSAAPGGRSGV

4. >gi|47523402|ref|NP\_999321.1| orexin precursor [Sus scrofa]

MNPPFAKVSWATVTLLLLLLLLPPAVLSPGAAAQPLPDCCRQKTCSCRLYELLHGAGNHAAGILTLGKRRPGPPGLQGRLQRLLQASGNHAAGILTMGRRAGAEPAPRLCPGRRCLAAAASSVAPGGRSGI

5. >gi|444714081|gb|ELW54969.1| Orexin [Tupaia chinensis]

MSLFPTTSEHYKPQVPGSRSQWTAARFQATRTTADIFPGCPTLSSRHNEPSLHKGLLPLLLLLLLLPPAL

LSPGAAAQPLPDCCRQKTCSCRLYELLHGAGNHAAGILTLGKRRPGPPGLQGRLQRLLQASGNHAAGILTMGRRAGAESAPRPCAGRRCPVVAATSIAPGGRSGV

6. >gi|6981016|ref|NP\_037311.1| orexin precursor [Rattus norvegicus]

MNLPSTKVPWAAVTLLLLLLLPPALLSLGVDAQPLPDCCRQKTCSCRLYELLHGAGNHAAGILTLGKRRPGPPGLQGRLQRLLQANGNHAAGILTMGRRAGAELEPYPCPGRRCPTATATALAPRGGSRV

7.>gi|465982168|gb|EMP36075.1| Inositol hexakisphosphate and diphosphoinositol-pentakisphosphate kinase 1 [Cheloniamydas]MSSLTTSHEGESSTPRFFVGTRDDETDFLGSNMKTDEIDFFEDDEESESPPERQIVVGICAMTKKKSKPMTQILERLCKFEYITVVIMGEDVILNEPVENWPPCDCLISFHSKGFPLDKAVAYAKLCNPFLINDLDMQYYIQDRREVYRILQEEGIDLPRYAVLNRDPDKPDECNLVEGEDQVEVNGAVFPKPFVEKPVSAEDHNVYIYYPTSAGGGSQRLFRKIGSRSSVYSPESSVRKTGSYIYEEFMPTDGTDVKVYTVGPDYAHAEARKSPALDGKVERDSEGKEIRYPVMLTAMEKLVARKVCVAFKPPWDLYWDHSVPLVVSCRLSATCSTPSSVYCEGEEDIVQLVLWVPVGACSLPDEALILLSLSPPDYHKQYHNLLRRVAIAFGLMREEIEDKQHQLLDLLQPPGPSQTALLIHEAILQPAQMVWHTPAHCAPTTKHLERGDTLSCLKARTSFSRTHLPTHWAAKKLDLLDRKVYSSVGLQFCITSCQALLEKYDFLSHSKLSEFQAFLLPDEQQDFQVLLDEGHLLTKQTVCGFDLLRANGHSFVCDVNGFSFVKNSMKYYDDCAKILGNIIMRELAPQFQIPWSIPTEAEDIPIVPTTSGTMMELRCVIAVIRHGDRTPKQKMKMEVKHSRFFELFEKYDGYKTGKLKLKKPEQLQEVLDIARLLVVELGTHNDCEIEERKSKLEQLKTVLEMYGHFSGINRKVQLTYLPRGHPKASSEDEDARKEPSPSLLLVLKWGGELTPAGRVQAEELGRAFRCMYPGGQGDYAGFPGCGLLRLHSTYRHDLKIYASDEGRVQMTAAAFAKGLLALEGELTPILVQMVKSANMNGLLDSDSDSLSSCQHRVKARLHEIMQKDAKFCEEDYEKLAPTGSISLVNSMTFIQNPVEICDKVFALIENLTSQICKRLEDPKSADLQLYHSETLELMLQRWSKLERDFRMKNGRYDISKIPDIYDCIKYDVQHNCTLKLEGTAELFKLSKALADVIIPQEYGINKEEKLEIAIGFCLPLIKKIQLDLQRTHEDESVNKLHPLYSRGVLSPGRHVRTRLYFTSESHVHSLLSIFRYGGLLDEYGINKEEKLEIAIGFCLPLIKKIQLDLQRTHEDESVNKLHPLYSRGVLSPGRHVRTRLYFTSESHVHSLLSIFRYGGLLDESKDQQWKRAMDYLSAISELNYMTQIVIMLYEDNNKDSSSEERFHVELHFSPGVKGCEEDGNAPTGFGFRPASAENDDKKPNQGSMEDLSKVKSDGTDQAQERSSQPSEPICIQRRSPLIRNRKTGSMEVLSESSSKTGGYRLFSSYSRQSSEMKQSGLGSQCTGLFSTTVLGGSSSAPNLQDYARSHGKKFTTSLTYKDELLSMPAVKRFSVSFAKHPTNDVLEHHRVAQLLCRFSSDYAMRRNISLDATLAHHLHQCSYHLRLFRSWLISGQDDLECLYGFEGCSMVPTIYPLETLHNSLSLRQVNEFLTSVCRSYSNSHSRASTALFDSMIGSQTPGDPFMPQRILSSSSLPLRQRSDKPPWYSSGPSSTVSSAGPSSPTSMENYARFGFTEKPSISPQISEERLNCQPPEQSEMEPLGEALELELGGSGPLVENPLGEMPEQGLMRVPGLLEVPEPSKEEPSEDVPEQGKTGVLELGKTRLPGETSEKDELVELEQGEEKPAGGIWELGEKGKLEPGERGLSGKMSDPGEEGPAGEMLEPDVIRPLVPGETSELDEEEPVMQMLEQSEGQLVEILKKEEEELSTDNAVSDQHPSSHPYRDQQLSSENSVEDEQPASQQELQN

8.>gi|45383750|ref|NP\_989516.1| hypocretin (orexin) neuropeptide precursor [Gallus gallus]

MEVPNAKLQRSACLLLLLLLLCSLAGGRQSLPECCRQKTCSCRIYDLLHGMGNHAAGILTLGKRKSIPPAFQSRLYRLLHGSGNHAAGILTIGKREERPGTACRDALSCAAGTQPTVTPRGTAASPRECQEHAEKDLTKGWAAAKSFY

9.>gi|322517983|gb|ADX06858.1| orexin precursor [Salvelinus namaycush]

MCFNTKHLTRAPGMDTACSTTKKLKVLILLLLVSHLACDAQGVANCCRQKSHSCRLYVLLCRSGDGTGTRGPLTDDAAAGILTLGKRKETDERRFQSRLNQLLHGSRNQAAGILTMGKRTEDTAEPLMCLFPILETAPTTTAQLVLQLPFK

10.>gi|302566879|gb|ADL41188.1| preproorexin [Leucoraja ocellata]

METTAMKKLDVILMLALLCSLVSASPRVPKCCCQQTCSCKVIDLLRGTGNHAAGILTLGKRKTNAQPLQNRLHHLLHGLENQATGILTMGKREEPQQVSLAEDSPGTNSRCEDKRSLLEKRFSWDLQLGSQEQQEFPEAQMAKKDLEPSECPAQLLKLF

11.>gi|525343860|ref|NP\_001266632.1| prepro-orexin precursor [Oreochromis niloticus]

MLWFPTKFQEAAGMEMNNRKAMVLVLLLLLSQLACDAHSVSECCREPSRPCRLYVLLCRSGNKGPGGVLTDDAAAGILTLGKRKEDEYRFQSRLQQLLQGSRNQAAGILTMGKRTRERAGEQYMDWMAQSGTTIMTPLPV

12.>gi|322517983|gb|ADX06858.1| orexin precursor [Salvelinus namaycush]

MCFNTKHLTRAPGMDTACSTTKKLKVLILLLLVSHLACDAQGVANCCRQKSHSCRLYVLLCRSGDGTGTRGPLTDDAAAGILTLGKRKETDERRFQSRLNQLLHGSRNQAAGILTMGKRTEDTAEPLMCLFPILETAPTTTAQLVLQLPFK

13.>gi|304368233|gb|ADM26763.1| hypocretin neuropeptide precursor protein [Epinephelus coioides]

MASLHTSQKMPWVPTNLQTAAGKDMSNRKVLVLVLMLLLSQLACDAHSVSECCRQPPRNCRLHVLLCRSGSKNLGGTLTGDAAAGILTLGKRREDDRLQSRLHQLLQGSRNQAAGILTMGKRTEEMGREQYIDWMTQSRTFTTPLPVLN

14.>gi|116517278|ref|NP\_001070860.1| orexin precursor [Danio rerio]

MDCTAKKLQVLVFMALLAHLARDAEGVASCCARAPGSCKLYEMLCRAGRRNDSSVARHLVHLNNDAAVGILTLGKRKVGESRVHDRLQQLLHNSRNQAAGILTMGKRLEEPAKFLIPTVPQDVDSYEKR

15.>gi|333102351|gb|AEF14410.1| prepro-orexin [Gasterosteus aculeatus]

MICVFISCVCFESCLDITHFLFAQQKFLALALMLLLSHVACEAHSLSQCCRQPARSCRLSVILCRSGSKN

FGGELPGDDAAGILTLGKRNEEEHNLQSRLNQLLQGSRSQAAGILTMGKRIAERAGEQYMAWLAQSGWTITTPLPDLS