

Schizophrenia and TOP3B

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May 1, 2014

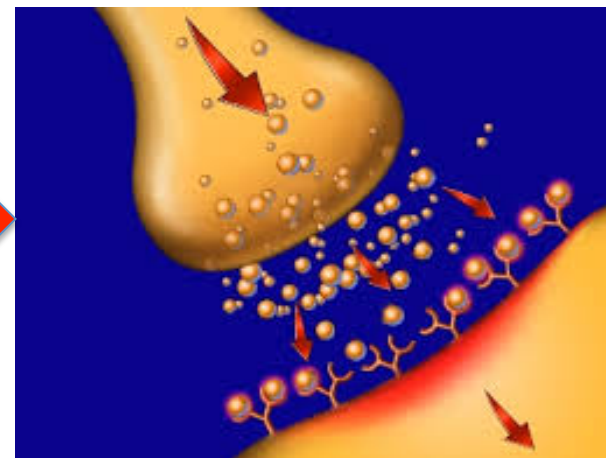
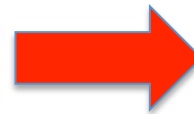
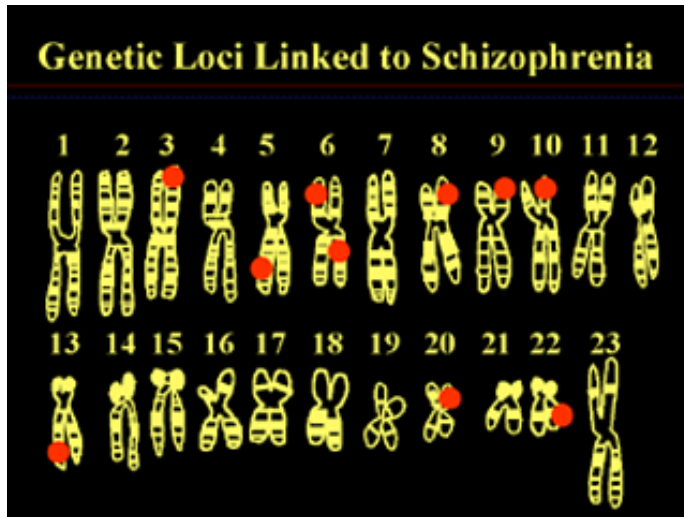
My Link to Schizophrenia



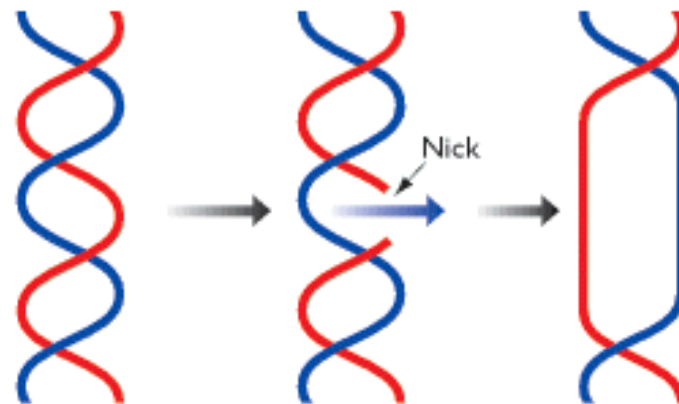
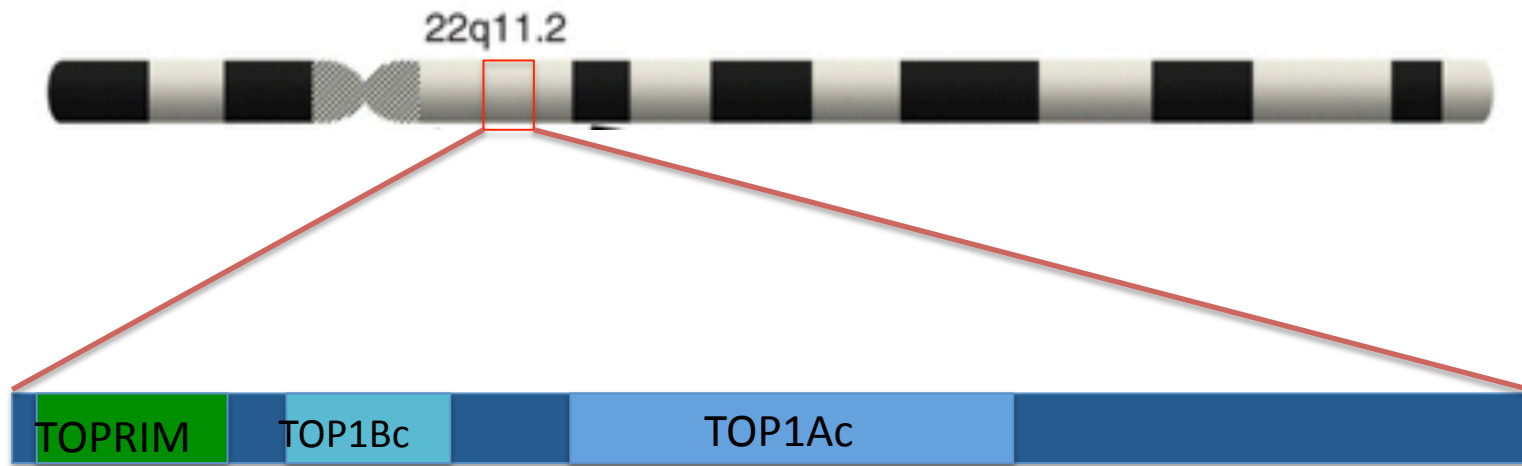
What is Schizophrenia?



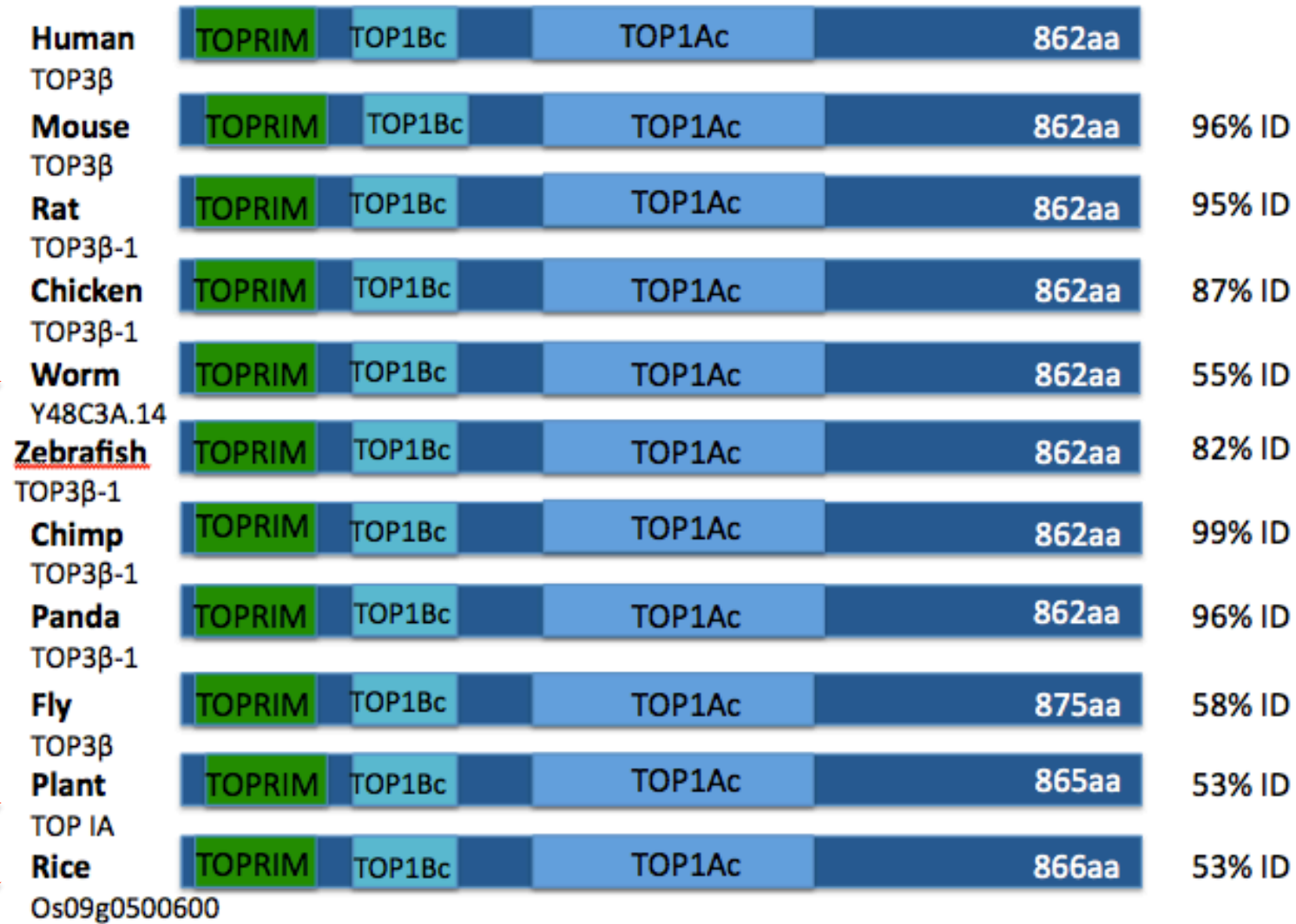
What Causes Schizophrenia?



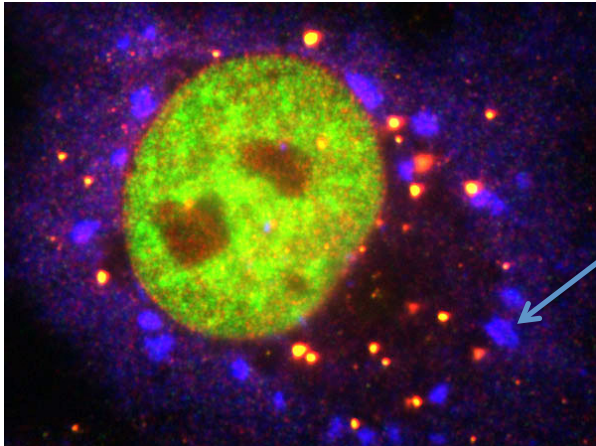
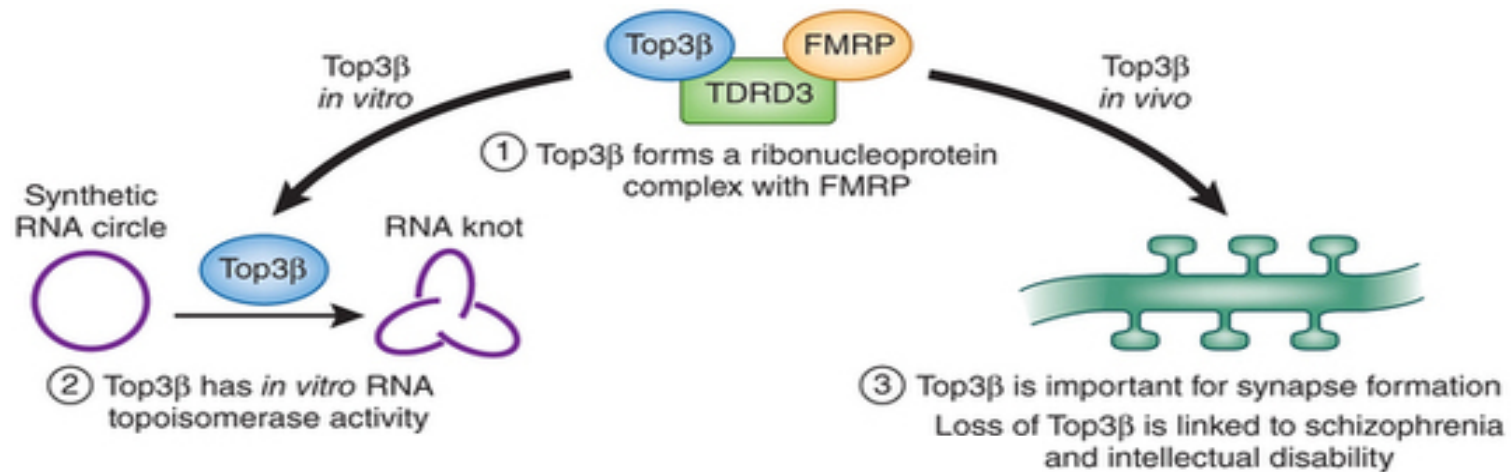
TOP3B: A Newly Identified Genetic Cause of Schizophrenia



TOP3B is Highly Conserved



TOP3B has been Found to bind RNA and Other Proteins and Alter Brain Connections

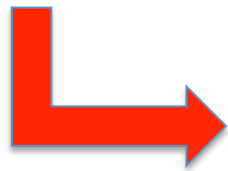


What Remains Unknown?

- The mechanism of how mutated TOP3B causes schizophrenia
- Hypothesis: wildtype TOP3 β directly interacts with proteins and RNAs in stress pathways, which are interrupted when TOP3B is mutated
- Primary Goal: To better understand how TOP3B mutation causes schizophrenia symptoms

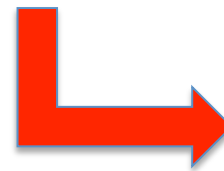


Specific Aim #1: To identify functional similarities of TOP3B gene sequences among organisms with complex and basic nervous systems.



The MEME Suite

Motif-based sequence analysis tools

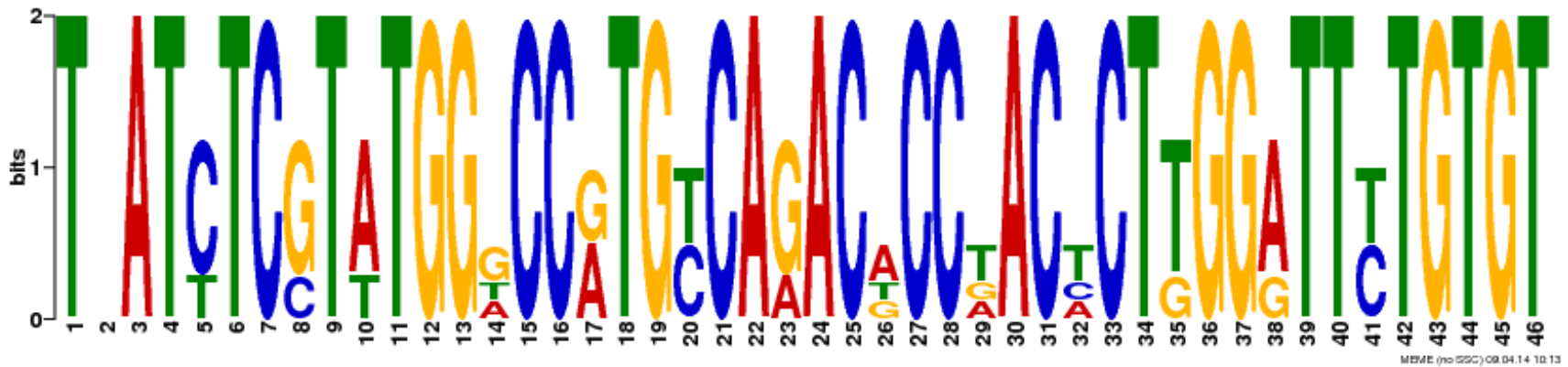


GOMO

→ Annotated motifs

- GO function
- GO compartment
- GO process

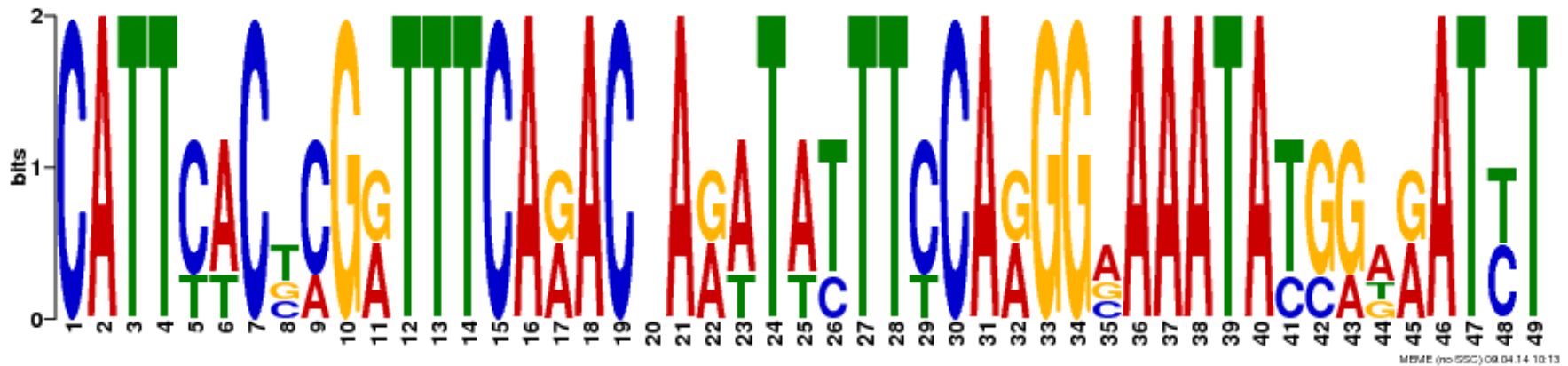
Specific Aim #1: Motif #2



BP: Positive regulation of interleukin-2 biosynthetic process

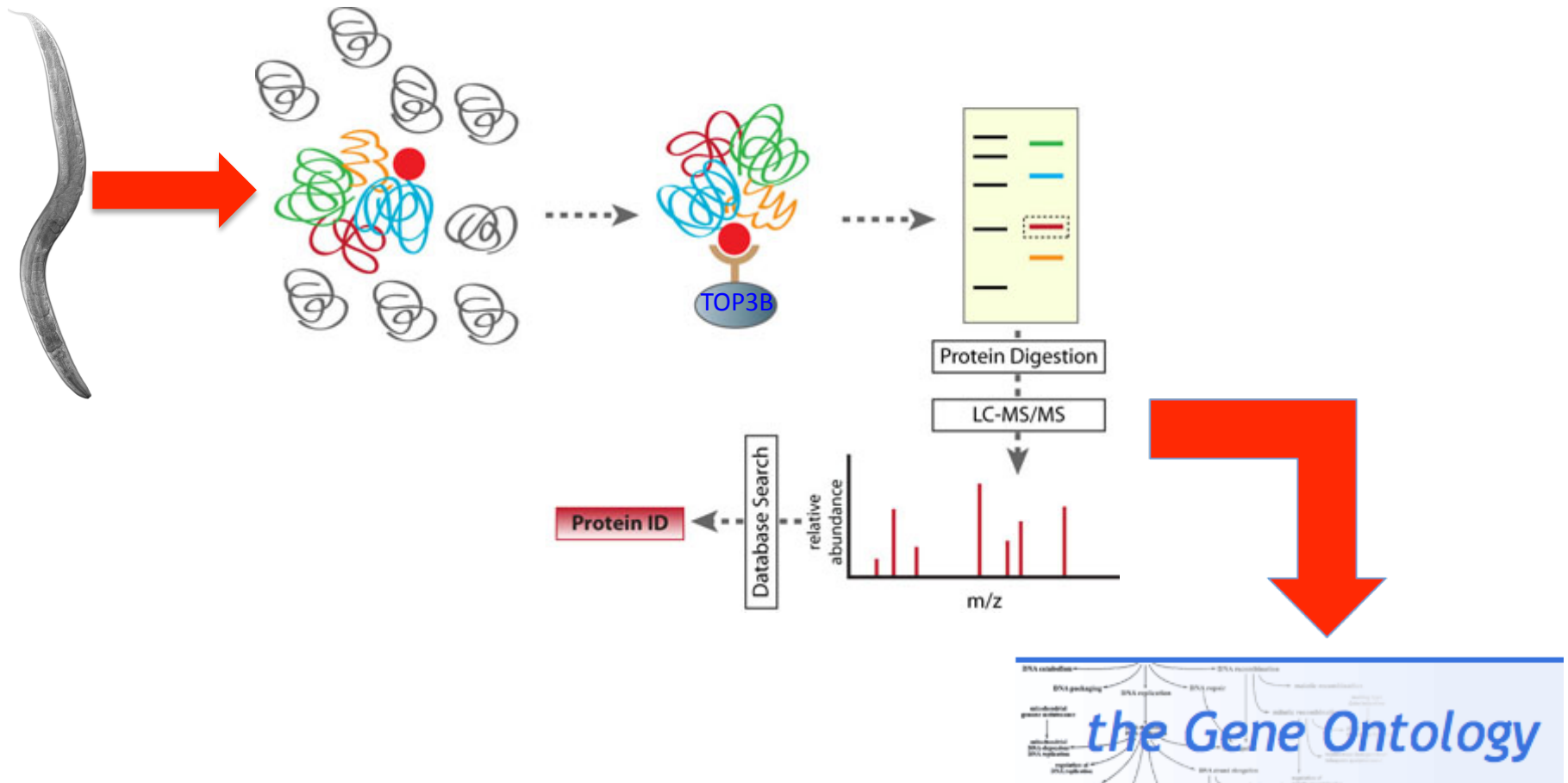
SURPRISE: Bacterium response

Specific Aim #1: Motif #3

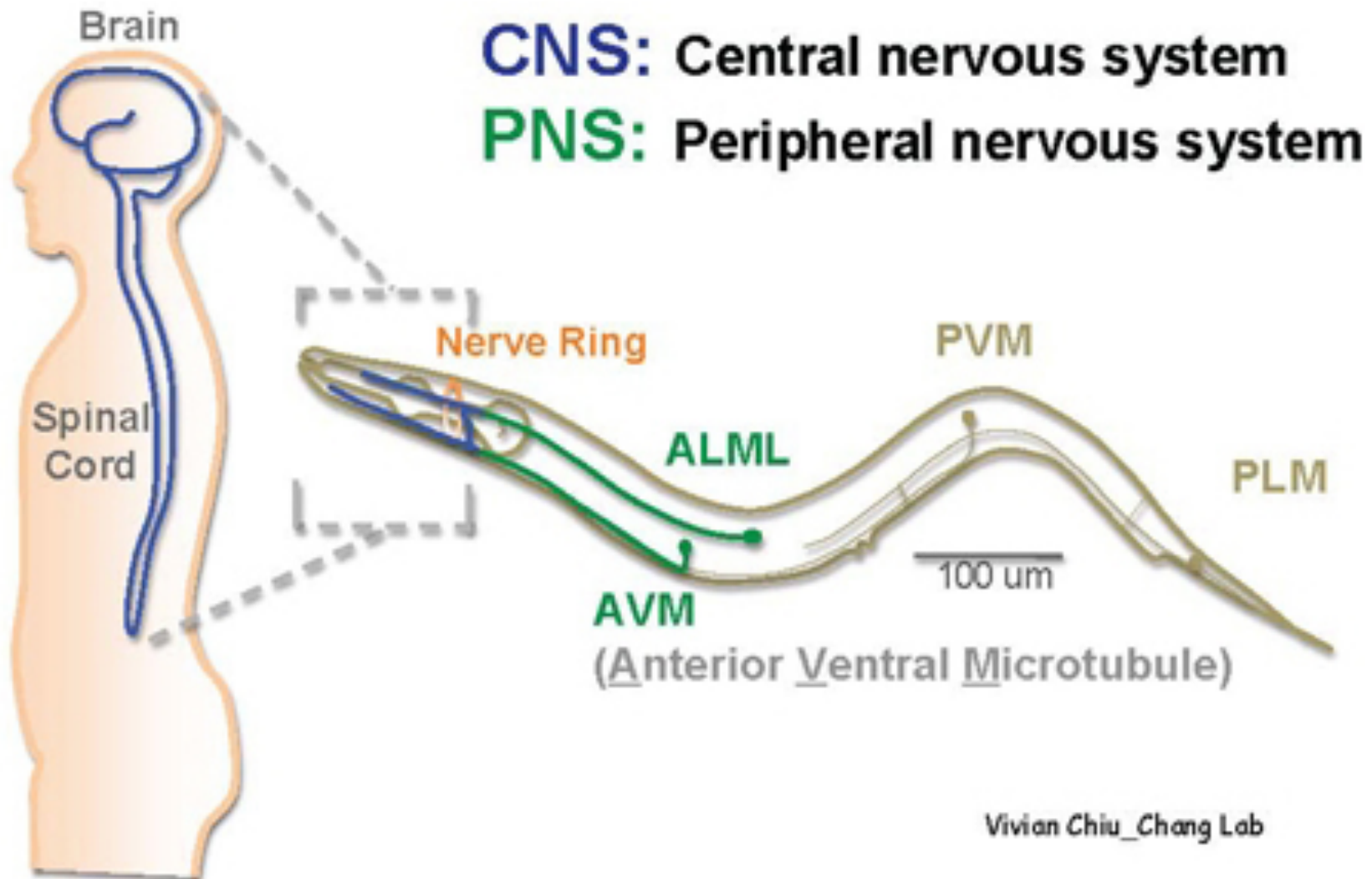


BP: G-protein coupled receptor protein signaling pathway
Sensory perception of smell

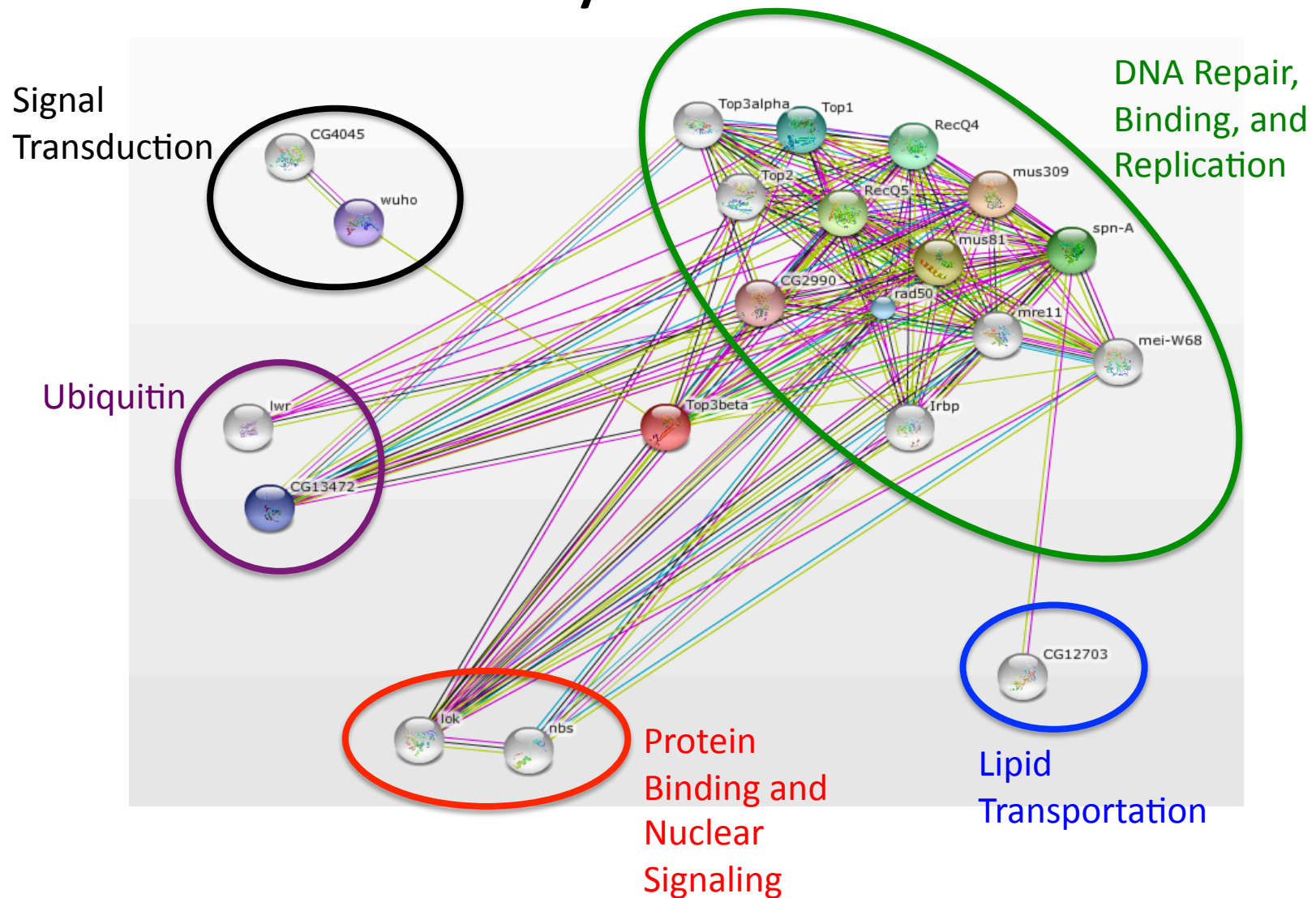
Specific Aim #2: To identify novel protein interactions of TOP3 β .



Why *C. elegans*?

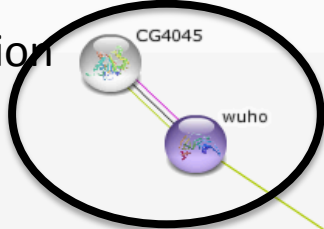


Specific Aim #2: Current Known Pathways in Humans

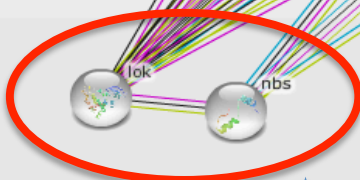
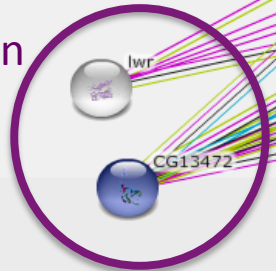


Specific Aim #2: Potential Additional Pathways

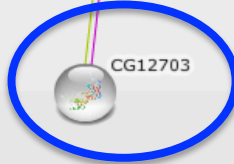
★ Signal Transduction



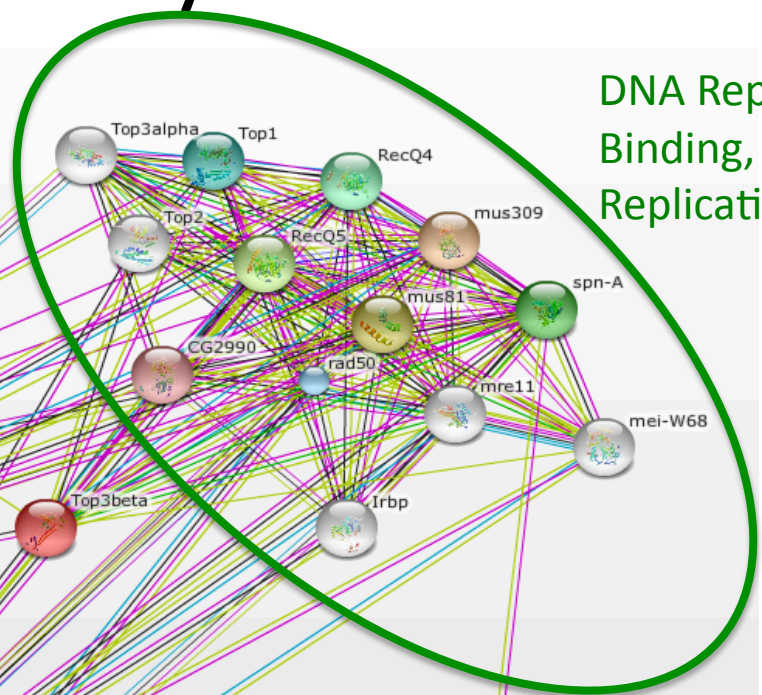
★ Ubiquitin



★ Protein Binding and Nuclear Signaling



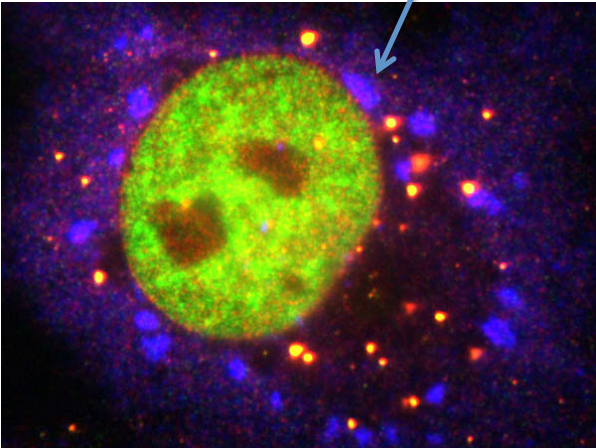
Lipid Transportation



DNA Repair, Binding, and Replication

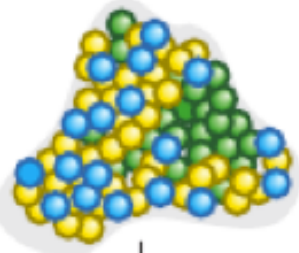
Specific Aim #3: Measuring Stress Granules Changes

RCK1 Staining

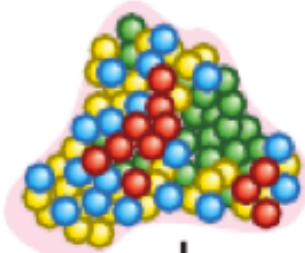


RNA-Seq

Wt C. elegans



RNAi C. elegans



AND



C. Elegans RNA-Seq



Expression profile clustering

Transcript Quantification



Why Is This Research Important?

TOP3B



Future Research: Studying the Effects of PUFA on TOP3B



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**THANK YOU FOR
LISTENING**



ANY QUESTIONS?

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