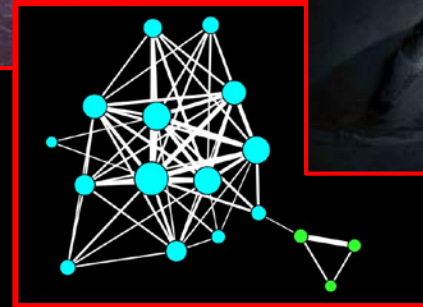


# Synaptic Protein Networks in Neuropsychiatry Disease



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Biomedical Mass Spectrometry Center  
University of Pittsburgh



# Prevalent & Debilitating

Schizophrenia



Assisted Living

70%



Attempt Suicide

40%



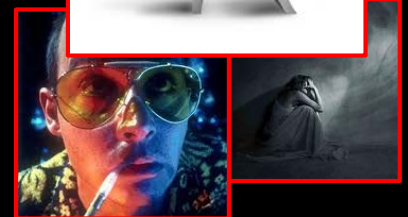
Homeless

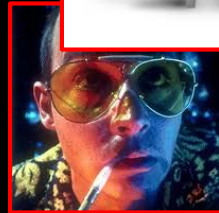
6%



Incarcerated

6%

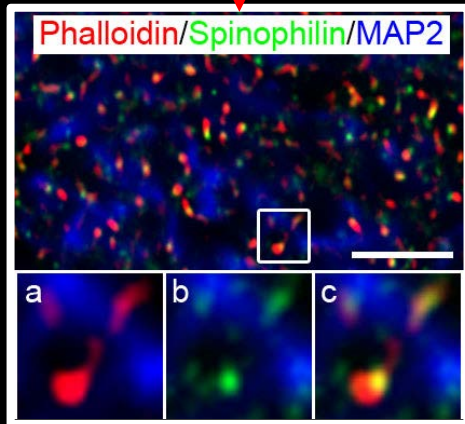




# Dual Approach

Fixed

Frozen



Immunohisto-  
chemistry

Targeted MS

# Stable Isotope Labeling in Mammals Neuronal Proteome Standard



## VAMP2



MSATAATVPPAAPAGEGGPPAPPNLTSNRRLQQTQAQVDEVVDIMRVNVDKVLERDQKLSSEDDR

**ADALQAGASQFETSAAK**

LKRKYWWKNLKMMLGVICAILIIIVYFST



MSATAATVPPAAPAGEGGPPAPPNLTSNRRLQQTQAQVDEVVDIMRVNVDKVLERDQKLSSEDDR

**ADALQAGASQFETSAAK**

LKRKYWWKNLKMMLGVICAILIIIVYFST



MSATAATVPPAAPAGEGGPPAPPNLTSNRRLQQTQAQVDEVVDIMRVNVDKVLERDQKLSSEDDR

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**ADALQAGASQFETSAAK**

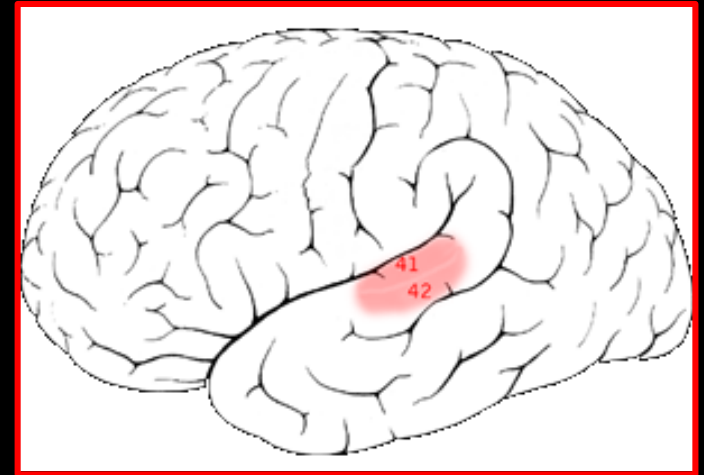
LKRKYWWKNLKMMLGVICAILIIIVYFST

## Grey Matter Homogenates

**22** Schizophrenia patients

**23** Control subjects

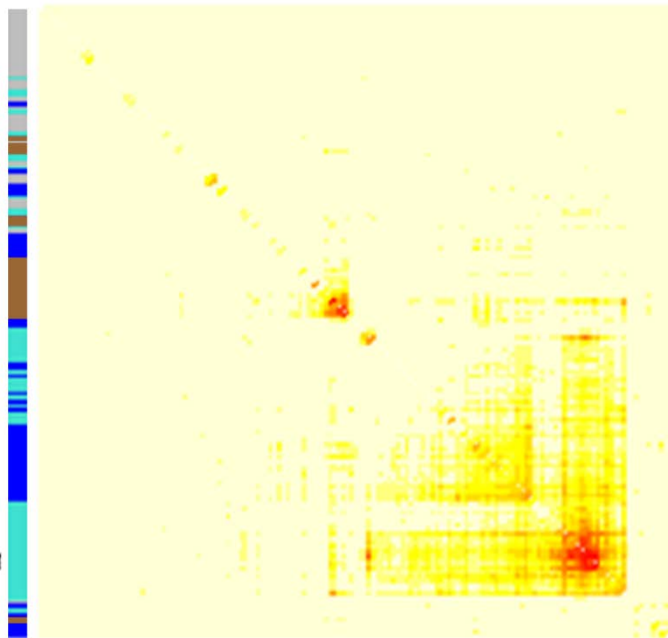
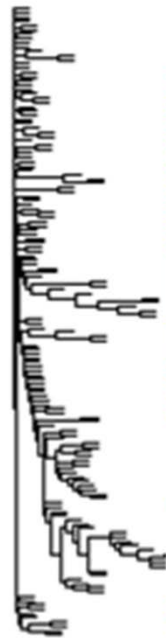
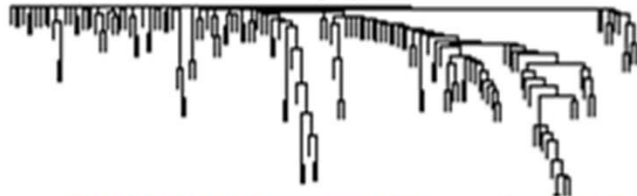
**155** Proteins



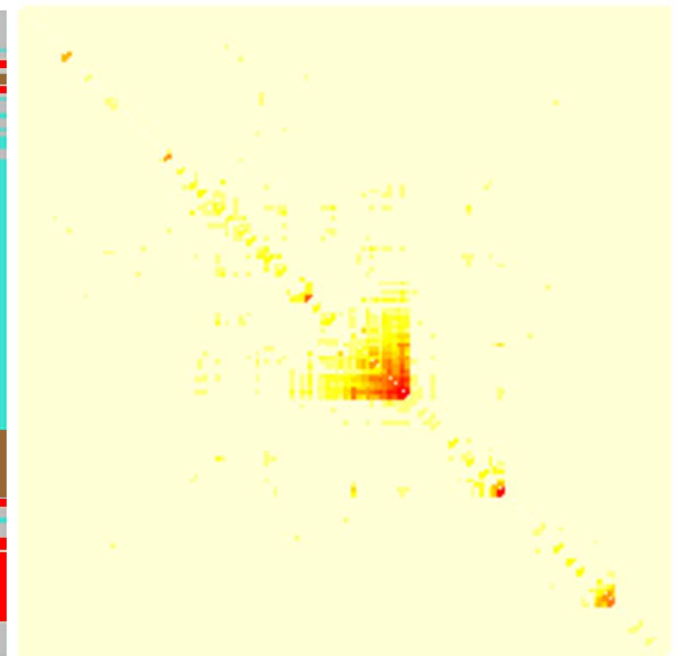
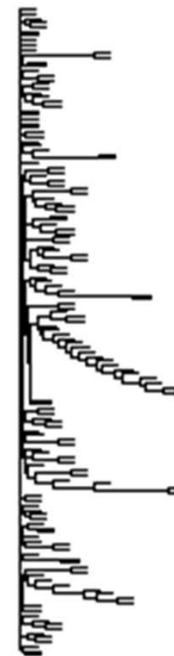
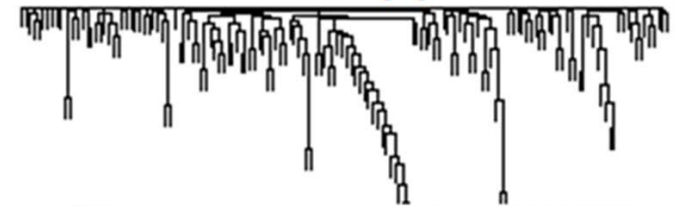
Auditory Cortex

# Networking Co-Regulated Protein Levels

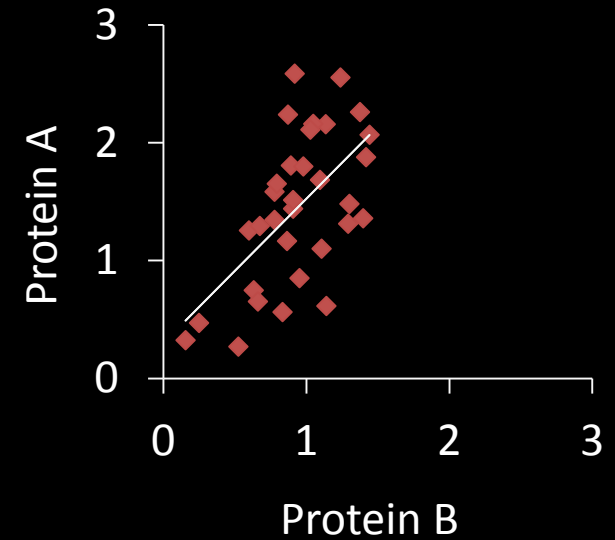
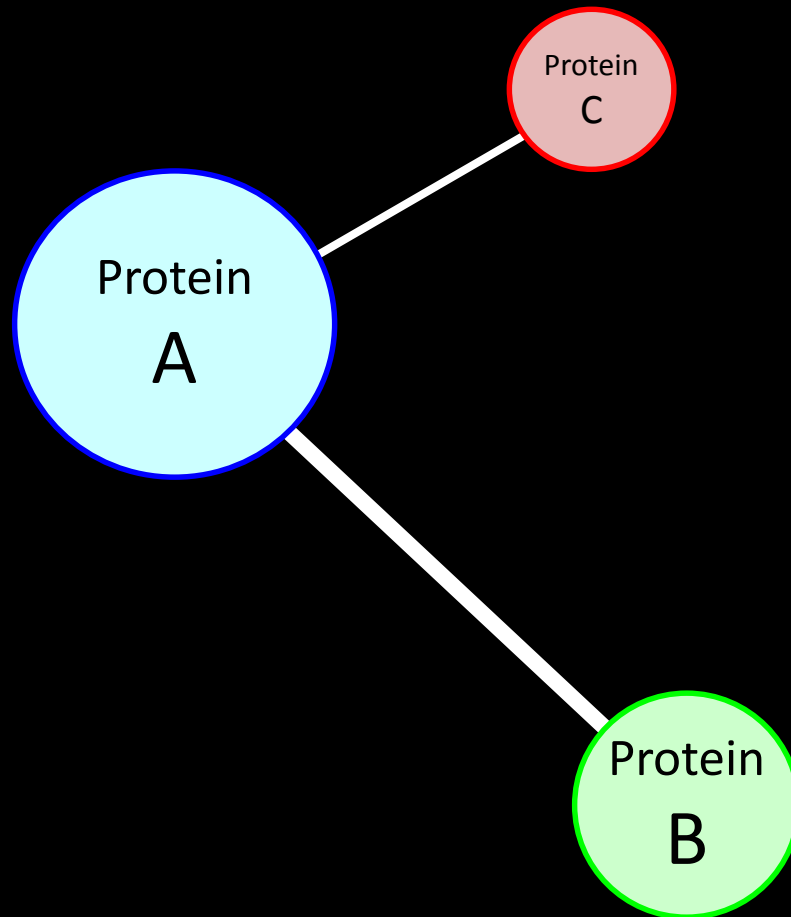
Network heatmap plot for Control



Network heatmap plot for Sz



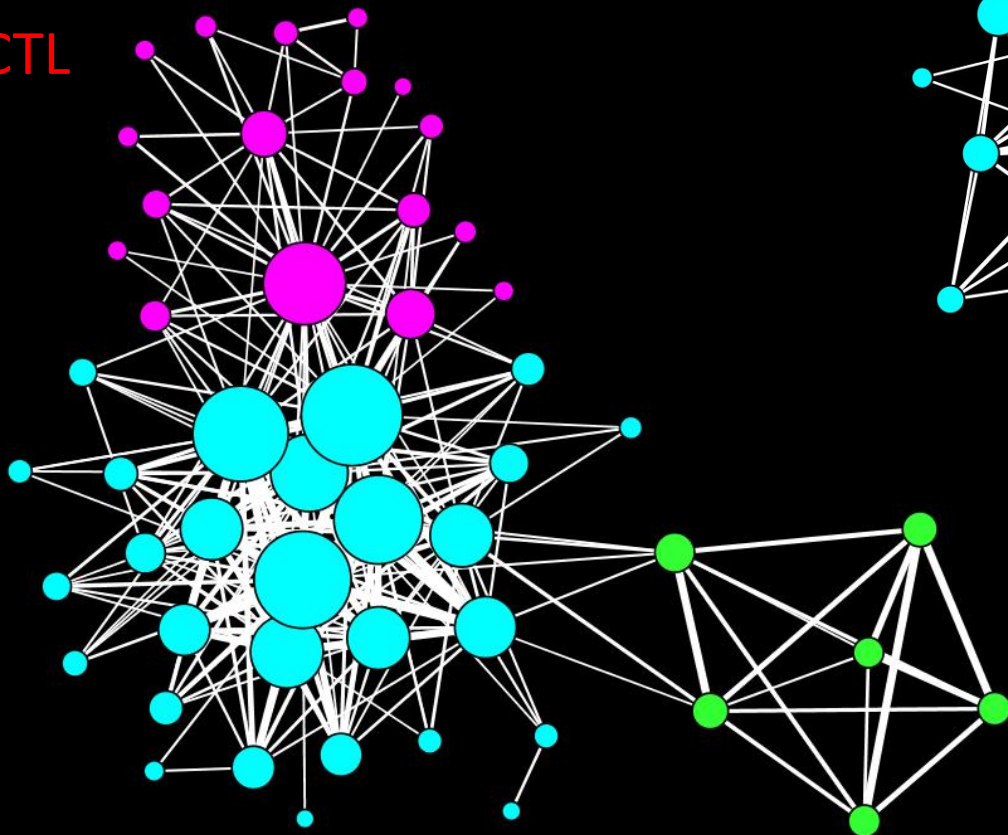
# Networking Co-Regulated Protein Levels



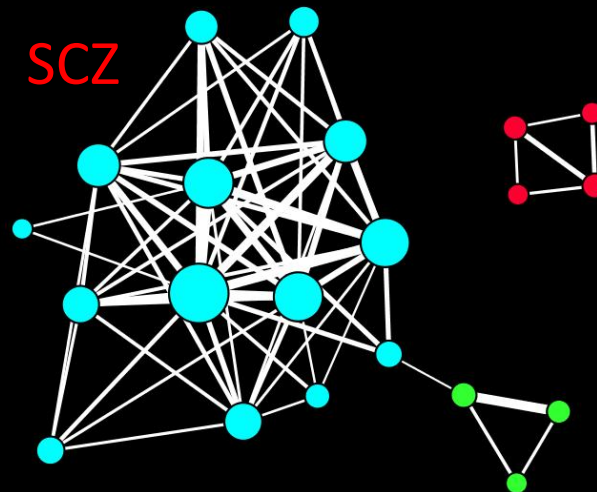


# Co-Regulation of Protein Levels is Decreased in Schizophrenia

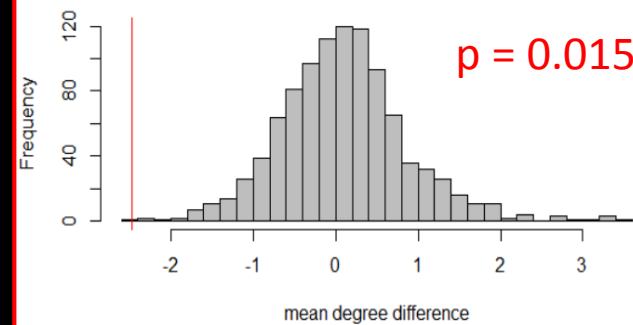
CTL



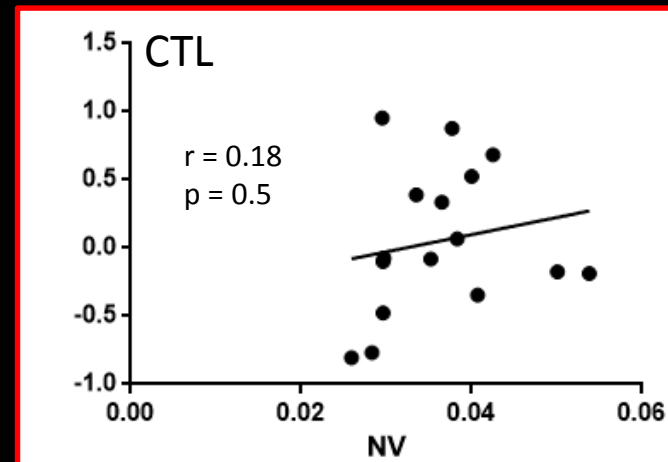
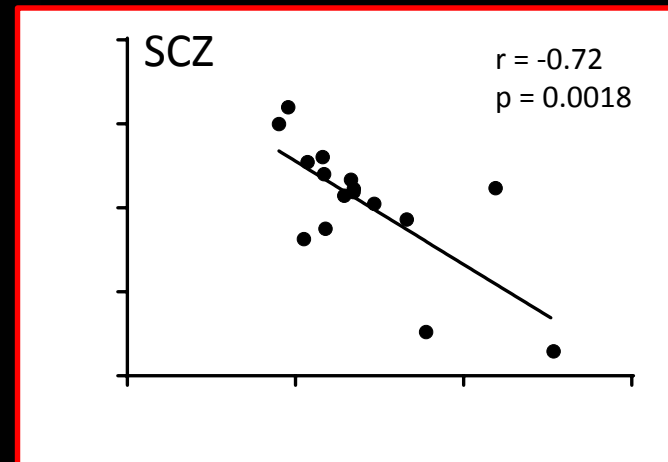
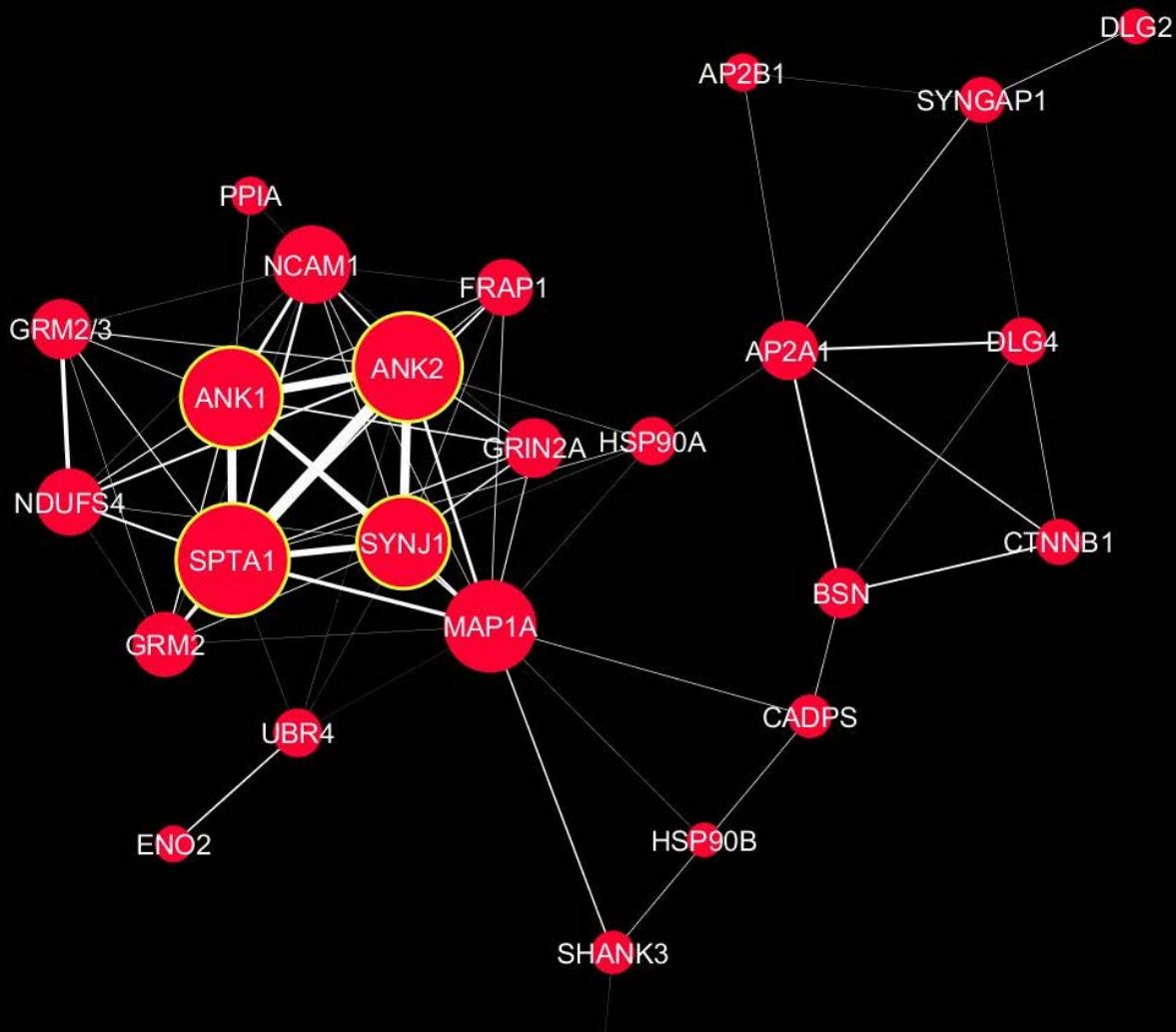
SCZ



Histogram of mean degree difference from 1000 permutations



# Novel Schizophrenia Protein Network Inversely Correlates with Spine Density in Schizophrenia



# Acknowledgments

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## Patients and Their Families