

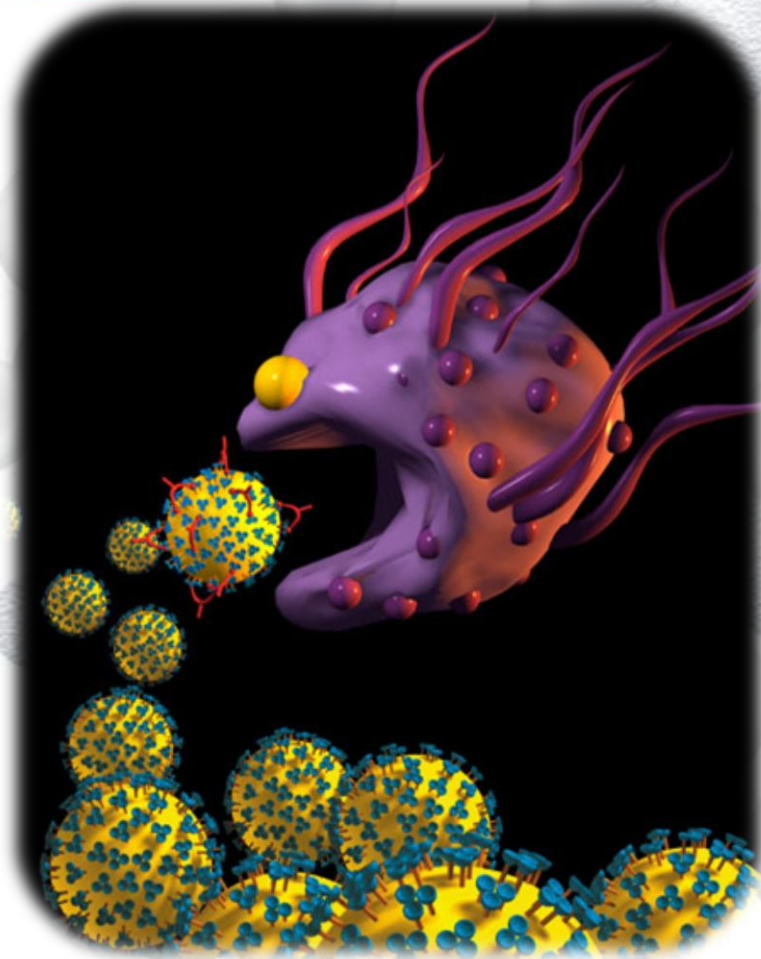


# **Recirculating Phagocytes are a Novel Source of Biomarkers for Brain Injury**

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- **CNS antigens are present in PBMCs of Multiple Sclerosis Subjects**
- **May be a means of monitoring active neurodegeneration**
- **Potential to identify resolving versus progressing TBI?**



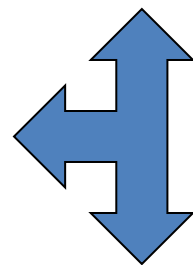
# MSDx Pathway Window into the Brain



## Sample Preparation



Protein Analysis



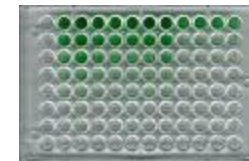
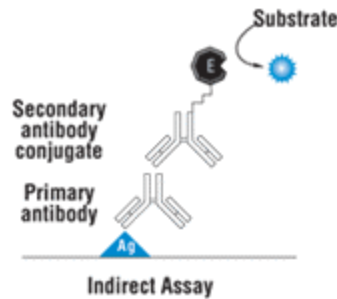
Micro centrifuge

Pellet (insolubles)

# MSDx Pathway Window into the Brain



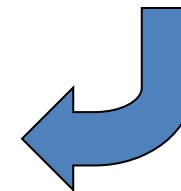
## Clarified Lysate ELISA Assay



Develop Color Reaction

Coat wells with lysate  
Wash and block

Measure and record  
Optical Density on a  
Microplate Reader



# Selected Antigens



## **Tau:**

Neuronal Microfilament Associated Protein. Associated with Alzheimer's Disease, Parkinson's, and Multiple Sclerosis.

## **Hippocalcin-1 like-1:**

Neuron Specific Protein mediating neuron specific calcium metabolism.

**Potentially Hundreds of Proteins within Phagocytes May be Informative**



# Subjects

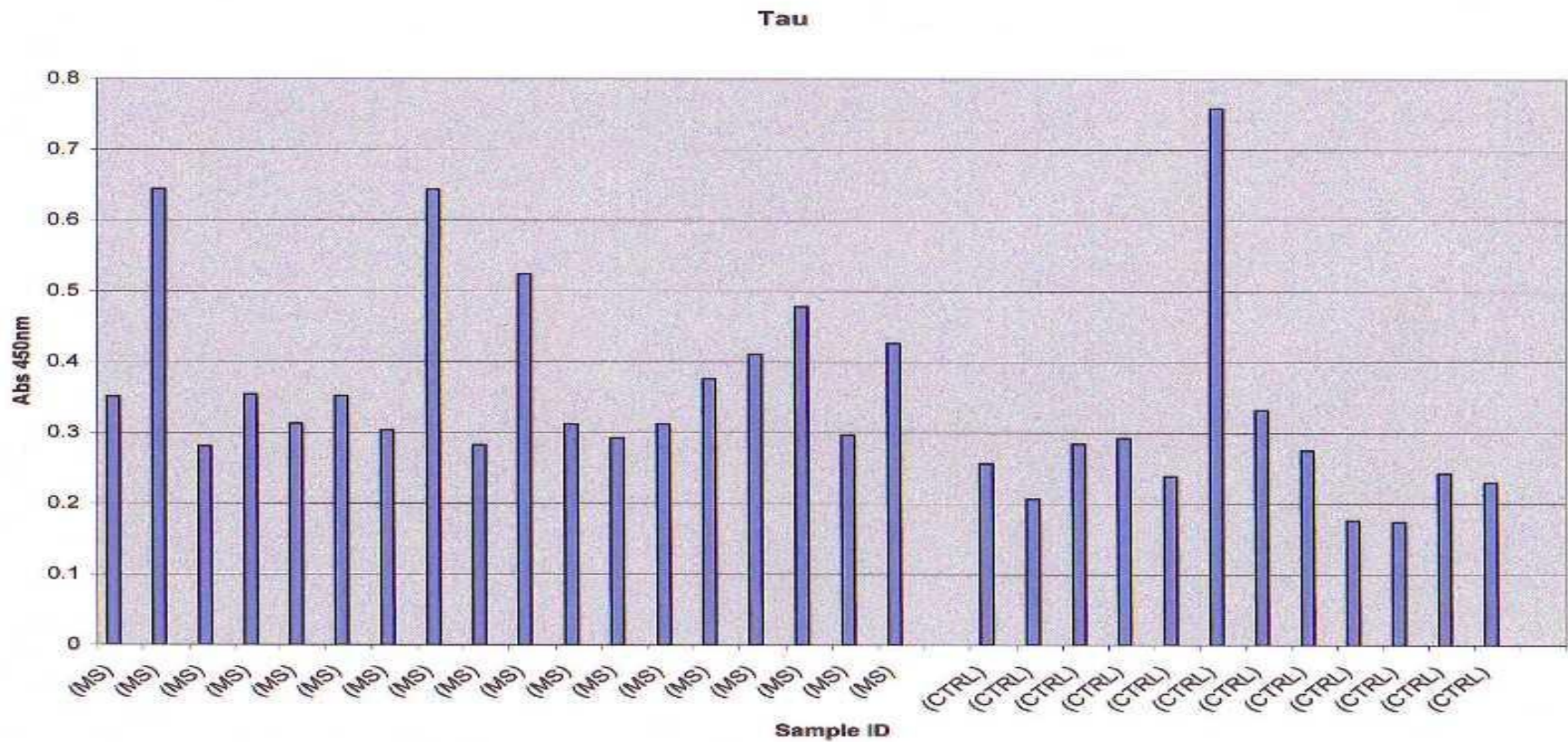


## **Relapsing Remitting Multiple Sclerosis:**

Eighteen sequential patients attending MS Clinic at Barrow Neurological Institute

## **Apparently Healthy Controls:**

Twelve randomly recruited co-worker at Barrow Neurological Institute



Using a cutoff value of 0.35, 7/18 MS samples were positive for Tau and 1/12 healthy control samples was positive for Tau.



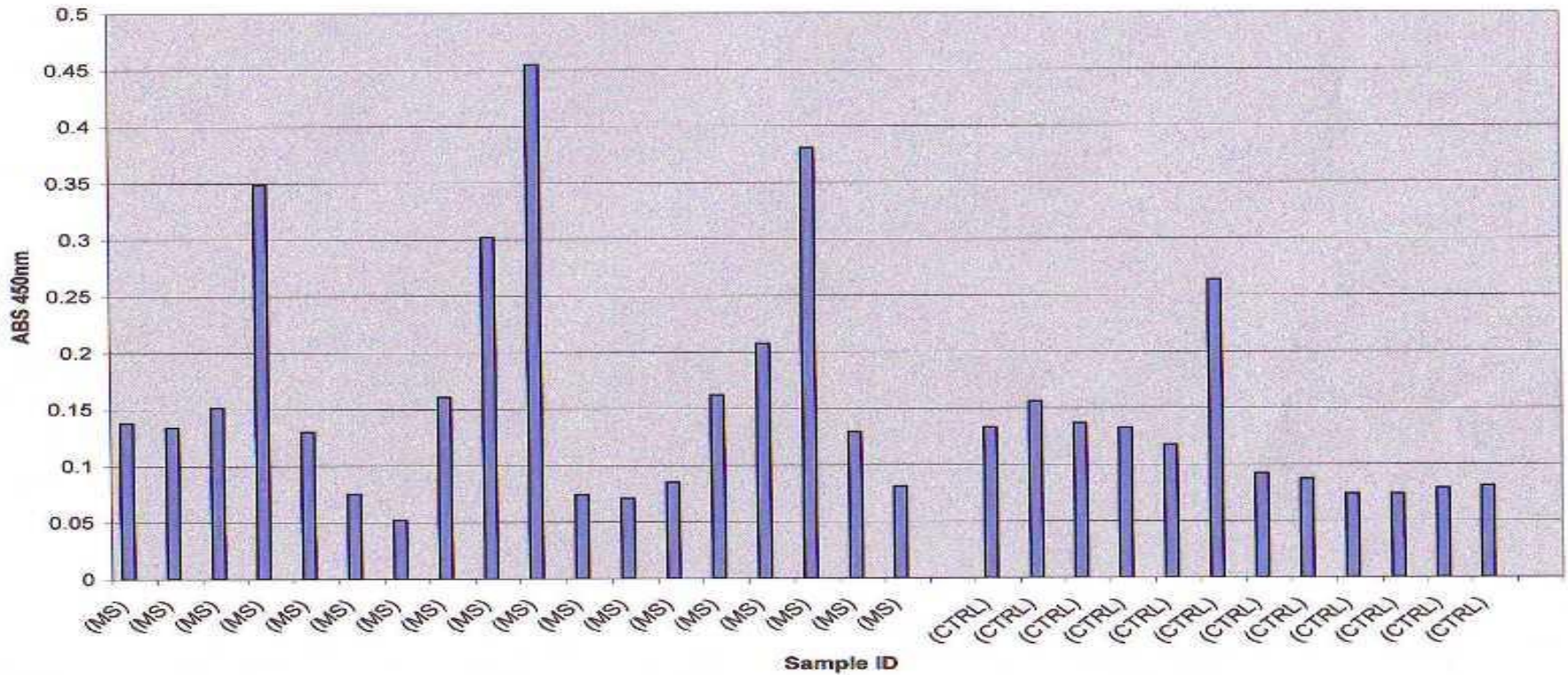
# Tau



Assay	Controls	MS Subjects
Tau	1/12	7/18

Tau 7/18 vs 1/12 not statistically significant

### Hippocalcin1



Using a cutoff value of 0.16, 7/18 MS samples were positive for Hippocalcin1like-1 and 1/12 healthy control samples was positive for Hippocalcin1 like-1.

# MSDx Pathway Hippocalcin1



Assay	Controls	MS Subjects
Hippocalcin1	1/12	7/18

7/18 vs 1/12 not statistically significant

# Statistical Effect of Combining the Biomarker Results



<b>Tau or Hippocalcin-1</b>	<b>Positive</b>	<b>Negative</b>	<b>Total</b>
Control	1	11	12
MS	9	9	18
<b>Total</b>	<b>10</b>	<b>20</b>	<b>30</b>

**The two-tailed P value equals 0.0235.**

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