Abnormalities in mitochondrial proteins of AD patients

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Mitochondria

Not static!

Mitochondria undergo Fission and Fusion
Fission Fusion
Real mitochondria

Need to be balanced in order for the Mitochondria to function properly

Fission and Fusion controlled by Proteins
In patients with Alzheimer's Disease (AD) these proteins are abnormal compared to aged-matched brain tissue from patients without AD.

Abnormalities in the expression of these proteins seems to be involved in some neurodegenerative diseases!
My project:

Is it possible to demonstrate the same protein abnormalities in fibroblast cells from AD patients?
Methods

• The Western Blot Approach

To detect Proteins such as Bif1

Diagram 1: Illustration of Western Blot Setup.
The RESULT!!
SR001: Human Fibroblast Cells; Protein expression levels

- Opa1
- MFF
- Drp1
- Bif 1 30 sec.
- Bif 1 10 sec.
- Actin

Control:
- DF-32
- WH-40

AD Nervous tissue

?
Human fibroblast cells were cultured at a density of $7.5 \times 10^3$ cells/ml in 4 well-plates. Cells fixed 3 days after the cells were infected with a lentivirus expressing MitoDsRed2 (1.5 μl). Cy3: exposure – 1000ms, Low 52, High 100.
Conclusion

• Although, we didn’t find enough evidence to support the use of human fibroblast cells to screen for the presence of AD in this particular set of samples, we will now turn to samples with different mutations to see if we have better luck with those!
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