

# Molecular changes in brain fluid give insight into brain-damaging disease

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Soon after an individual becomes infected with HIV the virus infects cells in the brain and spinal cord (the central nervous system [CNS]). Although this causes no immediate problems, during the late-stages of disease it can cause dementia and encephalitis (acute inflammation of the brain that can cause death).

Monkeys infected with a relative of HIV (SIV) also sometimes develop CNS damage and provide a good model of CNS disease in individuals infected with HIV. Insight into the mechanisms of CNS damage in SIV-infected monkeys has now been provided by a team of researchers at The Scripps Research Institute, La Jolla, who developed an approach to identify molecular changes in the fluid bathing the CNS (the CSF).

The researchers, who were led by Howard Fox and Gary Siuzdak, hope that similar approaches could be used to provide new information about other neurodegenerative and neuropsychiatric disorders.

In the study, an approach known as global metabolomics was used to assess the levels of molecules known as metabolites in the CSF before and after SIV-induced encephalitis was manifest. The level of a number of metabolites, including some known as fatty acids and phospholipids, was observed to increase during infection.

Consistent with this, a protein known to be important in the generation of fatty acids was found to be increased in the brain of monkeys with SIV-induced encephalitis. Further studies will be required to determine

the precise role of the increased level of each metabolite, but it should be noted that many of them are known to induce receptor signaling and thereby might be able to further modulate CNS function.

Source: Journal of Clinical Investigation

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