HIV and the hidden changes in our cells: a key to ageing

Why do some people seem to age faster than others?
Part of the answer may lie in something you can't see: **epigenetics.**

Epigenetics refers to **chemical marks that act like "switches"** for our genes, turning them on or off without changing the DNA itself.

Think of DNA as a book. Epigenetics decides which pages are read.

What influences these "gene switches"?

Our daily lives leave marks on our biology. Some factors can speed up ageing, while others may slow it down:

May slow ageing:

- Healthy diet
- Active lifestyle
- Sleep

May accelerate ageing:

- Substance use
- Body mass index
- Stress
- **Infections like HIV**

HIV and epigenetics

HIV can influence how genes behave and may speed up epigenetic ageing. This could help explain why cognitive changes sometimes appear earlier in people living with HIV.

Responding to the need: EPIVINF

The EPIVINF project, funded by the European Union, **studies how epigenetic changes are linked to brain health in HIV and other viral infections.** Our goals are to understand how these changes impact the brain, identify early biomarkers and enable earlier diagnosis and intervention.

EPIVINF

This project has recieved funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101057748

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Can epigenetics help prevent the neurological effects of HIV?

How does HIV affect the brain?

HIV can impact the nervous system at any stage of infection. These effects are grouped into three main categories:

Asymptomatic Neurocognitive Impairment (ANI)
Changes detected on tests, without daily impact.

Mild Neurocognitive Disorder (MND)
Noticeable difficulties with memory or attention.

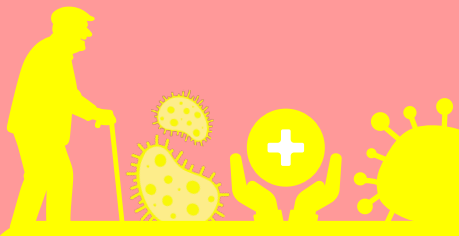
HIV-Associated Dementia (HAD)
More severe impact on thinking and daily life, now less common thanks to treatment.

Looking ahead

EPIVINF asks a key question:
Can we detect these changes early, and act on them?

By understanding epigenetics, we move closer to earlier detection, better care and healthier ageing

Up to **50% of people living with HIV may experience some form of neurological change**, with the risk increasing with age.
While mild changes in memory or attention can be part of normal ageing, in people with HIV these changes may appear earlier or progress differently.



Who is at higher risk?

- Older age.
- Long-term HIV infection.
- Other health conditions (e.g. diabetes, depression)
- History of low CD4 count.

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