Researchers Identify Compounds That “Block & Lock” HIV

One avenue in the HIV cure research field involves using agents that prevent reactivation of HIV replication in latently infected cells.

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Scientists have identified compounds that inhibit the reactivation of cells that are latently infected with HIV, meaning they are not replicating and producing new copies of the virus.

Because antiretrovirals (ARVs) work only on replicating cells, latently infected cells remain under the radar of standard HIV treatment. One avenue in the HIV cure research field involves the search for ways to roust such cells from their slumber and kill them off—a process known as shock and kill. An opposite approach is called block and lock, in which agents are used to prevent latently infected cells from reactivating.

Publishing their findings in Antimicrobial Agents and Chemotherapy, researchers tested 418 compounds known as kinase inhibitors on an HIV-infected cell line. These compounds target various signaling pathways within cells, including those that can reverse latency of HIV in infected cells. These tests were conducted with and without the addition of any from a trio of latency-reversing agents: prostratin, panobinostat and JQ-1.

The study authors found that 12 of the kinase inhibitors blocked reactivation of the virus, regardless of which latency-reversing agent was used. Two of these kinase inhibitors were associated with minimal toxicity to cells as measured by the level of cellular production of a form of fuel known as ATP.

It is possible that such compounds could be used along with standard ARV treatment to reduce residual HIV replication and possibly mitigate the harms that even well-treated HIV causes the body.

To read a press release about the study, click here.

To read the study abstract, click here.

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