New HIV-Fighting Protein Found in Coral Reefs

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Researchers have uncovered a new class of proteins, found in coral reefs, that can block HIV from entering immune cells. The hope is that these natural elements might one day be used as an active agent in a microbicide.

Called cnidarians, the proteins derive from coral, the tiny invertebrates that live in colonies on the ocean floor (coral are part of the phylum Cnidaria, which also includes jellyfish). These specific proteins were extracted from an area off the northern coast of Australia and then filed in the National Cancer Institute's extract repository. Investigators tested thousands of natural extracts in the repository before honing their sights on cnidarian proteins as a possible anti-HIV agent.

Testing the proteins against laboratory strains of HIV, the researchers found that cnidarians were highly potent, blocking HIV at miniscule concentrations—one billionth of a gram. They worked by binding to the virus and preventing it from fusing with the CD4 membrane.

"It's always thrilling when you find a brand-new protein that nobody else has ever seen before," senior investigator Barry O'Keefe, PhD, deputy chief of the Molecular Targets Laboratory at the National Cancer Institute's Center for Cancer Research, said in a release. "And the fact that this protein appears to block HIV infection—and to do it in a completely new way—makes this truly exciting."

Because cnidarians attack HIV with a novel mechanism, any resistance the virus might develop to them would not drag on the efficacy of standard antiretrovirals.

Researchers will now look to produce larger amounts of the proteins for further testing.

"Making more of it is a big key," O'Keefe said. "You can't strip the Earth of this coral trying to harvest this protein, so our focus now is on finding ways to produce more of it so we can proceed with preclinical testing."

To read the press release, click here.