Prevention: Pushing the Env

A new HIV vaccine prompts powerful antibody response in animals.

February 18, 2019 By Benjamin Ryan

Scientists have long pursued an HIV vaccine based on copies of Env, the so-called envelope protein on the virus's surface, because it would likely prompt a strong antibody response. But Env is highly complex and shape-shifting, and researchers hadn't been able to stabilize it until a recent study. In its natural state, Env appears in clusters of three, called trimers. By modifying a particular section of Env, scientists caused the trimers to remain in a stabilized shape, one that they could produce efficiently. For their vaccine, they attached up to 60 copies of Env trimers to individual nanoparticles that mimic the shape of HIV and exposed them to dozens of viral strains. Next, they gave mice and rabbits such a vaccine. The animals developed an unprecedentedly robust antibody response that neutralized a common viral strain, one that previous vaccines had failed against. Additional research is under way in monkeys.

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