Prevention: mRNA Vaccine

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The same messenger RNA (mRNA) technology used for the Moderna and Pfizer-BioNTech COVID-19 vaccines also shows promise for HIV. Researchers with the National Institute of Allergy and Infectious Diseases designed a vaccine regimen that delivers mRNA for envelope proteins from three different subtypes of HIV. Fourteen male macaque monkeys received one of two vaccine combinations or placebo injections; some got a final booster containing stabilized HIV spike proteins that are more easily recognized by broadly neutralizing antibodies. All the vaccinated monkeys produced antibodies against the viral proteins in the vaccine. When rectally exposed to an engineered HIV-like virus, all seven monkeys in the placebo group became infected within several weeks. But the vaccinated monkeys remained uninfected longer, and a few were still protected after 13 virus exposures—up to an 88% risk reduction. Phase I human trials of two mRNA HIV vaccine candidates from Moderna are expected to start this year.

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