

data



## Good Vibrations vs. Bad Viruses

### **Shaking a virus to death is not a new idea.**

Arizona State University physicist Kong-Thon Tsen, who pioneered the practice, conducted eight peer-reviewed studies in 2006 and 2007 demonstrating that vibrations can deactivate a number of viruses. But Tsen's latest work may have found a way to destroy HIV, just by hitting the right note.

In much the same way that opera singers use sound waves to shatter glass, laser light has shown considerable potential for killing viruses such as the tobacco necrosis virus and M13 bacteriophages. Like a wineglass, a virus's outer shell—known as a capsid—has an intrinsic frequency of vibration. Tsen uses a near-infrared laser to excite the target's outer shell and spur vibrations powerful enough to rupture the capsid.

In March 2008, preliminary testing

revealed that Tsen's lasers were able to destroy HIV in test tubes. For people with AIDS, Tsen's antiviral attack could be more effective and safer than the current drug cocktails, which have a slew of side effects. In the next two or three years, Tsen hopes to test the technology's effects on HIV in monkeys, zapping blood outside the body.

"When the blood is channeled outside the body in dialysis," Tsen says, "the laser can be applied to inactivate the HIV, and the HIV-free blood can be circulated back to the body." Blood cells would not be affected.

The findings have yet to be published, and final FDA approval could be more than a decade away. Still, Tsen believes his preliminary tests give hope that this technique could ultimately help destroy HIV and possibly prevent AIDS. **Orli Van Mourik**