Who says love hurts? New research shows that strong romantic feelings actually ease physical pain via the same neural pathways as powerful drugs.

By simply gazing at a picture of their beloved, undergraduates in a recent study were able to substantially reduce their experience of pain. The effect occurs thanks to a boost in the reward centers in the brain, according to the results, published online October 13 in *PLoS ONE*.

"The areas of the brain activated by intense love are the same areas that drugs use to reduce pain," Arthur Aron, a professor of psychology at the State University of New York at Stony Brook and coauthor of the new study, said in a prepared statement. "There is intense activation in the reward area of the brain—the same area that lights up when you take cocaine, the same area that lights up when you win a lot of money." Although previous studies have shown that loving feelings can mitigate feelings of pain, this was the first to look at the brain areas at work during the process.

To ensure peak passion, the researchers recruited people who were in the first nine months of a new relationship. "We wanted subjects who were feeling euphoric, energetic" about their new partner, Sean Mackey, an associate professor of anesthesia at Stanford University School of Medicine and coauthor on the new study, said in a prepared statement. "When passionate love is described like this, it in some ways sounds like an addiction," Mackey noted. "We thought, 'Maybe this does involve similar brain systems as those involved in addictions which are heavily dopamine-related.'" Love, too, can get the brain blasting higher levels of the feel-good dopamine neurotransmitter.

The researchers used fMRI (functional magnetic resonance imaging) to watch the brains of 15 of these besotted students while they were either looking at pictures of their romantic partner, viewing a photo of a similarly attractive acquaintance (of the same age and gender as the partner) or completing an emotionally neutral word association task.

During each of these phases, subjects would get a warm, uncomfortably hot or painfully searing jolt on their hand and then report their experienced pain level. In between the 54 randomized segments, the subjects worked number problems in their head to minimize any amorous carryover affects. "When people are in this passionate, all-consuming phase of love, there are significant alterations in their mood that are impacting their experience of pain," Mackey noted.

Both the word-based distraction and lover's image succeeded in numbing the pain, but the fMRI revealed that they did so using very different parts of the brain. "With the distraction test, the brain pathways leading to pain relief were mostly cognitive" in the cortical areas, Jarred Younger, an assistant professor of anesthesia at Stanford and coauthor of the study, said in a prepared statement. "Love-induced analgesia is much more associated with the reward centers" and is "activating deep structures that may block pain at the spinal level—similar to how opioid analgesics work," he noted.

So turning up the "heat" could help knock out the need for some painkillers. But with the reward centers of the brain doping these students up on love-induced, rewarding neurotransmitters, perhaps they might as well face that they could also get addicted to love.
Your love is my drug: How passion sparks the same painkilling pathways ... http://www.scientificamerican.com/blog/post.cfm?id=your-love-is-my-dr...