**[Be Mine Forever: Oxytocin May Help Build Long-Lasting Love](http://www.scientificamerican.com/article.cfm?id=be-mine-forever-oxytocin&print=true)**

The hormone oxytocin increases empathy and communication, key to sustaining a relationship between mates

By [Luciana Gravotta](http://www.scientificamerican.com/author.cfm?id=4168)  | Tuesday, February 12, 2013 | [12](http://www.scientificamerican.com/article.cfm?id=be-mine-forever-oxytocin&print=true#comments)

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If cupid had studied neuroscience, he’d know to aim his arrows at the brain rather than the heart. Recent research suggests that for love to last, it’s best he dip those arrows in oxytocin. Although scientists have long known that this hormone is essential for monogamous rodents to stay true to their mates, and that it makes humans more trusting toward one another, they are now finding that it is also crucial to how we form and maintain romantic relationships.

A handful of new studies show that oxytocin makes us more sympathetic, supportive and open with our feelings—all necessary for couples to celebrate not just one Valentine’s Day, but many. These findings have led some researchers to investigate whether oxytocin can be used in couple therapy.

The first bit of evidence that points to oxytocin as nature’s love glue comes from researchers who measured the hormone in couples. Psychology professor Ruth Feldman at Bar-Ilan University in Israel, spent years studying oxytocin’s role in the mother–child bond and recently decided to dive into the uncharted waters of romantic bonds by comparing oxytocin levels in new lovers and singles. “The increase in oxytocin during the period of falling in love was the highest that we ever found,” she says of a study she and her colleagues published in*Psychoneuroendocrinology*. New lovers had double the amount Feldman usually sees in pregnant women.

Oxytocin was also correlated with the longevity of a relationship. Couples with the highest levels were the ones still together six months later. They were also more attuned to each other than the low-oxytocin couples when Feldman asked them to talk about a shared positive experience. The high-oxytocin couples finished each other’s sentences, laughed together and touched each other more often. Feldman says it’s still not clear whether oxytocin was responsible for the stability of the couple’s bond six months later or if couples who weren’t as connected failed to trigger the oxytocin system.

One way to clarify that question is to give individuals oxytocin rather than just measure naturally occurring levels. In experiments by couple therapist and researcher Beate Ditzen at the University of Zurich, couples each sprayed a liquid containing oxytocin up their noses (which ensures that the hormone reaches the brain). Ditzen then got them to talk with each other about an issue that both partners said often lead to disagreement or fighting, such as who did the housework or how they spent their free time. She observed how they communicated with each other during the discussion compared with couples who didn’t get the hormone.

The first time Ditzen and her colleagues did this experiment they found that for both men and women oxytocin improved communication and lowered cortisol, a stress hormone. But in a recent study published in *Social Cognitive and Affective Neuroscience*, Ditzen and her colleagues measured salivary alpha-amylase (sAA)—an enzyme tied specifically to social stress—and found that men and women responded differently. Women who got oxytocin showed a decrease in sAA whereas men showed an increase and reported feeling more intense emotions. Counterintuitively, these men were also better at communication during conflict: they smiled more, had more eye-contact and were more open about their feelings. These behaviors are essential for peaceful conflict resolution.

Research shows that men tend to withdraw during conflict with their mate, which leads to a breakdown in communication and relationship dissatisfaction on both sides. Ditzen thinks the higher emotional arousal that oxytocin-infused men experience in her experiment may result in more engagement with their partner and thus more communication.

Although the new results provide evidence that oxytocin influences the way couples interact, Ditzen warns that it doesn’t tell us whether oxytocin is directly causing these behaviors.

A different line of evidence about oxytocin’s role in love comes from genetics. “With hormones you can say that maybe behavior created the hormone or the hormone created the behavior—we don’t know,” Feldman says. But a person’s genes are in place before any behavior can emerge, she notes.

A study published last year in *Biological Psychiatry* was the first to assess whether people with variations in their oxytocin-receptor gene have a harder time maintaining romantic relationships than those who don’t. Hasse Walum, a graduate student at Karolinska Institute in Stockholm, and his colleagues took advantage of Swedish twin studies that included thousands of participants, their genetic information and their answers to questions about how affectionate they were with their romantic partners. They found that women with a specific variation weren’t as close to their partners as women without it: they kissed their partners less and didn’t desire physical proximity as often. These women were also more likely to report having had a marital crisis. Although researchers don’t know exactly how this variation affects the oxytocin system, it may result in a lower number of oxytocin receptors in the brain. People with fewer receptors would be less sensitive to the hormone’s effects.

In a study that hasn’t been published yet, Feldman found that oxytocin receptor genes are also linked to empathy in couples. She looked at variants in the gene that have been linked with an increased risk for autism, a disorder that is marked by major social communication deficits. She found that the more of these “risk variants” a person had, the less empathy they showed toward their partner when that partner shared a distressing experience.

Oxytocin has been shown to help people with autism improve their ability to recognize emotion, and Wallum found that the same receptor variant that increases risk for marital crisis in women is linked to social problems in girls. These include trouble getting along with others and a preference for being alone. This and Feldman’s work on oxytocin’s importance for the mother–child bond suggests that the hormone is more involved in the communication component of love between couples than the romantic component of love.

Adam Guastella, a clinical psychologist at University of Sydney’s Brain and Mind Research Institute, and a pioneer in studies of how oxytocin can help people with autism, thinks the hormone can also help people in couple therapy by facilitating empathic communication. His research has shown that people who get oxytocin are more focused on positive emotion: they remember happy faces better than angry and neutral ones. Research by others has shown that oxytocin increases trust, generosity and our ability to identify emotion in facial expressions. It is perhaps by these mechanisms that the hormone improves communication.

Guastella and his team just completed an unpublished study that is the first to test the effects of oxytocin on couples in therapy. In one part of the study, couples were asked to discuss a “hot topic,” one that usually led to conflict between the pair, and to then try to solve the issue. Although the data analysis is still in progress, Guastella expects couples that got oxytocin to show less hostile interpretations of the problem and be less critical of their partners. He thinks overall it will increase perspective-taking and reduce blame, leading to smoother communication and better problem-solving.

How would that work? Feldman thinks that these types of behaviors are intimately linked with oxytocin in a positive feedback loop. “Oxytocin can elicit loving behaviors, but giving and receiving these behaviors also promotes the release of oxytocin and leads to more of these behaviors,” she says. She thinks that talk therapy alone can boost the oxytocin system, but admits that in some cases it might help to jump-start the feedback loop by administering oxytocin. If Guastella’s results support his hypothesis, talk and hormone therapy together might be the best recipe for breaking down dysfunctional communication between partners, especially in cases where the behaviors have been learned in childhood.

Although research has shown that good communication predicts relationship success, successful communication in couples therapy won’t ensure that partners stay together. The goal is to help the two people understand each other’s point of view and come to a mutual decision, even if it’s to break up. “If people are not connected at all, then oxytocin is not going to force that connection,” Guastella says.