The (other) big

It helps you fall in love, bond with your baby and beat stress. And now research shows that the hormone oxytocin could also keep you out of the divorce courts. Bring it on

oxy-to-cin *(äk´si tõsin, -täs´in)* ***noun*** a hormone produced by the pituitary gland, that stimulates contraction of the uterine muscles. Also reduces anxiety, bonds lovers to each other and parents to their children.

BY BROOKE HEMPHILL

SPECIAL REPORT

You wake up from a bad dream in which your partner does the dirty on you – and for a horrible moment, you think it's real. Registering your distress, your adrenal glands shoot out cortisol to put your senses on high alert, ready to face the *Cheaters* camera crew. Then your bloke wakes up and pulls you in for a cuddle, strokes your hair and whispers that it was just a dream. Responding to his touch, your pituitary glands release a burst of the hormone oxytocin into your nervous system, and within seconds you feel safe again. Your breathing and heart rate slow, and you're flooded with a warm feeling of connection and trust.

We've all experienced an O-rush. It's the feeling you get after yoga or a relaxing massage. It's what you feel when you lock eyes with your newborn baby (or that sexy-looking man at the bar). That loved-up glow when you hold hands with your husband or cuddle your fluffy dog. Eye contact, human touch, kissing, exercise and orgasm all release this feel-good hormone, and boy does it feel good. "When oxytocin reaches the brain's social centre, it interacts with other chemicals to make us associate warm-and-fuzzy feelings to that person. That's why it's so soothing and delightful to kiss, cuddle and canoodle," says Susan Kuchinskas, author of *The Chemistry of Connection: How the Oxytocin Response Can Help You Find Trust, Intimacy, and Love* ($26.95, New Harbinger). That's the power of O. It gets less attention than orgasms (and Oprah) but it's the glue that bonds us with others, and helps us live happily with our life partner.

Way to O

Research shows that's not all it does. Before 2002, the hormone was only ever tested on animals in the lab. Then researchers in Zurich discovered a way to test the hormone on humans, via a nasal spray. Since then scientists have been jumping up and down in their labs at the potential of oxytocin to help treat social phobias such as shyness, trust issues, anxiety and depression. "Oxytocin appears to have a broad effect on human thoughts and behaviour," says clinical psychologist Dr Adam »

Guastella, Senior Research Fellow at the University of Sydney's Brain and Mind Research Institute, who is currently testing to see if the hormone could help people with autism connect better with other people. "It could really change the way we treat behavioural problems and also means we can find out more about the way it affects human relationships, the way we connect and conflict with others." One study, for example, found oxytocin influences how generous we are. A team of researchers at the University of California, Los Angeles (UCLA), gave some participants a boost of the big O via a massage (human touch encourages its release into our bloodstream). All subjects then played a computer game that involved returning money to investors. The people who'd had a rub-down showed higher levels of the hormone – and gave back more money – than those who had no massage beforehand. They also found the females produced more of the love-drug in their bloodstream and returned more moolah than the men. Like the quiet kid at the back of the classroom, it seems this behaviour-changing hormone has been hugely underestimated.

Top 3 activities for oxytocin production:

1. Giving birth
2. Lactating
3. Orgasm

Women and O

Given our traditional roles as mothers and all-round caring people, it makes evolutionary sense that we're more sensitive to oxytocin's effects. Sir Henry H Dale discovered in 1909 that an extract from the human pituitary gland could contract the uterus of a pregnant cat (who says science nerds don't get all the fun jobs?). He named this newfound hormone "oxytocin" after the Greek words for "quick" and "birth" – something high on the wish list of every expectant mother rolled into the delivery room. Since then, research has found that during labour our bloodstream is flushed with the stuff, and it helps women release milk for breastfeeding. It's also commonly given intravenously during childbirth to induce or speed up contractions. All mammals secrete the love-drug – dogs, wombats, orangutans, men. A dose of the stuff even gives lab rats a hard-on (which sends our minds to weird places), and this discovery has led scientists to looking at oxytocin's role in treating human erectile dysfunction.

Just like you, oxytocin is a talented multi-tasker. It wears two hats: hormone and neurotransmitter, entering the bloodstream while also travelling along nerve cells in the brain and spinal cord. It binds to receptors located throughout the body and influences physiology: when it's not regulating body temperature, wound healing, thirst and hunger, oxytocin combats stress in the body by lowering blood pressure, kicking stress hormone cortisol's arse and slowing down our breathing and heart rate. Dr Kerstin Uvnäs-Moberg, scientist at the Karolinska Institute in Stockholm, Sweden, and author of *The Oxytocin Factor: Tapping the Hormone of Calm, Love, and Healing* ($63, Palgrave Macmillan), explains that oxytocin has the reverse effect to fight-or-flight hormones – calling it the yin to cortisol's yang. In fact, one landmark UCLA study found that women respond to stress with a cascade of chemicals – not just fight-or-flight – that encourage us to make and maintain friendships with other women. In other words, when you've had a shitty day at work and hook up with your girlfriends for a 6pm beer to sound off, you release oxytocin in your body, which counters your stress and makes you feel calm again.

Since it all began with childbirth and breastfeeding, mothers were thought to have the oxytocin market covered, but recent research has focused on its effect on the behaviour of both sexes. Our psychological reaction, known as the "oxytocin response", is more complex and varies from one person to the next. And this is where it gets really interesting.

Seeing eye to O

"We are not born with the oxytocin response," explains Kuchinskas. "It develops during the first two years of life and is mostly a response to the way we are mothered." We have our very first taste of it when the hormone is passed to us via our mum's breast milk. But even if you weren't breastfed, your baby brain produced its own supply of oxytocin when your parents fussed over you. Kuchinskas believes our mother's mood during these formative moments has a life-long effect on our reaction to the brain's release of oxytocin. "Some of us might develop an oxytocin response only if nurturing or connection comes with some anger or drama," Kuchinskas says. For example, if Mum was anxious or stressed while nursing, you would have come to associate the spurt of oxytocin with that tension. "Others might have learned that any time you get close and open up, there's going to be trouble. So for some people, oxytocin triggers feelings of fear and withdrawal rather than a desire to get closer," she says. This certainly explains why, when we seek help for destructive relationships, psychologists are so interested in our mothers.

Those early years can also affect our ability to produce the hormone later in life. A study by the Emory University School of Medicine, US, found that women with a history of childhood abuse had lower levels of oxytocin than those with a stable, loving upbringing. Scores of studies suggest the cuddle hormone can help combat emotions such as shyness and anxiety, and a recent study in the *Journal of Neuroscience* suggests oxytocin could reduce fear. Brain scans were conducted on male subjects who had been »

Oxytocin can reduce cravings for lollies

(SOURCE: DEPARTMENTS OF PHARMACEUTICAL SCIENCES, NEUROSCIENCE AND MEDICINE, UNIVERSITY OF PITTSBURGH, US)

Oxytocin is released when we give, but not when we receive

(SOURCE: THE NATIONAL INSTITUTE OF NEUROLOGICAL DISORDERS AND STROKE, US)

administered with oxytocin as they looked at pictures of threatening faces (think Jack Nicholson in *The Shining*). The scans showed that the part of the brain that processes fear was less responsive than when the same images were viewed without oxytocin.

Like Posh and Becks, oxytocin and eye contact go hand in hand. In his own research, Dr Guastella found it almost doubles the amount of eye contact people make – a factor that's key to feeling close and connected to your friends, partner and family. And vital for resolving that fight you had last night over his *Grand Theft Auto* addiction. "Eyes are the communication focal point, they tell us other people's intentions and reactions to what we're doing or saying," Dr Guastella says. "Couples who are more easily able to focus on the good things in their relationship, and use less hostile language in an argument, generally show higher oxytocin levels, and use more eye contact." Dr Gemma O'Brien, a physiologist at the University of New England in Armidale, NSW, believes oxytocin is the reason couples in love spend hours gazing into each other's eyes. But there's more to the link than candlelit dinners. An Israeli study measuring oxytocin levels in pregnant women found that those with higher levels at the start of the pregnancy looked at their little ones for longer and more frequent periods, indicating a strong attachment. On the flipside, lack of eye contact is a key symptom of autism, leading scientists to look at oxytocin in their search for a treatment. And the connection doesn't just apply to people. A recent Japanese study found that owners of dogs get an oxytocin high when their four-legged friends eyeballed them. When they sniffed their behind? Not so much.

98% of people release oxytocin when they are trusted
SOURCE: CENTER FOR NEUROECONOMICS STUDIES, US

O so sexy

While we know for sure that oxytocin is activated during pregnancy, labour and breastfeeding, research is yet to determine exactly what it does for the not-so-pretty sex. So far it appears that men get an O-rush when touched and when doing Daddy stuff like reading bedtime stories. One way to make your bloke feel loved? Get horizontal more often. In 1987 a team of researchers had women and men masturbate to orgasm. They found oxytocin increased during arousal for both sexes and at the point of climax the men's levels had doubled. Sounds good, until Dr O'Brien explains that men's O-high at the point of climax is only equal with the levels most women experience most of the time. But it could explain why men are keener than a seagull near hot chips at the mere mention of a shag.

Oxytocin also has a hand in the quality of our orgasms. Much like when a woman is in labour, the big O encourages the contraction of muscles in the reproductive tract during climax. "If a woman's uterus and the surrounding muscles contract strongly that will intensify her orgasm. What we feel in the reproductive tract feeds back into the brain producing even more oxytocin," Dr O'Brien says. In other words, the more thigh-quivering orgasms you have, the more you'll want. We don't get all the fun – oxytocin also contracts the muscles that cause male ejaculation – but the thrill for the fellas is short-lived. A report in the *Journal of Clinical Endocrinology & Metabolism* found that oestrogen increases the effect of oxytocin in the female body while testosterone seems to reduce its effects in men. So while we experience an intense oxytocin high after orgasm that can last for days, the levels of the hormone in the male body drop within a matter of minutes. This explains why you're sitting by the phone three days later waiting for him to call when he forgot all about you as soon as he did the walk of shame.

If you want to use your oxytocin powers to get him to call, the trick could be lots of kissing and not sleeping with him straight away. A study at Lafayette College in Pennsylvania, US, compared the blood levels of cortisol and oxytocin in men and women before and after they kissed. While cortisol levels dropped post-pash for both sexes, only the men's oxytocin levels rose; the women's lowered.

O on tap

So how to get more of the stuff? Your Hotmail account is probably littered with spam touting oxytocin sprays available online, tagging themselves "liquid love" or "trust in a bottle". Pharmaceutical companies are racing to cash in on the O-buzz, but every expert we spoke to rubbished them. "They're mostly a con. None have been approved by the American Food and Drug Administration or Australia's Therapeutic Goods Association and the quantity of oxytocin in them is so tiny and isn't going to do much at all," says Dr Guastella. Instead of seeking a quick fix in a bottle, Kuchinskas says a better approach is learning strategies that boost natural oxytocin. "Some of us may need to retrain our oxytocin response and to do that most of us just need to seek out oxytocin-inducing situations." The good news is there are many to choose from, and most of them are your favourite things, such as getting a massage, playing a musical instrument, singing along at a Coldplay gig, going for dinner with friends and – best of all – having sex. Aside from giving birth and lactating, the number one oxytocin producer is orgasm and, as Kuchinskas is quick to point out, you don't need a partner for that. WH