

# A tale of oxytocin and health: can the new science of love help us conquer fear?

Dr P. T. Diep, University Hospitals of Morecambe Bay NHS Trust, UK

Prof. C. S. Carter, Kinsey Institute, Indiana University, USA

“It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair...”<sup>1</sup>

Clarity can come with comparison. However, often we do not have the luxury of a great many words. The story of oxytocin is a vast tome from which we can only provide the briefest of overviews. Also, any story of oxytocin is only half the story, in view of oxytocin’s relationship to its older and more primitive sibling, a molecule known as vasopressin (also known as antidiuretic hormone).<sup>2</sup> We are learning that together oxytocin and vasopressin provide protection; offering both social and physiological solutions to the “stress of life”. A panorama of this great story, this tale of two peptides, can be found in the reviews (and the hundreds of empirical papers cited therein) at the end of this editorial.<sup>2, 3, 4</sup>

Although, the health benefits of oxytocin now fill volumes, this molecule was initially considered to be “just” an obstetric drug and a breast feeding hormone. It was believed to be a “woman’s hormone” with no known functions in men. This was simply wrong. Oxytocin affects both sexes, but this mistaken notion probably slowed progress in understanding oxytocin. As of June 2021 a Pubmed search for “oxytocin” returns over 28,500 results, most of these published in the last two decades.

It can now be argued, with strong evidence, that oxytocin is a homeostatic hormone of health in both sexes; in fact oxytocin is one of the most powerful natural medicines, linking the benefits of sociality, emotional support and love, to wellbeing<sup>2</sup>. Oxytocin is antioxidant, anti-inflammatory, anti-diabetic, anti-cancer and anti-aging. It can strengthen bones, build muscles and protect the nervous system, especially in the face of stress and trauma. It can strengthen our hearts and it can help us love. Not surprisingly, in these times of terror, oxytocin has also been proposed by multiple researchers as a possible treatment for the pandemic.

Let us slow down, turn back to our beginning, to our birth. This can be seen as a most stressful and inflamed time. From a foetus we transform into a baby. We break out of water and breathe with unfolded lungs; capturing the new air – containing the life-giving but also potentially dangerous molecule called oxygen. Oxygen is a double-edged sword, or a coin that must be flipped, again and again until it comes to rest. Reactive oxygen rusts iron, as it can damage our bodies, our organs, our cells, our very DNA. Oxytocin tempers this weapon; with antioxidant properties it calms the fire that burns from our first to our final breath.

From birth we are moulded from the inside by our genetics and from the outside by our environment. In between is the no-man’s land which academics call our epigenetics. Although we cannot change our genetic

makeup, the expression of genes is altered by experiences across the lifespan. These are tuned and turned; modifying the capacity to change and adapt. Our early life experiences, like a hand on a tap, can turn the flow to a trickle or to a flood. What happens when we are children may be invisible to the eye, but the imprints can hide under our skin and our makeup. Not surprisingly, experiences in early life are especially powerful in creating epigenetic changes in the receptor for oxytocin, thus altering our capacity to adapt, to heal and to restore.

When the stress of life rushes toward us, we can face it with reaction or action; we can receive it as a threat or as a challenge. Life is a challenge. The mammalian body is adapted to face this challenge; adapted to live. It has a vast array of protective mechanisms, some more potentially dangerous than others. For example, the sudden spring of our sympathetic nervous system saves us from the most immediate of dangers. Yet, without a way to release that potent energy we may light the fires of our own eventual destruction. Religions and philosophies are filled with sayings that reflect the danger of anger and selfishness: “Anger is a vessel that destroys itself”.

Oxytocin can cool these fires, can calm the storms. It is likely that in the night hours, when anxiety aches in our bones and our mood lies dark on our lids, oxytocin may become one balm (of several), to our souls. It can switch on the warm comforting lights of the more modern component of the autonomic nervous system, the parasympathetic nervous system,<sup>5</sup> and help to rescue our emotions from the fears that reside in darkness.

When our minds are lost in love, hand in hand, face to face, pupils wide in wonder – oxytocin is also working behind the scenes of these experiences. It brings us together, it keeps us together. It melts our bodies together, it allows two to become one. In isolation (whether real or perceived) our minds may turn in on themselves, our bodies will smoulder, possibly from the fires of an ancient inflammatory chemistry. Fires fed by molecules, such as vasopressin or the hormones of the “stress axis” which is built of molecules that are more primitive and potentially more dangerous than oxytocin. Metaphorically, love brings forth oxytocin and oxytocin, in its turn, can cradle love in its strong arms.

We are at a choice point in the history of our Earth. We can support this new age of science that is building on our understanding of the natural history and biology of our species. We can also question the past to learn lessons for the future. We can raise our heads upwards, with searching and optimistic eyes. We are not alone on this planet. Oxytocin links us emotionally and physically to others and in so doing potentially protects us from both disease and misfortune. Through acceptance of our better selves, and through compassion for ourselves and for others we can literally embrace the “healing power of love”. As we educate ourselves, we have the opportunity

to play a central role in our own health through changes in our attitudes and lifestyles. Alternatively, we can be bystanders, extras without a script. Knowledge of the power of oxytocin and the power of love encourages us to be the protagonist in the story of our own health. It offers hope that dramas, like the current pandemic, will – for most of us – end well.

Here we invite you to open these few pages and see for yourself whether insights like those coming from oxytocin and the new science of love can lead us to the best of times, to the age of wisdom, to the epoch of belief, to the season of Light and to the spring of hope?

**Correspondence to:**  
ptdiep@doctors.org.uk

**C. Sue Carter**, Ph.D. Distinguished University Scientist, Rudy Professor Emerita of Biology.



Dr. Sue Carter is a Distinguished University Scientist and Rudy Professor Emerita of Biology at Indiana University. A career biologist, Carter has studied the endocrinology of love and social bonds for more than three decades. She was the first person to detect and define the physiology of monogamy through her research on the prairie vole. These findings helped lay the foundation for

the studies of behavioral and developmental effects of oxytocin and vasopressin in humans.

Dr. Carter served as Executive Director of the Kinsey Institute from 2014-2019.

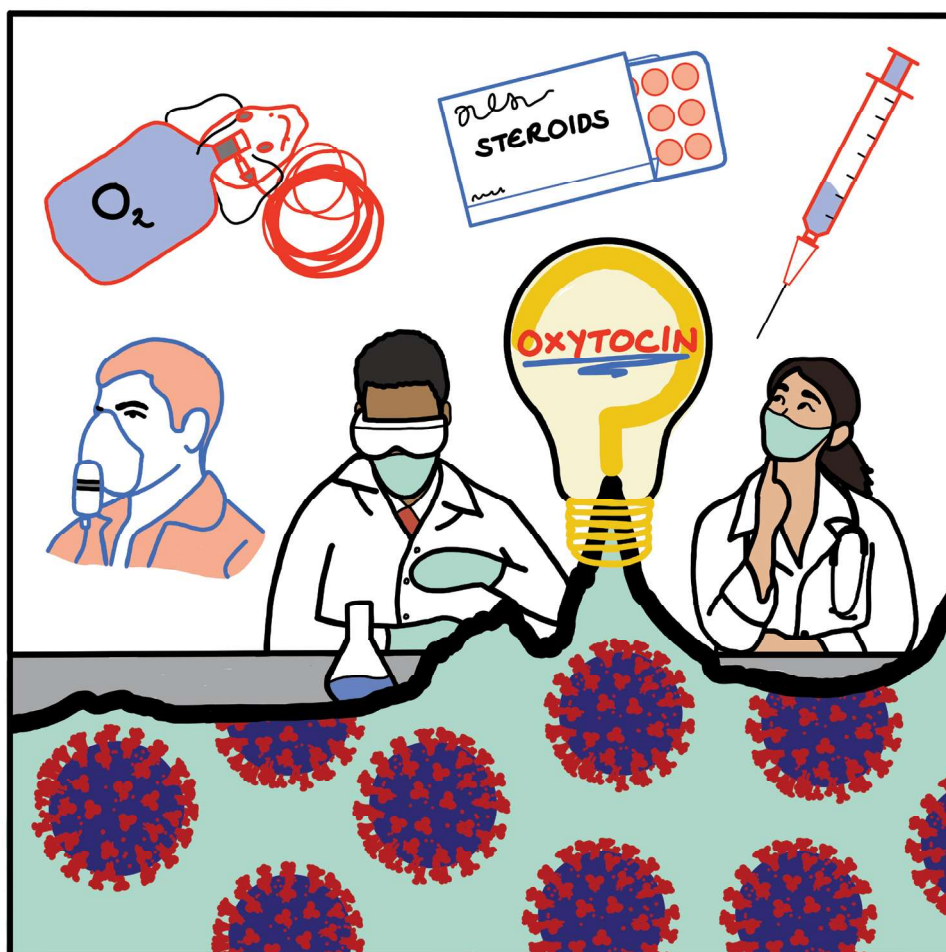
### Dr Phuoc-Tan Diep.

Dr Diep is a consultant histopathologist. He is exploring oxytocin and finding it of great interest.



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Samuel Bradley, 3rd year Medical Student, Lancaster Medical University