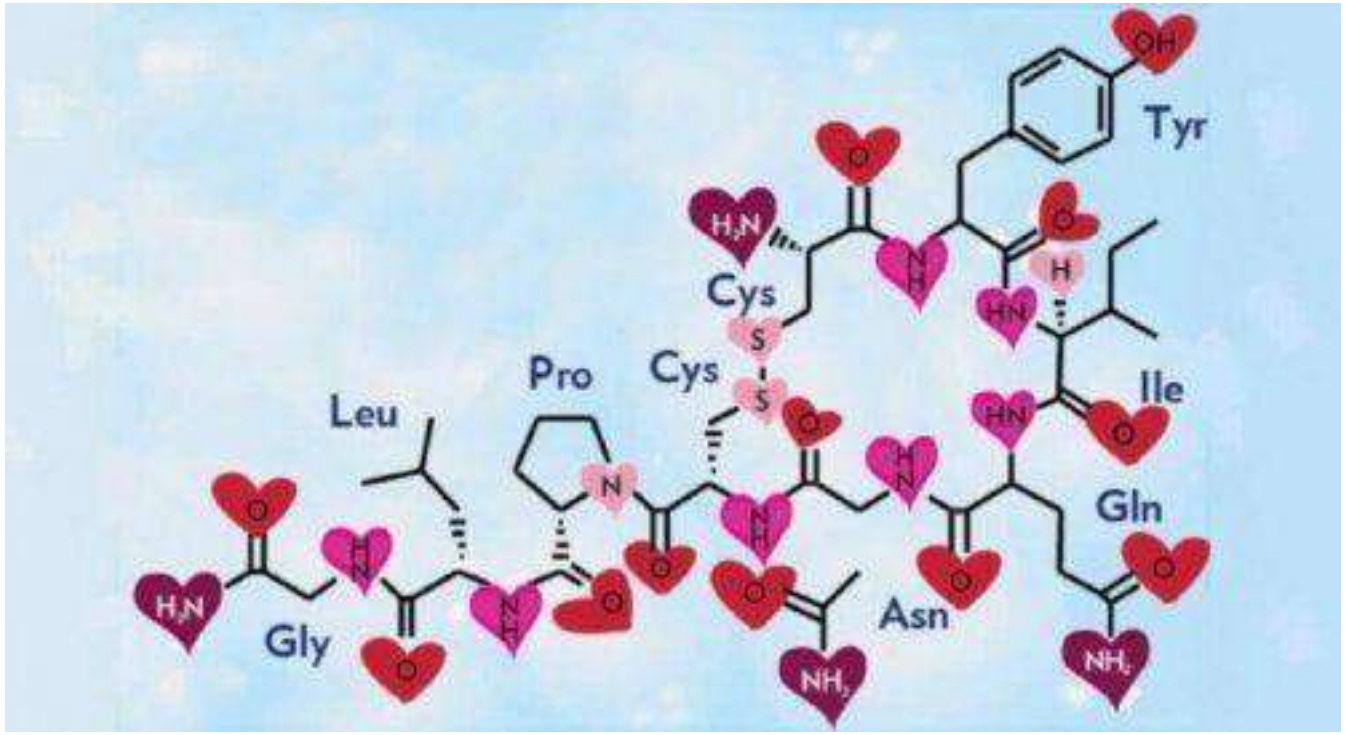
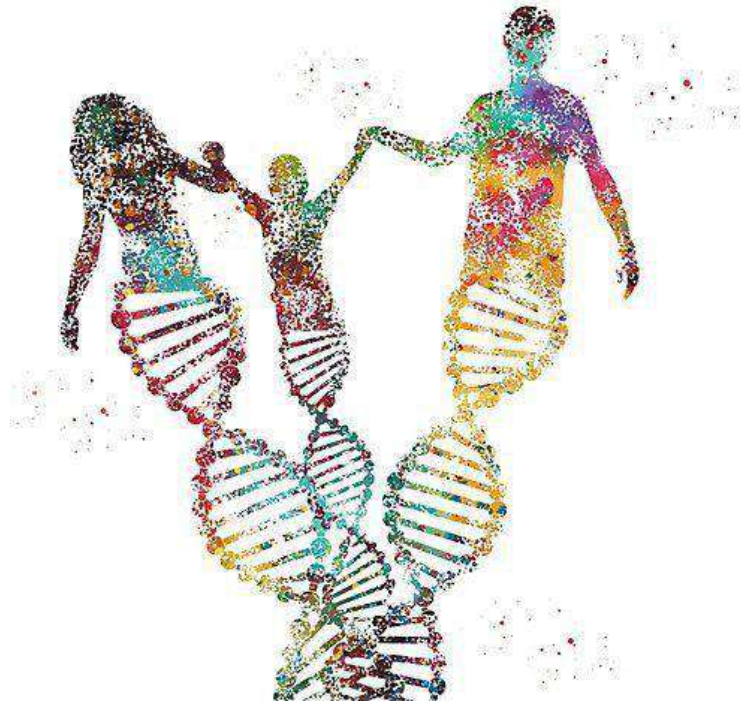
Oxytocin unexpected properties

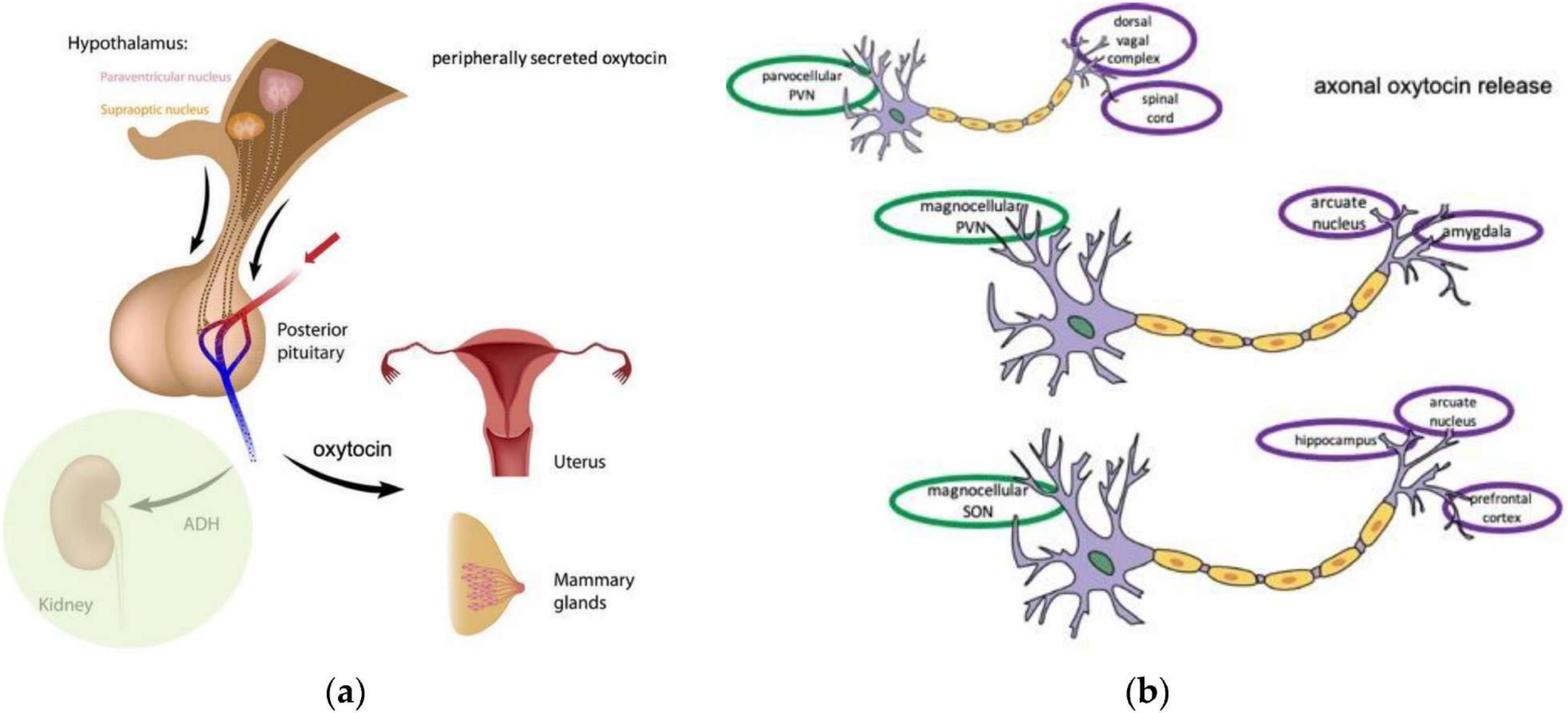
Congrès 2026 de la Société Belge de Médecine Esthétique vendredi 24 et samedi 25 avril 2026 à Bruxelles

Oxytocin (OXT) is a very abundant neuropeptide, exerting a wide spectrum of central and peripheral effects as a neurohormone, neurotransmitter or neuromodulator.





Oxytocin is a very abundant neuropeptide, exerting a wide spectrum of central and peripheral effects as a neurohormone, neurotransmitter or neuromodulator

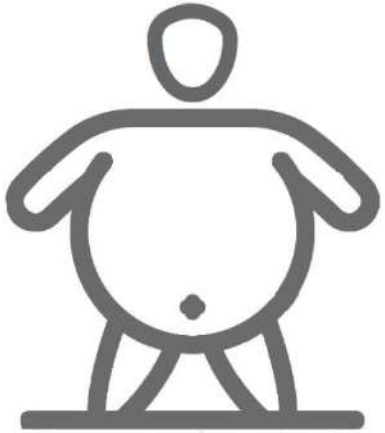


Biomolecules2022, 12(11), 1603

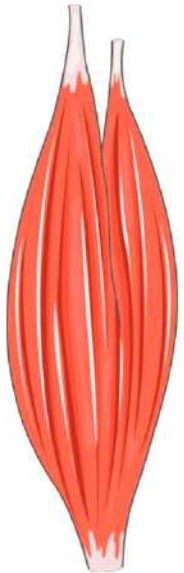
Seventy years of Oxytocin

YEAR 1955: Uterous Award of the Nobel prize to Vincent du Vigneaud for sequencing Oxytocin

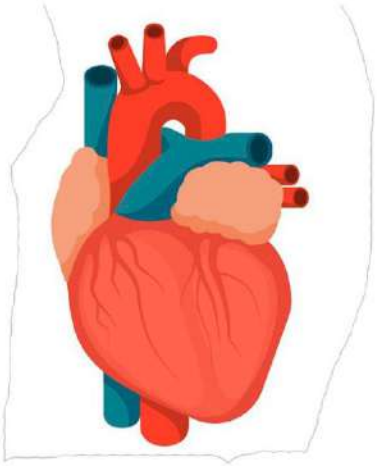
YEAR 2007: Oxytocin in bone



YEAR 2009: Oxytocin in fat and metabolic syndrome



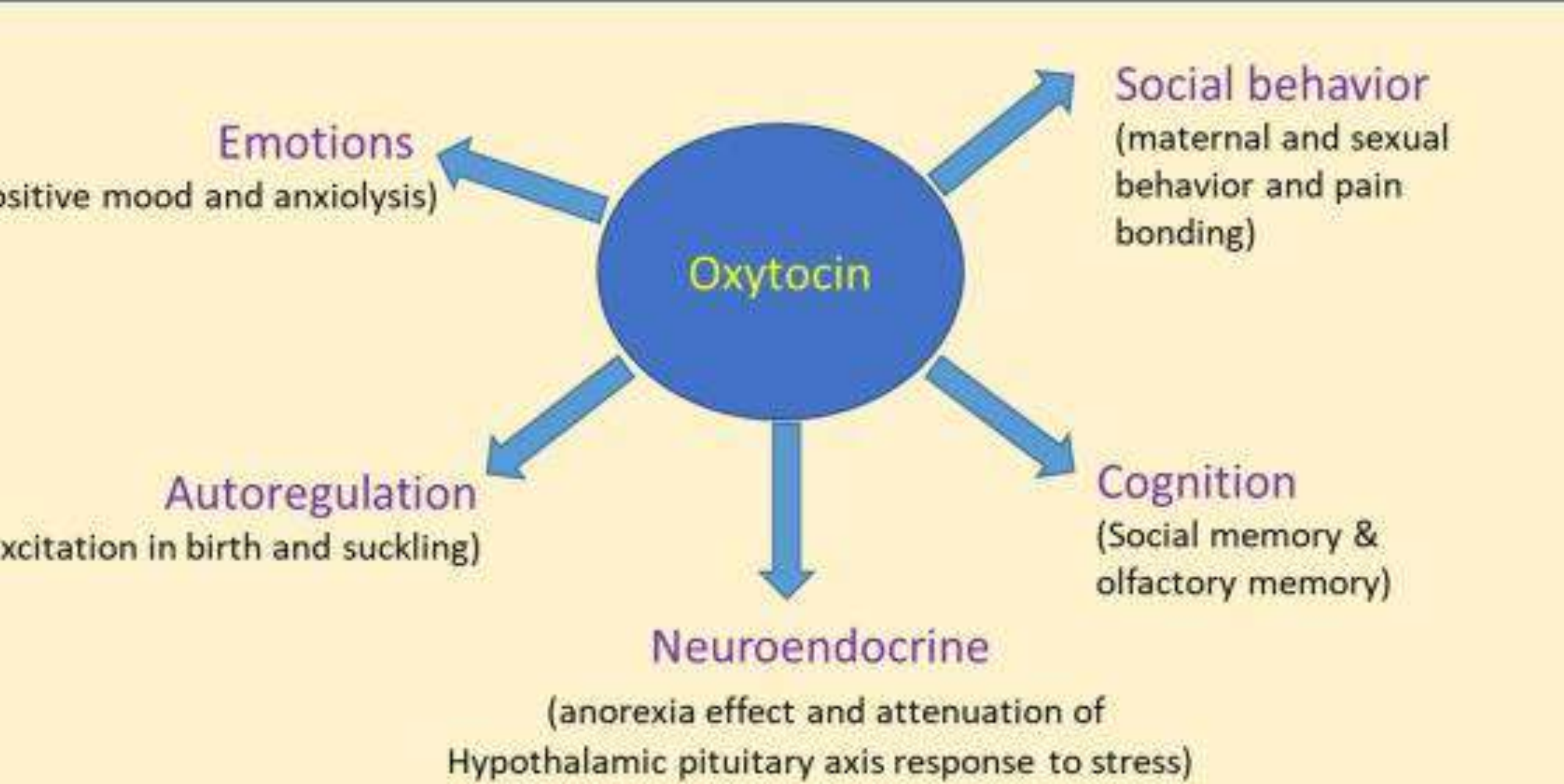
YEAR 2020: Oxytocin in muscle and thermogenesis



YEAR 2022: Oxytocin in heart and thermogenesis

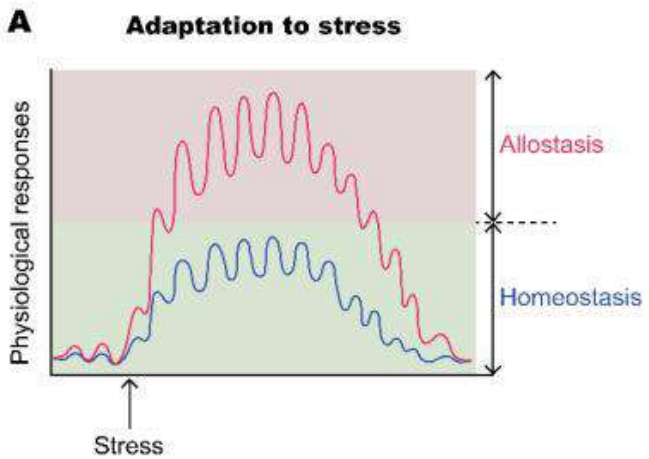
YEAR 2025: the therapeutic Promise of Oxytocin and Prader - Willi syndrome

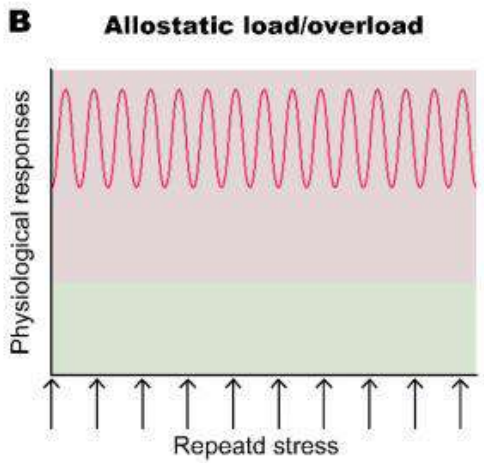
Int. J. Mol. Sci. **2023**, *24*(3), 2556;https://doi.org/10.3390/ijms24032556

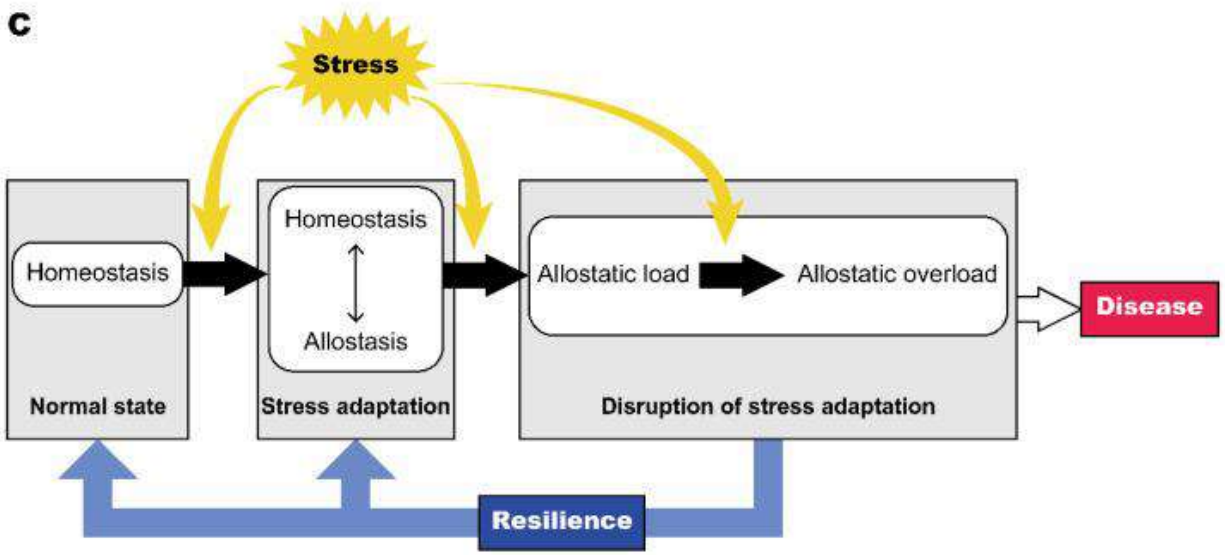


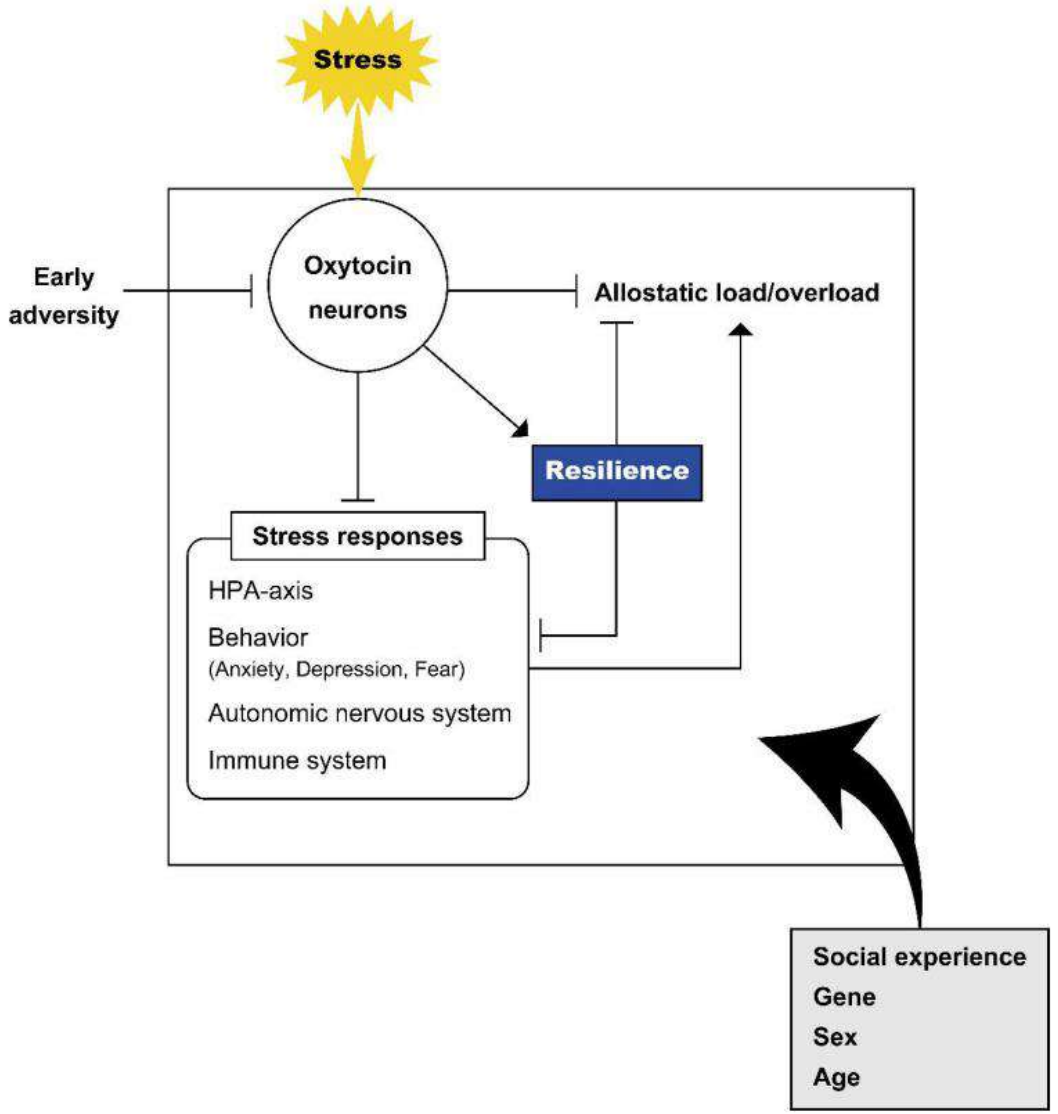
International Journal of Pharmaceutics. Volume 609, 20 November 2021, 121141. Emerging trends in the delivery of nanoformulated oxytocin across Blood-Brain B.

Roles of Oxytocin in Stress Responses, Allostasis and Resilience



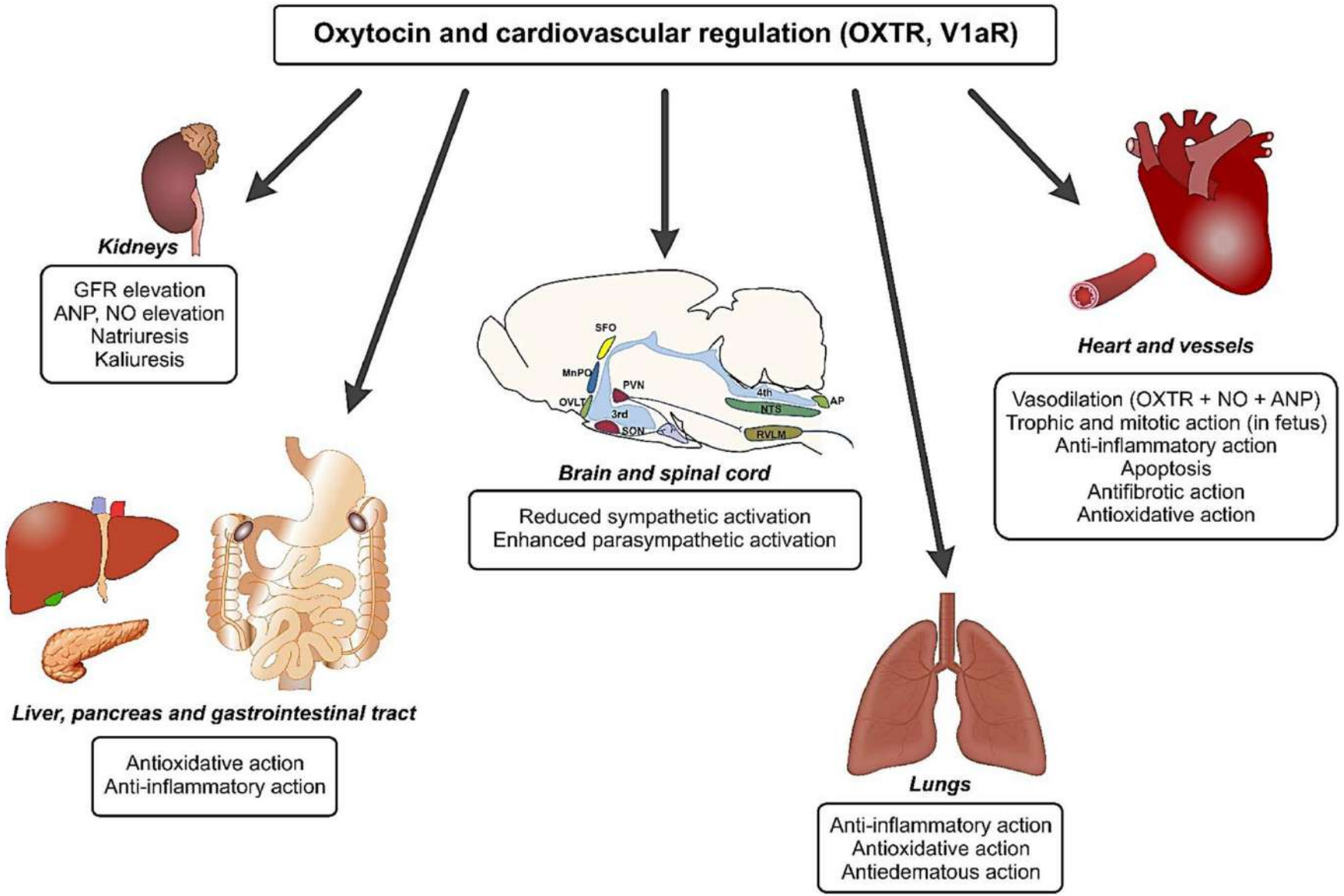






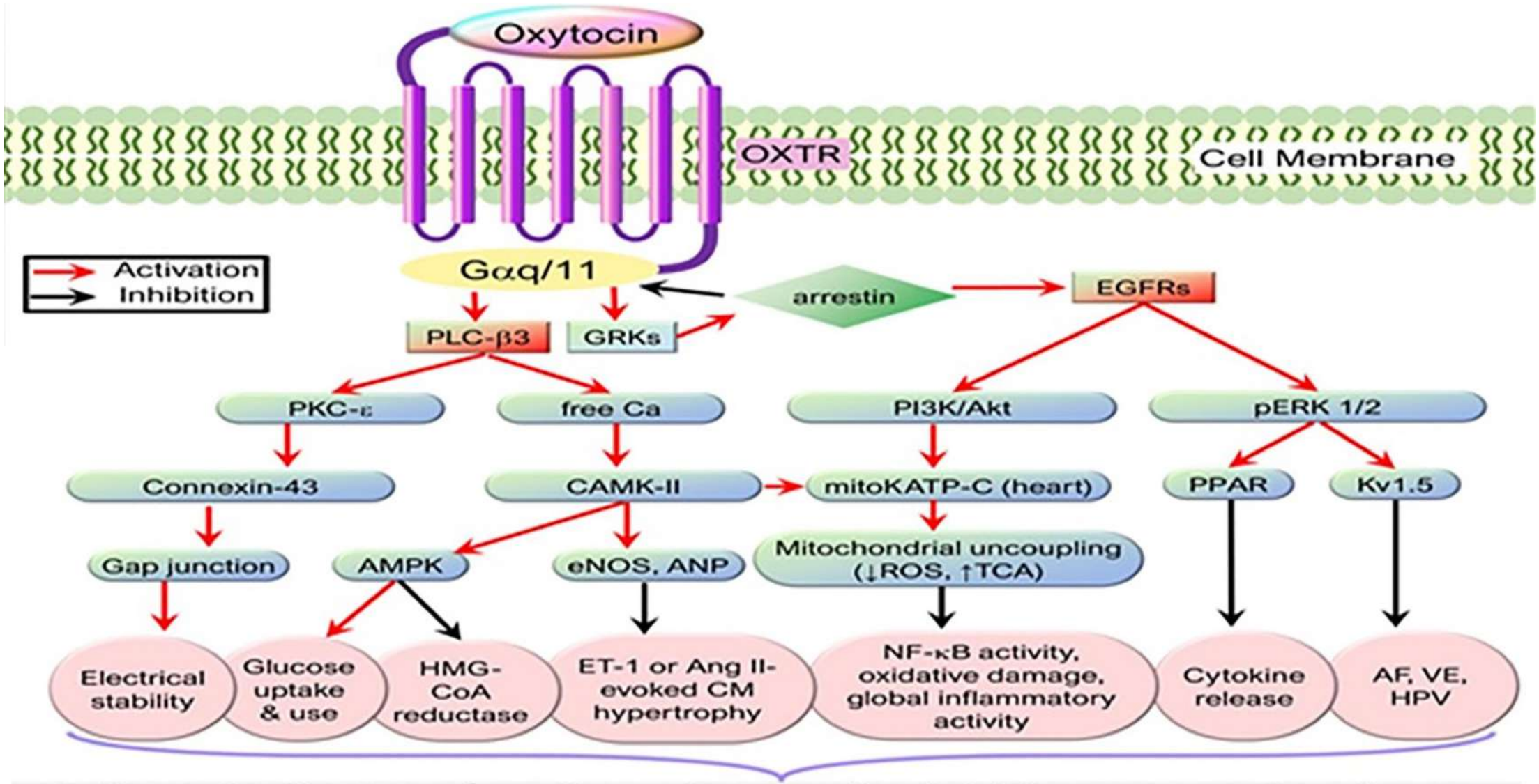
Int J Mol Sci. 2021 Dec 23;23(1):150.

The role of oxytocin in cardiovascular regulation



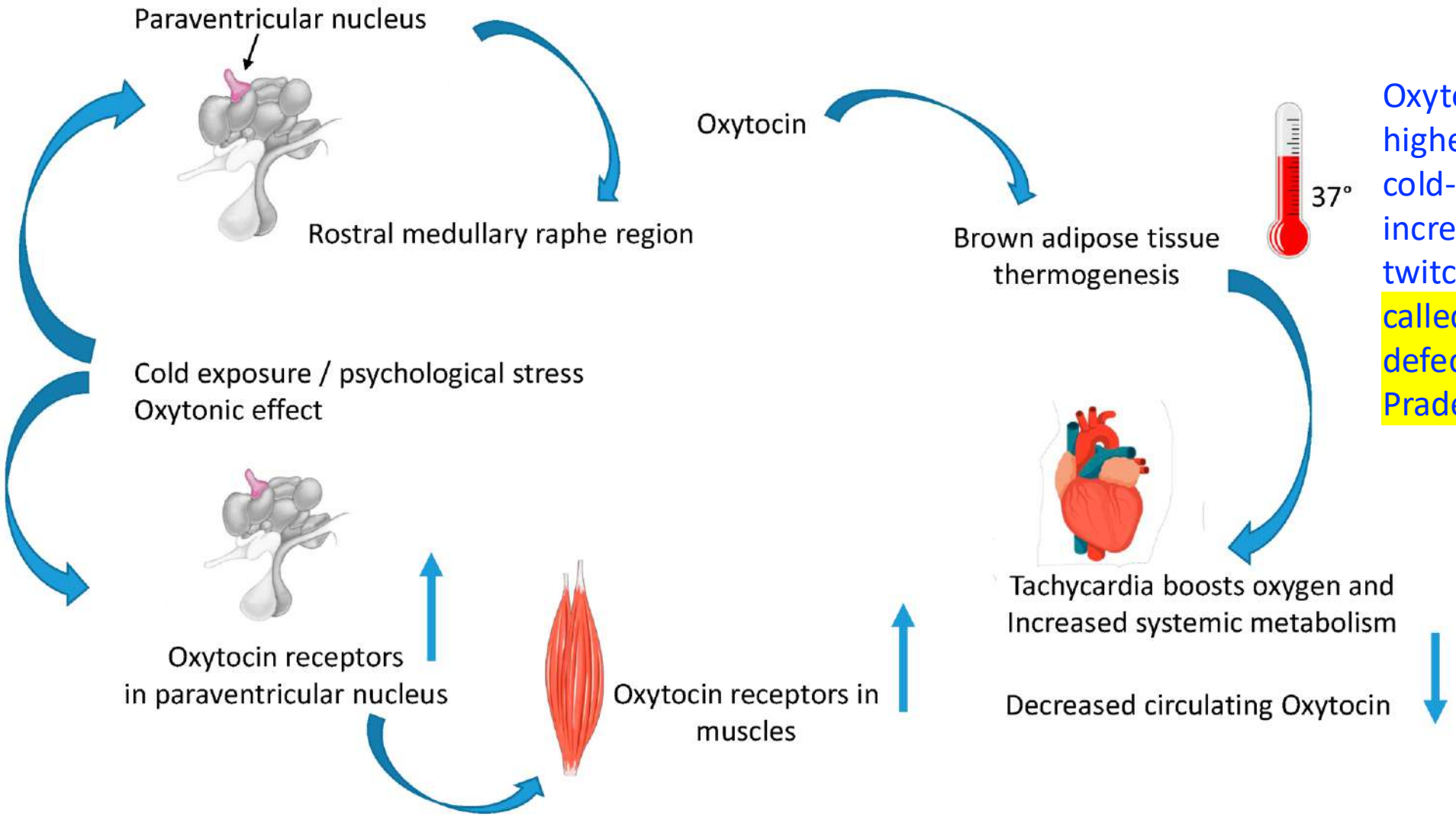
Complementary Role of Oxytocin and Vasopressin in Cardiovascular Regulation. Ewa Szczepanska-Sadowska and All. Int. J. Mol. Sci.2021, 22(21), 11465

Simplified cardioprotective signaling pathways of oxytocin



REVIEW article Front. Immunol., 29 April 2022. Sec. Inflammation.Volume 13 - 2022

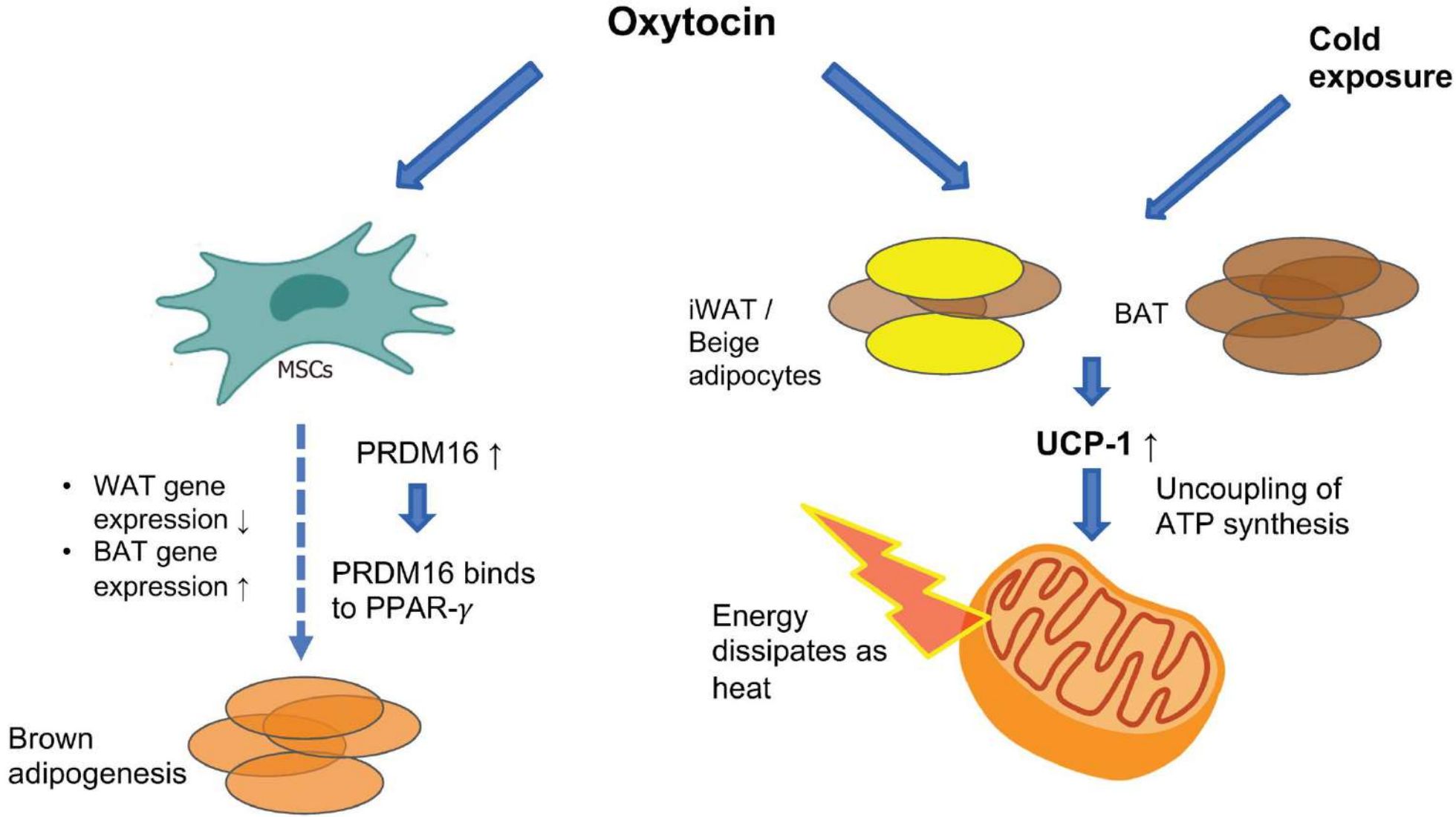
Oxytocin increases thermogenesis in muscles and heart



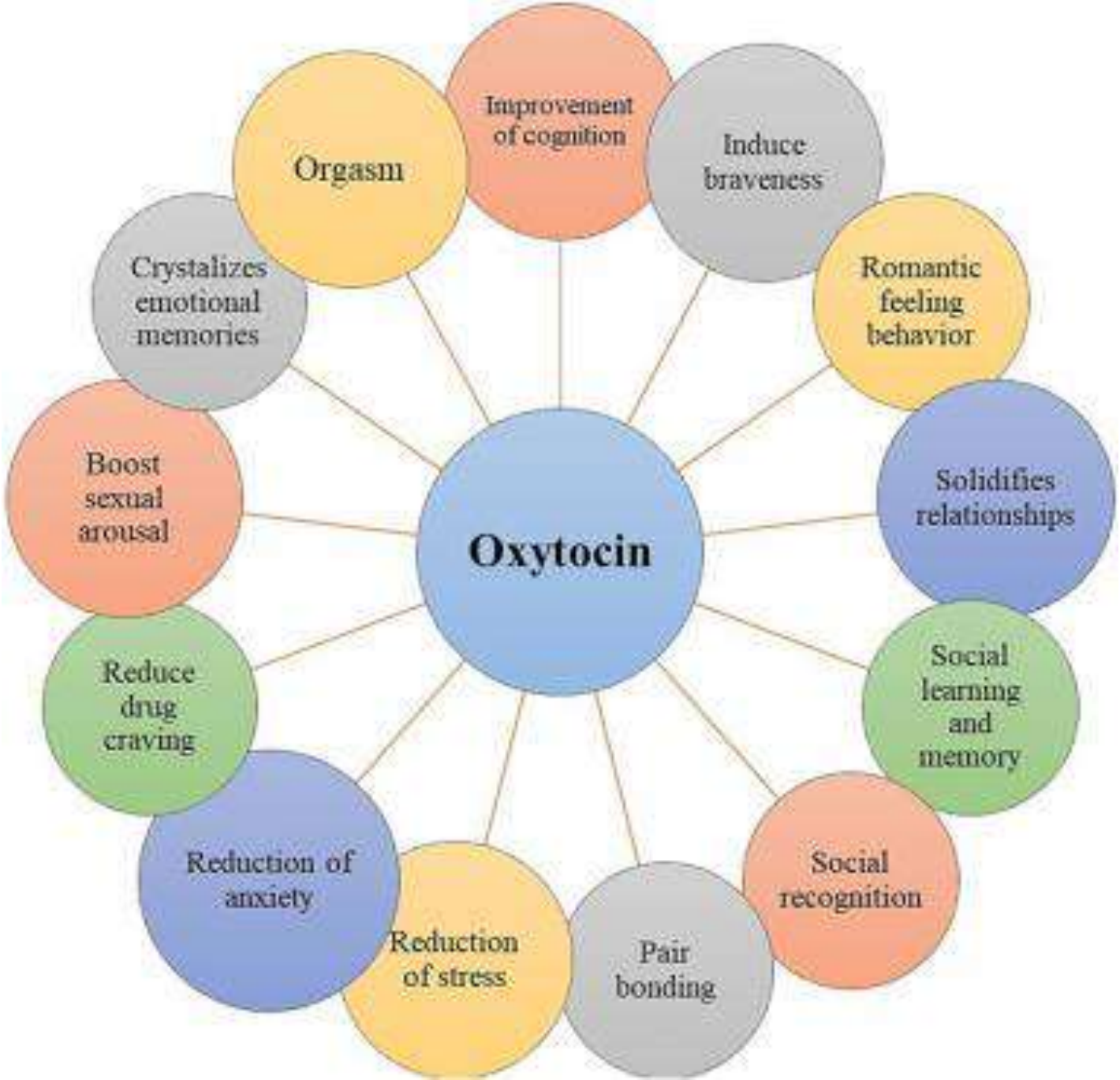
Oxytocin receptor mRNA is also higher in the slow-twitch muscle of cold-stressed mice, leading to increased tonicity of the slow-twitch muscles. This pathway was called the "oxytonic effect", and its defects may cause obesity and Prader–Willi syndrome.

Int. J. Mol. Sci. **2023**, *24*(3), 2556;https://doi.org/10.3390/ijms24032556

Proposed mechanism for the effects of oxytocin on thermogenesis and brown adipogenesis.

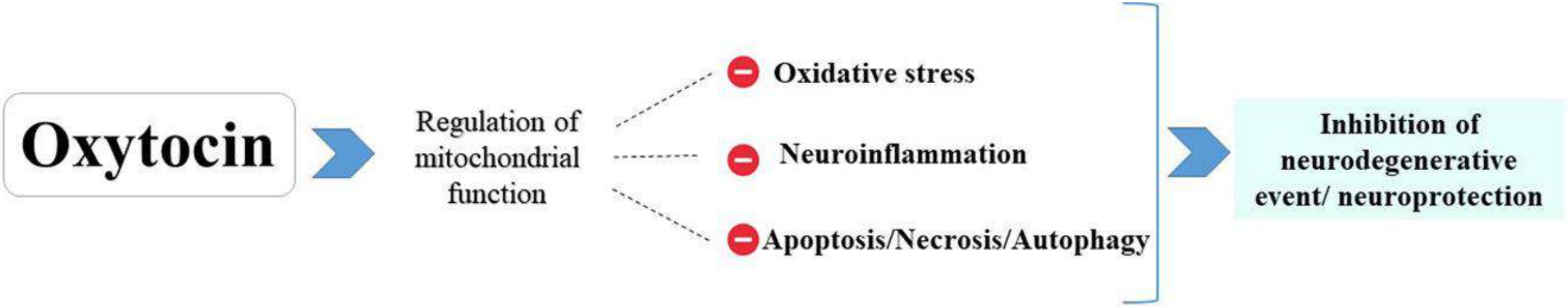


The Effects of Oxytocin on Appetite Regulation, Food Intake and Metabolism in Humans. Int. J. Mol. Sci.2021, 22(14), 7737



https://doi.org/10.1016/j.npep.2023.102352

Oxytocin as neuro-hormone and neuro-regulator exert neuroprotective properties: A mechanistic graphical review

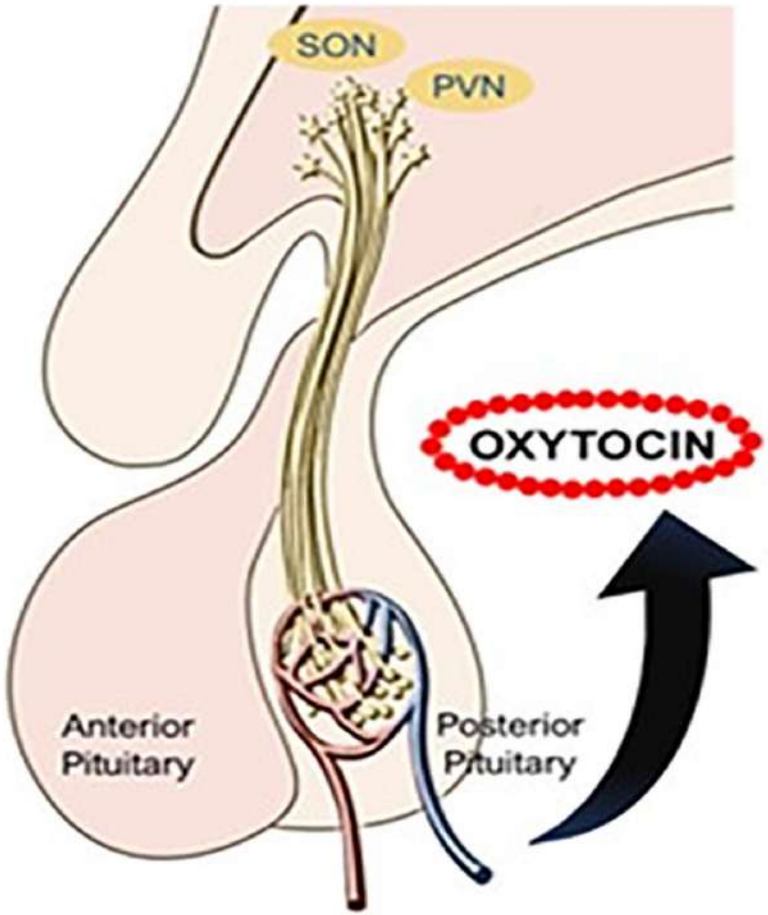


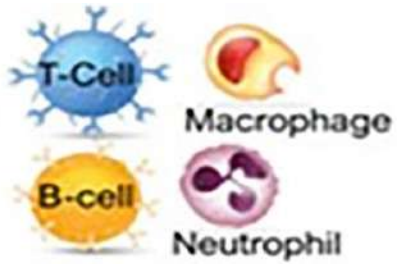
The neuroprotective effects of oxytocin appears to be mediated by its anti-inflammatory properties :

- inhibition of neuro inflammation,
- activation of several antioxidant enzymes,
- inhibition of oxidative stress and free radical formation,
- activation of free radical scavengers,
- prevent of mitochondrial dysfunction,
- and inhibition of apoptosis.

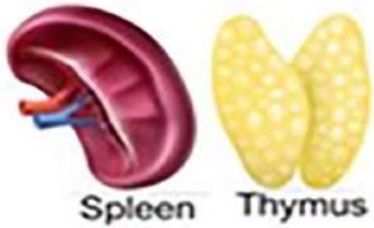
Neuropeptides Volume 101, October 2023, 102352

Immune functions of oxytocin

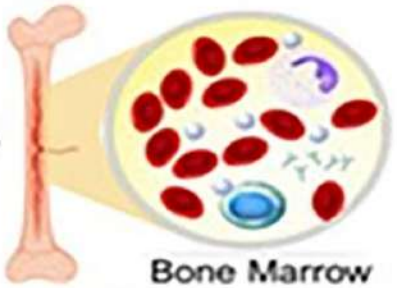




- ↓ IL-1, IL-1β, IL-2, IL-6, TNF-α, NF-κB
- ↓ neutrophils migration, MPO
- ↑ production of IL-10 from T-reg cells
- ↑ expression of PPAR-γ on macrophages
- ↑ IgG, IgM, IgA from B-cells



- ↑ thymic T-cells differentiation
- ↓ self-reactive T-cells
- ↑ growth of thymus gland
- ↑ pathogen clearance from spleen
- ↑ coordination between T and B cells

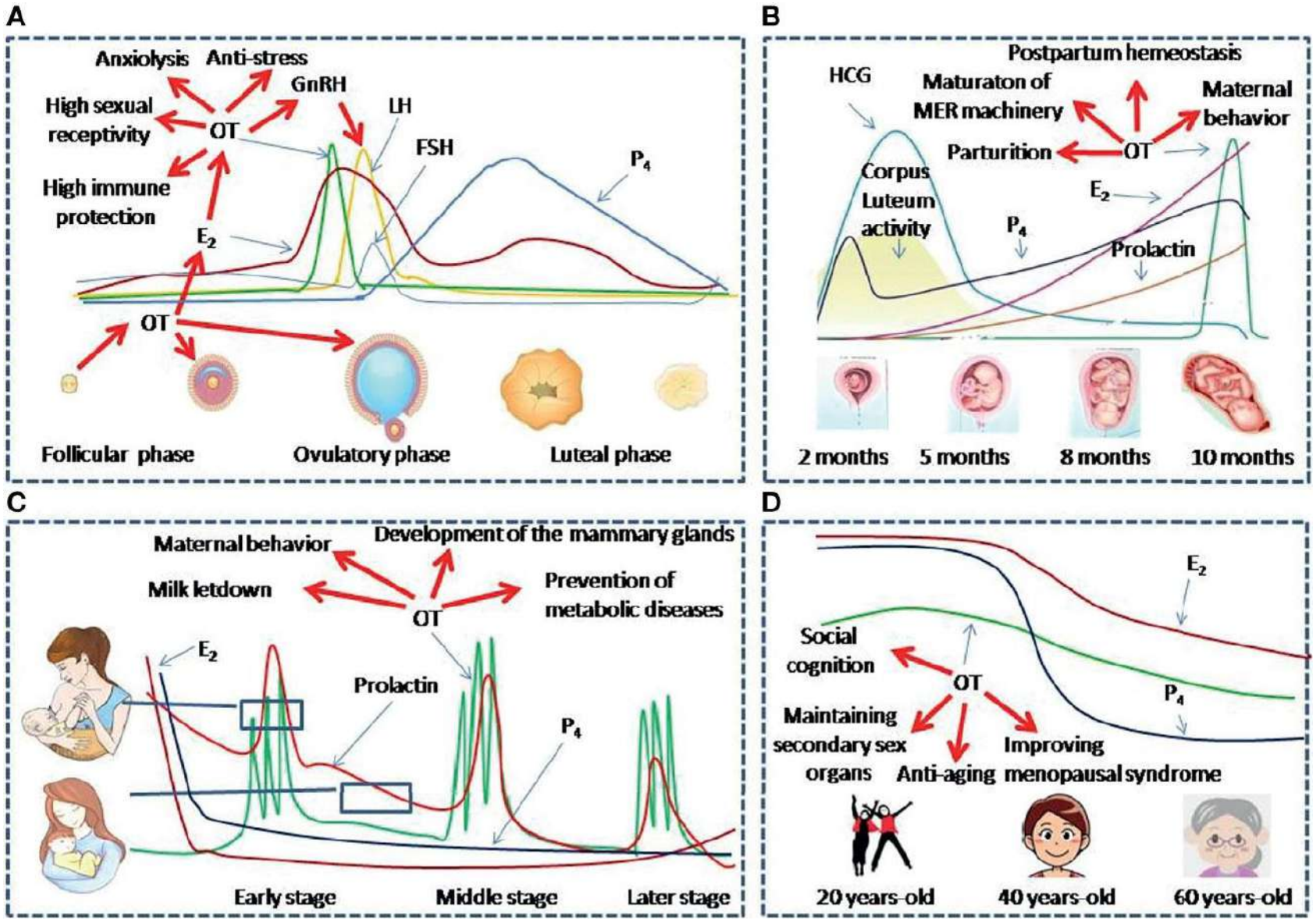


- ↑ mesenchymal stromal cells
- ↑ formation of blood cell lineages
- ↑ differentiation of HSCs **Hematopoietic Stem Cell**
- ↑ transport of HSCs to lymphatic organs
- ↑ osteoblastic activity

- ↑ cholinergic outflow
- ↓ sympathetic outflow
- ↑ release of nitric oxide
- ↑ prostacyclin release
- ↓ ACTH, TSH

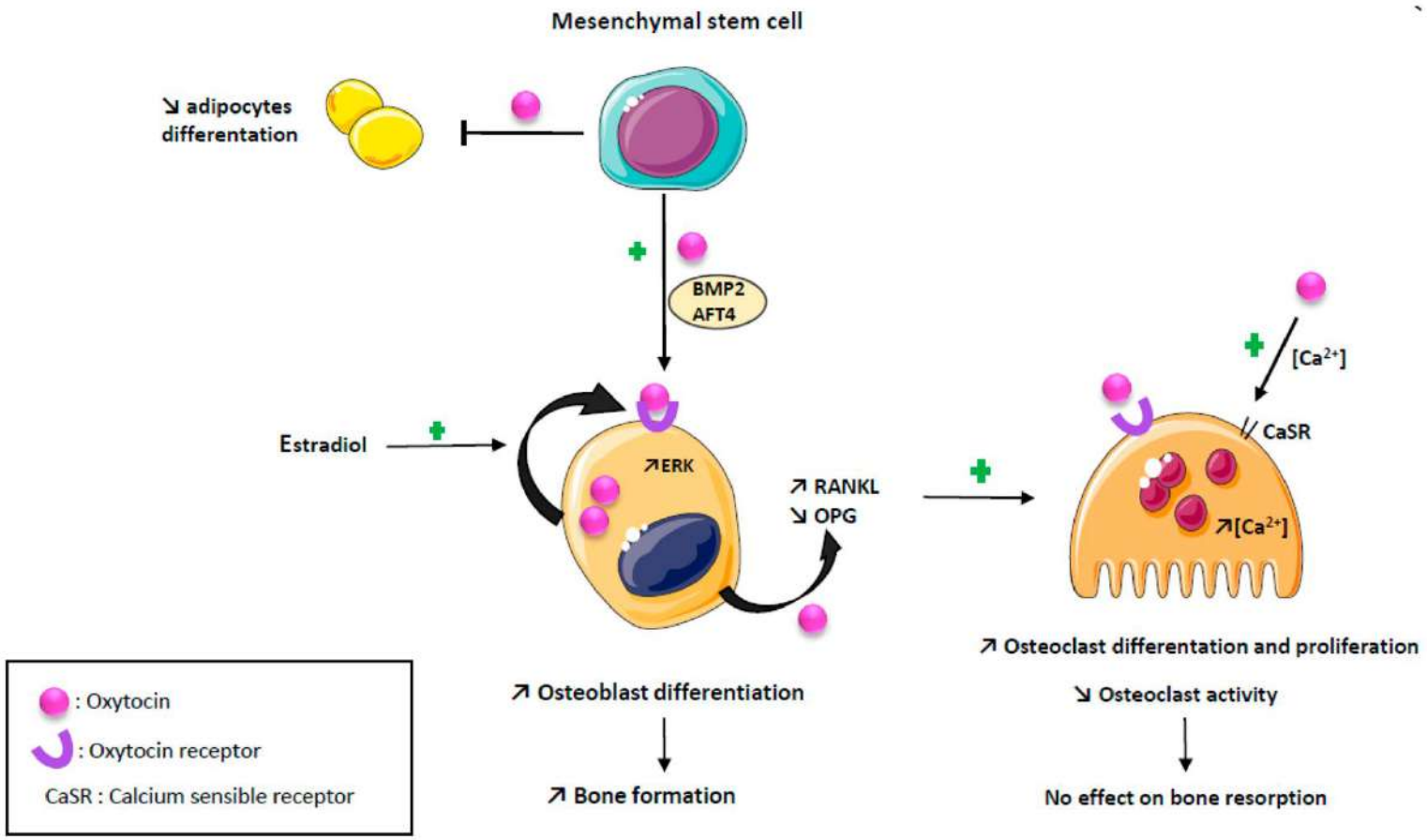
REVIEW article Front. Immunol., 29 April 2022. Sec. Inflammation.Volume 13 - 2022

Oxytocin functions at different reproductive stages of women



Oxytocin in Women's Health and Disease. MINI REVIEW article. Front. Endocrinol., 15 February 2022. Sec. Neuroendocrine Science. Volume 13 – 2022

Effects of oxytocin on bone cells



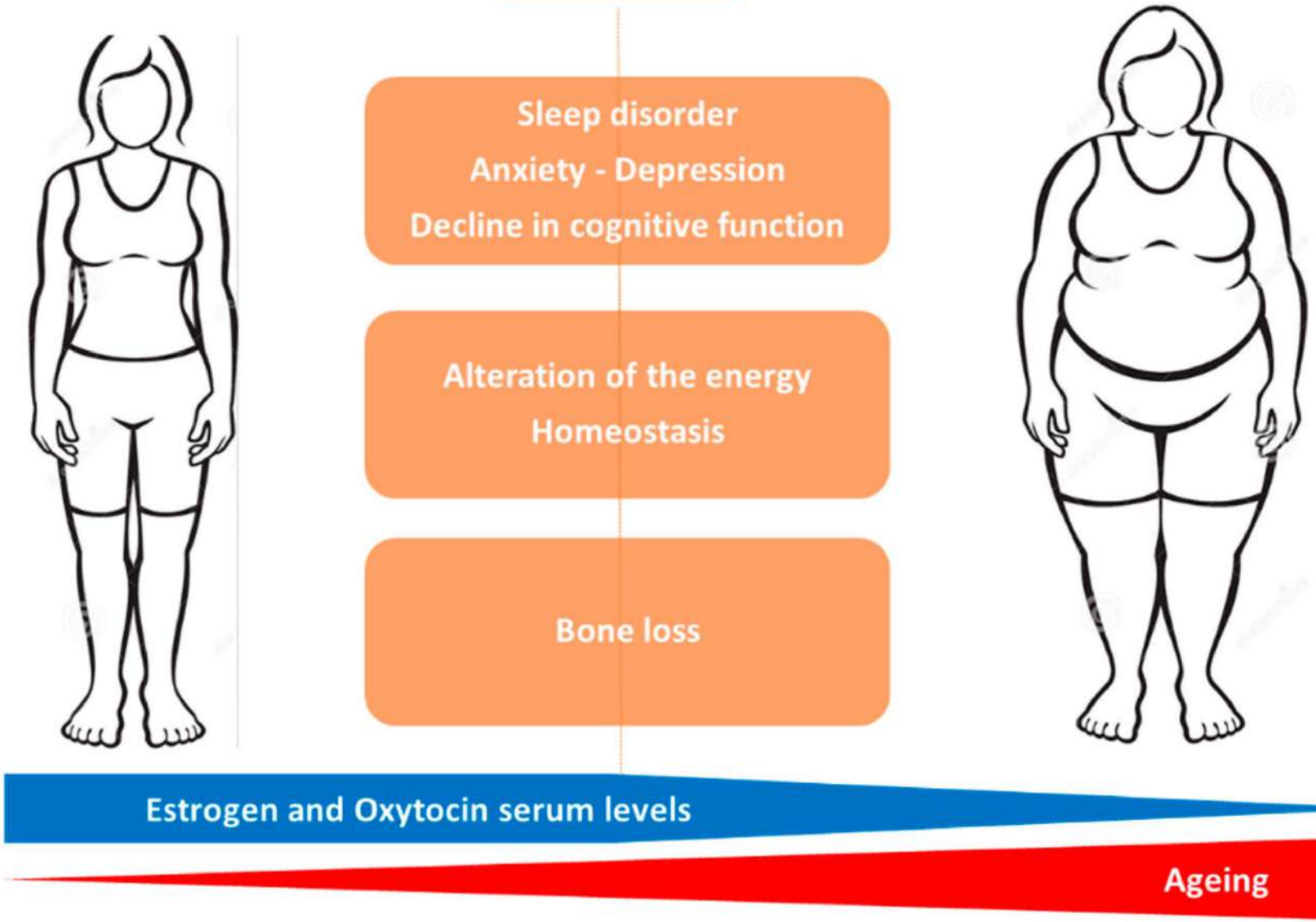
Oxytocin has an anabolic action promoting osteoblast differentiation and function by an upregulation of BMP2 and AFT4 pathways,

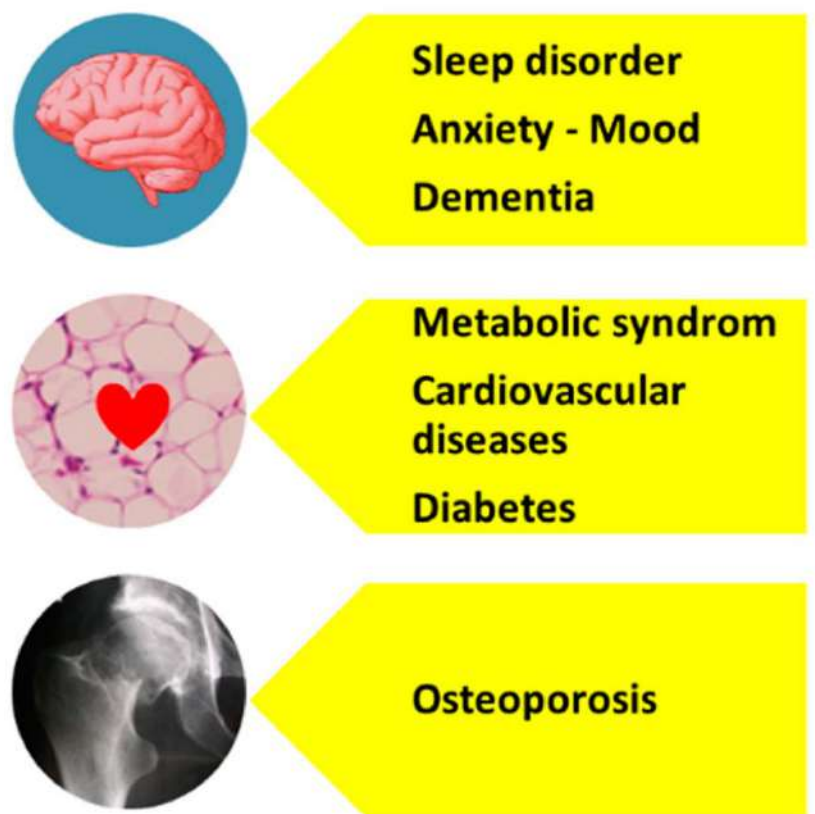
Reducing adipogenesis.

Estradiol positively stimulate oxytocin production by osteoblast through an activation of the MAP kinase/ERK pathway and oxytocin receptor expression, synergistic with a local feed-forward loop.

Oxytocin has a paradoxical effect on osteoclast resulting in no effect on bone resorption: osteoclast number is increased by promoting RANKL expression and decreasing OPG expression; mature osteoclast resorption is decreased by supporting intracellular calcium concentration.

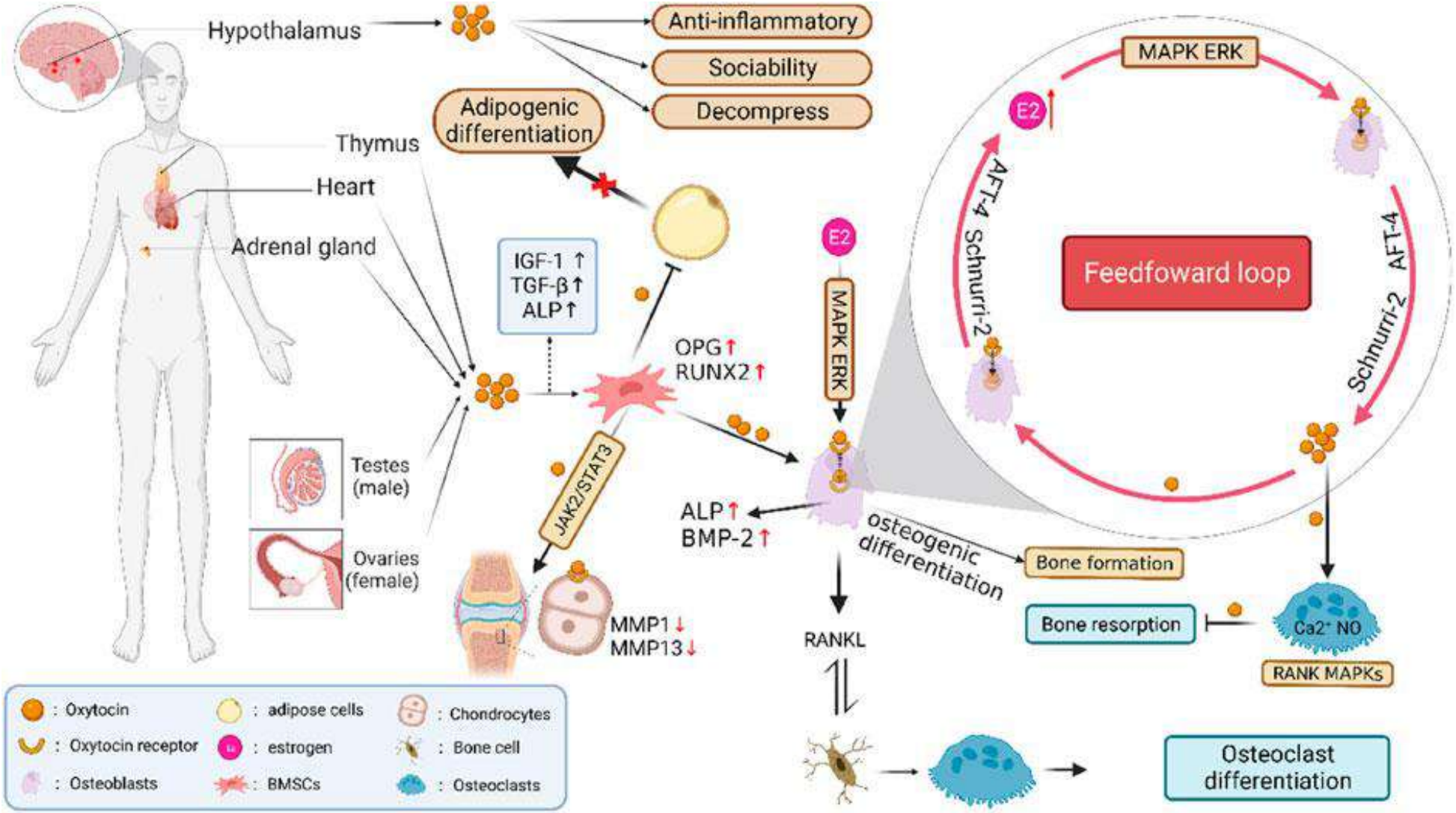
Oxytocin and Bone: Review and Perspectives. Int. J. Mol. Sci.2021, 22(16), 8551



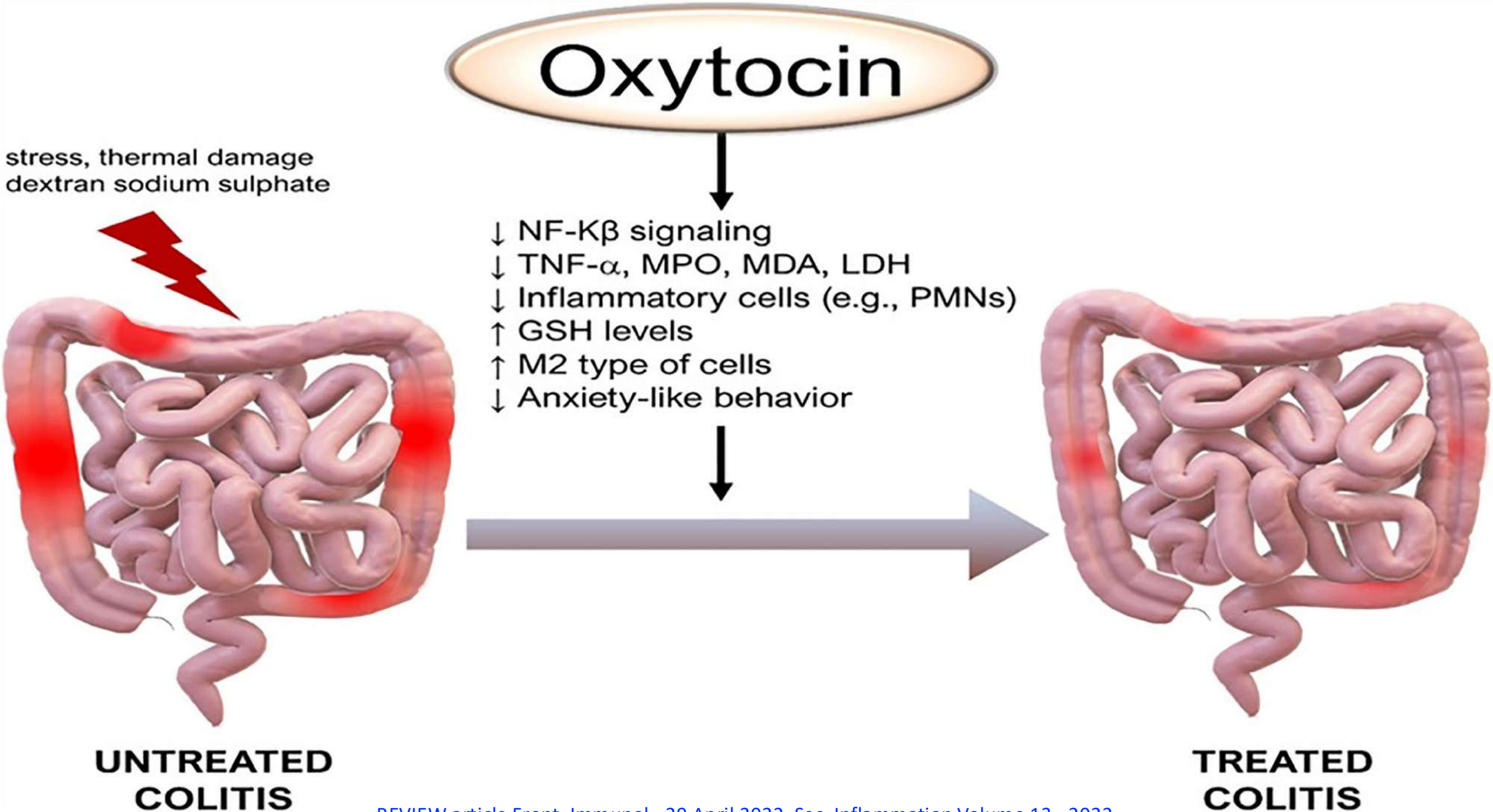


Oxytocin and Bone: Review and Perspectives. Int. J. Mol. Sci.2021, 22(16), 8551

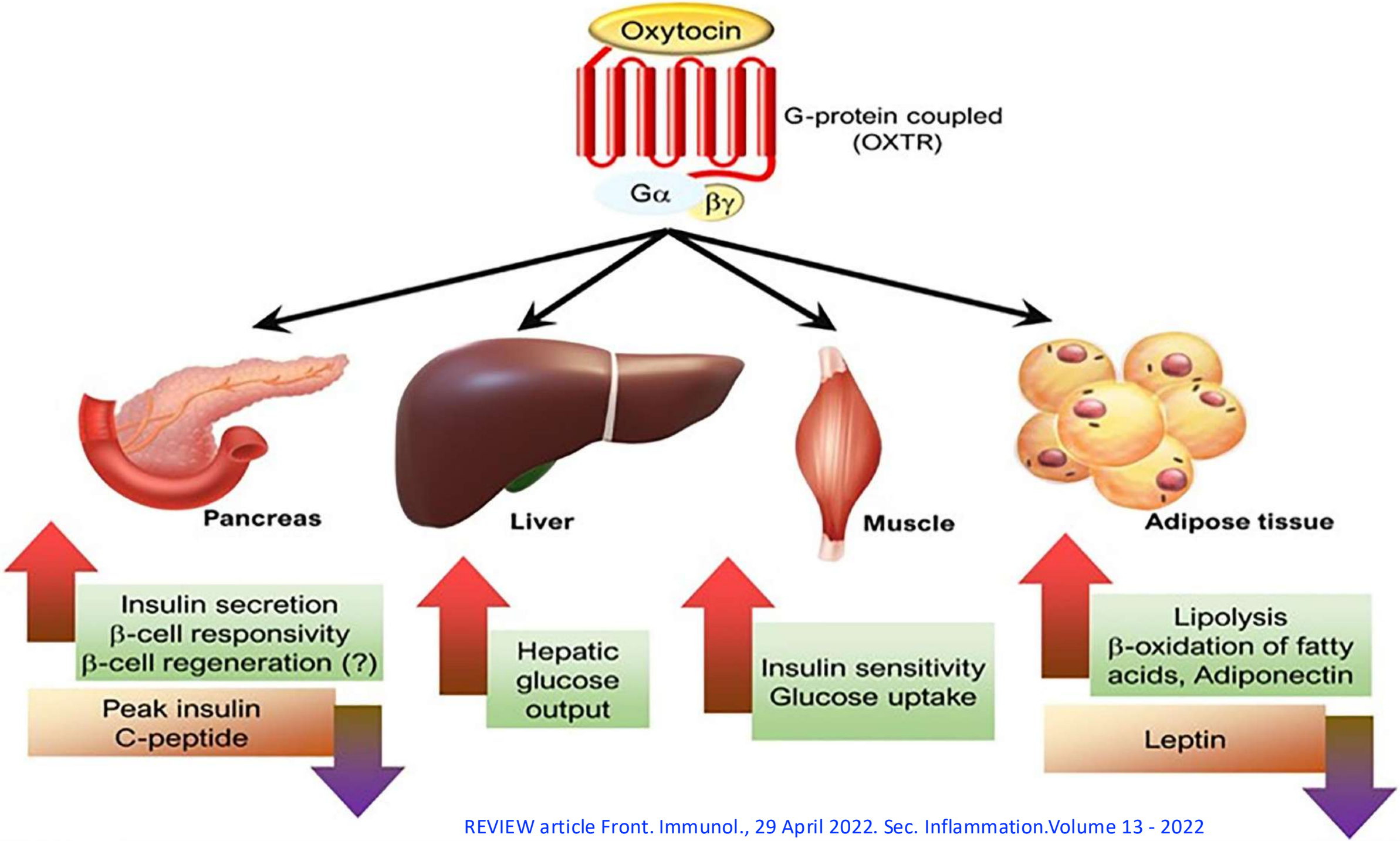
The mechanism of oxytocin and its receptors in regulating cells in bone metabolism



REVIEW article. Front. Pharmacol., 09 May 2023. Sec. Experimental Pharmacology and Drug Discovery. Volume 14 - 2023



REVIEW article Front. Immunol., 29 April 2022. Sec. Inflammation.Volume 13 - 2022



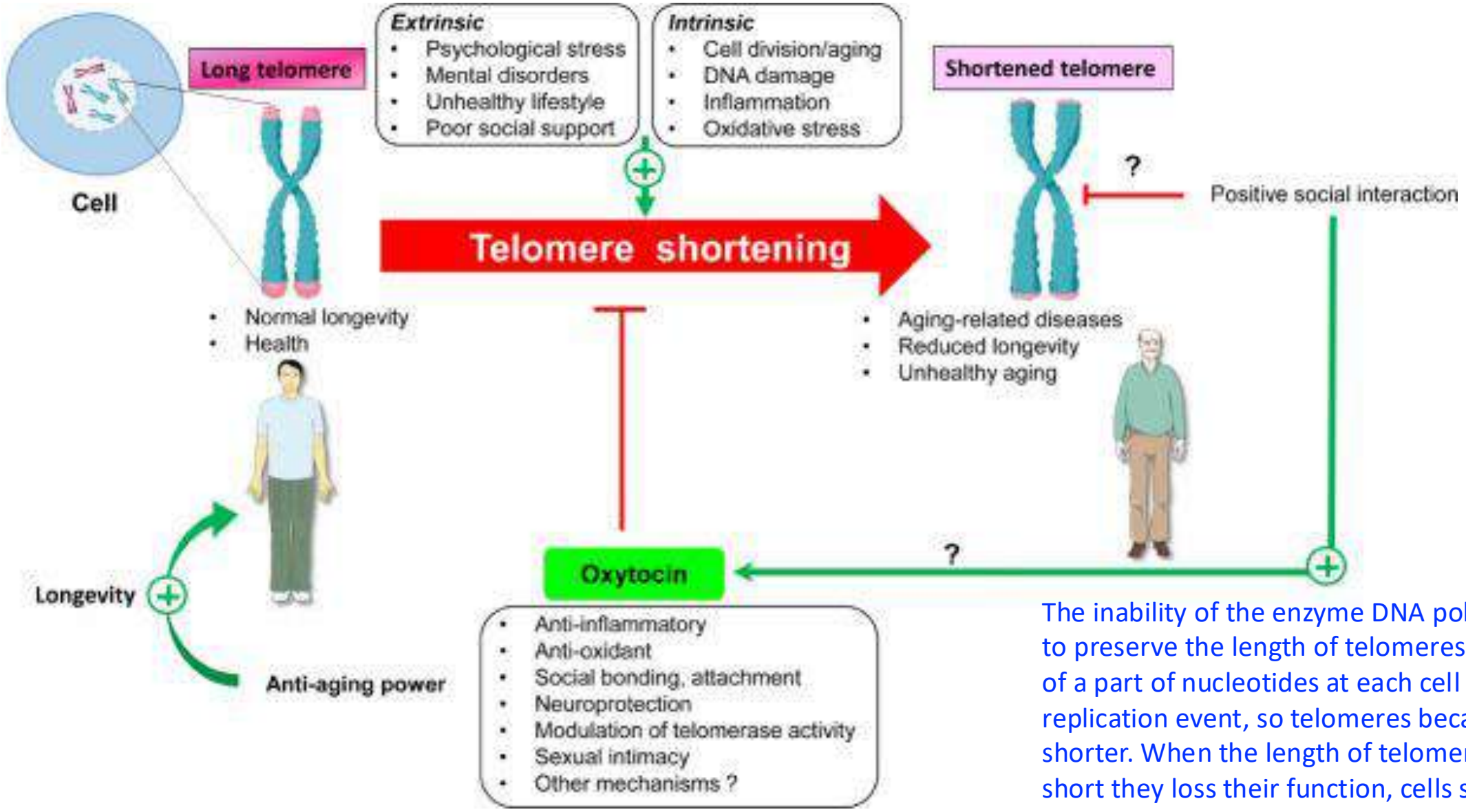
REVIEW article Front. Immunol., 29 April 2022. Sec. Inflammation.Volume 13 - 2022

Oxytocin as a Therapeutic Agent in Obesity and Metabolic Syndrome—Promise, Fundamental Challenges and Future Directions

- There is increasing evidence that oxytocin participates in the regulation of eating behavior, energy balance, and metabolism
- Animal studies strongly support the weight-reducing properties of oxytocin, via suppression of food intake, particularly reward-driven eating, and increase in thermogenenesis and energy expenditure
- The OXTR has an important role in the musculoskeletal system. It is needed for muscle maintenance and regeneration, to promote bone mineralization and to minimize adipose tissue generation from mesenchymal stem cells, thus overall exerting beneficial effects on body composition.

The Effects of Oxytocin on Appetite Regulation, Food Intake and Metabolism in Humans. Int. J. Mol. Sci.2021, 22(14), 7737

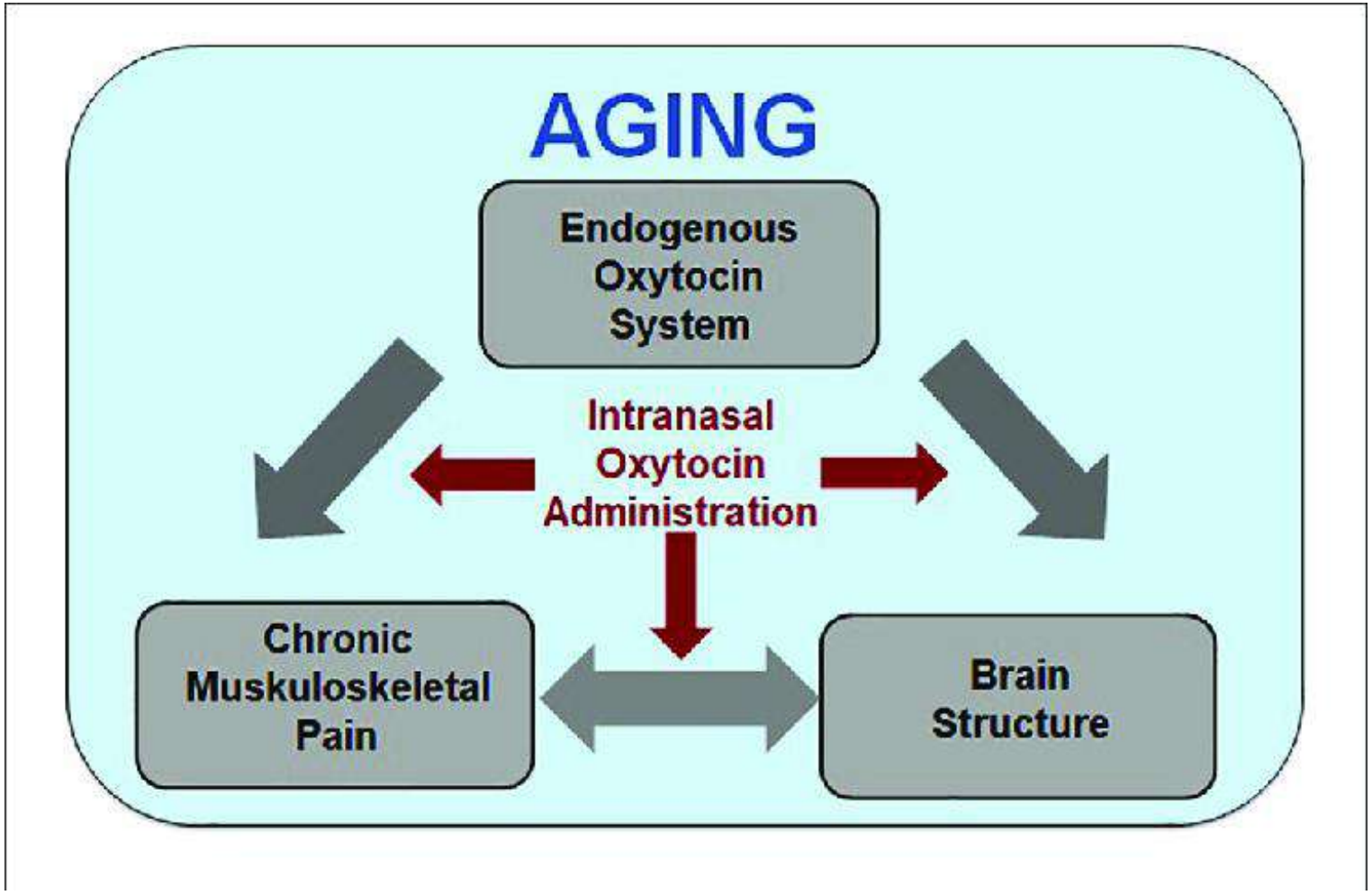
The antiaging role of oxytocin



Neural Regen Res. 23 avril 2021;16(12):2413-2414

The inability of the enzyme DNA polymerase to preserve the length of telomeres cause loss of a part of nucleotides at each cell division or replication event, so telomeres became shorter. When the length of telomeres is too short they loss their function, cells stop to divide and become senescent.

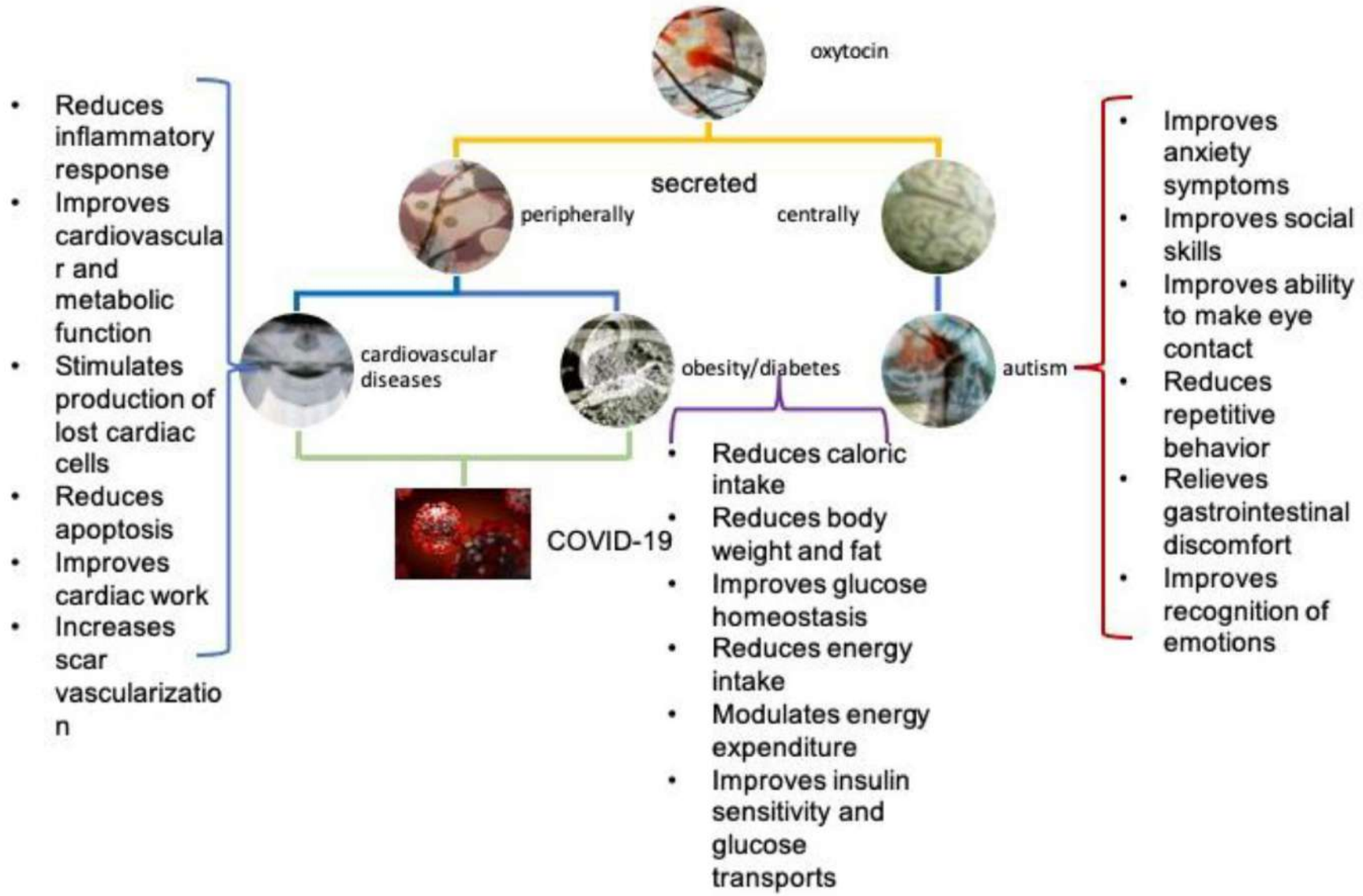
Musculoskeletal Pain and Brain Morphology: Oxytocin's Potential as a Treatment for Chronic Pain in Aging



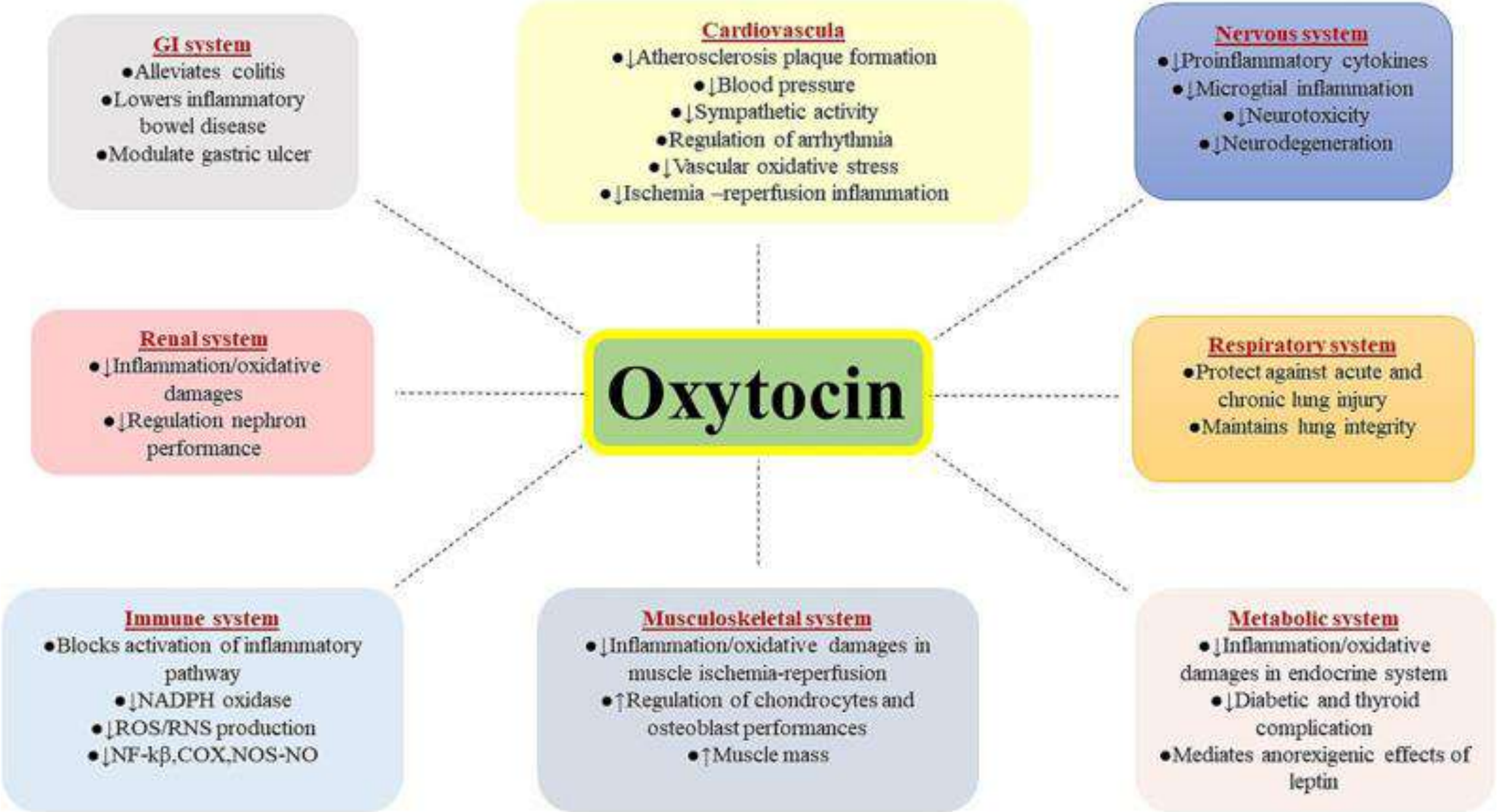
Increased age is associated with increased incidence of susceptibility for the development of chronic pain, alterations in brain morphology in regions associated with pain processing, and potential changes to the endogenous oxytocin (OT) system.

Frontiers in Aging Neuroscience 11:338. December 2019

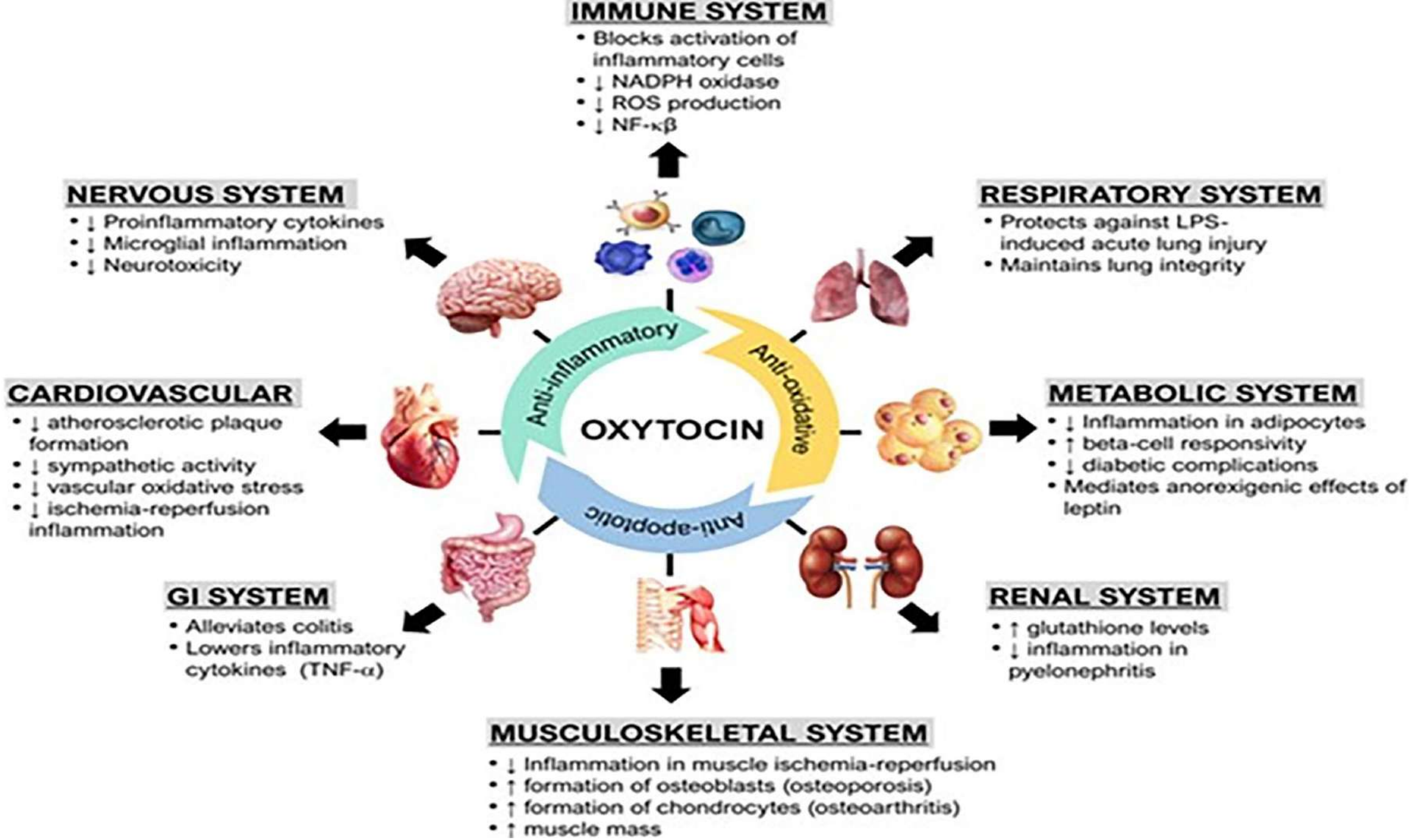
Oxytocin: A Multi-Functional Biomolecule with Potential Actions in Dysfunctional Conditions; From Animal Studies and Beyond



Biomolecules2022, 12(11), 1603



Neuropeptides. Volume 101 ,octobre 2023, 102352



REVIEW article Front. Immunol., 29 April 2022. Sec. Inflammation.Volume 13 - 2022


Merci pour
votre attention