

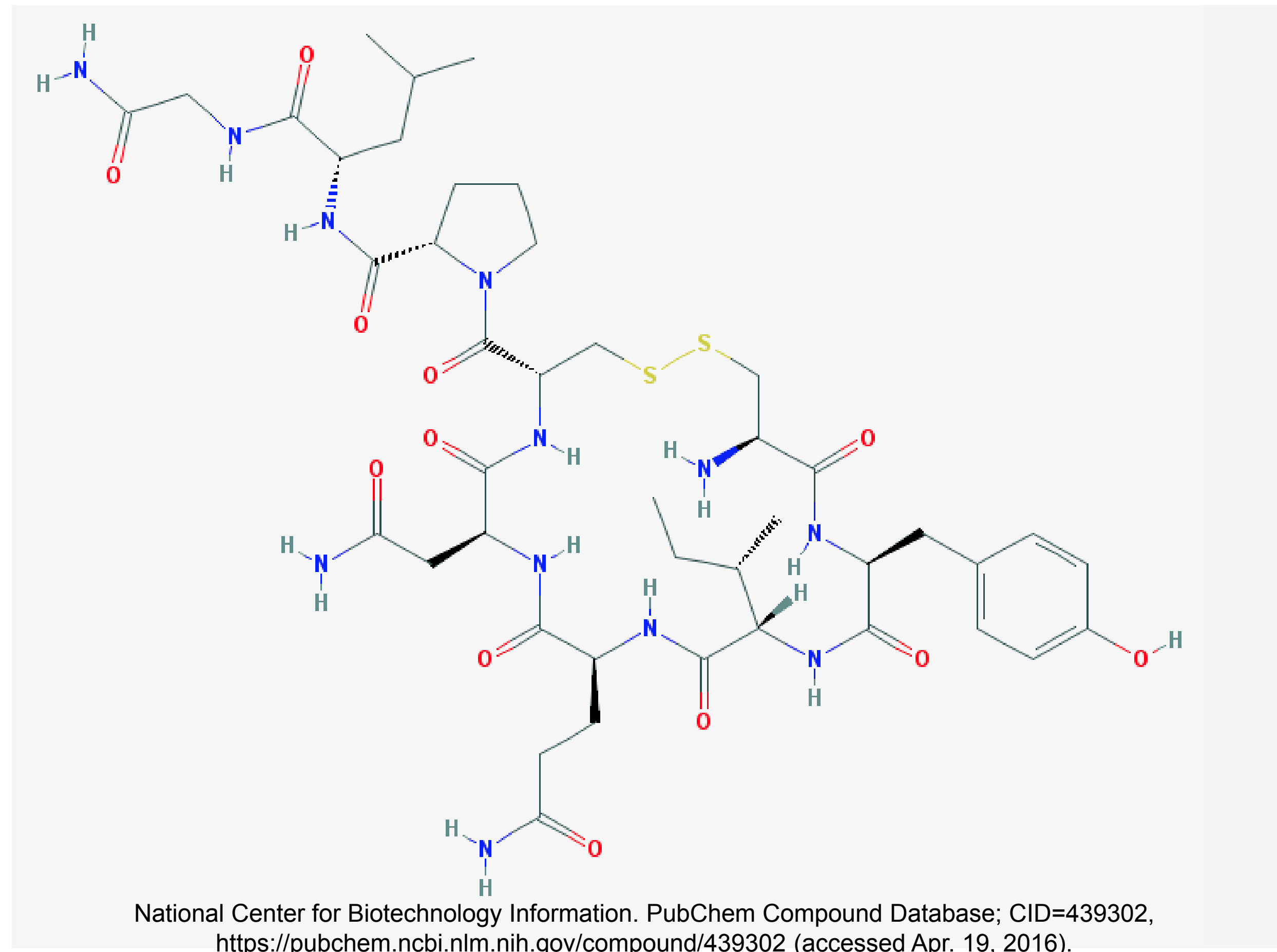
Oxytocin as Treatment for Individuals with Autism Spectrum Disorder

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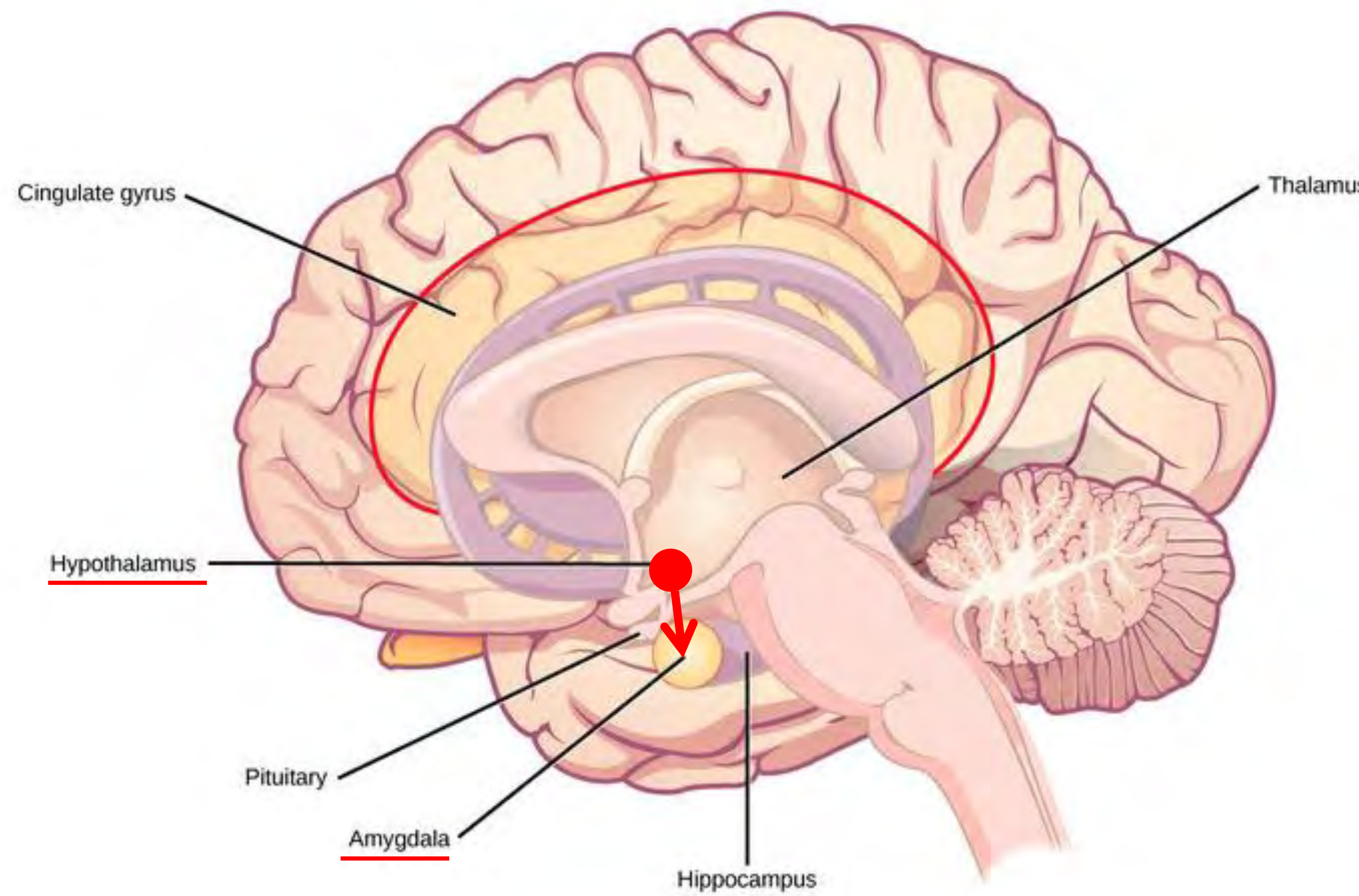
OXYTOCIN

OXYTOCIN IS PRODUCED IN THE HYPOTHALAMUS. IT CAN BE RELEASED INTO THE PITUITARY GLAND OR, IN THIS CASE, IT IS RELEASED BETWEEN NEURONS IN THE BRAIN. IT IS RELEASED DURING POSITIVE SOCIAL INTERACTION, AND DURING TOUCH, HUGGING, AND EVEN RECOGNITION OF A FAMILIAR FACE OR VOICE.

BACKGROUND

OXYTOCIN IS A HORMONE/NEUROTRANSMITTER THAT IS WIDELY STUDIED AND KNOWN FOR ITS INVOLVEMENT IN SOCIAL INTERACTION. IT IS SHOWN TO FACILITATE PAIR BONDING, MOTHER INFANT INTERACTIONS, AND REDUCED STRESS REACTIONS TO THREATENING STIMULI FOR SOCIAL ANIMALS WHEN IN THE PRESENCE OF A MEMBER OF THE SAME SPECIES.

BECAUSE OXYTOCIN SEEMS TO ENHANCE SOCIAL MOTIVATION, IT IS BEING TARGETED AS A POSSIBLE TREATMENT FOR DISORDERS IN WHICH SOCIAL DYSFUNCTION IS A TRAIT, INCLUDING AUTISM SPECTRUM DISORDER.



Source: Boundless. "Brain: Midbrain and Brain Stem." Boundless Biology. Boundless, 08 Jan. 2016. Retrieved 19 Apr. 2016 from <https://www.boundless.com/biology/textbooks/boundless-biology-textbook/the-nervous-system-35/the-central-nervous-system-202/brain-midbrain-and-brain-stem-768-12001/>

AMYGDALA

INVOLVED IN

- FEAR
- RECOGNIZING FACIAL EMOTIONS
- MEMORY PROCESSING
- EMOTIONAL REACTIONS

OXYTOCIN ACTS ON SUBREGIONS OF THE AMYGDALA BY BINDING TO OXYTOCIN RECEPTORS. IT'S EFFECT IS TO DECREASE THE DEGREE TO WHICH IT PROCESSES SOCIAL STIMULI AS THREATENING, AND TO INCREASE THE DEGREE IN WHICH SOCIAL STIMULI ARE PROCESSED AS POSITIVE. THIS SERVES AS A REWARD MECHANISM FOR SOCIAL INTERACTION

THE PROJECT

TO FULFILL THE SENIOR WRITING REQUIREMENT FOR FULBRIGHT COLLEGE, I DECIDED TO RESEARCH THE HORMONE/NEUROTRANSMITTER OXYTOCIN AND ITS ROLE IN SOCIAL COGNITION. I FOCUSED MY RESEARCH TO THE INTRANASAL ADMINISTRATION OF OXYTOCIN AS A POSSIBLE TREATMENT FOR INDIVIDUALS WITH AUTISM SPECTRUM DISORDER (ASD).

SUSTAINABILITY

ACCORDING TO CDC:

- ABOUT 1 IN 68 CHILDREN HAS BEEN IDENTIFIED WITH AUTISM SPECTRUM DISORDER
- THE TOTAL COSTS PER YEAR FOR CHILDREN WITH ASD IN THE UNITED STATES WERE ESTIMATED TO BE BETWEEN \$11.5 BILLION - \$60.9 BILLION (2011 US DOLLARS)



OUTCOME

FOR USE AS TREATMENT FOR INDIVIDUALS WITH ASD, OXYTOCIN IS ADMINISTERED IN THE FORM OF AN INTRANASAL SPRAY. THIS WAY IT IS CAPABLE OF REACHING THE BRAIN.

ACUTE ADMINISTRATION OF INTRANASAL OXYTOCIN CAN HELP WITH:

- MAKING EYE CONTACT
- RECOGNIZING EMOTIONS
- WEAKENING FEARFUL RESPONSE AND ENHANCING HAPPY RESPONSE TO POSITIVE SOCIAL STIMULUS

IT'S EFFECTS ON BEHAVIOR HAVE BEEN SMALL. FOR A GREATER EFFECT ON BEHAVIOR, RESEARCHERS CAN FOCUS ON FIGURING OUT THE BEST TIME FOR ADMINISTERING OXYTOCIN.

REFLECTION

THIS PROJECT HAS MADE ME A BETTER WRITER BY MAKING ME TAKE SCIENTIFIC WRITING AND MAKE IT SIMPLE, TO WRITE AS IF TELLING A STORY.

IT HAS EDUCATED ME ON OXYTOCIN, THE BRAIN, AND ABOUT AUTISM SPECTRUM DISORDER.

IT HAS STRETCHED MY ABILITY TO FOCUS ON SOMETHING THAT WASN'T OF IMMEDIATE INTEREST