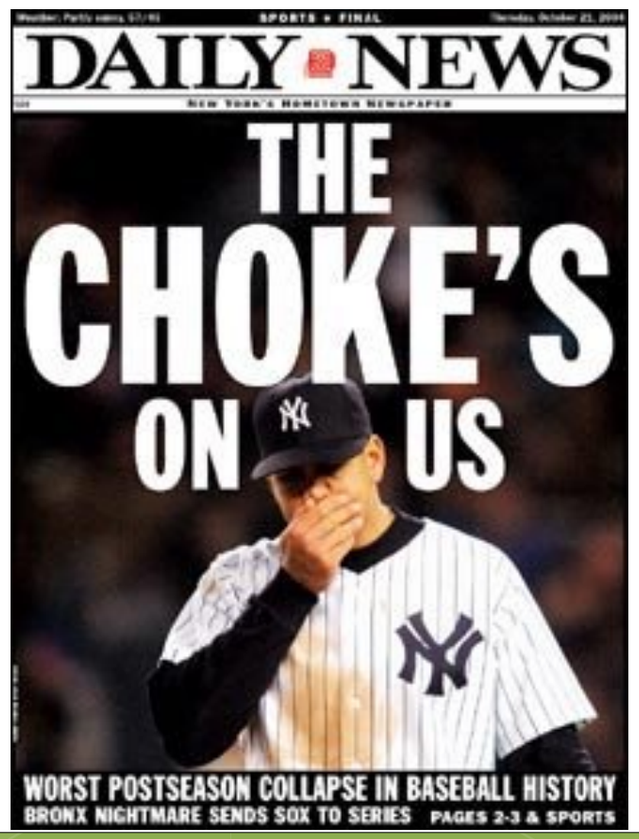
COMT Gene

The *COMT* gene provides instructions for making an enzyme called catechol-O-methyltransferase, which helps break down neurotransmitters in the synapse.

- COMT Gene: A gene that codes for an enzyme that clears dopamine from the frontal lobe.
- This can impact how you deal with stress.



Warrior or Worrier?

WORRIER:

<u>Slow Acting Enzyme</u> = Elevated Dopamine, Adrenaline, Noradrenaline, etc.

- No Stress: Higher cognitive functioning, attention, and problem solving
- Stress: Meltdown (already high levels move to overwhelming level)

WARRIOR:

<u>Fast Acting Enzyme</u> = Reduced Dopamine, Adrenaline, Noradrenaline , etc.

- No Stress: Underwhelmed by daily life and a lack of problem solving & concentration
- Stress: Concentration & problem solving skyrocket

But the COMT polymorphism also leads to elevated epinephrine, norepinephrine, and estrogen, which may produce other effects as well

Chang et al (2009)

- Aim: To investigate the role of the COMT Gene in school test performance.
- Method:
  - Took blood samples from thousands of Taiwanese students about to take their Basic Competency Test.
  - Performed a genetic test on each student.
  - Compared the scores for variants of COMT Gene.

Chang et al (2009)

- Finding: Students with fast acting enzymes (warriors) performed better than students with slow acting enzymes (worriers).

- Conclusions: The COMT gene affected the way that students performed under a stressful situation.

- Critical Thinking?

Parasuraman et al (2013)

- Aim: To investigate the COMT Gene's impact on high stress multitasking.
- Method:
  - 99 participants were measured on their ability to control six drones in an Air Force simulation.
- Findings:
  - Participants with the slow action enzyme (Worriers) destroyed more targets than participants with fast acting enzymes (warriors).
- Conclusion: People with slow acting enzyme variants were more effective at multitasking complex tasks.
- Critical Thinking?

Discussion Questions

- Should the military, colleges, police forces, etc. use genetic testing to help judge applicants?
- Is it ethical to use genetics in determining who can become a drone pilot or another job?
- Do you want a genetic test? Why or why not?
- To what extent do our genes impact our behavior?