

A Brief History of Nearly Everything Neurochemical

Dopamine tells a mammal that a reward is at hand. The great feeling motivates the body to invest effort in pursuit. Dopamine is triggered by things that promote survival in the state of nature (rich foods, mating opportunity), and by patterns you associate with the rewards of your past. A surge of dopamine paves neural pathways that help a mammal find more rewards in the future. Complex links build, so even small steps toward rewards can turn on your dopamine.



Oxytocin lets a mammal relax and lower its guard in the presence of another mammal. Trust feels good because of oxytocin. In the state of nature, lowered vigilance can bring lethal harm, so the mammal brain is careful about when it releases oxytocin. The birth process involves lots of oxytocin, and a young mammal gradually wires itself to trust things associated with its past oxytocin experiences. Touch triggers oxytocin, but an individual close enough to touch you is close enough to harm you. The mammal brain keeps seeking safe opportunities to enjoy the good feeling of trust.



Serotonin is triggered when a mammal sees that it's stronger than the mammal next to it. The nice, safe feeling motivates a mammal to do things that stimulate it. That promotes survival in the state of nature where the stronger individual gets the food or mating opportunity. Conflict is bad for survival, so the mammal brain only releases serotonin when it sees that it has the advantage. Your inner mammal seeks serotonin as if your survival depended on it. Frustration often results because the world is full of other mammals seeking advantages too. Your past serotonin surges connected neurons that tell you where to expect more in the future.



Endorphin is released when a mammal is in pain. It produces a euphoria that masks pain. In the state of nature, this helps an injured mammal escape from harm. The oblivion soon passes because noticing injuries also promotes survival. Endorphin depends on physical pain, but the exertions of laughing, crying, and exercise can stimulate a bit of it too.



* * * * But it's complicated * * * *

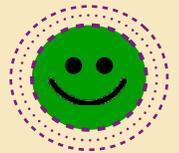
Habituation The brain soon habituates to happy chemicals, so the same-old things stop triggering them. You have to do more to get more. That may be frustrating, but it has motivated survival-promoting behaviors for millions of years.



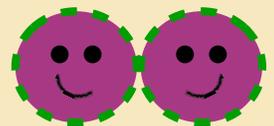
Cortisol The brain releases this bad-feeling chemical when an internal or external threat is perceived. Cortisol gets your attention and makes you feel like you will die if you don't make it stop. Your past cortisol spurts connected neurons that turn on your cortisol today. Thus, a brief delay or small disappointment can feel like an urgent survival threat. In the state of nature, this promotes survival by motivating a mammal to act fast when it sees signs of past threats to its safety, food, or reproductive success.



Myelin Some of our neural pathways develop into superhighways because of myelin. This substance coats neurons in a way that makes them fast and efficient. Myelin levels are high before age eight, and during puberty, so the experiences of those years build the brain's infrastructure. Electricity flows effortlessly down your myelinated neurons, which gives you the feeling that you are on track for rewards and avoiding pain. Leaving your myelinated pathways often feels like a survival threat, despite your intentions.



Mirror Neurons These special neurons fire when a mammal observes others. If you see another mammal get a reward or risk pain, your mirror neurons fire in the same pattern triggered by executing that behavior yourself. This wires you to mirror the behaviors you observe. Without effort or intent, a young mammal wires it to seek rewards and avoid pain by seeing what works for others.



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