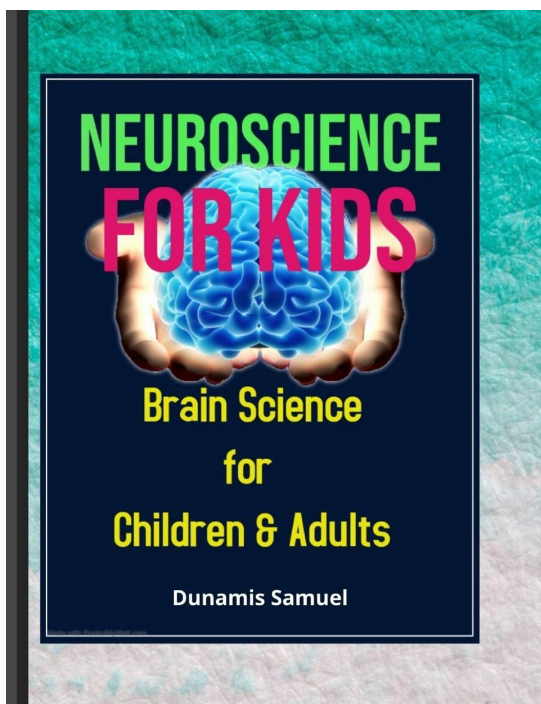


Neuroscientist Marc Lewis Illustrates How The Brain's Motivation System Works



We searched YouTube for neuroscientists who teach neuroscience on a level a child can understand.

In the following video and transcript Marc Lewis illustrates the brain's reward system on a teenager's level.

[The Dopamine Pathway Compared to a Ship](#) (less than 2 minutes)

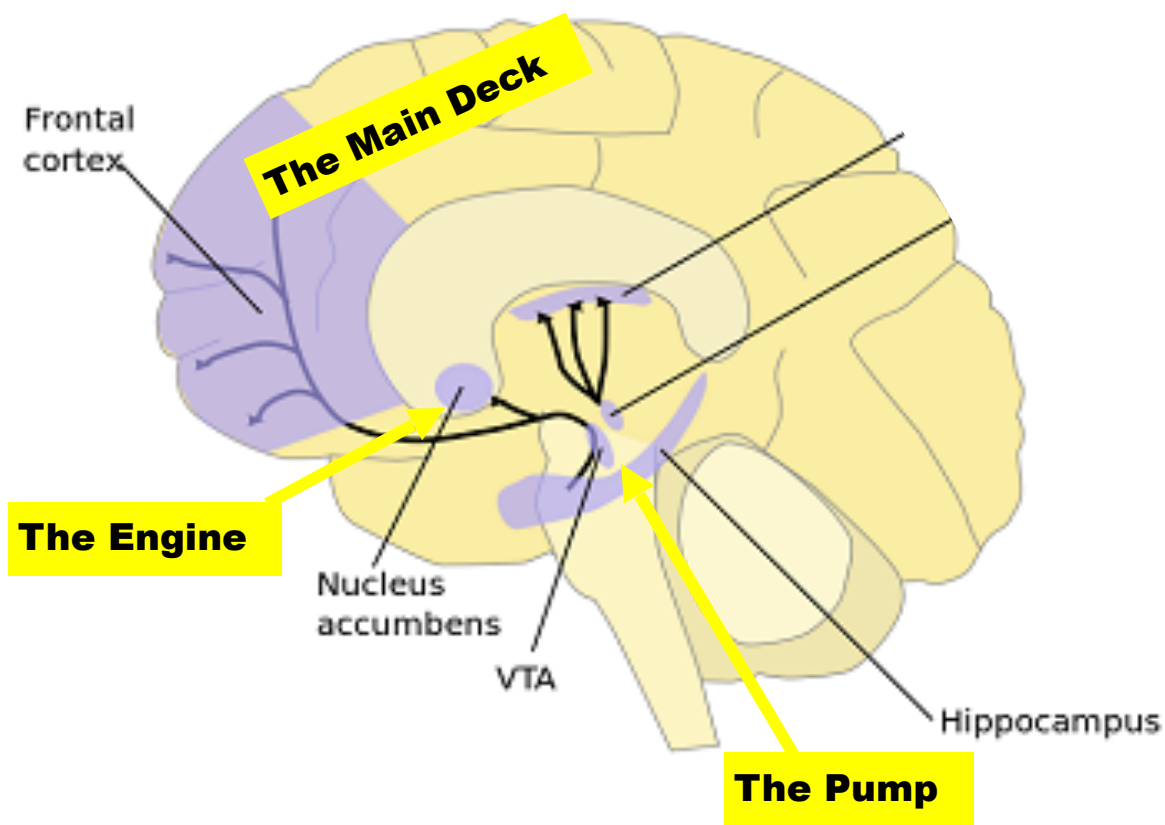
Transcript of Neuroscientist Marc Lewis' video:

There are three regions you have to think about. First, is the prefrontal cortex. In particular, the dorsal lateral prefrontal cortex is the most sophisticated region up here, and it's responsible for judgment, decision-making, perspective-taking, self-regulation, all that good stuff. And you can think of that as the bridge of the ship. That's where we steer our behavior. That's where we steer ourselves from.

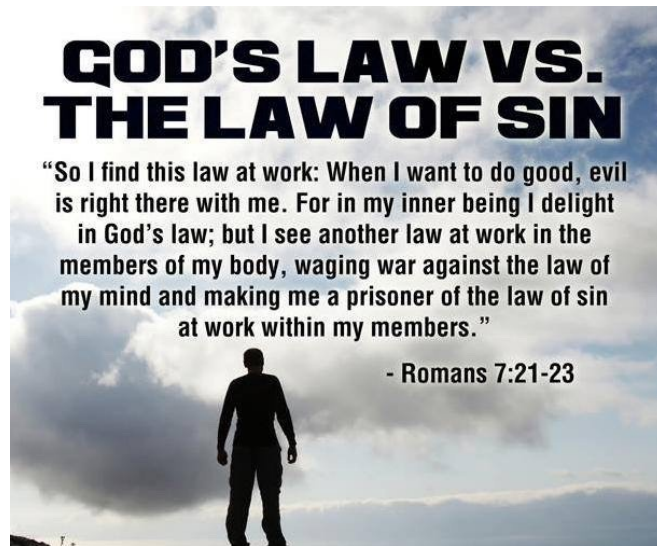
So, there's that region and then there's the nucleus accumbens, you'll see that a lot in the addiction literature and we can call that the motivational engine. So, the nucleus accumbens is

part of the motor system and it actually gets us mammals to act and to basically pursue goals, because that's what we do. When we act, we pursue goals. The goal might be getting away from something, but in this case, let's focus on getting towards something. It also generates the motivation for doing that. So, mammals unlike frogs need a push to get them to do something. They need a motive or an emotional drive. You know, we don't just flick out our tongues when a fly goes by. We have to feel some kind of attraction and that is generated by the nucleus accumbens. So, you can see that that's an important region of the brain when it comes to addiction.

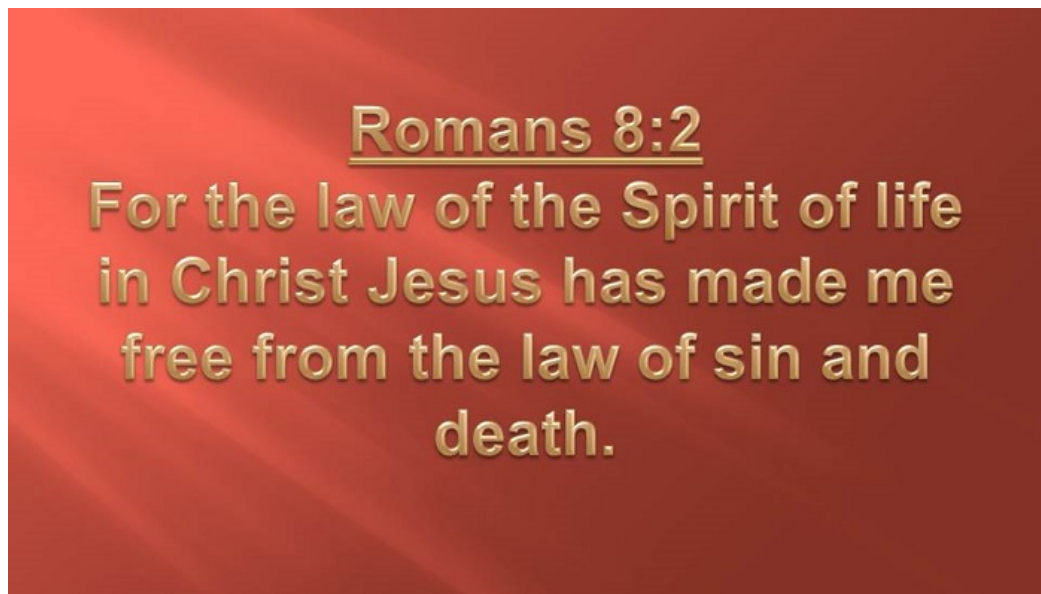
And then this part of the midbrain, the ventral tegmental area, you can call it a dopamine pump. It manufactures dopamine which is a neurochemical you'll often read about in addiction studies. And what dopamine does, is it basically, it does a lot of things, but it energizes the nucleus accumbens. It turns on all the cells in the striatum, and it gets the striatum to focus on the goal. So it narrows the beam of attention and it drives behavior toward the goal. **Marc Lewis**



The word “law” is used 4 times in Romans 7:22,23. This passage implies that God designed how the brain’s neurobiological and neurospiritual systems work together:



Romans 8:2 implies that God designed the mind’s spiritual system to balance with the neurobiological system:



Neuroscientist Marc Lewis uses a ship illustration to describe how the brain's reward system works:

Test & Answers

Explain how the prefrontal cortex is like the Bridge (main deck) of a ship:

There are three regions you have to think about. First, is the prefrontal cortex. In particular, the dorsal lateral prefrontal cortex is the most sophisticated region up here, and it's responsible for judgment, decision-making, perspective-taking, self-regulation, all that good stuff. And you can think of that as the bridge of the ship. That's where we steer our behavior. That's where we steer ourselves from.

Explain how the nucleus accumbens is like the engine of the ship:

The nucleus accumbens, we can call that the motivational engine. So, the nucleus accumbens is part of the motor system and it actually gets us mammals to act and to basically pursue goals, because that's what we do. When we act, we pursue goals. The goal might be getting away from something, but in this case, let's focus on getting towards something. It also generates the motivation for doing that. So, mammals unlike frogs need a push to get them to do something. They need a motive or an emotional drive. You know, we don't just flick out our tongues when a fly goes by. We have to feel some kind of attraction and that is generated by the nucleus accumbens.

Explain how the ventral tegmental area (VTA) is like the pump of the ship:

The ventral tegmental area (VTA) is like the pump of a ship. You can call it a dopamine pump. It manufactures dopamine which is a neurochemical you'll often read about in addiction studies. And what dopamine does, is energize the nucleus accumbens. It turns on all the cells

in the striatum (motor system), and it gets the striatum to focus on the goal. So it narrows the beam of attention and it drives behavior toward the goal.

Which phrases in Romans 7:22,23 imply that God designed how the brain's neurobiological and neurospiritual systems work together?

the law of God according to the inward man
law of my mind
law of sin which is in my members

Which phrases in Romans 8:2 imply that God designed the mind's neurospiritual system to balance with the neurobiological system?

law of the Spirit of life in Christ Jesus law of sin and death

