

The Story of **AUTISM**

PART 26:

**MISSING MIRROR
NEURONS ARE
NO MYSTERY**



THE STORY OF AUTISM: Missing Mirror Neurons

Here's some food for thought.

If you hold a baby by the abdomen and lower him to the ground, what does he do? Does he straighten his arms and put his hands down, with fingers spread to protect his head?

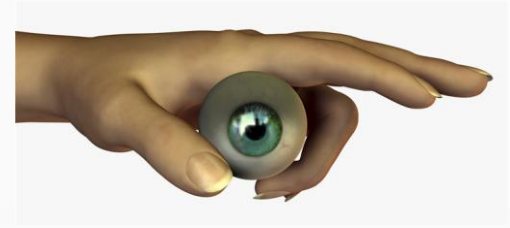


THE STORY OF AUTISM: Missing Mirror Neurons

And what does this simple reflex have to do with anything anyway?



Here's what. It is called **the hands supporting reflex** and it influences the development of vision and perspective, hand-eye coordination, gross motor development and spatial awareness.



THE STORY OF AUTISM: Missing Mirror Neurons

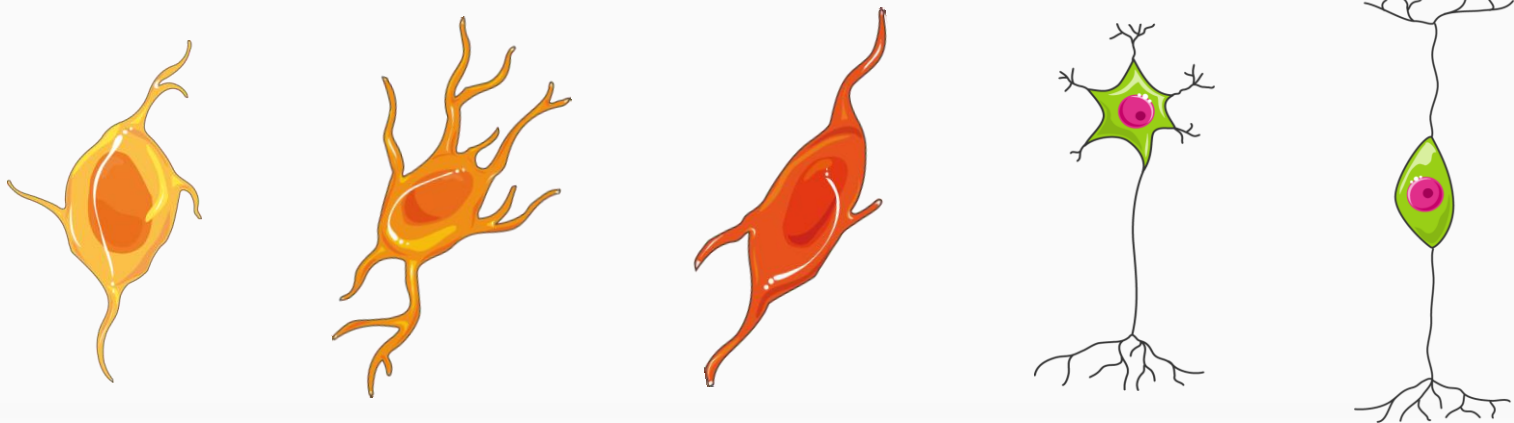
It also helps the brain develop movements that “mirror” each other, such as when a baby sees his mother hand clapping or waving “bye, bye,” he/she does it too (essentially “mirroring” the action).



This reflex should be integrated by the time a baby is 2 months old.

THE STORY OF AUTISM: Missing Mirror Neurons

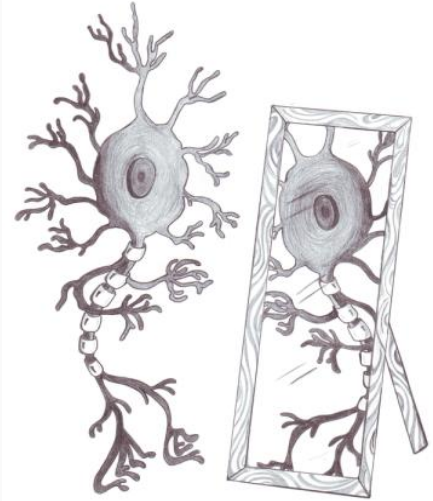
If this primitive reflex does not develop and disappear on time, then follow up reflexes will be thrown off schedule and "mirror cells" will not mature into the highly specialized type of pre-motor neurons that allow us to imitate without even trying.



THE STORY OF AUTISM: Missing Mirror Neurons

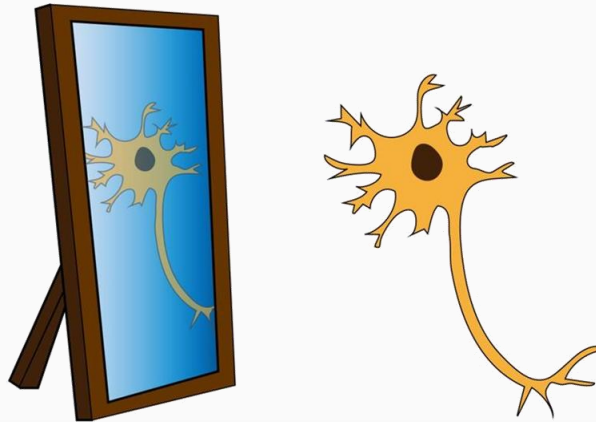
According to Marco Iacoboni, a neuroscientist at the University of California: “**Mirror neurons** are the only brain cells specialized to code the actions of other people and also our own actions. **They are essential brain cells for social interactions.**

Without them, we would likely be blind to the actions, intentions and emotions of other people.”¹⁸



THE STORY OF AUTISM: Missing Mirror Neurons

Iacoboni says that the way mirror neurons likely let us understand others is by providing some kind of inner imitation of the actions of other people, which in turn leads us to “simulate” the intentions and emotions associated with those actions.¹⁹



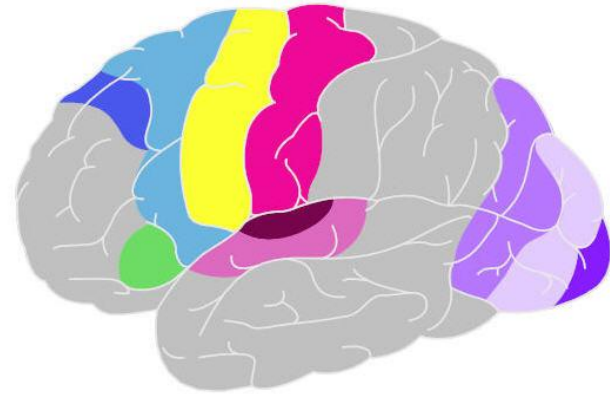
THE STORY OF AUTISM: Missing Mirror Neurons

So, if I see you smile, my mirror neurons for smiling fire up, too. I don't need to figure out what you are feeling because I feel it too.²⁰



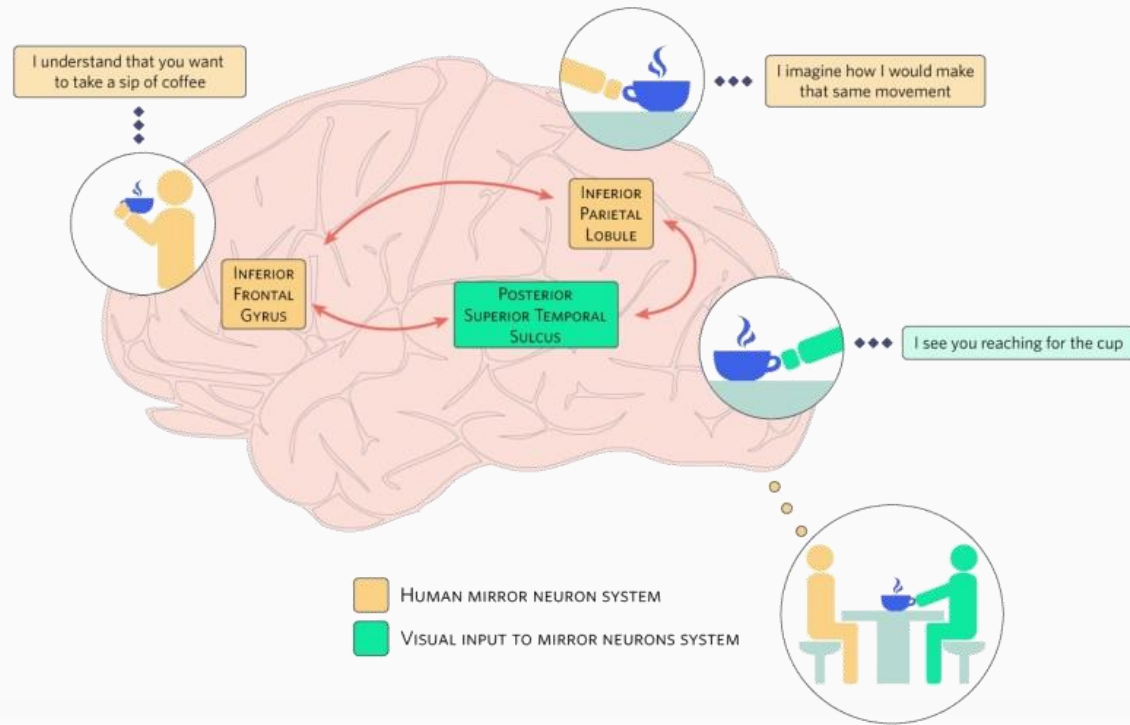
THE STORY OF AUTISM: Missing Mirror Neurons

It's interesting that these **mirror neurons** that are essential for us to understand how to behave and interact socially, are mostly **located in the frontal lobe** in the pre-motor cortex, the supplementary motor area, the primary somatosensory cortex and the inferior parietal cortex.



THE STORY OF AUTISM: Missing Mirror Neurons

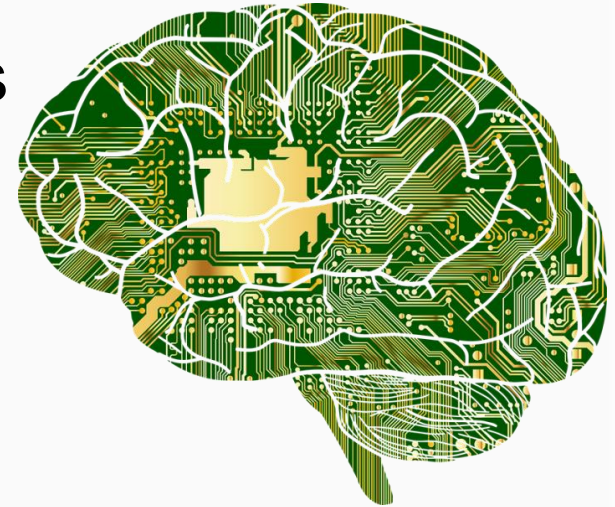
At the very end of the cortical processing chain.



THE STORY OF AUTISM: Missing Mirror Neurons

Here's what else is interesting. **The area in the frontal lobe that likely contains the most mirror neurons overlaps with Broca's area.**

Remember, this is the area that is important for speech articulation and it is generally dysfunctional in autistic brains.



THE STORY OF AUTISM: Missing Mirror Neurons

Funny how once you get the first few pieces in place, all the rest of the pieces in the autism puzzle start to come together.



THE STORY OF AUTISM: Missing Mirror Neurons

Throughout these presentations I have shown how the retention of primitive reflexes, automatic body movements that occur before birth and during the first year of life, cause the development of the brain to veer off course toward atypical, spectrum functionality.



THE STORY OF AUTISM: Missing Mirror Neurons

The hands supporting reflex is no different. However, it could be the primitive reflex with the greatest direct connection to autism because of its link to the formation of mirror neurons.



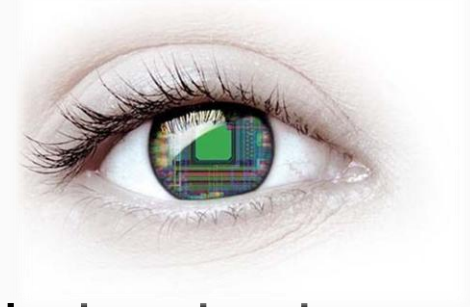
THE STORY OF AUTISM: Missing Mirror Neurons

If mirror cells do not develop into mirror neurons then not only will social development be affected, but the absence of these complex pre-motor neurons in Broca's area will derail the typical development of speech as well.



THE STORY OF AUTISM: Missing Mirror Neurons

However, you know enough about the brain now to understand that Broca's area is only one small portion of the brain's frontal lobe.



And that just because the autistic brain is wired atypically, causing them to have unique thought, movement and behavior patterns, doesn't mean that their minds are not every bit as capable as ours.

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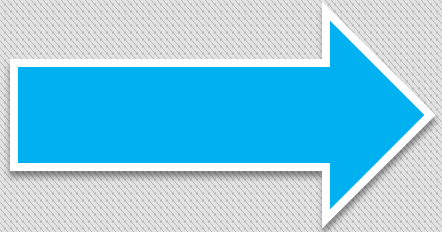
FOOTNOTES:

18. <https://www.scientificamerican.com/article/the-mirror-neuron-revolut/?redirect=1>

19. <https://www.scientificamerican.com/article/the-mirror-neuron-revolut/?redirect=1>

20. <https://www.scientificamerican.com/article/the-mirror-neuron-revolut/?redirect=1>

GO ON TO THE NEXT PRESENTATION



The Story of
AUTISM

PART 27:



**THE AUTISTIC
BRAIN: A BRAIN
LIKE NO OTHER**