

The Unselfish Gene?



BY JASON MARSH | NOVEMBER 20, 2009

"I feel your pain," Bill Clinton famously told Americans when he was running for president. Now it seems that his message may have had as much to do with genetics as with politics: A new study, sponsored in part by the Greater Good Science Center (GGSC), has found evidence that empathy may be influenced by a single gene.

In the study, co-authored by neuroscientist Sarina Rodrigues when she was a post-doctoral fellow at the Center, along with GGSC Graduate Fellow Laura Saslow, nearly 200 participants took tests that measured their ability to identify and feel the emotions of others; they also provided DNA samples. When the researchers, who also included Center Faculty Director Dacher Keltner, examined the participants' DNA, they zeroed in on a particular gene that's the receptor for oxytocin, which is known as the "love hormone." People can have one of three variations of this gene—either AA, AG, or GG—depending on the genetic information they receive from each parent.

The researchers found that participants who had the GG variation scored significantly higher on the empathy tests than those who had either of the other two variations. What's more, people with the GG variation seemed less reactive to stress, which the researchers gauged in part by measuring the participants' heart rate as they anticipated a loud burst of noise.

The study, published online this week in the journal *Proceedings of the National Academy of Sciences*, sheds light on why some people may have a harder time connecting with others.

"I think the most useful information we can take from this study is that some people are going to be a bit more naturally closed off and unable to really understand what other people are feeling," says Rodrigues, "and this could be in large part due to the fact that they're so consumed by their own stress—that it's somehow impairing them from connecting with others and reaching out."

One encouraging implication of the study is that empathy is part of humans' biological legacy. At least for some people, empathy is innate, something that's rooted in the genetic makeup they get from their parents.

But what about those who have the AA or AG variation—are they doomed to go through life emotionally cut off from others?

Not at all, says Rodrigues, who's quick to point out that our genes do not determine our destiny. Our genome may predispose us to certain behaviors, but ultimately, our lives are shaped by the interaction between our genes and our experiences.

"Sure, our genes give us a natural predisposition to the way we might want to socially connect with people or handle stress," says Rodrigues, now an assistant professor of psychology at Oregon State University. "But through nurturing and social connectivity and understanding, people can overcome these obstacles."

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