# What Does It Mean to Be Human?

By Brandon Keim ✉June 01, 2008 | 10:26:21 AMCategories: Bioethics, Genetics, Neuroethics, World Science Festival

What does it mean to be human? And can science illuminate the answers?

A star-studded panel of scientists gathered to discuss those heady themes last night at the World Science Festival in New York City. Here are their answers in convenient nutshell form:

Marvin Minsky, artificial intelligence pioneer: We do something other species can't: We remember. We have cultures, ways of transmitting information.

Daniel Dennett, cognitive scientist: We are the first species that represents our reasons, and can reason with each other. "The planet has grown a nervous system," he said.

Renee Reijo Pera, embryologist: We're uniquely human from the moment that egg and sperm fuse. A "human program" begins before the brain even begins to form.

Patricia Churchland, neuroethicist: The structure of how the human brain is arranged intrigues me. Are there unique brain structures? As far as we can understand, it's our size that is unique. What we don't find are other unique structures. There may be certain types of human-specific cells -- but as for what that means, we don't know. It's important not only to focus on us, to compare our biology and behavior to other animals.

Jim Gates, physicist: We are blessed with the ability to know our mother. We are conscious of more than our selves. And just as a child sees a mother, the species' vision clears and sees mother universe. We are getting glimmers of how we are related to space and time. We can ask, what am I? What is this place? And how am I related to it?

Nikolas Rose, sociologist: Language and representation. We are the kind of creatures that ask those questions of ourselves. And we believe science can help answer. We've become creatures that think of ourselves as essentially biological -- and I think we're more than biological creatures. I'm not sure biology has answers.

Ian Tattersall, anthropologist: It's not "what is human," but what is unique: our extraordinary form of symbolic cognition.

Francis Collins, geneticist: What does the genome tell us? There's surprisingly little genetic difference between human and chimpanzee. Yet clearly we're different. There's brain size and language. A language-related gene, FoxP2, evolved most rapidly in the last few million years. How did we develop empathy? Appreciate our mortality? And we should admit that there are areas that might not submit to material analysis: beauty, inspiration. We shouldn't dismiss these as epiphenomenal froth.

Harold Varmus, physiologist: Intrigued by our ability to generate hypotheses and make measurements.

Paul Nurse, cell biologist: Is excited about the ability of science to answer this question.

Antonio Damasio, neuroscientist: The critical unique factor is language. Creativity. The religious and scientific impulse. And our social organization, which has developed to a prodigious degree. We have a record of history, moral behavior, economics, political and social institutions. We're probably unique in our ability to investigate the future, imagine outcomes, and display images in our minds. I like to think of a generator of diversity in the frontal lobe -- and those initials are G-O-D.

What do you think, *Wired Science* readers? What does it mean to be human? I'll save my own answer for later, with one caveat: this is a semantically tricky question. It's really several questions: What is unique to humanity now, what will be unique about humanity in the future, and what is important about humanity.

Source Wired Science from Wired .com: http://blog.wired.com/wiredscience/2008/06/what-does-it-me.html