Red-meat consumption is already linked to higher levels of colorectal cancer and cardiovascular disease (atherosclerosis, heart disease, and stroke). Now researchers from Harvard School of Public Health (HSPH) have added an increased risk of type 2 (adult onset) diabetes to that list. The incurable illness occurs when the body’s ability to control blood glucose levels by means of insulin secretion becomes impaired, either because of “insulin resistance” (when insulin fails to trigger effective glucose uptake by muscle or other tissues), or because production of insulin by beta cells in the pancreas declines.

The HSPH investigators, led by professor of epidemiology Frank Hu and research fellow An Pan, analyzed data from three longitudinal studies of male and female healthcare professionals who were followed for 14 to 28 years. After adjusting for other risk factors, the researchers found that a daily serving of red meat no larger than a deck of cards increased the risk of adult-onset diabetes by 19 percent. Processed red meat proved much worse: a daily serving half that size—one hot dog, or two slices of bacon, for example—was associated with a 51 percent increase in risk. (The average 10-year risk of getting diabetes for U.S. adults is around 10 percent.)

Why is red meat harmful? “Saturated fat, which can lead to cardiovascular disease, is really just the beginning of the story,” explains Hu. Even though it is “difficult to pinpoint one compound or ingredient” as mechanistically linked to diabetes risk, three components of red meat—sodium, nitrites, and iron—are probably involved. Sodium is well...
The Biology of Right and Wrong

Philosophers have long debated the foundations of moral decision-making. “Rationalists” from Socrates to Immanuel Kant argued that people should rely on intellect when distinguishing right from wrong. “Sentimentalists” like David Hume believed that people should rely on intellect when circumstances, with each offering its own advantages and disadvantages. He likens the moral brain to a camera that comes with manufactured presets, such as “portrait” or “landscape,” along with a manual mode that requires photographers to make adjustments on their own. Emotional responses, which are influenced by humans’ biological makeup and social experiences, are like the presets: fast and efficient, but also mindless and inflexible. Rationality is like manual mode: adaptable to all kinds of unique scenarios, but time-consuming and cumbersome.

“The nice thing about the overall design of the camera is that it gives you the best of both worlds: efficiency in point-and-shoot mechanisms and flexibility in manual mode,” Greene explains. “The trick is to know when to point and shoot and when to use manual mode. I think that this basic design is really the design of the human brain.”

Unlike earlier philosophers, he can test his theories with neuroscientific instruments. His primary tool is functional magnetic resonance imaging (fMRI), which takes advantage of the fact that many mental functions are localized to specific areas of the brain. Deliberative reasoning, for instance, is housed in the prefrontal cortex, whereas the amygdala is considered the seat of the emotions. By monitoring blood flow to these areas, fMRI allows Greene and his colleagues to observe exactly when someone is relying on “manual mode” or “automatic settings.”

For one experiment (published in Neuron in 2004), Greene asked his subjects how they would respond to a moral dilemma known as “the trolley problem,” which involves pushing an innocent stranger in front of a speeding trolley in order to save five other strangers from being killed. Despite the utilitarian value of killing a single stranger, most respondents said that doing so would be morally wrong; the thought of pushing an innocent person to his death was too much. Yet a handful of subjects said they would end the stranger’s life in order to rescue the others, and Greene found that this group exhibited increased activi-