

## ***What makes us human . . .***

As a doctor by training it's always been natural to me to look at human behaviour and responses in biological terms. As a Christian it's likewise important to me to look at Christianity and religious concepts in the same way. I know some Christians yet very uneasy if I start talking about religious or spiritual responses, but to me it's not just natural but essential. After all it's a fact that these things do actually exist. They're not something that scientists dream up in their imaginations. And any religion that cuts these things out of it's observational horizon must be in some way deficient. (I'm often amazed by the number of Christians who are totally happy to use computers etc in their every day lives, and at the same time deny the reality or relevance of the science that underlies these devices and causes them to work.)

A key scientific element in understanding what makes us - and most animals - behave as we do, as well as understanding what distinguishes us from those animals, is DOPAMINE.

Dopamine is the pleasure neurotransmitter, the 'feel-good factor' in our brains. When we do things that make us feel good, the endpoint of the pathways we activate is the release of dopamine; it's this dopamine that causes us to feel good about what we have just done. This pleasurable response is what makes us want to activate that same pathway again, to achieve that same response again. And every time we activate that pathway in the brain, we reinforce it - that is, we strengthen the neural connections which constitute the pathway, thus making it progressively easier for our brain to go down that road again and (perhaps more to the point) more difficult to resist. Thus we form a habit.

This mechanism is (probably) essentially the same for humans as other animals. So just as a human can be addicted to cigarette smoke by the promise of dopamine release at the end of the pathway, so a laboratory rat can also be easily addicted to cigarettes by repeated exposure

At this point however there comes a difference. The rat, once hooked, is never going to voluntarily quit. He's not going to wake one morning and think, "Hey, this is doing me no good and probably not really making me happy long term either." Once hooked, he's hooked for life, and that reinforced dopamine pathway will continue as long as the smoke is available.

For people, it's different. A human smoker has the option of saying, "I'm not obliged to be a slave for this for ever. I can choose to break out. I can face the pain of cutting off the dopamine release by rejecting the cigarette path. It's going to be painful, but I can still make that choice." This is what we call free will, something we have and the rat for practical purposes doesn't. Or we can think of it in terms of rejecting temptation. Temptation comes in many forms and a lot of these hold out the prospect of activating that dopamine-releasing, pleasure-inducing pathway. Rats can't reject temptation. We can. It's our ability to choose to override this pathway that makes us truly human, puts us into *'the image of God'*.

It will always be painful to reject that pathway, but without it we cannot be like God. This is the meaning of our humanity. And conversely (I will return to this later) if we constantly choose to follow that easy, dopamine-inspired pathway, we will see our humanity gradually eroded, and we will become more and more like that rat.