

Rats' senses a whisker away from humans

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The sophisticated way in which rats use their whiskers in their surrounding environments show significant parallels with how humans use their fingertips, according to new research carried out at the University of Sheffield.

Rats are tactile animals that use their facial whiskers as their primary sense. These whiskers are swept back and forth, or 'whisked' many times each second. Research carried out by Dr Tony Prescott and colleagues from the University's Department of Psychology found that these whisker movements are actively controlled like human fingertips.

They found that whiskers near a point of contact subsequently move less,

while those away from it move more. This active control of whiskers, allows a rat to 'home-in' on interesting objects in their environment, while ensuring that their whiskers touch gently against objects rather than bending strongly against them.

Until now, the understanding of what guides whisker movements during natural behaviour was limited, largely due to the difficulty of accurately observing whisker positions in freely moving animals. The researchers, however, used high-speed video and recordings of muscle activity to study how 'whisking' behaviour in rats changes upon contact with an object.

Dr Tony Prescott said: "If you are exploring a surface with your hand you will control the position of your fingertips so as to get as much information as possible from each touch. We are discovering that rats do something very similar with their whiskers. That is, they adjust the movements of their whiskers on a moment-by-moment basis using information from each contact to decide how best to position their whiskers for the next one."

The researchers are currently working with Bristol Robotics Laboratory to build a robot with an artificial whisker sense in order to better understand rat whisking behaviour and to develop artificial touch systems that may be useful for robots.

Source: University of Sheffield

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