

## Dragonfly inspires design of tiny, versatile aerial vehicles

Seeing and flying like a dragonfly could be the key to developing highly versatile micro-aerial vehicles.

The extraordinary flying ability of the dragonfly has been the subject of ongoing research by Richard Berry from the Centre for Visual Sciences at Australian National University (ANU). He attributes their dazzling aerial control to their remarkable vision.

'While true dragonflies are one of the oldest arthropods in existence, they are also one of the most accomplished fliers known,' said Berry.

'What underlies their exceptional flight ability is excellent vision. Like many other flying insects, dragonflies possess a triplet of eyes found on the front and top of the head, known as the ocelli.

'The ocelli have long been postulated to have a role in controlling flight stability. It could just be that these eyes are the key for designers of tiny insect-size aircraft to learn how to fly like a dragonfly,' he said.

Berry and colleagues, Joshua van Kleef and lab head Gert Stange, have determined what the ocelli see by a variety of approaches.

'We started by literally peering through the lenses of the eyes to see what sort of patterns could be seen through the other side. We then made a virtual three-dimensional model to describe the shapes of the eyes,' said Berry.

The team also developed a novel 'movie theatre' for dragonflies. This movie theatre consists of hundreds of ultraviolet and green LEDs that encircle the head of a dragonfly, said an ANU release.

'We play different movies to the dragonflies, and record what the cells in the eye do during each movie. The movies are really just random patterns of light, but when we analyse the results we are able to work out what each cell sees.

'The results show that the ocelli of dragonflies are exceptionally well tuned to provide fast, sensitive and directionally selective information about the world,' Berry said.

( © IANS / India eNews)