

techman / May 24, 2011 06:16PM

[\[International Cooperation\]\[Biology\] Invisibility Cloak Might Be Possible! Taiwan Scientists Unfold the Secret of Cuttlefish's Camouflage](#)

[International Cooperation][Biology] Invisibility Cloak Might Be Possible! Taiwan Scientists Unfold the Secret of Cuttlefish's Camouflage ([Chinese Version](#))

RTI & udn.com (2011/05/24) How the color-blind cuttlefish changes the color of the skin in response to the environment in order to hide itself from the enemy has been a biological mystery for a long time. Professor Chuan-Chin CHIAO at the Department of Life Science, National Tsing Hua University, tries to unfold the mystery by simulating the first non-human visual experience from the perspective of fish and discover that within the visible range the squid skin has similar reflectance spectra to those of the natural environment, which enables cuttlefish to change the surface color for camouflage. The findings have been published in Proceedings of National Academy of Sciences of the U.S.A, PNAS on May 16 issue.

The laboratory led by Professor Chuan-Chin CHIAO at the Department of Life Science, National Tsing Hua University, Taiwan, has cooperated with scientists from Woods Hole Marine Biological Laboratory in the U.S. and the U.S. Military Academy at West Point for about ten years. They focus on the animal visual behaviors and neuroscience by using hyperspectral imaging system. The spectral analysis of the data they collected from the cuttlefish revealed that most reflectance spectra of individual cuttlefish and substrates were similar, rendering the color match between the skin and the environment possible. With such a mechanism, the cuttlefish can change the surface color suiting the environment and hide itself from the potential predators.

Besides, Professor CHIAO said, when the visual signals were sent to and processed by the cuttlefish's brain, the millions of chromatophores covering its body would be controlled by the nervous system, via which the areas to release the chromatophores were also determined. That is how the cuttlefish changes the skin color in response to the environment.

The research team also pointed out, to understand how the animals change the surface color to suit the environment could also be influential inspiration to the fields such as architecture, advertisement, costume designing, etc. Perhaps Harry Potter's invisibility cloak will be rendered possible in the future.

Related Website:

[PNAS abstract](#)

Reference:

[RTI 2011/05/24](#) (Chinese)

[Udn.com 2011/05/24](#) (Chinese)

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[National Science Council International Cooperation Sci-Tech Newsbrief](#)

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Edited 1 time(s). Last edit at 05/24/2011 06:18PM by techman.

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