

Imaging analysis of the zebrafish escape response

The CSIC has developed a procedure and system for kinematic analysis of the stimulus-evoked escape response in adult zebrafish. The procedure falls within the field of image analysis using algorithms.

Research centres and Industrial partners from pharmaceutical companies are being sought to collaborate through a patent licence agreement.

An offer for Patent Licensing

Vibrational stimulus

The procedure comprises the steps of producing a vibrational stimulus by a solenoid in containers containing adult fish with carangiform or subcarangiform movement.

The described procedure allows an accurate detection of each fish to evaluate by images the evolution of its body curvature over a period of time before and after the stimulus.

The procedure allows locating the fish in the images using an image recognition algorithm and calculating the curvature of the dorsal fin of each fish in each of the images.

The described procedure allows to determine in a simple way kinematic parameters of the fish's escape response, being able to discriminate between the first two modules of this type of response (C curvature and counter curvature).



Image obtained by the image capture module for analysis of fish behavior

Main innovations and advantages

The invention allows studying the pharmacological effect of chemical substances on the escape response evoked by a vibrational stimulus

The procedure allows evaluating the alertness of the fish and studying the effect on cognitive aspects through the analysis of the habituation process to vibrational stimuli.

The analysis and capture (1000 images / second) of the images of the change of body curvature in the fish allows to obtain a video that shows the variation of the curvature of the fish body over time as a consequence of the stimulus, marking the fish, and obtain kinematic parameters of the movement of each fish such as: latency, maximum amplitude, maximum angular velocity, and / or time of curvilinear movement.

Patent status

Priority patent application filed suitable for international extension

For more information, please contact:

Antonio Jiménez

Deputy Vice-Presidency for Knowledge Transfer.

Spanish National Research Council (CSIC)

Tel.: +34 91 568 19 30

E-mail: a.jimenez.escrig@csic.es
comercializacion@csic.es