



The Utility of Zebrafish in Stress Research

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Zebrafish are becoming widely used in experimental biology and translational modeling of brain disorders, such as epilepsy, addiction and affective disorders. Exploration of novel tank is highly sensitive to various manipulations, and can be used to assess zebrafish stress. Several endpoints can be scored, including latency to initial transition into top half of the tank, number of transitions to the top, erratic movements, and freezing episodes. The use of video tracking techniques introduces additional endpoints, such as velocity and angular velocity. Anxiolytic drugs (e.g., ethanol) tend to reduce anxious behavior (as assessed by shorter latency to initial transition, higher frequency of transitions, and fewer erratic movements or freezing). Chronic treatment with antidepressants (e.g., fluoxetine) also shows significant reduction of anxious behavior. In contrast, alarm pheromone from zebrafish skin provokes a high-anxiety phenotype, including freezing, erratic movements and markedly reduced exploration. Behaviors observed in these tests can be correlated with physiological (cortisol levels) and genomic (expression of key brain genes) responses. Overall, zebrafish emerge as a promising alternative to other species used in stress research. Supported by SPARC and NARSAD.