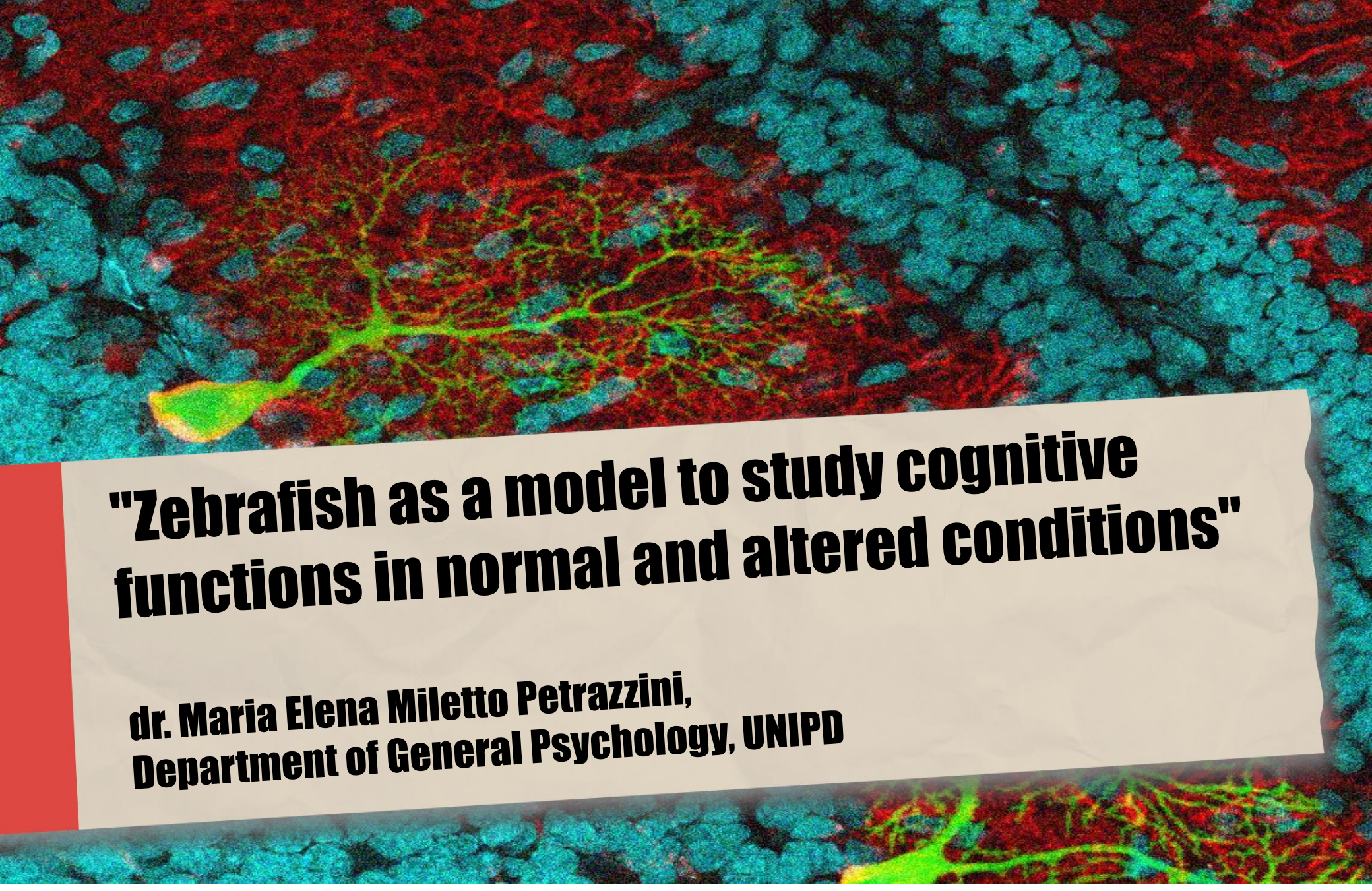

"Zebrafish as a model to study cognitive functions in normal and altered conditions"

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20th

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14:30

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Assessment of behavioural outcomes in animal models plays a crucial role in determining both normal cognitive functions and dysfunctions that recapitulate human symptoms of brain disorders. Understanding the pathogenesis of the complex behavioural alterations that characterize neurological diseases is a major challenge for biomedical research.In recent years, an increasing number of studies have demonstrated that fish possess complex cognitive abilities and exhibit sophisticated behaviors. For instance, laboratory studies have shown that the accuracy of fish, zebrafish included, in quantity judgements is comparable to that of many birds and mammals. The finding that zebrafish possesses quantitative skills, raises the possibility of using this species as a model to investigate both the genetic mechanisms and the neural circuitry underpinning numerosity representation and the role of potential genes associated with developmental disorders, like dyscalculia. Zebrafish, also share another interesting feature common to all vertebrates, the brain functional lateralization. Atypical functional lateralization has been associated with cognitive disfunctions and neuropsychiatric disorders, but it is unclear whether these abnormalities are causes or consequences of disease. My findings suggest that some patterns of altered brain asymmetries observed in zebrafish have a causative effect on behaviour and cognition. All together, these results suggest that zebrafish have great potential to improve our understanding of behavioral phenotypes associated with neurological conditions in order to characterize the impact of the underlying molecular mechanisms as well as the identification of potential therapeutics.

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