

# Understanding the molecular mechanisms of aggression in BALB/c and TPH2-deficient mice

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## **Propositions**

1. Alterations in the expression of 5-HT6-R and AMPA-R subunits GluA1-3 and internalization of the latter are implicated in excessive aggression in the ultrasound mouse model of ‘emotional stress’ (*this thesis*);
2. In mice with partial genetic deficit of tryptophan hydroxylase-2 (Tph2-het), predation stress evokes aggression and changes in the expression of 5-HT6-R, GluA2 and serotonin metabolism (*this thesis*);
3. Ultrasound-induced aggression in BALB/c mice is associated with neuroinflammation, decreased hippocampal plasticity and oxidative stress (*this thesis*);
4. Compounds with antioxidant properties, including vitamin B1 (thiamine), benfotiamine and herbs, normalize ultrasound-induced aggression and accompanying molecular changes (*this thesis*);
5. New paradigms of aggressive behaviour, evoked by ‘emotional stress’ in BALB/c mice and by predation in Tph2-het mice are useful for fundamental and pre-clinical studies (*valorization*);

6. Gene-environment interactions underpin manifestations of many psychopathologies;
7. The use of multiple tests and a variety of experimental conditions is the must with the validation of animal models of psychiatric disorders;
8. A balance between oxidative stress and inflammation on one hand and counteracting detoxifying and anti-inflammatory factors on another hand determines healthy state;
9. Aggression unopposed becomes a contagious disease (*Jimmy Carter*);
10. War is sweet to those who have not experienced it (*Desiderius Erasmus*).