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MECACCM

Preclinical study targeting cationic channels for Cerebral Cavernous Malformations therapy and early diagnosis

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Cerebral Cavernous Malformations (CCM) are vascular malformations occurring in the venous capillaries of the brain. One person out of 200 can develop such malformations consisting of stacks of dilated and hemorrhagic blood vessels resembling a mulberry. These lesions can occur either sporadically and their cause is usually not known, or in family of patients who carry mutations on either one of 3 identified genes. Numerous lesions form in the brain of these patients throughout their life. The consequences are devastating as they provoke epilepsy, stroke and many neurological disorders such as paralysis or cognitive disorders. There is no therapeutic treatment yet for the many patients who cannot be operated. The goal of our project is to test new therapeutic drugs against certain cationic channels that, as we recently discovered, are not functioning correctly in the diseased state. Our hypothesis is that their dysfunction is a triggering event that initiates the formation of the CCM by causing vessels leakiness and excessive growth. Using different in vitro and in vivo models of the disease, we will test whether blocking these channels stops the formation of CCM. This preclinical study will help to find a preventive therapeutic treatment for the familial patients and also to identify specific biomarkers that could be used to predict the occurrence of a new lesion.

