TECHNOLOGY OFFER: NEW PROMISING ORAL COMPOUND FOR THE TREATMENT OF MULTIPLE SCLEROSIS

PROBLEM: Multiple sclerosis is an autoimmune inflammatory disease of the Central Nervous System that afflicts 150/100000 people/person worldwide, that is characterized by a progressive demyelination and neurodegeneration. Available commercial treatments cannot halt disease development at all variants, especially the primary progressive form, which is characterized by progressive neurodegeneration.

SOLUTION: Evidences suggest that together with an immune attack on the myelin sheet, oxidative stress is one of the major contributors of the progression of the disease. Oxidative stress exacerbates the inflammatory status and contributes to the Blood Brain Barrier disruption favoring immune cell infiltration. Finally, oxidative stress is increased by the proinflammatory response driving the demyelination and neurodegeneration processes of the disease. Therefore anti-oxidant strategies directed to stop oxidative stress and neuroinflammation mediated damage, could lower or even stop disease progression. In this sense, cells have developed an intrinsic mechanism of protection against oxidative stress, the Nrf2-EpRE phase IIantioxidant response. This pathway is regulated by the Nrf2 transcriptional factor, known as the master regulator of redox home stasis. Based on these features, **a research group led by Dr. Rafael León at IIS del Hospital Universitario de La Princesa together with Scientists from Universidad Autónoma de Madrid have designed a multitarget structure that can act as Nrf2 inducer and a potent free radical scavenger**. The inclusion of both biological targets also induces an anti-inflammatory effect that can stop the main hallmarks of the disease. Finally, it exerted neurogenic properties that might be highly beneficial after the onset of the disease.

CURRENT STATUS: Currently, we are at the discovery phase and we have demonstrated the biological activities included. In our lead compound, the combination of Nrf2 induction and free radical scavenger properties drives the reduction of oxidative mediated damage, which turns in a reduction of the neuronal loss. More interestingly, we have found a potent neurogenic effect of the lead compound, and also a potent anti-inflammatory effect of the compound that is Nrf2 independent. Preliminary results in a multiple sclerosis *in vivo* model (Experimental Autoimmune Encephalomyelitis, EAE) indicate that the compound, given by oral administration, can lower disease progression, in a concentration-dependant manner. We believe that our lead compound can alleviate, not only the immune-inflammatory forms of the disease (EAE model), but also the neurodegenerative forms that are the most aggressive and incurable.

SUPPORTING DOCUMENTS FOR EVALUATION: Nonclinical Regulatory Road Map, FTO, Market Analysis, Business Model Analysis and Patent Documents.

IPR STATUS: **Patent granted in Spain and patent filed in Europe, USA and Canada**.

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TYPE OF PARTNERSHIP CONSIDERED: In this phase we will require, collaboration with experienced companies in preclinical development in order to study the ADMET properties of the compound and complete the IND to take the compound to phase I clinical trials. We also seek investors or licensees.