

Brain inflammation likely key initiator to prion and Parkinson's disease

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In a recent publication, researchers of the Computational Biology group at the Luxembourg Centre for Systems Biomedicine showed that neuro-inflammation plays a crucial role in initiating prion disease.

[Prion diseases](#) represent a family of neurodegenerative disorders associated with the loss of [brain cells](#) and caused by proteins called prions (derived from 'protein' and 'infection'). The diseases are found in both humans and animals, such as Creutzfeld-Jakob disease and [mad cow disease](#) respectively. Although mostly harmless, prions can transform into infectious agents, which accumulate in the brain and destroy the [nervous tissue](#).

But how exactly does the accumulation of prions cause destruction of the brain? "Understanding the process by which prions destroy neurons is critical for finding a cure for prion disease", says Isaac Crespo, first author of the publication. He and his colleagues tackled this question with a [computational approach](#): They ran their own computer programmes on experimental data generated by other research groups, and identified a set of 16 proteins that seems to control the onset of the disease. Interestingly, almost all of these proteins have known functions in neuro-inflammation.

"What we consider remarkable and constitutes our main finding, is the key role that neuro-inflammation plays in initiating prion disease. This finding is not only relevant for prion diseases, but also for other '[protein misfolding](#) diseases' such as Parkinson's and Alzheimer diseases" says

Prof. Dr. Antonio del Sol, group leader of the Computational Biology group.

Since its publication on October 15th, Crespo's paper was accessed so frequently, that it received the mark 'Highly Accessed', only awarded to articles that are downloaded very frequently. The strong interest that scientists are showing for these research findings reflects the urgency with which researchers are trying to understand prion diseases for which there is no cure until today.

Provided by University of Luxembourg

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