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## **APPLICATIONS**

## AN INNOVATIVE PROTOCOL FOR DISCOVERING POTENTIAL NEW DRUGS

An innovative protocol for discovering potential new drugs has been developed by a broad, international team led by researchers from INFN, the University of Trento, the University of Perugia, the

Dulbecco Telethon Institute, the Telethon Foundation. The Pharmacological Protein Inactivation by Folding Intermediate Targeting (PPI-FIT) protocol consists in identifying small molecules that can block the folding process of a protein involved in a pathological process, thus promoting its degradation through control mechanisms present in the cells. The PPI-FIT protocol, applied for the first time in the field of prion diseases, is the fruit of work with a strong multidisciplinary character, thanks to contributions that range from theoretical physics to IT, to medicinal chemistry, from biochemistry to cellular biology. The computational process, is founded on mathematical models developed in theoretical physics for studying subatomic phenomena, such as the quantum tunnelling effect, and suitable for simulating complex biomolecular processes, such as the folding and aggregation of proteins. The results obtained open a path forward for a new pharmacological paradigm, which is useful for modulating the levels of different factors involved in pathological processes. From an even broader perspective, the study suggests the existence of a generic mechanism for regulating protein expression, not considered until today, which acts at the level of folding paths.