

**Proposition de financement doctorale
Paris Science et Lettres
pour la rentrée 2020 - 2021**

Titre de la thèse :

**Theoretical characterization of single vesicular events in exocytosis in connection
with oxidative stress and inflammation**

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The aim of the project is to study theoretically vesicular exocytotic release of neurotransmitter by neurons on quantitative dynamic grounds. More precisely, the emphasis will be put on the very act of neurotransmitter release – the dimensions of fusion pore and its temporal dynamics with the intention to decipher by modelling a mode of release undertaken by a given vesicle. In particular, the effect of some naturally occurring molecules on neurotransmission in the neurons affected with Parkinson's disease will be investigated. The theoretical approach being developed will strongly rely on experimental investigations performed within the framework of Laboratoire International Associé CNRS "NanoBioCatChem" and other internationally recognized collaborators.

Mots clés : vesicular exocytosis, oxidative stress, modeling, nanoelectrode