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Biography

Fabienne Burlina obtained her Ph.D. in Chemistry in 1996 from the Université Paris Sud. She then worked as a postdoctoral fellow in the group of M. J. Gait at the LMB (Cambridge, U.K.). In 1999, she joined the Chemistry Department of the Université P. et M. Curie as a CNRS researcher. She is now director of research at the Laboratoire des Biomolécules at Sorbonne Université. Her current research interests include the development of ligation methodologies for the synthesis of proteins and the design of cell-penetrating peptides for the delivery of bioactive compounds.

Abstract**Extending chemical ligation for the synthesis of proteins: Application to NEMO ubiquitylation**

We are developing methods for the easy chemical ligation of peptides to synthesise proteins or bioconjugates. In this context, we have reported general methods to access peptide thioesters compatible with the incorporation of post-translational modifications. This include an HF-free Boc protocol¹ and a method using peptides with a C-terminal α -methyl cysteine residue as thioester precursors². More recently, we have designed a ligation auxiliary that can be easily installed on the peptides post-synthesis³. Applications will be presented with the synthesis of cyclic cell-penetrating peptides⁴ and of the mono-ubiquitylated NEMO_{Cozi} protein that was used to study the mechanism of NEMO linear ubiquitylation.

¹ R. Raz, F. Burlina, M. Ismail, J. Downward, J. Li, S.J. Smerdon, M. Quibell, P. D. White, J. Offer. HF-free Boc synthesis of peptide thioesters for ligation and cyclisation. *Angew. Chem. Int. Ed.* 2016, 55, 13174

² F. Burlina, G. Papageorgiou, C. Morris, P. D. White, J. Offer. *In situ* thioester formation for protein ligation using α -methyl cysteine. *Chem. Sci.* 2014, 5, 766

³ F. Burlina, A.-B. M. Abdel-Aal, R. Raz, I. Pinzuti, G. Papageorgiou, J. Li, R. Antrobus, S. R. Martin, S. Kunzelmann, B. Stieglitz, J. Offer. Auxiliary-assisted ubiquitylation of NEMO and linear extension by HOIP. *Commun. Chem.* 2019, 2,111

⁴ M. Amoura, F. Illien, A. Joliot, K. Guitot, J. Offer, S. Sagan, F. Burlina. Head to tail cyclisation of cell-penetrating peptides: impact on GAG-dependent internalisation and direct translocation. *Chem. Commun.* 2019, 55, 4566