

## Glow in the dark

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The field of chemical biology has been transformed thanks to the development of click and bioorthogonal chemistry. This particular branch of chemistry, where two partners specifically react together in complex biological media, allowed researchers to reach until now new biomolecules through the chemical reporter strategy, as exemplified by the emergence of the metabolic glycan engineering (MGE). The toolbox for *in vivo* imaging has never expanded wider and faster, but the cell compartment and the complexity of the whole organism aim to prevent the use of some strategies that would yet be suited for other targets. Over the past few years, our both teams have combined efforts to decipher the functions played by *O*-GlcNAcylation, a structurally very simple but functionally extremely complex post-translational modification (PTM). This difficult study is partly due to the fact that *O*-GlcNAcylation is very labile and occurs at all levels of cellular homeostasis. During this Interdisciplinary Duo Communication, we will present our most important results including: (i) the development of a biosensor to better understand the dynamics of *O*-GlcNAcylation on the proto-oncoprotein b-catenin, (ii) the importance of a reasoned choice of the chemical reporter, (iii) the great challenge for genetic code expansion for tailoring protein structure.

### Bibliographic references:

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