

Photocatalyzed, C-5 selective functionalization of β -fucosides via HAT mechanisms

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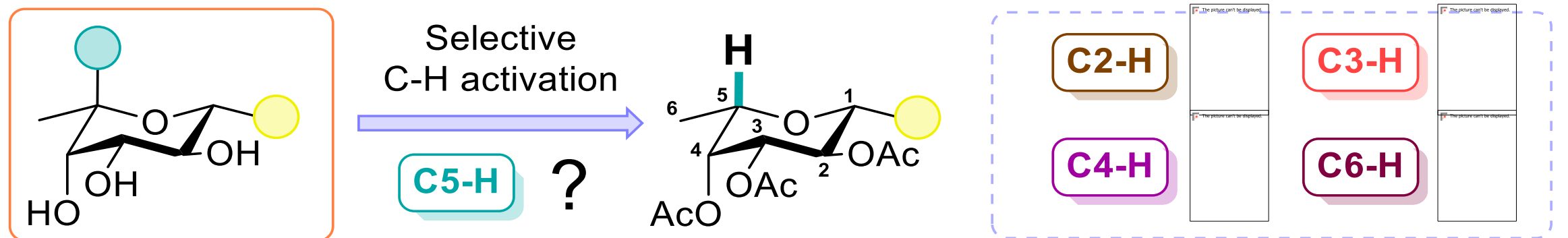
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Selectivity is key!

Sugar scaffolds' functionalization plays a pivotal role in drug development.

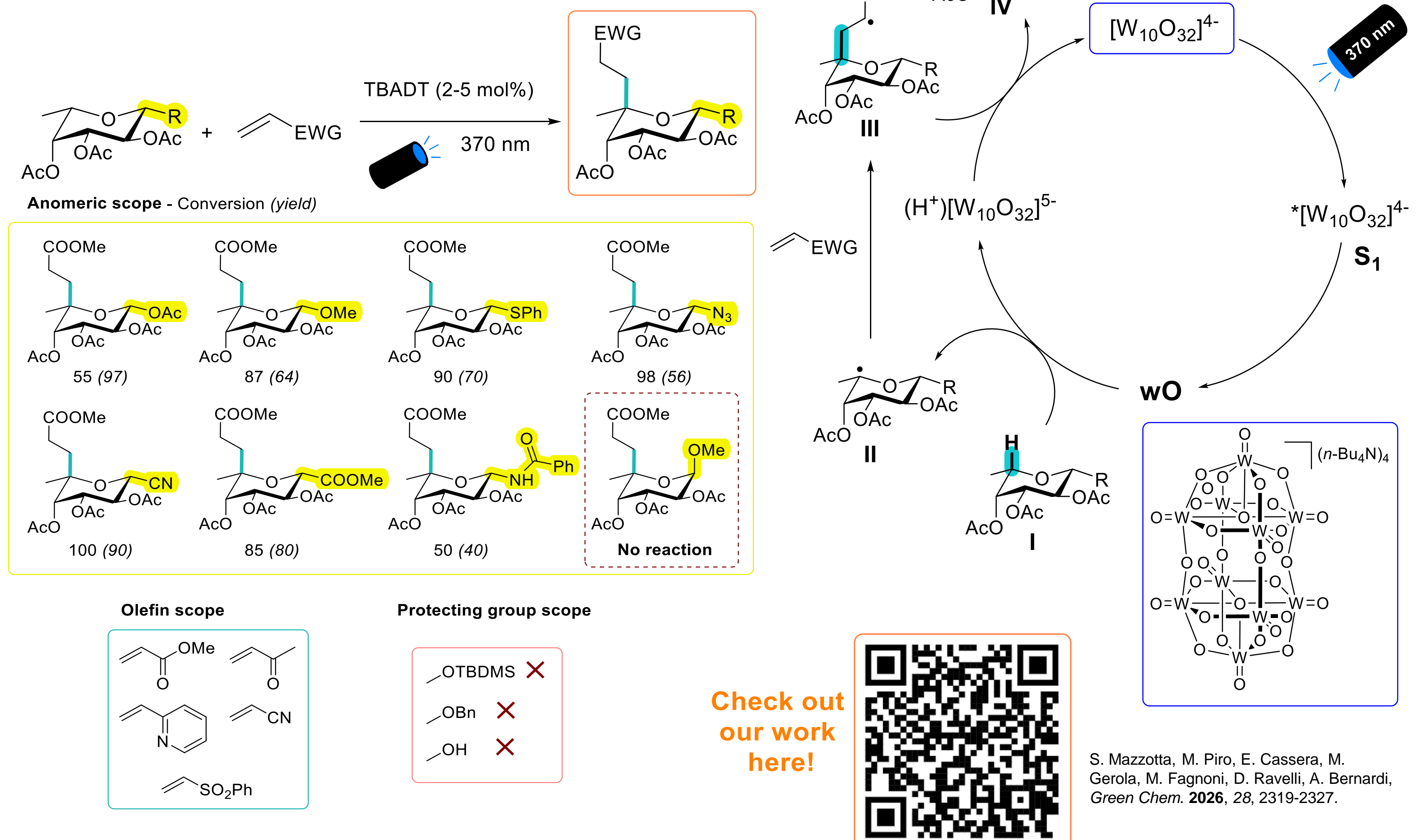
C-H bond activation via Hydrogen Atom Transfer (HAT) reactions represents an important tool for the direct modification of the sugar backbone. However, achieving full regio- and stereoselectivity still proves challenging.



What started it all!

In our research for the development of glycomimetics for fucoside-specific receptors, we designed a regio- and stereoselective photocatalyzed functionalization of β -fucosides.

This is achieved using TBADT as a direct photocatalyst; the sugar radical intermediate may undergo Giese-like alkylation with an electron-poor olefin.



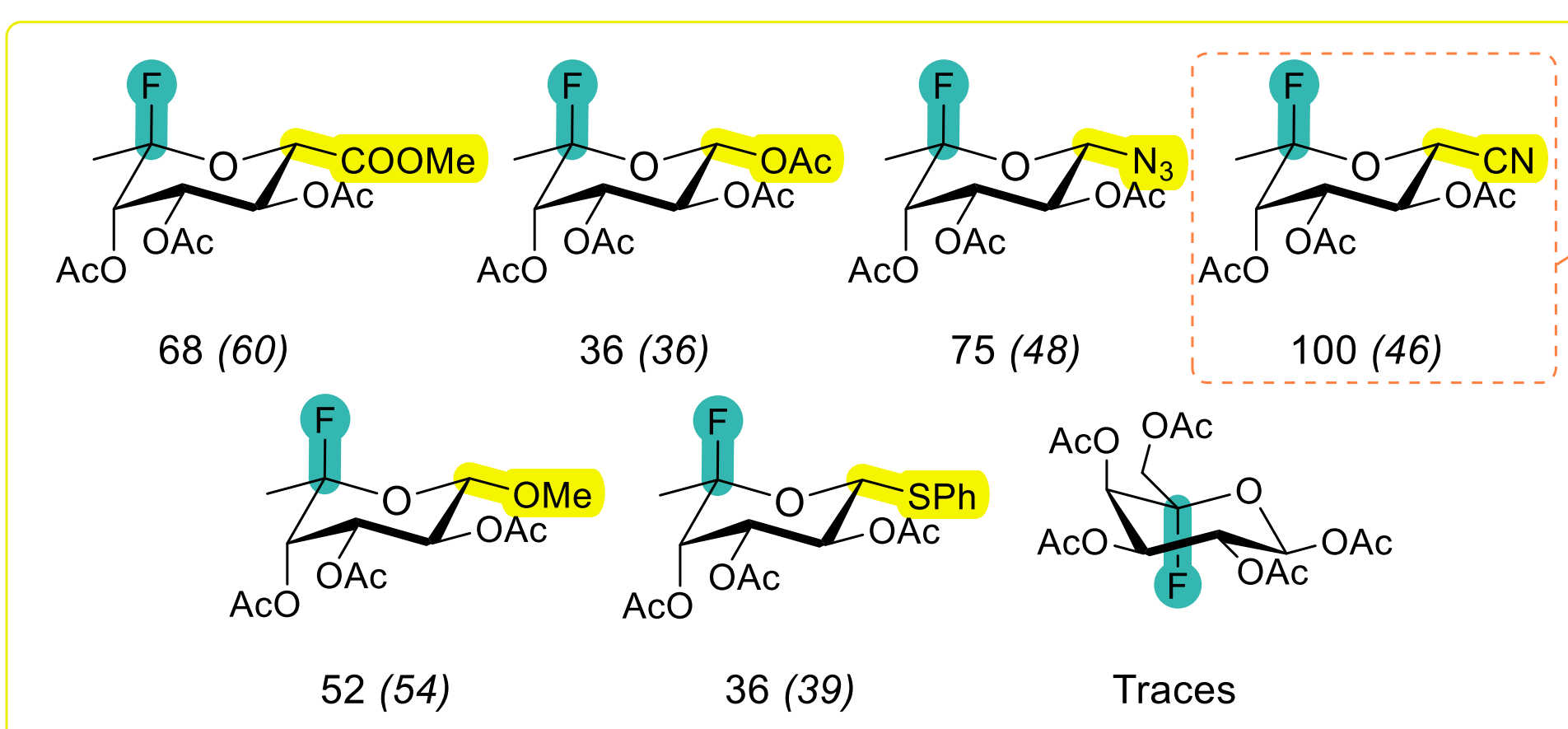
Stay tuned for more – fucoside fluorination!

β -fucosides show very interesting reactivity in HAT reactions.

Fluorine may be extremely versatile in the glycomimetic world – it can alter the interactions of sugars with their receptors or serve as an NMR tag for monitoring.

Here we show the direct C5-selective axial fluorination of β -fucosides via an electrophilic fluorine source.

Anomeric scope - Conversion (yield)



The reaction mechanism, although believed to be similar to the one of the Giese alkylation, will be studied via kinetic experiments and computational calculations.

Let's keep in touch!

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