

Method	Sortagging reaction	Click chemistry
Number of synthesis steps	3 steps	3 steps
Required reagent	GMBS GGG(W/T)C peptide Sortase A enzyme	DBCO-PEG ₅ -NHS azide-PEG ₄ -NHS
Reagent stability	+	++ (DBCO-PEG ₅ -NHS needs to be used at <20mM in aqueous medium)
VHH modification	no	yes
Reaction selectivity	High	High
Reaction speed	Rapid (2-3h)	Moderate (24h)
Conversion yield	Moderate (<50%)	High (>95%)
Final purification	Sortase elimination + SEC preparative (no elimination of excess AGuIX possible)	SEC preparative (all excess reagents can be removed)
Ratio NP/VHH	1	1
DH (nm)	6.1 ± 3.7 nm	5.4 ± 3.1 nm
Reaction costs	High (Biomolecule production)	Moderate
Scale-up potential	Low	High