

Sidewinder™ dPEG® Constructs

Background: Quanta BioDesign has designed a new class of dPEG® constructs* with a broad range of powerful applications. The fundamental and proprietary in-house expertise in processing dPEG® constructs as single molecules developed at QBD, allows us to make this exceptional offering.

The foundation of the Sidewinder™ dPEG® concept is the ability to add various therapeutic or diagnostic moieties onto a side-arm, with a dPEG® construct extending into the *in vivo* medium to protect it as it moves selectively or systemically *in vivo*, while realizing further enhanced performance parameters.

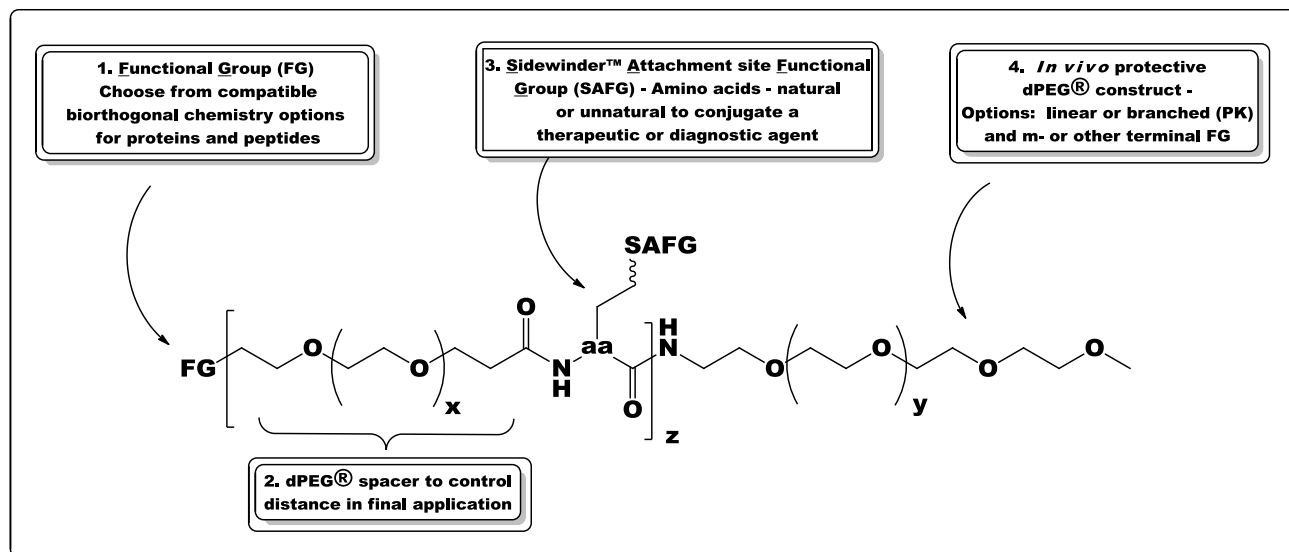
It has been demonstrated, by Seattle Genetics in an ADC application, that attaching a hydrophobic drug closer to the surface of an antibody and protected by a hydrophilic dPEG® construct is superior to attaching the same drug on the distal end of a linker. This allows for a higher DAR without sacrificing the PK. In fact, the PK is nearly equal to the naked antibody, but with a DAR = 8.

This is just one of the many advantages that the Sidewinder™ can offer for ADC's. Other features in targeted applications include optimizing BD, cell internalization and trafficking, serum half-life and immunogenicity. The constructs can be applied to systemic or nanoparticle based applications as well.

Additional features include our ability to make the Sidewinder™ dPEG® constructs which can have multiple moieties attached to one construct, allowing one to either multiplex at a single point of attachment or attach different moieties on a single construct, including, e.g., both a therapeutic and diagnostic.

The general structure of the Sidewinder™ dPEG® construct is shown below. Each of the variables can be designed and optimized for your particular application, and some examples are shown for each variable portion of the Sidewinder™ construct.

*Patent pending,** "Novel ADC Chemistry for Improved Stability and Pharmacokinetics," Robert P. Lyon, PEGS 2014, May, 2014, Boston, MA.



1. **FG:** Maleimide; Bromoacetyl; DBCO; Azide; Aminooxy; Aldehyde; and Custom chemistries.
2. **dPEG_x spacer:** x = 4; Custom spacers where x = 6, 8, 12, 24, 36.
3. **aa and SAFG:** Glu (TFP ester); Lysine (t-boc or TFA salt) convertible to other compatible functionality; Tyrosine (propargyl); Custom amino acid core and functionality; [Glu (OH or TFP ester)]_z, z = 1, 2 or 3; Glu (TFP ester) and Lys (t-boc); Customized to application.
4. **dPEG® options:** m-dPEG₂₄; See Quanta catalog for any Amino-dPEG® construct that can be incorporated per application requirements; Custom design options available.