**Supplementary Discussion**

GDAPs can be easily covalently attached to NHS-activated glass slides and to form glycan-DAP microarrays that are recognized by CBPs and our studies show that this derivatization provides identifiable and quantifiable glycan spots. The use of DAP conjugates will promote future expansion of glycan arrays by allowing the derivatization and use of minute amounts of commercially available glycans and glycans that can be generated by chemical and enzymatic procedures from natural sources. Furthermore, complex mixtures of free glycans derived from natural sources, such as purified glycoproteins or even tissue samples, could be conjugated with DAP, separated into component species by fluorescence-HPLC, recovered, analyzed and sequenced, and then covalently captured on solid or soluble supports as pure or semi-pure species. This approach is applicable to O-glycans, which are usually much more difficult to obtain commercially and are often recovered by β-elimination from glycoproteins in a reduced condition. As we have shown here, the DAP derivatives of such glycans are easily separable and quantifiable, but moreover, they can now be successfully covalently derivatized to solid surfaces and characterized for their interactions with CBPs and with pathogenic organisms, such as *Pseudomonas aeruginosa*, a pathogen known to recognize glycans within airway mucins\(^1\text{-}^3\).

Although the fluorescent properties of GDAPs could complicate interpretations of protein-carbohydrate interactions if certain types of fluorescently-labeled CBPs are used, the GDAP fluorescence has an emission max at 390-400 nm, far below that of most fluorophores used in detecting systems, such as FITC, Alexaflour 488, and Cy3 and Cy5. In addition, the GDAPs might be useful as conjugates to quantum dots\(^4\), which have emission maxima >600 nm, for binding and uptake studies of glycans by living cells and
systems. Thus, the GDAP fluorescence does not complicate measurements of binding by commonly-used fluorescently-labeled CBPs.

While the use of GDAPs have many obvious advantages and broad utility as discussed, a potential disadvantage is that their formation involves reductive amination. However, most CBPs recognize terminal, rather than core, structures, which would be preserved in DAP-glycan conjugates involving large glycans. While the small size of the DAP as a spacer moiety could be a disadvantage, the reduced end of the glycan adds additional spacing to the DAP and so far we have not found that the relatively small DAP spacer causes a problem in CBP recognition even with di- and trisaccharides.

References: