Supporting Information

Carbohydrate microarray-based analysis of specific interaction between saccharides from algin and influenza A viral hemagglutinin

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1. **Preparation of pHEMA-CC-modified substrates**

The glass slides were cleaned by piranha solution (3:1 v/v concentrated H_2SO_4/30% H_2O_2) at 70 ºC for 30 min, then washed three times with water and dried under a N_2 stream. The cleaned slides were immersed in APTMS solution (10% in ethanol) for 150 min, then washed three times with ethanol and dried under a N_2 stream. The slides were then immersed in a dichloromethane solution of BIBB (1%) and TEA (1%) for 30 min with gentle agitation. After being washed three times with dichloromethane and dried under N_2 stream, the initiator (BIBB) modified slides were immersed in a degassed polymerization solution under N_2 protection. The polymerization solution was prepared by mixing HEMA, water and methanol at 1:1:1 (v/v/v), and then added with CuBr (11.5 mM), BPY (30.0 mM), and AA (65.5 mM). After reaction for 3 h with gentle stir, the slides were washed three times with methanol and water, respectively, and then dried under a N_2 stream. The pHEMA-modified glass slides were then immersed in acetone solution of CC (100 mM) and DIPEA (100 mM) for at least 8 h at 4 °C. After being washed three times with acetone and dried under a N_2 stream.

2. Cytopathic effect (CPE) inhibition assay

The CPE assay was performed as previously reported[1]. MDCK cells in 96-well plates were firstly infected with IAV, and then treated with GulA, $GulA_2$, $GulA_3$, and $GulA_4$ in triplicate after removal of the virus inoculum. After 48 h incubation, the cells were fixed with 4% formaldehyde for 20 min at room temperature. After removal of the formaldehyde, the cells were stained with 0.1% crystal violet for 30 min. The plates were then washed and dried followed by solubilization of the dye with methanol, and the intensity of crystal violet staining for each well was measured at 570 nm. The concentration required for GulA, $GulA_2$, $GulA_3$, and $GulA_4$ to reduce the CPE of IAV by 50% (IC_{50}) was determined.

3. Chemical structure of GulA, $GulA_2$, $GulA_3$, and $GulA_4$

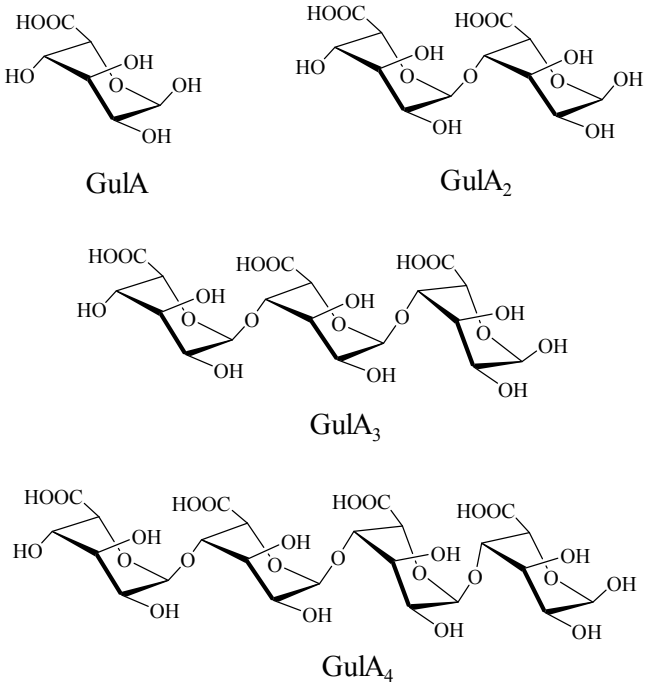

Figure S1 Chemical structure of GulA, $GulA_2$, $GulA_3$ and $GulA_4$

4. The relationship of fluorescence binding signals with spotting concentration of Neu5Ac

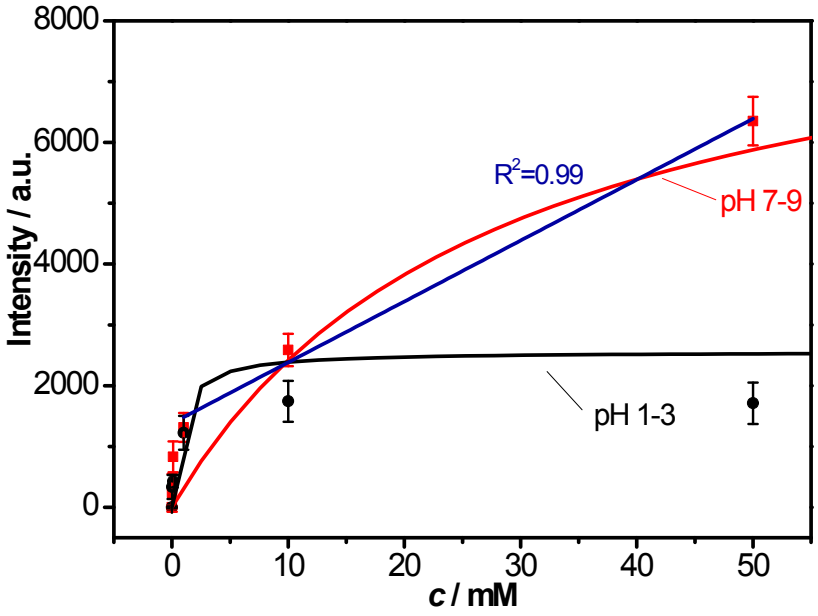

Figure S2 Relationship of fluorescence binding signals with spotting concentration of Neu5Ac from 0 to 50 mM.

Reference

1. W. Wang, J. Wu, X. Zhang, C. Hao, X. Zhao, G. Jiao, X. Shan, W. Tai and G. Yu, *Scientific Reports*, 2017, **7**, 40760.