

Supplementary information for:

Synthesis and immunological evaluation of a single molecular construct MUC1 vaccine containing L-rhamnose repeating units

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Figure S1. ESI-MS data of *N*-[(9H-fluoren-9-yl)methoxycarbonyl]-*O*-((2,3,4-tri-*O*-acetyl)- α -L-rhamnopyranosyl)-L-serine phenylmethyl ester **2**

Figure S2. ^1H NMR of *N*-[(9H-fluoren-9-yl)methoxycarbonyl]-*O*-((2,3,4-tri-*O*-acetyl)- α -L-rhamnopyranosyl)-L-serine phenylmethyl ester **2**

Figure S3. ^{13}C NMR of *N*-[(9H-fluoren-9-yl)methoxycarbonyl]-*O*-((2,3,4-tri-*O*-acetyl)- α -L-rhamnopyranosyl)-L-serine phenylmethyl ester **2**

Figure S4. HRMS data of *N*-[(9H-fluoren-9-yl)methoxycarbonyl]-*O*-((2,3,4-tri-*O*-acetyl)- α -L-rhamnopyranosyl)-L-serine **3**

Figure S5. ^1H NMR of *N*-[(9H-fluoren-9-yl)methoxycarbonyl]-*O*-((2,3,4-tri-*O*-acetyl)- α -L-rhamnopyranosyl)-L-serine **3**

Figure S6. ^{13}C NMR of *N*-[(9H-fluoren-9-yl)methoxycarbonyl]-*O*-((2,3,4-tri-*O*-acetyl)- α -L-rhamnopyranosyl)-L-serine **3**

Figure S7. MALDI-TOF data of single molecule construct of Pam₃CSK₄-DBCO-MUC1 -(Rha)₃ sequence **6**

Figure S8. MALDI-TOF data of single molecule construct of Pam₃CSK₄-DBCO-MUC1 **8**

Figure S1. ESI-MS data of *N*-[(9H-fluoren-9-yl)methoxycarbonyl]-*O*-((2,3,4-tri-*O*-acetyl)- α -L-rhamnopyranosyl)-L-serine phenylmethyl ester (**2**)

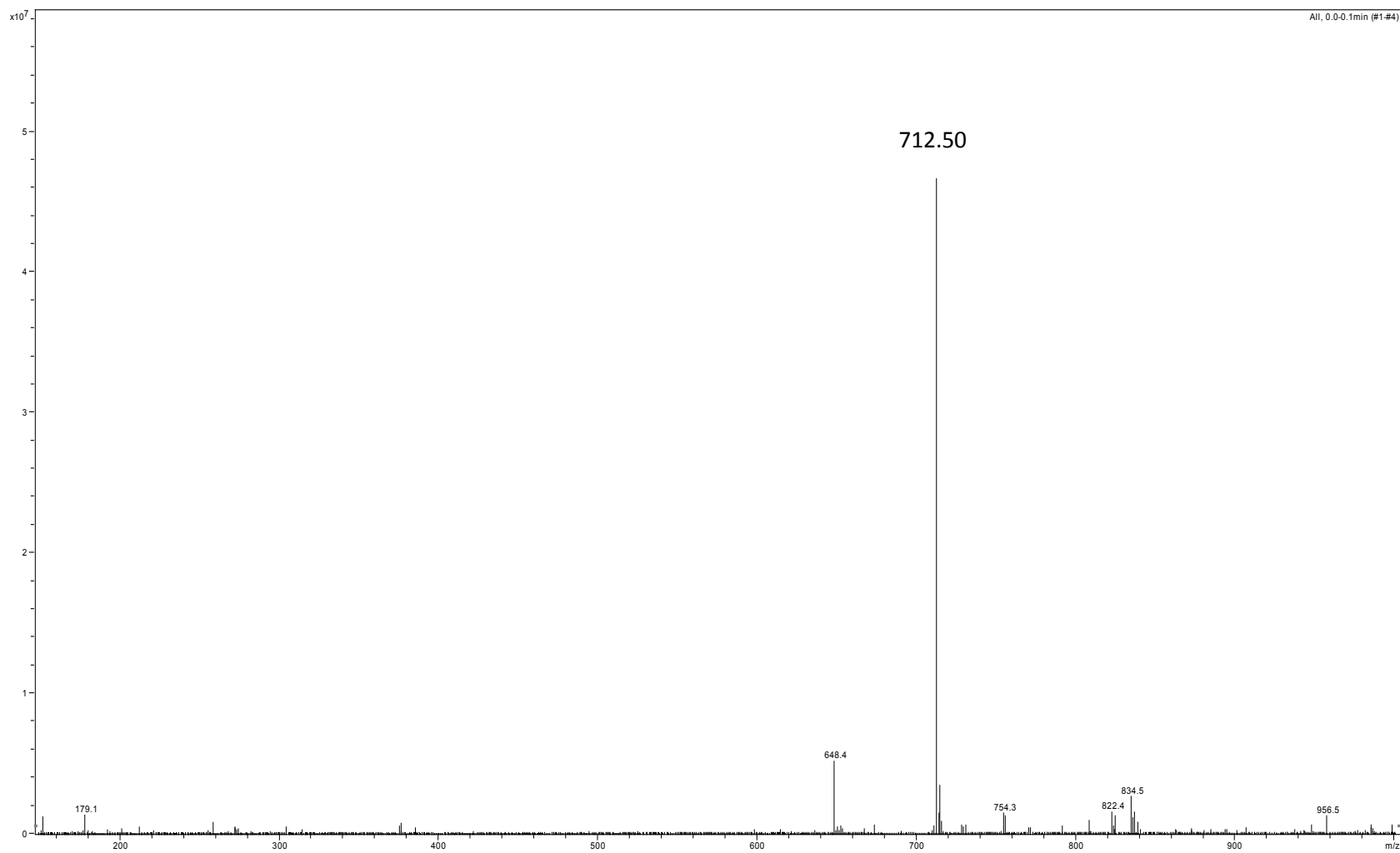


Figure S2. ^1H NMR of *N*-[(9H-fluoren-9-yl)methoxycarbonyl]-*O*-((2,3,4-tri-*O*-acetyl)- α -L-rhamnopyranosyl)-L-serine phenylmethyl ester (**2**)

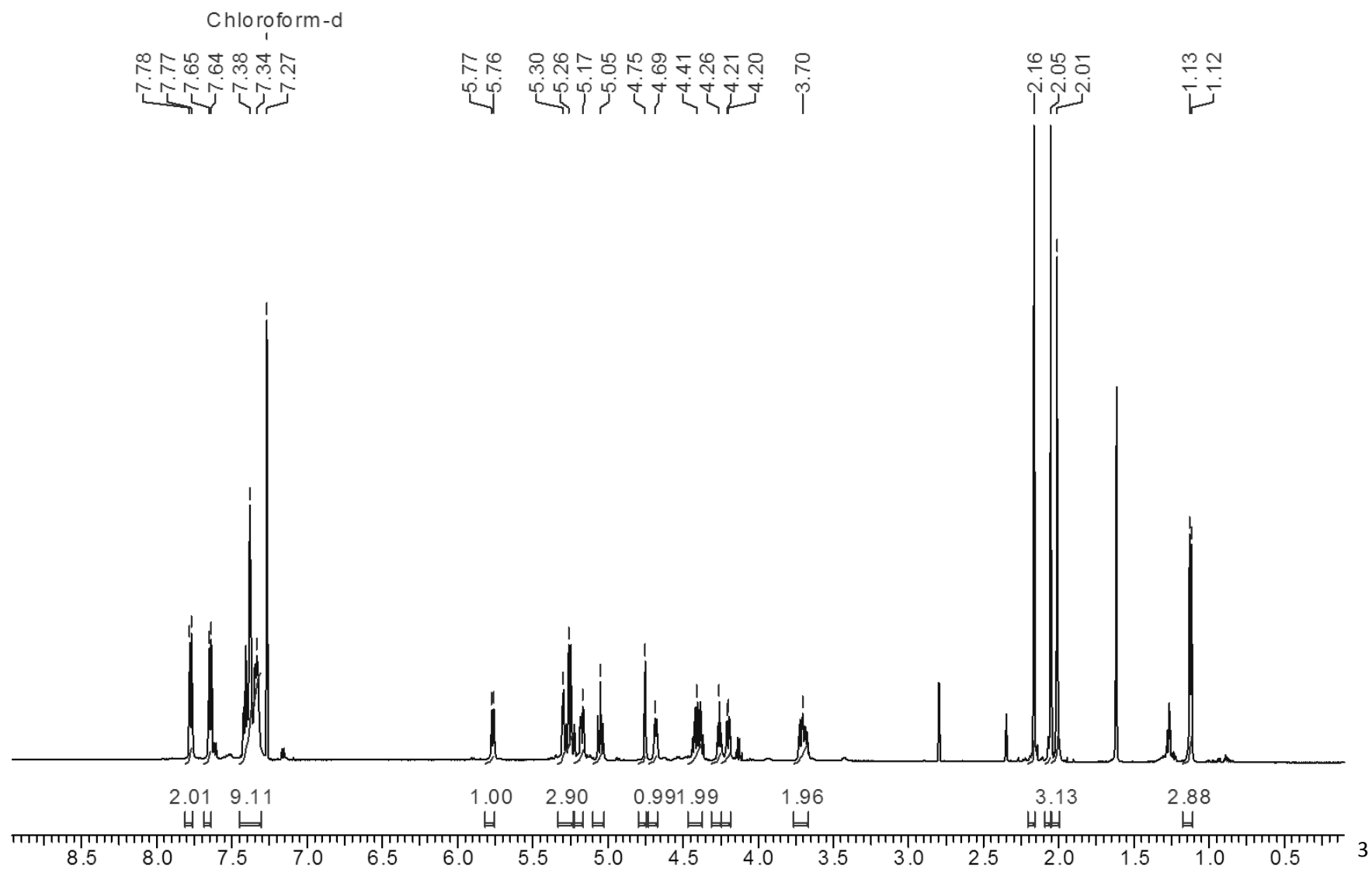


Figure S3. ^{13}C NMR of *N*-[(9H-fluoren-9-yl)methoxycarbonyl]-*O*-((2,3,4-tri-*O*-acetyl)- α -L-rhamnopyranosyl)-L-serine phenylmethyl ester (**2**)

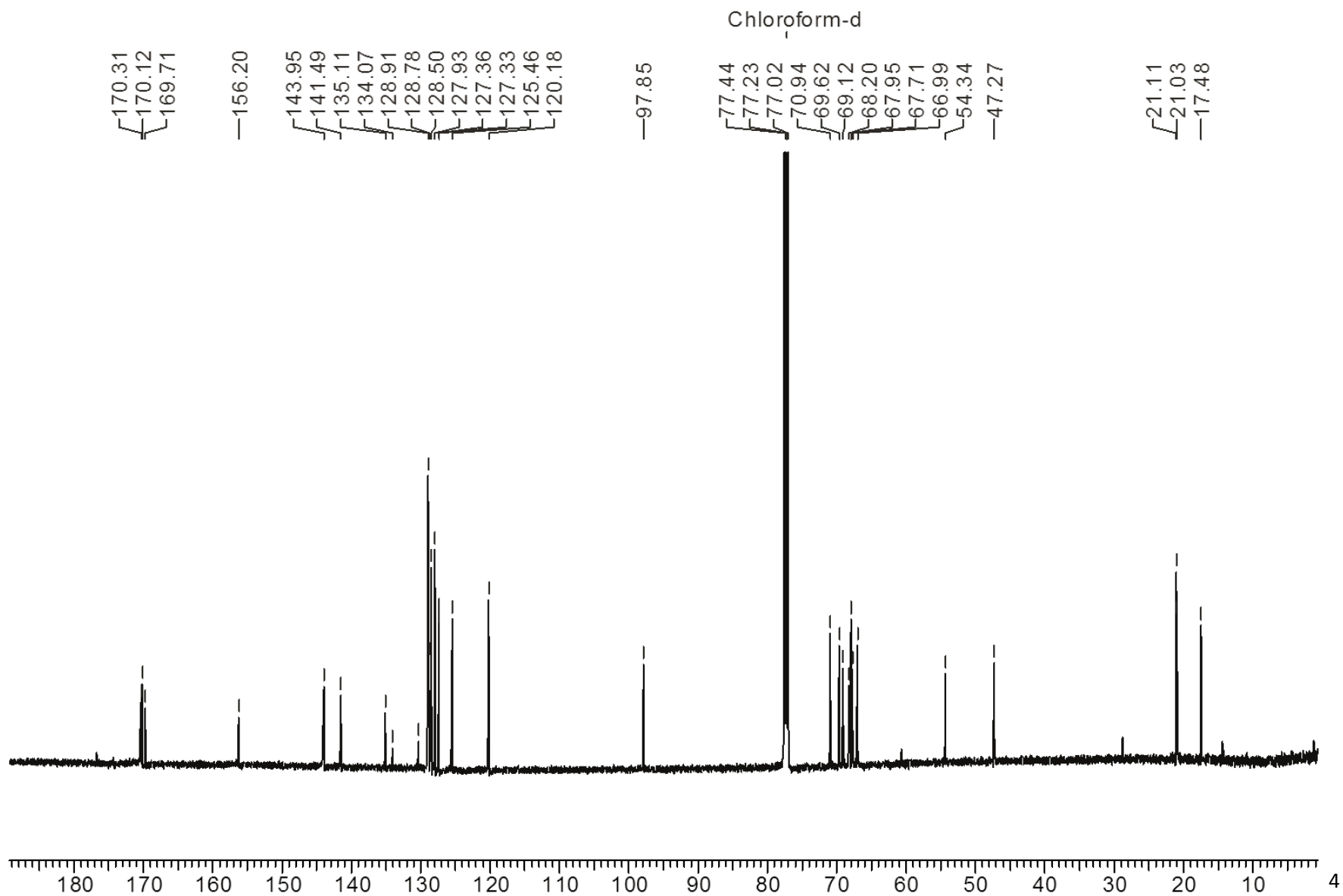


Figure S4. HRMS data of *N*-[(9H-fluoren-9-yl)methoxycarbonyl]-*O*-((2,3,4-tri-*O*-acetyl)- α -L-rhamnopyranosyl)-L-serine (**3**)

TL_ABHISHEK_AV224_01102017 229 (3.910) AM (Cen,4, 80.00, Ar,8000.0,556.28,0.70); Cm (227:232)

TOF MS ES+
1.13e5

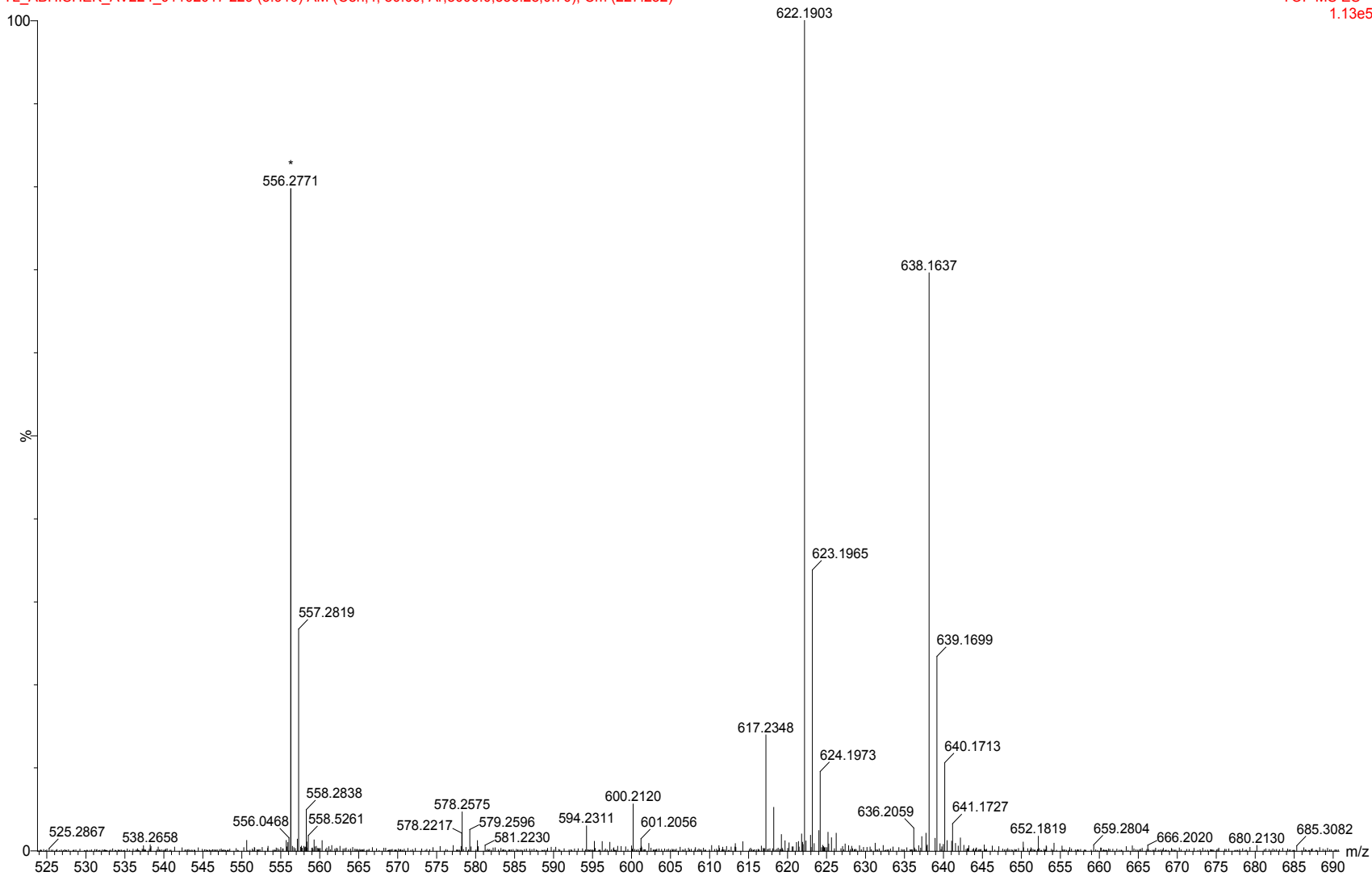


Figure S5. ^1H NMR of *N*-[(9H-fluoren-9-yl)methoxycarbonyl]-*O*-((2,3,4-tri-*O*-acetyl)- α -L-rhamnopyranosyl)-L-serine (**3**)

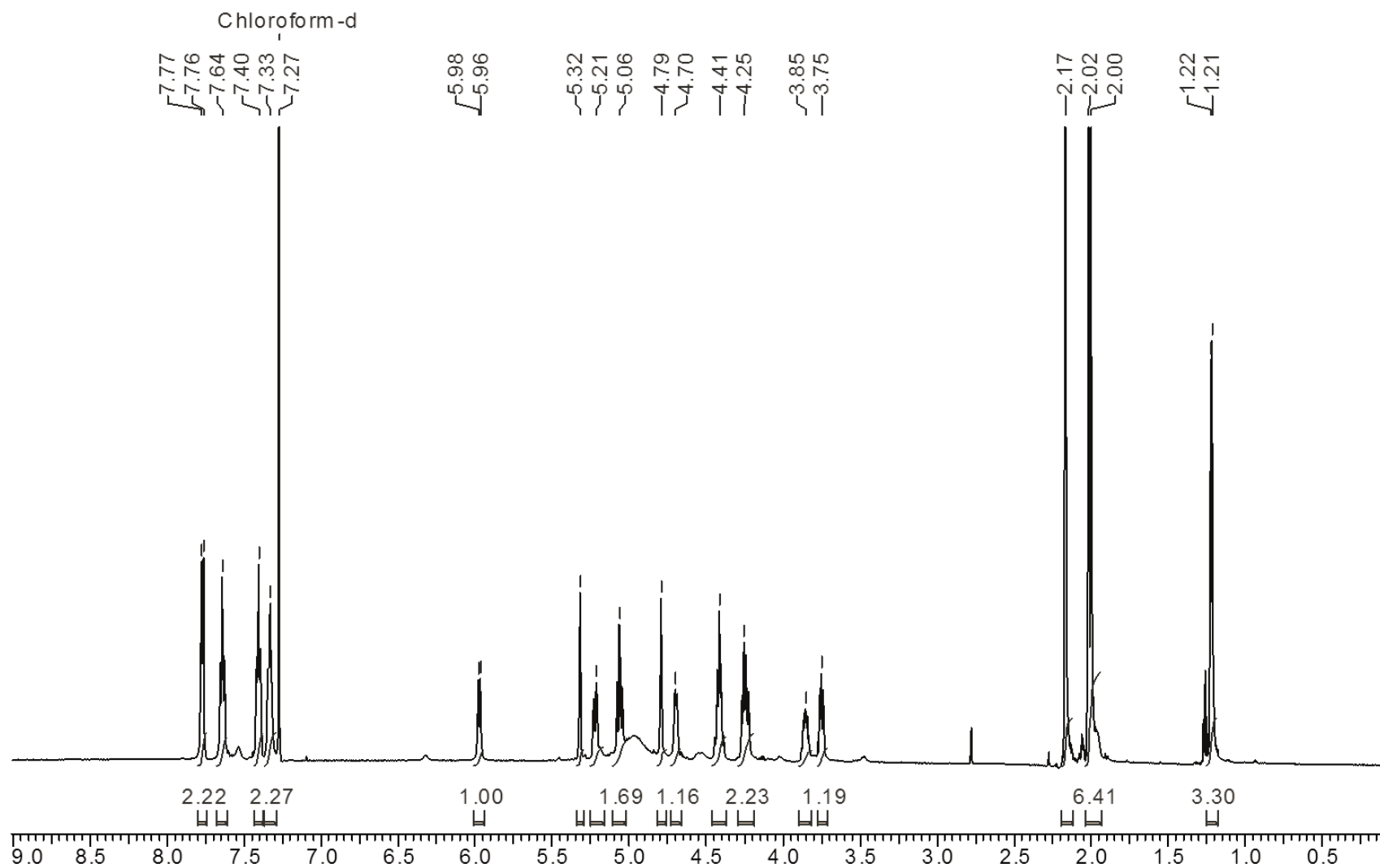


Figure S6. ^{13}C NMR of *N*-[(9*H*-fluoren-9-yl)methoxycarbonyl]-*O*-((2,3,4-tri-*O*-acetyl)- α -L-rhamnopyranosyl)-L-serine (**3**)

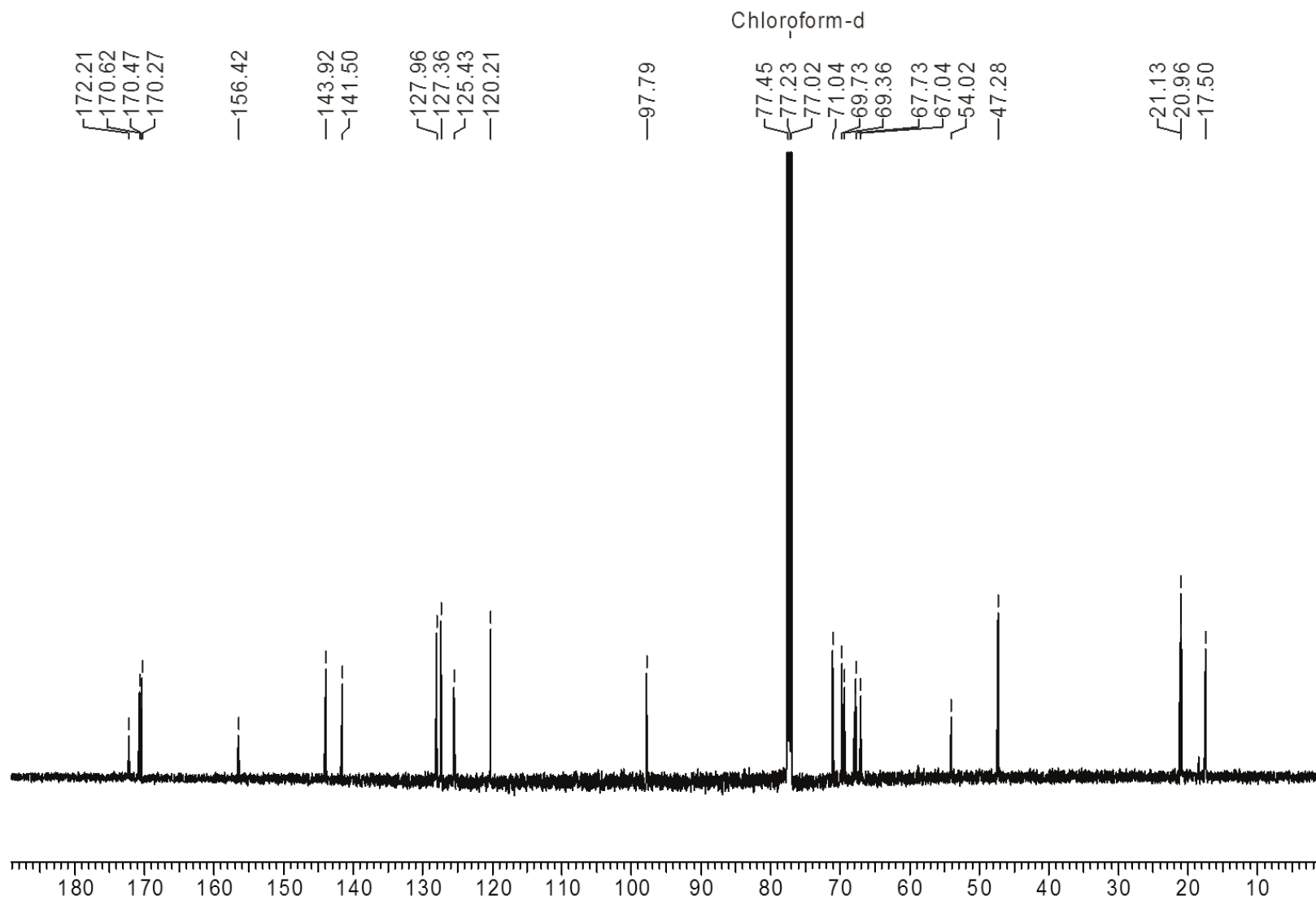


Figure S7. MALDI-TOF data of single molecule construct of Pam₃CSK₄-DBCO-MUC-1 -(Rha)₃ sequence (6)

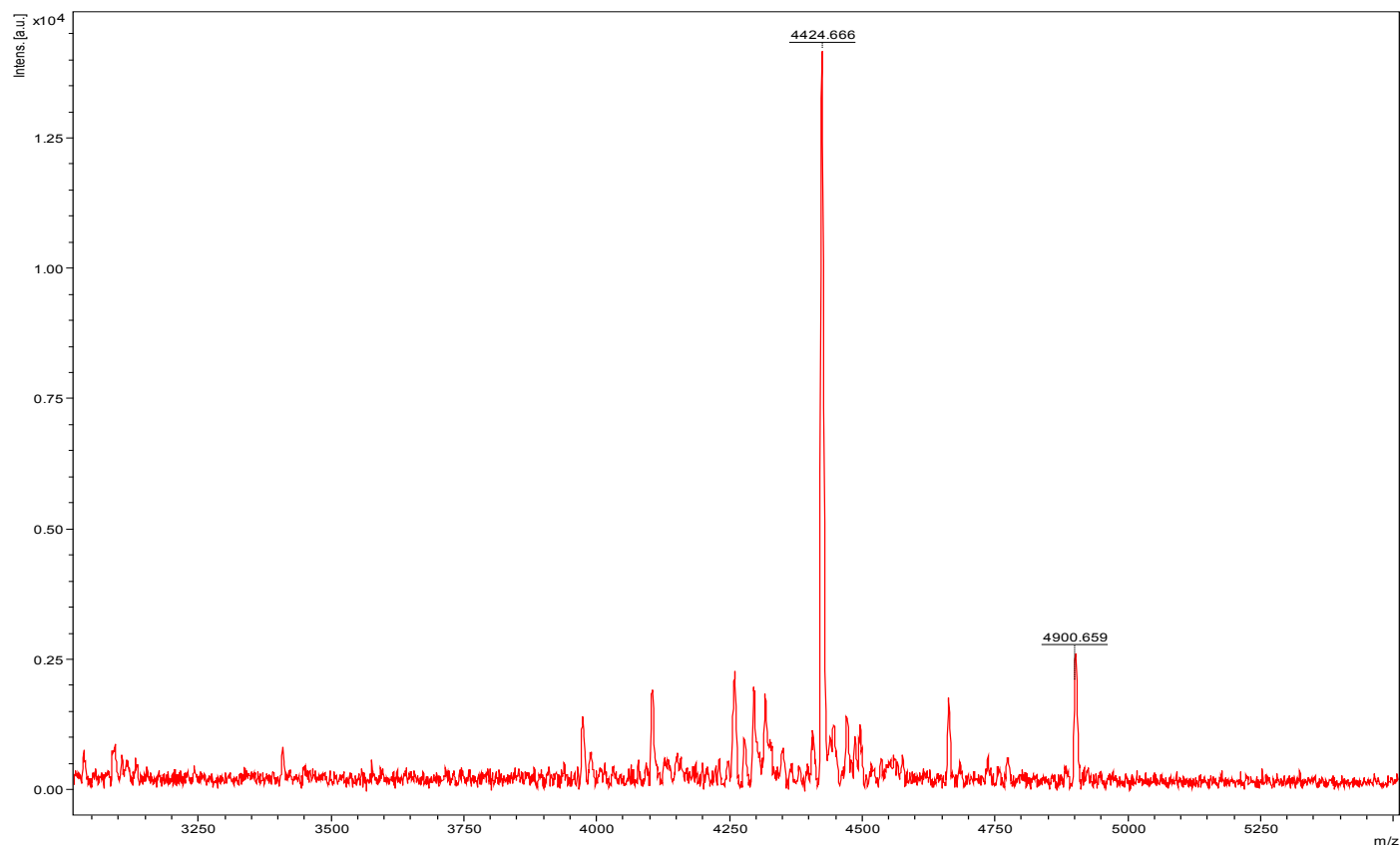
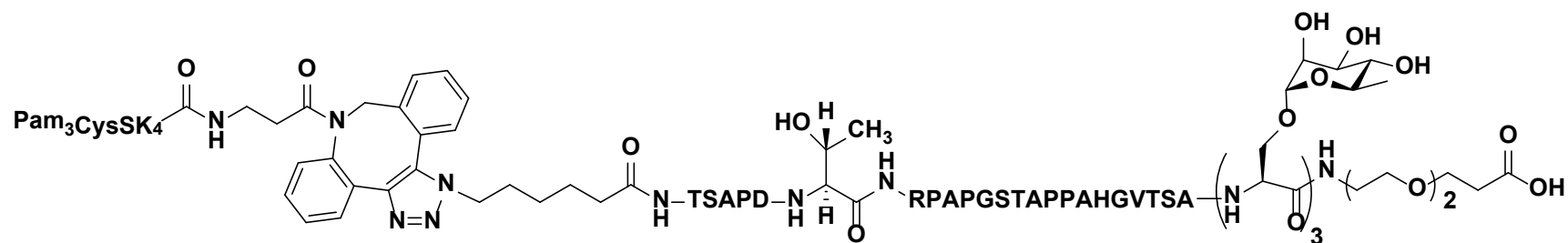


Figure S8. MALDI-TOF data of single molecule construct of Pam₃CSK₄-DBCO-MUC-1 (**8**)

