Supplementary Materials: 2-C-Alkynyl and 2-C-cis-Alkenyl β-Mannosides with Acetal Protected γ-Aldehyde Functionality via 2-Uloside Alkynylation and Lindlar Hydrogenation

Daniel Borowski, Melchior Menzel and Thomas Ziegler

Figure S1. Compound 2 13C-NMR.

Figure S2. Compound 2 13C-NMR Zoom.
Figure S3. Compound 2 $^1$H-NMR.

Figure S4. Compound 2 $^1$H-NMR Zoom.
Figure S5. Compound 3a 13C-NMR.

Figure S6. Compound 3a 13C-NMR Zoom.
Figure S7. Compound 3a ¹H-NMR.

Figure S8. Compound 3a ¹H-NMR Zoom.
Figure S9. Compound 3b ¹³C-NMR.

Figure S10. Compound 3b ¹³C-NMR Zoom.
Figure S11. Compound 3b ¹H-NMR.

Figure S12. Compound 3b ¹H-NMR Zoom.
Figure S13. Compound 3c 13C-NMR.

Figure S14. Compound 3c 13C-NMR Zoom.
Figure S15. Compound 3c 1H-NMR.

Figure S16. Compound 3c 1H-NMR Zoom.
**Figure S17.** Compound 3d $^{13}$C-NMR.

**Figure S18.** Compound 3d $^{13}$C-NMR Zoom.
Figure S19. Compound 3d $^1$H-NMR.

Figure S20. Compound 3d $^1$H-NMR Zoom.
Figure S21. Compound 4a 13C-NMR.

Figure S22. Compound 4a 13C-NMR chloroform.
Figure S23. Compound 4a $^{13}$C-NMR Zoom.

Figure S24. Compound 4a $^1$H-NMR.
**Figure S25.** Compound 4a "H-NMR chloroform.

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**Figure S26.** Compound 4a "H-NMR Zoom.
Figure S27. Compound 4b 13C-NMR.

Figure S28. Compound 4b $^{13}$C-NMR chloroform.
Figure S29. Compound 4b $^{13}$C-NMR Zoom.

Figure S30. Compound 4b $^1$H-NMR.
Figure S31. Compound 4b 1H-NMR chloroform.

Figure S32. Compound 4b 1H-NMR Zoom.
Figure S33. Compound 4c $^{13}$C-NMR.

Figure S34. Compound 4c $^{13}$C-NMR Zoom.
Figure S35. Compound 4c $^1$H-NMR.

Figure S36. Compound 4c $^1$H-NMR Zoom.
Figure S37. Compound 4d $^{13}$C-NMR.

Figure S38. Compound 4d $^{13}$C-NMR Zoom.
Figure S39. Compound 4d $^1$H-NMR.

Figure S40. Compound 4d $^1$H-NMR Zoom.