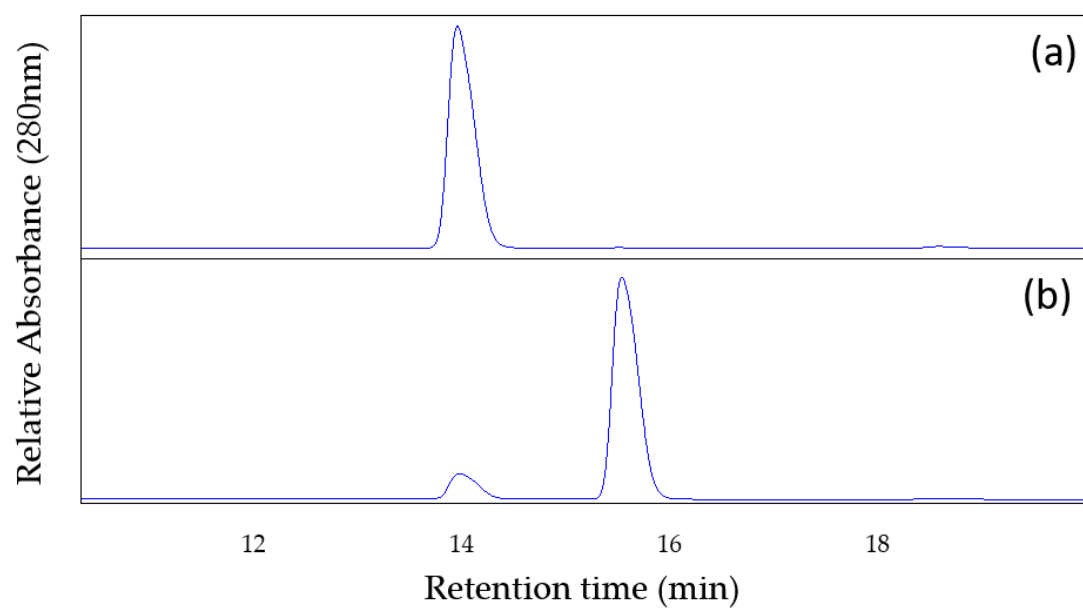
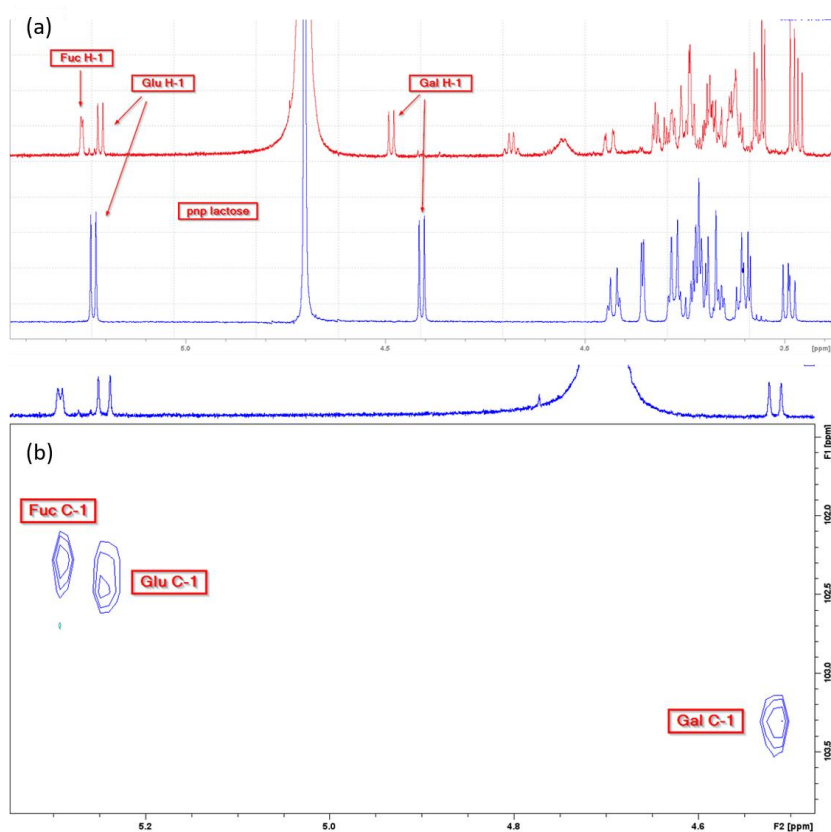
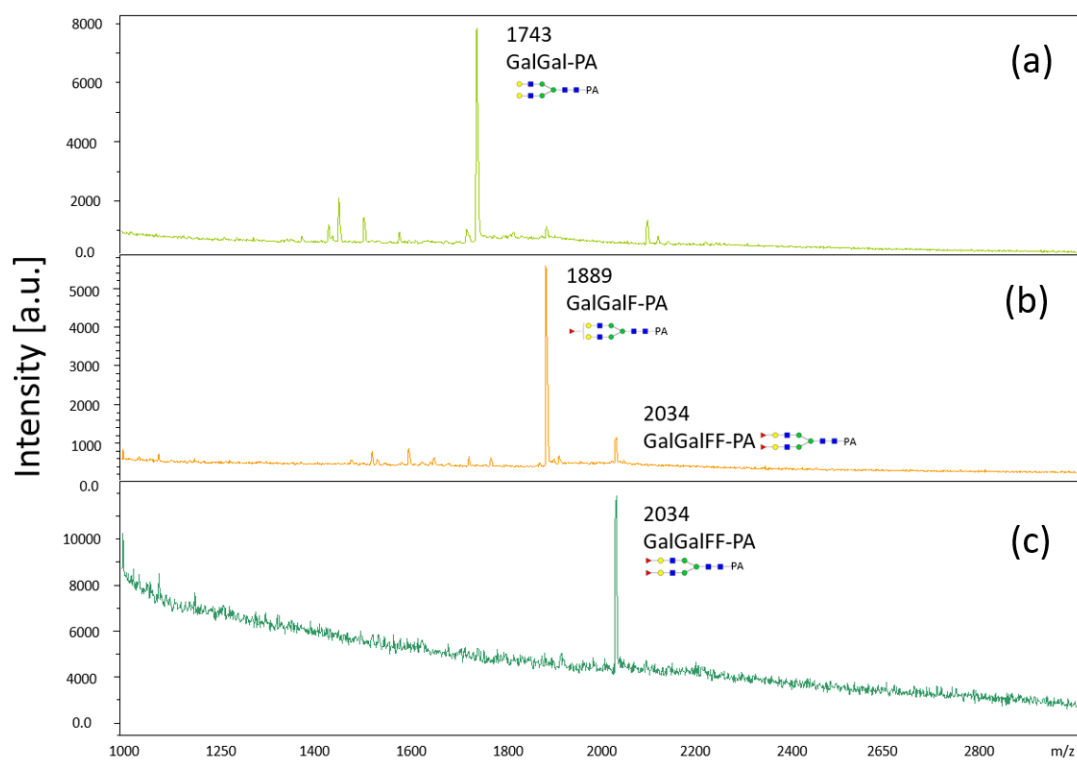




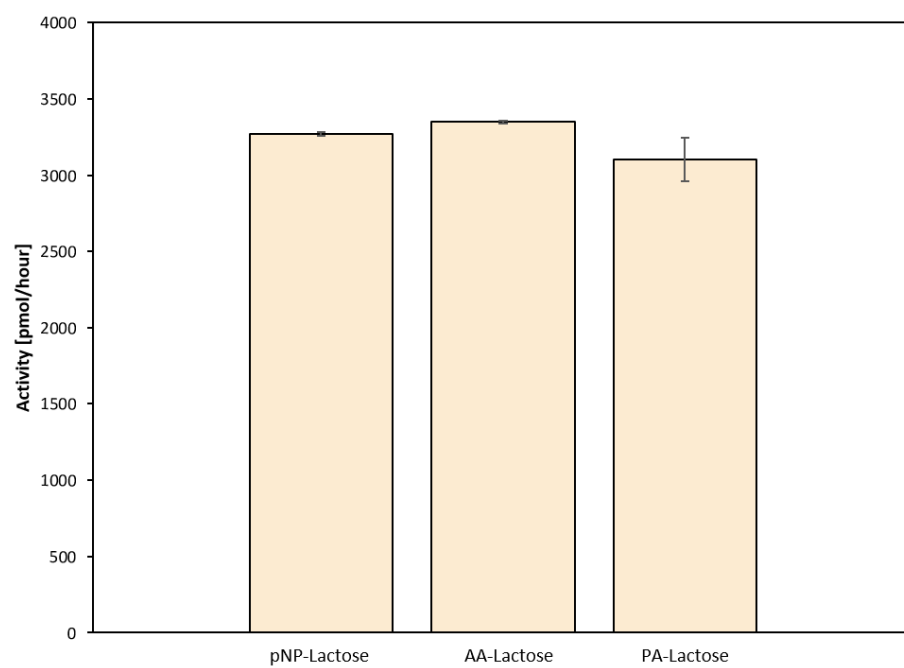
**Fig. S1** HPLC analysis of the transfer of Fuc to pNP- $\beta$ -lactose. (a) Standard pNP- $\beta$ -lactose and (b) pNP- $\beta$ -lactose incubated with CgFUT2



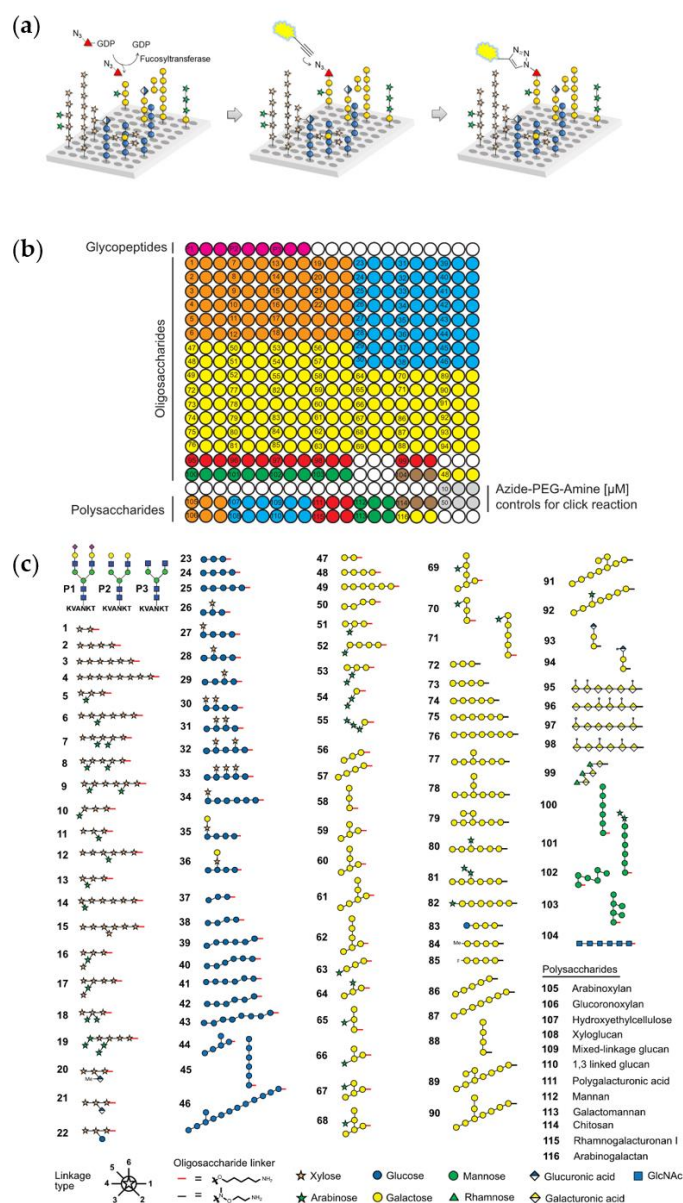
**Fig. S2** (a)  $^1\text{H}$  NMR comparison of pnp-lactose (blue, lower graph) and obtained transfer product (red, upper graph). (b) HSQC of the anomeric region with the newly introduced Fuc C-1 and the already present Gal and Glc C-1



**Fig. S3** MALDI-TOF analysis of the transfer of Fuc to terminal galactoses of GalGal-PA. (a) GalGal-PA substrate, (b) one fucose residue added and (c) two fucose residues added



**Figure S4:** Effects of different sugar labels on the activity of CgFUT2



**Figure S5:** Glycosyltransferase glycan microarray principle, printing pattern, and printed compounds. (a) Principle of the glycan microarray for the analysis of glycosyltransferases. (b) Printing pattern of the array. Each compound is printed in triplicates at concentration of 200 μM for oligosaccharides and 200 μg/ml for polysaccharides. (c) Complete list of printed compounds, including the structures of the oligosaccharides. Oligosaccharides were chemically synthesized, the glycopeptides were purified from egg yolk. Figure is modified from [34]

| No.                  | AV   | SD | No.            | AV  | SD | No.              | AV  | SD | No.              | AV  | SD | No.                    | AV   | SD  |
|----------------------|------|----|----------------|-----|----|------------------|-----|----|------------------|-----|----|------------------------|------|-----|
| <b>Glycopeptides</b> |      |    | <b>Glucans</b> |     |    | <b>Galactans</b> |     |    | <b>Galactans</b> |     |    | <b>Other</b>           |      |     |
| P1                   | 218  | 3  | 23             | 4   | 2  | 47               | 64  | 5  | 71               | 3   | 1  | 95                     | 9    | 1   |
| P2                   | 2477 | 94 | 24             | 5   | 1  | 48               | 468 | 30 | 72               | 157 | 13 | 96                     | 6    | 2   |
| P3                   | 21   | 2  | 25             | 4   | 0  | 49               | 484 | 40 | 73               | 314 | 22 | 97                     | 6    | 1   |
| <b>Xylans</b>        |      |    | 26             | 2   | 1  | 50               | 77  | 8  | 74               | 320 | 12 | 98                     | 9    | 1   |
| 1                    | 1    | 1  | 27             | 1   | 1  | 51               | 4   | 1  | 75               | 357 | 7  | 99                     | 10   | 2   |
| 2                    | 1    | 0  | 28             | 3   | 2  | 52               | 20  | 4  | 76               | 351 | 6  | 100                    | 1    | 1   |
| 3                    | 2    | 0  | 29             | 4   | 1  | 53               | 13  | 2  | 77               | 16  | 3  | 101                    | 2    | 2   |
| 4                    | 2    | 1  | 30             | 0   | 1  | 54               | 2   | 1  | 78               | 25  | 1  | 102                    | 0    | 1   |
| 5                    | 1    | 0  | 31             | 2   | 2  | 55               | 3   | 1  | 79               | 22  | 2  | 103                    | 1    | 0   |
| 6                    | 0    | 0  | 32             | 3   | 0  | 56               | 546 | 21 | 80               | 24  | 2  | 104                    | 1    | 1   |
| 7                    | 2    | 1  | 33             | 2   | 1  | 57               | 532 | 21 | 81               | 22  | 3  | <b>Polysaccharides</b> |      |     |
| 8                    | 3    | 0  | 34             | 7   | 1  | 58               | 47  | 1  | 82               | 40  | 3  | 105                    | 2    | 0   |
| 9                    | 2    | 1  | 35             | 7   | 2  | 59               | 590 | 28 | 83               | 6   | 1  | 106                    | 2    | 1   |
| 10                   | 1    | 1  | 36             | 400 | 24 | 60               | 317 | 3  | 84               | 754 | 22 | 107                    | 22   | 6   |
| 11                   | 1    | 1  | 37             | 38  | 4  | 61               | 466 | 14 | 85               | 11  | 1  | 108                    | 7    | 1   |
| 12                   | 0    | 0  | 38             | 12  | 1  | 62               | 200 | 18 | 86               | 383 | 24 | 109                    | 1    | 1   |
| 13                   | 0    | 1  | 39             | 2   | 0  | 63               | 37  | 4  | 87               | 445 | 6  | 110                    | 0    | 1   |
| 14                   | 1    | 0  | 40             | 11  | 1  | 64               | 851 | 43 | 88               | 20  | 2  | 111                    | 2    | 1   |
| 15                   | 1    | 0  | 41             | 8   | 1  | 65               | 35  | 2  | 89               | 396 | 18 | 112                    | 1    | 1   |
| 16                   | 1    | 1  | 42             | 22  | 1  | 66               | 46  | 4  | 90               | 299 | 7  | 113                    | 13   | 13  |
| 17                   | 2    | 1  | 43             | 7   | 3  | 67               | 654 | 41 | 91               | 284 | 10 | 114                    | 19   | 30  |
| 18                   | 0    | 1  | 44             | 0   | 1  | 68               | 380 | 23 | 92               | 395 | 24 | 115                    | 97   | 10  |
| 19                   | 1    | 1  | 45             | 3   | 1  | 69               | 272 | 14 | 93               | 24  | 30 | 116                    | 8    | 7   |
| 20                   | 2    | 0  | 46             | 4   | 1  | 70               | 6   | 1  | 94               | 7   | 2  | <b>Azides</b>          |      |     |
| 21                   | 2    | 1  |                |     |    | 71               | 3   | 1  |                  |     |    | Az10                   | 2135 | 134 |
| 22                   | 3    | 0  |                |     |    |                  |     |    |                  |     |    | Az50                   | 2038 | 227 |

**Table S1:** Fluorescence values for the acceptor substrates on the array. No. ; Number of the compound (see Figure S4). AV: Average fluorescence of the triplicates. SD: standard deviation