SUPPORTING INFORMATION

Sensing Ligand Binding to a Clinically Relevant Lectin by Tryptophan Fluorescence Anisotropy

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| Excitation/emission wavelengths | no lactose | + lactose |
|------------------------------------|---------------|---------------|
| 300/350 nm | 4.96 ns - 4% | 4.45 ns - 3% |
| | 1.46 ns - 78% | 1.05 ns - 77% |
| | 0.44 ns - 18% | 0.35 ns - 20% |
| 340/425 nm | 6.16 ns - 5% | 6.67 ns - 5% |
| | 1.62 ns - 19% | 1.76 ns - 19% |
| | 0.23 ns - 76% | 0.26 ns - 76% |
| | | |

Table S-1. Fit parameter for a tri-exponential fit of the TCSPC decay data for Trp fluorescence of hGal-1 shown in Fig. S-3

The picosecond decay component is a fitting artifact due to the temporal width of the LED excitation pulses.



Fig. S-1. Extent of fluorescence anisotropy of the two Trp residues in homodimeric hGal-1 measured over several days in aqueous solution at 20 °C. The line indicates a mean value of 0.1858 for all measurements. Error bars document size of the standard deviation for all measurements taken from a single sample on the same day.



Fig. S-2. Extent of anisotropy of Rayleigh-scattered light as a function of the wavelength. Measurements were performed with the experimental set-up using UV polarizers in the excitation and the emission pathways and identical monochromator settings. Absorption measurements revealed a residual transmission when using crossed polarizers (A). Extents of anisotropy (B) and applied correction G factor (C) are shown. The total incoming light (D) is estimated from the measured intensity for both polarizers in vertical position and reflects properties of the xenon lamp, the optical pathways and the detector. The data reveal that the measured anisotropy varies according to the polarizers' efficiency.



Fig. S-3. Extent of fluorescence anisotropy of Trp freely diffusing in aqueous solution at 20 °C. Anisotropy is shown as a function of the concentration of lactose added on a logarithmic (A) and a linear (B) scale up to a concentration of 200 mM. The data show that no significant variation of Trp anisotropy by viscosity changes due to lactose addition was detected up to a sugar concentration of 10 mM (A).



Fig. S-4. TCSPC measurements of hGal-1. Time-resolved fluorescence decays are presented for the excitation/emission wavelength combinations of 300/350 nm (A) or 340/425 nm (B). Each panel illustrates data for hGal-1 in PBS (black) and in PBS containing 5 mM lactose (red).



Fig. S-5. Extent of Trp fluorescence anisotropy for hGal-1 measured as a function of increasing viscosity by the addition of sucrose and plotted according to the Perrin equation (A). The lines are a guide to the eye indicating a transition between two baselines as evidence for protein-sucrose interaction. (B) Measurements carried out in the presence of 5 mM lactose, illustrating an effect at increasing sucrose content.