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Lactosylceramide (LacCer) has its specialized role in the immune system when it binds to β -glucan, mannan, and other glycans from pathogenic and fungi. We previously reported that potent LacCer-LacCer interaction stabilizes nano-scale LacCer domains in bilayer membranes, which may be involved in the glycan recognitions¹. However, the specific binding arrangement of LacCer with β -glucan is unknown. We aim to synthesize the CF₃-attached LacCer probe **1** for ¹⁹F solid state NMR measurements in the presence of β -glucan. ¹⁹F solid state NMR spectra will answer the specific binding of LacCer with β -glucan and its conformation change; e.g., ¹⁹F chemical shift anisotropy and CF₃ dipolar interactions will be diagnostic of glucan binding to the LacCer domains in the bilayer membranes. We currently develop the synthetic route for CF₃-galactose, a key intermediate to synthesize CF₃ attached lactosylceramide.

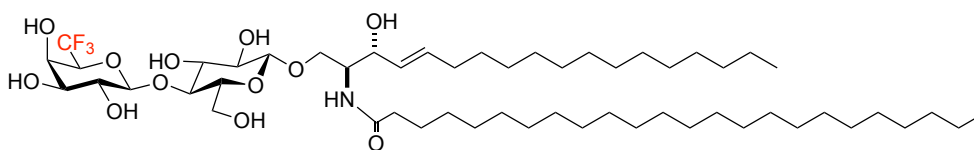


Fig. 1 Structure of CF₃-attached LacCer **1** (galactose residue)

1) S. Hanashima, R. Ikeda, Y. Matsubara, T. Yasuda, H. Tsuchikawa, P. J. Slotte, M. Murata, submitted.