

## **In vitro glycosyltransfer activity alteration by domain switching of GT-B fold enzyme**

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### **Abstract**

Aminoglycoside and glycopeptide antibiotics are clinically important materials and the sugar moieties are essential for their bioactivities. The protein structures of vancomycin glycosyltransferase, GtfE, and kanamycin glycosyltransferase were developed by homology modeling. Both of enzymes revealed as GT-B fold proteins that comprise two distinctive domains connected with interdomain loop region. The C-terminal domain of GtfE and N-terminal domain of kanamycin glycosyltransferase are sequently ligated by their loop linker region for changing sugar selectivity. This chimeric enzyme expressed in *Escherichia coli* was able to catalyze TDP-glucose transfer to 2-deoxystreptamine (DOS). Enzyme reaction detected by TLC and MALDI-MASS after derivatization. It appears that the domain switching of GT-B fold enzyme is useful strategy for making a hybrid antibiotics.