

**O-24: BIOPHYSICAL CHARACTERIZATION OF THE OLIGOSACCHARIDE BINDING ACTIVITIES OF TWO ANTIVIRAL LECTINS, GRIFFITHSIN AND SCYTOVIRIN**

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The potent antiviral activities of two lectins, griffithsin (GRFT) and scytovirin (SVN), are due in large part to their carbohydrate-dependent binding of glycoproteins on the target viruses. Using biophysical characterization techniques such as calorimetry (ITC, DSC), spectrometry (CD, fluorescence and NMR), and x-ray crystallography, the carbohydrate binding mechanism of the lectins has been achieved. Both proteins bind mannose containing oligosaccharide structures, GRFT capable of binding both the larger and smaller mannoside structures (Kd 37-75 mM) whereas SVN showing greater binding specificity, recognizing only the branched nonamannoside and a linear tetramannoside structure (Kd 18 mM). GRFT is capable of binding the monosaccharide mannose although with weaker affinity (Kd 102 mM). In crystal studies, GRFT is described by a domain-swapped dimer structure with six mannose binding sites. It is a highly stable protein (Tm 77.9 C) whereas SVN is less stable, melting at 59.1 C. In NMR studies, SVN exhibits a novel fold with no elements of regular secondary structure and has two oligosaccharide binding sites.