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Preparation of ^{13}C and ^{15}N Labelled 28-mer RNA in the Yeast Double-stranded RNA Virus for Heteronuclear Multi-dimensional NMR Studies

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X-ray crystallography and NMR spectroscopy are currently the only methods available for determining high resolution structures of biomacromolecules. However, crystallization of RNAs is still a significant challenge despite continuous improvement. Thus NMR spectroscopy presently represents the most promising approach for RNA structure determination. The advent of methods for preparation of ^{15}N and/or ^{13}C enriched RNAs has added wings to such prospects of NMR spectroscopy. To determine the three-dimensional structure of the VBS region which is responsible for viral protein binding and replication, we have prepared $^{13}\text{C}/^{15}\text{N}$ doubly-labelled RNA containing 28 nucleotides. Heteronuclear multi-dimensional experiments are being performed on this RNA molecule for the simplified assignment and structure determination.