

P004 NMR structural studies of mismatched DNA base pairs and their interaction with *E. coli* MutS protein

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The NMR structure determination of mismatched G-T, I-T, C-T and normal C-G duplex DNAs has been carried out in solution state. The identification of exchangeable imino proton resonances provide support for the overall stability of the DNAs in solution, with G-T and I-T DNA mismatches exhibiting greater stability in comparison to C-T DNA. Site-specific ^{15}N -isotopic labelling of the 4-amino nitrogen of the cytosine base of C-T DNA provided the first unambiguous NMR evidence for base pairing with the 4-carbonyl oxygen of the thymine base. The interaction of mismatched DNAs with the *Escherichia coli* MutS protein (97 kDa, monomer) was probed by monitoring changes in the imino proton resonances of the mismatched base pairs. The results show selective changes in chemical shifts and linewidths to the resonances of G-T, I-T and C-T DNAs after the addition of MutS signifying specific interaction of the protein with the mismatched bases (*F. Vendeix, R. J. Banks, T. Cheung, Y-Z. Zu and V. Ramesh (2007) Nucleic Acids Res. (under review)*). These NMR structural data usefully complement and add support to the previous biochemical studies which have shown affinity of MutS for various DNA mismatches.