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Letters to the Editor

NMR assignment of the backbone resonances of the firefly luciferase C-terminal 14.3 kDa domain

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Firefly luciferase (Luc) from *P. pyralis* is a 550 amino acid monomeric enzyme containing a large N-domain linked to a small C-terminal domain (residues 440–550) through a short hinge region. Mutagenesis evidence suggests that Luc function, like other enzymes of the acyl-adenylate-forming superfamily, requires conformational changes involving significant rotations of the C-domain (Branchini et al., 2005). We initiated a NMR structure determination of the Luc C-domain and hinge region (residues 420–550). We used 2D and 3D heteronuclear NMR experiments with uniformly ^{13}C, ^{15}N-labeled and five selectively ^{15}N-labeled proteins. Backbone assignments are essentially complete with the exceptions of L480, K510 and K511. CSI prediction of secondary structure (Wishart and Sykes, 1994) strongly agrees with that reported for the Luc crystal structure. Exceptions are that β-strands S420–Y435 and F432–I434 are predicted to be random coils in the truncated Luc probably because four strands of the full β-sheet region are absent. We believe this to be the first report of NMR assignments of a firefly luciferase or related superfamily enzyme. BMRB deposit with Accession No. 6646.

References: Branchini et al. (2005) *Biochemistry*, **44**, 1385–1393; Wishart and Sykes (1994) *J. Biomol. NMR*, **4**, 171–180.

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NMR assignment of protein Rv1980c from *Mycobacterium tuberculosis*

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Tuberculosis (TB) is the most widespread and deadly infectious disease in the world (Sacksteder and Nacy, 2002). A major obstacle to global TB control is that current diagnostic methods do not effectively differentiate between active disease and prior exposure or vaccination. Clinical studies suggest that hypersensitivity to the Rv1980c protein secreted by *M. tuberculosis* can distinguish active TB disease from these other states when administered through a transdermal patch. While Rv1980c homologs have been identified in other *Mycobacteria*, a precise biological role for these proteins remains unclear. To provide insights into the function of Rv1980c and its remarkable ability to transit skin layers, we have initiated solution NMR studies to determine a high-resolution 3D structure for this protein. 2D and 3D heteronuclear NMR experiments have been recorded using uniformly ^{15}N-, ^{13}C-labeled Rv1980c. Nearly complete backbone and side chain ^{1}H, ^{13}C, ^{15}N resonance assignments ($>90\%$) have been determined for Rv1980c and deposited in the BMRB under Accession No. 6688.

References: Sacksteder and Nacy (2002) *Expert. Opin. Biol. Ther.*, **2**, 741–749.

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