

ORAL PRESENTATION O3

Does FOG-1 recruit Sin3b to regulate gene expression?

M. Clifton and J.P. Mackay

School of Molecular and Microbial Biosciences, The University of Sydney, Bldg. G08, Sydney, NSW 2006

FOG-1, through its interaction with GATA-1, is required for the normal differentiation of platelets and erythrocytes. The essential nature of FOG-1 is illustrated by FOG-1 knockout mice, which die at embryonic day 11.5 due to severe anaemia (1). FOG-1 also has a GATA-1 independent role during blood cell development and is likely to have a range of protein binding partners (2). Despite all the evidence implicating FOG-1 as being essential during hematopoiesis, the mechanisms through which FOG-1 acts as a transcriptional regulator are not well understood.

Using a combination of pull-down experiments and peptide mass fingerprinting we have discovered that a particular domain of FOG-1 (residues 100–254) interacts with Sin3b, a global regulator of transcription and genomic stability (3). We have solved the structure of this domain by NMR and found it resembles a SET domain, a motif found in proteins associated with the regulation of gene expression.

We have shown the colocalisation of FOG-1 and Sin3b by confocal microscopy and investigated the effects of the interaction on transcriptional regulation. The recruitment of the co-repressor Sin3b via the SET domain of FOG-1 may explain the regulatory role FOG-1 plays during blood cell development.

1. Orkin, S.H. & Cantor A.B. (2002) *Oncogene* 21, 3368-3376.
2. Cantor, A.B. & Orkin, S.H. (2002) *Oncogene* 21, 3368-3376.
3. Silverstein, R.A. & Ekwall, K. (2005) *Curr.Genet.* 47(1), 1-17.