A Tri-nuclear Metal Cluster in Reduced Mouse Ribonucleotide Reductase R2 Subunit

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Ribonucleotide reductase (RNR) is the enzyme that converts ribonucleotides to their corresponding deoxyribonucleotides. The R2 protein reacts with ferrous iron and dioxygen to generate a tyrosyl radical that is essential for enzymatic activity.

Here we present a structure of mouse R2 soaked in ferrous iron, ascorbate, and methanol. In addition to the expected di-nuclear iron cluster, a tri-nuclear metal cluster is observed. The tri-nuclear cluster is located ~10 Å from the di-nuclear cluster and is attached to the protein by a two cysteines and the protein backbone. It is not yet clear whether the observed tri-nuclear cluster is an artefact from the soaking conditions or if it has some biological relevance.

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