

## **A Proposal to Engineer Protein Crystallization through Metal Ions**

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A topic of current interest is engineering surface mutations in order to improve the success rate of protein crystallization. This report explores the possibility of using metal-ion-mediated crystal-packing interactions to facilitate rational design. Escherichia coli apo acyl carrier protein was chosen as a test case because of its high content of negatively charged carboxylates suitable for metal binding with moderate affinity. The protein was successfully crystallized in the presence of zinc ions. The crystal structure was determined to 1.1 Å resolution with MAD phasing using anomalous signals from the co-crystallized Zn(2+) ions. The case study suggested an integrated strategy for crystallization and structure solution of proteins via engineering surface Asp and Glu mutants, crystallizing them in the presence of metal ions such as Zn(2+) and solving the structures using anomalous signals [1].

[1] Qiu X., Janson, C.A., *Acta Crystallogr D*, 2004, **60**, 1545.

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