

HaloCHIP™ System: Mapping Intracellular Protein:DNA Interactions using HaloTag® Technology

ABSTRACT

The HaloCHIP™ System is a novel method that covalently captures intracellular protein:DNA complexes without using antibodies. DNA binding proteins of interest are expressed in cells as HaloTag® fusion proteins, crosslinked to DNA, and then captured on HaloLink™ Resin, which forms a highly specific, covalent interaction with the HaloTag® moiety on the fusion protein. Due to the complete covalent linkage established between the HaloLink™ Resin and the crosslinked protein:DNA complexes, the resin can be stringently washed to remove nonspecific DNA and protein more effectively than is possible by coimmunoprecipitation. The crosslinks are reversed to release purified DNA fragments from the resin. By improving specificity and reducing background interference during the isolation of protein:DNA complexes, this new method effectively increases the signal-to-noise ratio to permit detection of small changes in protein binding within a genome.

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