DNA binding proteins play critical roles in all living organisms, notably in pathways known to be affected in certain diseases, such as cancer. An initial step in the characterization of these proteins is purification by affinity chromatography. This typically involves over-expression of the protein and often leads to a fraction of molecules being in a mis-folded (non-active) state. Considering that many studies require an exact quantification of “active” protein molecules, some measurement of activity is needed.

This technology provides a novel assay for rapidly determining the binding state of stable protein-DNA interactions based on the molecular accessibility of a fluorescent reporter molecule. Using this assay, the fraction of active protein molecules can be determined rapidly, accurately, and utilizing a high-throughput microplate-based system.

Though the assay described focuses on determining the fraction of active molecules in enzyme preparations, the technique itself should be applicable to any study that necessitates quantifying the total number of trapped enzyme-DNA moieties.

Advantages

• Faster results (under 1 hour)
• Neither radioactive nor fluorescent labels required
• Can be generalized for use with a variety of DNA binding proteins and protein/DNA complex experiments

Applications

• Hospitals and clinics
• Research institutions
• Life science companies

I.P. Status

US Patent # 8,546,083

Molecular Accessibility Assay
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Learn more about Dr. Wallace’s research at: http://bit.ly/18jtnoD

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