Molecular basis of the interaction of the human Apoptosis Inducing Factor with its nuclear partners

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The Apoptosis Inducing Factor (AIF) was first discovered as a caspase-independent cell death promoter that also plays a vital role in mitochondria, where it is normally confined. In healthy mitochondria, AIF contributes to the maintenance and stability of several respiratory chain complexes and is present in a monomer-dimer equilibrium regulated by NADH/NAD^+ levels. AIF dimerization is undergoing upon NADH oxidation, which is accompanied by conformational rearrangements of the reductase and apoptotic domains. These observations suggest an interconnection between the mitochondrial and apoptotic activities of AIF which increases the interest of the intriguing relation between redox states and cellular activities. After cell death induction, AIF is liberated into cytosol, and then translocated to the nucleus where induces DNA degradation. The interaction between human AIF and the DNA occurs in an independent manner based on electrostatic interactions. The lethal activity of AIF requires its interaction with nuclease proteins as cyclophilin A.
Here, we use different biophysical techniques to *in vitro* characterize the hAIF interaction with its nuclear partners. In addition, we also analyze the influence of the hAIF redox state in the modulation of such interactions.