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Photoinduced conformational changes to porphyrin-bound albumin reduces albumin binding to Osteonectin SARAH ROZINEK, UTSA and Air Force Research Lab., ROBERT THOMAS, Air Force Research Lab., LORENZO BRANCALEON, UTSA — Much work has shown light-induced structural changes to proteins are possible. For instance, we have previously shown that, small secondary and tertiary structural changes occur to albumin when it is bound (non-covalently) to meso-tetrakis(4-sulfonatophenyl)porphyrin (TSPP) and irradiated with a low intensity laser. Further study of this light-induced protein modification could advance the understanding of albumin's structure/function relationship. Then, this structural modification technique might be implemented to deactivate unwanted protein functions or even to bestow non-native protein properties. A necessary step toward this goal is to determine if and how protein function is affected once its structure is modified. The current study aims to explore the light-induced conformational change to TSPP-bound albumin by testing its ability to bind the biologically relevant albumin receptor, Osteonectin. In this Affinity-Depletion experiment, Osteonectin has been covalently attached to magnetic beads, forming an affinity column. TSPP-albumin will non-covalently bind the column, and we predict that the light-induced change to albumin will cause a reduction in binding to Osteonectin. This loss of binding ability would mean a deactivation of albumin's natural cellular functions.

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