

2007 Ohio Student Research Forum

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RESEARCH ABSTRACT FORM

TITLE: Using Synthetic Peptides to Study the Binding Properties of Nucleoporins**AUTHOR:** Jaime Castillo**MENTOR(S):** Dr. Jennifer J. Ottesen**DEPARTMENT(s):** Department of Biochemistry at OSU, Enrolled in Department of Chemical and Biomolecular Engineering at Tulane**INSTITUTION:** Ohio State University

The nuclear pore complex (NPC) is the gate through which proteins 40 kDa in size or greater must pass in order to enter or exit the nucleus. Many proteins are carried across the nucleus by carrier molecules called karyopherins (Kaps), which interact with proteins in the NPC called nucleoporins (Nups). Kaps interact with a class of Nups that contain long, unstructured regions rich in Phe and Gly repeat regions (FG-Nups), though the details of this interaction are not well understood.

In order to perform biophysical and functional assays with FG-Nups, access to significant amounts of pure FG-Nups is necessary. We have employed native chemical ligation on the solid phase to join short peptide sequences containing FG-repeat patterns in order to create synthetic FG-Nup constructs. The short peptides themselves were created using standard Boc solid-phase peptide synthesis protocol and later purified using RP-HPLC and confirmed as correct by MALDI-TOF MS. Here, we present that we are able to obtain the FG-repeat peptides. We also show that SDS-PAGE analysis of pulldown assays reveals binding to and preference for certain Kaps.