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**P029: Yeast Ortholog of Human La Antigen**

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ABSTRACT: "P029" is an acronym given by the New York Structural Genomics Research Consortium (nysgrc.org). P029 is "YDL051w", a 275 amino acid *Saccharomyces cerevisiae* protein. Within a 171 residue stretch, this yeast protein has 25% identity and 53% similarity to the human autoantigen La. La is an ubiquitous phosphoprotein found associated with a large variety of RNA ligands with a specificity for UUU-OH-3'. Disease states such as systemic lupus erythematosus, Sjogren's syndrome, autoimmune hepatitis and thrombophilia have been correlated with autoantibodies to La epitopes. Of additional interest are tRNA maturation events as well as RNA protection and chaperoning activities associated with La. P029 was successfully expressed, purified and concentrated to 10 mg/ml. Numerous Hampton Research Crystal Screens plated out at 4° and RT° failed to result in good crystals. Hence, limited proteolysis by a panel of proteases (ArgC, AspN, LysC, Trypsin and V8) followed by LC-MS was conducted to rationally design a truncation more amenable to crystallization and subsequently crystallographic resolution of the 3-dimensional structure and its atomic coordinates. These studies demonstrated a more stable truncation of K12 – 222E. Subcloning has been done and expression/purification is in progress of this rationally designed truncation sans the first (N-terminal) 11 and last (C-terminal) 57 residues of the native full-length protein. These sub-domains have produced needle-like crystals that are being optimized.