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Exploring the functional decapping ability of the dogfish shark Nudt16 homolog

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A nuclear decapping and binding protein, X29/Nudt16, was originally characterized in Xenopus, and has also been characterized in humans. It is suggested that not only the protein's sequence, but also its functions has been preserved through evolution. The purpose of this study is to characterize a homologue of Nudt16 in the dogfish shark, which on an evolutionary scale is quite diverged from frogs and mammals. Here the open reading frame encoding the dogfish shark protein was amplified via PCR and cloned into an expression vector. When placed into bacteria under the proper growth conditions, a Histidine-tagged dogfish shark protein is synthesized. The protein can be purified from bacteria. The purified dogfish shark protein will be tested to determine if it has the same biochemical properties as the mammalian and frog proteins: can the protein decap RNA in vitro and can it bind RNA directly. Does this protein have catalytic activity that is essential for a healthy life?