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Crystal Structure of a Novel Signalling Protein from Porcine at 2.1 Å Resolution. Asha Bhushan, D.B. Srivastava, A.S. Ethayathulla, N. Singh, S. Sharma, T.P. Singh, Dept. of Biophysics, AIIMS, New Delhi, INDIA.

This protein is expressed in mammary gland during the initial period of involution. It is a 40-kDa protein and overall pI is 8.0. It glycosylated and its precise function is not yet known. During this period of involution, the structure and function of the gland must revert back to the non-pregnant state. It is speculated that this protein SPP-40 acts as a protective signaling factor that determines which cells are to survive the drastic tissue remodeling that must occur during involution. Thus, many breast epithelial cells increased during pregnancy must now be destroyed. These cells die by a precise programmed cell death pathway called apoptosis and SPP-40 regulates which cells to survive in mammary gland. The samples from dry secretions were collected after a week of termination of lactation. The protein was purified and crystallized. The data were collected to 2.1 Å resolution and it belong to orthorhombic system. The structure was solved and refined to an R-factor of 18.5 %. The protein adopts a β/α domain structure with a TIM barrel conformation in the core and a small $\alpha+\beta$ folding domain. A single glycosylation site containing two NAG residues has been observed. TIM barrel is tightly packed with protein residues thus restricting the binding of sugar molecules.