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Bombyx mori ATFC for regulating activity of a transcription factor that controls the unfolded protein response

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Cells respond to an accumulation of unfolded proteins in the endoplasmic reticulum (ER) by increasing transcription of genes encoding ER resident proteins. The information is transmitted from the ER lumen to the nucleus by intracellular signaling pathway called the unfolded protein response (UPR). To obtain genes related to UPR from *Bombyx mori* Bm5 cell lines, the cDNA library was constructed with mRNA isolated from Bm5 cell lines in which N-glycosylation was inhibited by tunicamycin treatment. From the cDNA library, we selected 40 clones that differentially expressed sequence tags (ESTs). Among these clones, we isolated ATFC gene (GenBank Acc. No. AF325210) which we call ATFC, an acronym of activating transcription factor of chaperone. It encodes a bZIP (basic-leucine zipper) protein of 238 amino acids with close homology to the mammalian ATF/ CREB and yeast Haclp transcription factor. Also, ATFC is up-regulated when newly synthesized proteins in the ER is inhibited by tuncimycin, DTT, calcium inophore A23187, antimycine A, monensin and H2O2. Therefore we suggest that ATFC is a gene responding to accumulation of unfolded proteins in the ER.