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A Protein Disulfide Isomerase Gene Fusion Expression System That Increases the Extracellular Productivity of *Bombyx mori* Bm5 Cells

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In eukaryotic cells, protein disulfide isomerase (PDI) found in the endoplasmic reticulum (ER) catalyzes disulfide bond exchange and assist in protein folding of newly synthesised proteins. PDI also functions as amolecular chaperone and has been associated with proteins in the ER.

We have developed a versatile insect cell expression and secretion system based on the use of *Bomyx mori* protein disulfide isomerase (bPDI) as a gene fusion partner. Fusion with PDI increased the extracellular production of heterologous proteins (antibacterial peptide "nuecin" and "enbocin", about 20-fold). Linkage to PDI prevented the aggregation of the secreted proteins, 'nuecin" or "enbocin", resulting in high-level accumulation of fusion proteins in soluble and biologically active forms. We suggest that PDI function, such as chaperone-like activity, synergistically prevented the aggregation of heterologous proteins in the PDI fusion expression system.