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Secreted Production of Human Interleukin-2 Fused with Green Fluorescent Protein in Stable Insect *Drosophila* S2 Cells

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Human interleukin-2 (hIL-2) production in *Escherichia coli* and insect cell/baculovirus expression systems can be inefficient. Here we investigated secreted production of hIL-2 fused with green fluorescent protein (GFP) as a versatile fusion partner in optimized stably transfected insect *Drosophila melanogaster* S2 cells. This non-lytic S2 insect cell expression system employs a plasmid vector and allows for secretion of functional human proteins. We report that following stable transfection and induction, S2 cells secreted hIL-2 as a fusion protein (~ 2.3 μg/mL yield), with a secretion efficiency of approximately 90%. Regression analysis indicated a single linear relationship existed between GFP fluorescence and hIL-2 mass in both whole cell and secreted medium samples, indicating that in vivo monitoring and quantification of target foreign protein expression and even secretion is possible using this system. The simple comparative measurement of GFP fluorescence also allowed monitoring of secretion efficiency during periods of high GFP/hIL-2 expression.