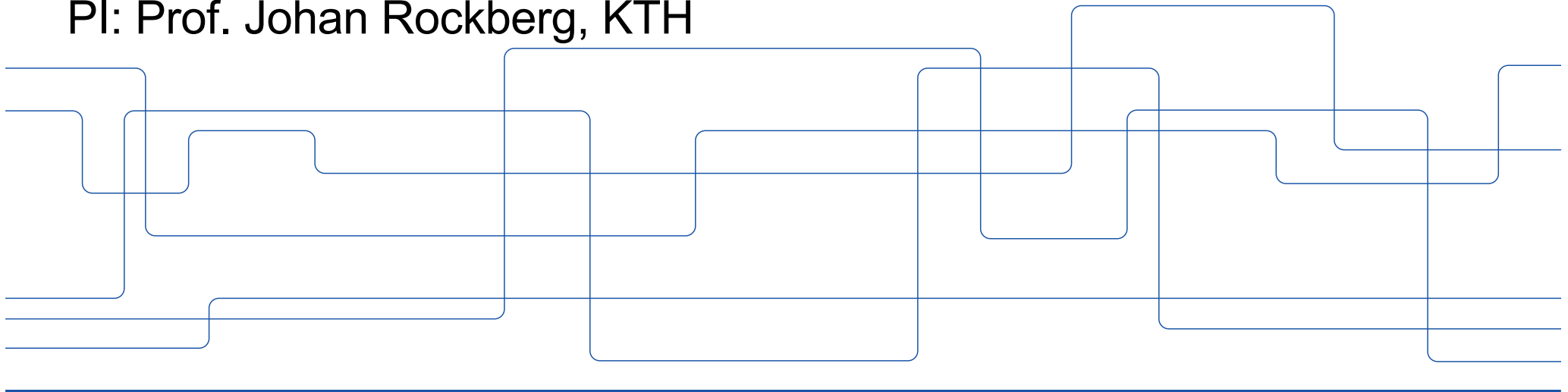




# Reducing product aggregation with helper genes

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PI: Prof. Johan Rockberg, KTH





Aggregation is one of the major bottlenecks of recombinant protein production in mammalian cells. Aggregated proteins are nonfunctional which in turn affects the end product's quality, safety and efficacy.

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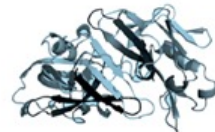
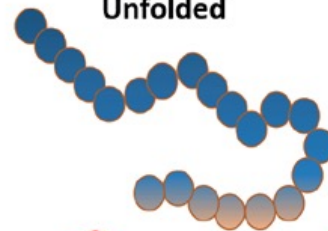
# Protein aggregation in mammalian cells



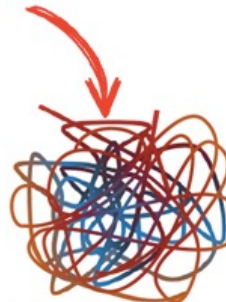
What is protein aggregation?



Unfolded



Properly folded protein



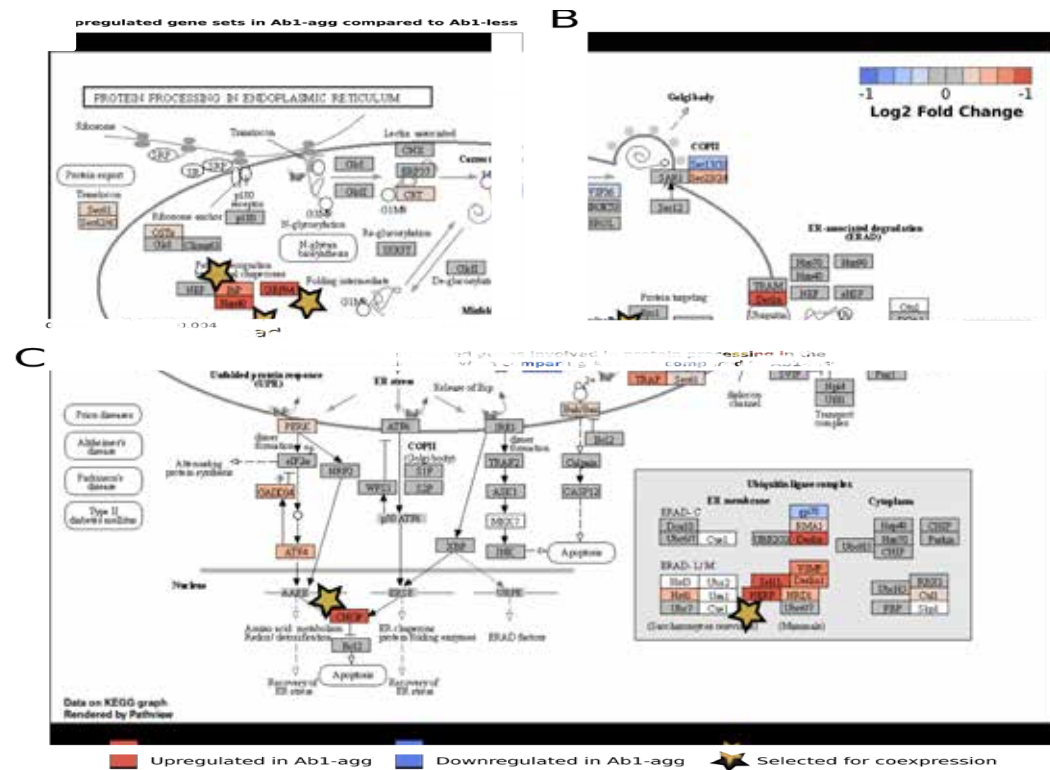
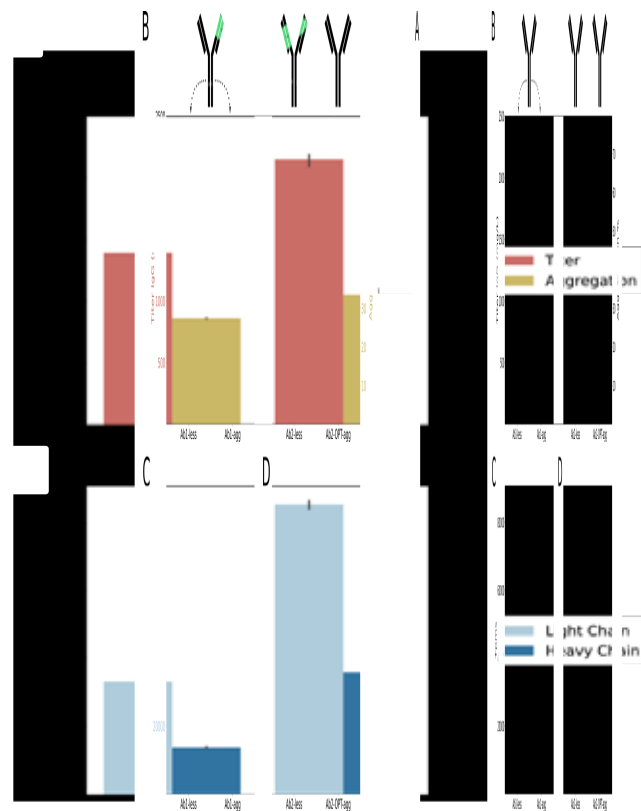
Toxic protein clump

Reasons for aggregate formation?

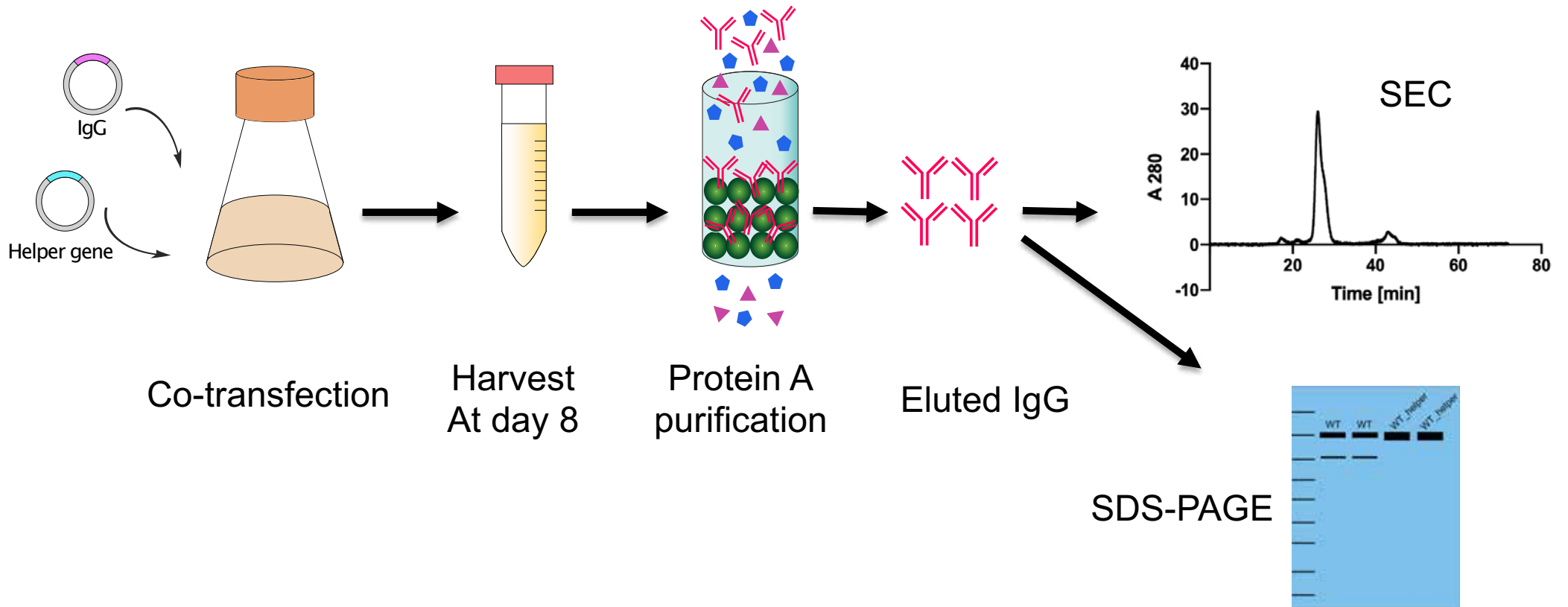
Consequences for drug development?

- Quality
- Safety
- Efficacy

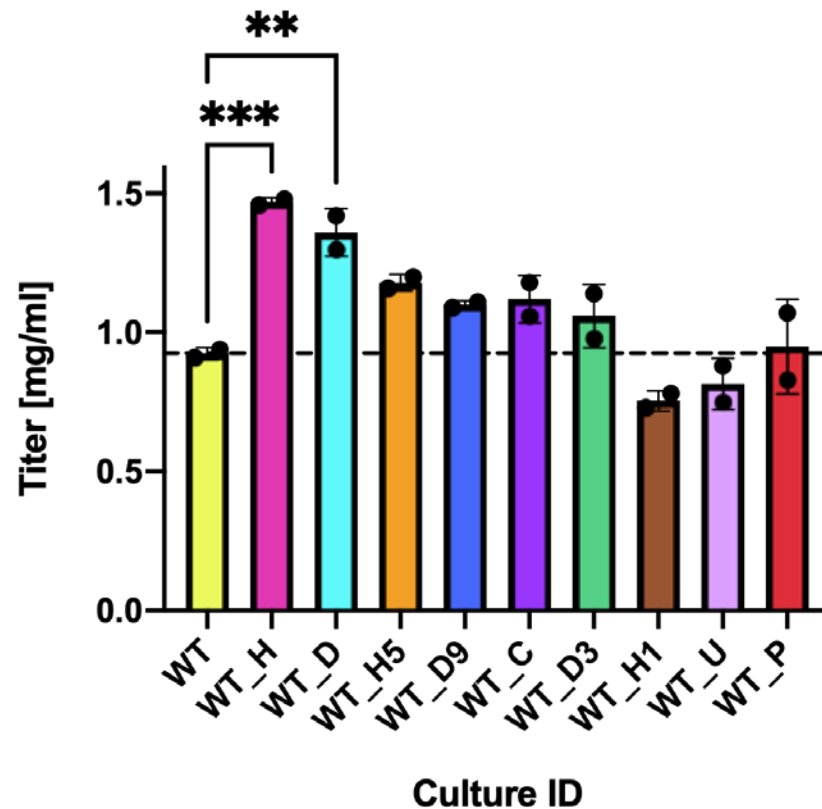
# Side by side comparison of clones cultivated in Ambr microreactors revealed differentially expressed genes involved in ER stress and protein folding



# Experimental workflow



# Co-expression (1:10) with H and D gave significantly higher titer



H= Chaperon1  
 D=TranslationReduser1  
 H5=Chaperon2  
 D9=Chaperonactivator  
 C=Membranereceptor1  
 D3=transcriptionfactor1,  
 H1= ER-qualitycontrol1,  
 U= ERAD-protein1  
 P= disulfide-isomerase