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Construction of genetic circuits that promote controlled flocculation and cell lysis of *P. pastoris*

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In processes to obtain heterologous proteins, either extracellular or intracellular, it is necessary to separate the cells from the culture medium by centrifugation or by filtration. Furthermore, in the case of intracellular proteins is indispensable the breaking of the cells. This purification steps contribute rising the production costs of heterologous proteins. *Pichia pastoris* is widely used for protein expression. Despite its biotechnological importance, few strains have been generated by genetic engineering to facilitate its industrial application.

This work pretends to perform the necessary genetic changes in *P. pastoris* strain GS115 to induce flocculation and cell lysis under regulation by temperature-sensitive repressors. First to overexpress FLO1 putative gene (a putative flocculin) from *P. pastoris*, and then, to overexpress the *P. pastoris* putative genes encoding β-1,3-glucanase and α-1,6-mannosidase. These genes will be regulated by a temperature-sensitive repressor from a phage and a cold-sensitive promoter from *S. cerevisiae*. The construction of flocculation and cell lysis modules were fulfilled by a variety of recombinant PCR and traditional genetic engineering procedures. Each module will be inserted in the *P. pastoris* genome by homologous recombination. The resulting strain will facilitate the processes to obtain heterologous proteins inducing flocculation to separate these cells and autolysis to break them.

Biography

Yaneth Bartolo Aguilar is a 40 years old Ph.D. student at Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional (CINVESTAV-IPN), México city. She worked in the food industry and educational sector.

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