Supporting Information

Nanoscale Advances

Magnetic Nanoparticles Mediated-Gene Delivery for Simpler and More Effective Transformation of *Pichia pastoris*

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Table S 1. Primer sequences used in this study

Specific Primers	Name	Sequencing
Gene	GFP Forward	5′-CGCGAATTCATGTCTAAAGGTGAAGA-3′
	GFP Reverse	5′-GGGGTACCTTTGTACAATTCATCCAT-3′
Vector	pGAP Forward	5′-GTCCCTATTTCAATCAATTGAA-3′
	3′AOX1	5′-GCAAATGGCATTCTGACATCC-3′

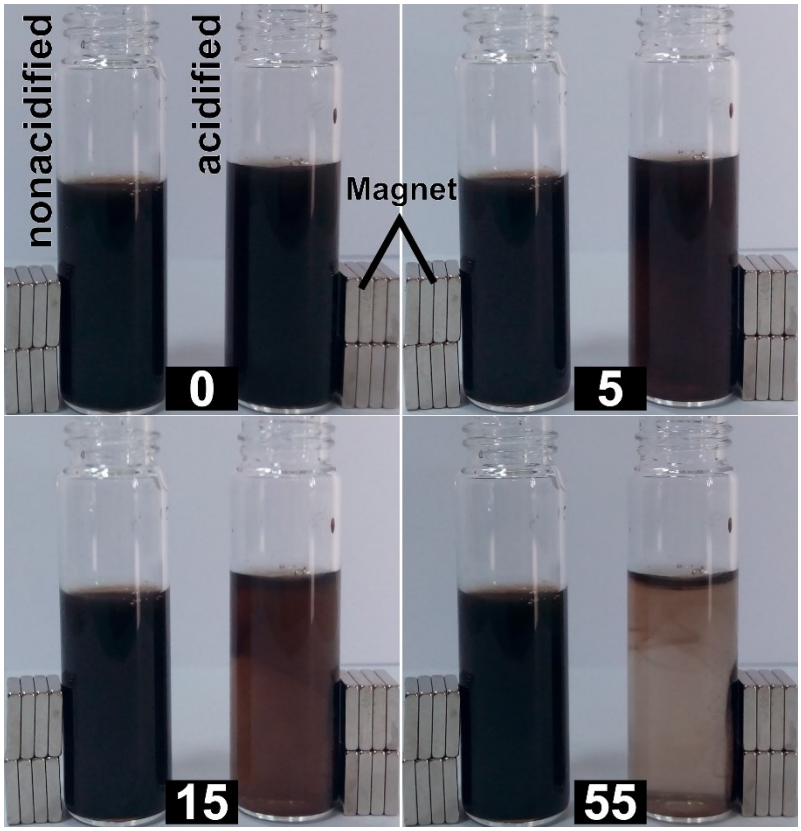

Fig S 1. The photos of the time-dependent magnetic accumulation of non-acidified and acidified Fe_3O_4@PEI MNPs after 0, 5, 15 and 55 seconds.

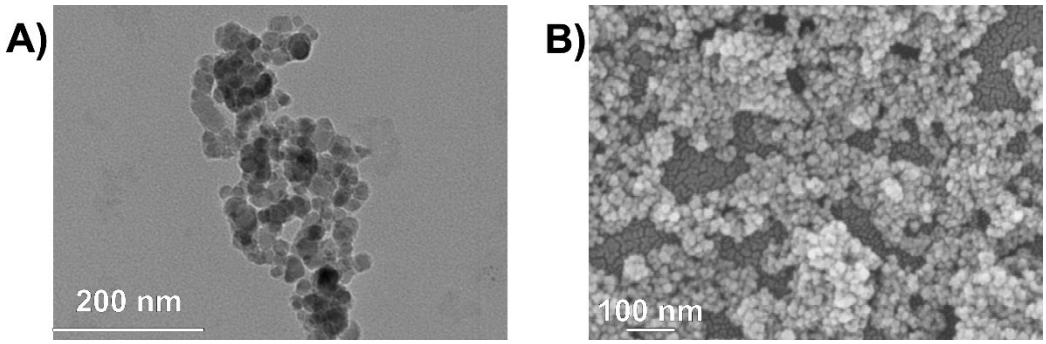

Fig S 2. A. TEM image of non-acidified Fe_3O_4@PEI MNPs and **B.** SEM image of Fe_3O_4@PEI MNPs.

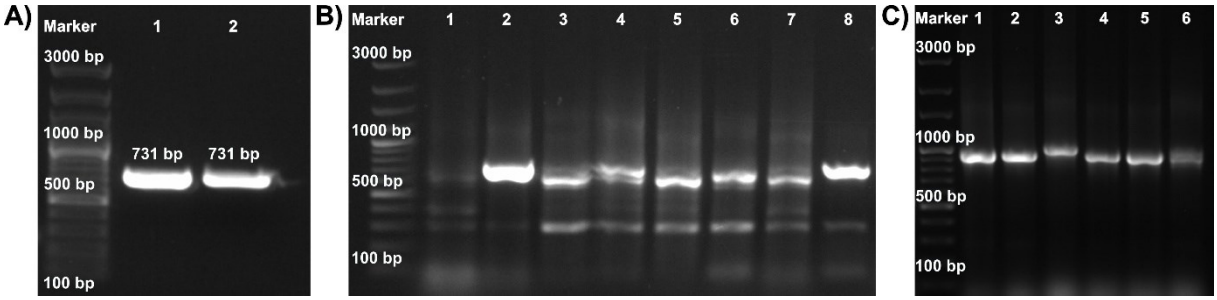

Fig S 3. Agarose gel electrophoresis results belong to **A)** the GFP amplification by PCR (1: reaction with 50 mM $MgCl_2$ 2: reaction without $MgCl_2$), the colony PCR from selected *E. coli* colonies with **B)** gene-specific primers (1-8: numbers of colonies) and **C)** vector-specific primers (1-6: numbers of colonies).

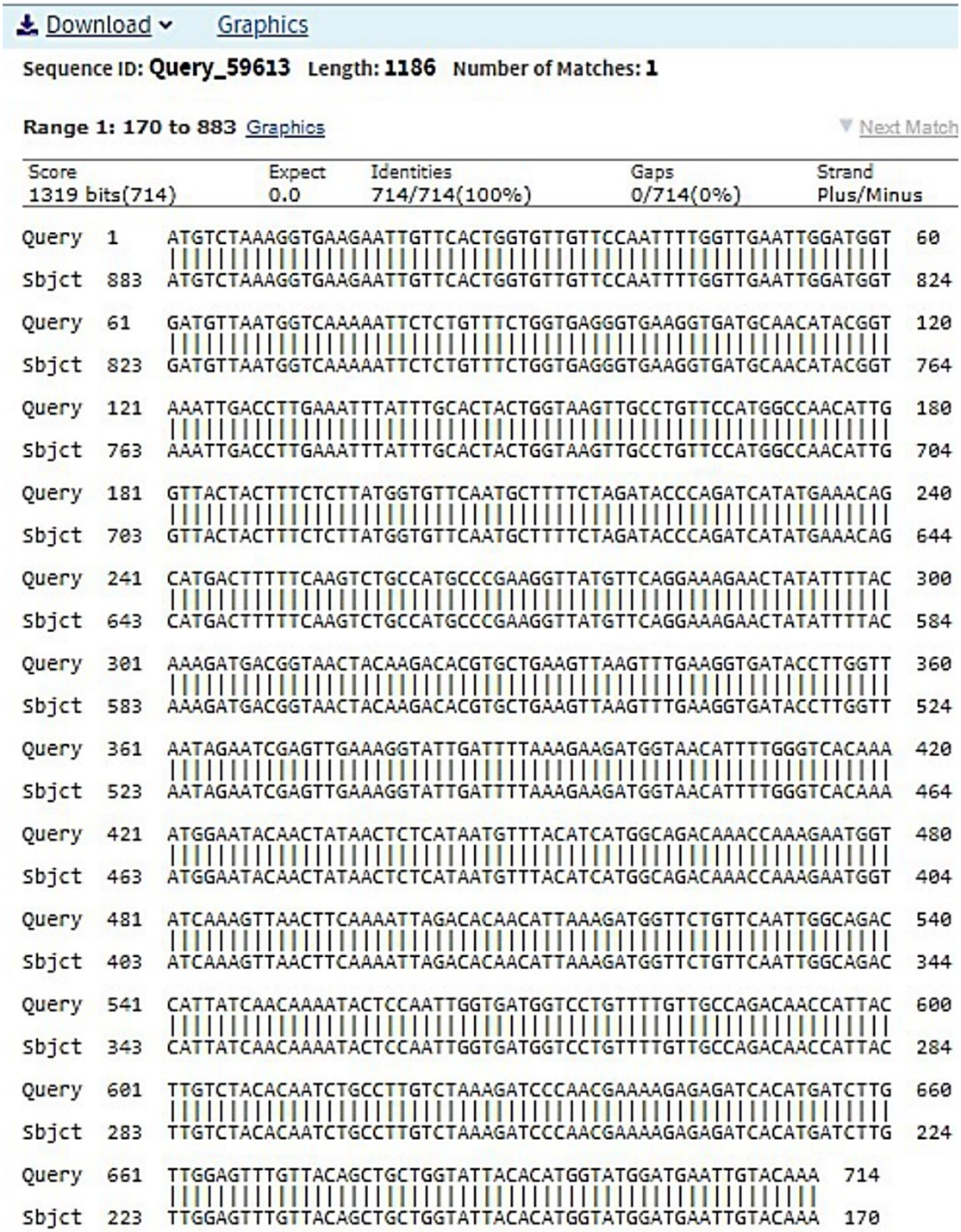

Fig S 4. Nucleotide BLAST analysis result of pGKB-GFP expression cassette (sequencing with pGAP forward and 3'AOX1 primer)

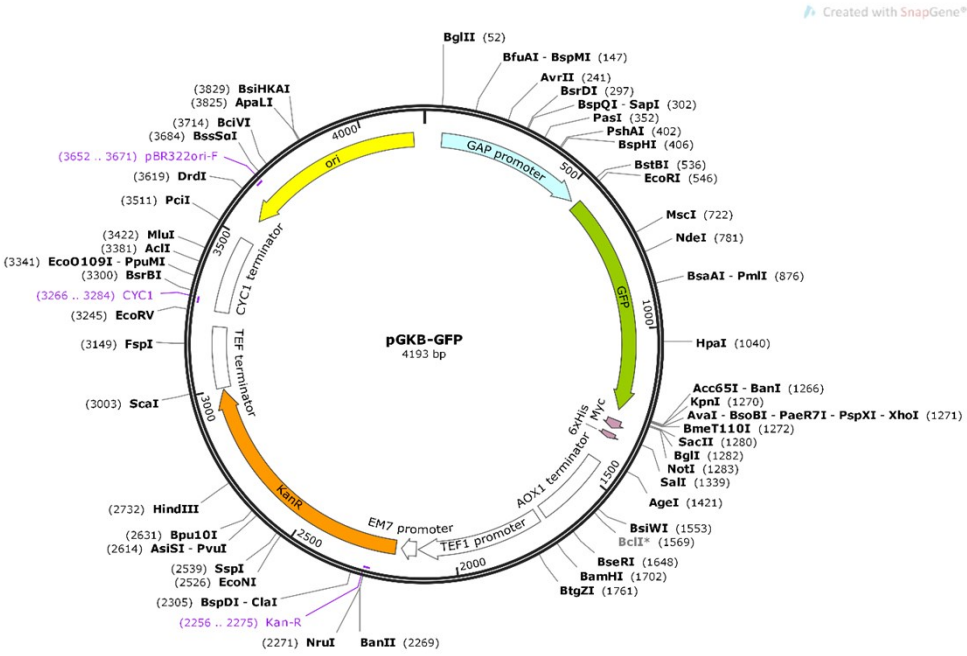

Fig S 5. Construction map of pGKB-GFP which is used in this study (vector map was visualized by SnapGene (SnapGene® software, www.snapgene.com).

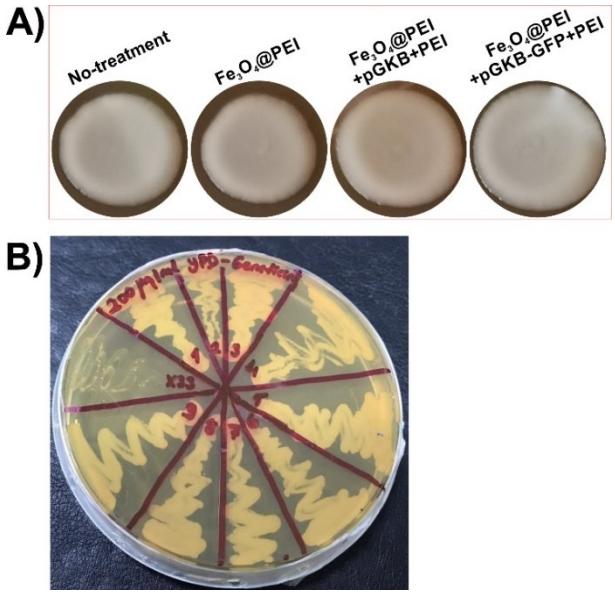

Fig S 6. A) Growing of the cells exposed to Fe_3O_4@PEI MNPs and magnetofectins prepared with both pGKB and pGKB-GFP (Fe_3O_4@PEI+pGKB+PEI and Fe_3O_4@PEI+pGKB-GFP+PEI) in YPD agar and, **B)** Second selection of the transformed cells in YPD plates containing geneticin (G418, 200 µg/mL).

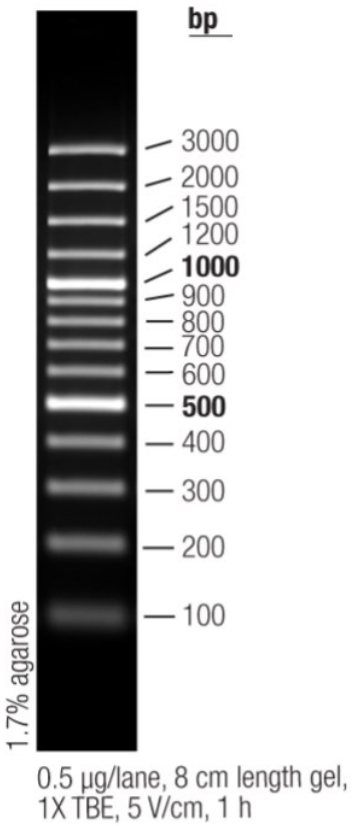

Fig S 7. DNA ladder used in the study (GeneRuler 100 bp Plus DNA Ladder, Thermo Scientific™).