

## Metabolically new approach as the strategy in enhanced metabolite production

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Systematic analysis on genome-scale metabolic model has being developed to improve valuable product yields and combine various high-throughput experiment data. Strategies for identifying gene deletions on genome-scale model were applied and predict the target genes to achieve high amount of production. The systematic strategy for the amplification of genes responsible to the increasing flux was not developed yet. Thus, using flux scanning with enforced objective flux (FSEOF) the genome scale model for valuable metabolite production was investigated for systematic amplification of genes in the metabolic network. For validating the effectiveness of this approach, we carried out this approach was successfully employed to improve the yield of the production of shikimic acid, indigo, and lycopene. We anticipate that FSEOF plays an important role in the systematic strain improvement. This work was supported by the Korean Systems Biology Research Program (M10309020000-03B5002-00000) of the Ministry of Science and Technology through the Korea Science and Engineering Foundation. Further supports by the BK21 program, LG Chem Chair Professorship, and IBM SUR program are appreciated.