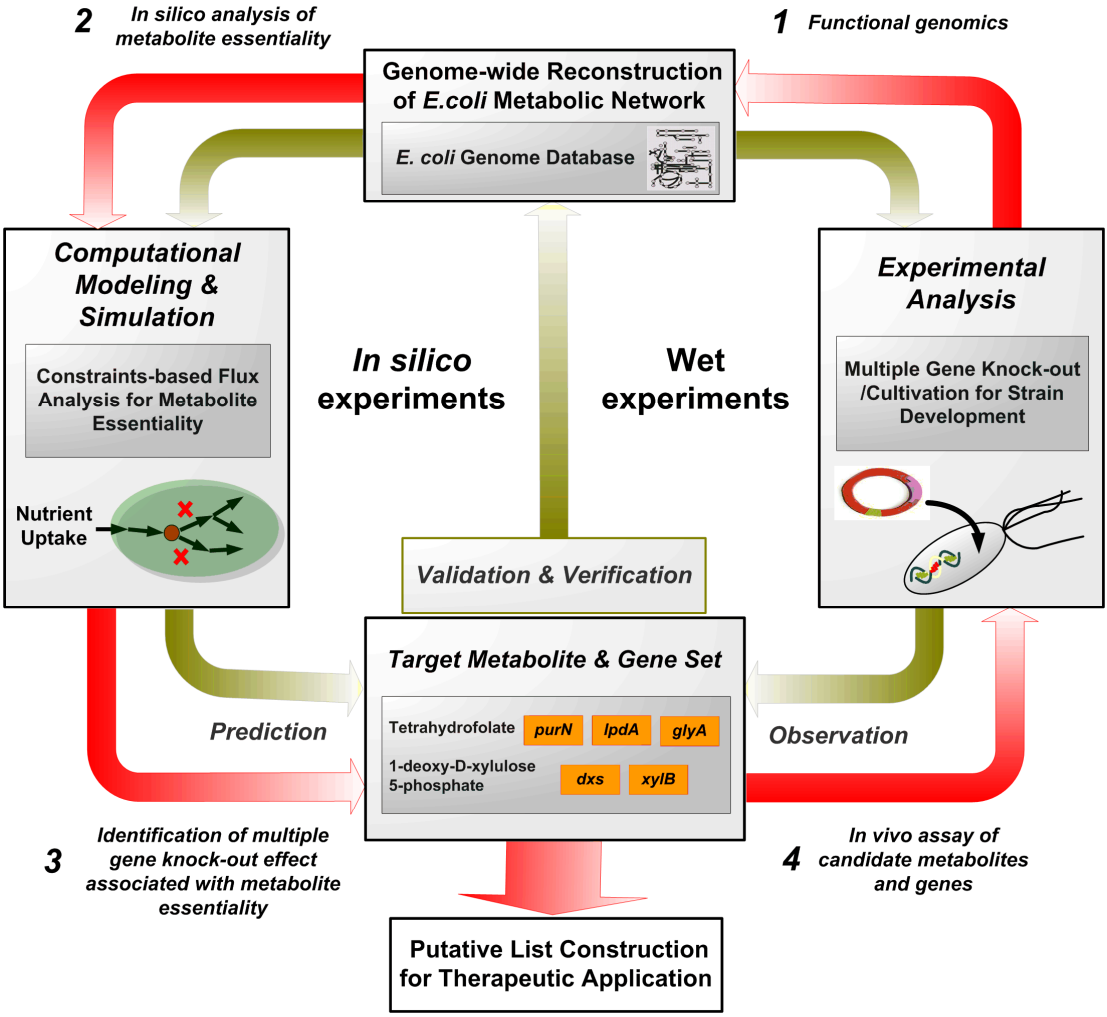
2 In silico analysis of metabolite essentiality
1 Functional genomics
Genome-wide Reconstruction of E.coli Metabolic Network
E. coli Genome Database
Computational Modeling & Simulation
Constraints-based Flux Analysis for Metabolite Essentiality
Nutrient Uptake
In silico experiments
Wet experiments
Experimental Analysis
Multiple Gene Knock-out /Cultivation for Strain Development
Validation & Verification
Target Metabolite & Gene Set
Tetrahydrofolate
purN
lpdA
glyA
1-deoxy-D-xylulose 5-phosphate
dxs
xylB
Prediction
Observation
3 Identification of multiple gene knock-out effect associated with metabolite essentiality
4 In vivo assay of candidate metabolites and genes
Putative List Construction for Therapeutic Application