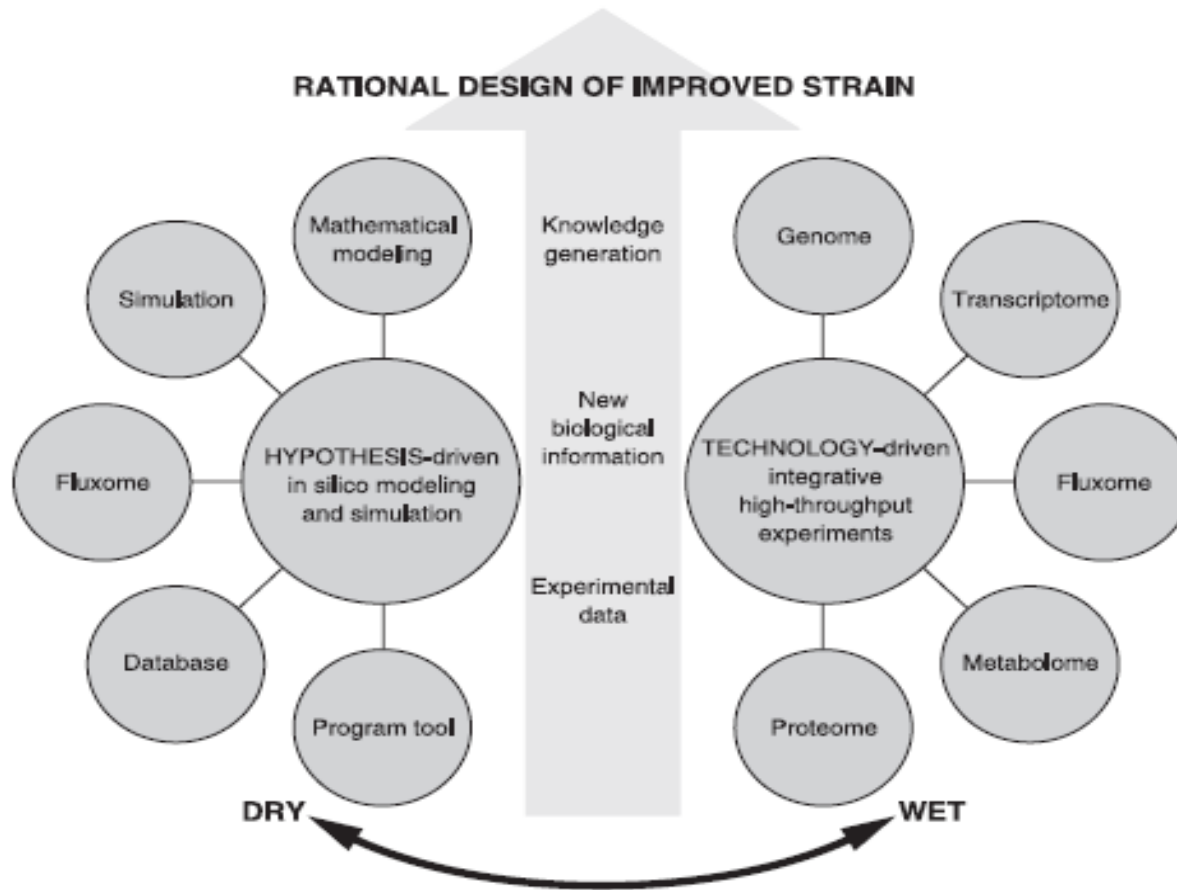


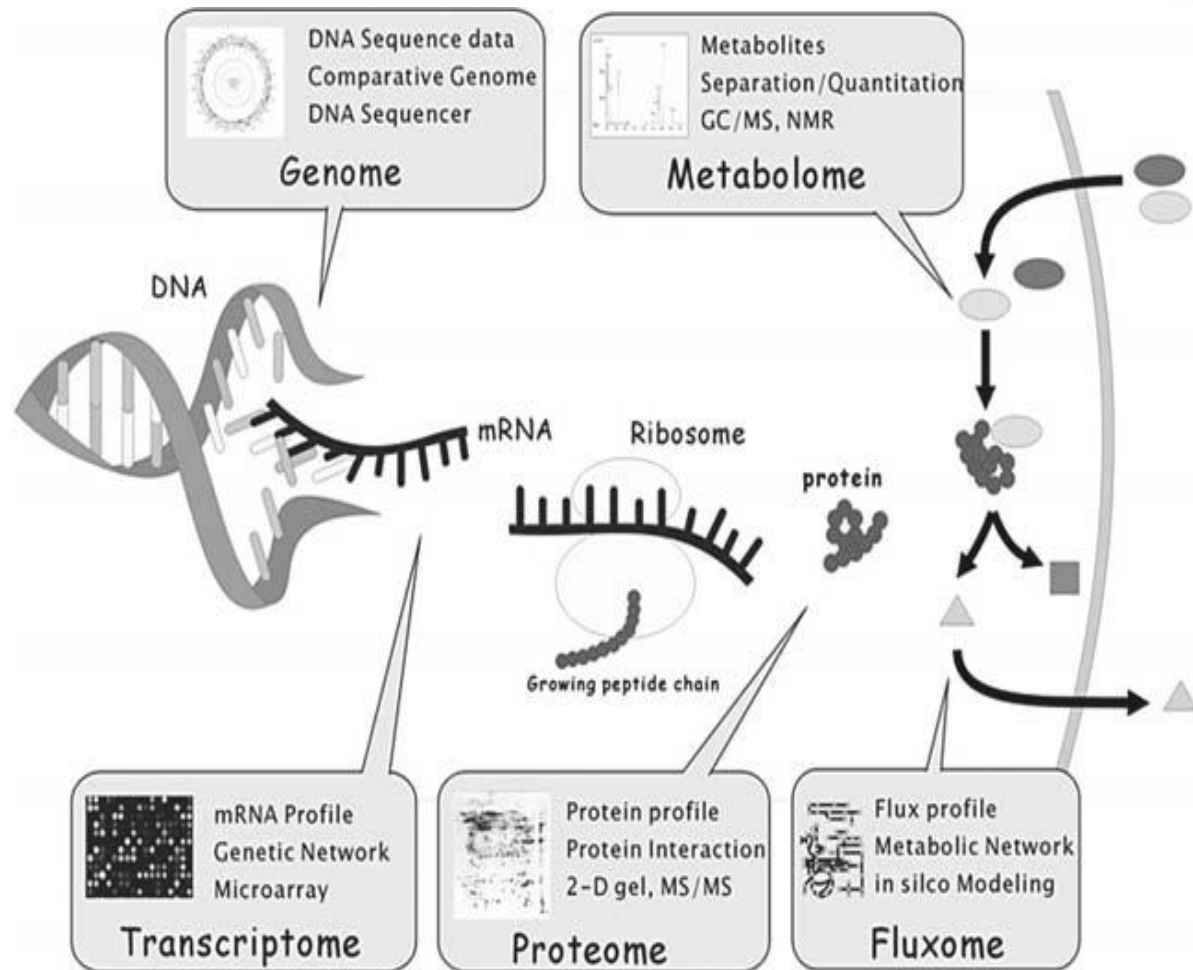
# System biotechnology

- General overview of the system biotechnology and its components



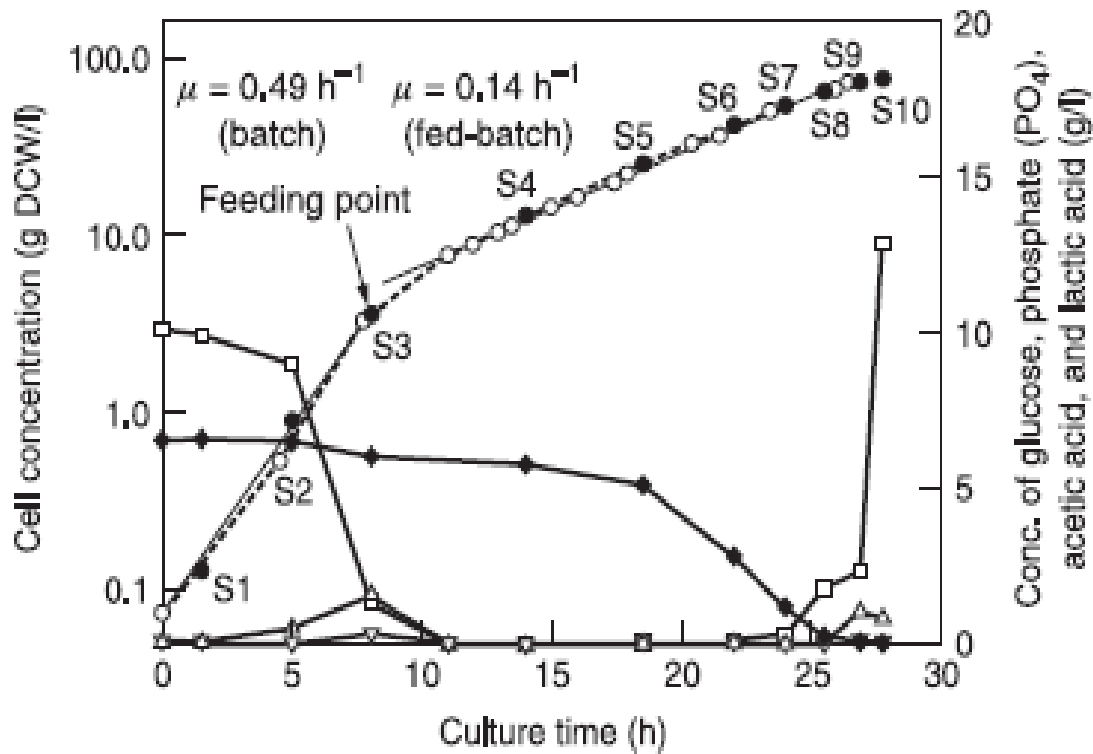
# Characteristics

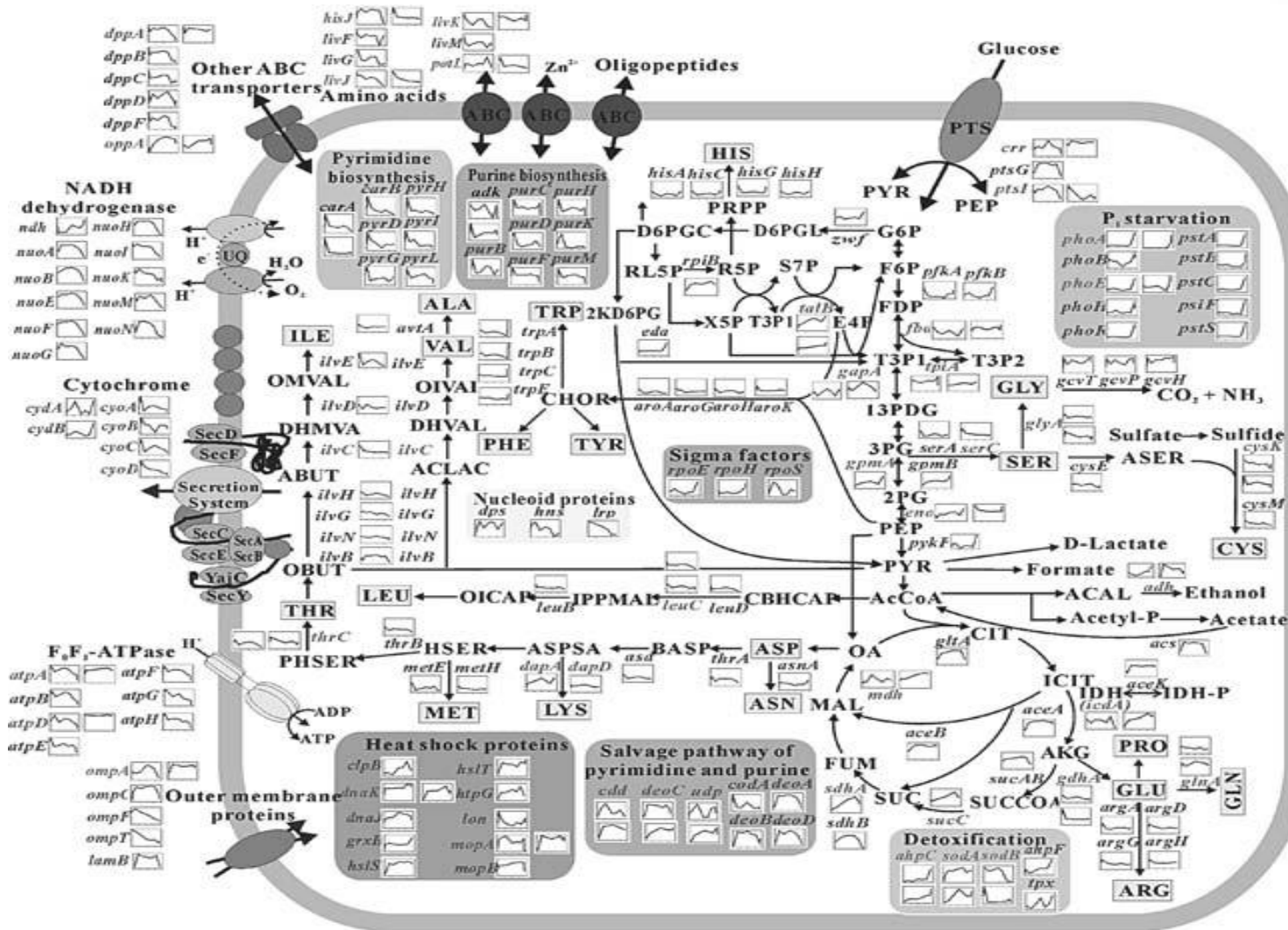
- Objectives
- Differences
- Information



# Example 1

- Combining proteomics and transcriptomics for determining the reasons for the decreased productivity in HCDC (high cell density culture)
- Suppression the expression of the genes coding for enzymes of Crebs Cycle for biosynthesis of dehydrogenases has been detected



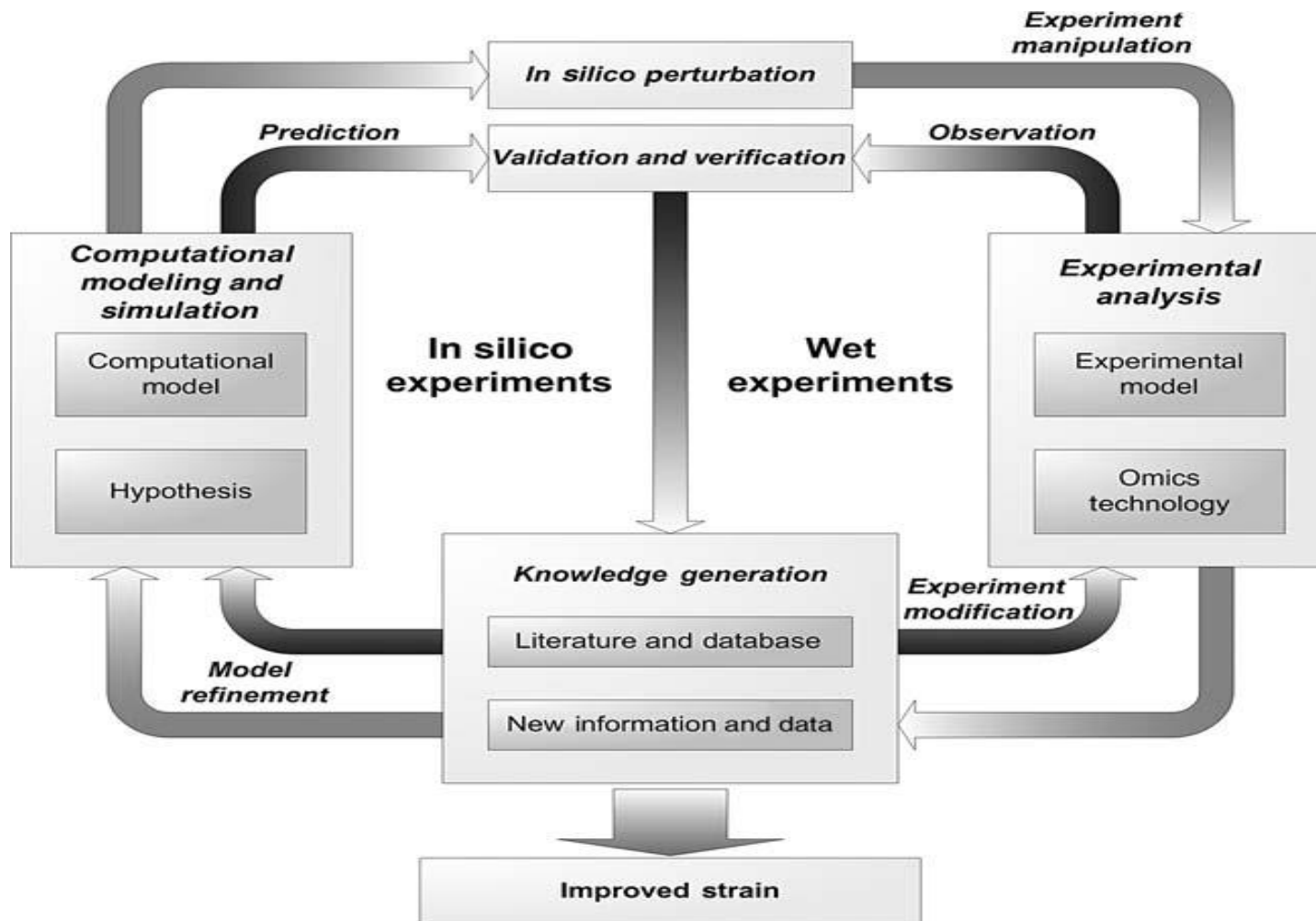


# Example 2

## *In silico* modeling

- Kinetic model:  $Sv - b = \frac{dc}{dt}$
- Static model  $Sv = b$

# Strategies in system biotechnology



# Data bases

- Specific
- Integrated

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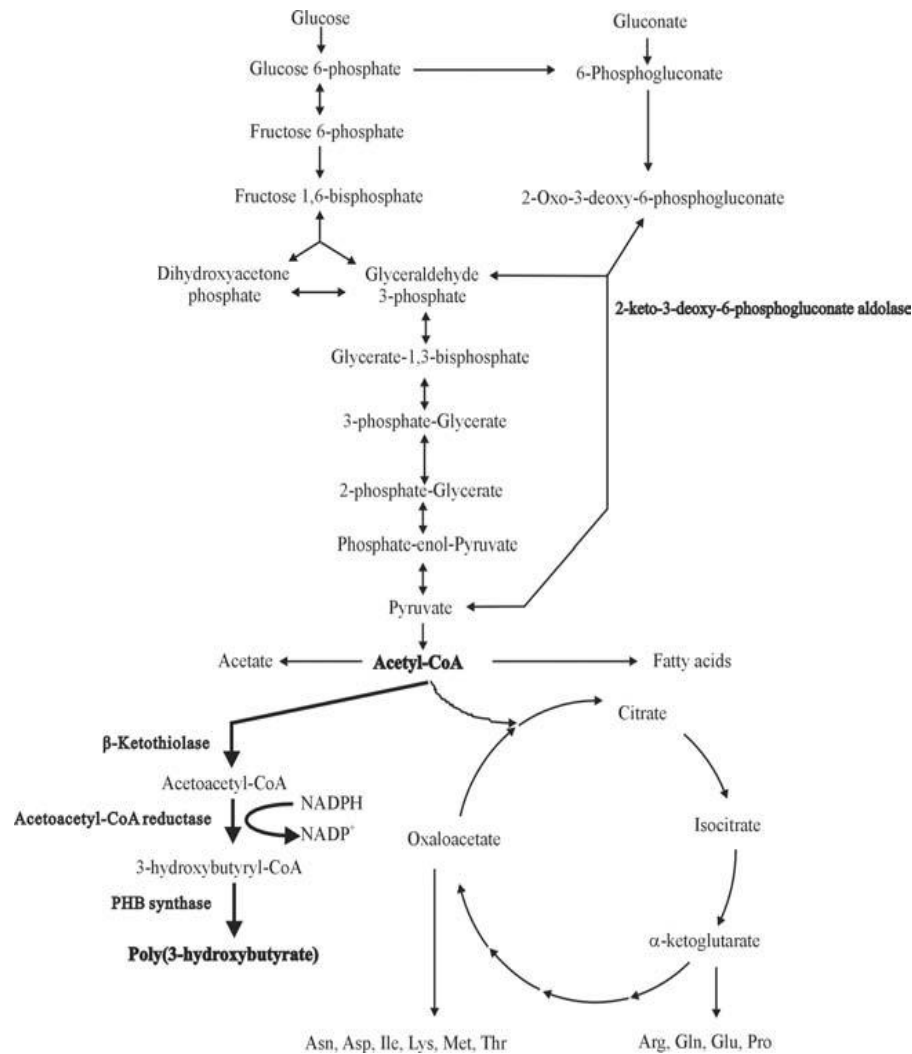
Database	Corresponding URL
Biocarta	<a href="http://www.biocarta.com/genes/allPathways.asp">http://www.biocarta.com/genes/allPathways.asp</a>
BioCyc	<a href="http://biocyc.org">http://biocyc.org</a>
BioSilico	<a href="http://biosilico.kaist.ac.kr">http://biosilico.kaist.ac.kr</a>
BRENDA	<a href="http://www.brenda.uni-koeln.de">http://www.brenda.uni-koeln.de</a>
EcoCyc	<a href="http://ecocyc.org">http://ecocyc.org</a>
ENZYME	<a href="http://www.expasy.org/enzyme/">http://www.expasy.org/enzyme/</a>
ERGO-LIGHT	<a href="http://www.ergo-light.com/">http://www.ergo-light.com/</a>
KEGG	<a href="http://www.genome.ad.jp/kegg">http://www.genome.ad.jp/kegg</a>
Klotho	<a href="http://www.biocheminfo.org/klotho/">http://www.biocheminfo.org/klotho/</a>
LIGAND	<a href="http://www.genome.ad.jp/ligand/">http://www.genome.ad.jp/ligand/</a>
MetaCyc	<a href="http://metacyc.org/">http://metacyc.org/</a>
PathDB	<a href="http://www.ncgr.org/pathdb">http://www.ncgr.org/pathdb</a>
UMBBD	<a href="http://umbbd.ahc.umn.edu/">http://umbbd.ahc.umn.edu/</a>

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# Example 3

## Production of PHB by E. coli



# Conclusion

## Getting There

Technology makes our lives easier and more enjoyable. You are familiar with how transportation has changed to be faster and safer. Agriculture has also had tremendous changes. These changes have allowed fewer farmers to grow more food. Check out this timeline comparing the changes in transportation to the changes in growing corn.

