

Course 2851 Principles of Metabolism  
Metabolism and endocrinology programme, Karolinska Institutet

Lecture 1  
**Introduction**

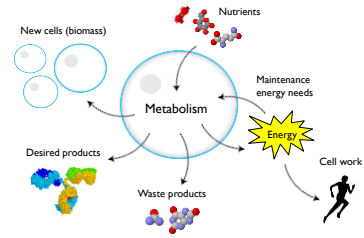
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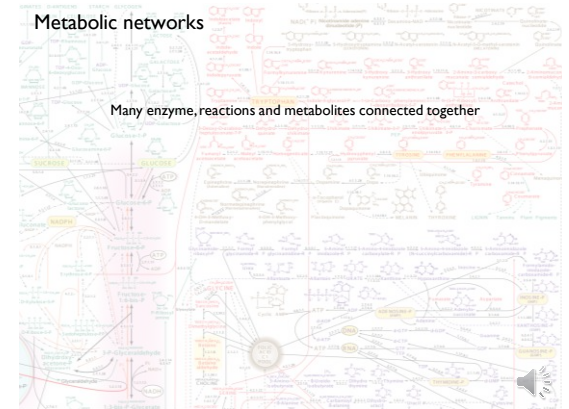
**What is (cellular) metabolism?**

Greek μεταβολή (metabole), "change"



**Metabolic networks**

Many enzyme, reactions and metabolites connected together



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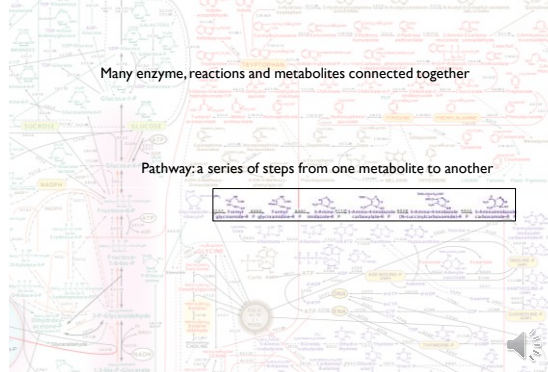
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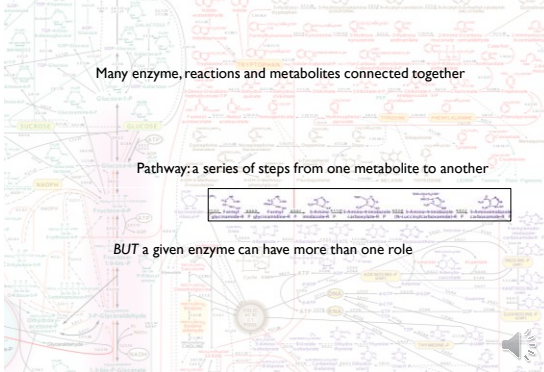
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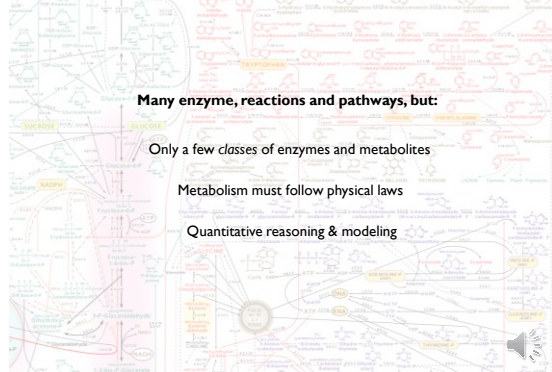
### Metabolic networks



### Metabolic networks



### Principles of metabolism: coping with complexity



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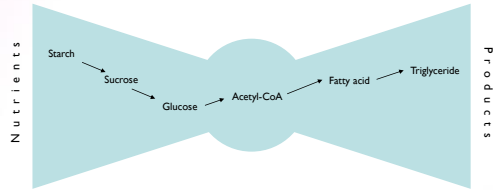
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The bow tie model

Example pathway through the metabolic network



Csete and Doyle, Trends Biotech 22:446-450, 2004.  
Ma et al, Mol Sys Bio 3:135, 2007.

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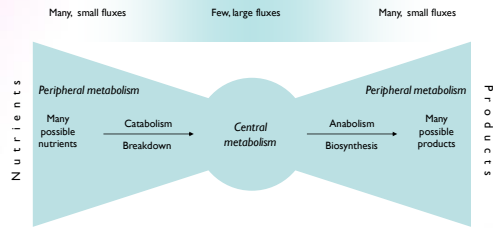
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The bow tie model



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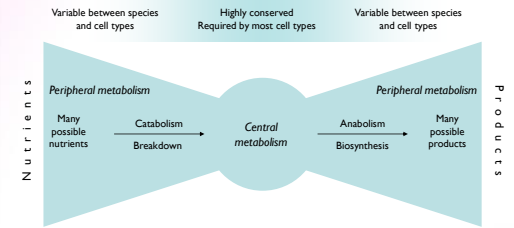
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The bow tie model



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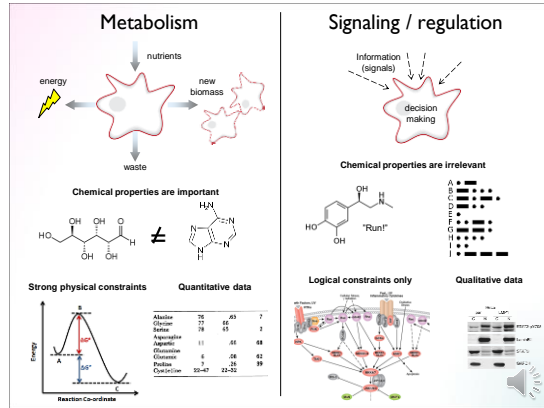
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