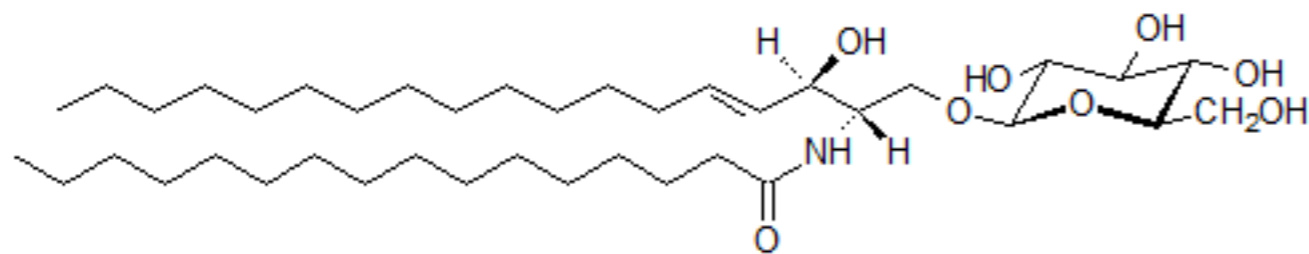
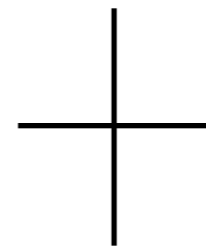


PSAP and Gaucher Disease

By Mitchell Coplan



glucocerebroside



What is Gaucher Disease?

Severe



Mild

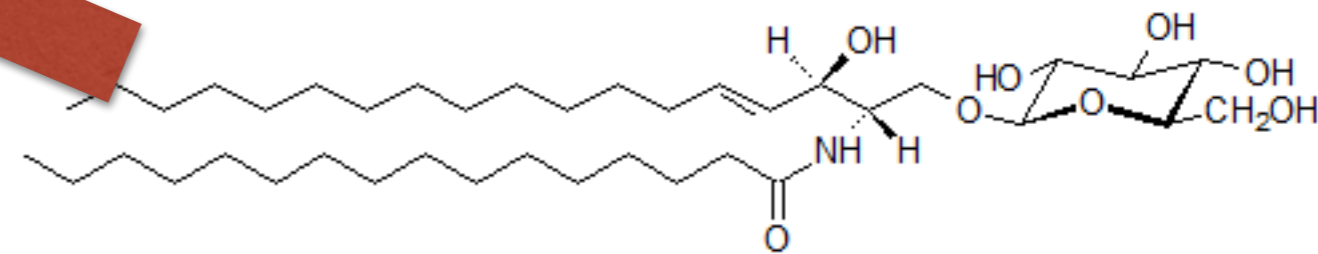
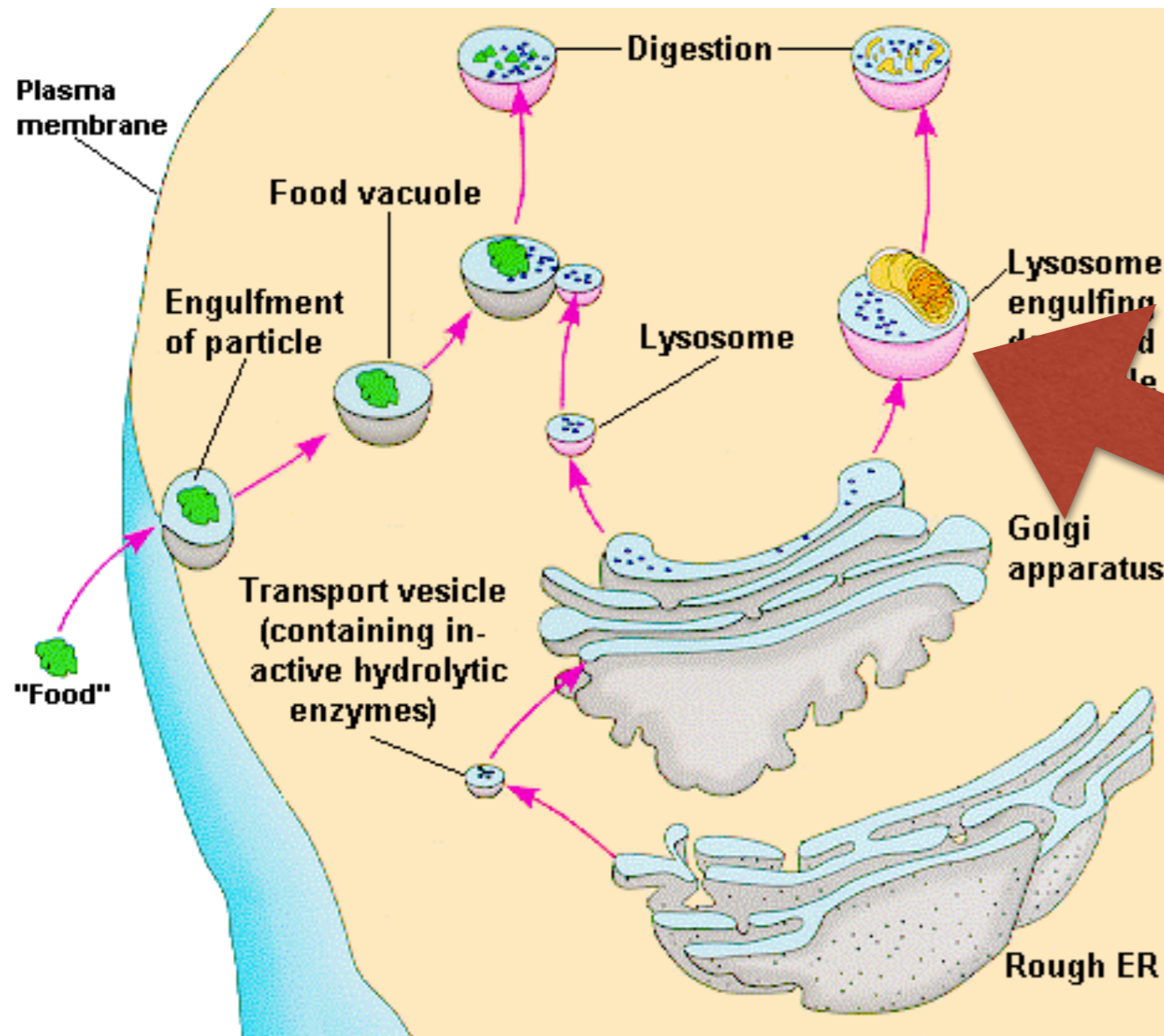


<http://www.vpriv.com/about-vpriv/what-is-type-1-gaucher-disease.php>

<http://www.gauchercare.com/en/healthcare.aspx>

<http://www.vpriv.com/about-gaucher-disease/>

What causes these phenotypes?



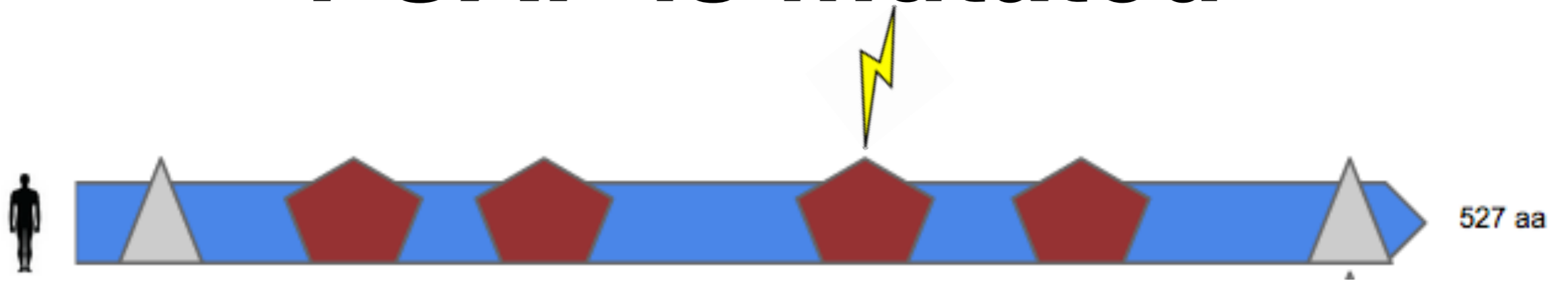
glucocerebroside

Lysosomal storage disease
Cells can't break down glucocerebrosides

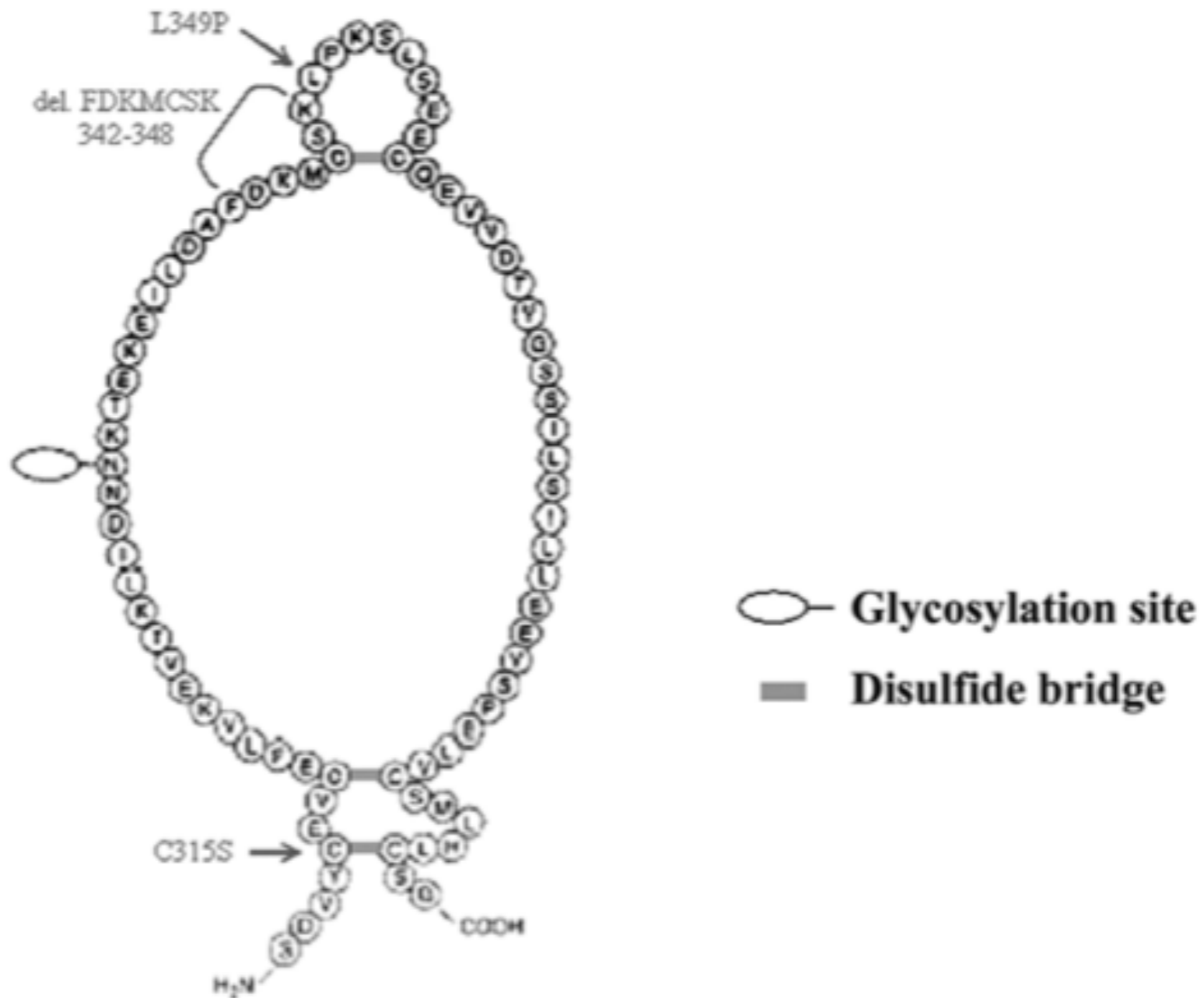
<http://wiki.pingry.org/u/ap-biology/index.php/Lysosomes>

<http://lipidlibrary.aocs.org/Lipids/whatlip/index.htm>

PSAP is mutated

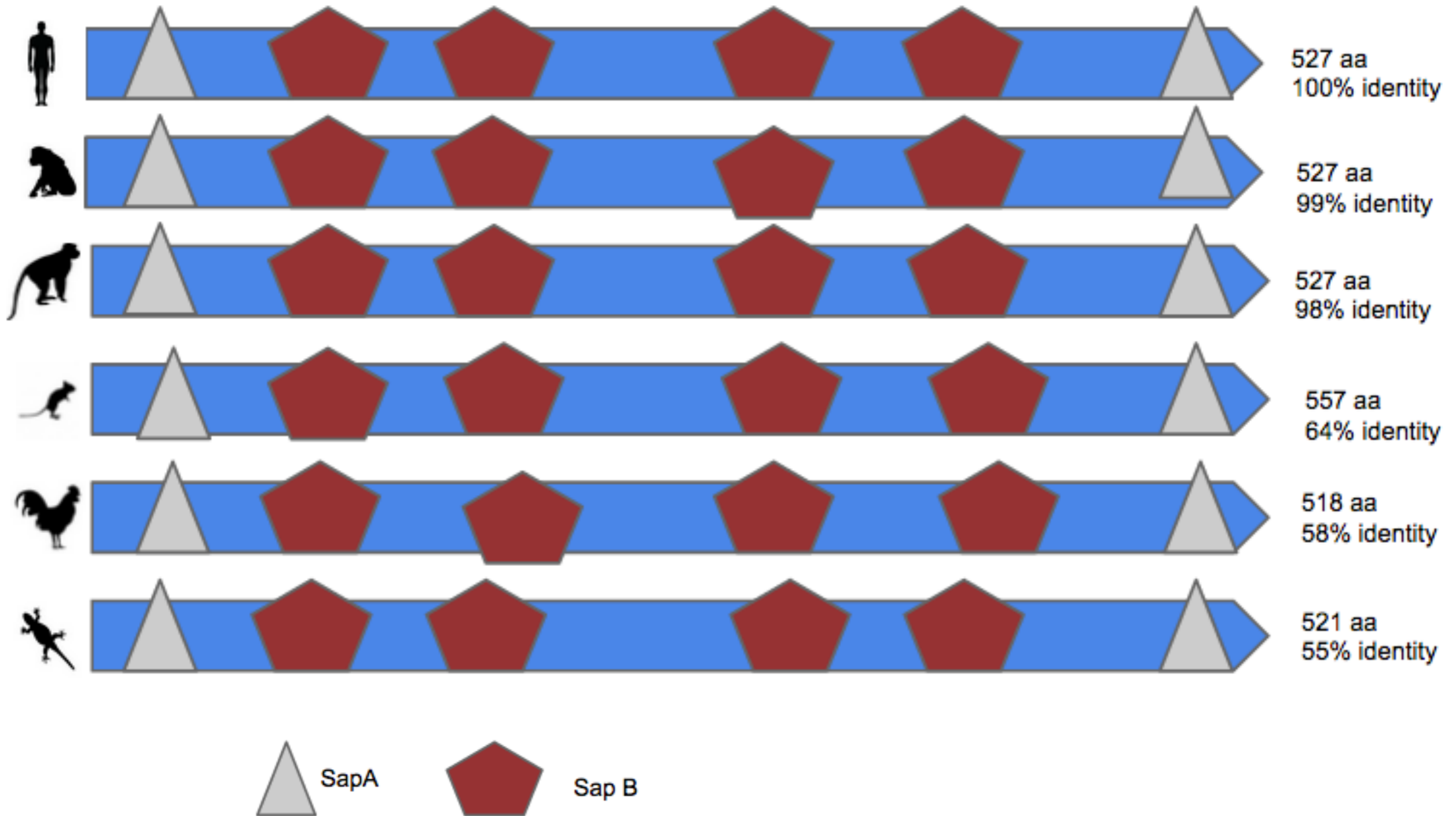


B



Mutations occur in disulfide bridges

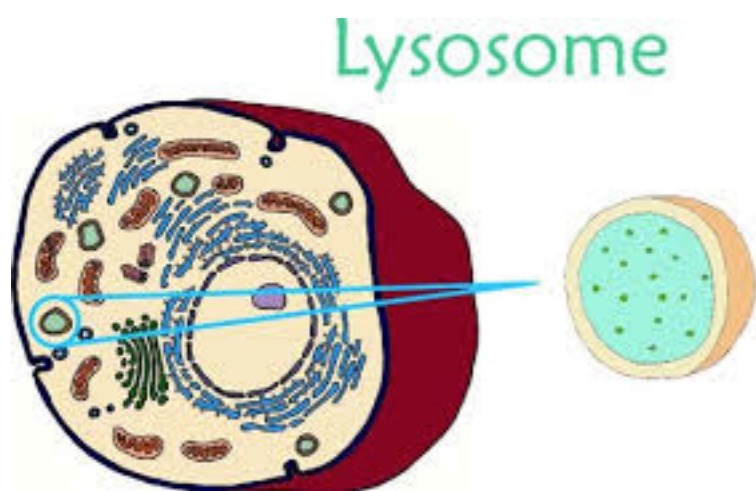
How well conserved is PSAP?



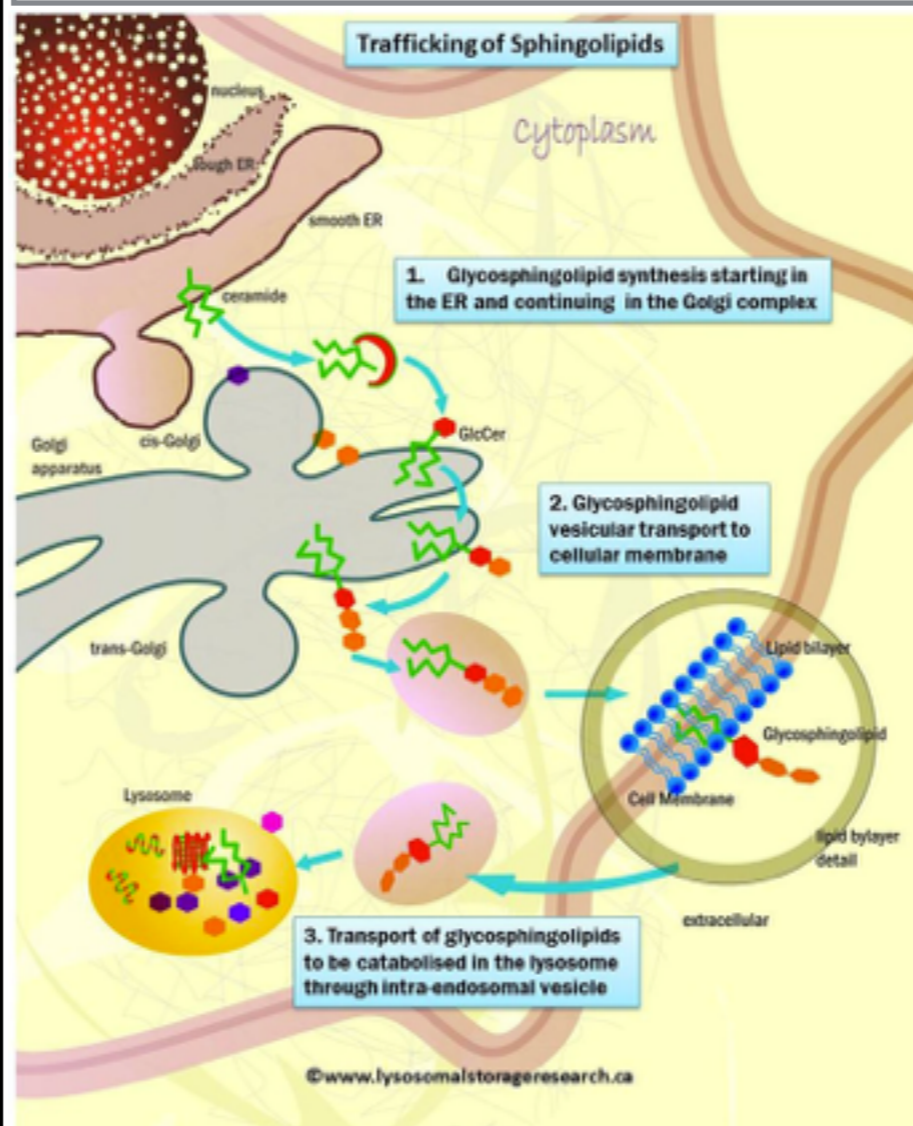
The proteins domains are conserved

Where and how does PSAP function?

Cellular Components

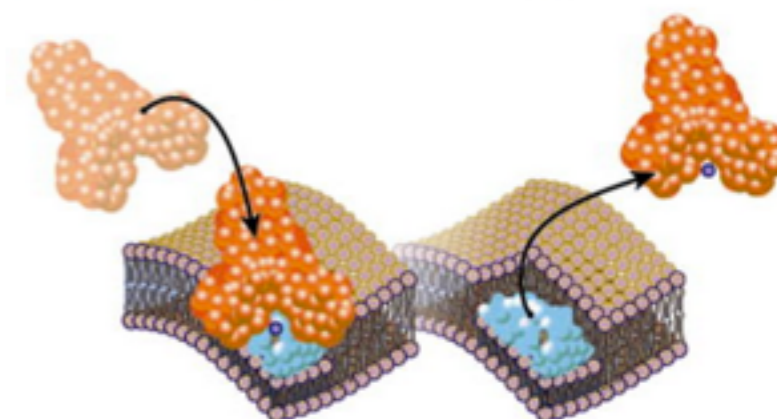


Biological Processes



sphingolipid metabolic process

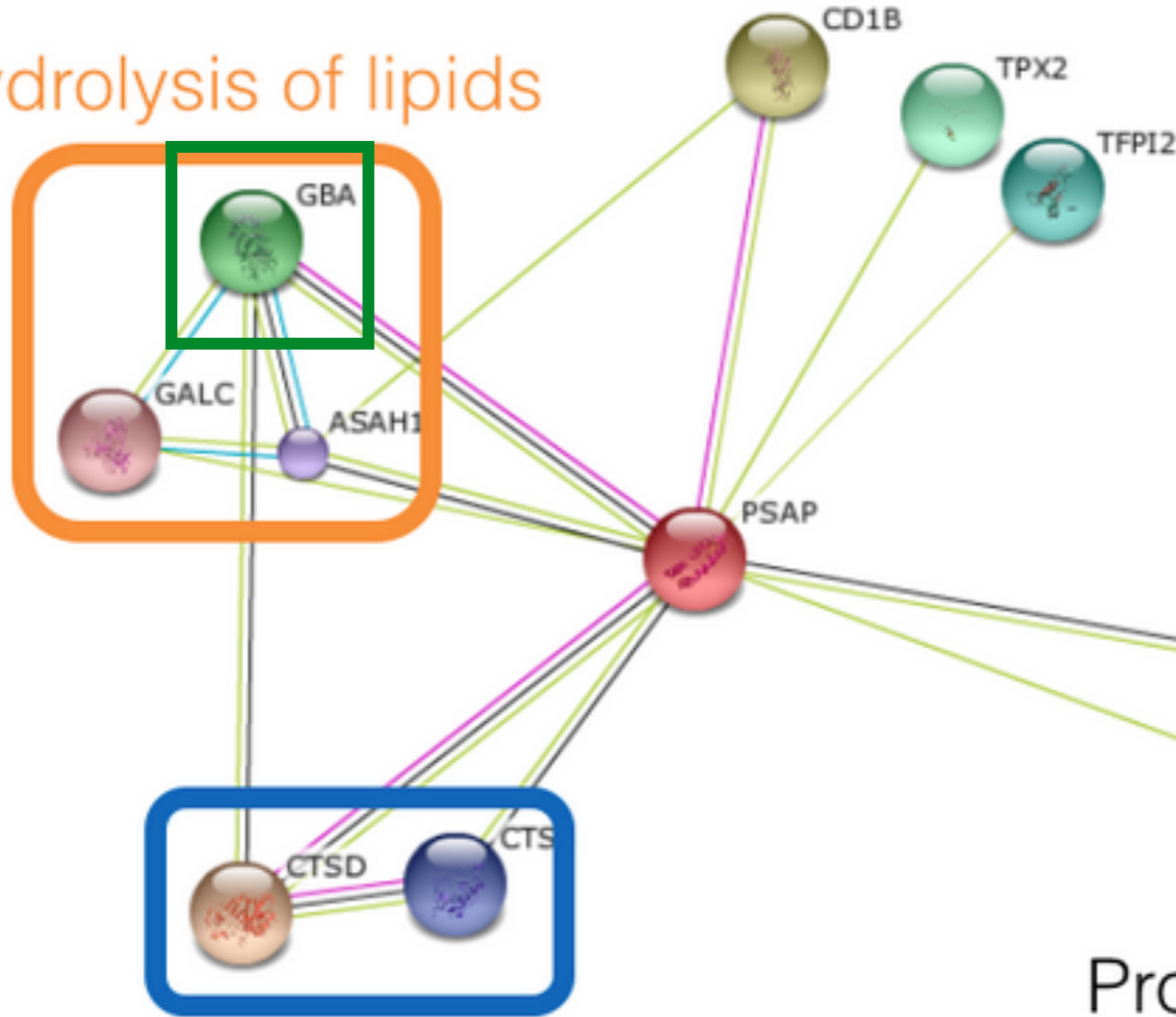
Molecular Function



Lipid binding

PSAP and GBA are binding partners

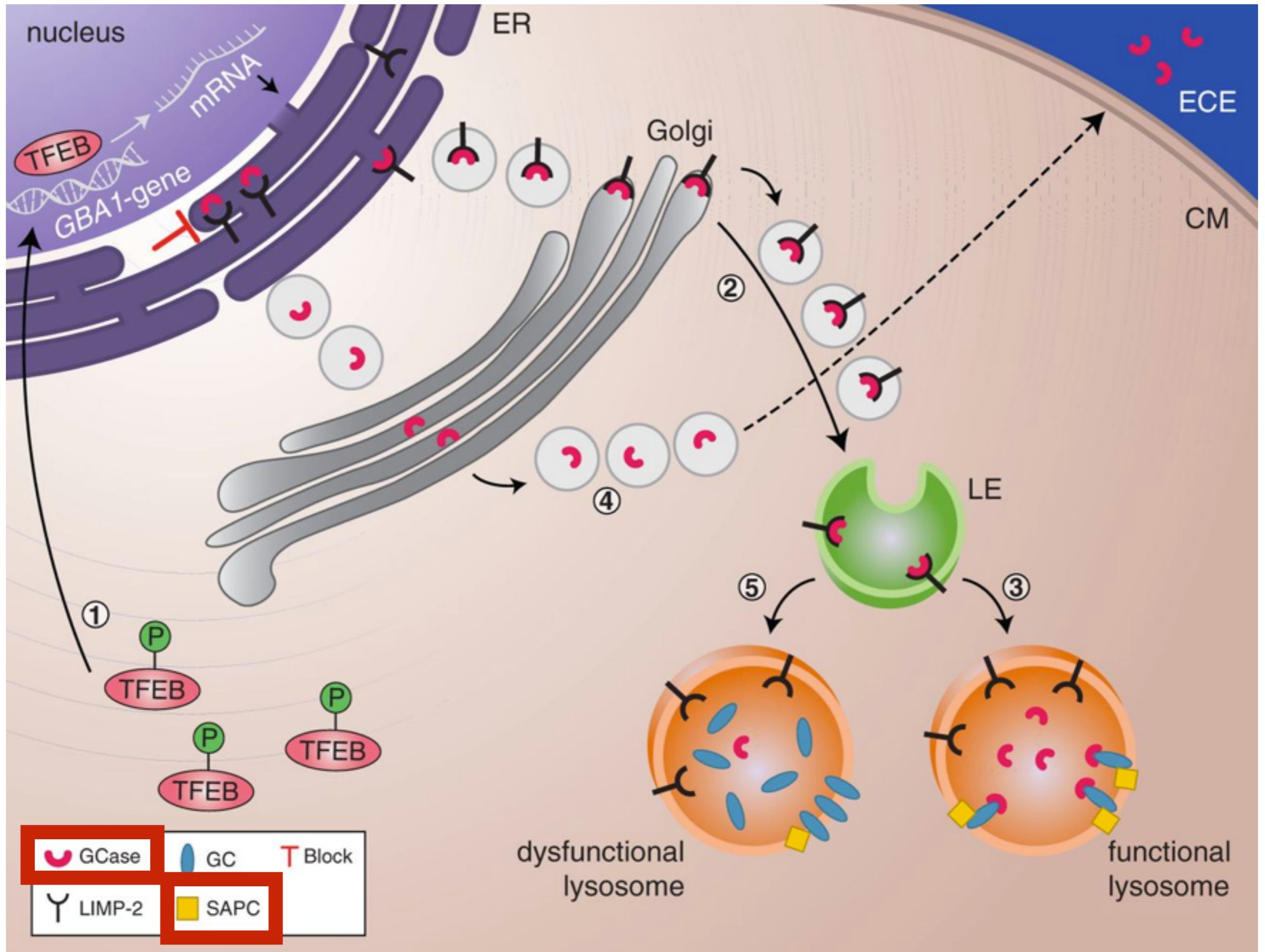
Hydrolysis of lipids



Protein transport

Intracellular protein degradation

PSAP and GBA break down glucocerebrosides



GBA (GCase) and PSAP (SAPC)

Gap: What factors are responsible differences between the mild and severe phenotypes?

Severe



Mild



Hypothesis: Variations in *PSAP* activity and expression contribute to the differences between the mild and severe phenotype

Severe



PSAP?



Mild



Aim 1: Genome sequencing to find variable genomic regions

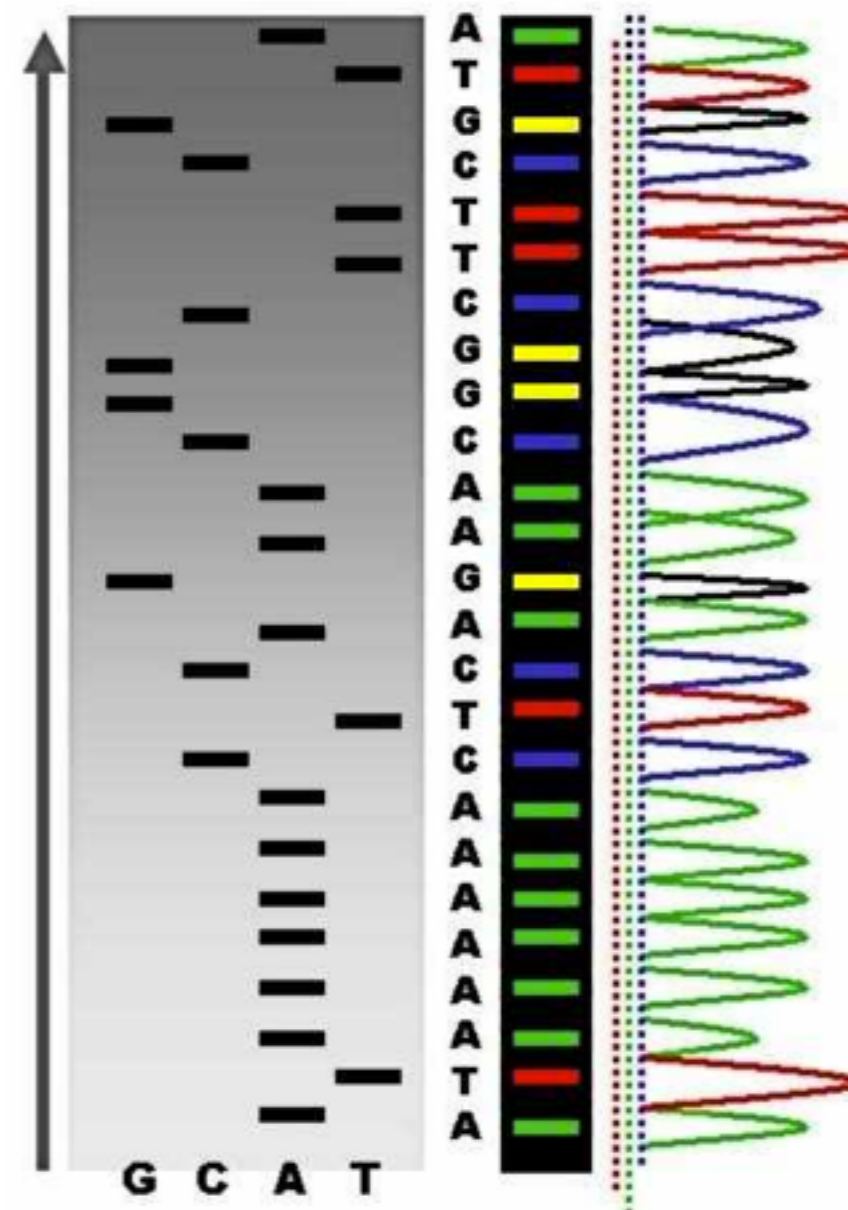
Mild



Severe



Control



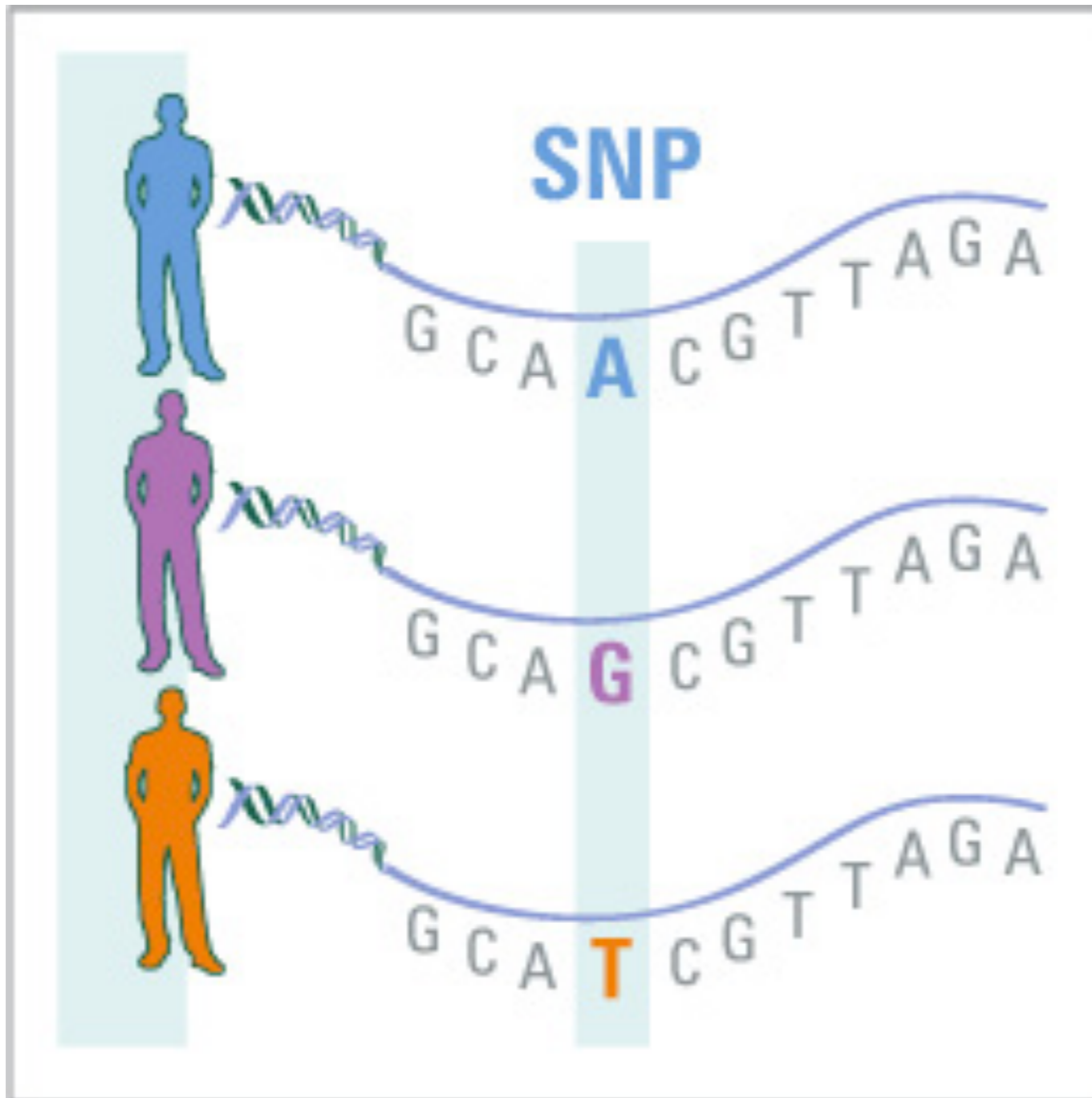
http://en.wikipedia.org/wiki/DNA_sequencing
<http://bldg6.arsusda.gov/cregan/snp.html>

Hypothetical results: Identification of genomic region that may regulate PSAP expression

Mild

Severe

Control



Possible roles:

Transcription factor

Regulatory region

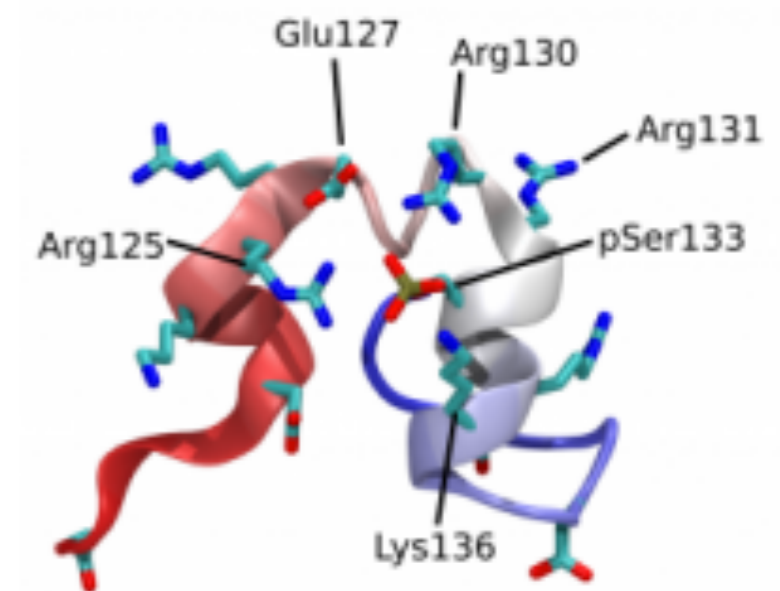
Lipid breakdown

Aim 2: Identify the phosphorylated amino acids of PSAP in mild and severe patients

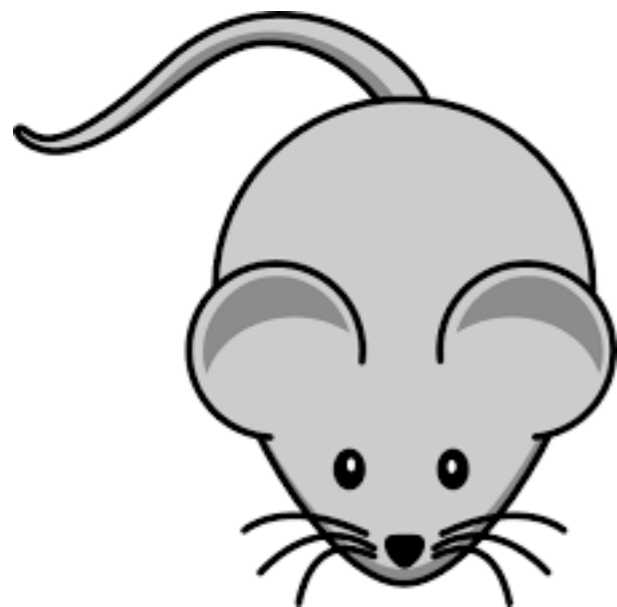
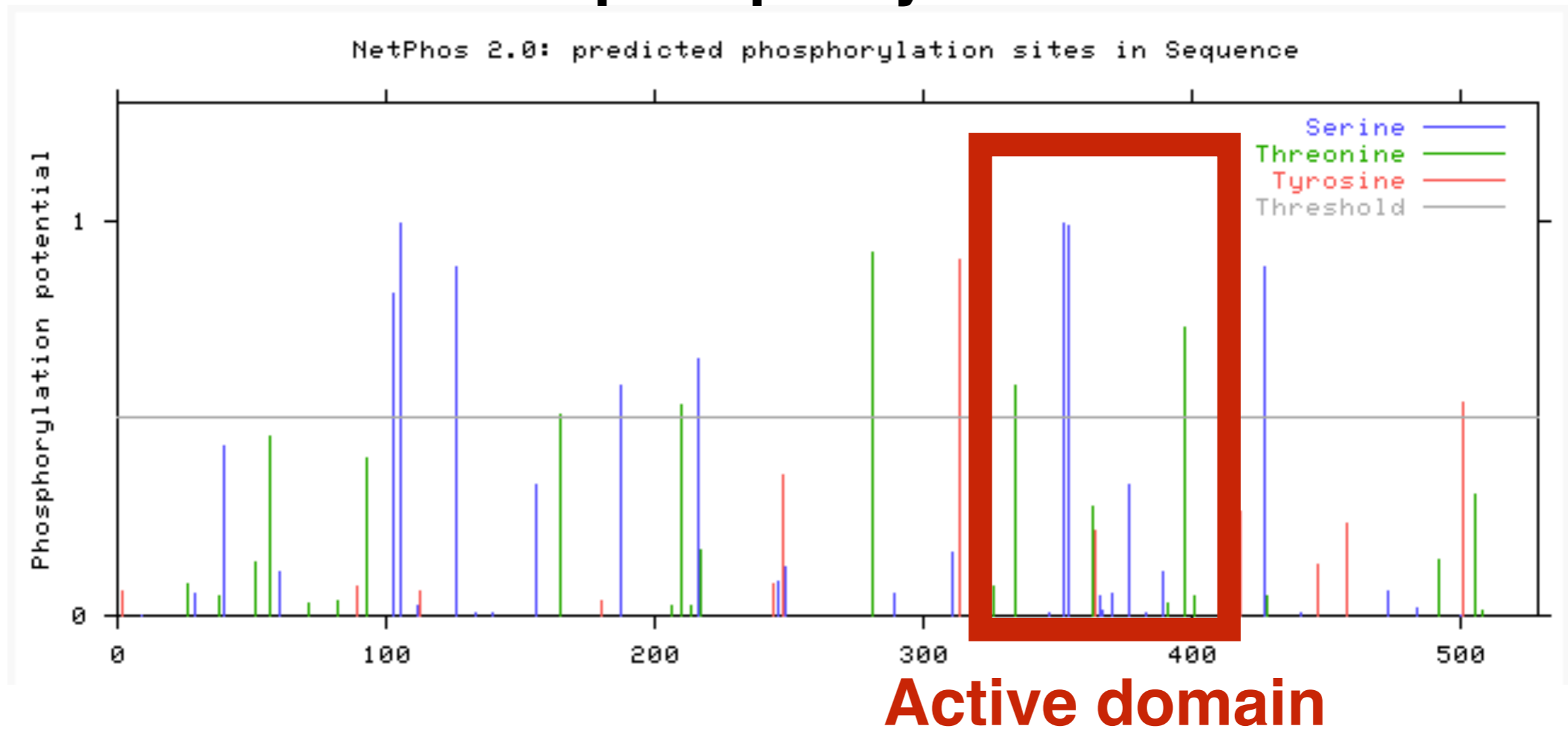
Severe



Mild



Hypothetical results: PSAP in missing a serine phosphorylation

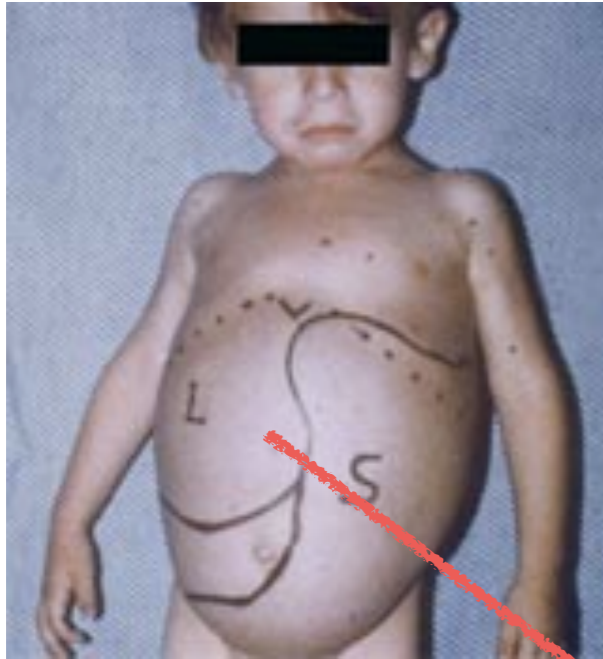


Change AA



Aim 3: Compare tissue specific levels of PSAP and GBA expression in GD patients

Severe



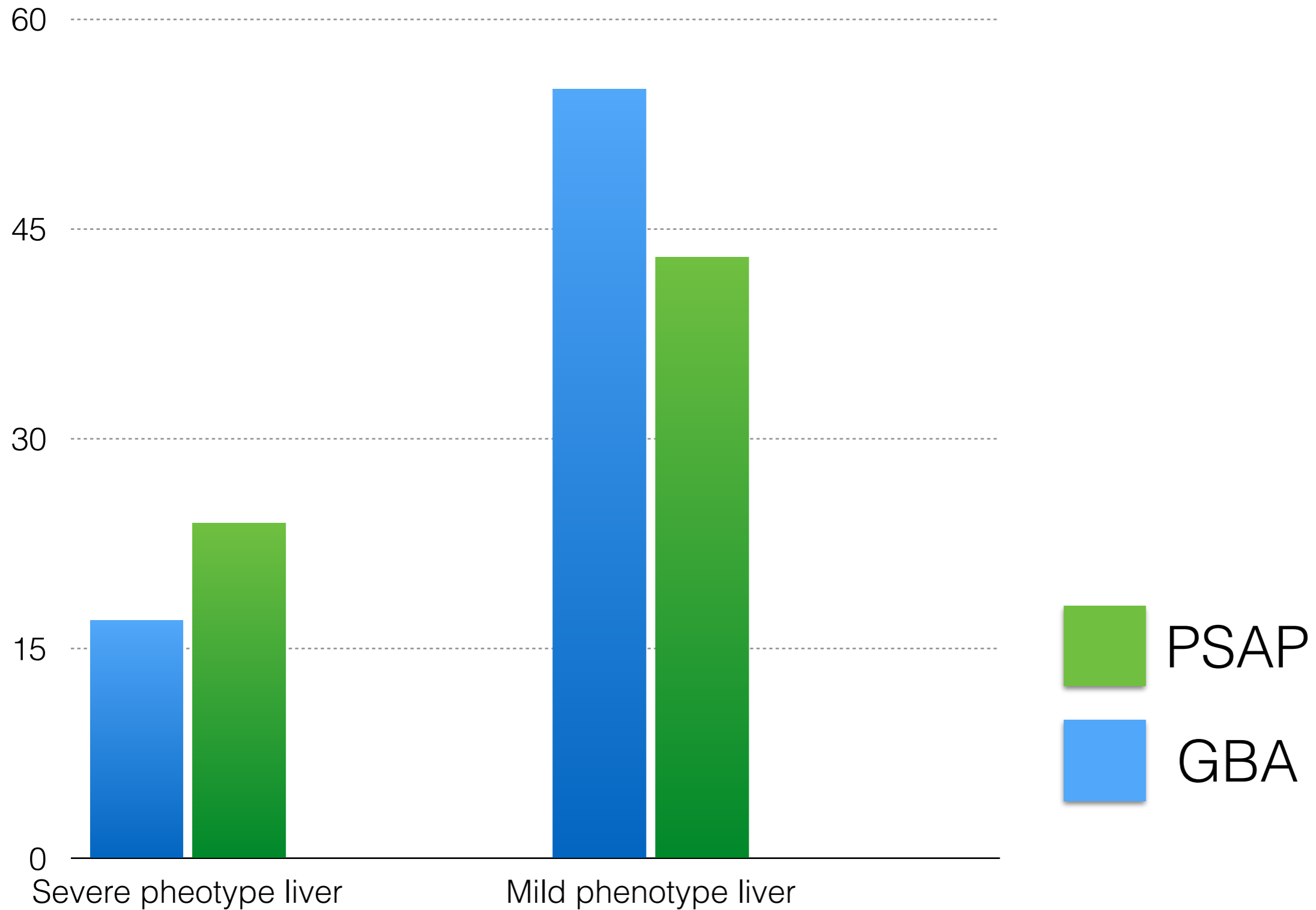
Mild



liver tissue

Different expression levels?

Hypothetical results: Higher expression in mild phenotype



Payoff & Future?

PSAP is a factor in disease symptoms



Questions?



<http://cliparts.co/people-animation>