

# Lorenzo's Oil

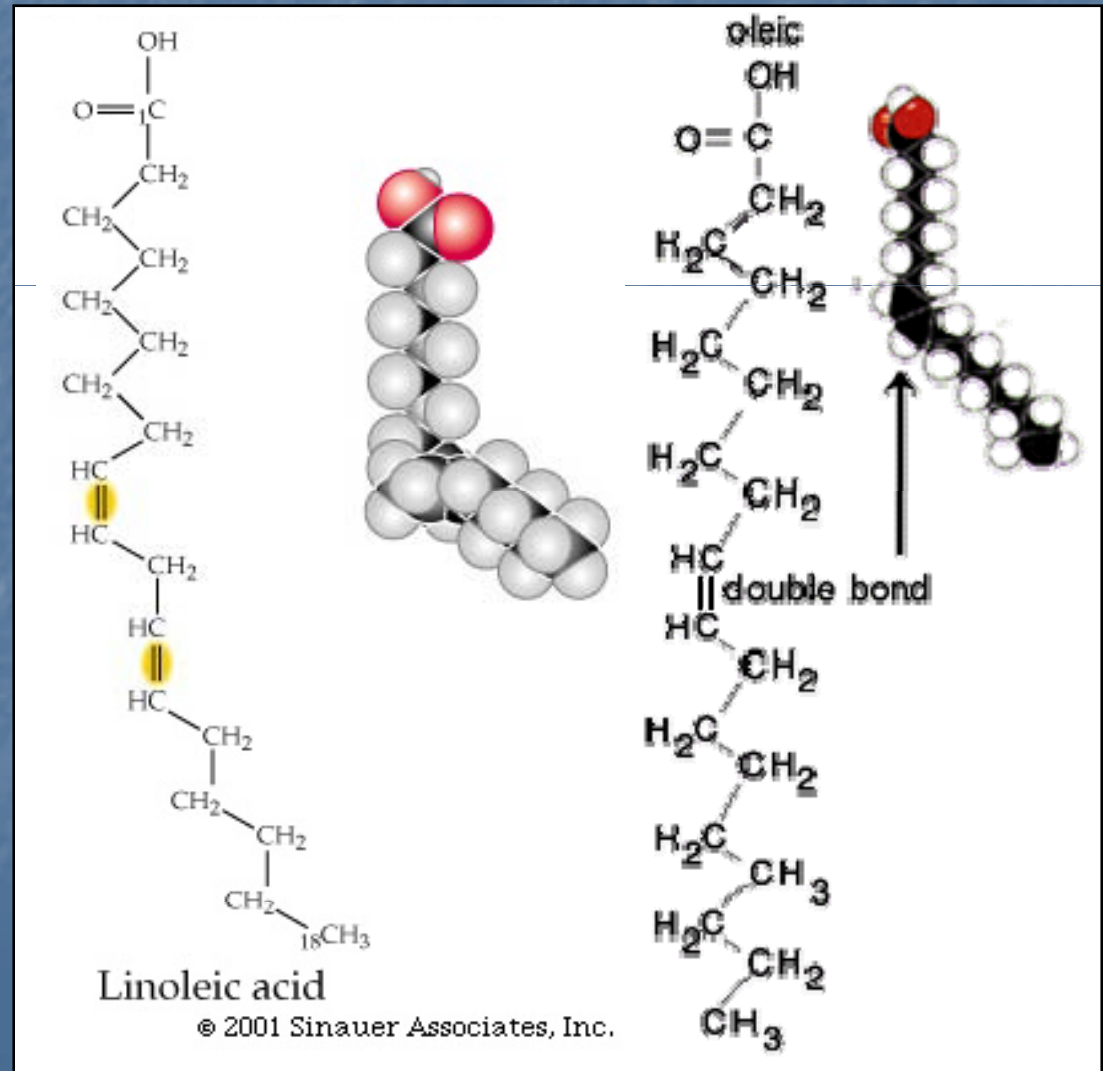
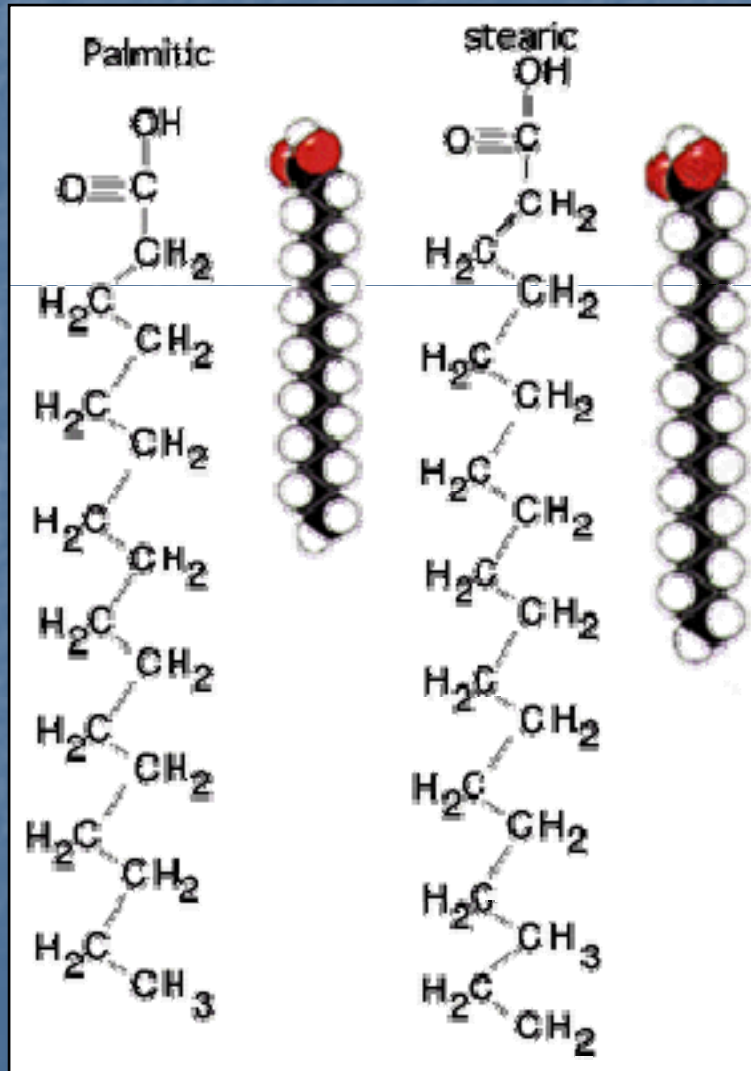
# Adrenoleukodystrophy (ALD)

- ALD patients are unable to breakdown very long chain saturated fatty acids (VLCSSFA).
- Build up of VLCSSFA are toxic to myelin of nerves
- Breakdown of nerves results in symptoms of ALD including loss of motor function, loss of speech, and seizures

# What are fatty acids?

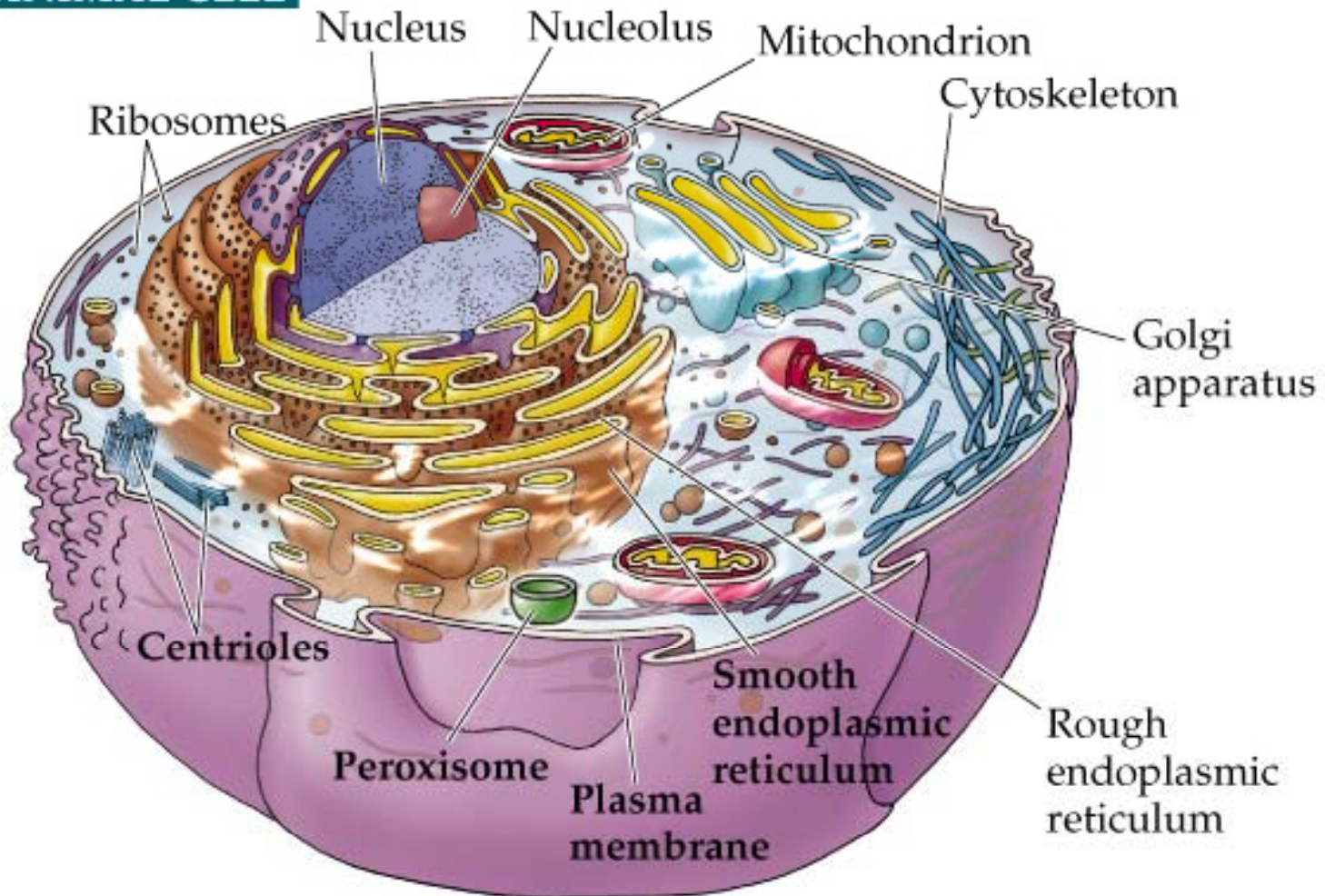
## Saturated fatty acids

## Unsaturated fatty acids



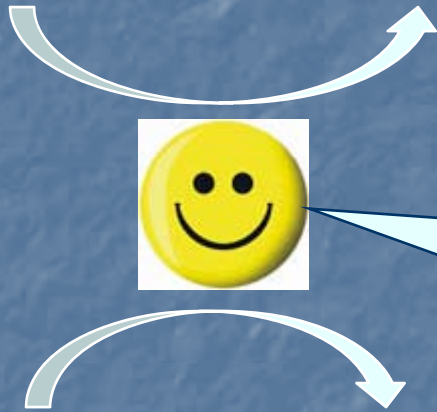
# Cell Biology

## AN ANIMAL CELL



# Summary of ALD

Saturated Fat



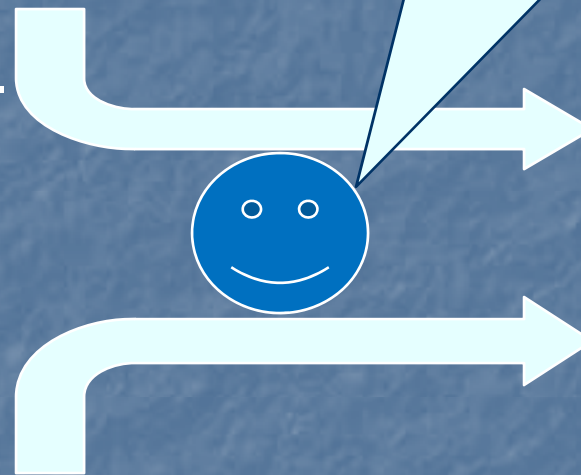
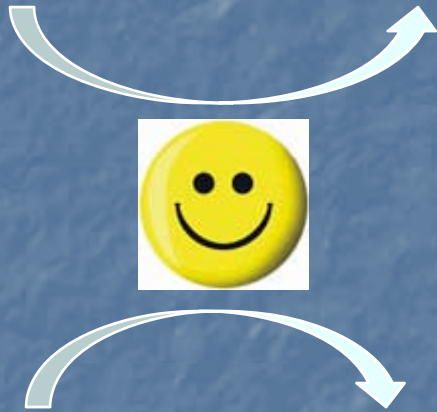
I make very long chain fats by adding carbon atoms to the ends of BOTH types of fats in the ER



Unsaturated Fat

# Summary of ALD

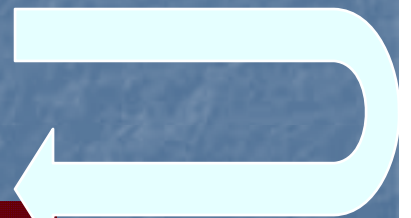
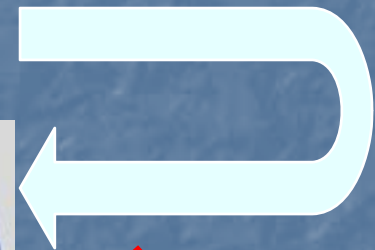
When I am working right, I breakdown excess fats in the peroxisome



# Summary of ALD

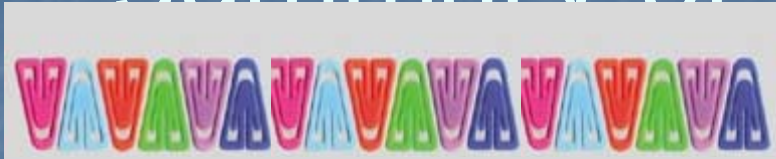


# Summary of ALD

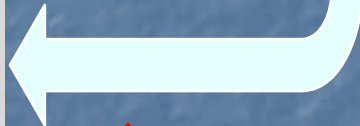




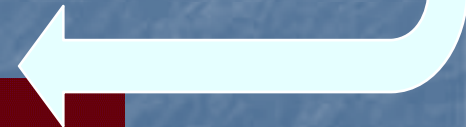
# Summary of ALD



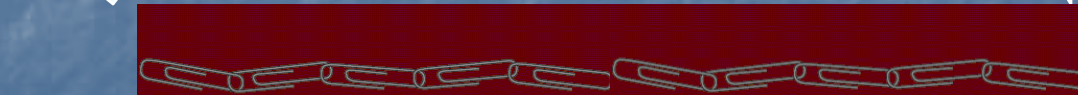
**PROBLEM**



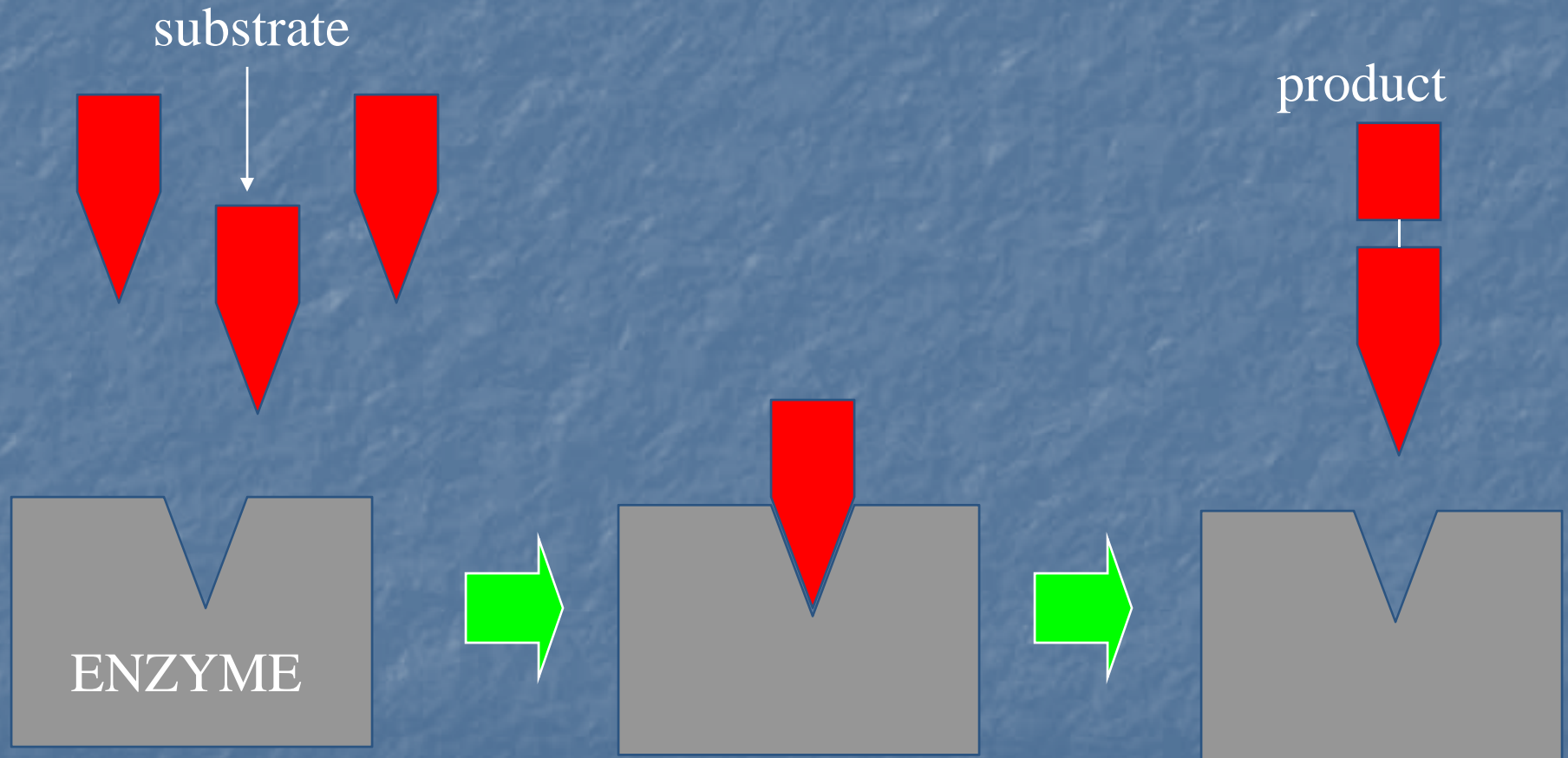
**NO PROBLEM**



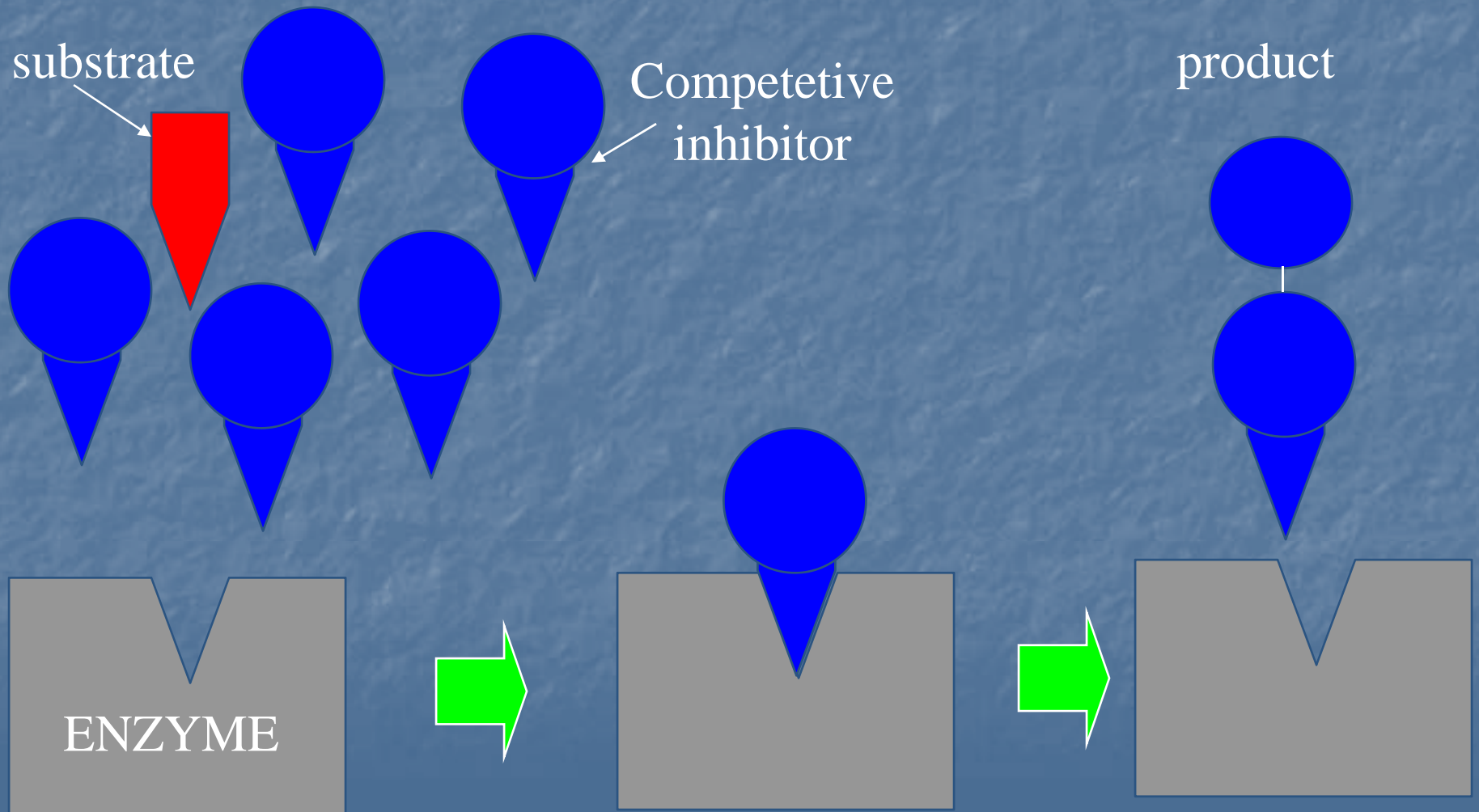
# How Can We Fix it?



# Enzyme Function



# Competitive Inhibition

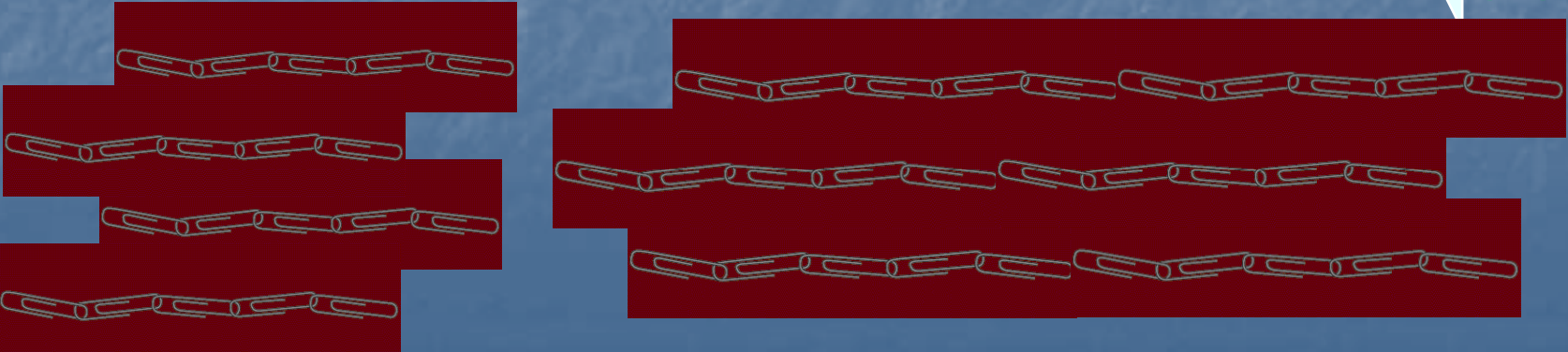


# Lorenzo's Oil

Less saturated fats  
in the diet



Lorenzo's  
Oil

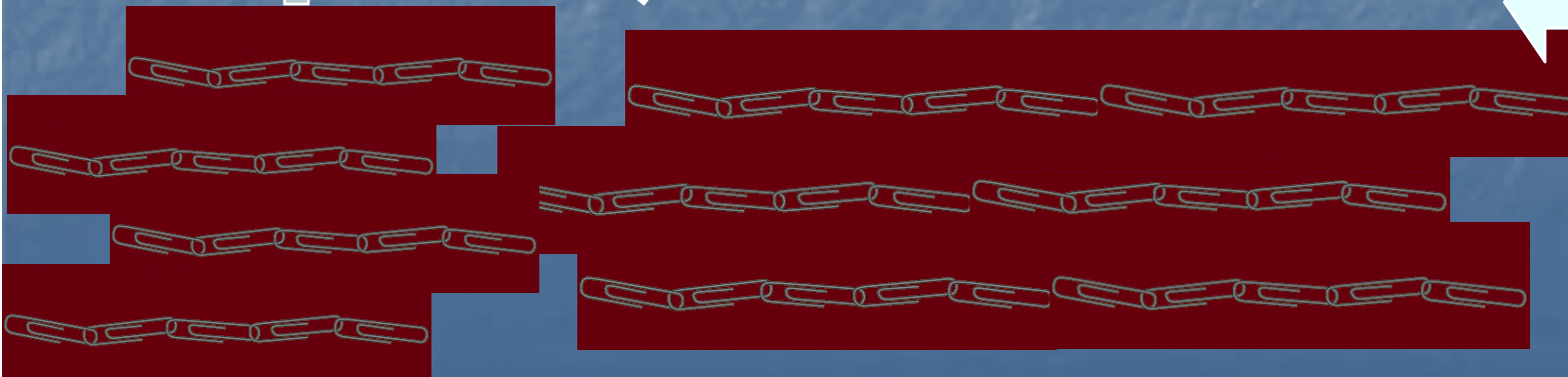


# Competitive Inhibition

Less saturated fats  
in the diet



Lorenzo's  
Oil

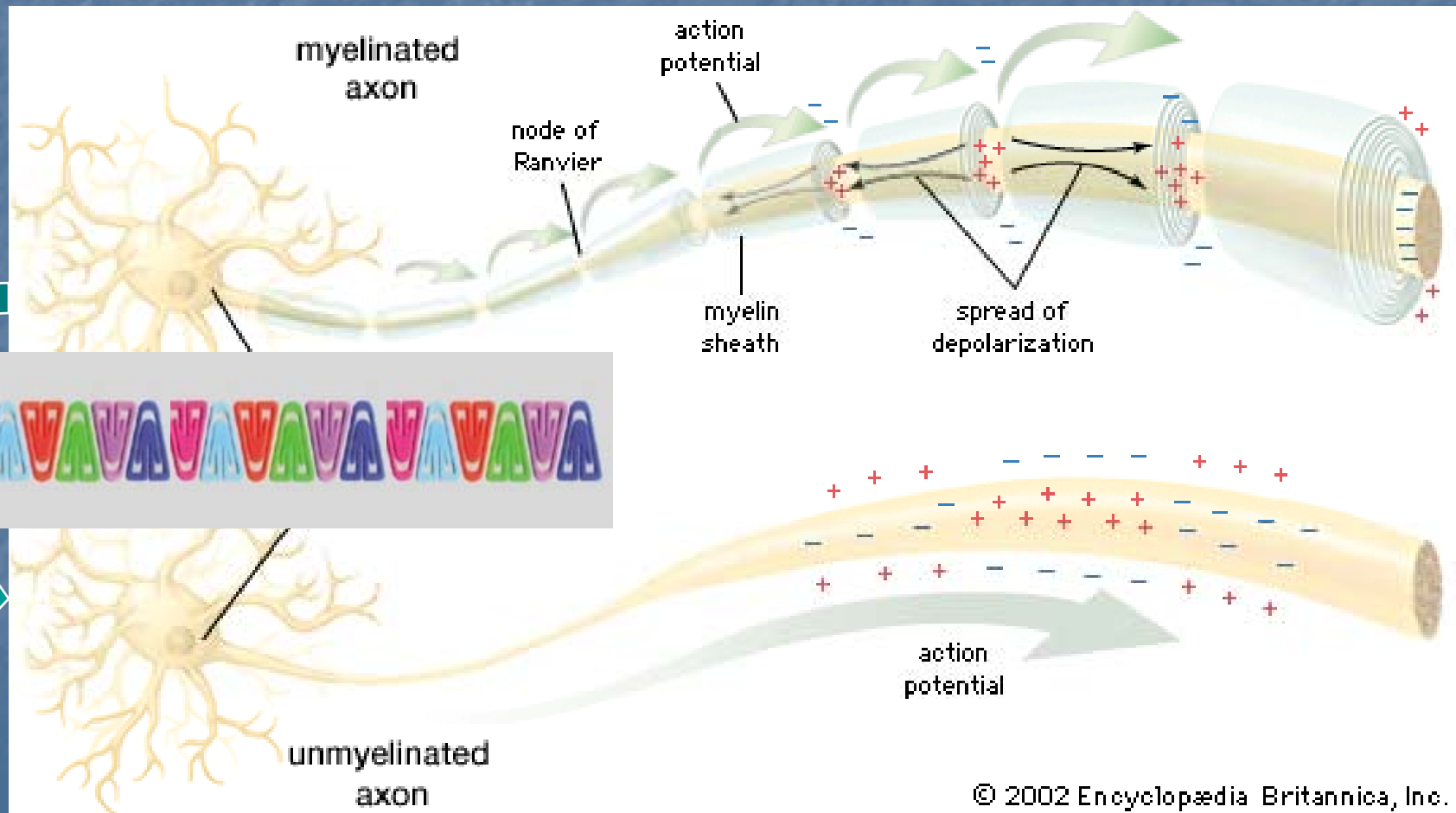


I am so busy working with  
all the unsaturated fats,  
that I don't have time to  
add carbon molecules to  
the saturated fats

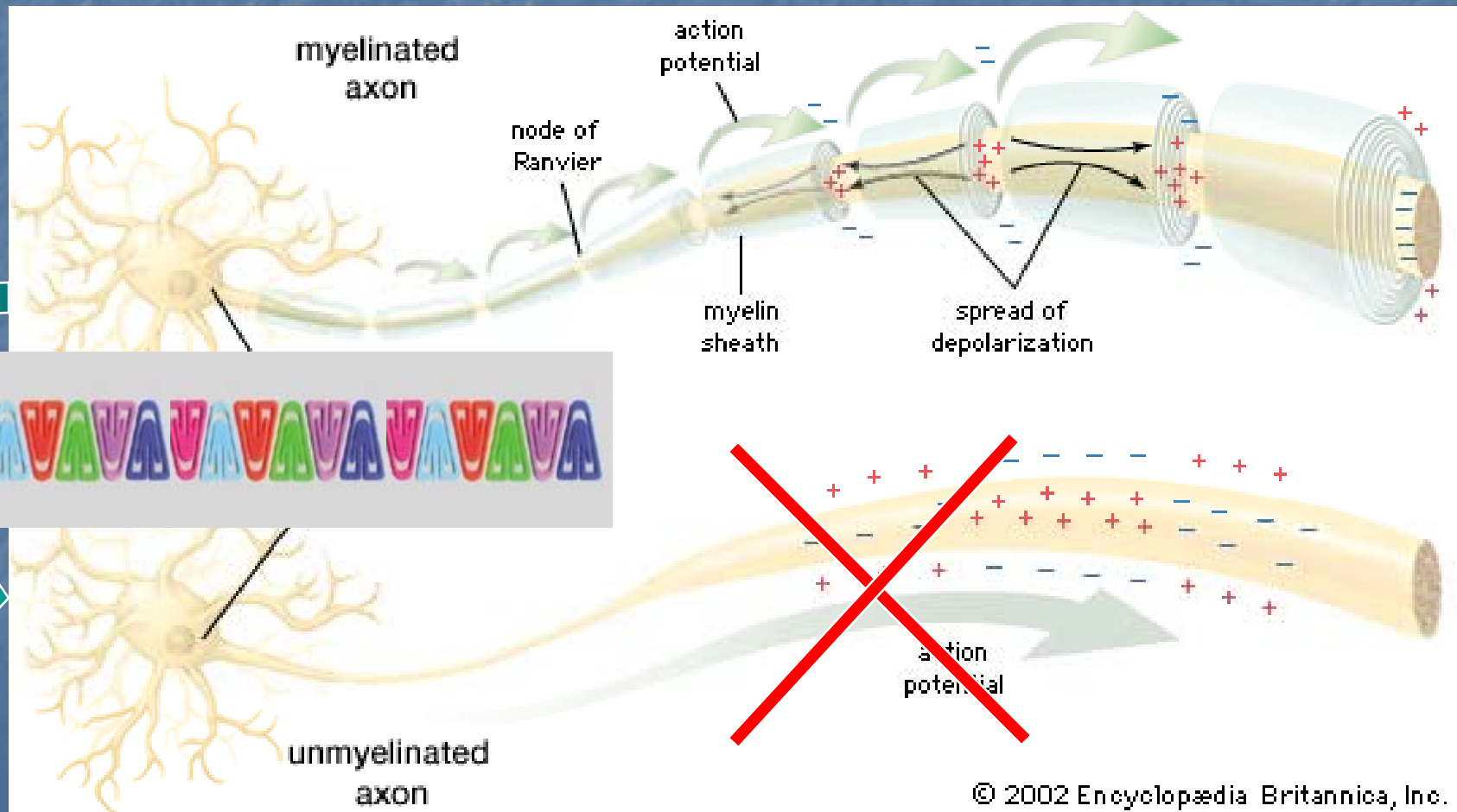


**GOOD**

# Too many saturated fats are BAD for our nerves



# Unmyelinated Nerves Don't work



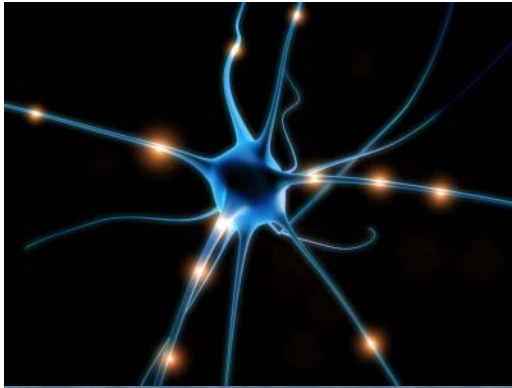


# Is Lorenzo's Oil a treatment or a cure?



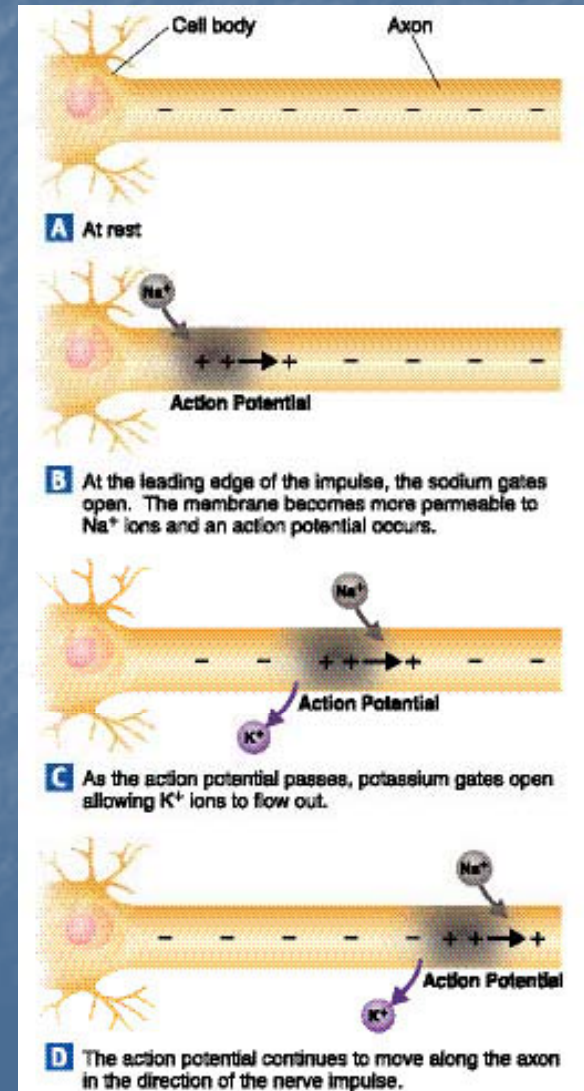
- Lorenzo is still alive today paralyzed by ALD
- His remarkable survival is due to his parents' refusal to accept the doctors' grim diagnosis.
- With no scientific training, they set out to find a cure and in 1986 it seemed they had succeeded.

<http://news.bbc.co.uk/2/hi/health/3907559.stm>



# Nerve Function

- Nerves send electrical signals to and from the brain
- They work similar to electrical wiring



# Myelinated Nerve

Myelin sheaths on nerves are made of fats and help to speed up nerve impulses

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## Nerve Impulse on Myelinated Fiber

