

Lorenzo's Oil

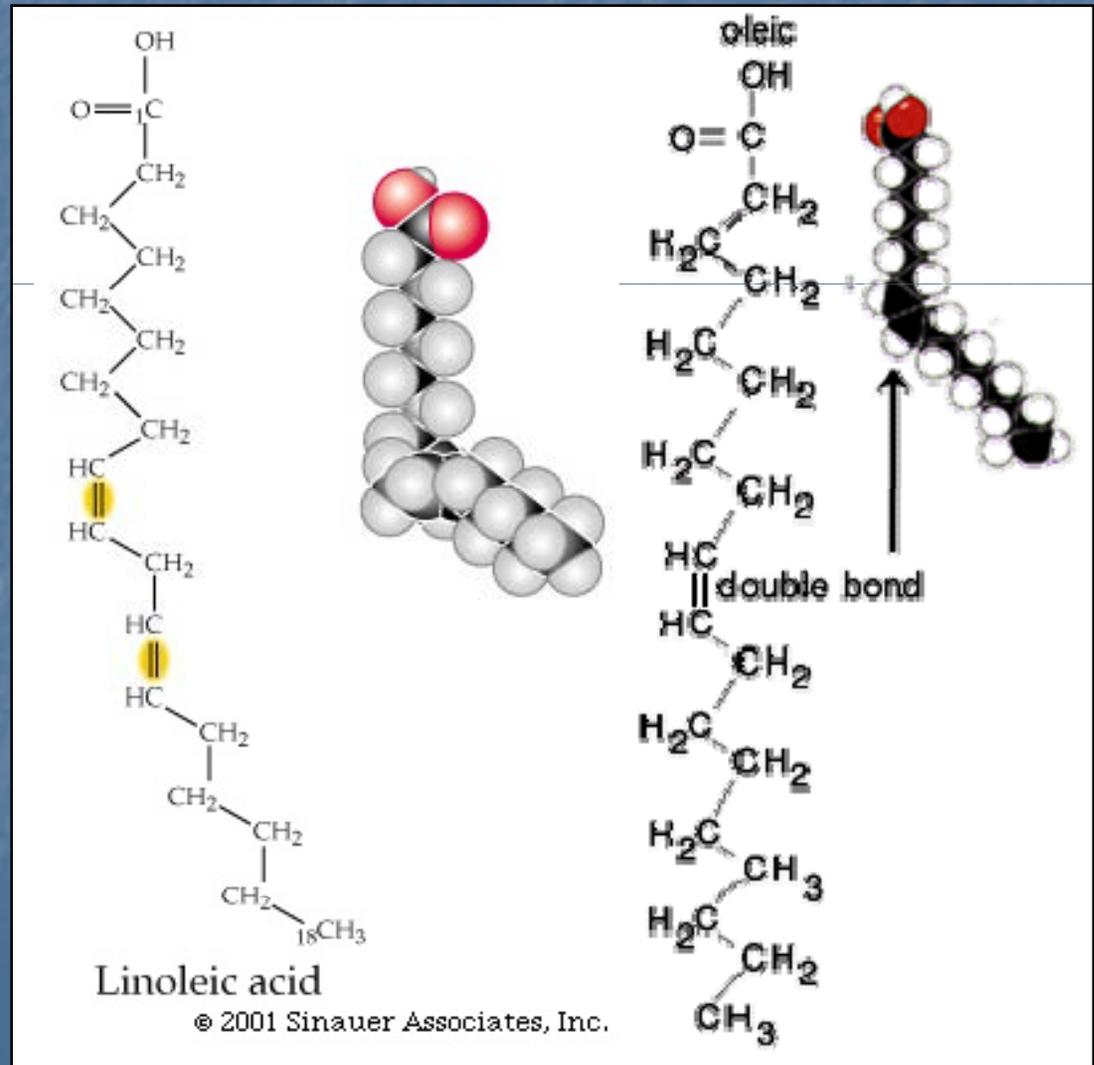
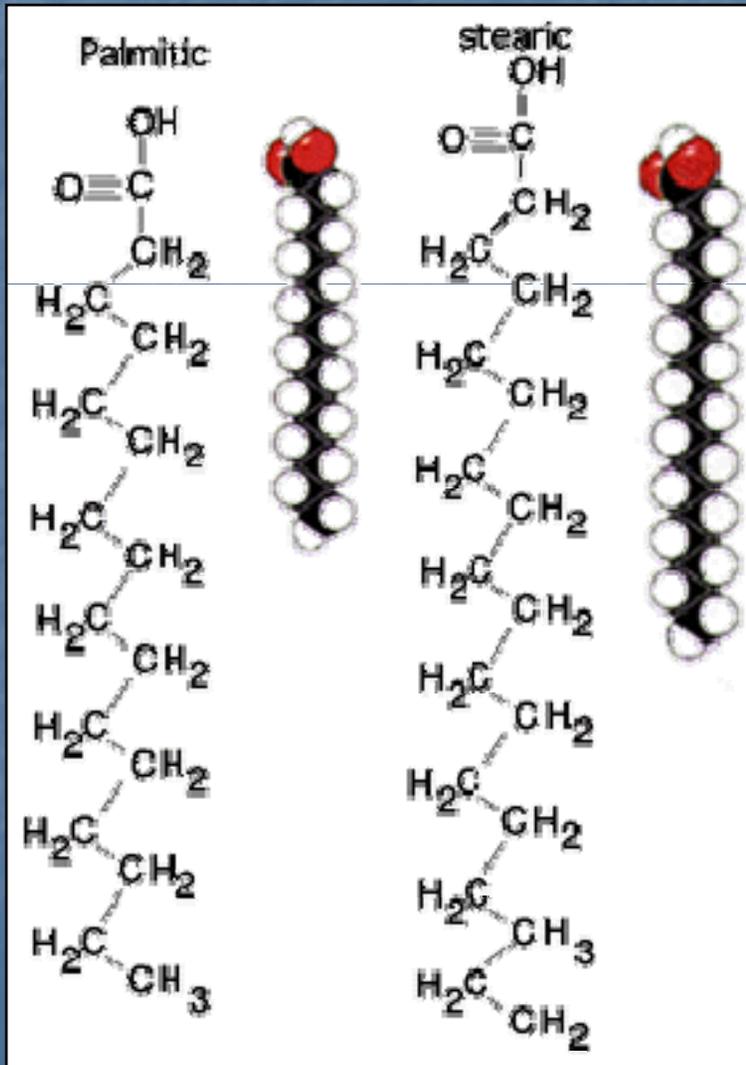
Adrenoleukodystrophy (ALD)

- 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?

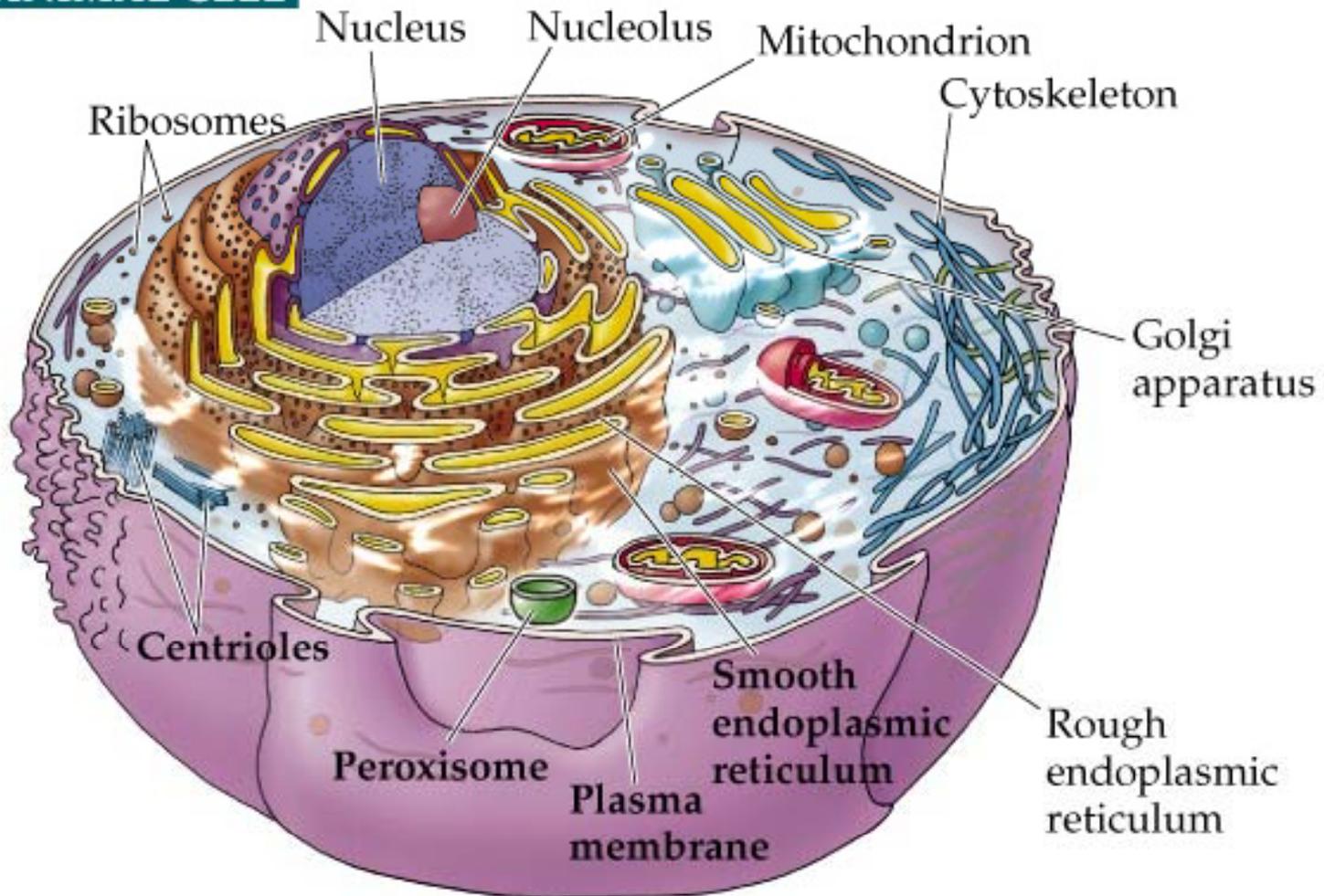
Saturated fatty acids

Unsaturated fatty acids



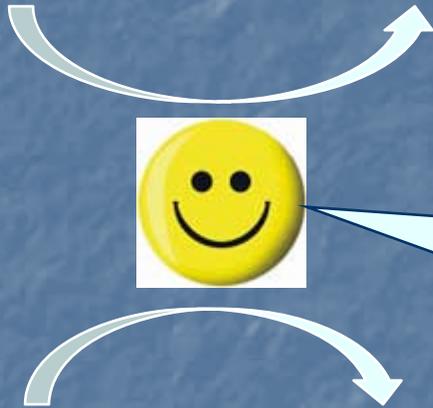
Cell Biology

AN ANIMAL CELL



Summary of ALD

Saturated Fat



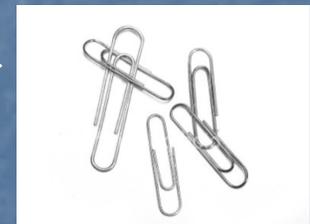
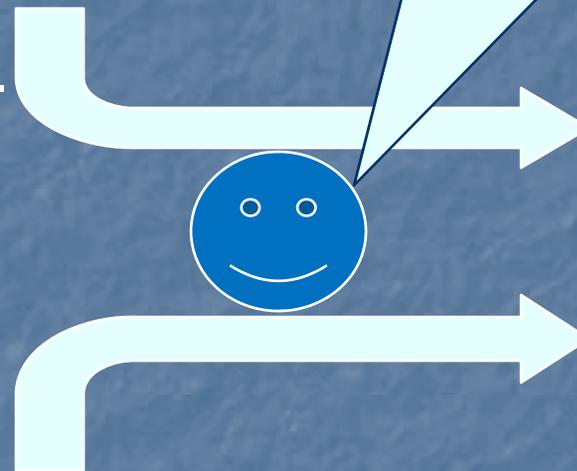
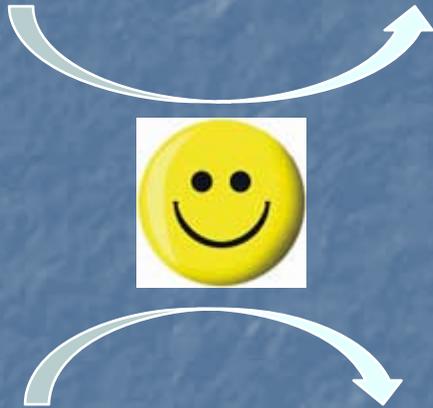
I make very long chain fats by adding carbon atoms to the ends of BOTH types of fats in the ER



Unsaturated Fat

Summary of ALD

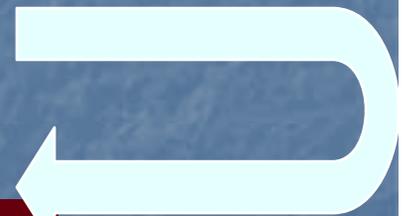
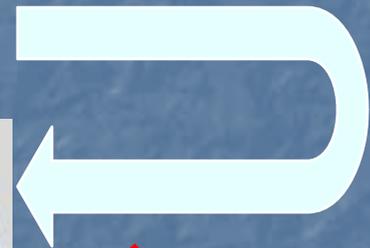
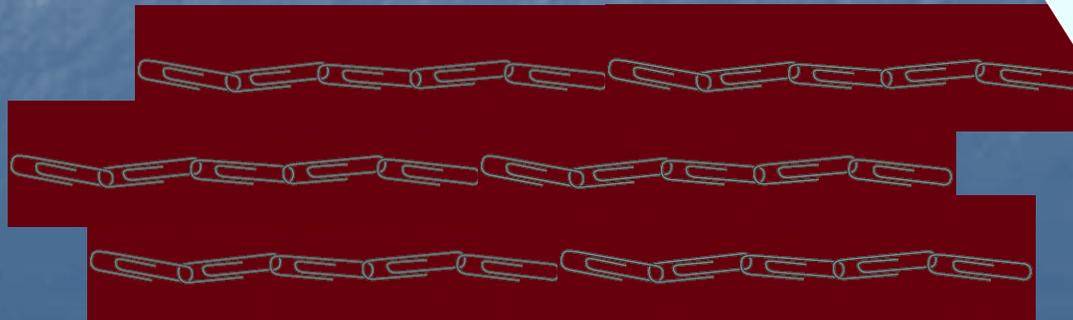
When I am working right, I breakdown excess fats in the peroxisome



Summary of ALD



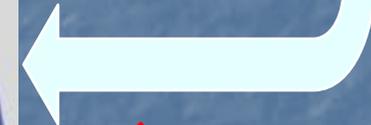
Summary of ALD



Summary of ALD



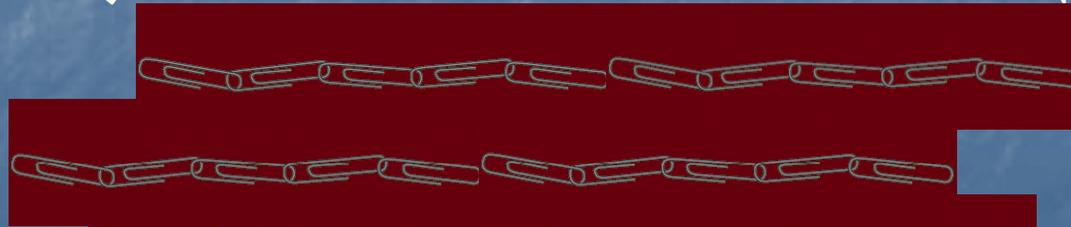
PROBLEM



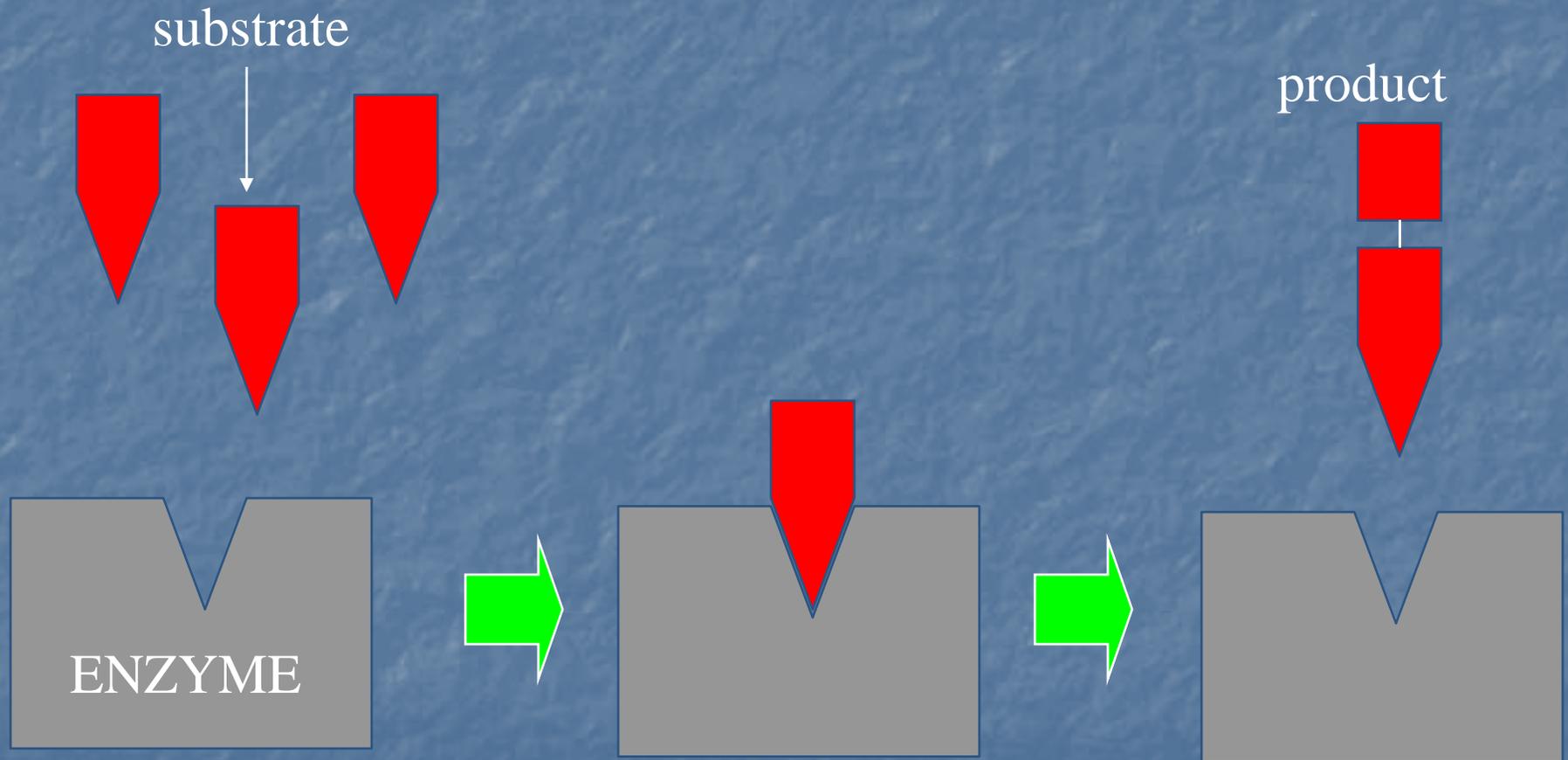
NO PROBLEM



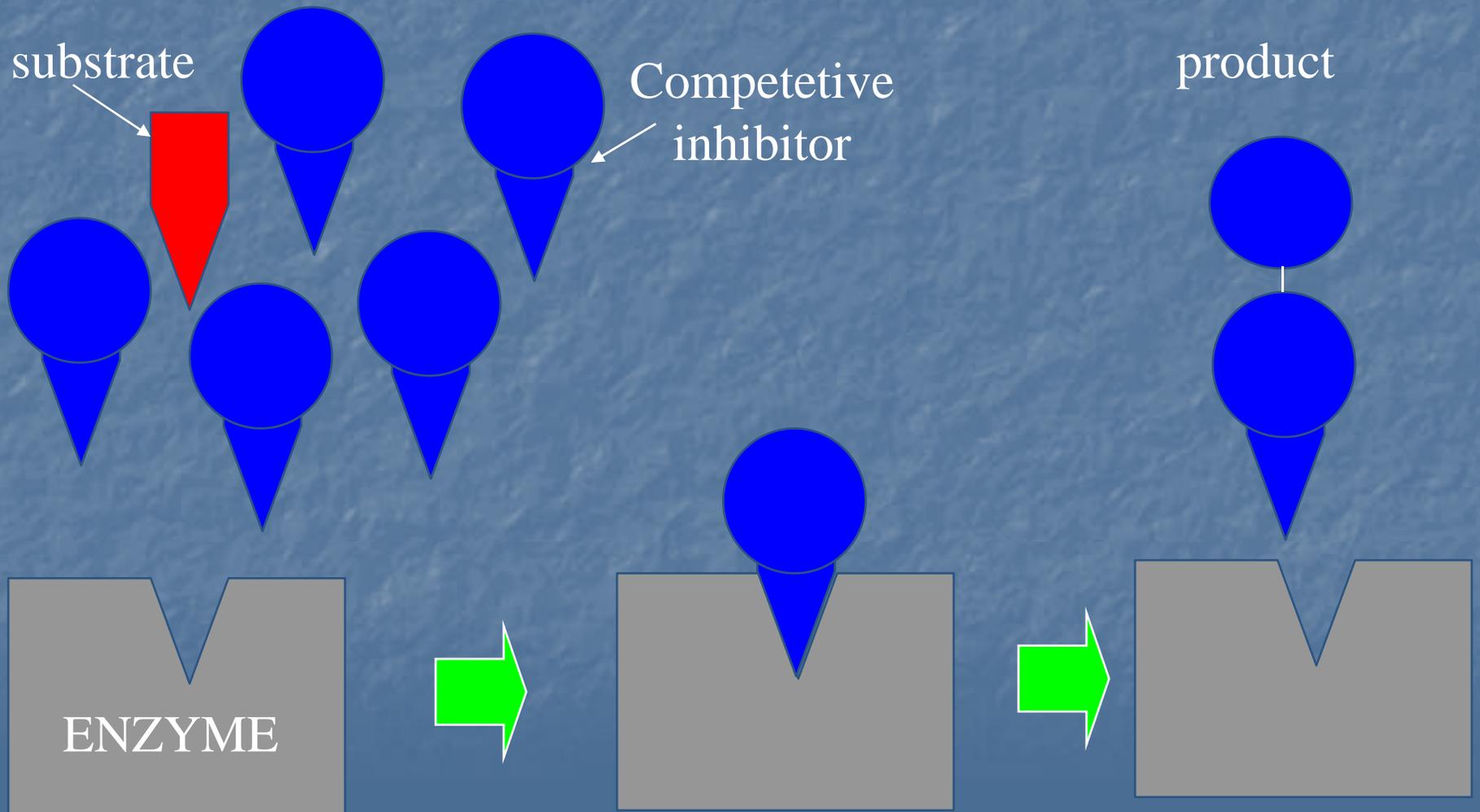
How Can We Fix it?



Enzyme Function



Competitive Inhibition

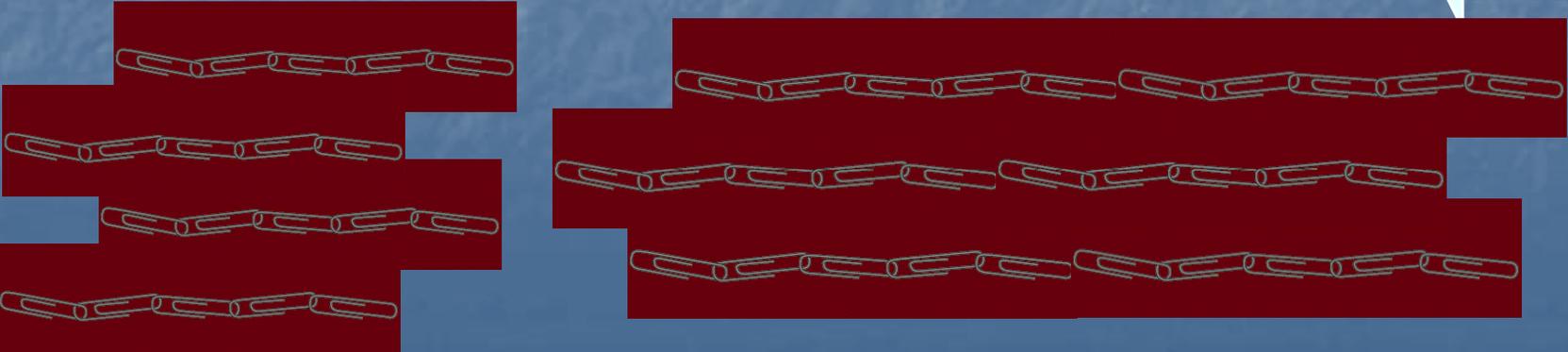


Lorenzo's Oil

Less saturated fats
in the diet



Lorenzo's
Oil

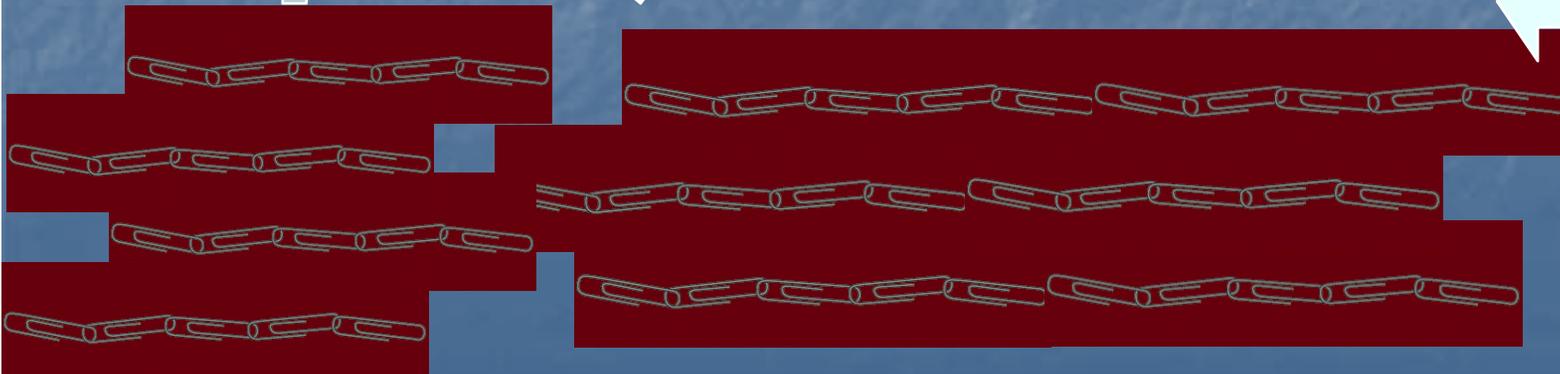


Competitive Inhibition

Less saturated fats
in the diet



Lorenzo's
Oil

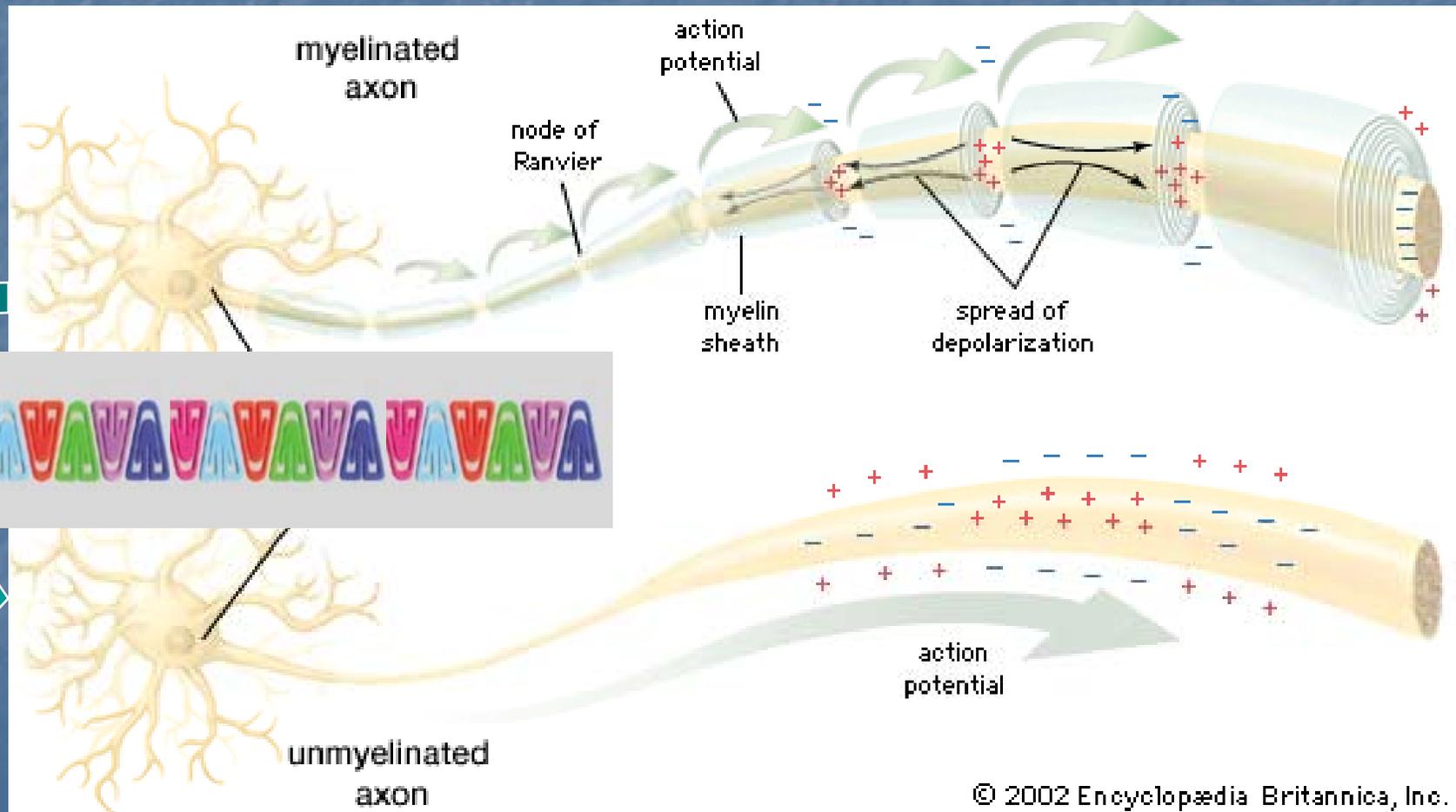


I am so busy working with
all the unsaturated fats,
that I don't have time to
add carbon molecules to
the saturated fats

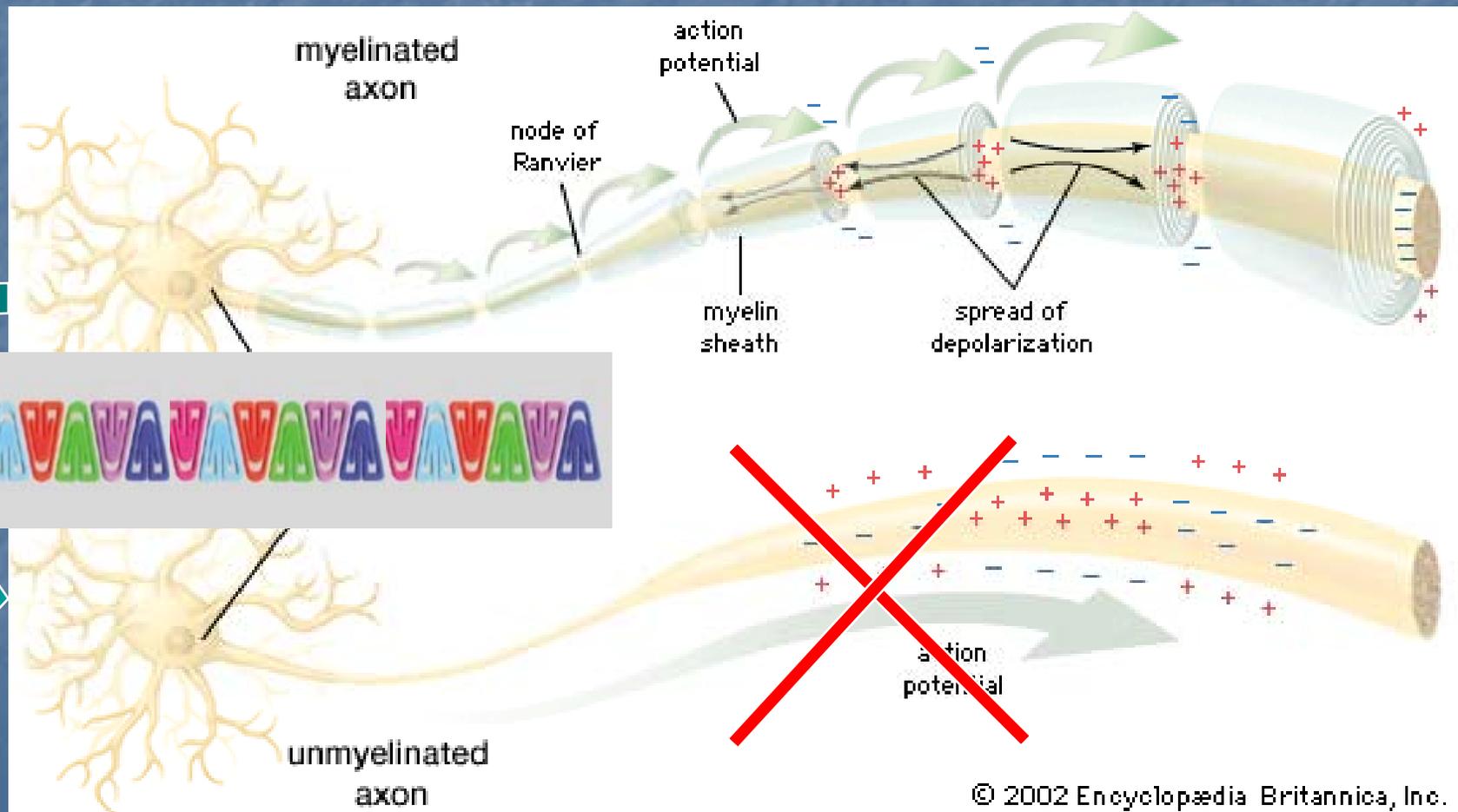


GOOD

Too many saturated fats are BAD for our nerves



Unmyelinated Nerves Don't work

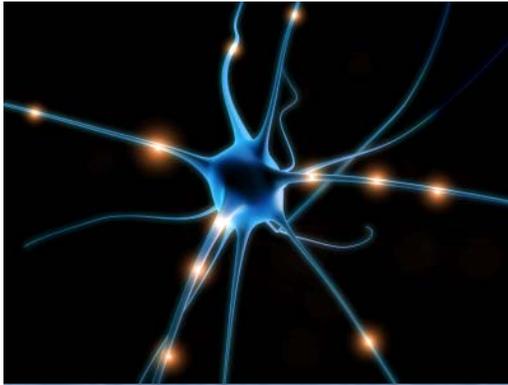


Is Lorenzo's Oil a treatment or a cure?



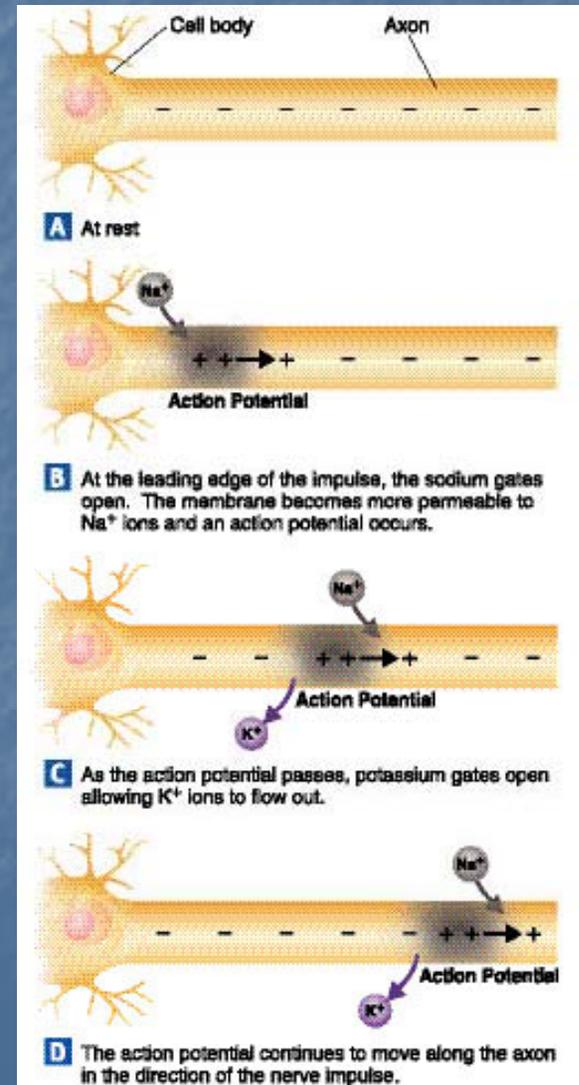
- Lorenzo is still alive today paralyzed by ALD
- His remarkable survival is due to his parents' refusal to accept the doctors' grim diagnosis.
- With no scientific training, they set out to find a cure and in 1986 it seemed they had succeeded.

<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

