Lorenzo’s Oil
Adrenoleukodystrophy (ALD)

- ALD patients are unable to breakdown very long chain saturated fatty acids (VLCSFA).
- Build up of VLCSFA 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

- Nucleus
- Nucleolus
- Mitochondrion
- Cytoskeleton
- Ribosomes
- Golgi apparatus
- Centrioles
- Peroxisome
- Plasma membrane
- Smooth endoplasmic reticulum
- Rough endoplasmic reticulum

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
When I am working right, I breakdown excess fats in the peroxisome.
Summary of ALD
Summary of ALD
How Can We Fix it?
Enzyme Function

substrate → ENZYME → product
Competitive Inhibition

substrate

Competitive inhibitor

product

ENZYME
Lorenzo’s Oil

Less saturated fats in the diet

Lorenzo’s Oil

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