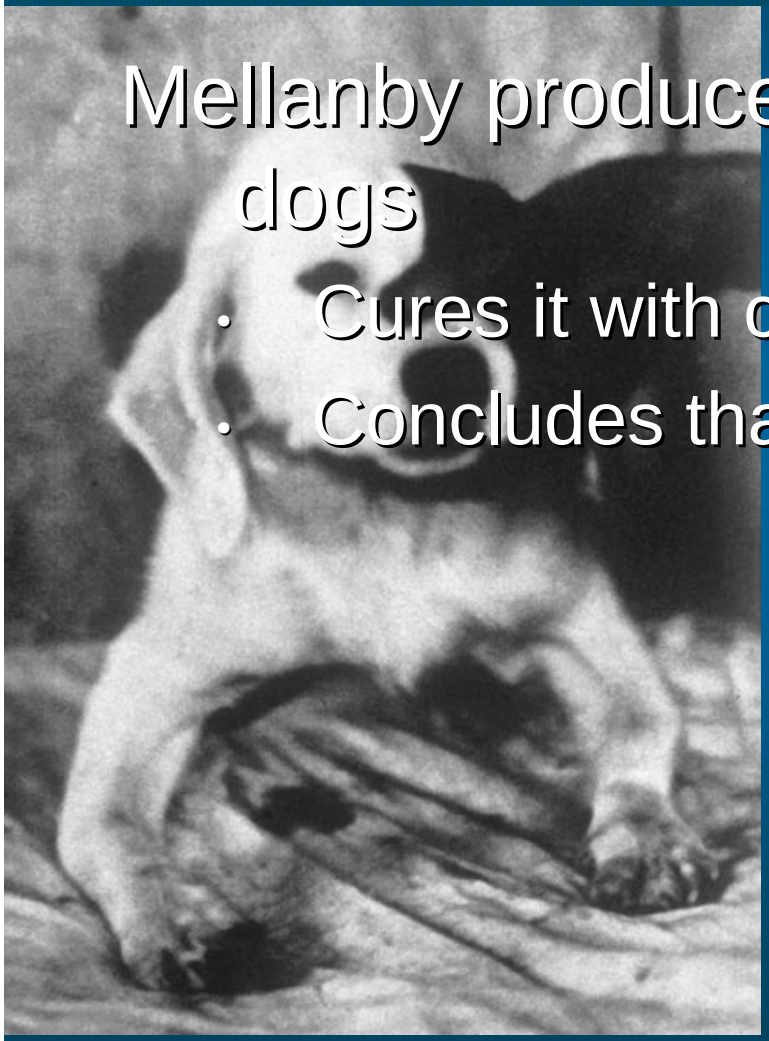
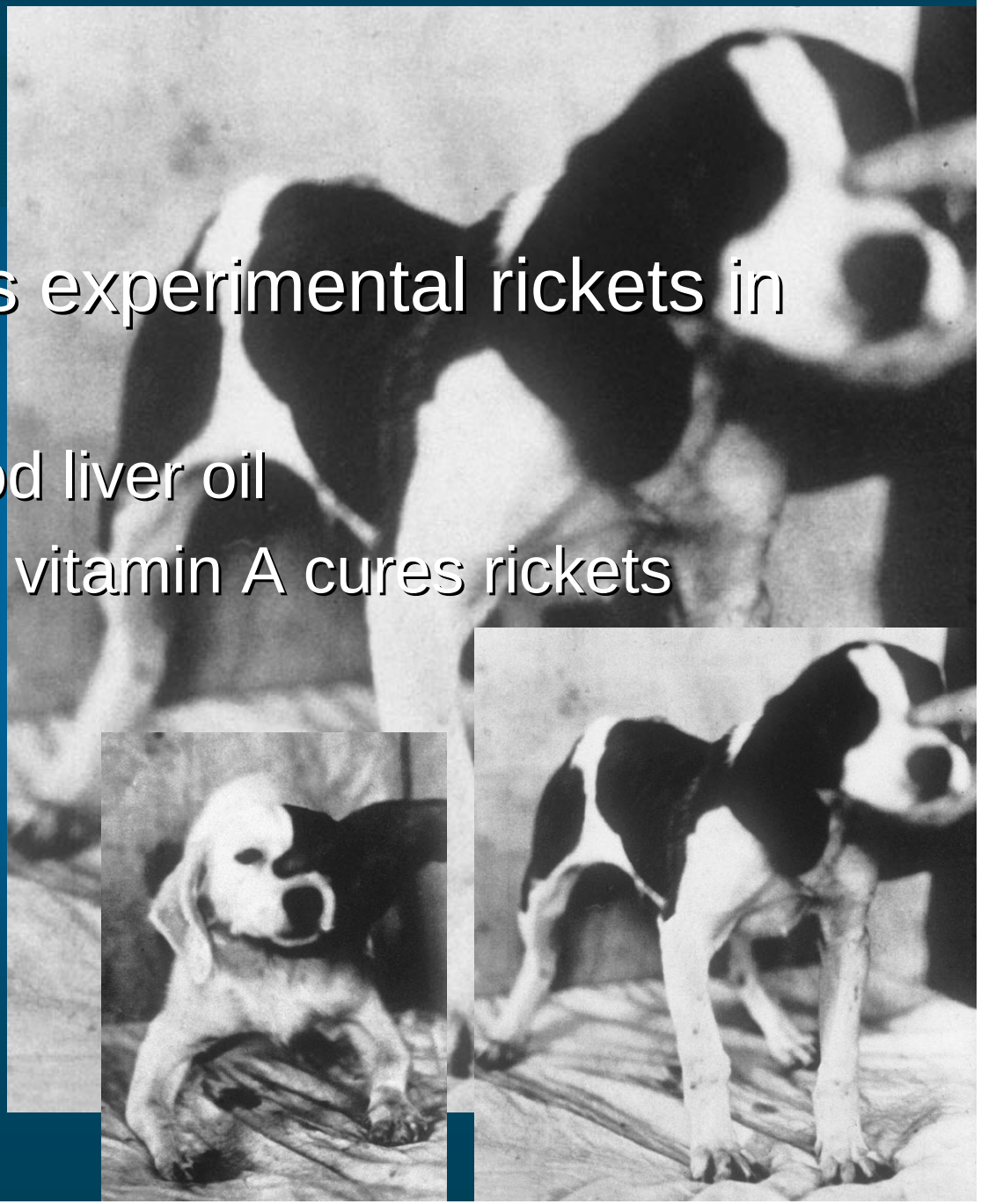

Vitamin D - A Public Health Issue
Bascom Hill Society
August 14, 2007

1919

Mellanby produces experimental rickets in dogs

- Cures it with cod liver oil
- Concludes that vitamin A cures rickets

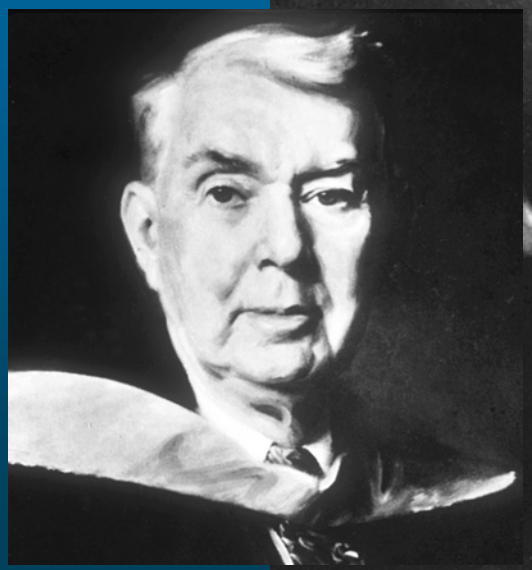




1922

McCollum destroys vitamin A in cod liver oil still cures rickets

Concludes this a new vitamin ‘vitamin D’

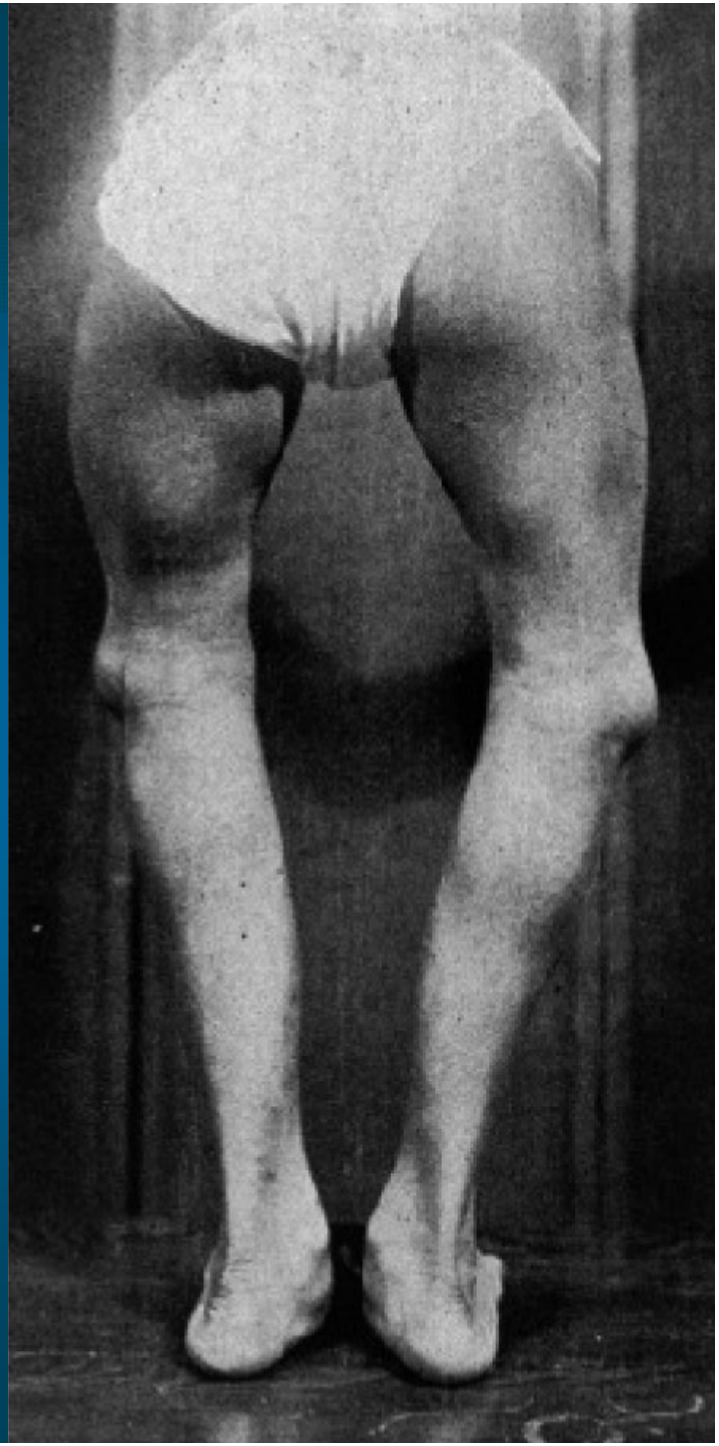


1919

Huldshinsky in Vienna and Chick in England

cure rickets with UV light

Light = cod liver oil

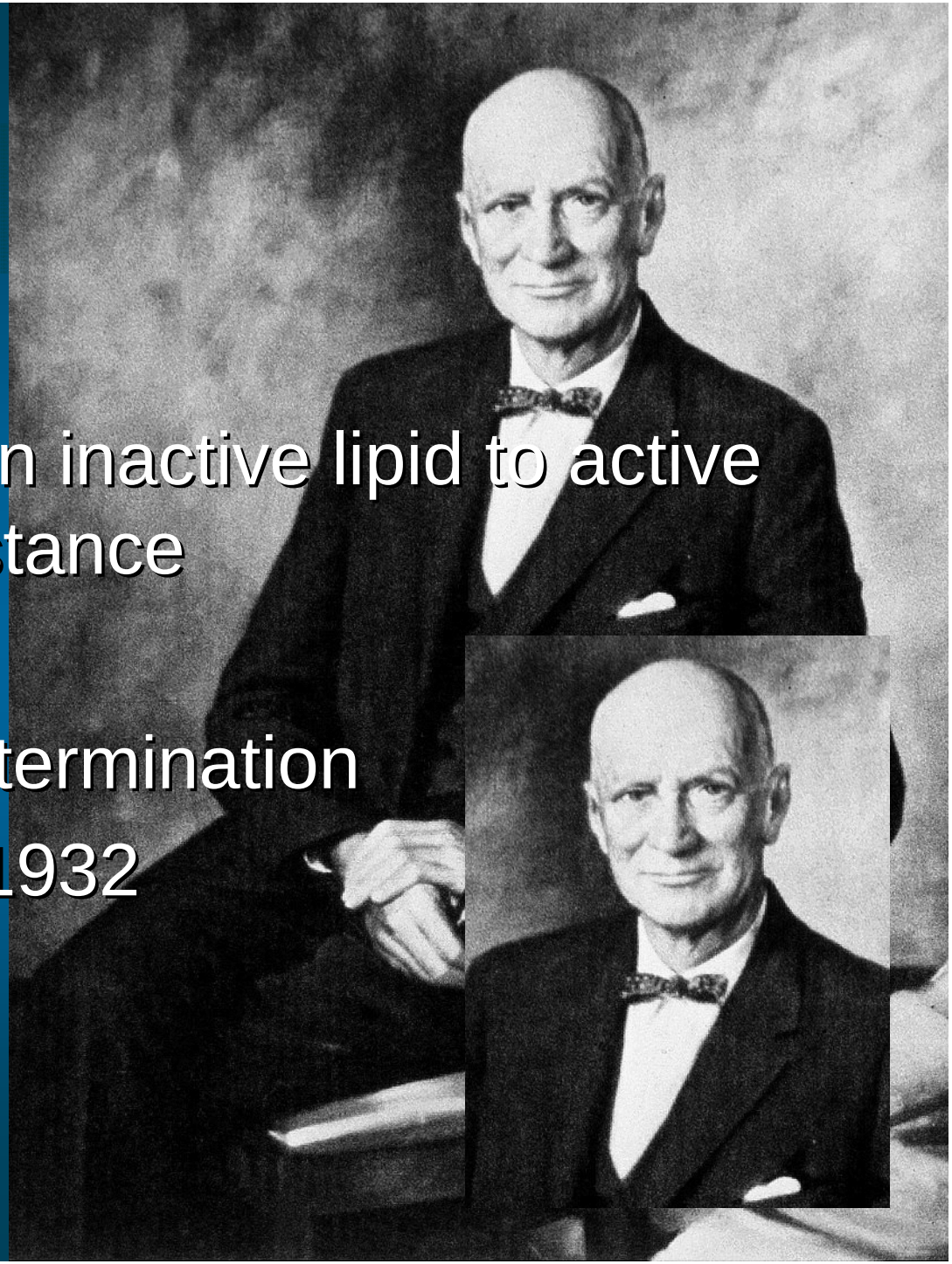


1924

Steenbock shows:

UV light converts an inactive lipid to active antirachitic substance

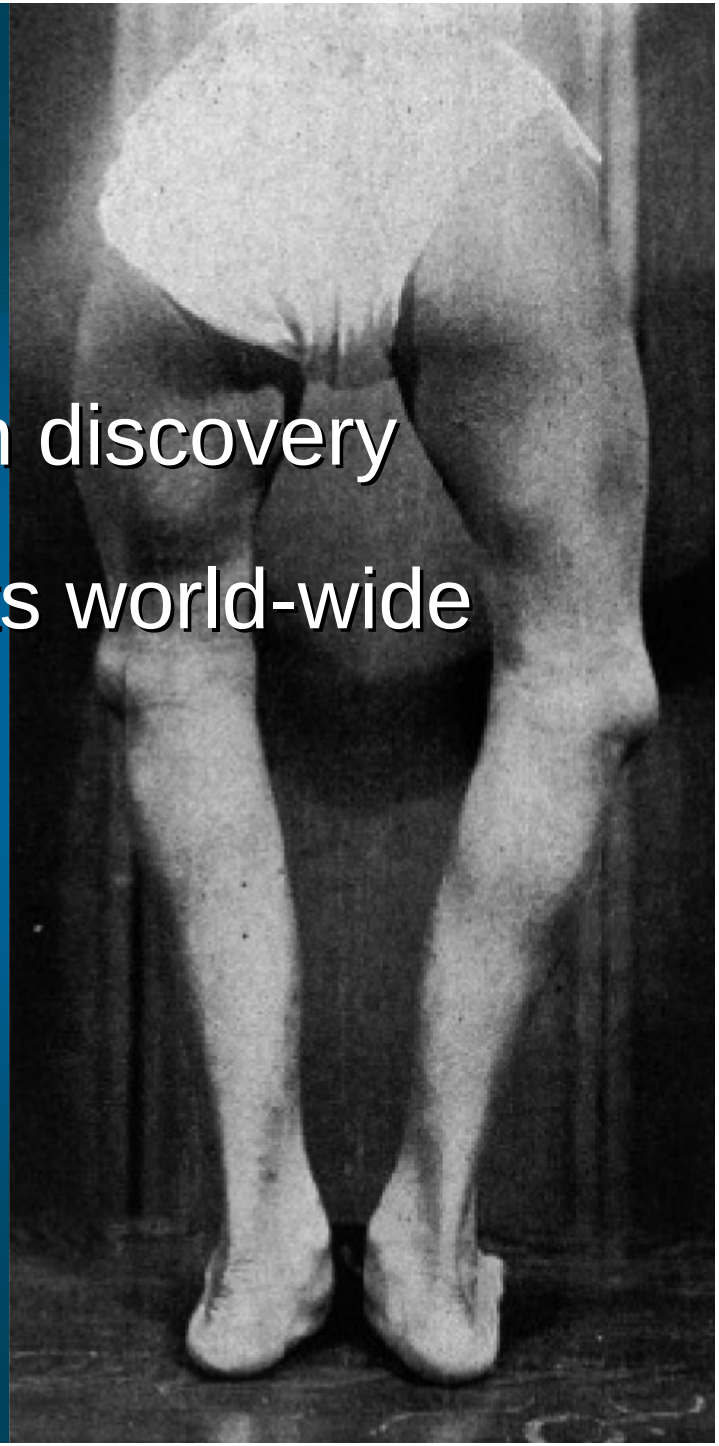
Led to structure determination of vitamin D_2 in 1932 by Askew et al



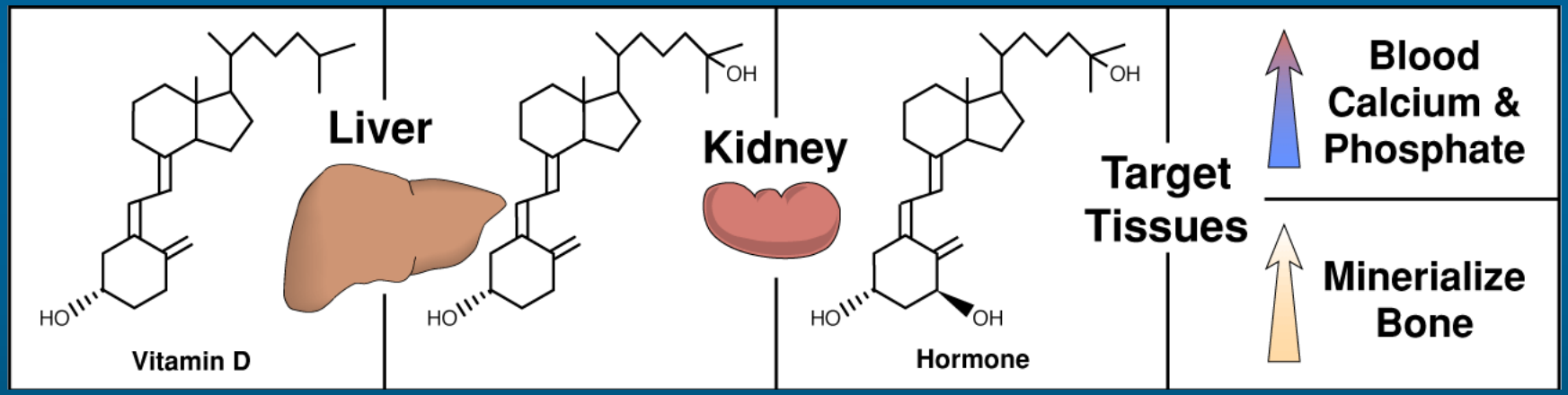
Rickets treatment

Steenbock patents irradiation discovery

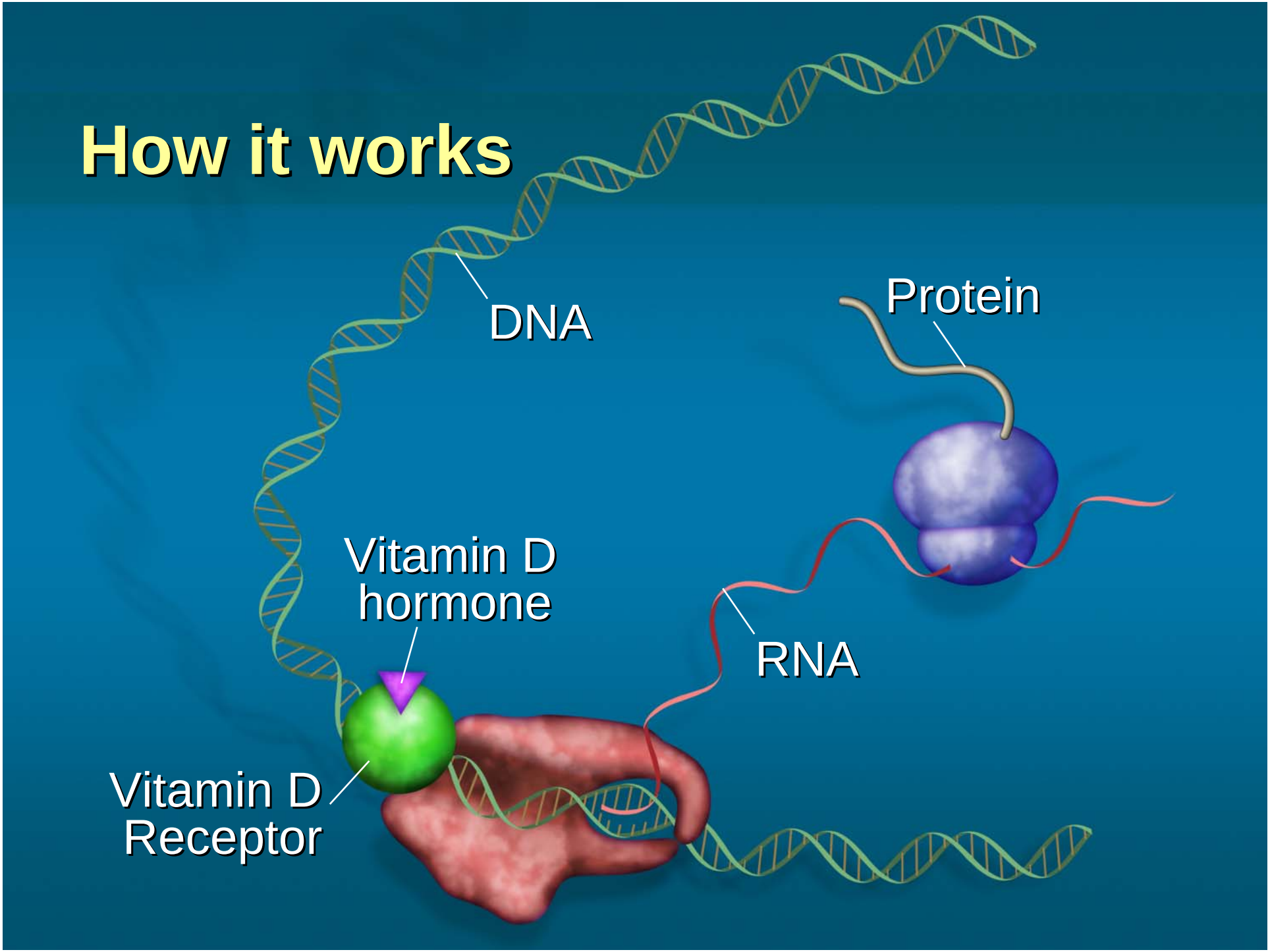
The method eliminates rickets world-wide



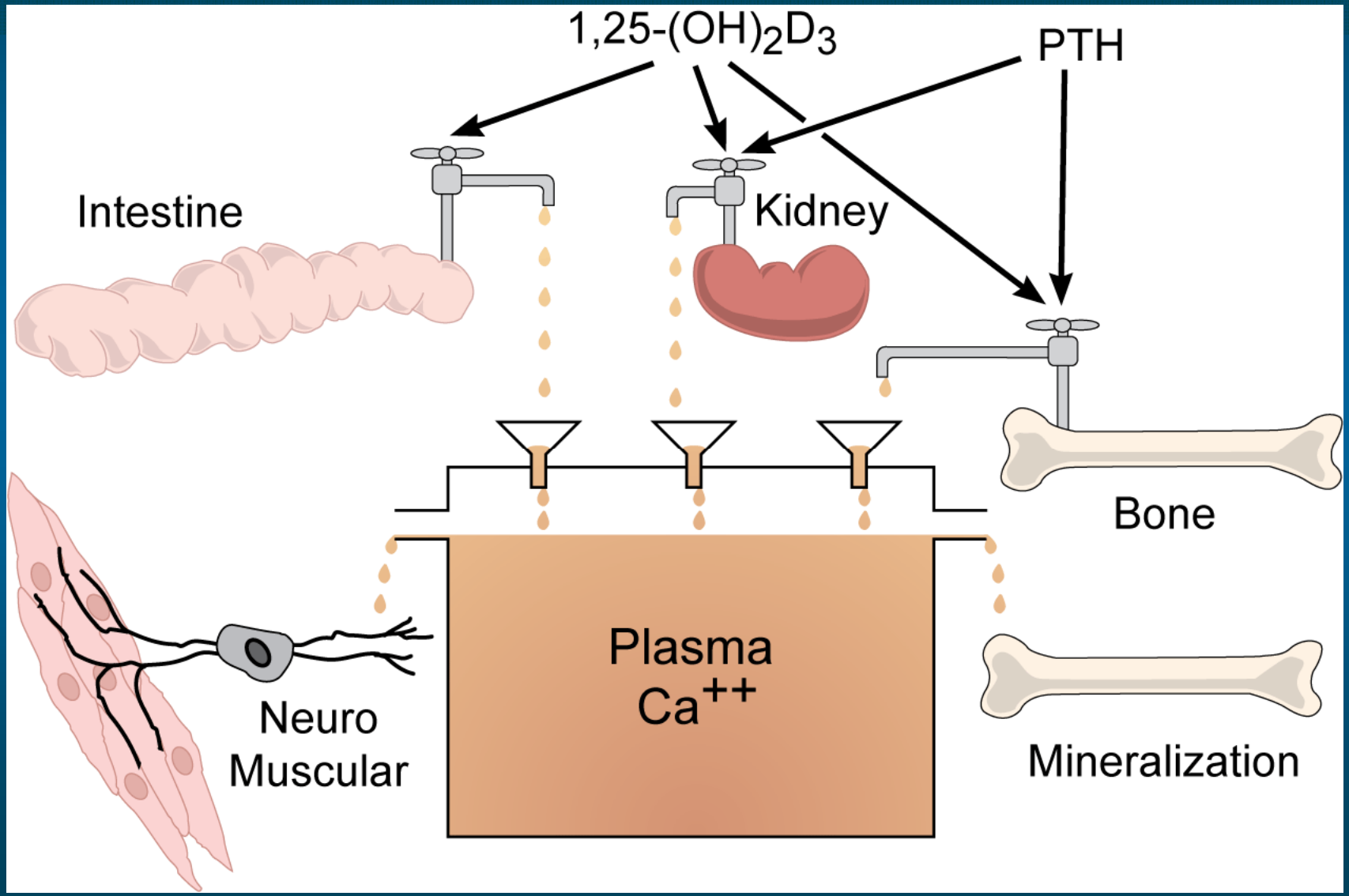
Vitamin D Conversion to a Hormone



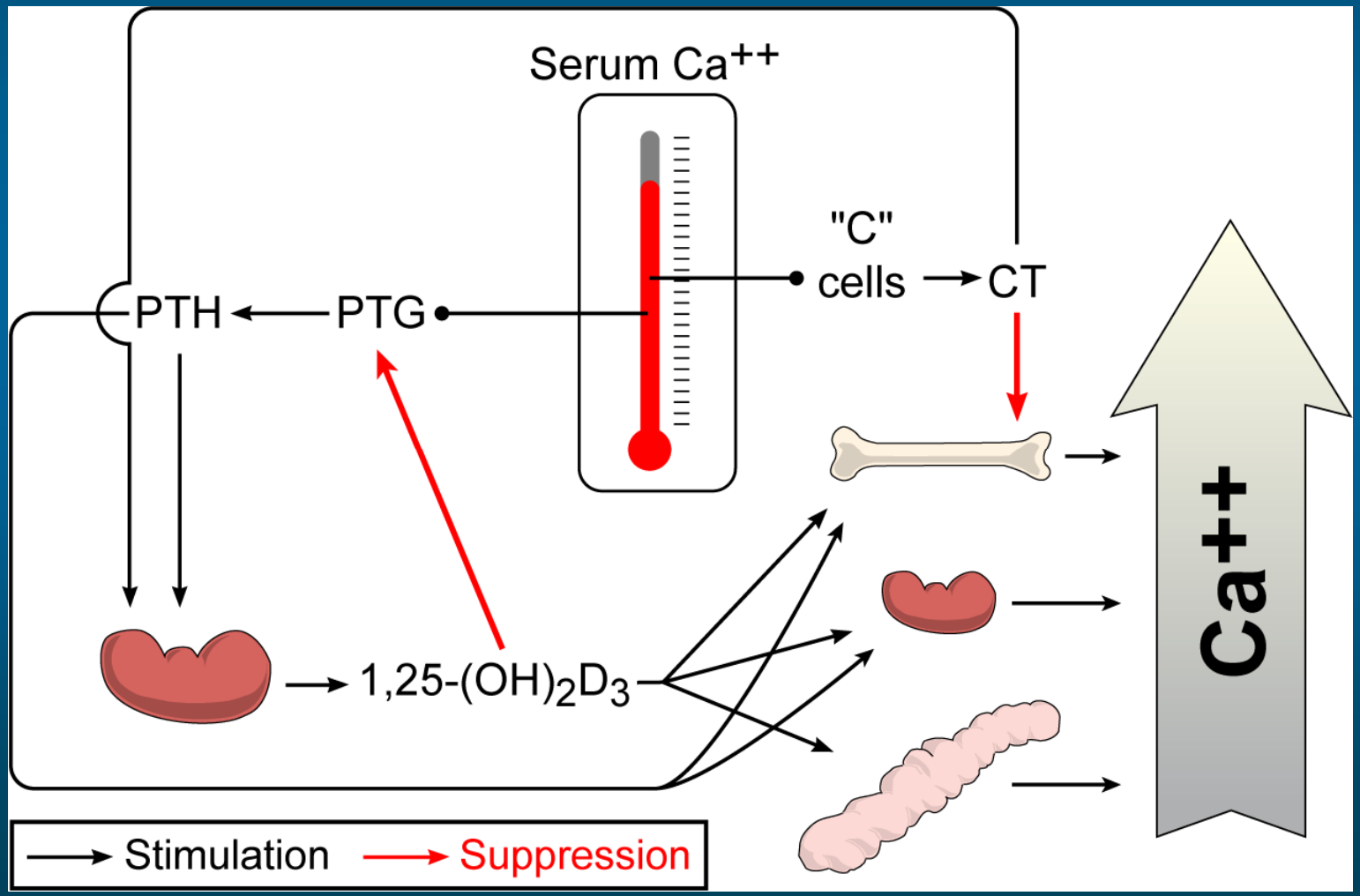
How it works



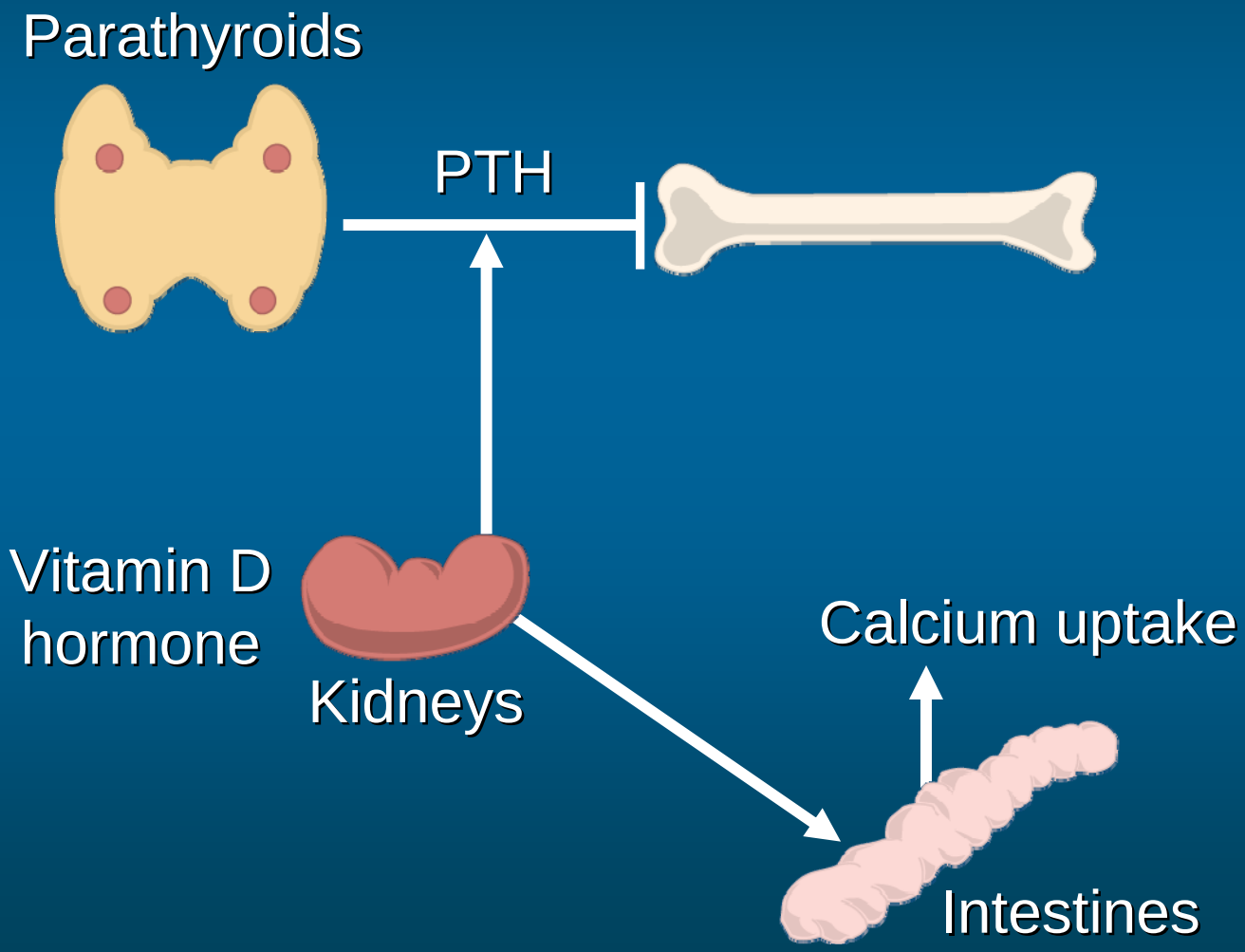
How the Hormone Heals Rickets



How the Hormone Controls Blood Calcium



Kidney loss promotes bone degeneration



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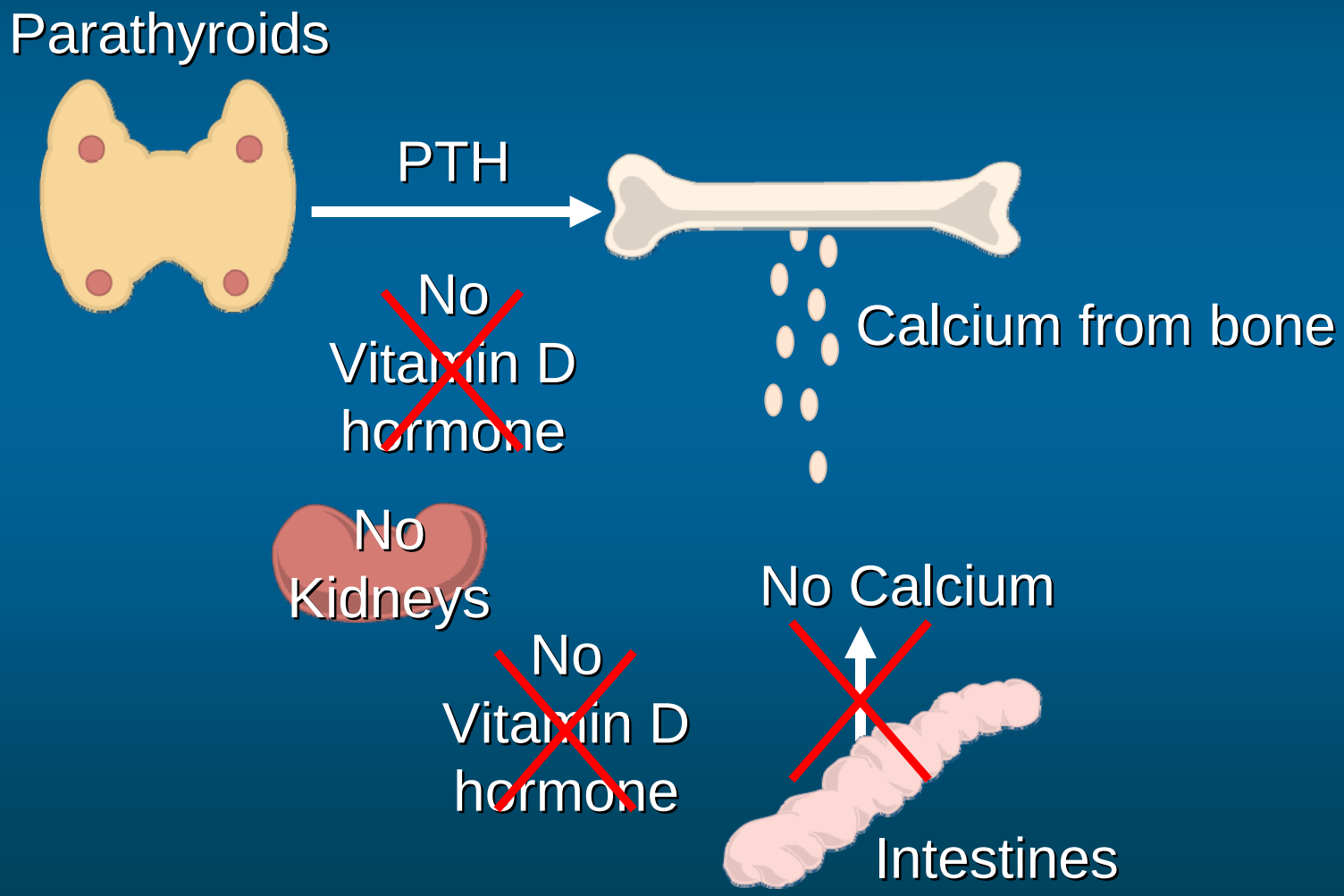
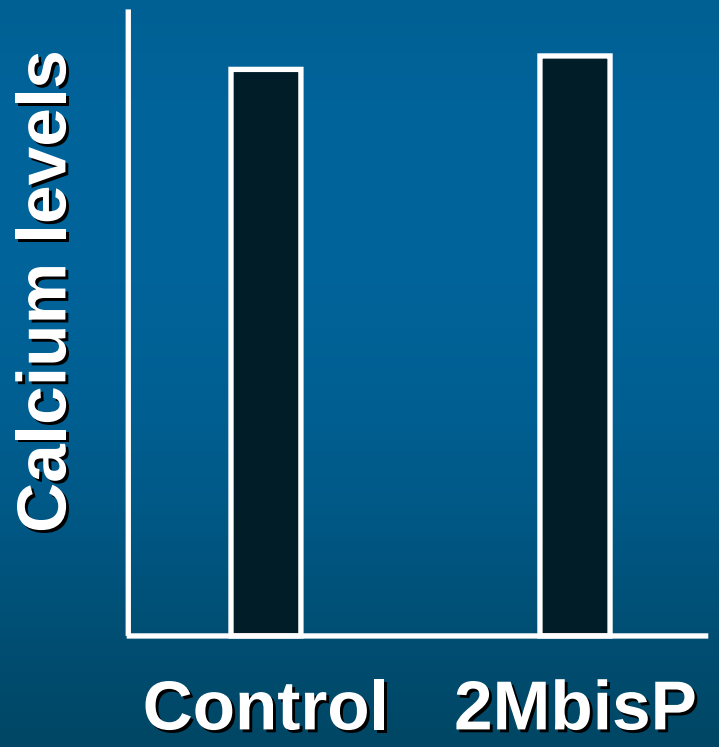
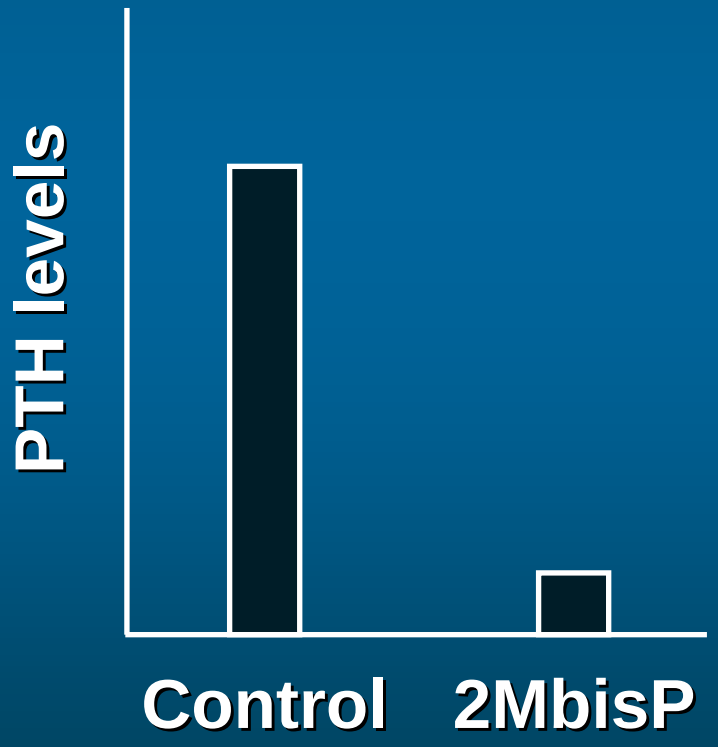


2MbisP Reduces Parathyroid Hormone Without Increasing Blood Calcium

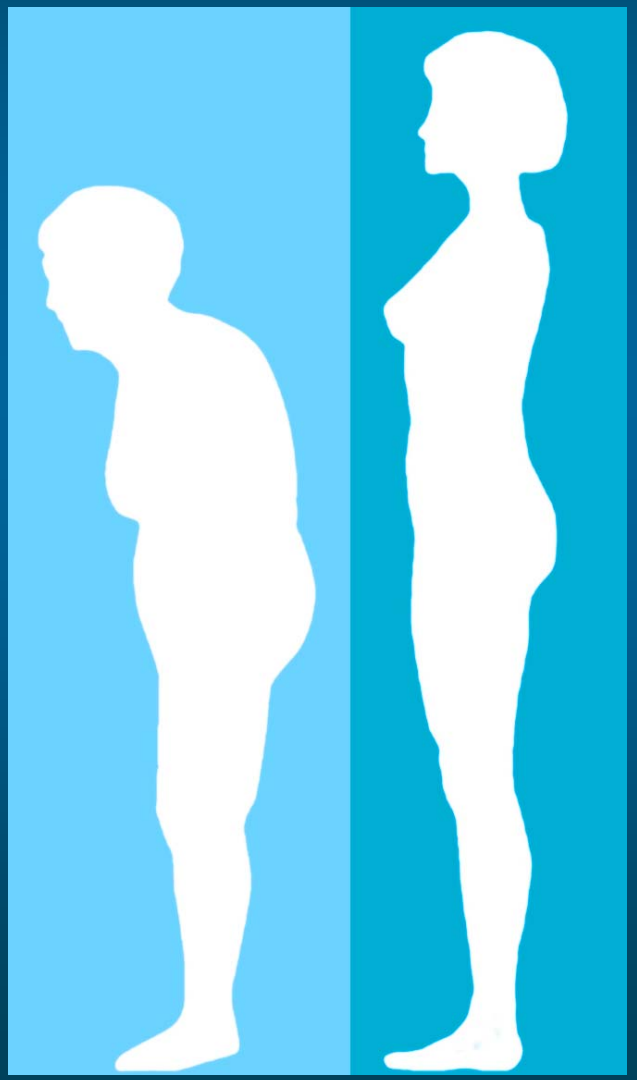




Post-menopausal Osteoporosis

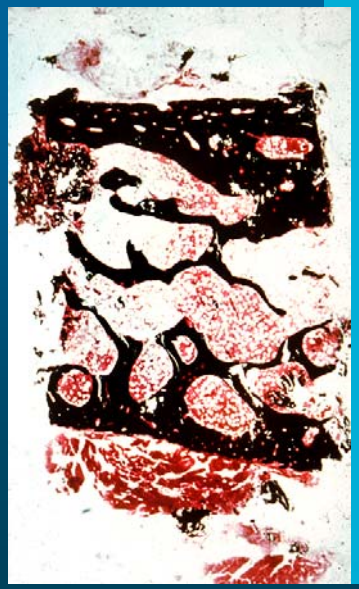
25 million US patients

15% currently treated

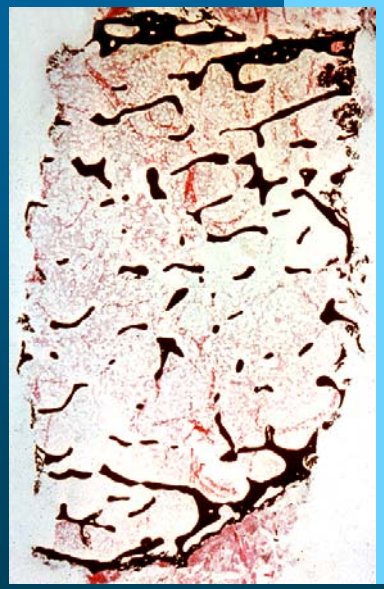


Post-menopausal Osteoporosis

Normal



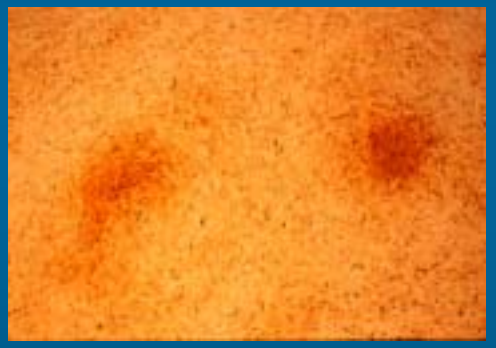
Osteoporosis



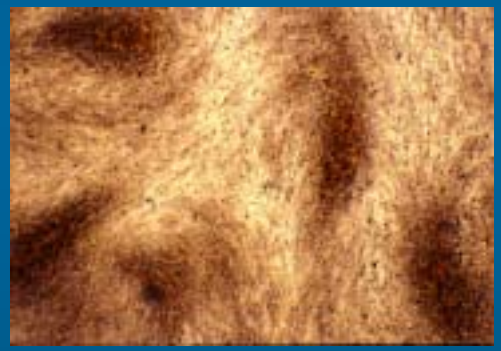
2MD Induces Bone Formation

No treatment

Vitamin D Hormone

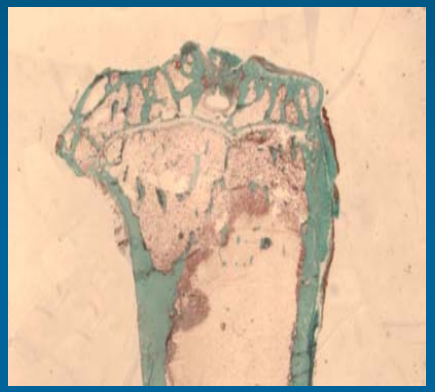


2MD

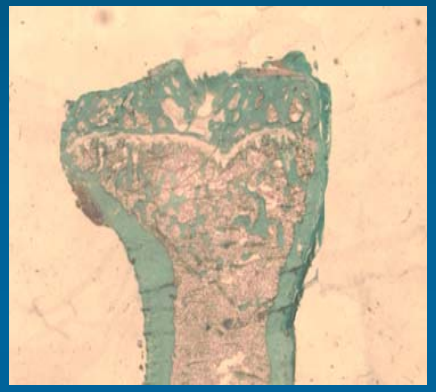


Bone

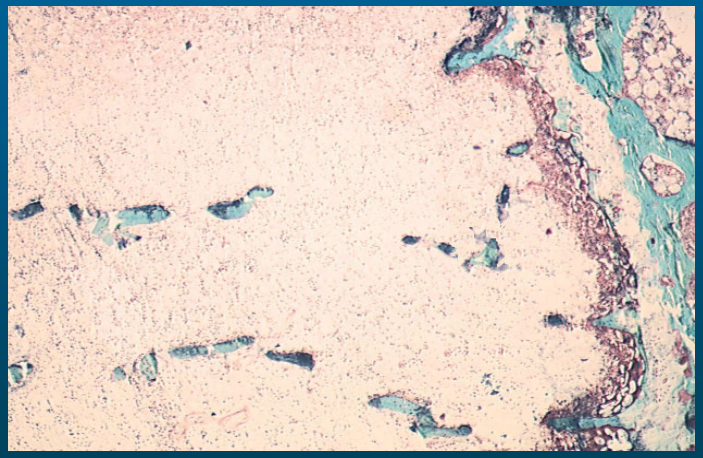
2MD Induces Bone Formation

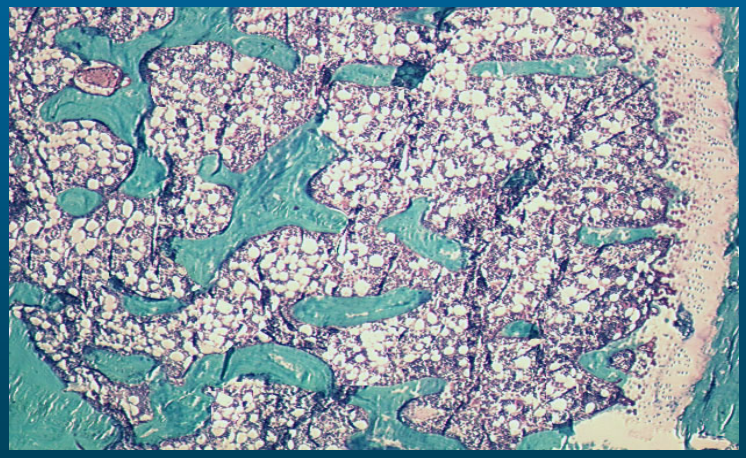


Control



2MD





Vitamin D Hormone Targets

Intestine
Osteoblast
Kidney

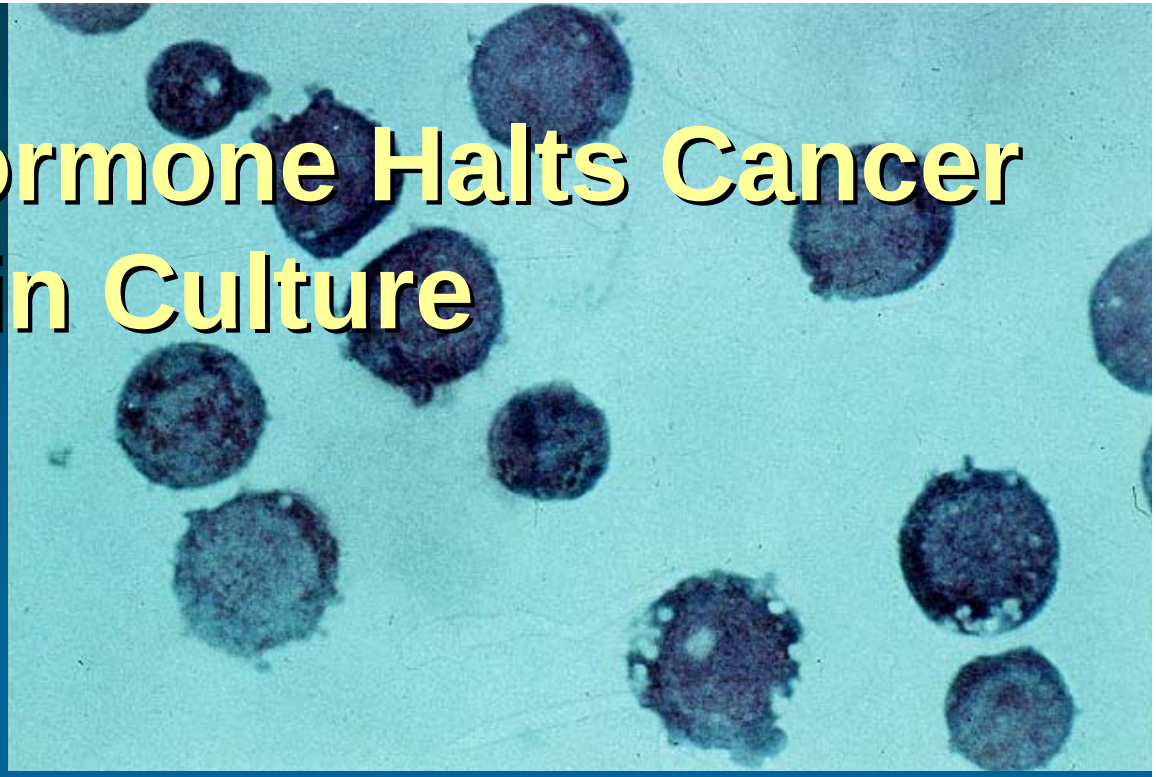
Parathyroid
Skin

Immune Cells
Colon
Pancreas
Stomach
Pituitary
Ovary
Prostate

Placenta
Brain
Mammary
Blood Vessels

Cancer Cells

Vitamin D Hormone Halts Cancer Cell Growth in Culture



Cancer cells

Treated with Vitamin D hormone
(Cancer stops growing)

Psoriasis Treatment

Before

After

Multiple Sclerosis Treatment

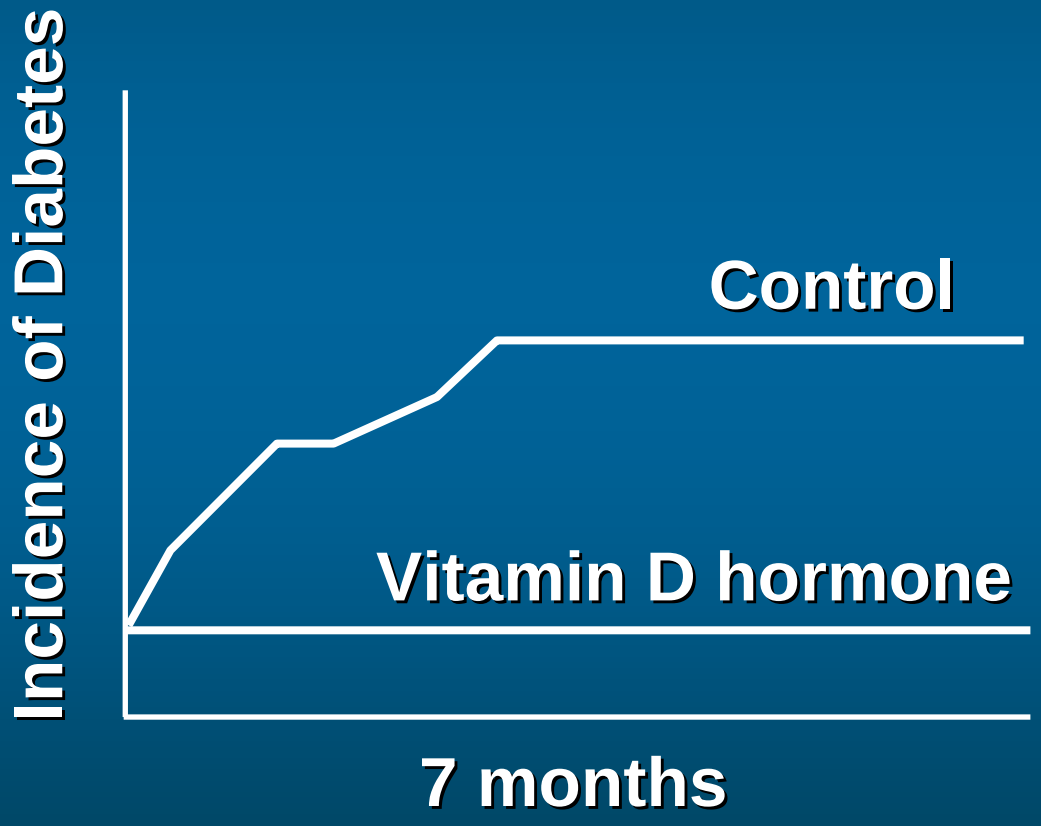
Induced MS

Control

Induced MS

Vitamin D hormone

Prevention of Diabetes



QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

American Diabetes Association.
Cure • Care • Commitment®

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TIFF (Uncompressed) decompressor
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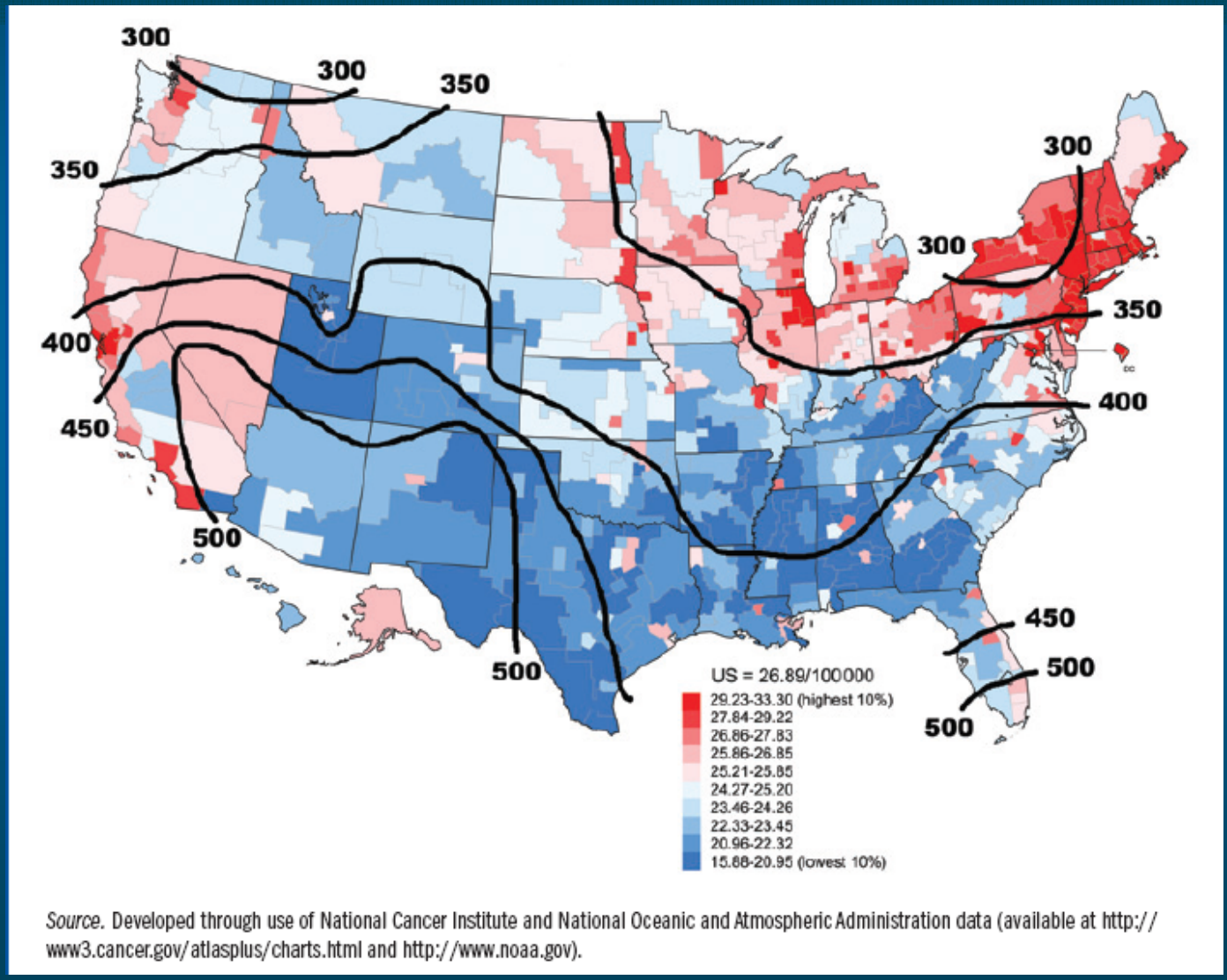
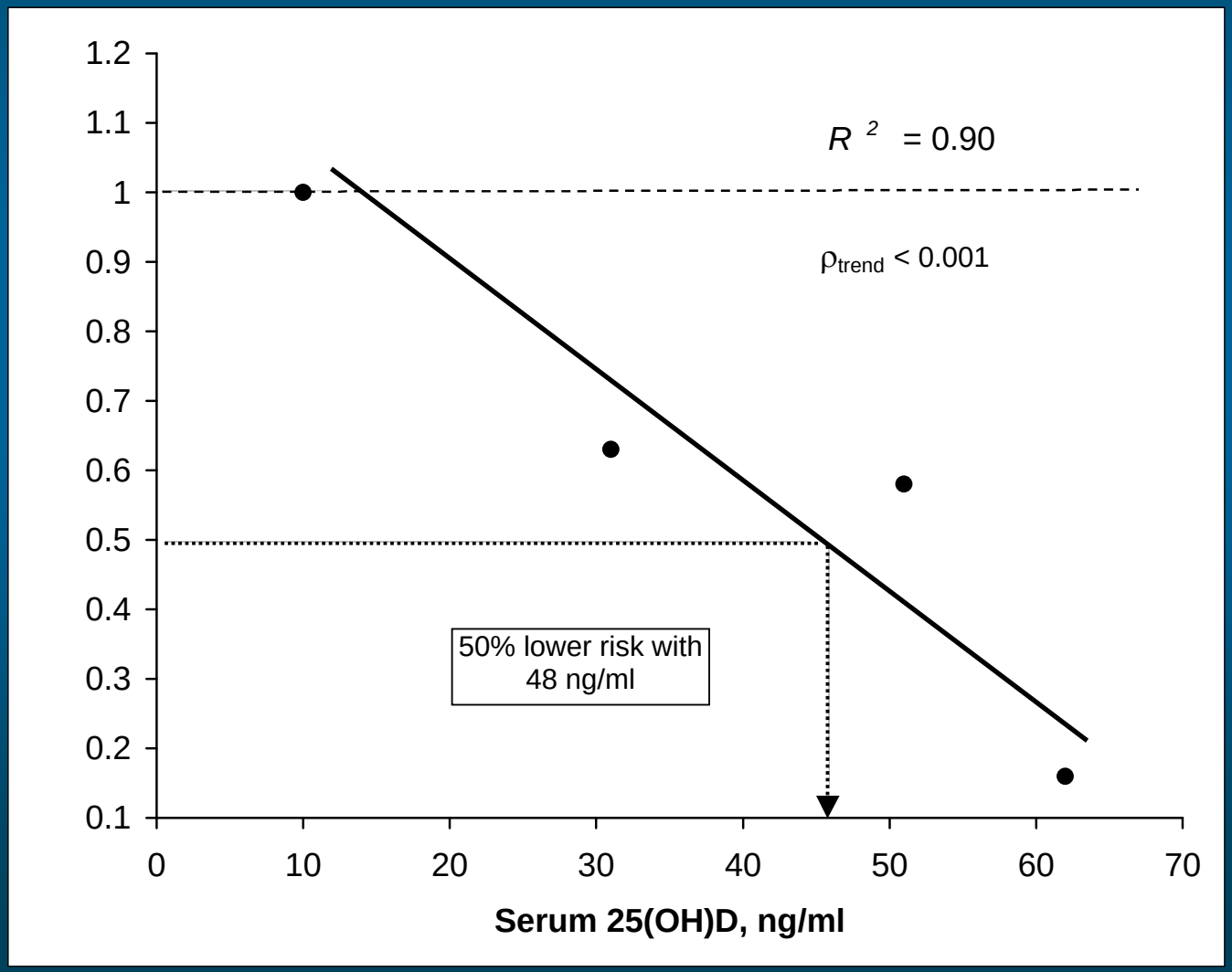
Breast Cancer in Relation to Solar Radiation



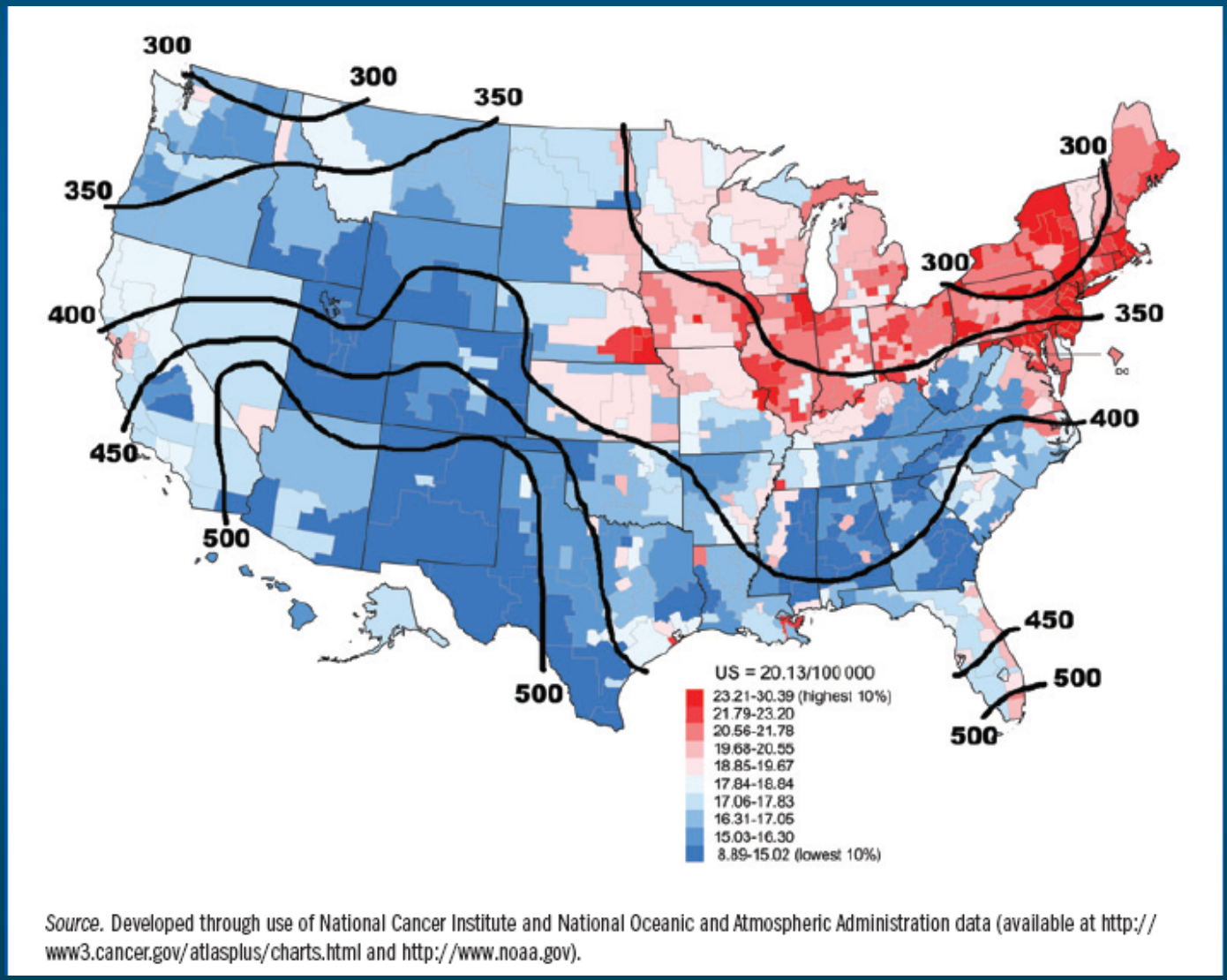
Source. Developed through use of National Cancer Institute and National Oceanic and Atmospheric Administration data (available at http://www3.cancer.gov/atlasplus/charts.html and http://www.noaa.gov).

Breast Cancer Risk Relationship to Blood Vitamin D Levels



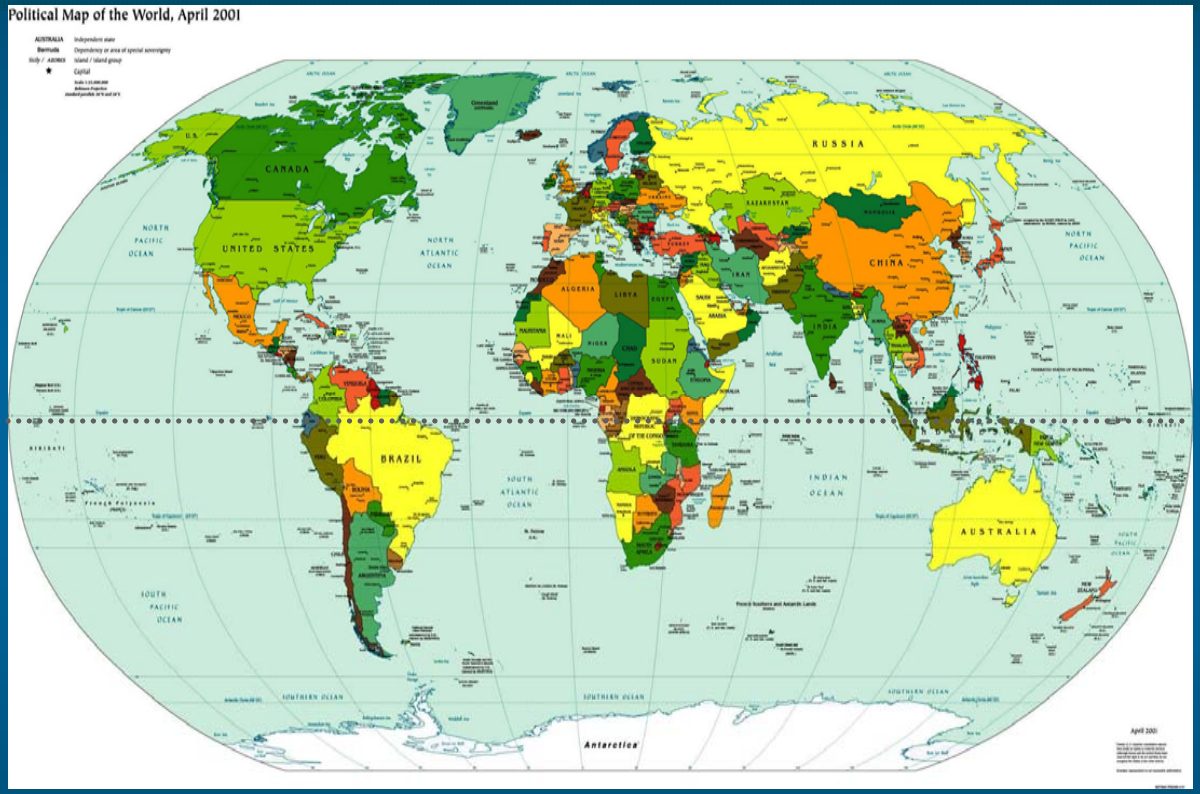
Lowe et al. 2005 Eur J Cancer 41:1164

Colon Cancer Related to Solar Radiation



Source. Developed through use of National Cancer Institute and National Oceanic and Atmospheric Administration data (available at http://www3.cancer.gov/atlasplus/charts.html and http://www.noaa.gov).

Global Distribution of Prostate Cancer

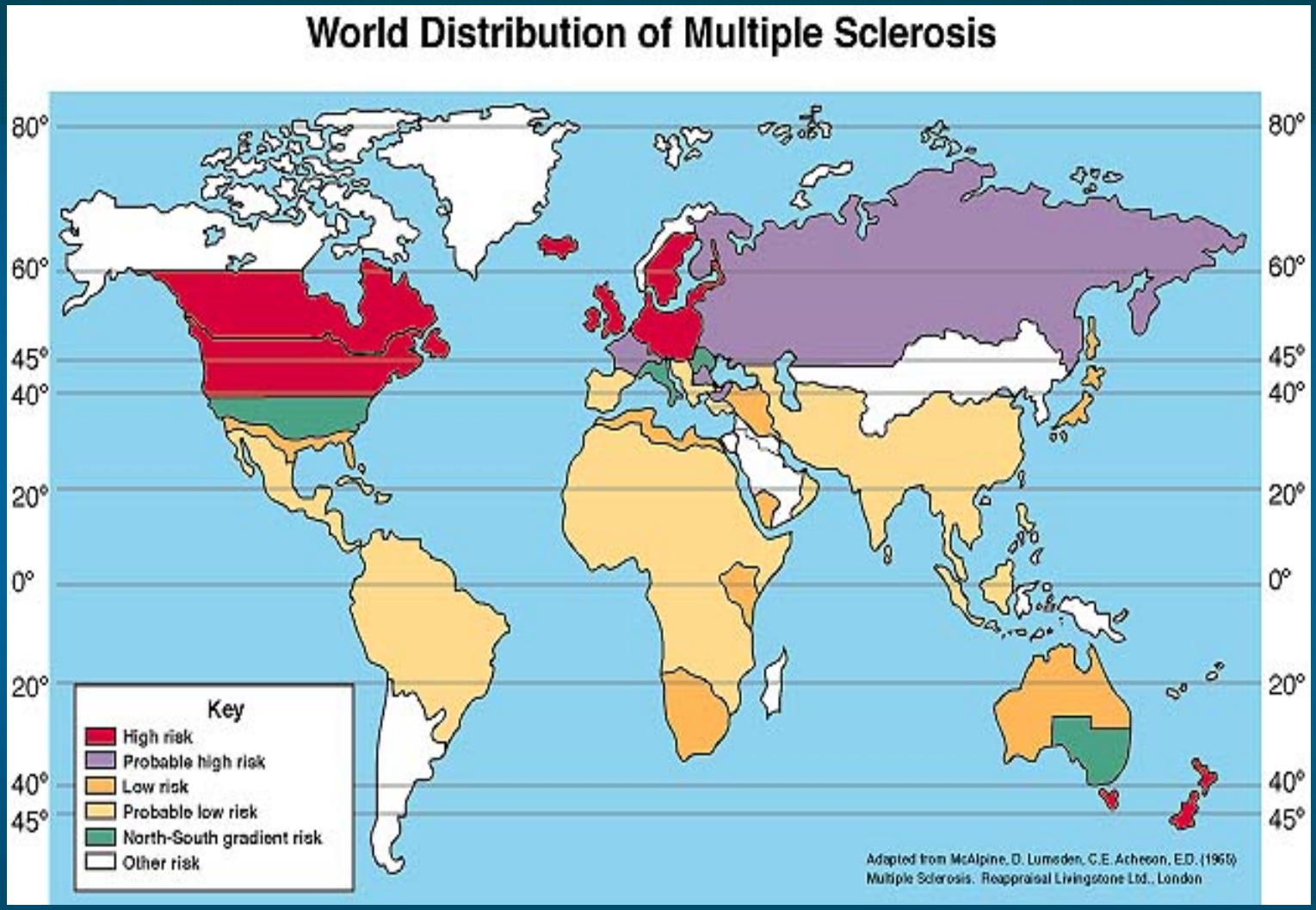


Vit. D Deficiency

Prostate Cancer

Rastogi *et al*. Nature reviews. Cancer Opportunities for cancer epidemiology in developing countries. 2004 (4) 909 -17

World Distribution of Multiple Sclerosis



How much vitamin D should I take?

- Remember vitamin D in large amounts is toxic
- Current recommendation among experts is between 2000 and 4000 units per day to reduce risks of cancer and autoimmune disease
- Do not take more than 4000 units unless under the care of a physician

Conclusions

- Therapies for a number of diseases with vitamin D compounds now is possible
  - Osteoporosis
  - Bone disease of kidney failure
  - Psoriasis
- Adequate Vitamin D is important to reduce the risk of several cancers and autoimmune diseases such as multiple sclerosis