

A photograph of two people kayaking on a calm river. The kayakers are wearing orange life jackets and yellow helmets. The river is surrounded by dense green trees and foliage, with their reflections visible in the water. The scene is peaceful and scenic.

# THE IMPORTANCE & SAFETY OF HIGH-DOSE VITAMIN D3

Riordan Clinic | Dr. Ron Hunninghake

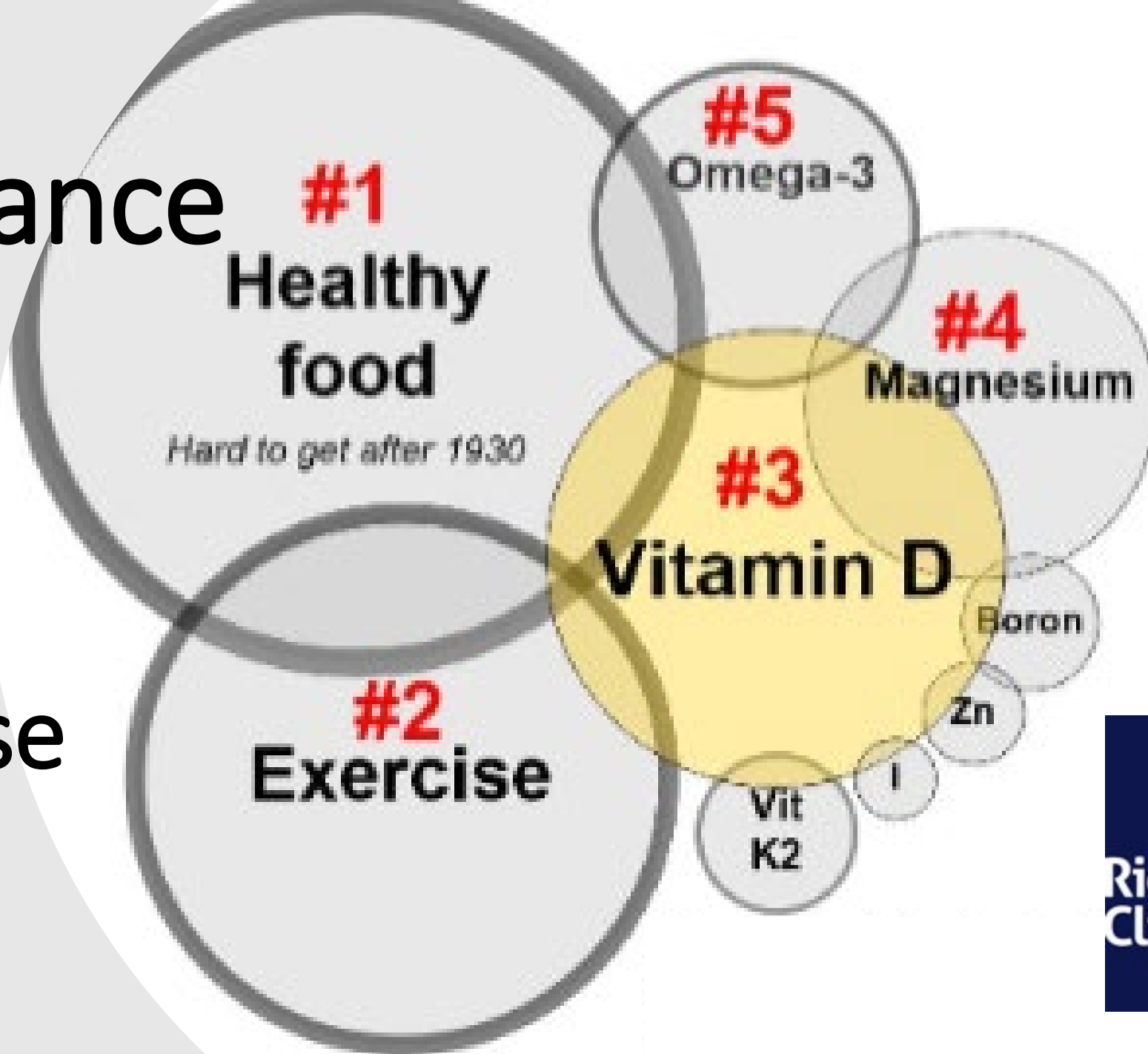


Riordan  
Clinic

[riordanclinic.org](http://riordanclinic.org)

Recorded: October 23, 2019

# The Importance and Safety of High-Dose



# 1950's – Misdiagnosis of *Williams Syndrome*

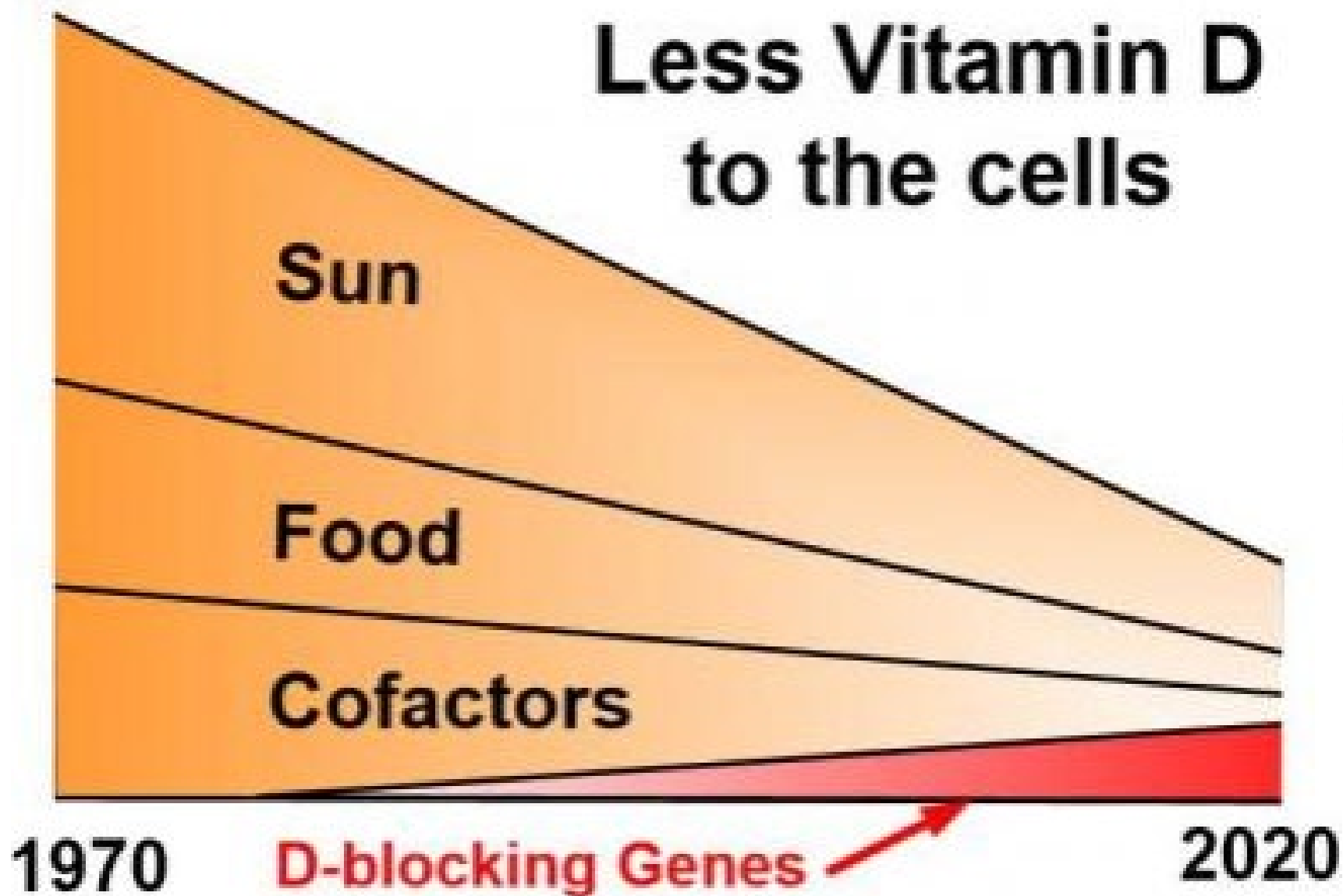
- A deletion on 26 genes occurring in 1 in 7000 births
- Results in hypercalcemia and high levels of Vitamin D
- Correctly diagnosed in the 60's...but it was too late:
- The reputation of vitamin D has remained tainted for 50+ years
- To this day, doctors rarely consider even trying more than 2,000 IU daily
- The importance of enough vitamin D might have been left undiscovered...
- Were it not for the global emergence of vitamin D deficiency syndromes
- “I have since learned that there is little concern at 10,000 IU and the [toxic level](#) for long term use is about 40,000 IU daily.”

- John Cannell, M.D.

Founder of the Vitamin D Council



22 of the  
38 Reasons  
for  
Vitamin D  
Deficiency  
Are  
NEW!



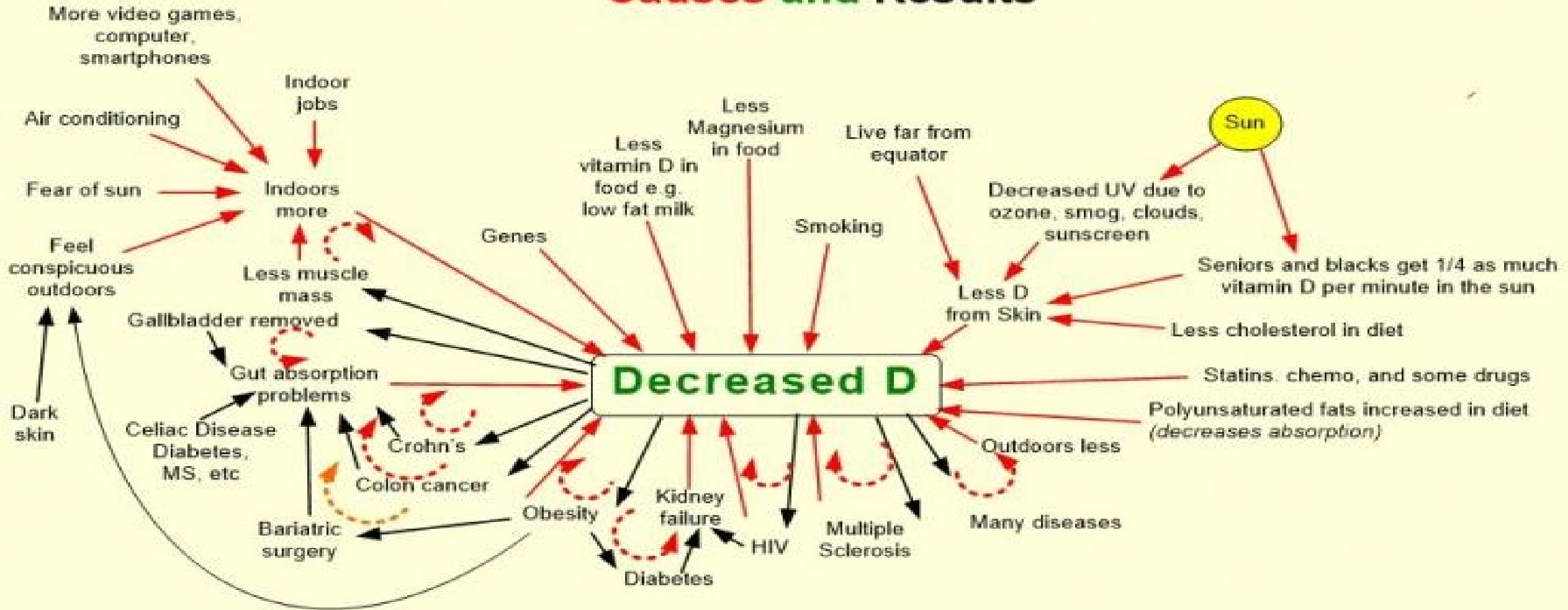
# Epidemic Vitamin D Deficiency! Why?



[https://vitamindwiki.com/tiki-index.php?page\\_id=1586](https://vitamindwiki.com/tiki-index.php?page_id=1586)

# Decrease in Vitamin D

## Causes and Results



→ = Causes decreased vitamin D  
→ = Results from decreased Vitamin D

↻ Vicious circles

Many other diseases, e.g. cancers, rickets, heart attack, lupus, psoriasis, depression, do not seem to have vicious circles.

VitaminDWiki.com 4/2019  
[tinyurl.com/amldeficient](http://tinyurl.com/amldeficient)

# Myth-Understandings about “vitamin” D

**Myth** - Spend 10-15 minutes in the sun three times a week and your vitamin D will be fine.

**Myth** - Eat fish three times a week and your vitamin D will be adequate

**Myth** - Can get all your vitamin D needs from food

**Myth** - Drink a cup of milk every day and your vitamin D will be okay

**Myth** - A daily multivitamin will meet your vitamin D needs

**Myth** - You do not develop vitamin D deficiency if you live in a warm, sunny place

**Myth** - Eating a healthy diet will take care of your vitamin D needs as well

**Myth** - More Kidney stones if you take more vitamin D

**Myth** - Need lots of Calcium while getting lots of vitamin D ( just the opposite actually)

**Myth** - No tan is a safe tan (“skin cancer can happen in just a few minutes”)

**Myth** - If I sunburn easily, I need to stay out of the sun (easy sun burning = severe D deficiency)

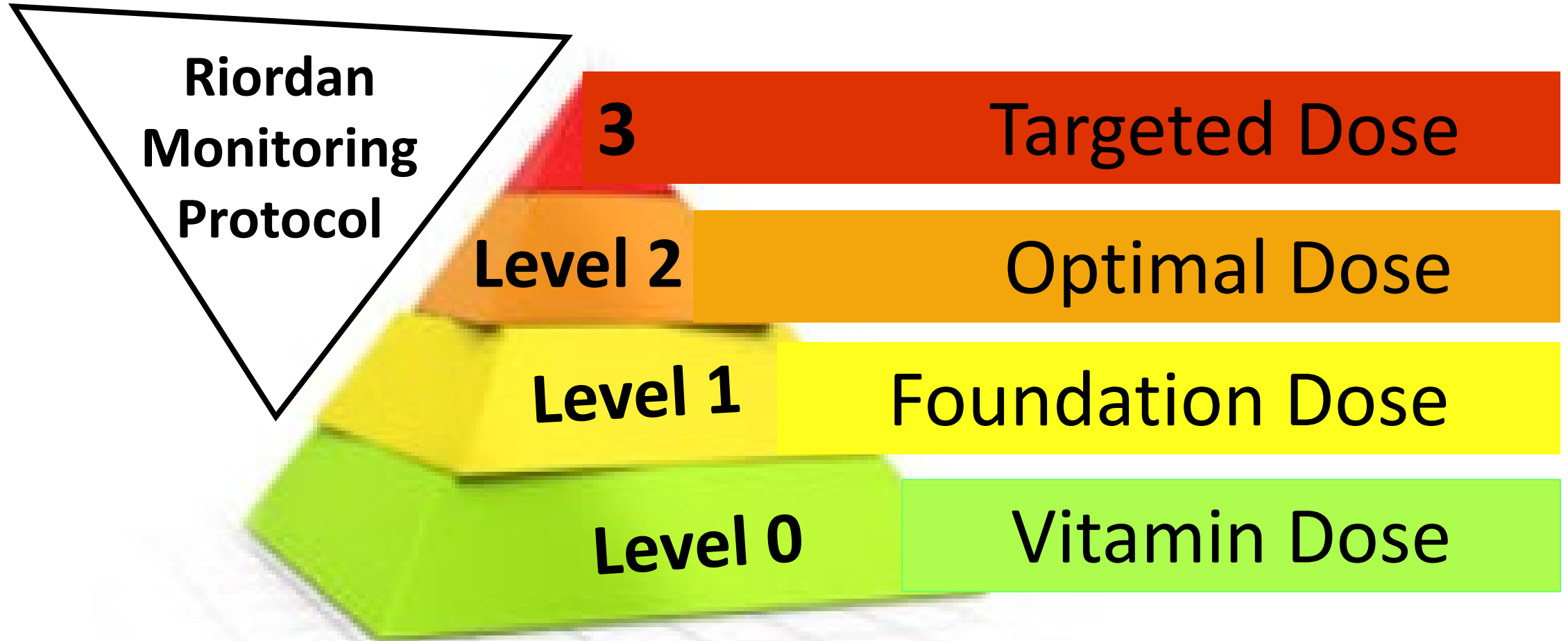
**Myth** - Should reduce cholesterol ( no, increase cholesterol - to produce vitamin D)

**Myth** - Sunlight alone causes skin cancer (melanoma often occur where the sun does not shine)

**Myth** - Can get enough vitamin D from the sun to last you thru the winter

**Myth** - Can get enough vitamin D even if wearing lots of sunscreen

# Therapeutic Vitamin D3:K2





Is **D** a  
vitamin  
?

Think in 4 Levels:

**3** D is a receptor-modulator

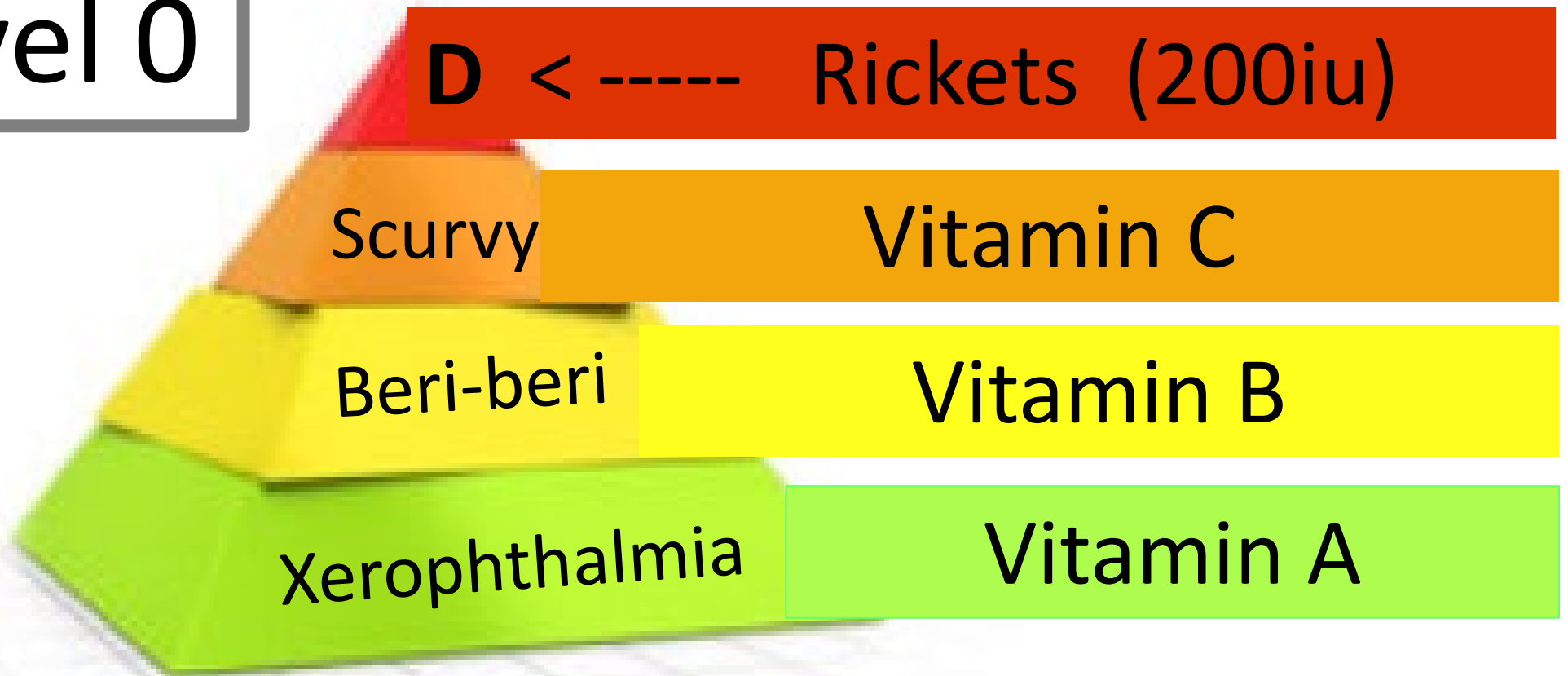
**Level 2** D is a KEY cell-enabler

**Level 1** D is a hormone

**Level 0** D is a vitamin

# 1913 – The Birth of the “Vitamin Concept”

Level 0

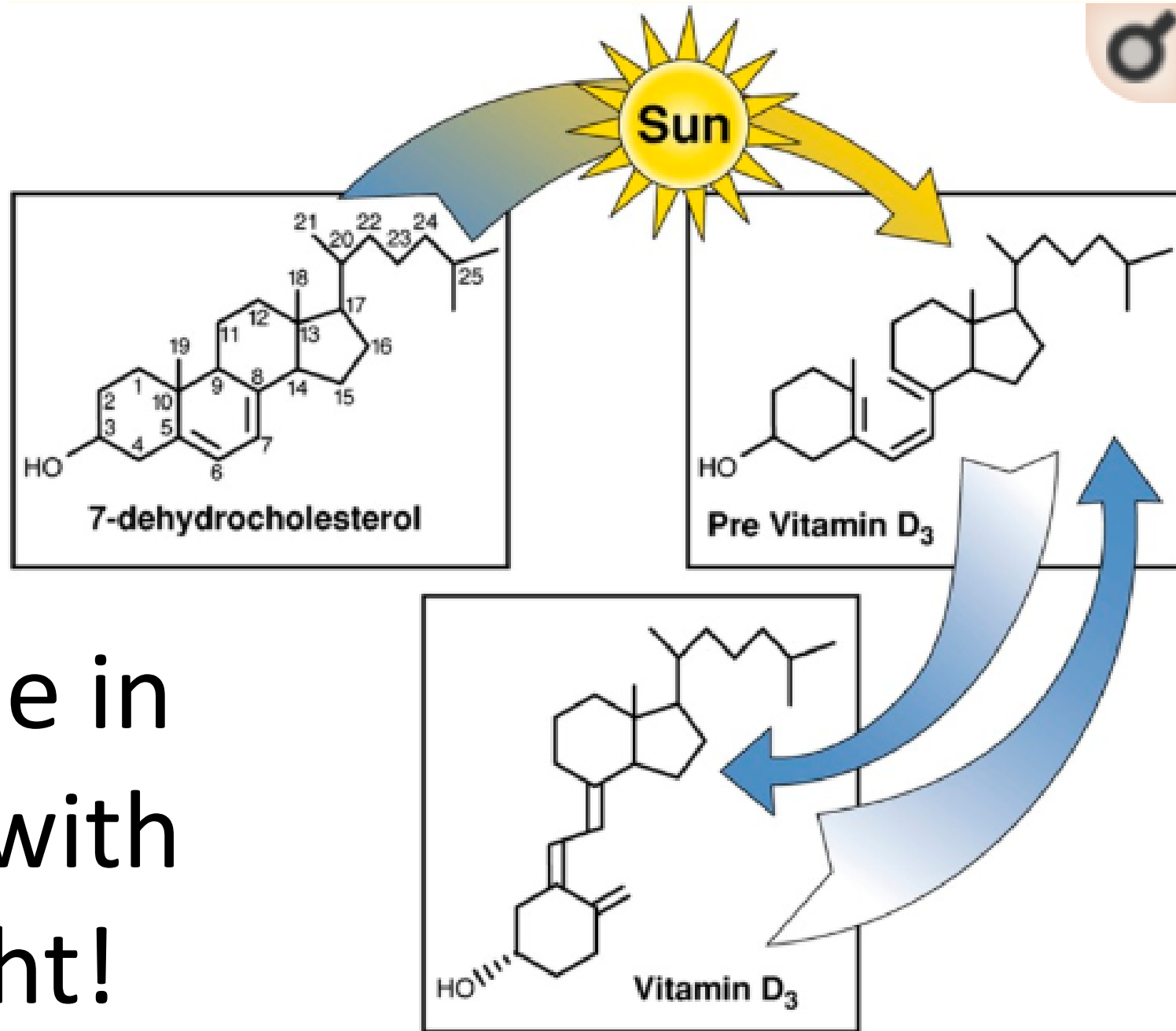


1937

Level 1

Discovery:

**D** is made in  
the skin with  
UVB light!



**D** is a hormone synthesized in the body

**Level 1**

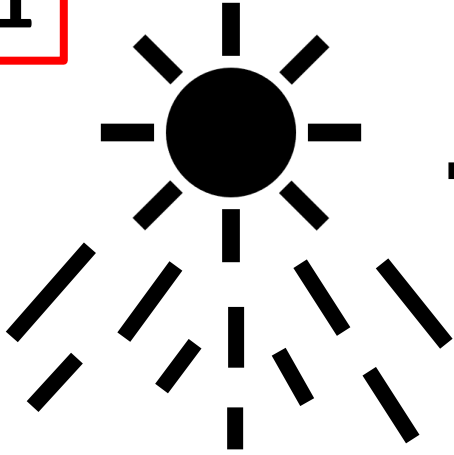
**3** D is a receptor-modulator

**Level 2** D is a KEY cell-enabler

**Level 1** D is a hormone

**Level 0** D is a vitamin

1



D ↑  
30,000iu

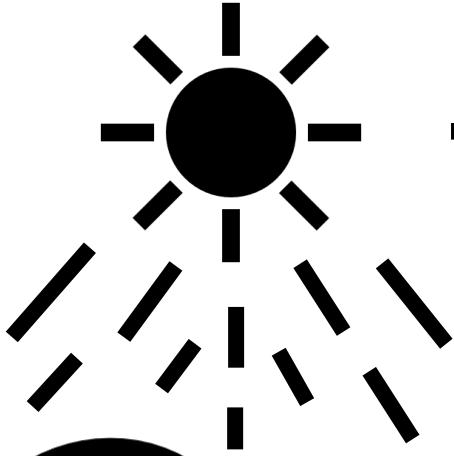
D is a hormone

Endocrinology

2



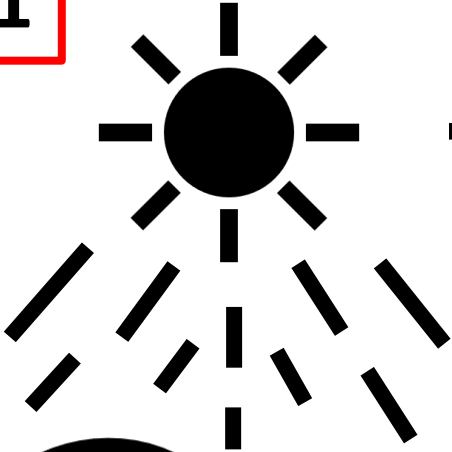
? iu



D ↓



1



D ↑

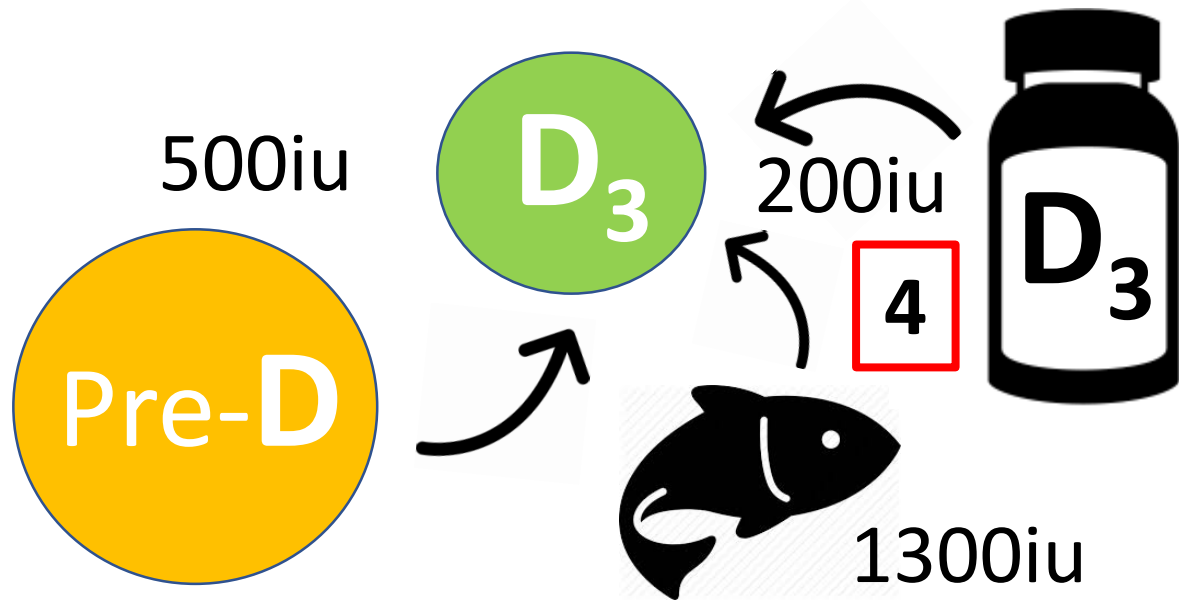


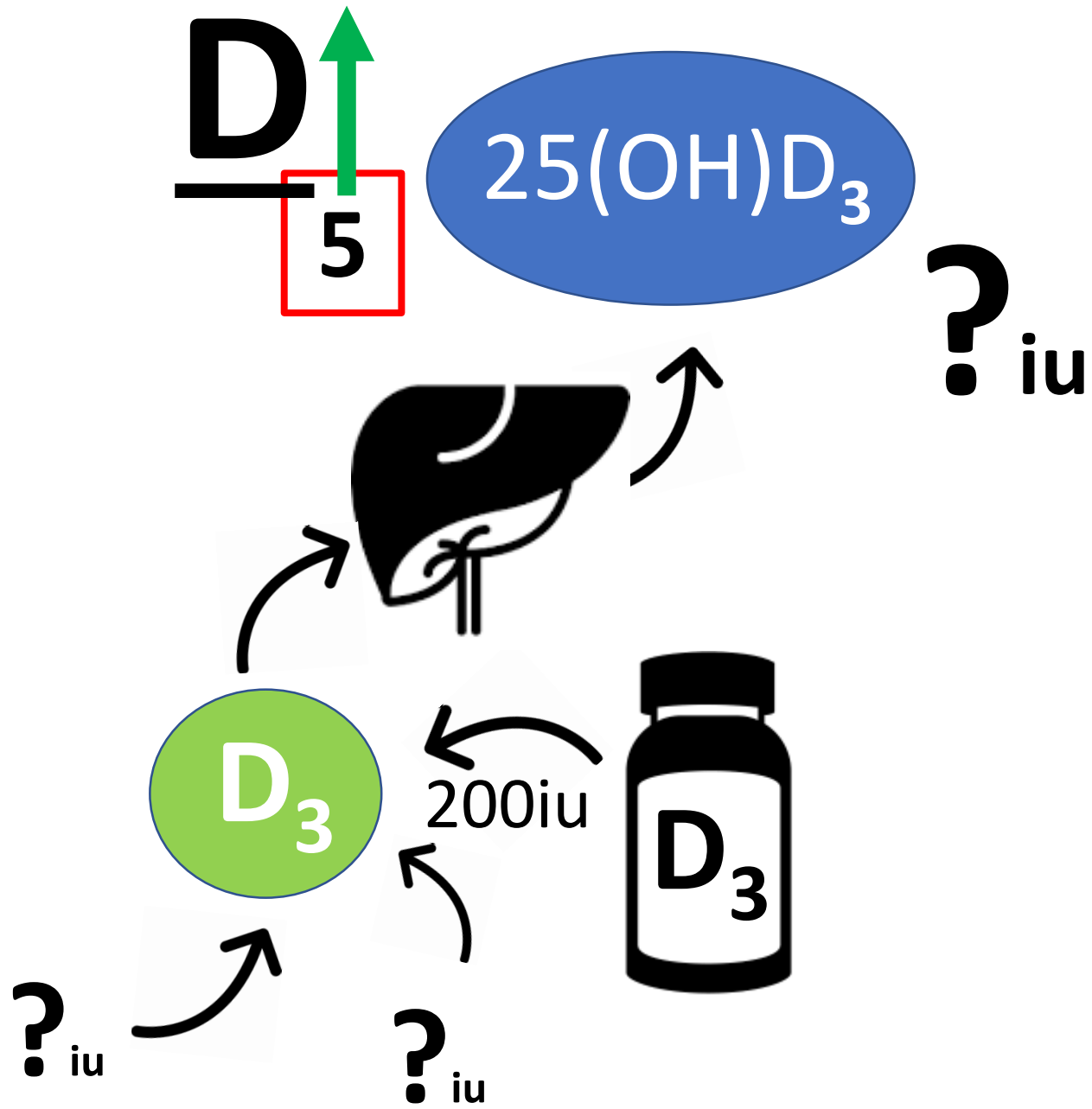
3

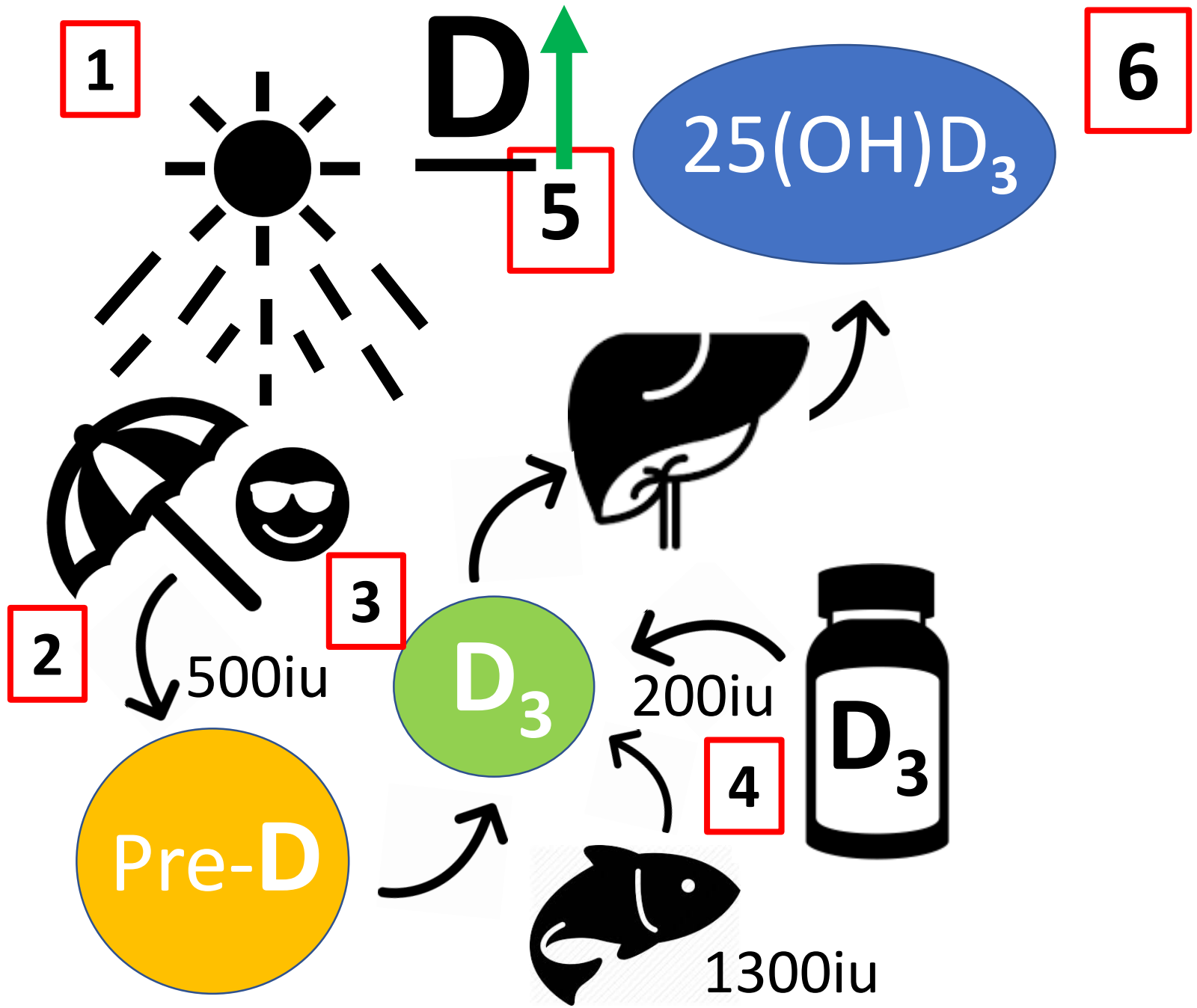
500iu

Pre-D

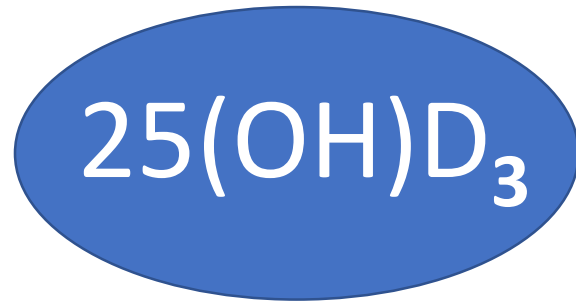
D↑





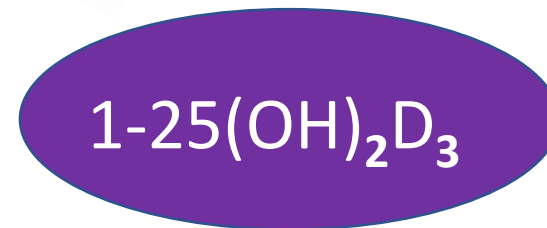
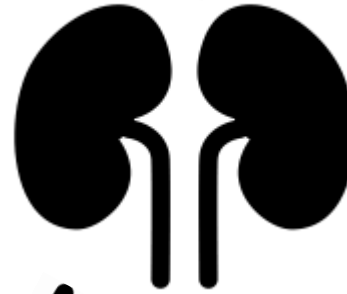


D ↑

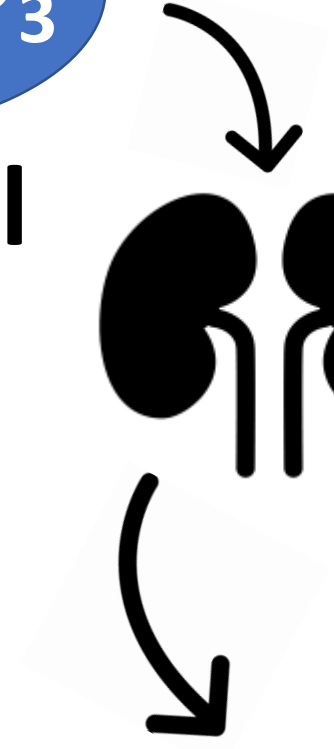


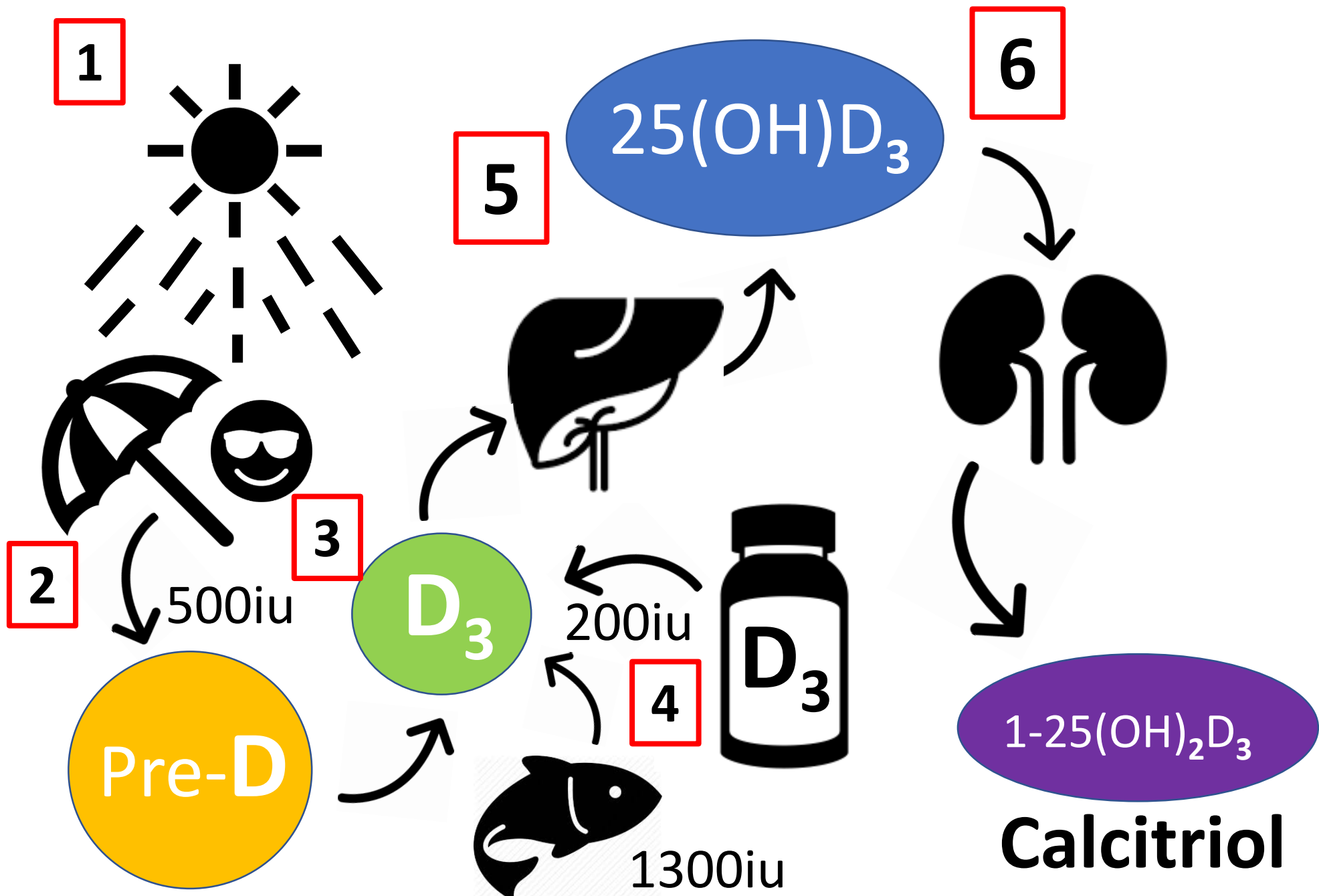
Calcidiol

6



Calcitriol

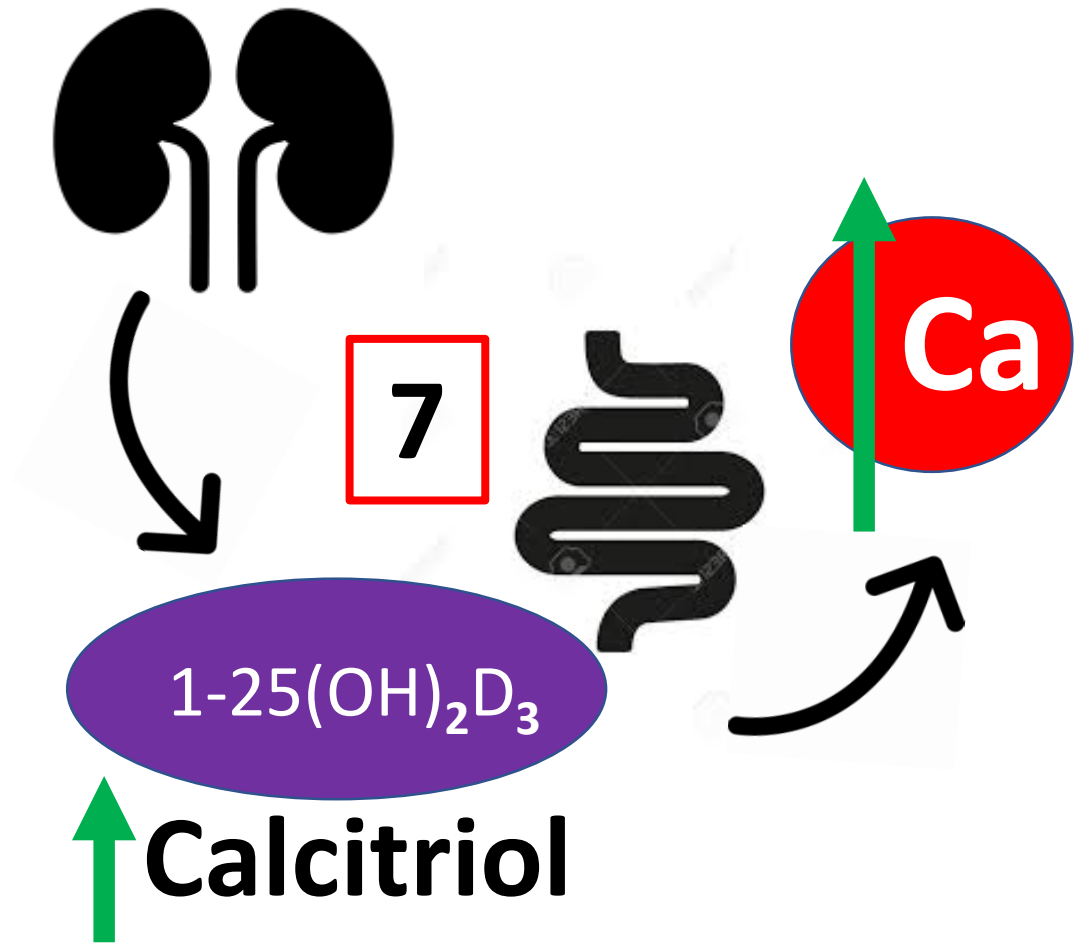


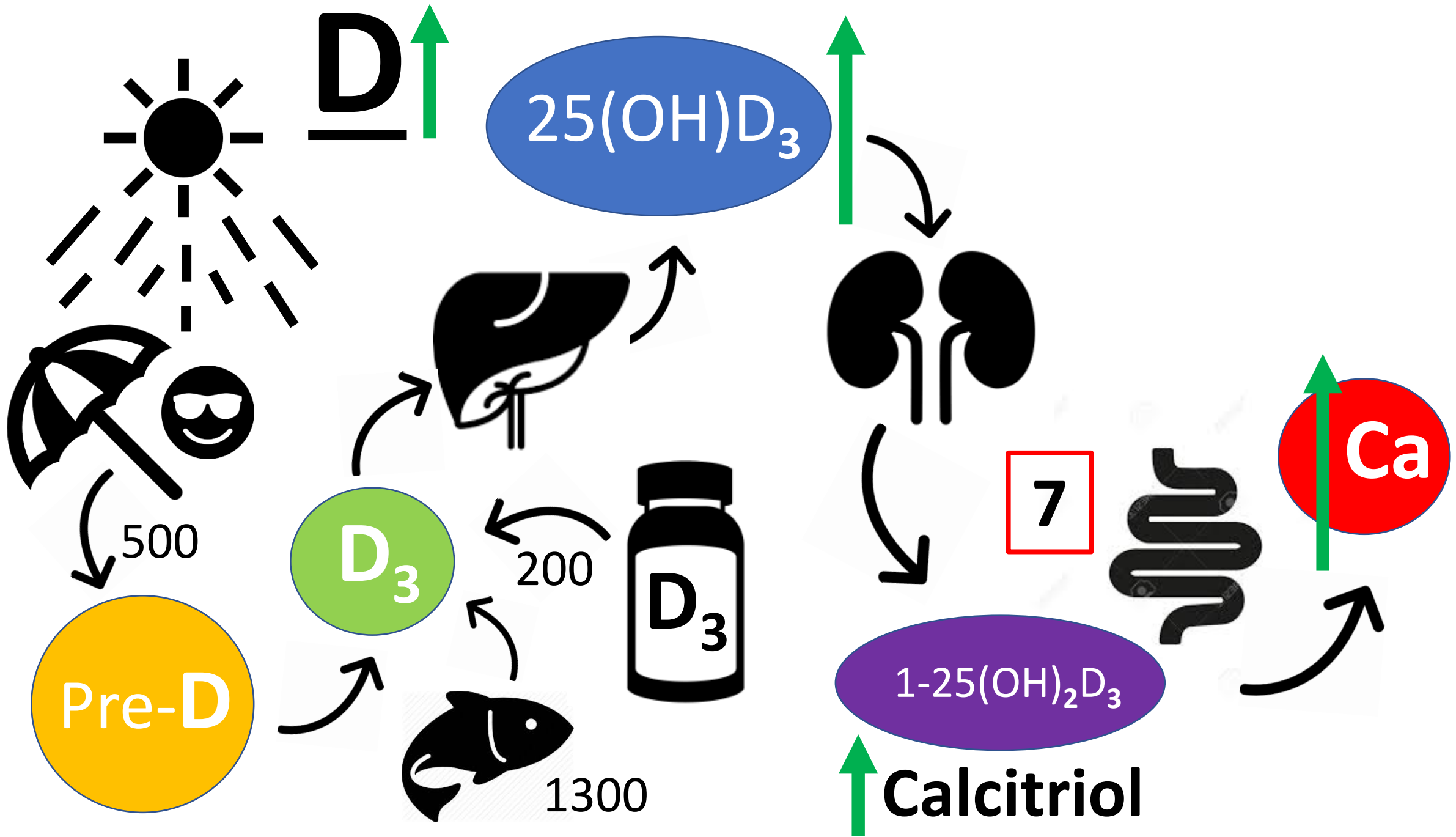


**Calcitriol**



D↑





When 25(OH)D3 goes UP...

Calcitriol goes UP...

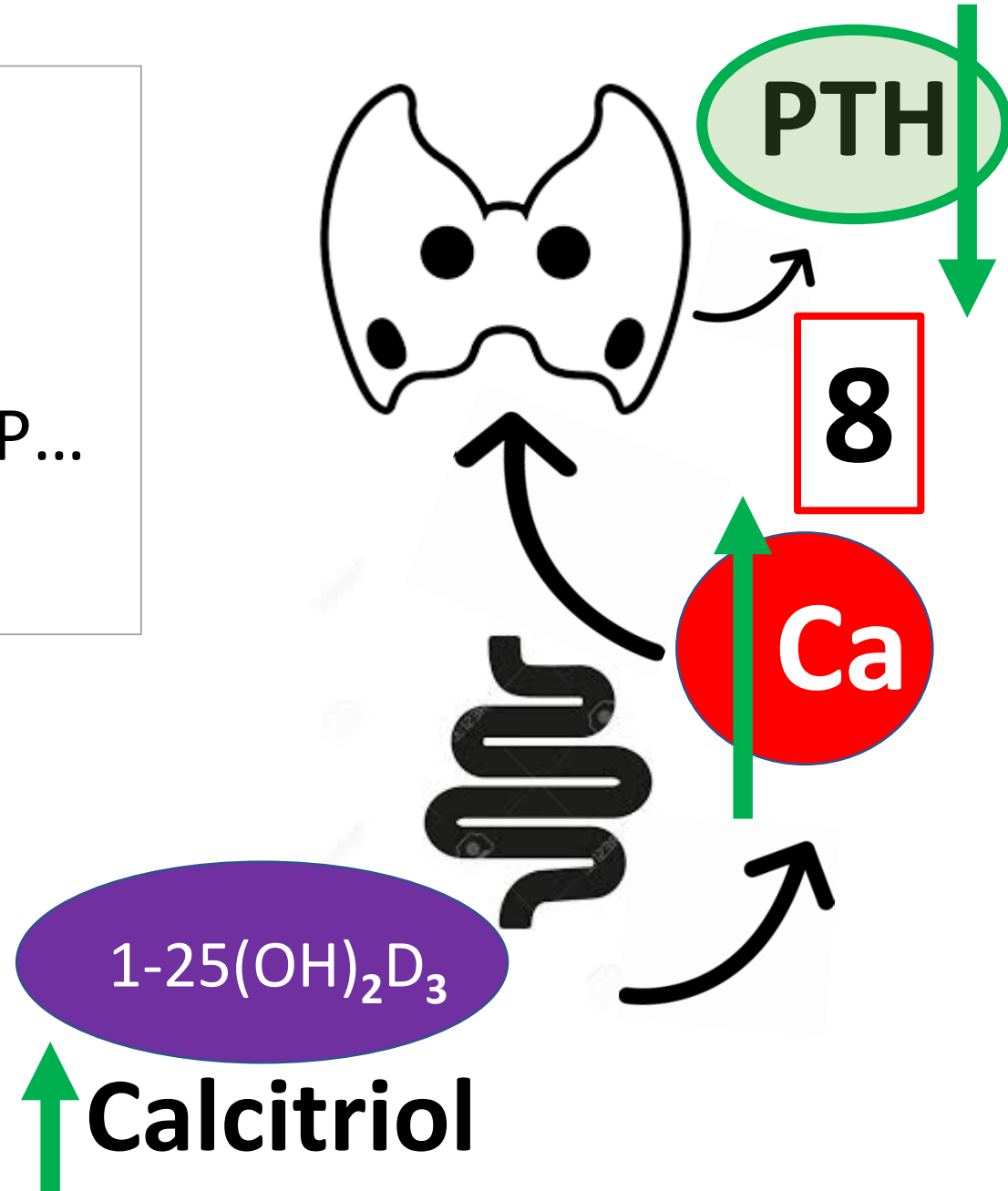
Calcium absorption from gut goes UP...

Parathyroid hormone goes **DOWN**...

Serum calcium is regulated by...

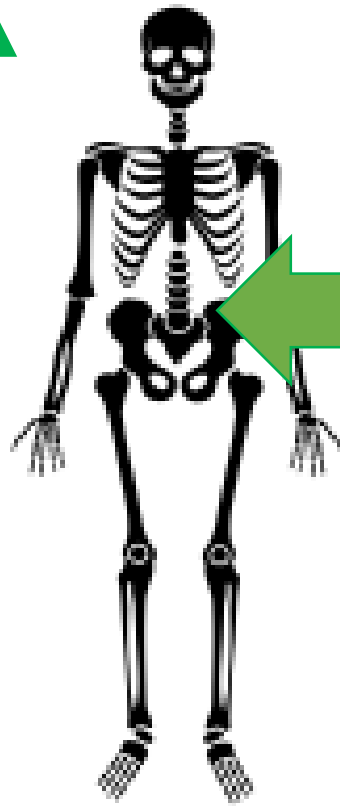
**BOTH**

25(OH)D3 **AND** PTH





**D** ↑



**Ca**



**PTH** ↓

**8**

**Ca** ↑

**7**



**1-25(OH)<sub>2</sub>D<sub>3</sub>**

**Calcitriol**

**Parathyroid Cells**  
**Job: Monitor Calcium**

**If *Calcium* goes UP**

**\*\*\* Make LESS **PTH**** ↓

**\*\*\* Absorb LESS calcium from bone & gut**



**Parathyroid Cells**

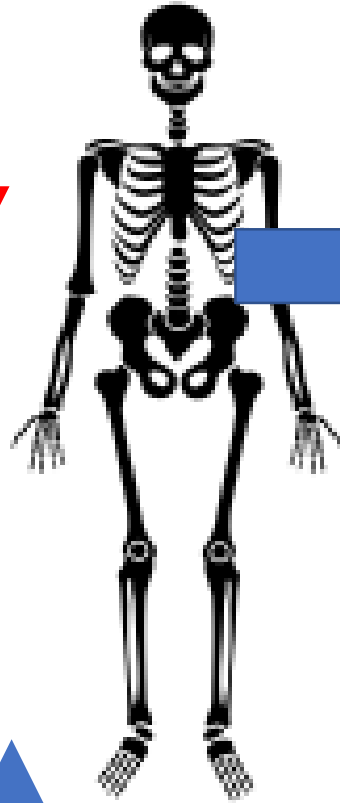
**Job: Monitor Calcium**

**If *Calcium* goes Down**

**\*\*\*Make MORE PTH**

**\*\*\*Absorb MORE calcium from bone & gut**

**D**



**Ca**



**PTH**

**8**

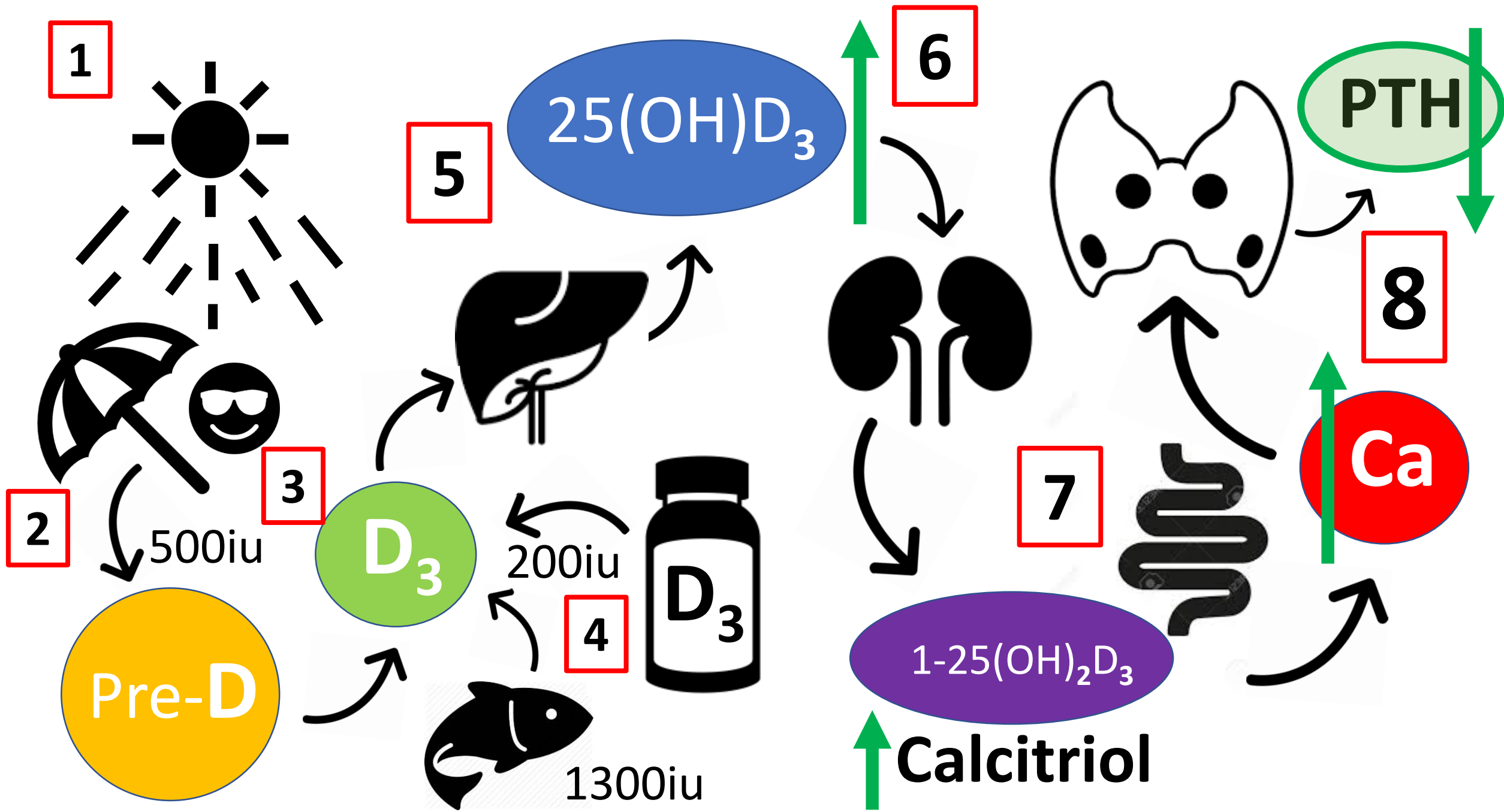
**Ca**

**7**

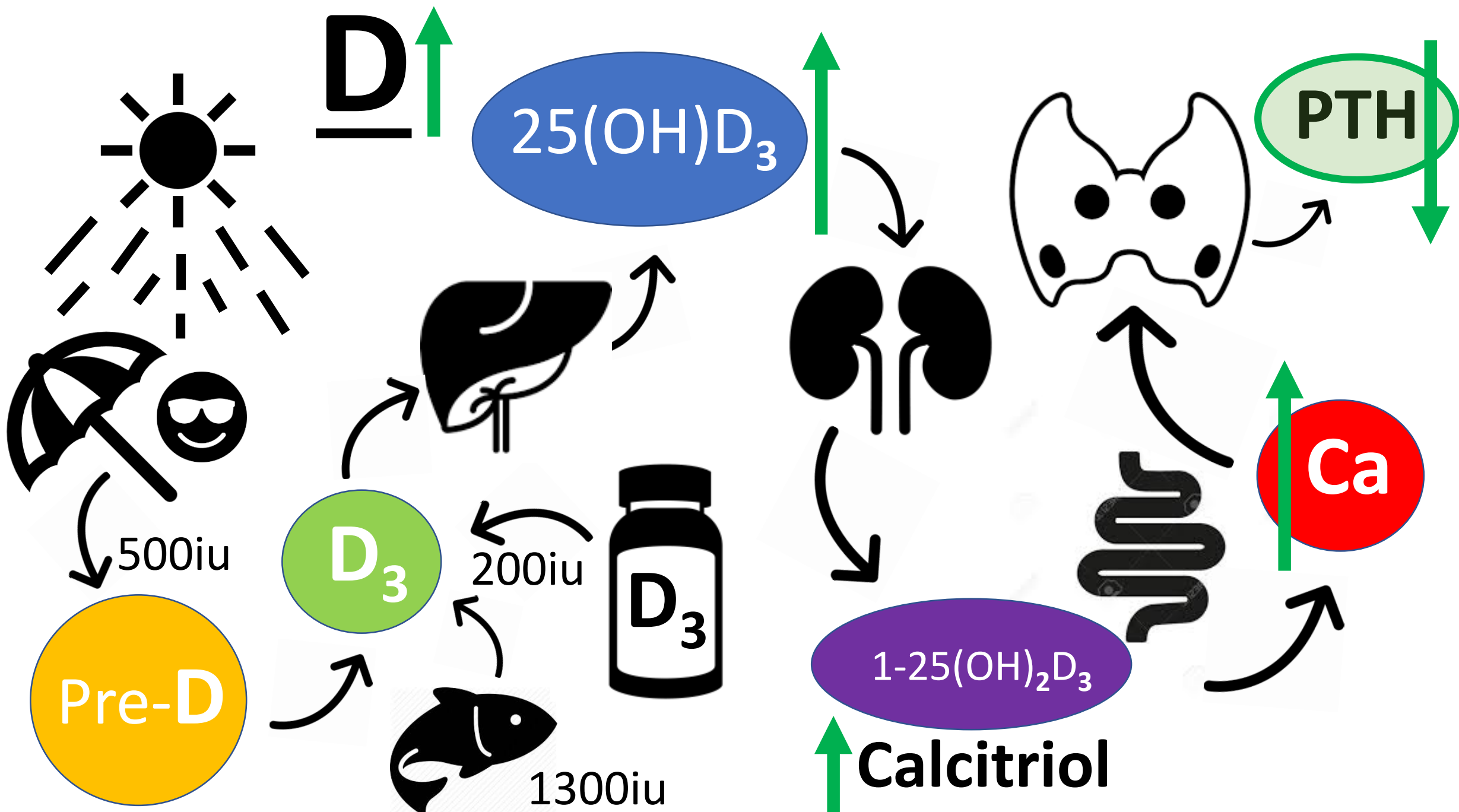


**1-25(OH)<sub>2</sub>D<sub>3</sub>**

**Calcitriol**







**D** ↑

25(OH)D<sub>3</sub>

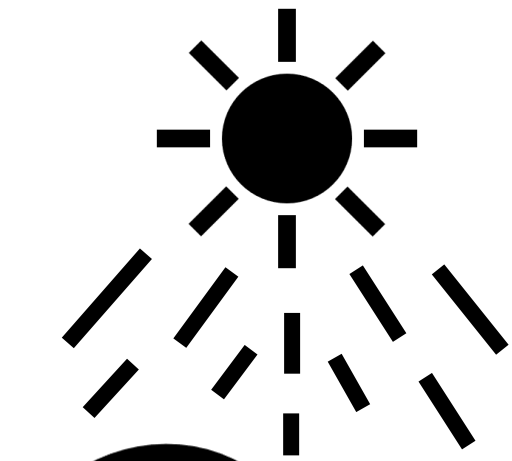
↑

PTH ↓

Ca ↑

1-25(OH)<sub>2</sub>D<sub>3</sub>

↑  
**Calcitriol**

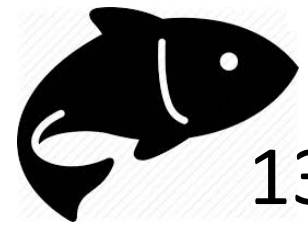


500iu

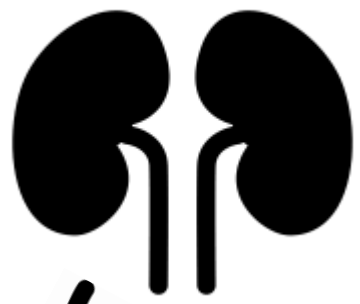
Pre-D

D<sub>3</sub>

200iu



1300iu



Ca



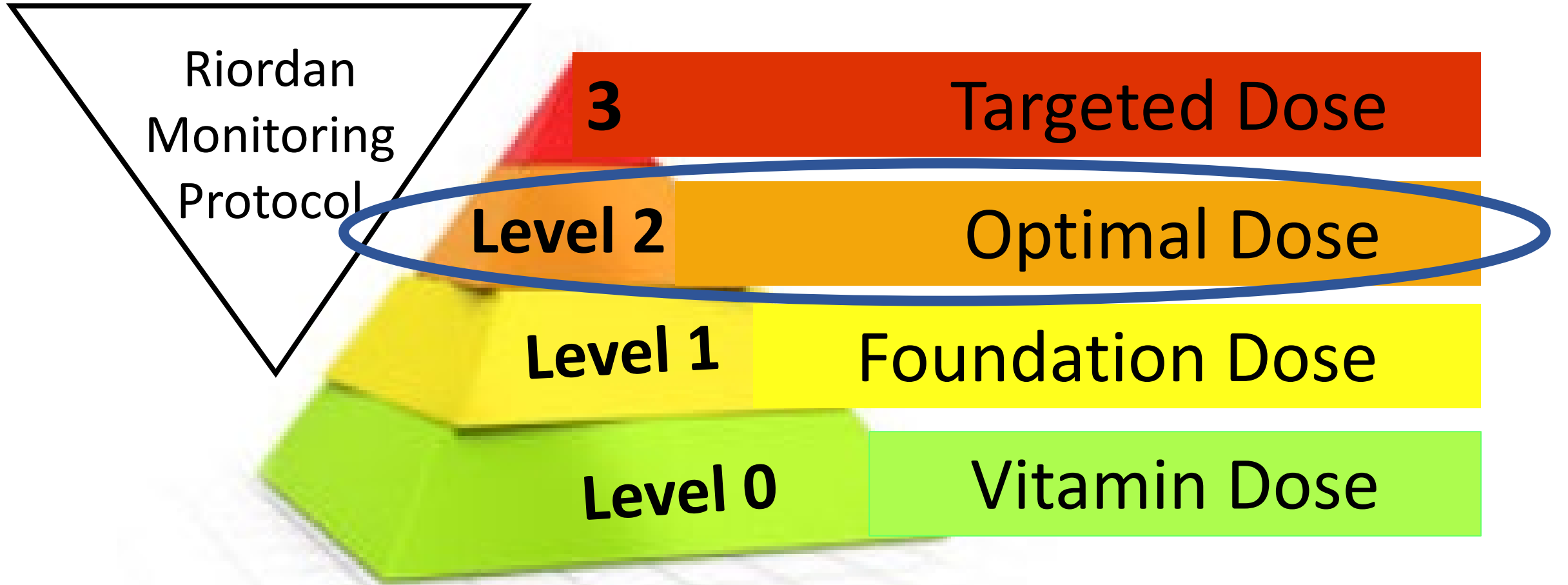
**D3 / K2**

Dietary Supplement • 120 Capsules



Riordan  
Clinic

# Therapeutic Vitamin D3:K2



**D<sub>3</sub>** is a hormone synthesized in the  
body

Level 2

3 D is a receptor-modulator

Level 2

D is a KEY cell-enabler

Level 1

D is a hormone

Level 0

D is a vitamin

FUNDAMENTALS  
OF VITAMIN D  
HORMONE-  
REGULATED GENE  
EXPRESSION

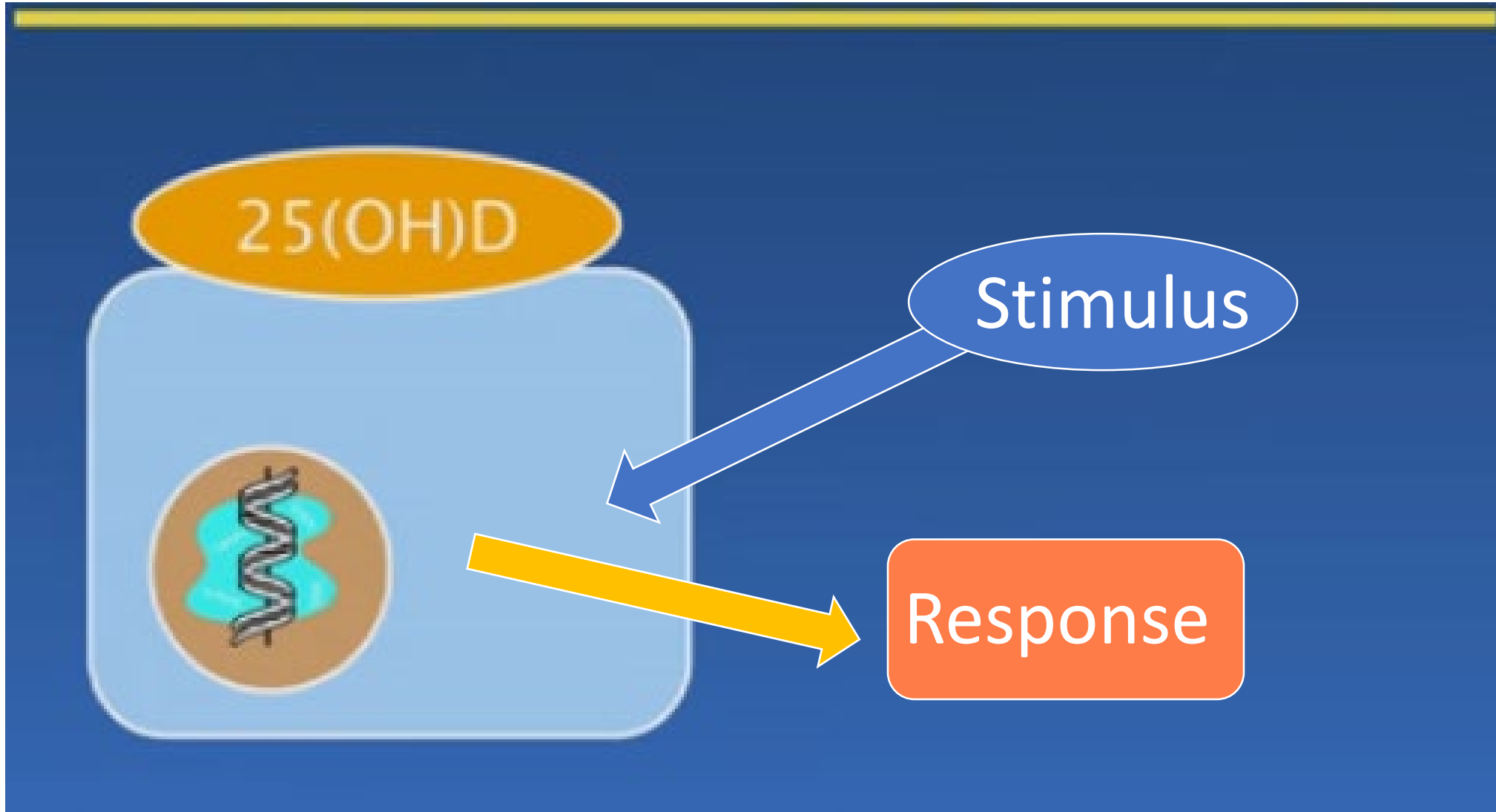
J Steroid  
Biochemical  
Molecular  
Biology  
2014

The vitamin D  
*hormone*

$1,25(\text{OH})_2\text{D}_3$

exerts its diverse  
biological effects  
in target tissues  
by regulating  
gene expression

# 25(OH)D Acts as a Cellular Function Enabler

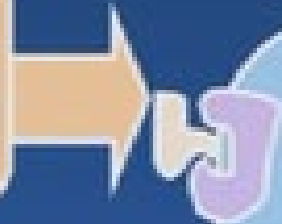




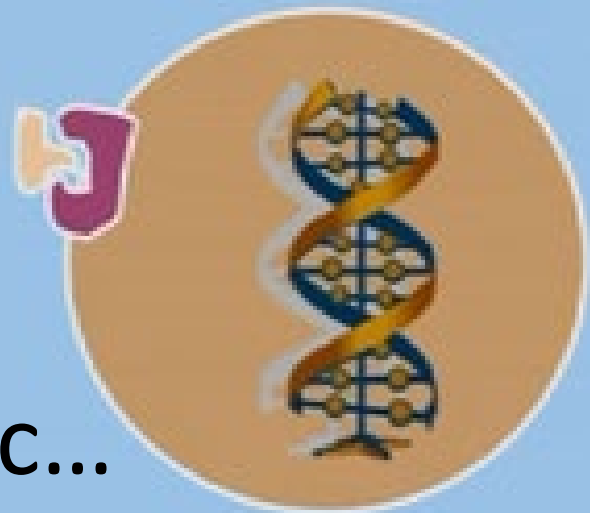
# HOW A CELL RESPONDS

---

Signal /  
Demand



Autocrinology

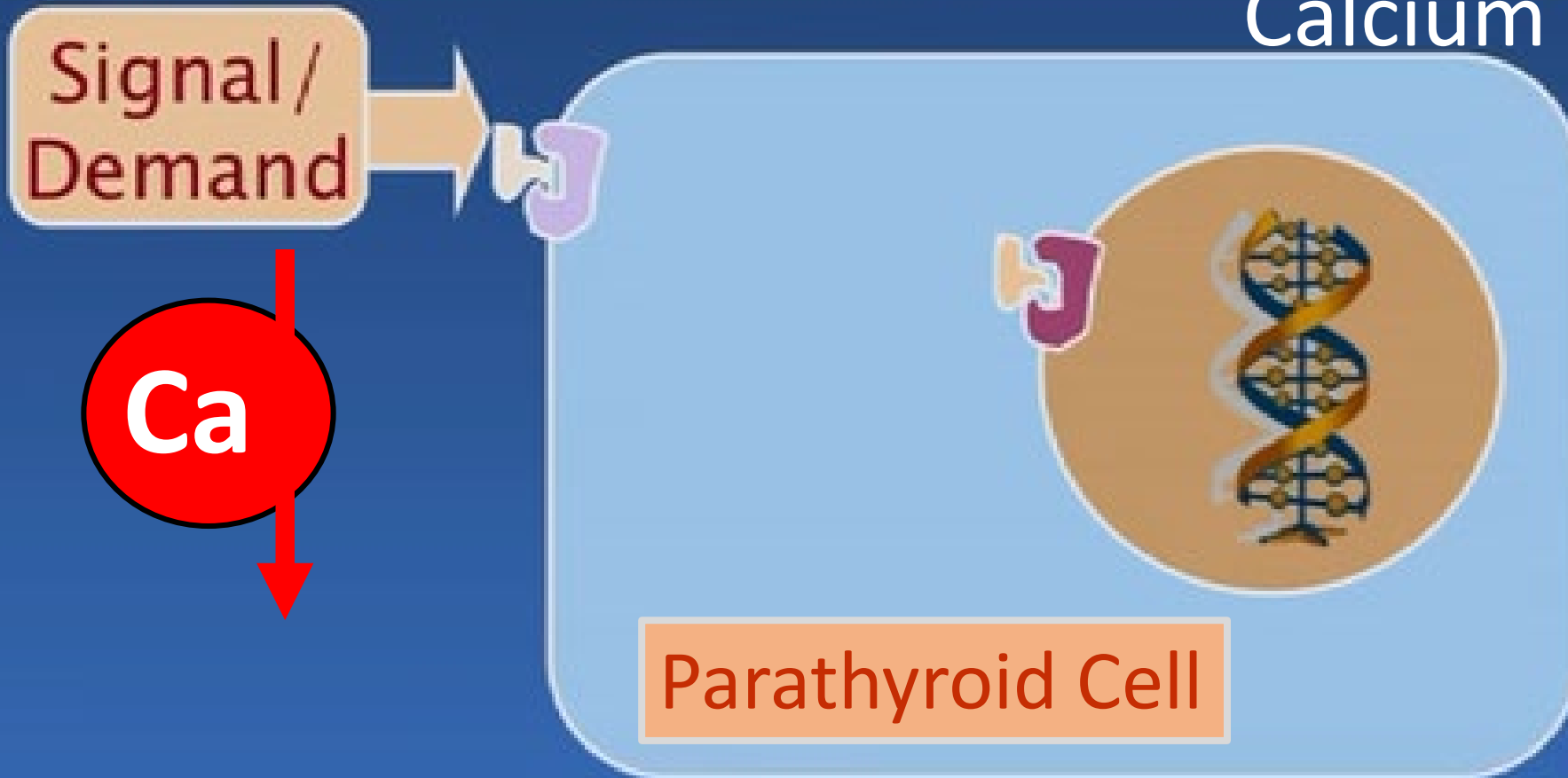


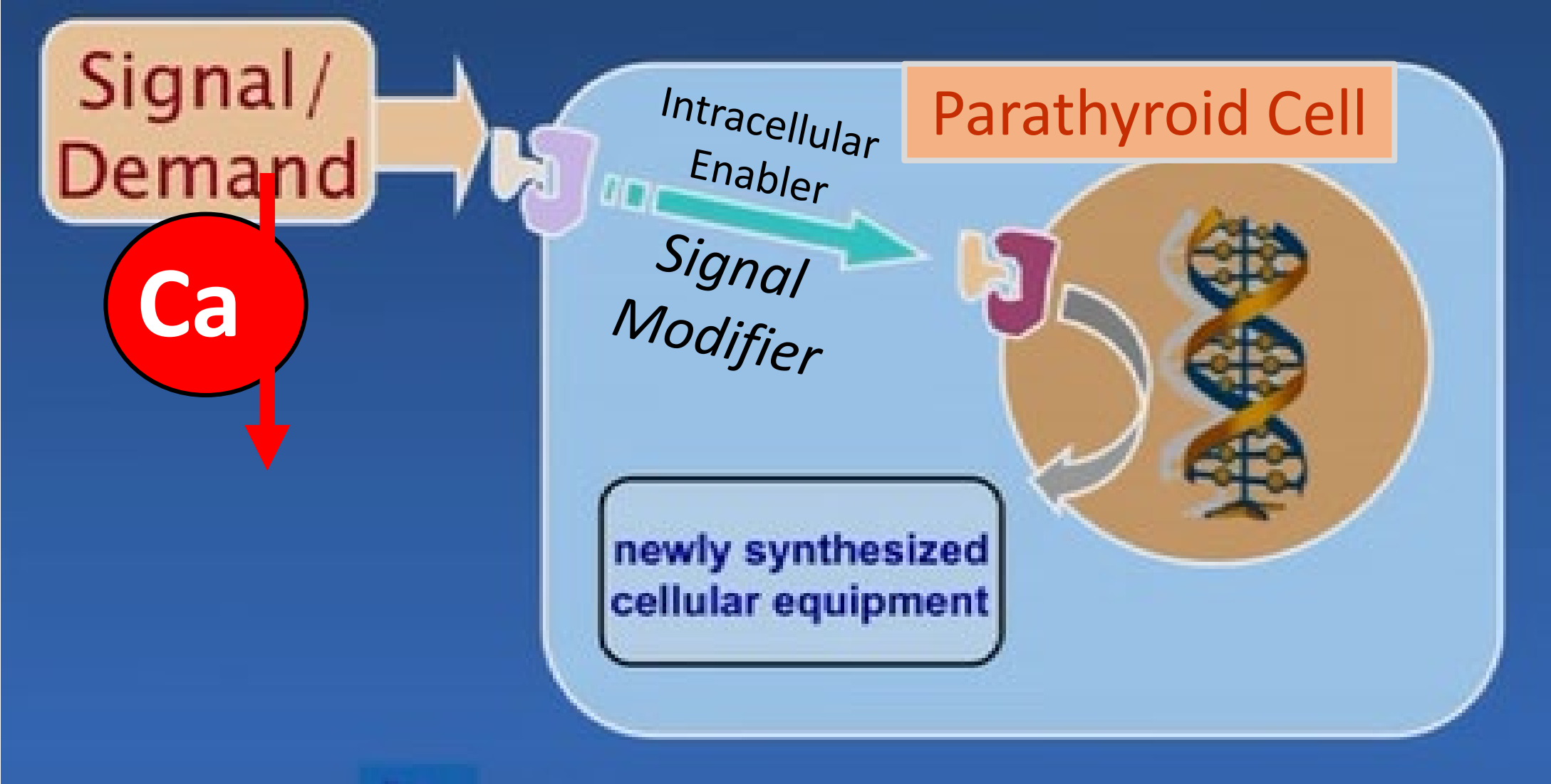
Epigenetic...

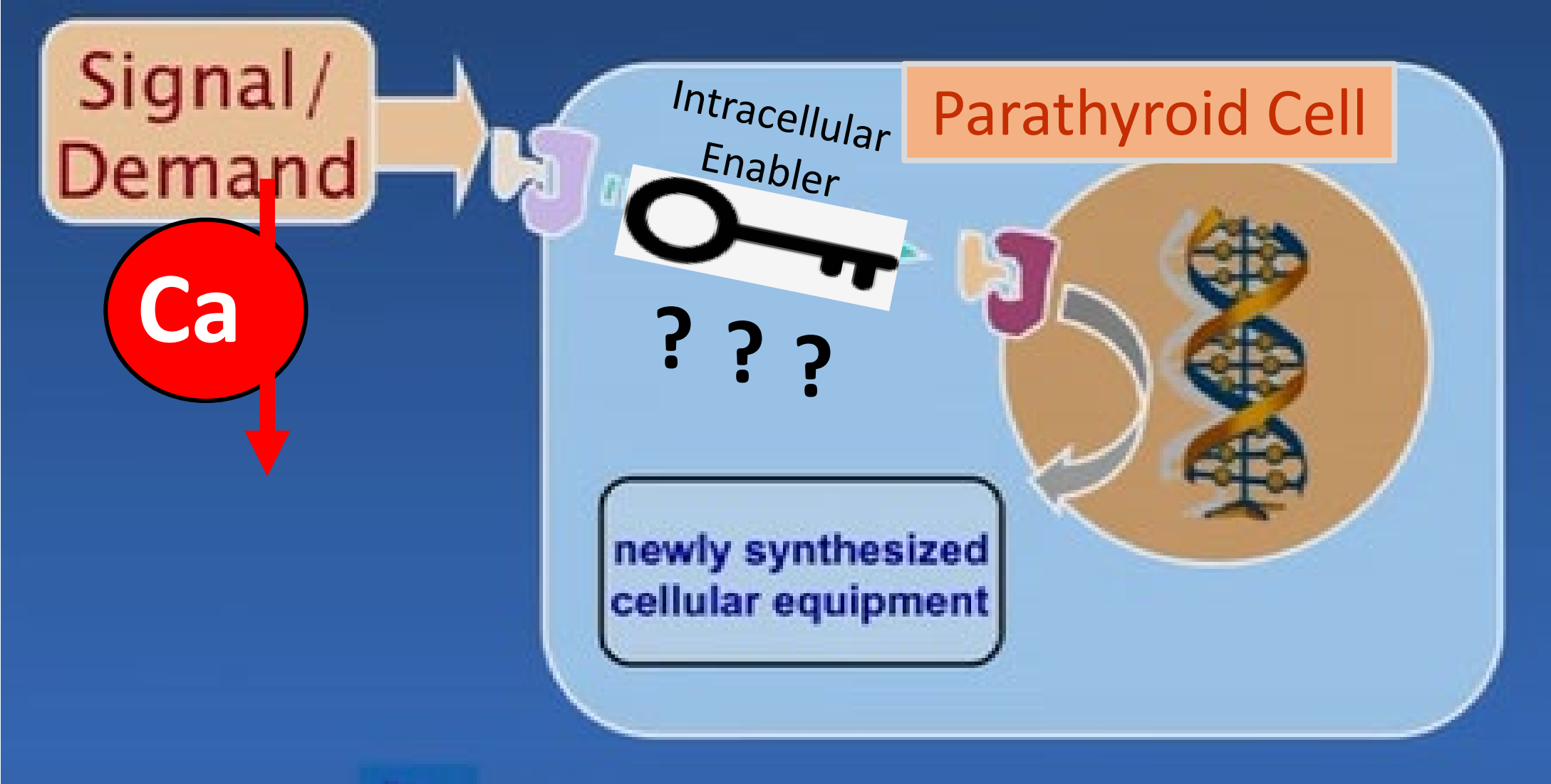
Dynamic DNA

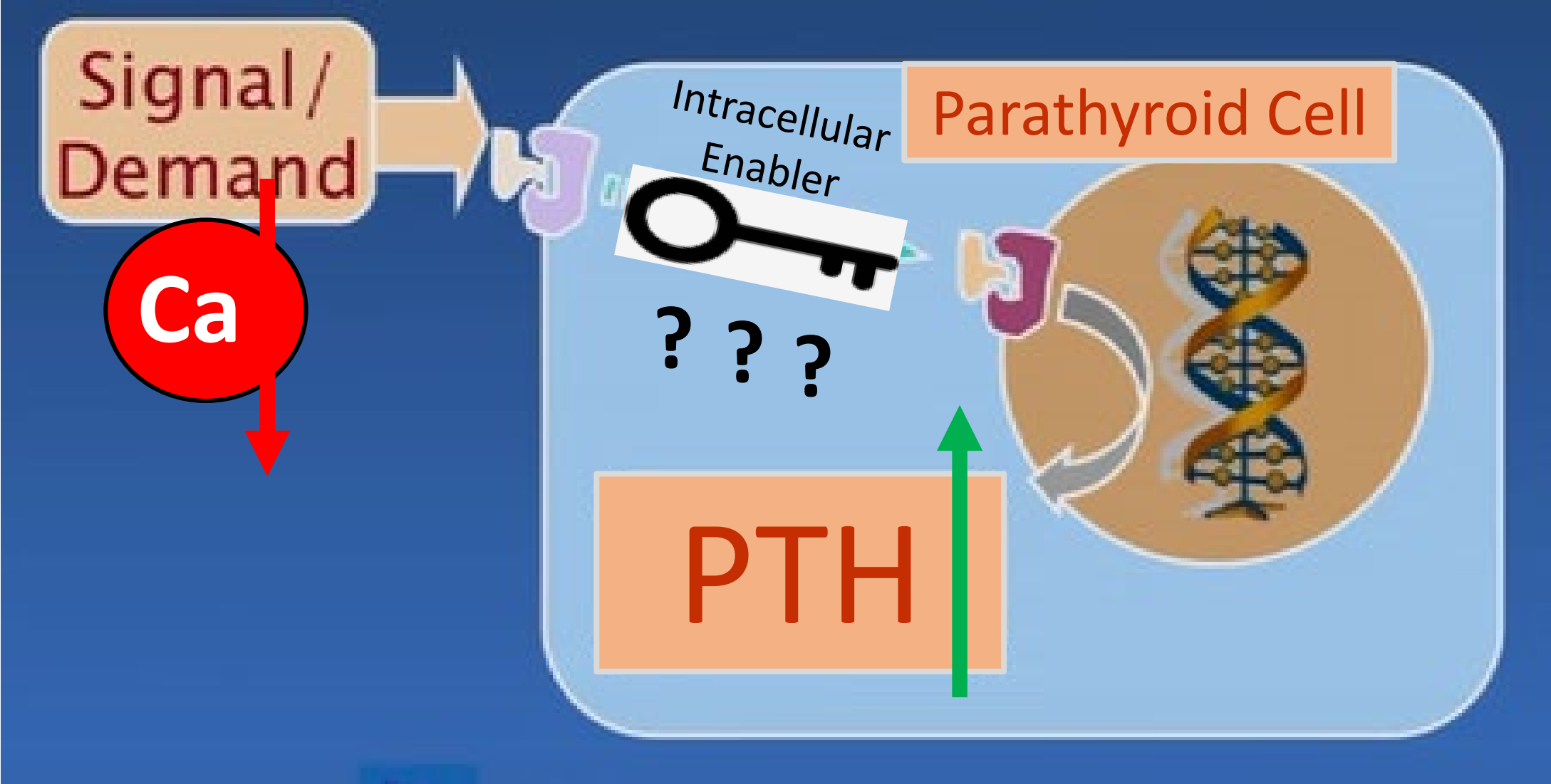
# HOW A CELL RESPONDS

...to LOW  
Serum  
Calcium

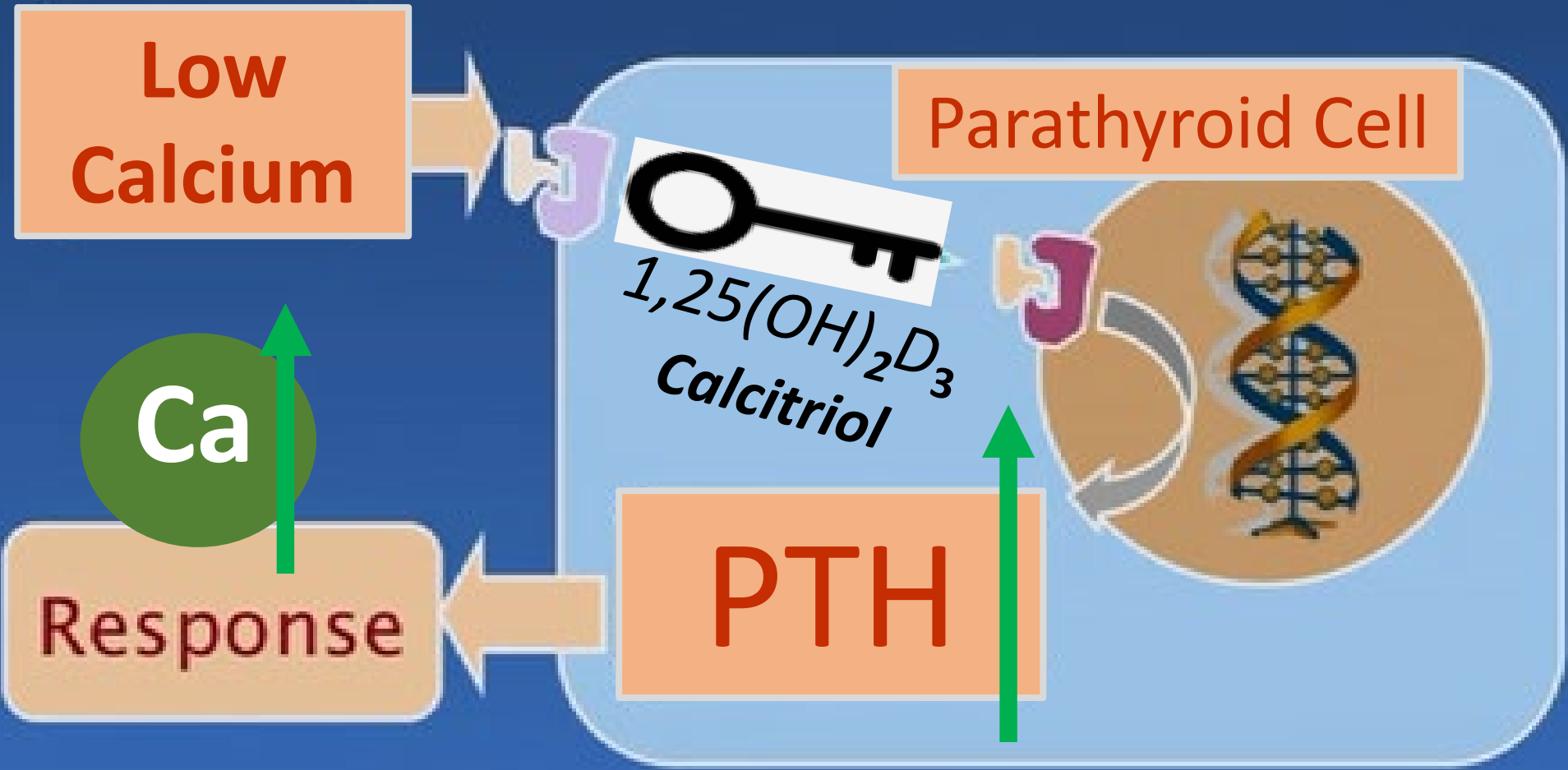




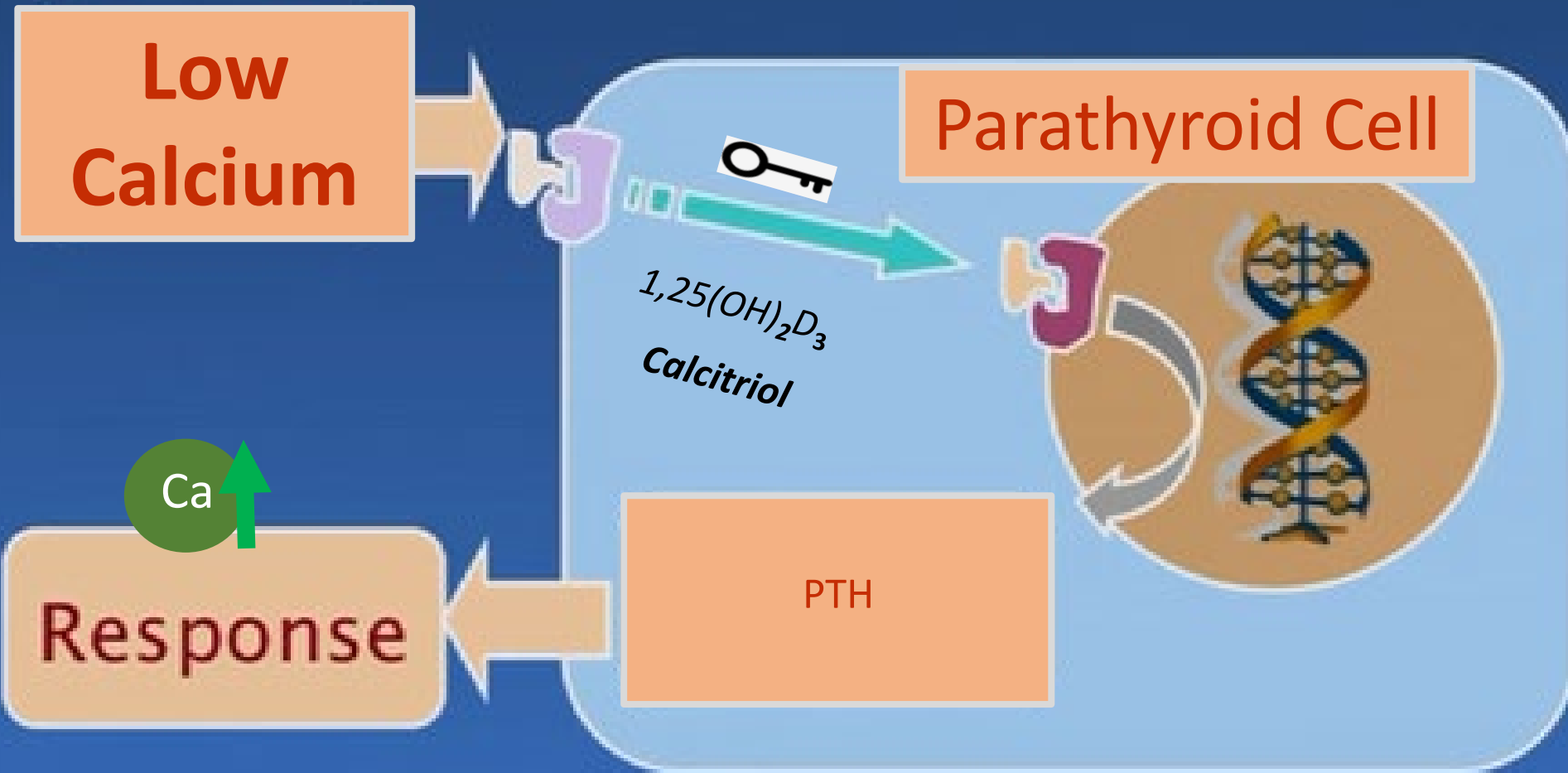




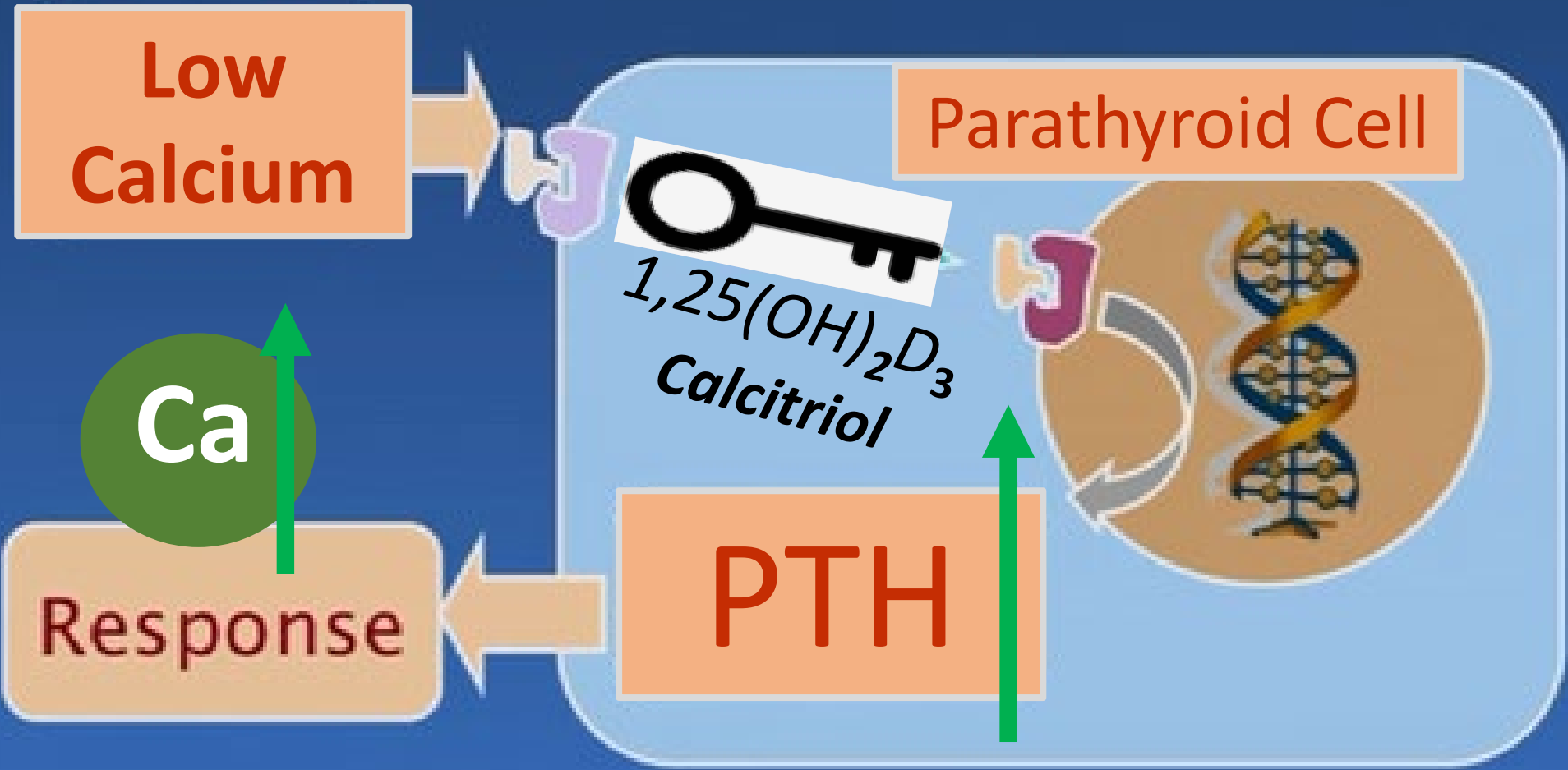
# HOW A CELL RESPONDS



If Intracellular Calcitriol is LOW, the response is weak

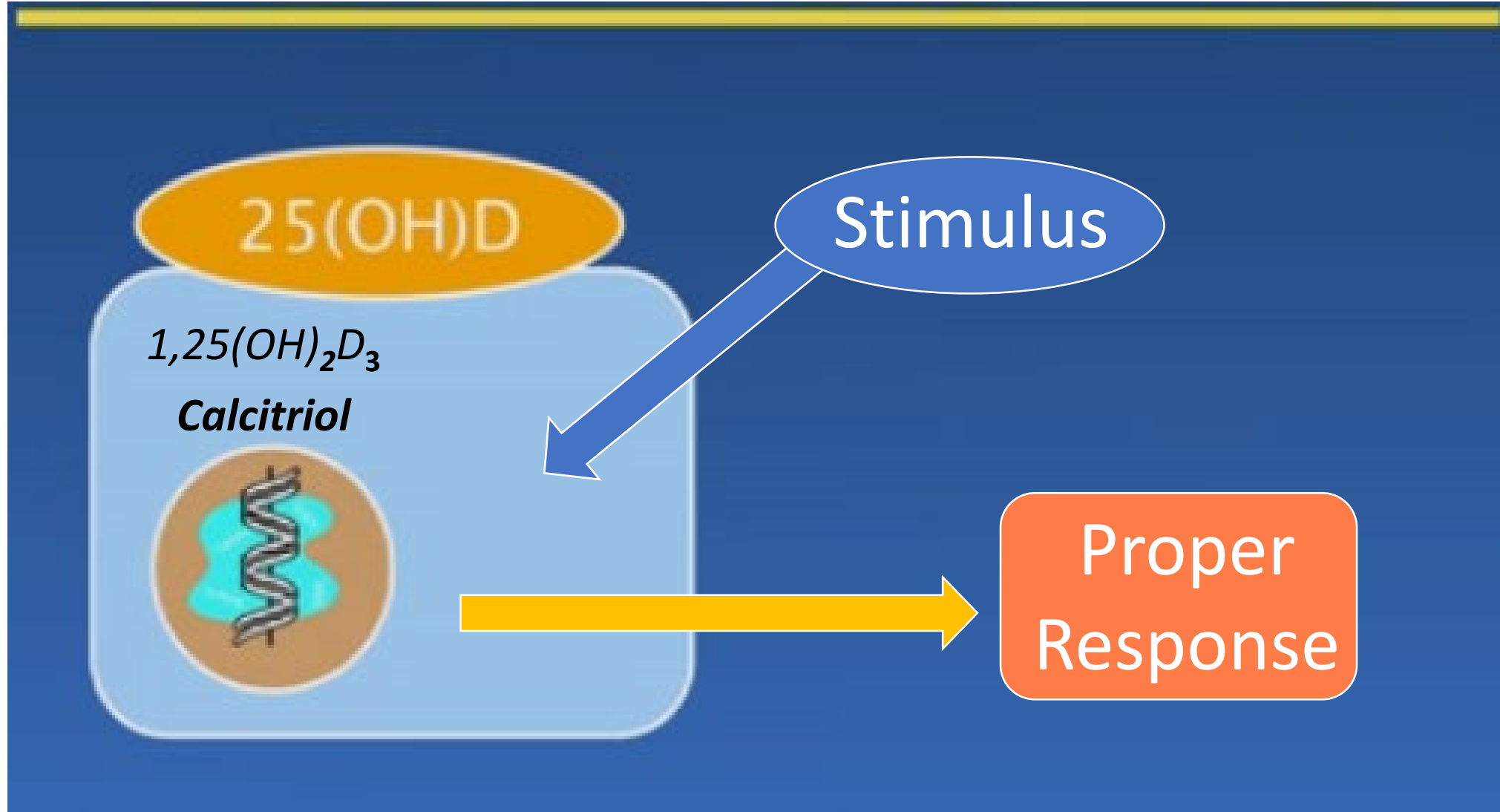


# HOW A CELL RESPONDS

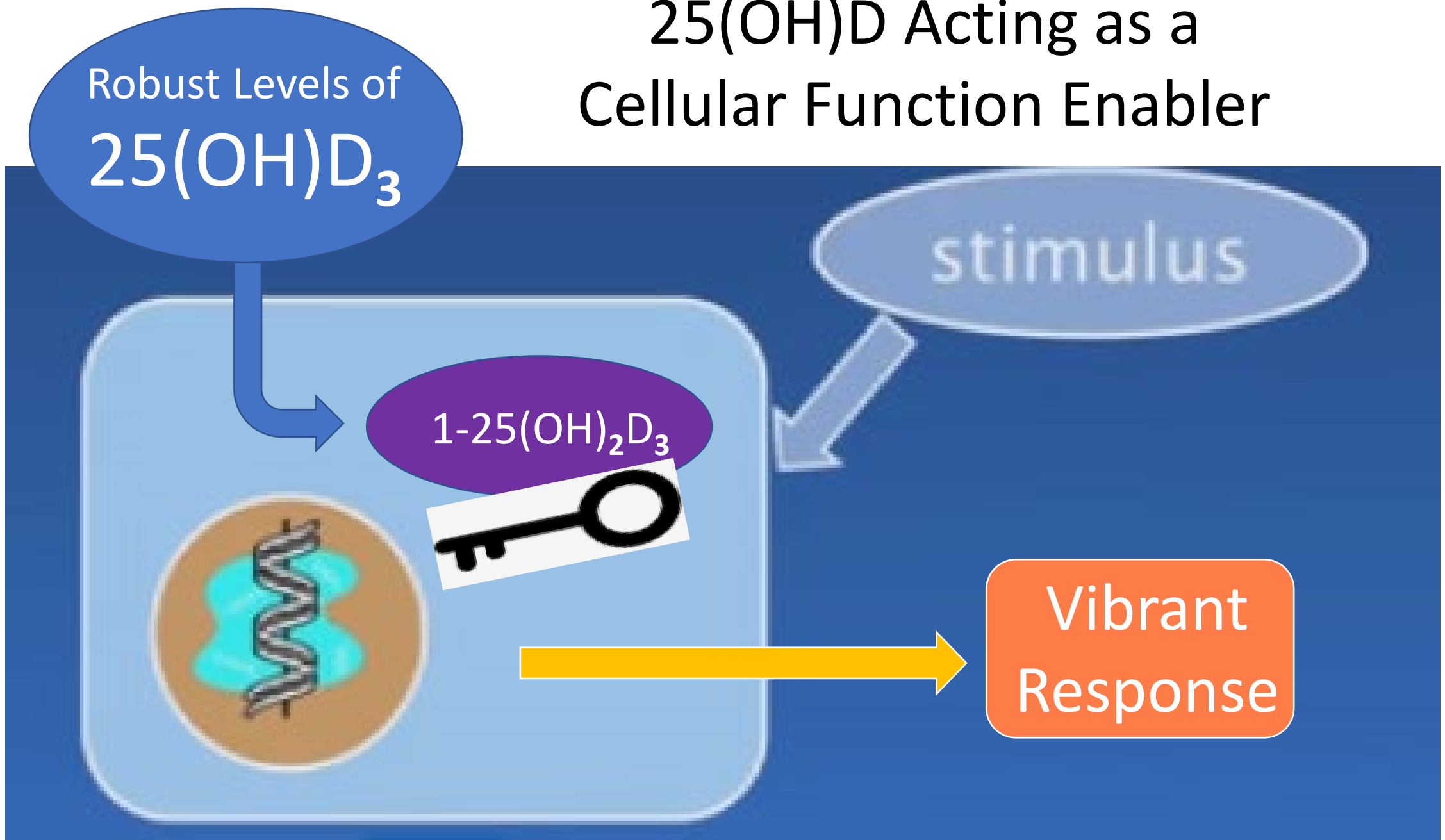




# 25(OH)D Acts as a Cellular Function Enabler

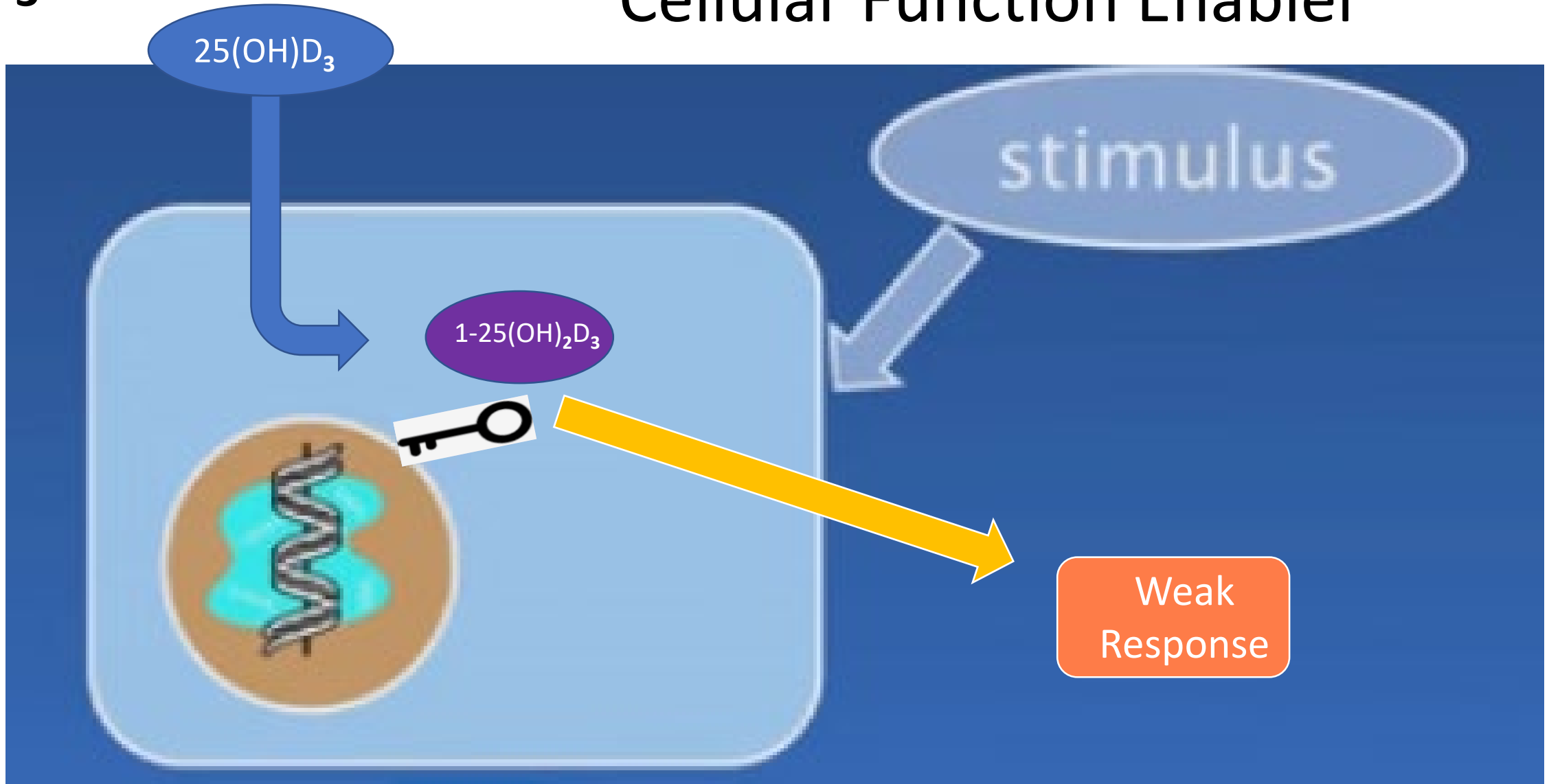


# 25(OH)D Acting as a Cellular Function Enabler

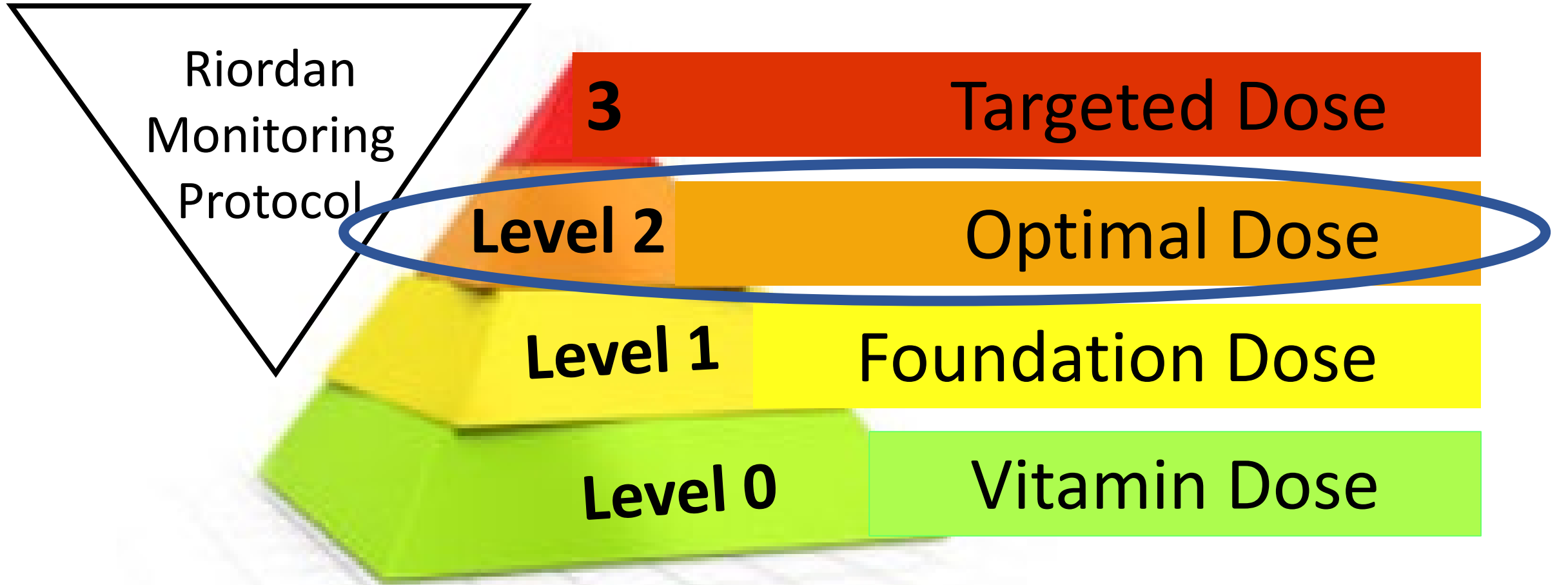


# D<sub>3</sub> Deficiency Syndrome

# 25(OH)D Acting as a Cellular Function Enabler



# Therapeutic Vitamin D3:K2



# Optimal Metabolism/Weight Loss Program

CRP-hs, Thyroid Profile: TSH, FT3, and FT4, Vitamin D, Lipid Profile, and Chem Profile/CBC

1-800-447-7276



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**LIFESTYLE RX**  
WEIGHT LOSS PROGRAM



Mike Shaw, PA-C  
Wichita



# D<sub>3</sub> modulates VDR Receptors

Level 3

3 D is a receptor-modulator

Level 2

D is a KEY cell-enabler

Level 1

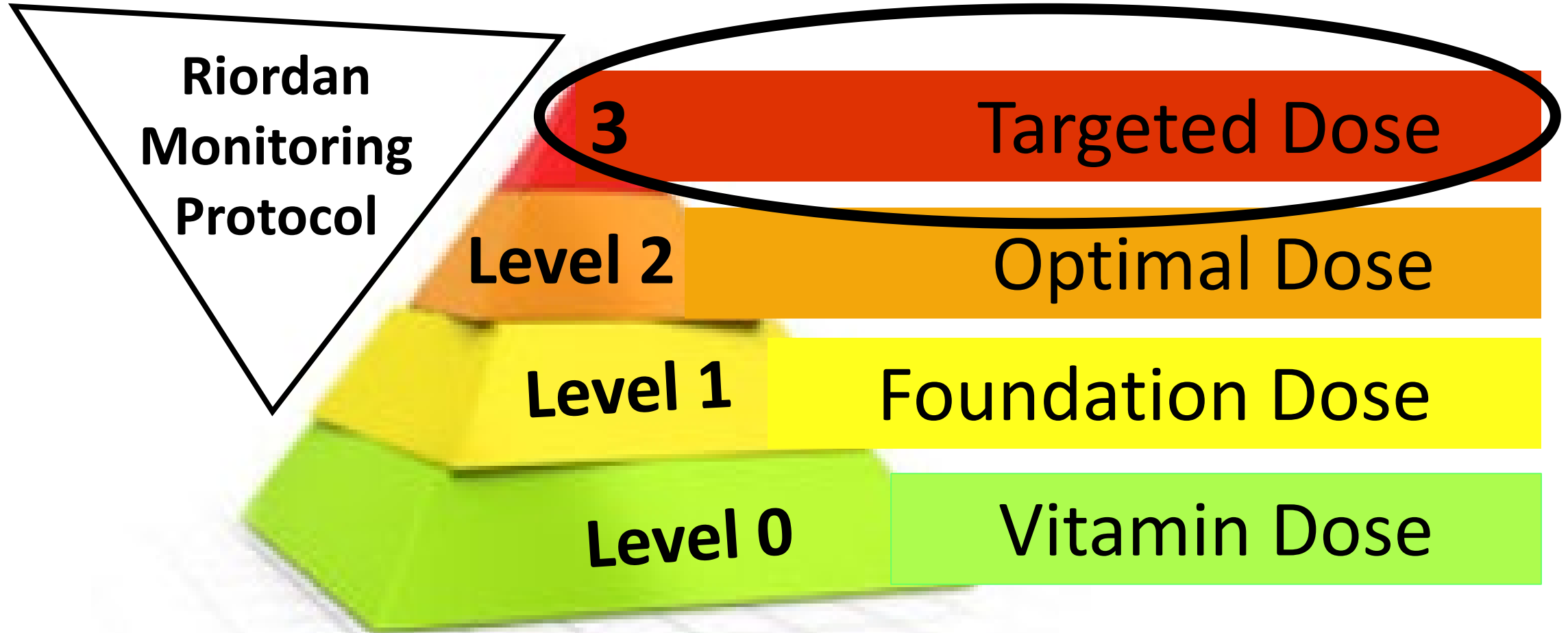
D is a hormone

Level 0

D is a vitamin



# Therapeutic Vitamin D3:K2





# Lab Profiles

Included in the Essential and  
Advanced Programs

Real Health  
Discovery      Foundation

	Real Health Discovery	Foundation
Vitamin A	•	•
Vitamin B1 (Thiamine)	•	•
Vitamin B2 (Riboflavin)	•	•
Vitamin B3 (Niacin)	•	•
Vitamin B5 (Pantothenic Acid)	•	•
Vitamin B6 (Pyridoxine)	•	•
Vitamin B12 (Cobalamin)	•	•
Folic Acid (Folate)	•	•
Vitamin C – Plasma	•	•
Vitamin C – Urine	•	
Vitamin D	•	•
Vitamin E	•	•

**Vitamins  
& Nutrients**

Included in the Living  
Well Program

Real Health  
Discovery      Foundation

	Real Health Discovery	Foundation	
<b>Amino &amp; Fatty Acids</b>	Essential Amino Acids		
	Fractionated Amino Acids	•	
	Taurine		
	Fatty Acids	•	•
	Lipid Profile	•	•
<b>Hormones &amp; Thyroid</b>	Lipoprotein (a)		
	DHEA-S	•	
	Estradiol	•	
	Free T3	•	
	Progesterone	•	
	Testosterone	•	
	TSH	•	•
	RT3	•	
	FT4	•	

	Beta Carotene	•	•
	Coenzyme Q10	•	•
	Glutathione	•	
	Lutein	•	•
	Lycopene	•	•
Elements	Calcium ( <i>Serum</i> )		
	Chromium ( <i>Serum</i> )	•	
	Copper ( <i>RBC</i> )	•	•
	Magnesium ( <i>RBC</i> )	•	•
	Manganese ( <i>RBC</i> )	•	
	Potassium		
	Potassium/Sodium Ratio		
	Phosphorus ( <i>Serum</i> )		
	Selenium ( <i>RBC</i> )	•	
	Strontium ( <i>Urine</i> )		
	Boron ( <i>Urine</i> )		
	Zinc ( <i>RBC</i> )	•	•

Blood Sugar & Inflammation	Glucose		
	Insulin	•	
	HBA1c	•	•
	CRP-hs	•	•
	Homocysteine	•	
	Histamine	•	
Conventional Screening	CBC	•	•
	Chem Profile	•	•
	UA + Micro		
	UA+C+Micr	•	
	Pyrroles	•	
	Ferritin	•	
	G6PD	•	•
	Glutamine		
	Yeast, Oral	•	
	Iron Profile (TIBC)	•	



Ryan Hartig, M.D.  
Wichita



Gael Wheeler, D.O.  
Overland Park



Lucas Tims, ND, FABNO

Overland Park Campus



Dustin Moffitt, ND

Hays Campus