Vitamin D, DM and Obesity

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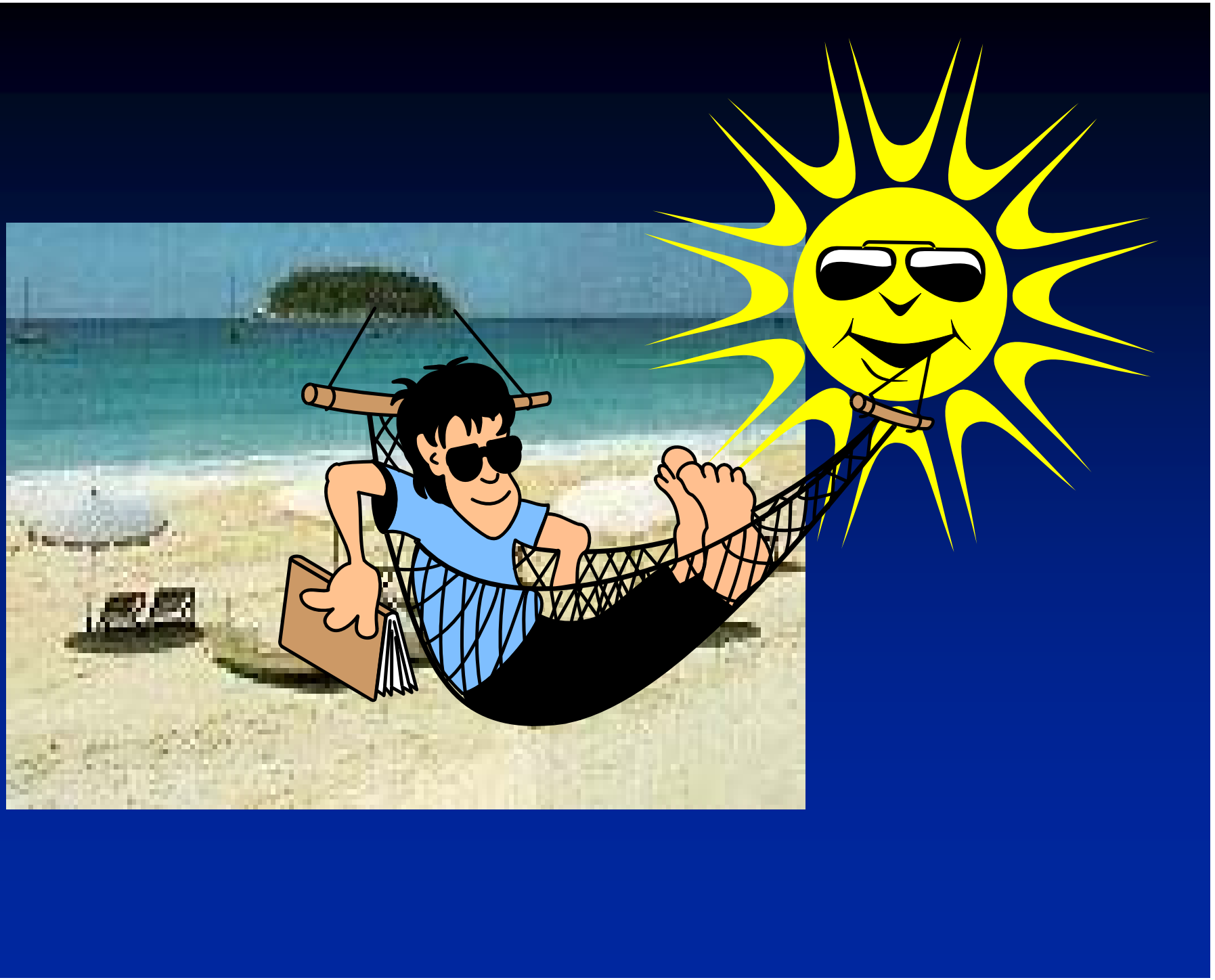
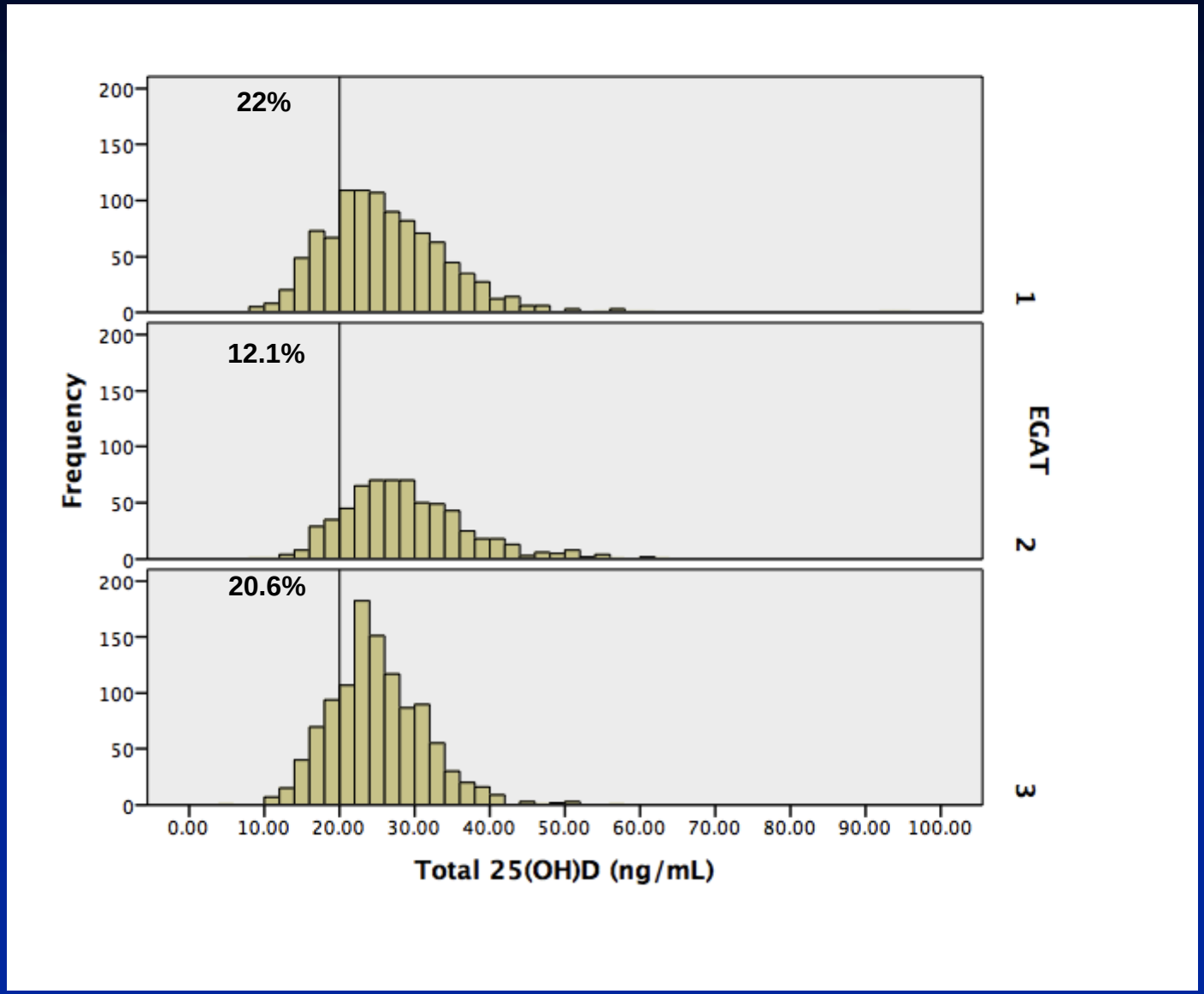


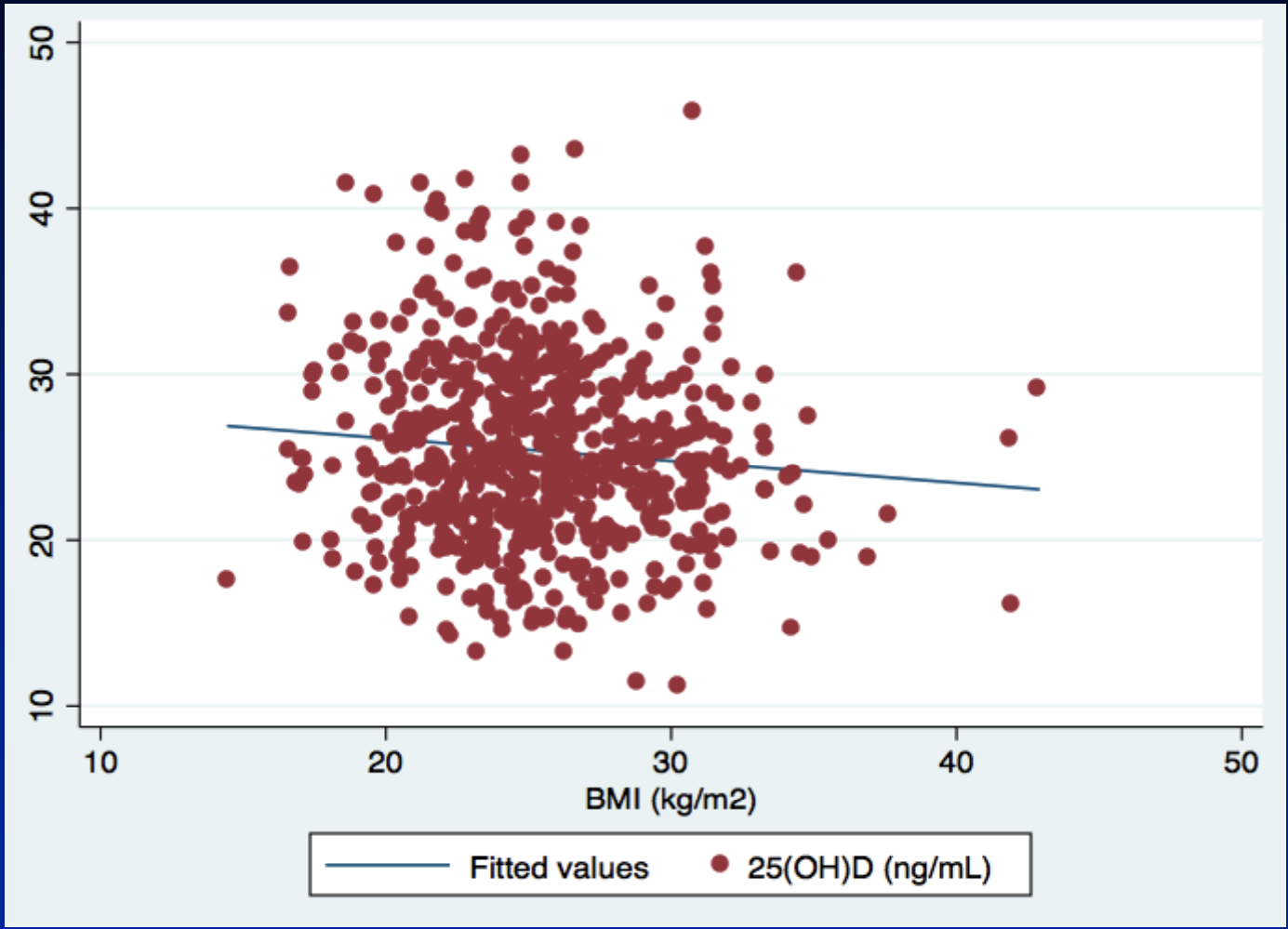
Prevalence of Vitamin D Deficiency in EGAT 1-3



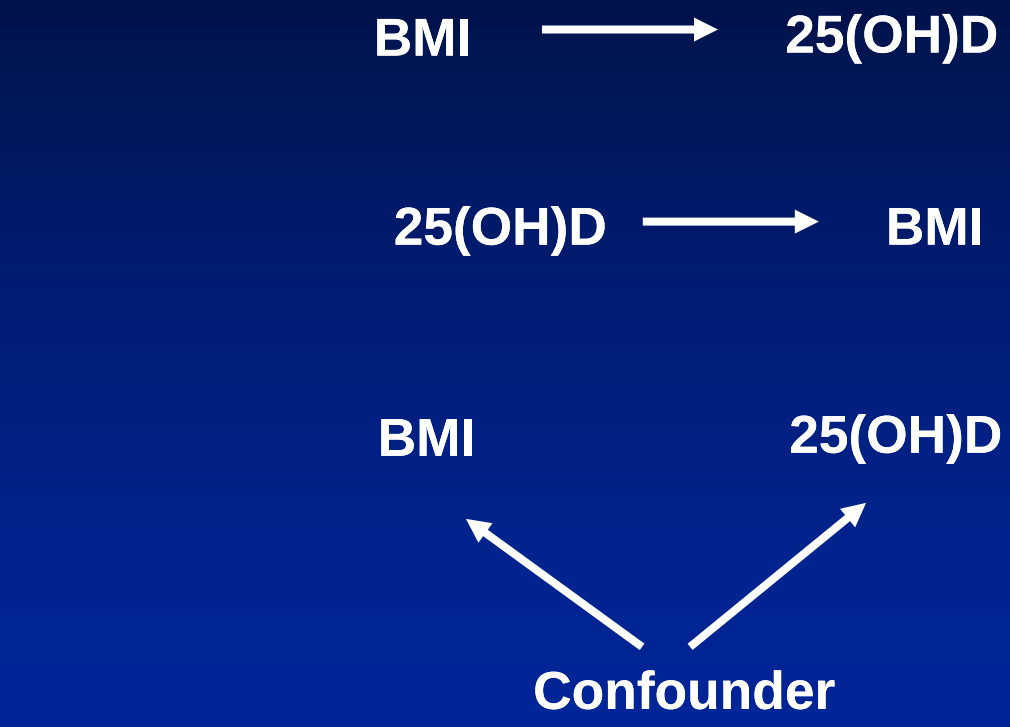
Adverse Outcomes Related to a Low 25D Level

- Bone mass
- Fractures
- Walking speed
- TB
- URI
- Admission to ICU
- CVD
- Type 1 DM
- Type 2 DM
- Multiple sclerosis
- Preeclampsia
- Cancer

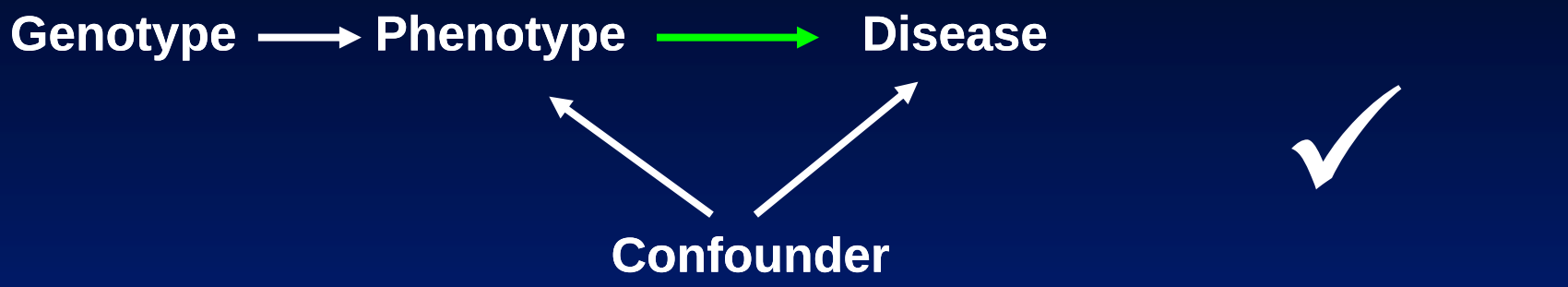
Relationship between Vitamin D Status and BMI

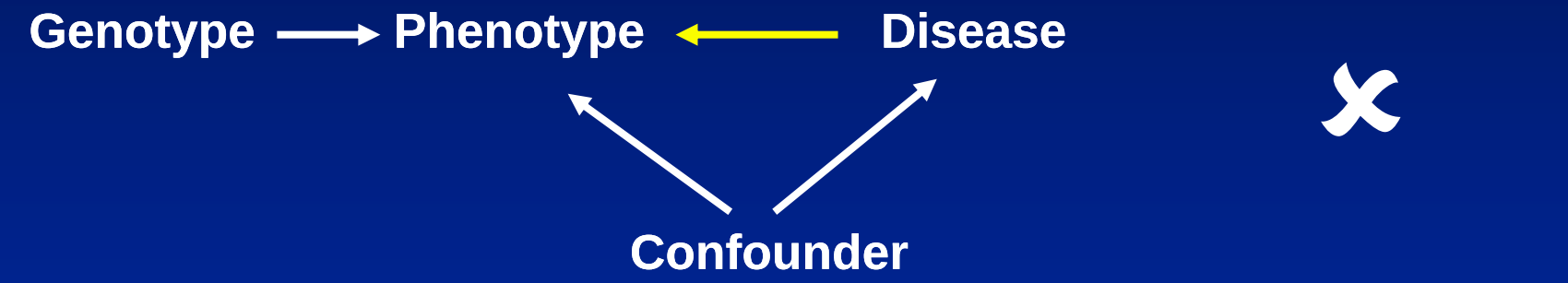


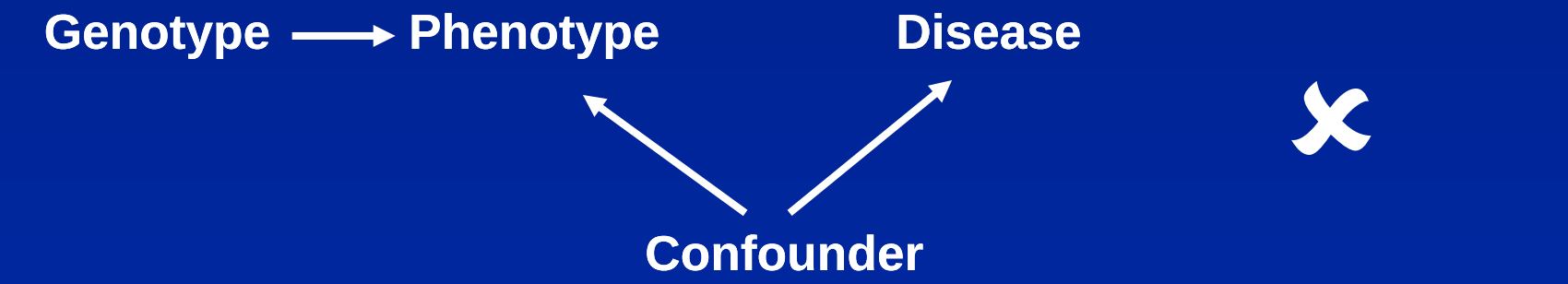
- N = 646
- Beta = -0.14, P < 0.05


BMI
25(OH)D
25(OH)D
BMI
BMI
25(OH)D
Confounder

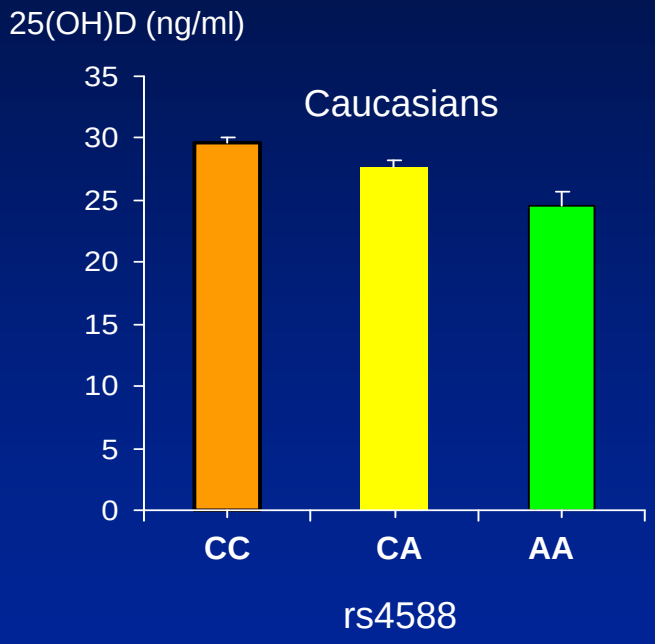
Causal Model Based upon Mendelian Randomization



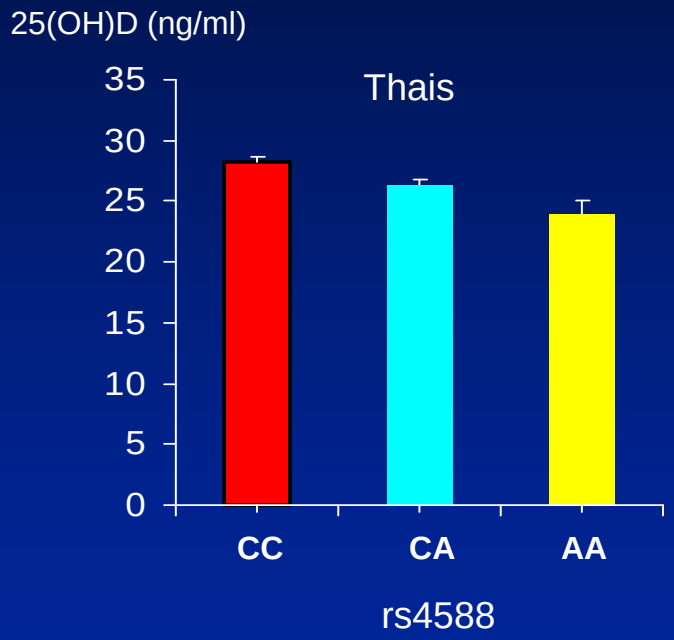




25(OH)D Levels vs. Vitamin D Binding Protein Genotype

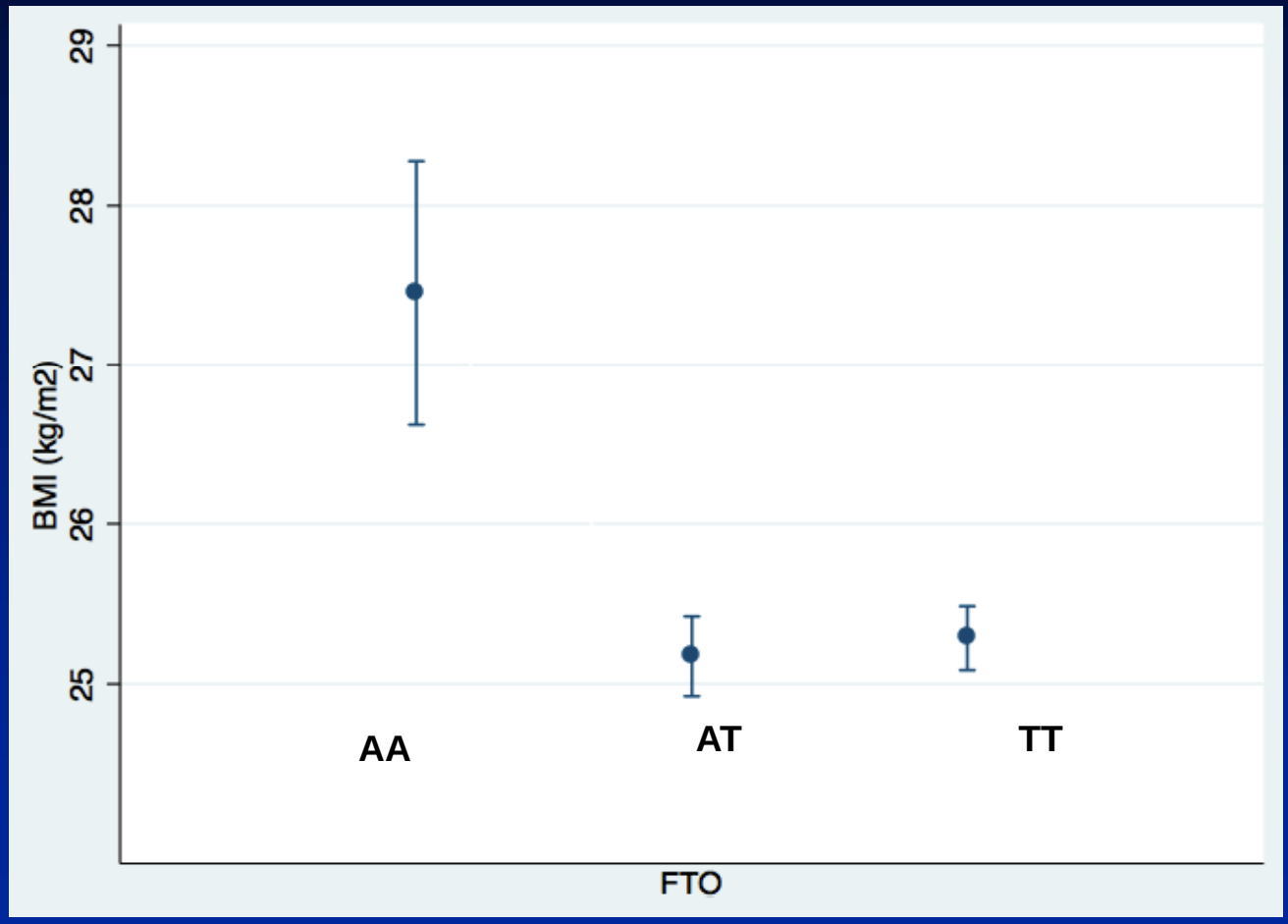


Sinott M, et al. Am J Clin Nutr 2009;89:634-40

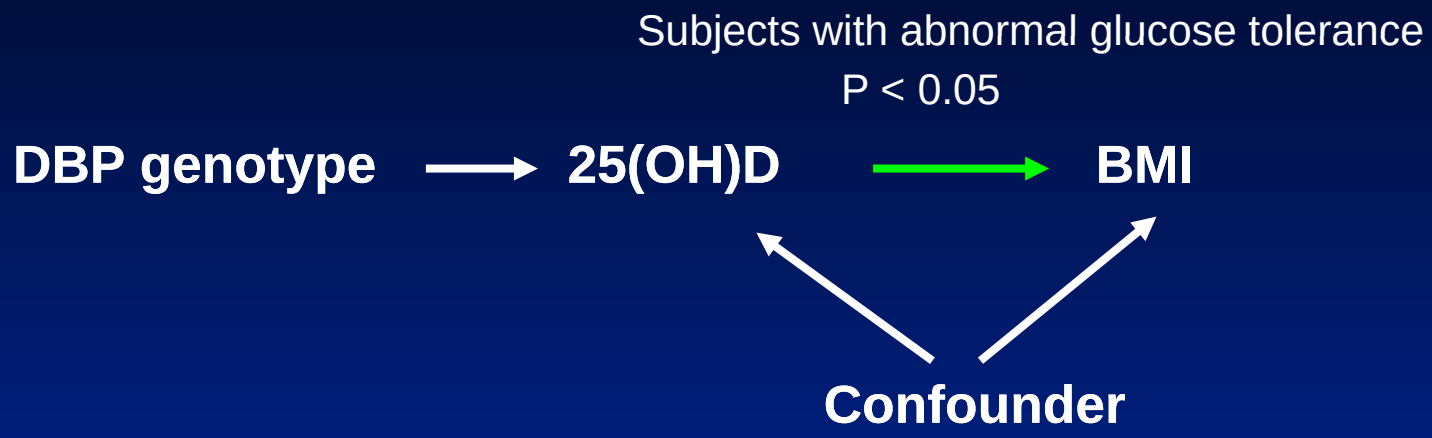


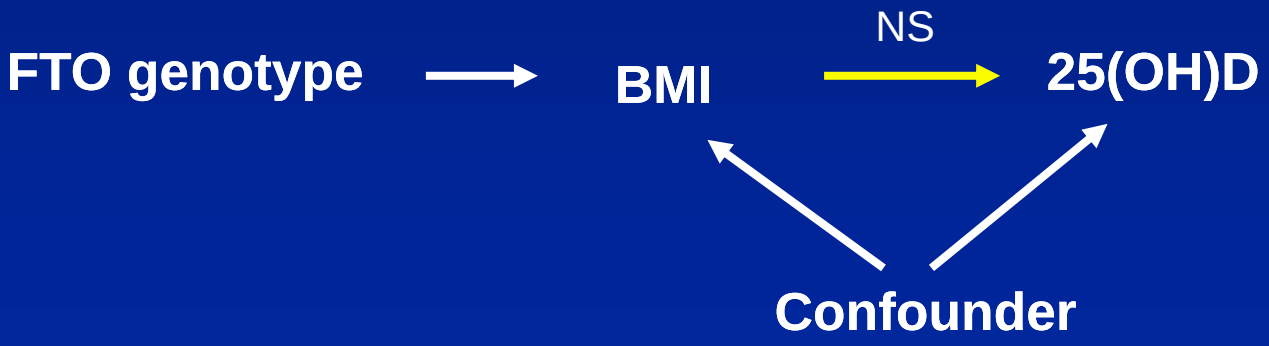
Chailurkit L, et al. 2009

BMI vs. FTO Gene Polymorphism in Thais



Causal Model Based upon Mendelian Randomization





Prevalence of Vitamin D Insufficiency in Thais: National Health Examnation Survey

Table 4 Prevalence of vitamin D insufficiency by geographical region and gender

Regions	Age, yrs (range)	Serum 25(OH)D levels					
		< 75 nmol/L			< 50 nmol/L		
		Men	Women	Total	Men	Women	Total
Bangkok	15 - 93	66.7%	75.5%	64.6%	10.8%	24.2%	14.3%
Central	15 - 91	36.2%	59.2%	43.1%	2.1%	11.4%	6.5%
North	15 - 98	27.9%	50.8%	39.1%	0.9%	6.5%	4.3%
Northeast	15 - 91	25.1%	51.0%	34.2%	0.1%	3.7%	2.8%
South	15 - 92	29.4%	65.8%	43.8%	1.5%	12.9%	6.3%
Total	15 - 98	32.6%	57.3%	45.2%	1.9%	9.3%	5.7%

Chailurkit L, et al. BMC Public Health 2011;11:853

Effect of Urbanization and Age on the Relationship between Vitamin D Status and Diabetes: National Health Examnation Survey

	Adjusted OR (95%CI)		
Age (years)	**15–44 (n = 882)**	**45–69 (n = 879)**	**>=70 (n =874)**
Urban			
Age (years)	1.10 (1.04, 1.18)	1.08 (1.04, 1.11)	0.96 (0.93, 0.99)
Male gender	2.33 (0.90, 6.06)	1.09 (0.68, 1.77)	0.84 (0.60, 1.19)
BMI (kg/m^2)	1.22 (1.10, 1.35)	1.19 (1.10, 1.28)	1.08 (1.03, 1.13)
25(OH)D2 (nmol/L)	1.0 (0.74, 1.29)	1.04 (0.93, 1.16)	1.04 (1.00, 1.07)
25(OH)D3 (nmol/L)	1.03 (1.0, 1.06)	1.0 (0.99, 1.01)	0.98 (0.97, 0.99)

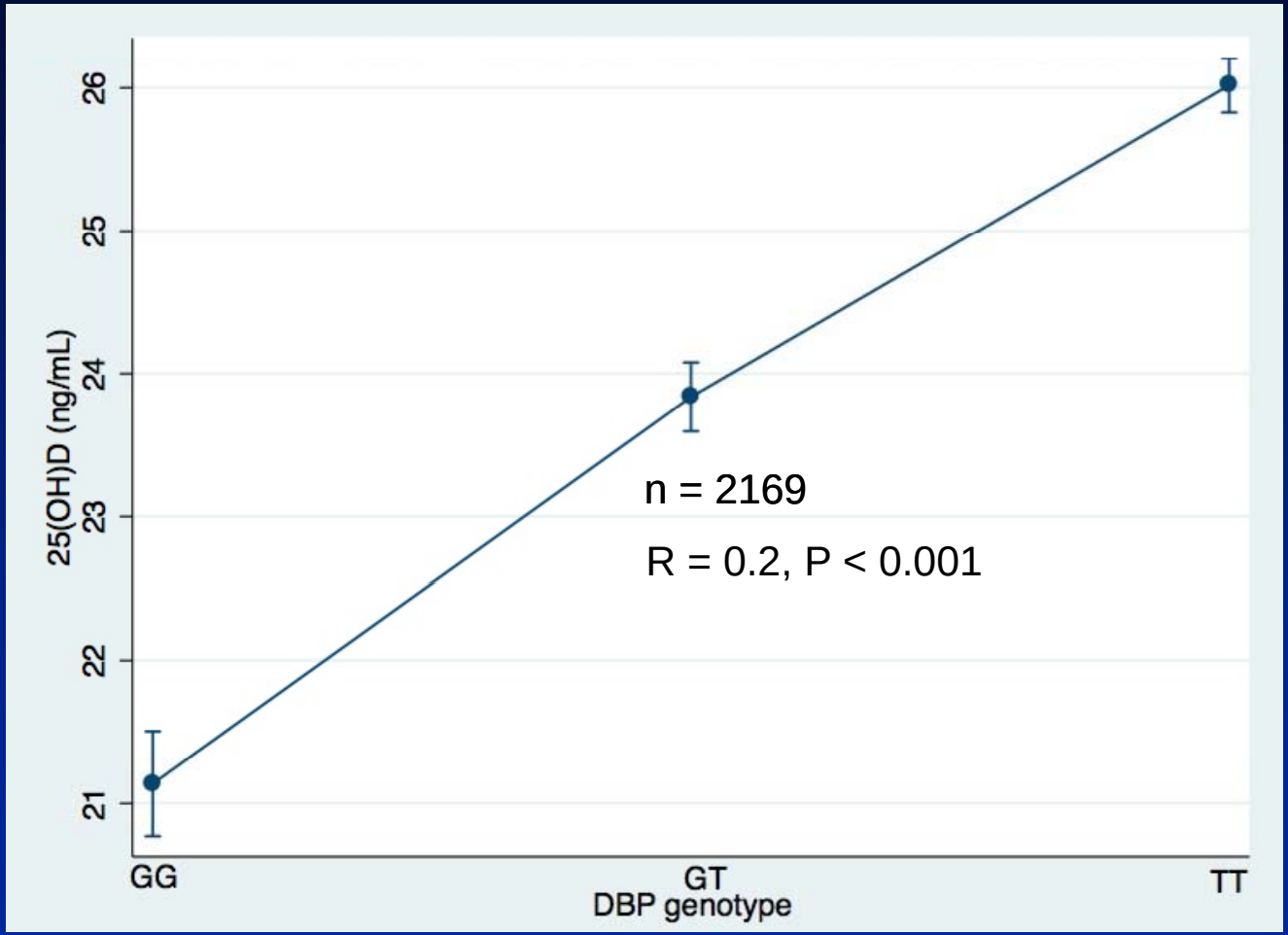
Chailurkit L, et al. 2011

25(OH)D and Fasting Plasma Glucose: EGAT 3

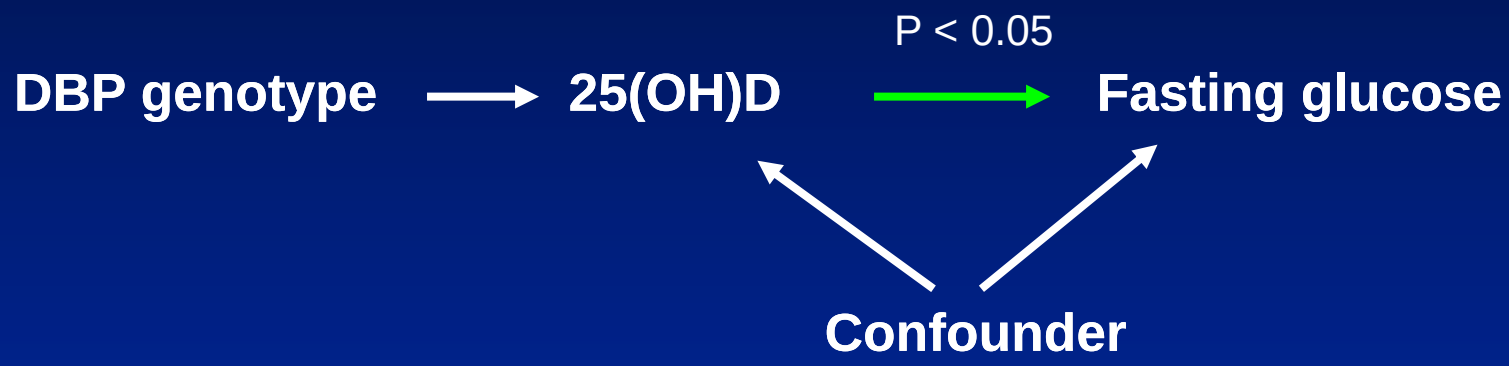
- Subjects with body fat mass in the lowest tertile (n = 674)
- Age 25-54

	Beta	P
Total 25D	0.11	< 0.01
Age	0.20	< 0.001
Female	-0.10	< 0.05

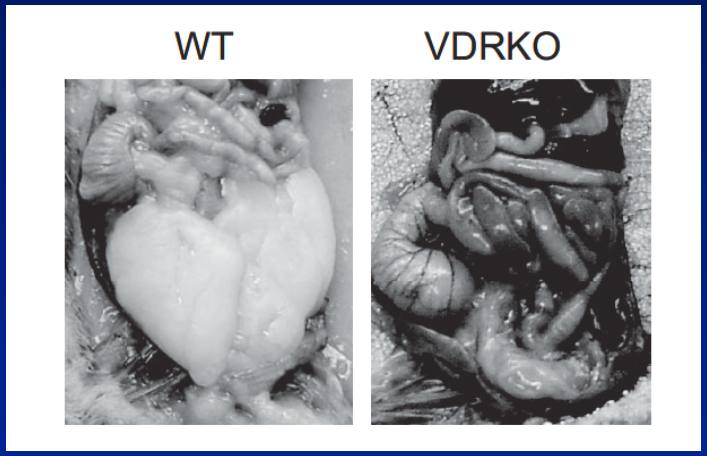
Vitamin D Status in Relation to DBP Gene Polymorphism

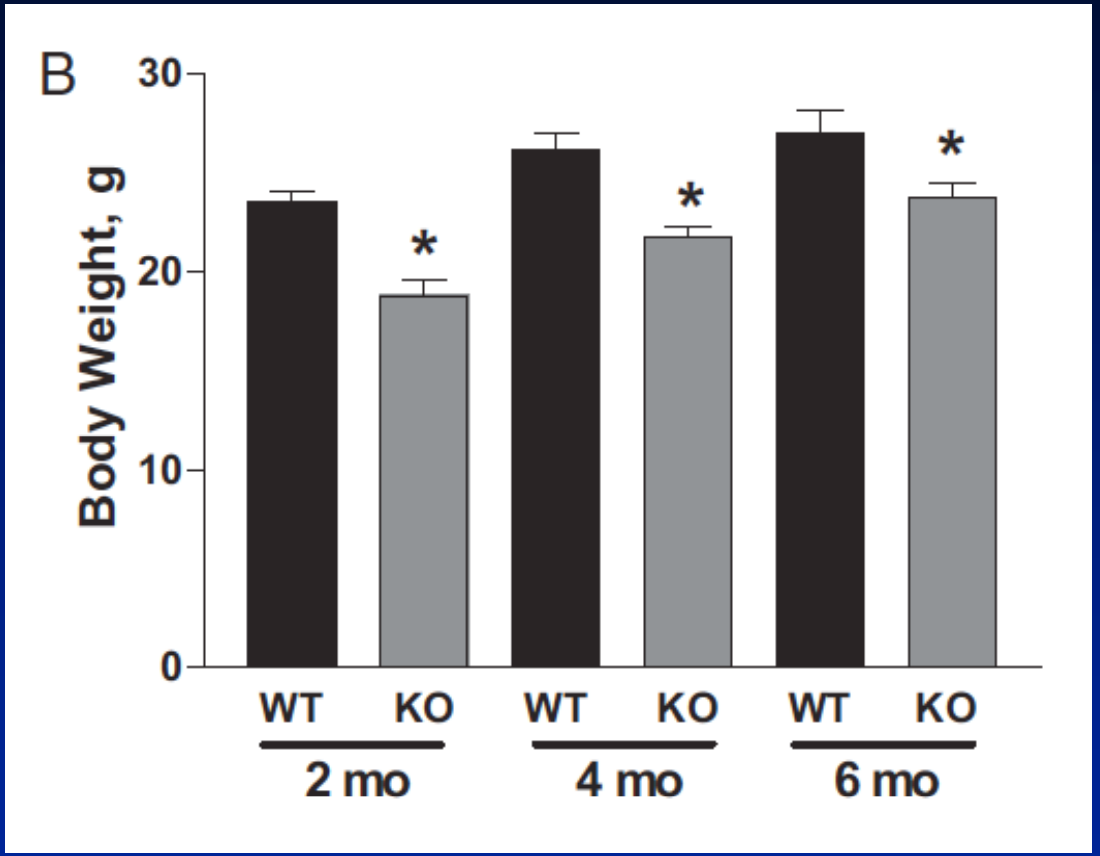


Causal Model Based upon Mendelian Randomization

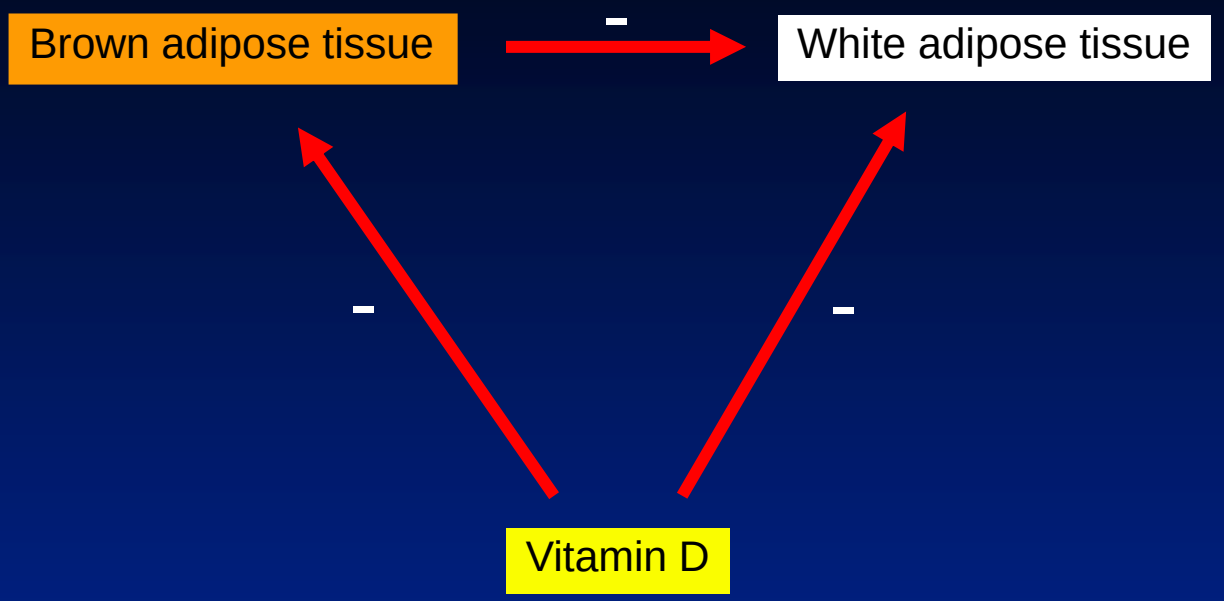


VDR -/- and CYP27b1 -/- Mice are Thin





Narvaez CJ, et al. Endocrinology 2009;150:651-61



- Vitamin D reduces BMI in subjects with abnormal glucose tolerance
- Vitamin D reduces diabetes in urban elderly
- Vitamin D increases fasting plasma glucose in subjects with low body fat