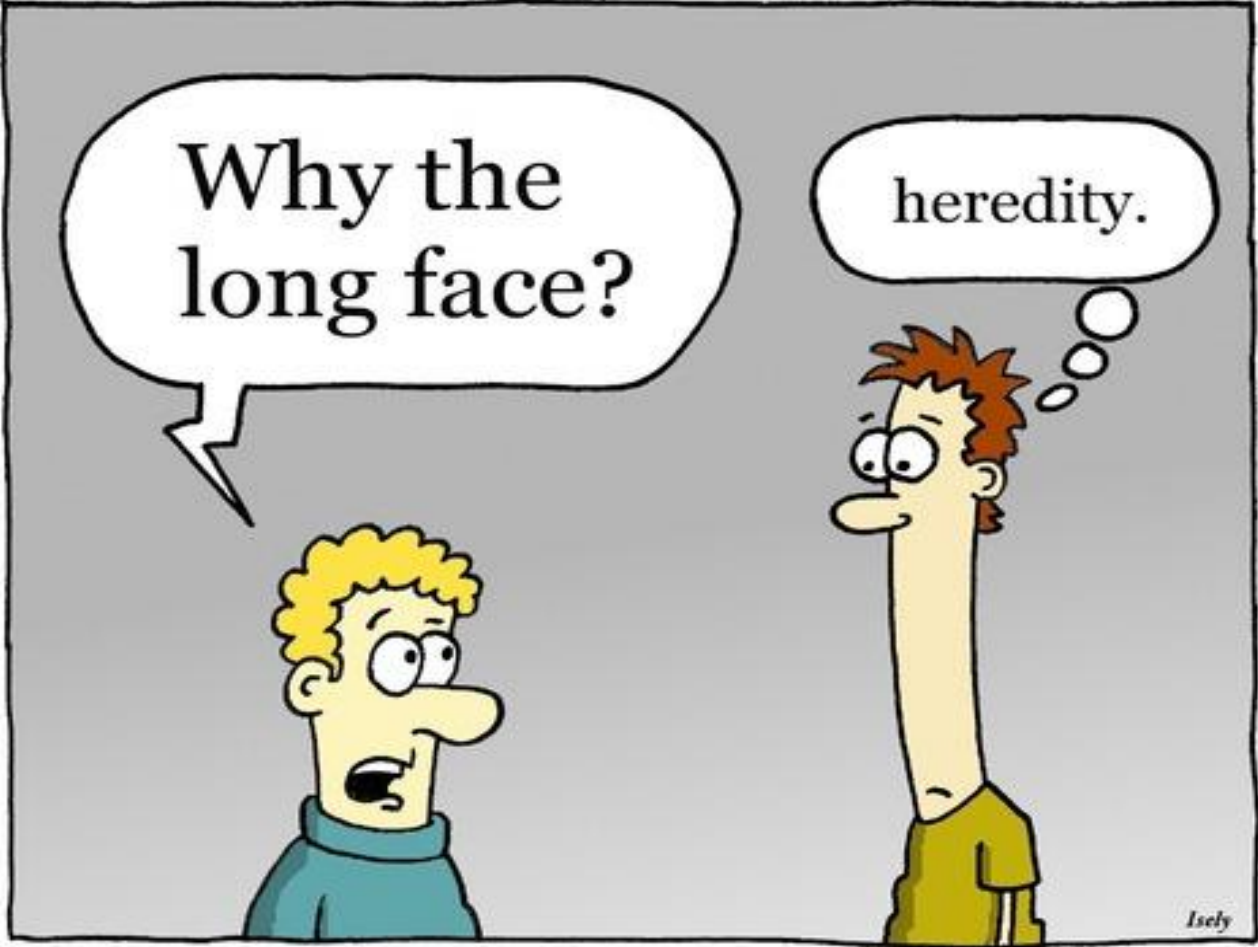


Tired of the Same Results?

Transform your genes and transform yourself!

Dr Penny Kendall-Reed

LIV North 2023



Why the long face?

heredity.

Isely

Nature vs Nurture

- ▶ Each cell contains a specific set of DNA. This unique combination of nucleotides (A, C, T, G) is what makes that individual unique.
- ▶ This is **Nature**.

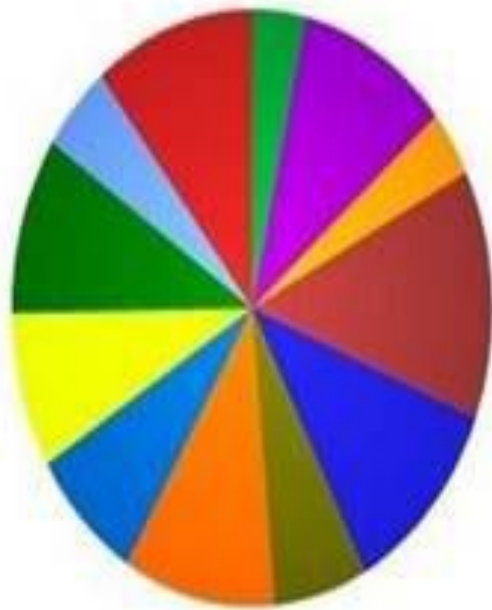
- ▶ The expression of these genes is controlled by external factors such as environment, stress, diet and exercise.
- ▶ This is **Nurture**.



V S

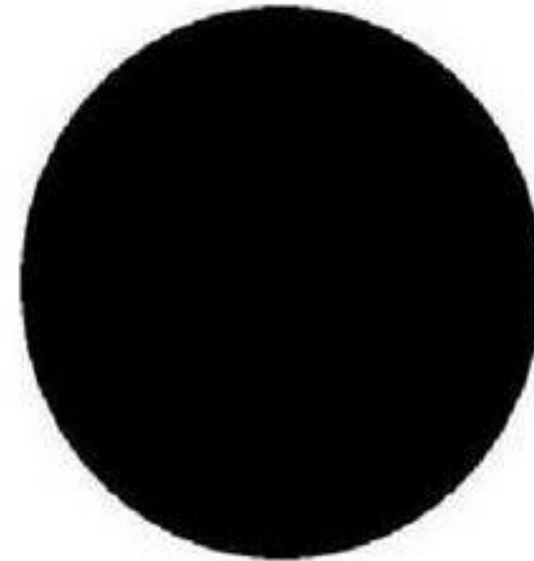


HOW WOMEN CHOOSE SHAMPOO:



- Effectiveness
- Brand
- Smell
- What it does to hair
- Ingredients
- Color
- Quality
- Design
- Recommendations
- Reviews
- Quantity
- Popularity

HOW MEN CHOOSE SHAMPOO:



■ it says shampoo

Response to Diet



Response to Exercise



What else can we learn?

- ▶ Production and conversion of hormones.
- ▶ Ability to clear toxins from the body.
- ▶ Inflammatory response.
- ▶ Ability to repair from injuries.
- ▶ Stress response.
- ▶ Vitamin and mineral absorption.
- ▶ Risk of cancers.
- ▶ Risk of auto-immune diseases.
- ▶ Much much more.....

Genetic Codings

- ▶ Homozygous Normal - 2 of the “good” or “ancestral” alleles - one from each parent. Usually associated with normal or good function.
- ▶ Heterozygous - 1 “good” allele and one “variant” or “bad” alleles - one from each parent. Usually associated with decreased or suboptimal function.
- ▶ Homozygous Variant - 2 of the “variant” or “bad” alleles - one from each parent. Usually associated with little to no function or too much function, both generally having adverse effects.

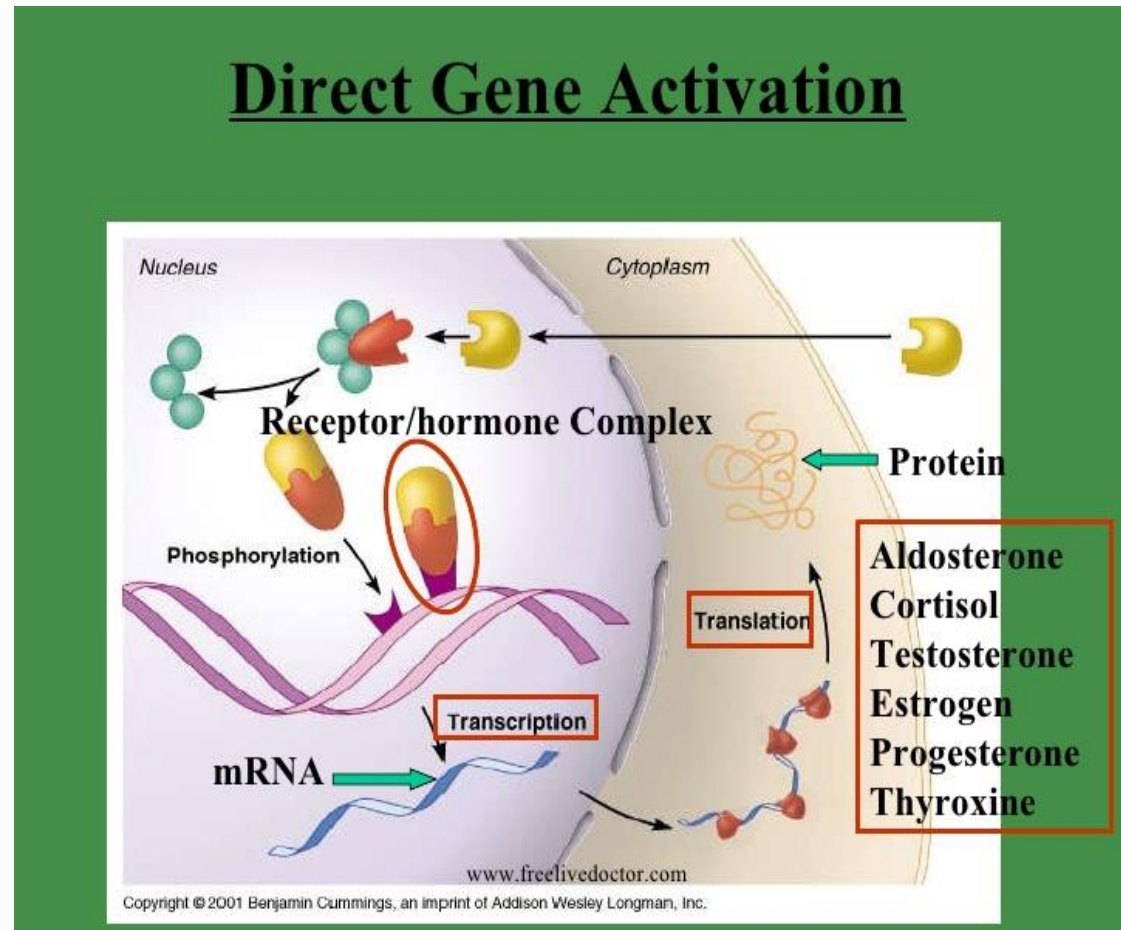
Gene Therapy

"I turn on, I turn off..."

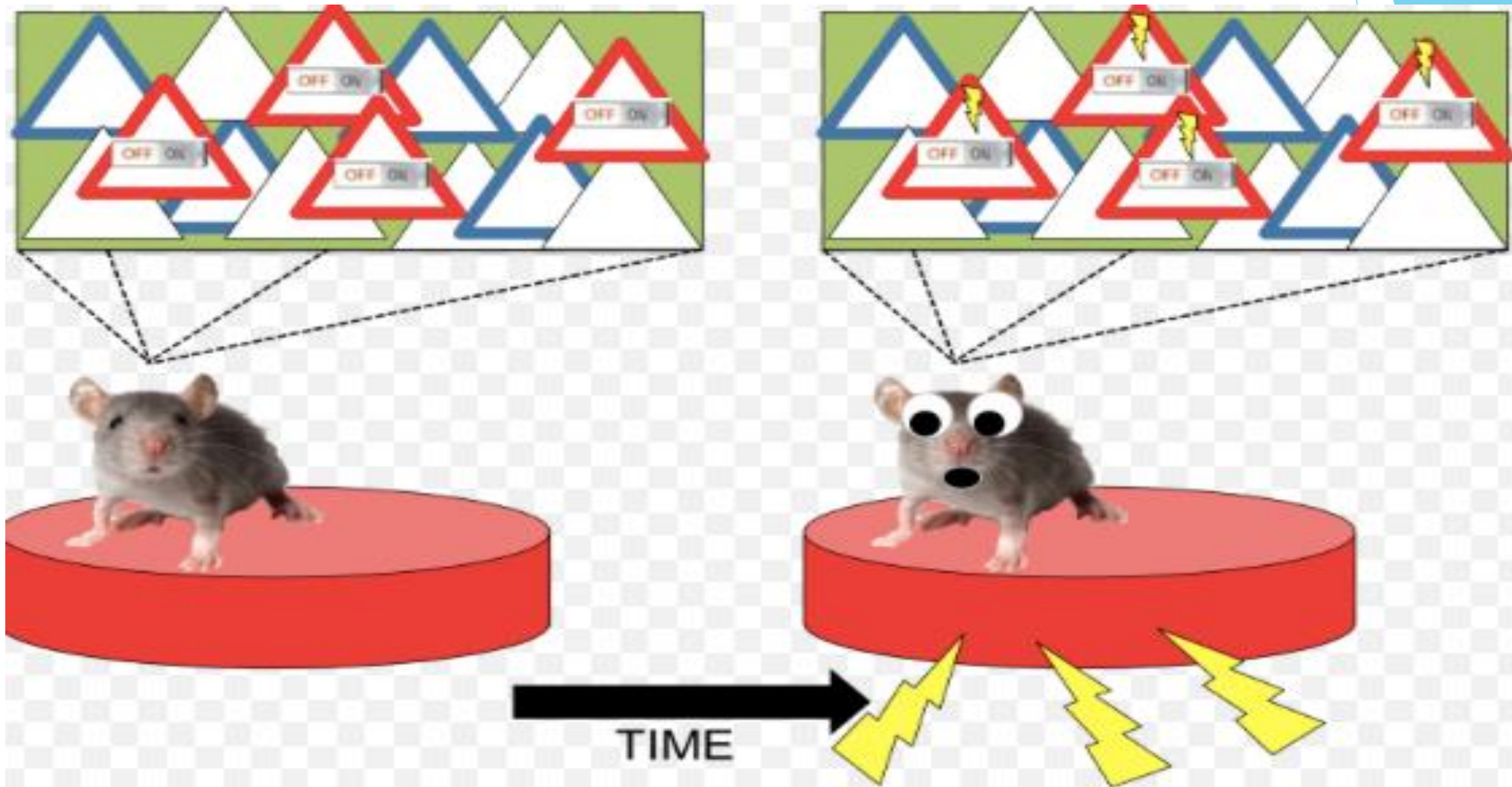


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Hormone-gene-interaction



How Stress Changes our Genes= Tagging.



Protective Gene Tagging

- ▶ After conditioning, the mice would physically shudder when exposed to smell alone.
- ▶ They also developed more *M71* receptors - the smell receptors, which enabled them to detect the acetophenone at much lower levels.
- ▶ **Protective gene tagging.**

Reversal of Genetic Tagging

Ohio state University medical center found that more than **170** genes were affected by stress (chronic cortisol secretion), 100 of them shutting off completely, especially wound healing and inflammation, sleep, metabolic functioning, and cardiac control.

- ▶ 20 volunteers had 8 weeks of meditation and yoga. At the end of the study, novices in meditation showed a change in **1561** genes (upreg 874 for health and down reg 687 for stress) and lowered BP, heart rate. Experienced meditators expressed 2209 new genes, most improving health and body's response to psych stress
- ▶ *S Roy et al, "Wound Site Neutrophil Transcription in Response to Psychological Stress in Young Men", Gene Expression, vol. 12, no 4-6:pp 273-287, 2005)*
- ▶ *J A Dusek et al, "Genomic Counter-Stress Changes Induced by Relaxation Response". PLOS ONE vol 3, no. 7:[e2576 (2008)*

Our Future in Genetics

“We will live in a time of more effective personalized medicine. Information from genetic testing will help to detect risk for disease, guide strategies for maintaining health, offer more accurate diagnosis, and guide treatment choices for a wide variety of conditions.”

National Institute of Health- Department of Health and Human Services.

Why Test Genetics?

- Not responding to typical treatment.
- What used to work is no longer working -diet or exercise.
- Family or personal history of a disease looking to prevent progression.
- Inadequate lab testing.
- No “One Size Fits All” treatment plan.

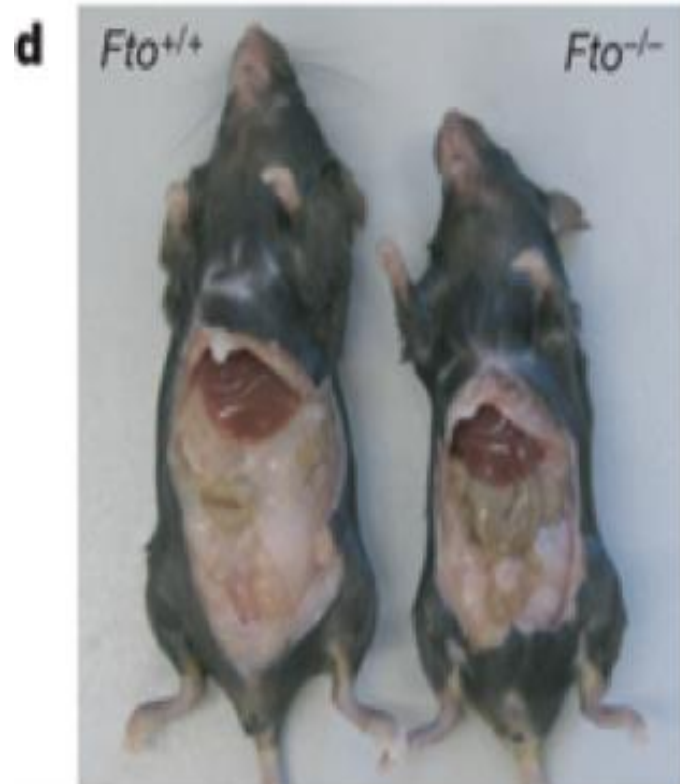
FTO - First identified obesity risk gene

▶ Variant Coding:

- ▶ Very low satiety
- ▶ Increased appetite
- ▶ Desire to snack
- ▶ Significantly lower metabolic rate
- ▶ Increased adipogenesis
- ▶ All metabolic variables turned on by the consumption of saturated fats and sugars

▶ *J Clin Endocrin & Meta.* 2008; 93: 3640-3

FTO - Normal and Variant



- ▶ 20 week old mice.
- ▶ Same diet, exercise and sleep patterns.
- ▶ *Nature* 458, 894-898 16 April 2009

What an FTO variant need.

- ▶ Higher protein at each meal.
 - ▶ Much lower saturated fats and sugar.
 - ▶ Better with intermittent fasting.
-
- ▶ TMC by Douglas Laboratories- Tri Metabolic Control to regulate leptin, adiponectin and ghrelin for 8 weeks to reset the genes.

APOA2 - Apolipoprotein a

▶ Variant Coding:

- ▶ Increased absorption of dietary fat when consuming more than 22 grams of saturated fat per day
- ▶ Increased weight gain with saturated fat consumption
- ▶ Increased ghrelin and altered leptin with saturated fat consumption
- ▶ Higher BMI by 6.2% when consuming saturated fats.

▶ *Arch Intern Med.* 2009 Nov 9; 169(20): 1897-906

APOA2 - Why keto is not for everyone.

- ▶ Reduce dietary intake of saturated fat to 22 grams or less per day.
- ▶ Saturated Fat - examples:
 - 16 g/oz, in coconut oil
 - 7.6 g/tbsp in butter
 - 9.4 g/oz in dark chocolate
 - 7 g/oz in hard goat cheese
 - 1.1 g/oz in almonds (approx 30 almonds)
 - 3 g in 12 walnuts.
 - 6 g in half a fillet (200 g) of salmon.



What an APOA2 variant needs?

- ▶ Less than 22 grams of saturated fats per day.
 - ▶ Consume almonds and walnuts versus other nuts.
 - ▶ Consume fat free dairy products (yogurt or cottage cheese)
 - ▶ Consume more pumpkin and chia seeds versus other seeds.
 - ▶ Do not use coconut oil or MCT oil.

- ▶ Pure Lean Fiber by Pure Encapsulations- 1 scoop at a meal that is higher in saturated fat.

TCF7L2 - transcription factor 7-like 2

▶ Variant Allele:

- ▶ Increased insulin production with less carbohydrates
- ▶ Increased weight gain with carbohydrates
- ▶ Increased risk of type 11 diabetes
- ▶ Increased risk of metabolic syndrome
- ▶ Increased risk of colon cancer
- ▶ Increased inflammation



What a TCF7L2 variant needs.

- ▶ Reduce the intake of simple carbohydrates to 2 out 3 meals and keep the size of the carbohydrate to $\frac{1}{2}$ the size of the protein.
 - ▶ Grains
 - ▶ Starches
 - ▶ Fruits
 - ▶ Sweets
 - ▶ Alcohol
- ▶ Always combine carbs above with protein.
- ▶ Increase consumption of vegetables and salads (“good” carbs).
- ▶ Resveratrol Extra By Pure Encapsulations

FKBP5- FK binding protein 5

▶ **Variant Allele:**

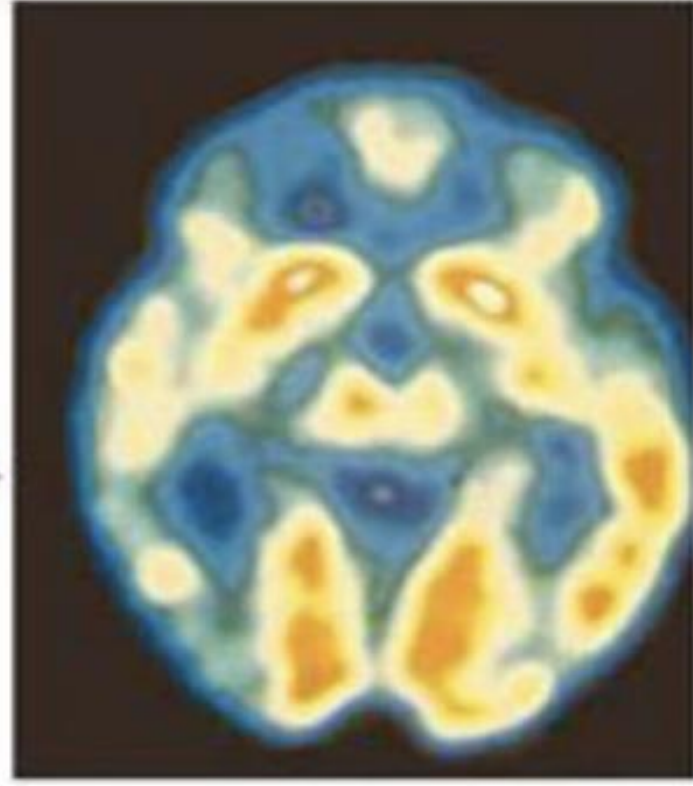
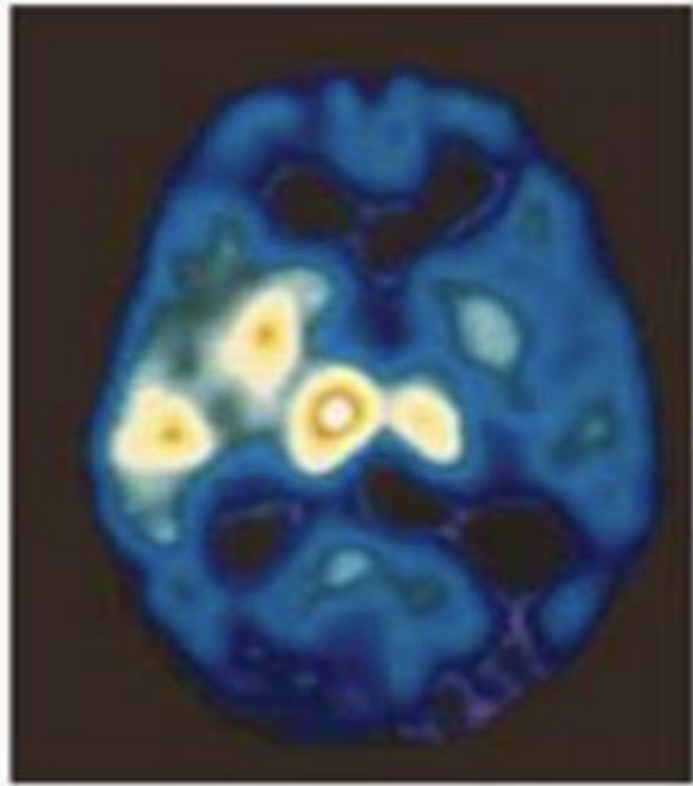
- ▶ Increased FKBP5 production
- ▶ Increased blocking of hypothalamic receptors.
- ▶ Decreased ability to turn off the stress response
- ▶ Increased anxiety
- ▶ Increased depression
- ▶ Increased obesity
- ▶ Increased insomnia or sleep problems.

NR3C2 - Nuclear receptor Subfamily 3 group C

▶ **Variant Allele:**

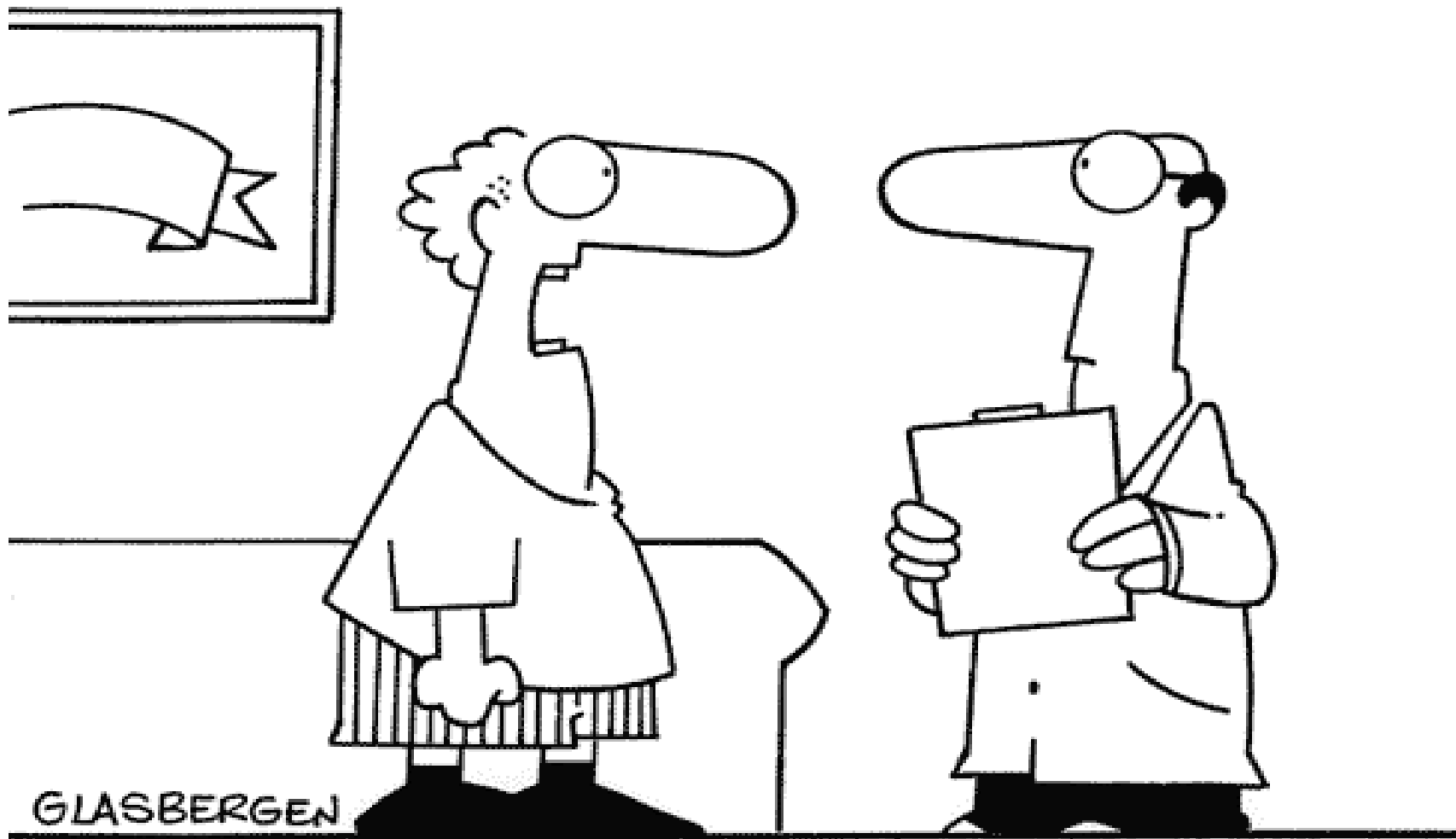
- ▶ Fewer hypothalamic and pituitary receptors
- ▶ Increased ACTH
- ▶ Decreased negative feedback in the HPA axis
- ▶ Easily gets stuck in the sympathetic (stress side) of the nervous system.
- ▶ Increased anxiety
- ▶ Increased depression
- ▶ Increased obesity
- ▶ Increased sleep disorders

Mayo Foundation brain imaging.



What FKBP5 and NR3C2 variants need.

- ▶ Regular exercise
 - ▶ Meditation
 - ▶ Laughing
 - ▶ Deep breathing
 - ▶ Stop multi-tasking
 - ▶ **JUST SAY NO!**
-
- ▶ Sereniten Plus by Douglas labs to immediately reduce cortisol and reset the HPA axis.



“I’m learning how to relax, doctor—but I want to relax better and faster! I WANT TO BE ON THE CUTTING EDGE OF RELAXATION!”

© 1997 Randy Glasbergen.
E-mail: randy@glasbergen.com
www.glasbergen.com



**“This is my relaxation tape—
it’s the sound of ocean waves crashing
onto the shore, snatching my boss’s body off
his beach chair and carrying him out to sea.”**

Integration of Genes - Exercise

- ▶ ACTN3 - C/C = normal:
 - ▶ Increased fast twitch muscle fibers for sprinting.
 - ▶ Increased myelin sheath for faster neural messaging.
- ▶ ACE - A/A - Variant
 - ▶ Decreased and slower profusion of blood across muscle
 - ▶ Poor electrolyte control
 - ▶ Increased CK with HIIT.
- ▶ ADRAB2 - A/A = variant
 - ▶ Fewer beta 2 adrenergic receptors.
 - ▶ Decreased bronchodilation.
 - ▶ Increased VO2Max for endurance.





How this changes treatment.

Need to moderate the intensity of the workouts greatly.

Can still perform sprints, but they need to be **longer, slower sprints** (1-2 minutes) at 75% capacity, with **longer faster recoveries** (45 seconds) at 50% capacity.

Need to perform cardiovascular workouts for **45 minutes to 1 hour versus 30 mins.**

L-Glutamine for muscle repair when doing modified interval training.

Case Study

- ▶ 34-year-old female. Distance runner in her early 20's. Slim, ate a balanced diet of protein to carbs to fats = 25:50:25.
- ▶ Dropped most of her exercise when she graduated university and started working as a lawyer. Sleeping only 6 hours/night and was waking between 2-4:0 am.
- ▶ Gained 17 lbs in 6 months with no change to her diet.
- ▶ Started eating more keto style and began running again- training for a half marathon.
- ▶ Gained 7 more lbs in 1 month, more fatigued

Case study

- ▶ TCF7L2 T/T (okay with carbs)
- ▶ IRS1- C/T (needs a slight decrease in carbs)
- ▶ APOA2 C/C (not good with saturated fats)
- ▶ FTO - A/A (2.5 fold inc in weight with saturated fats, better with IF)

- ▶ ACTN3- C/C (better with sprinting)
- ▶ ACE- A/G (need to moderate the sprints a bit)
- ▶ ADRB2- G/G (does not excel at endurance)
- ▶ LPL - C/C (decreased weight loss with exercise)

Case Study

- ▶ Put her back on her original diet, more healthy carbohydrates, far less fats (especially saturated fats) and moderate protein.
- ▶ Changed her to modified HIIT - 80% work efficacy for sprints, with 35 to 40% recovery - 45 mins.
- ▶ Sereniten Plus - 2 BID - one dose 1 hour before bed, and 1 capsule if waking in the night.
- ▶ Melatonin SR - 6 mg 1 hour before bed.

Case Study

- ▶ Lost 2 lbs in the first week, felt less muscle fatigue.
- ▶ Sleeping through the night in 10 days, more rested on waking.
- ▶ At 8 weeks, she had lost 19 lbs, and by the end of the 3rd month she has lost 28 lbs.
- ▶ 2 years later she was spending less time working out and eating more food than when she was gaining the weight, kept it off, had great energy and was sleeping consistently .

www.CartoonStock.com



"BUT IF YOU WANT THE REAL LOWDOWN, WE'LL
NEED SOME OF YOUR DNA."

