

# HOW TO FEED OUR GENES

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# 1. Gene Expression



IT IS A PROCESS BY WHICH  
THE INFORMATION FROM  
A GENE IS USED IN THE  
SYNTHESIS OF A  
FUNCTIONAL GENE  
PRODUCT.

GENOTYPE



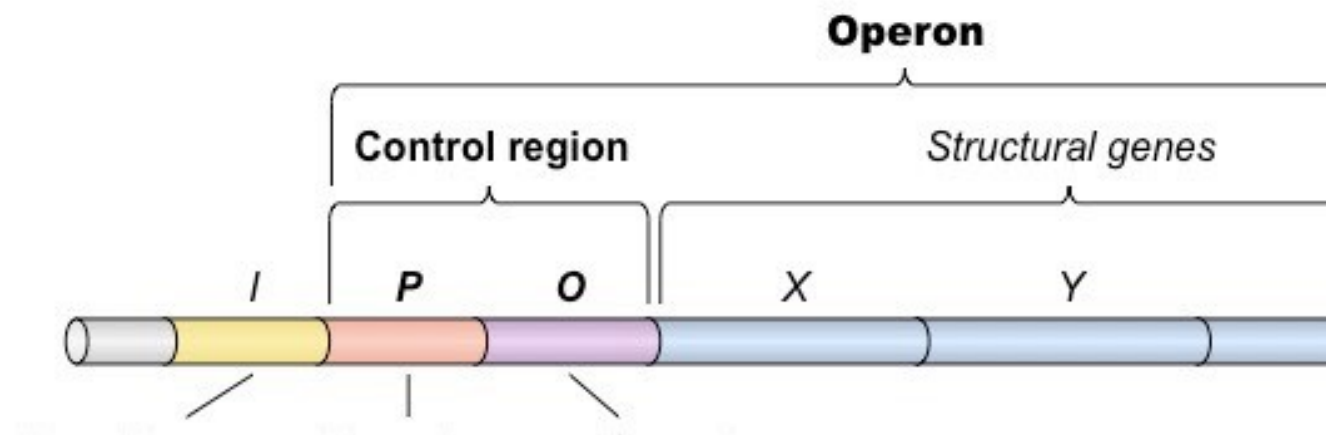
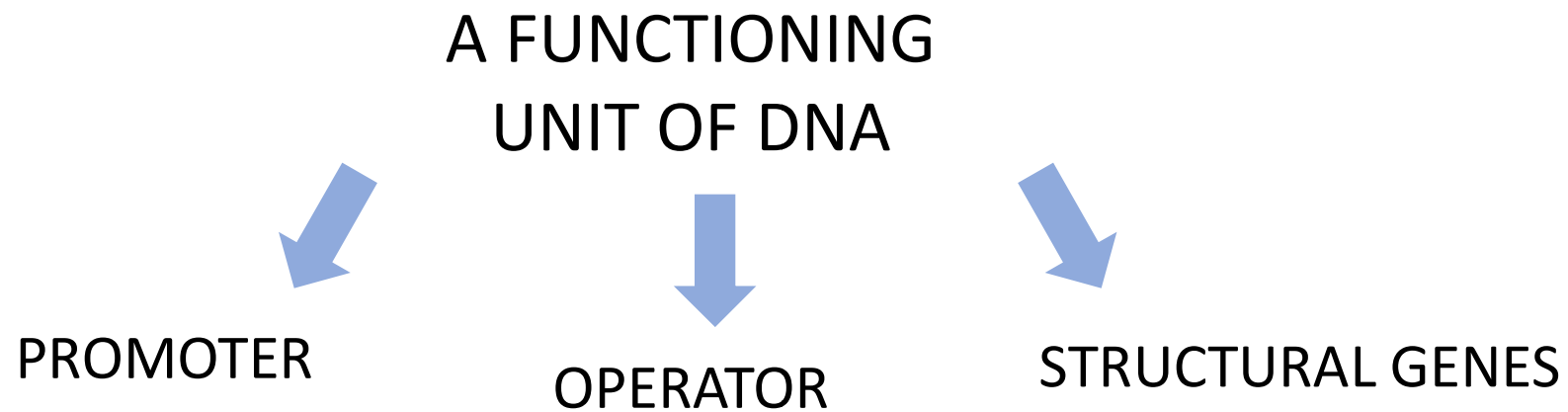
GENE REGULATION PROCESS



PHENOTYPE

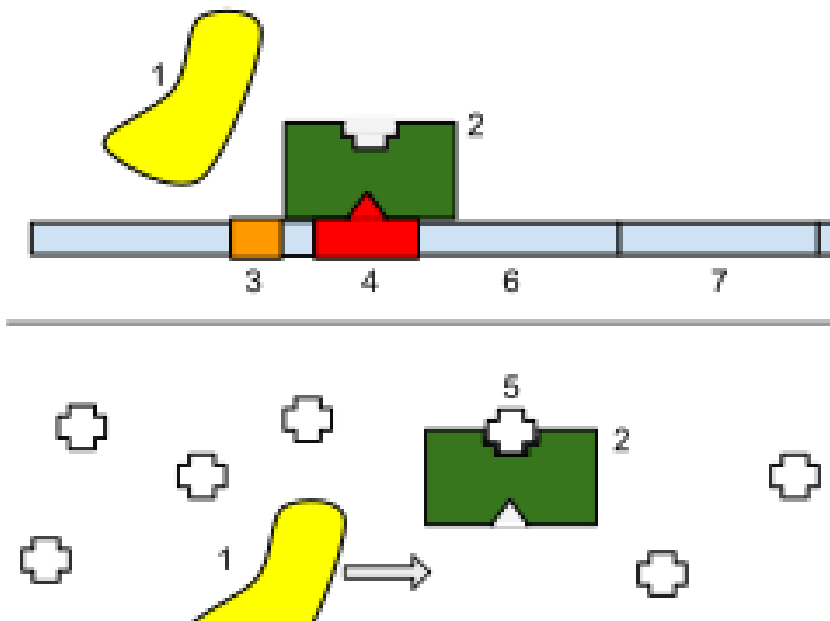


# 1.1. The Operon System

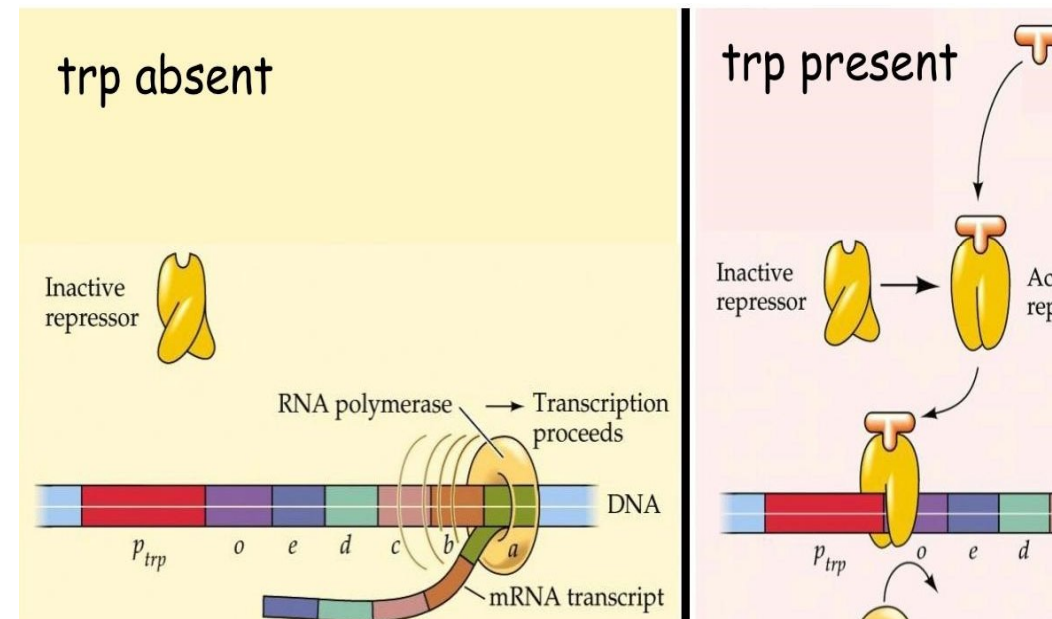


# 1.2. INDUCIBLE AND REPRESSIBLE OPERONS

## INDUCIBLE OPERON

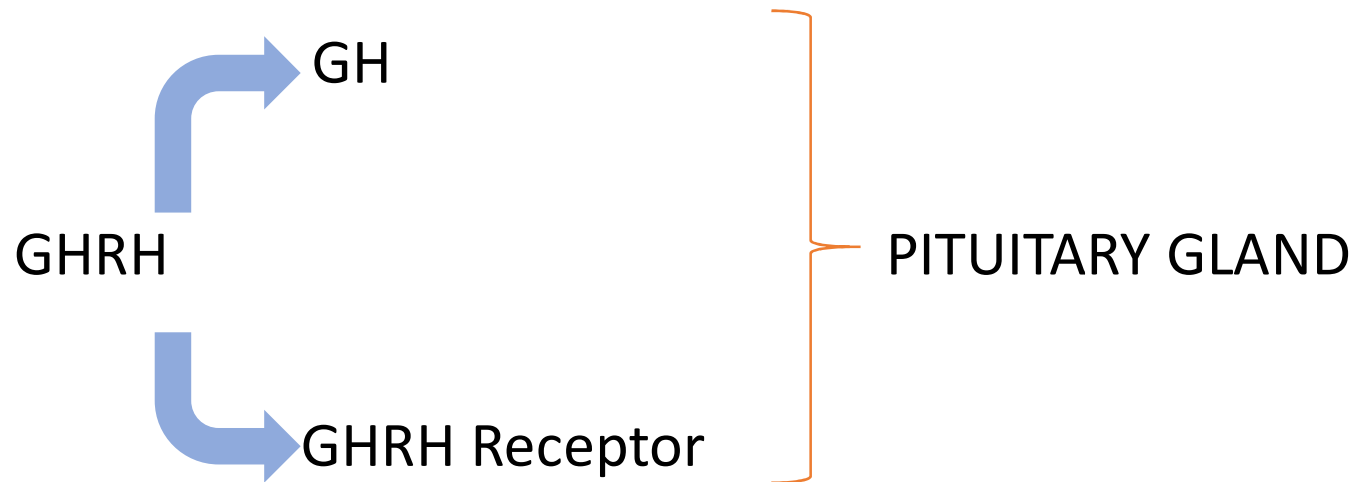


## REPRESSIBLE OPERON



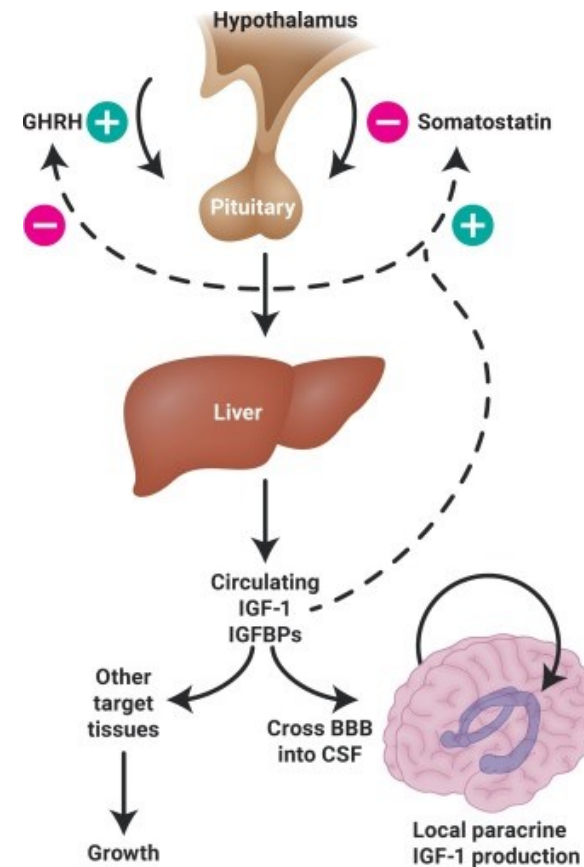
# 2.GHRH and IGFR1

## 2.1 GHRH



# IGF1(R=receptor)

- Insuline-like growst factor 1
- a protein located on the surface of human cells
- Without receptor = - die in development
  - show a dramatic reduction in body mass
- hormones = regulate each other
- an imbalance = affects
  - sleep
  - food intake
  - memory



# 3. resistance exercise training

- Chronic diseases
- External force
- Muscular contraction

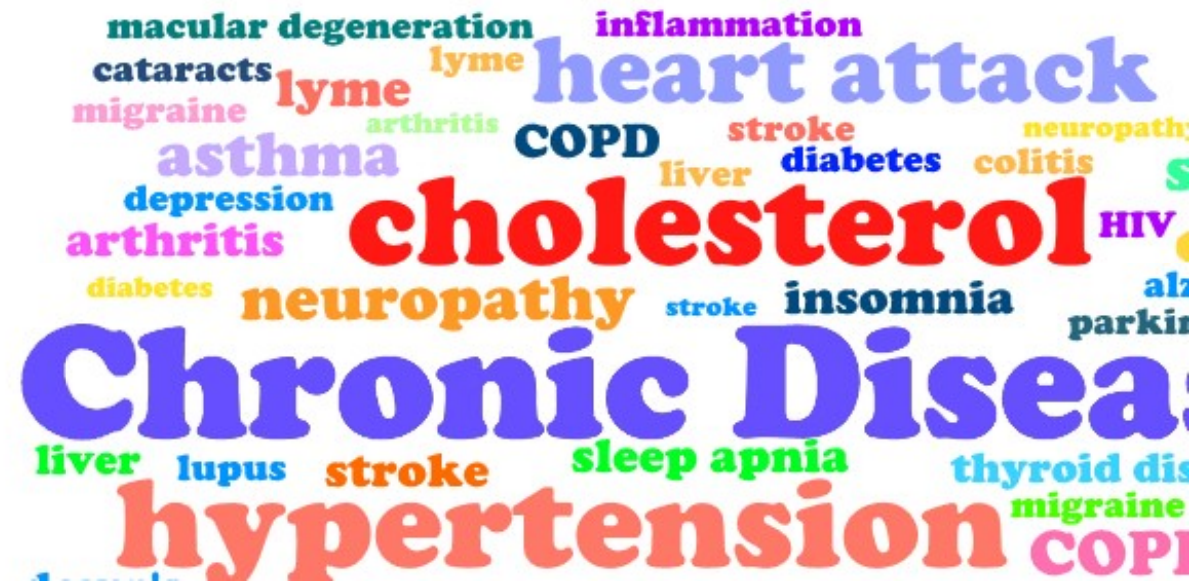




# 3.1 Health Effects

## CHRONIC DISEASES

- Obesity
- Cardiovascular disease
- Type 2 diabetes
- Gigantism

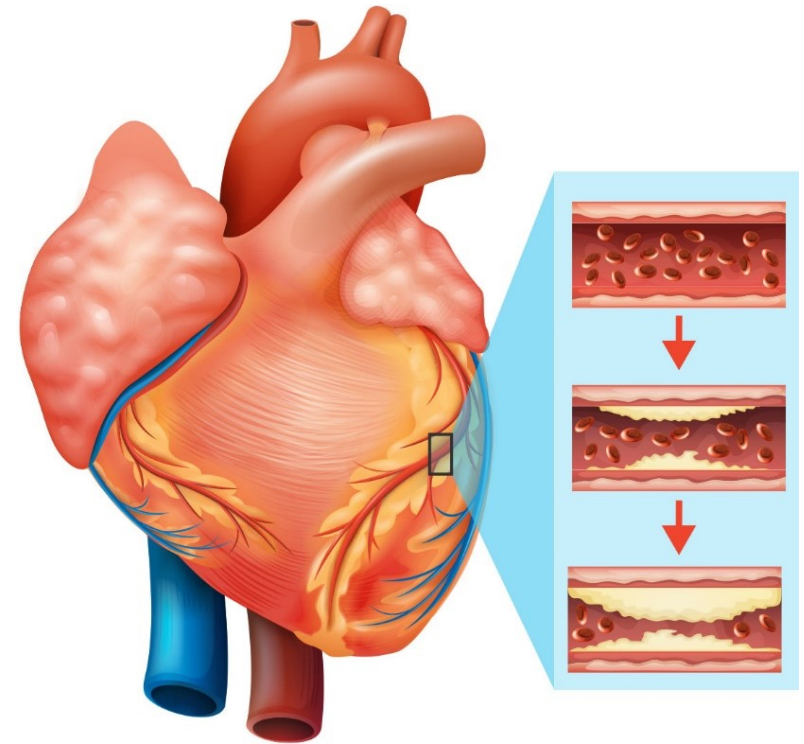


# Cardiovascular disease

- Blood clots in arteries
- Brain, heart, kidney, eyes

## 4 MOST COMMON CVD:

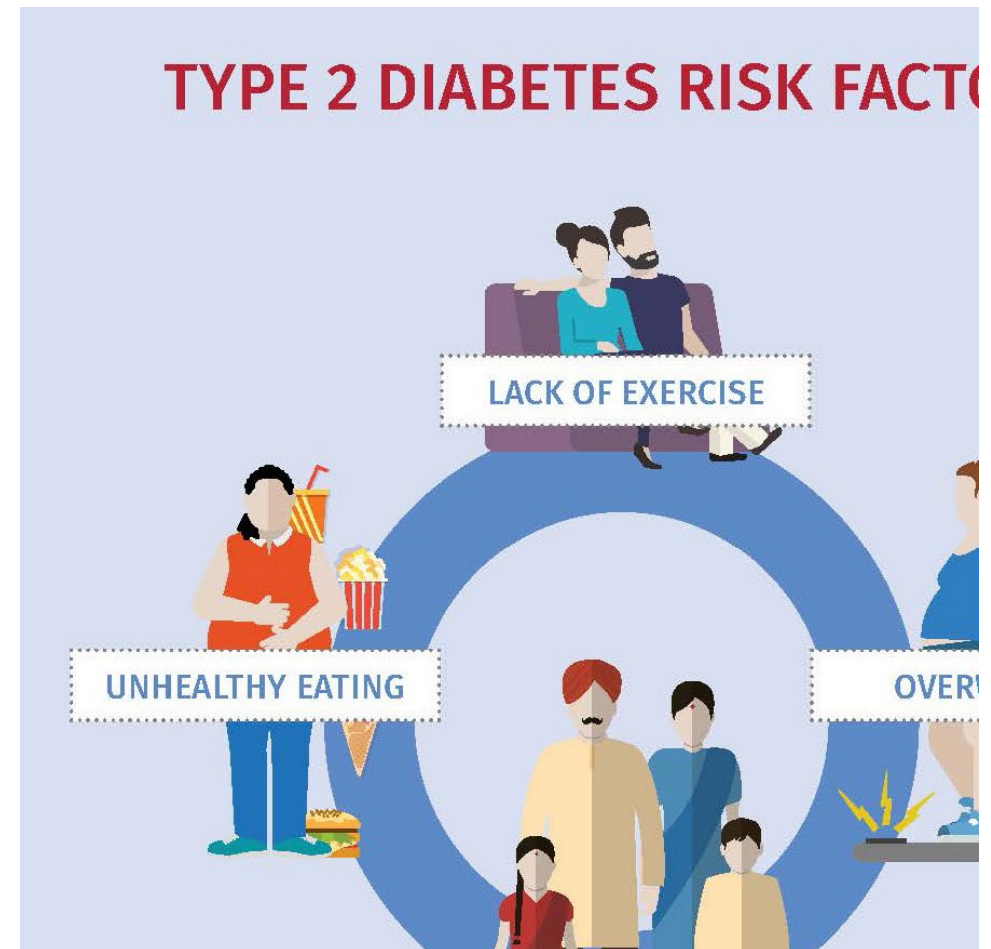
- Heart attack
- Arrhythmia
- Heart failure
- Coronary artery disease (CAD)



# Type 2 diabetes

- High blood sugar
- Insulin resistance
- Lack of insulin
- Slow symptoms

NO CURE, ONGOING DISEASE.



# Gigantism

- Pituitary gland (GH & IGF-I)
- Common age 13
- Hypertension
- Mechanism not understood
- Surgery & drugs (Pharmaceuticals)

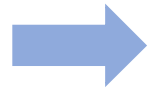


## 3.2 RESISTANCE EXERCISE TRAINING



IT HELPS MAINTAINING  
MUSCULAR STRENGTH AND  
MASS

EPIGENETIC  
MODIFICATIONS



DECREASE OF THE  
RISK OF CHRONIC  
DISEASES



HERITABLE  
CHANGES



# 4. EXPERIMENT

## 4.1 HYPOTHESIS

RET: -DNA Methylation  
-Transcriptional Changes to Genes



Improvements on the strength





## 4.2 Experiment structure

- -eight men(19-23 years old)
- Initial RET program(three sets)
- 8 weeks(3 times per week)
- At alternating days because they have a break of 72 hours between every session
- 8 repetitions squat, bench press, bench pull, deadlift exercises
- Training load of each exercise was increased = participants could comfortably complete



## 4.3 Results

- Upper and lower body improvement
- Gene expression changes
- Growth factors
- Methylation (IGF1R & GHRH)





# THANK YOU



# 5. Our RET

- Warming up
- Bleep test



20 meters

