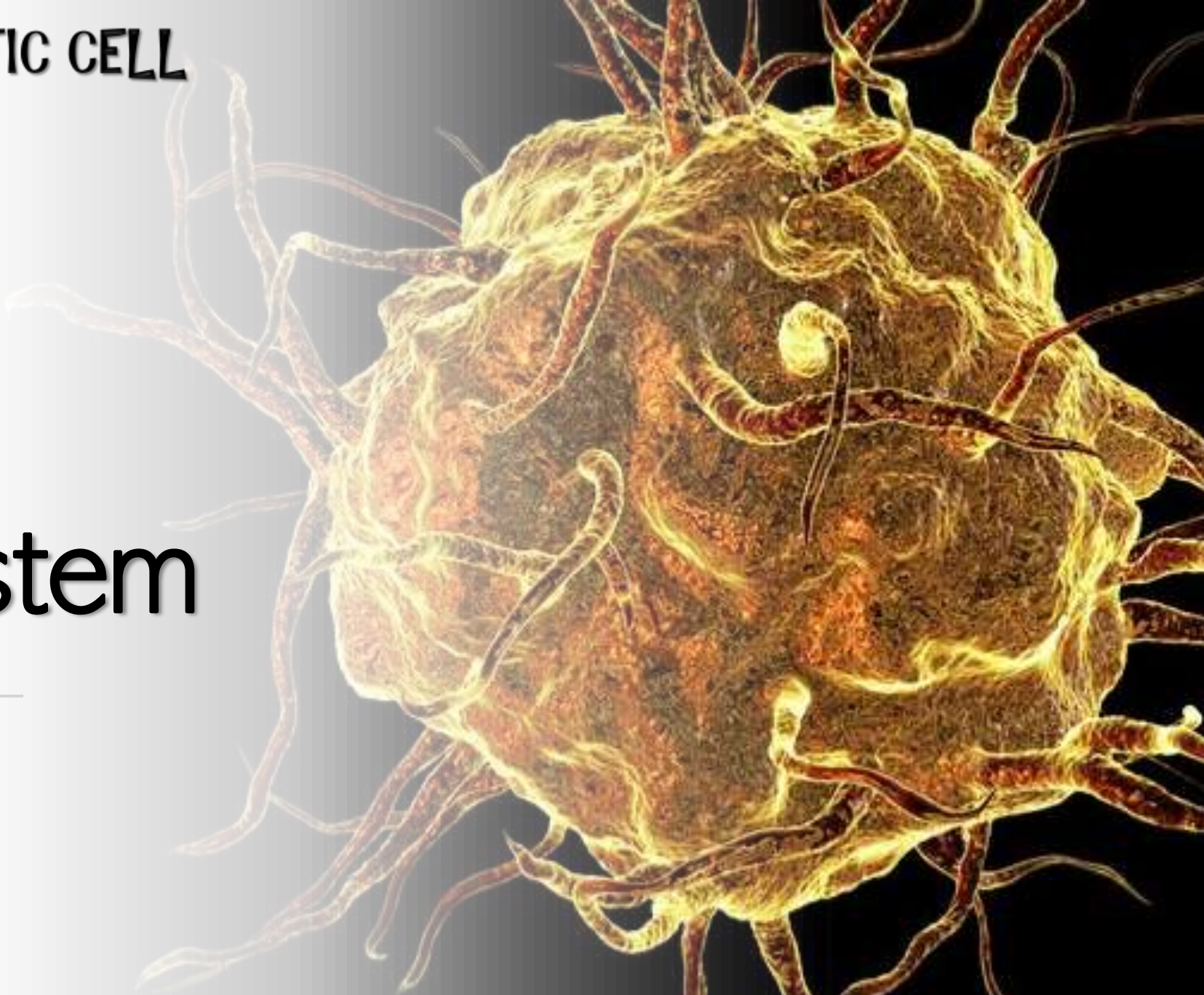


DENDRITIC CELL

Boosting Operator's Immune System

Greg Paul

Op2Myz, LLC



IMPORTANT I'M NOT A DOCTOR



PLEASE CONSULT WITH YOUR PERSONAL PHYSICIAN WHEN WORKING ON HEALTH IMPROVEMENTS

THEN, WHAT I'M DOING?

- Sharing Info – **FROM WHERE?**
- 7 yrs. of learning – ~ 1 to 2 hrs./day
- Reading Books & Research papers
- Video lectures & Podcasts by Health professionals, MDs, PhDs & DOs
- **WHY SHARE?** – *Stimulate Thought & Action*

Why Young "Health" Folk?

WHY INTEREST in IMMUNE HEALTH ?

COVID OF COURSE !!!

WHAT GIVES COVID IT'S BIG IMPACT ?

COMORBIDITIES* !!!

* More than 1 **DISEASED** or **PATHOGENIC** condition

Multiple disease states – stressing immune system

FLOW → → →

INTRO

IMUNNNITY SIMPLIFIED

CELLS

BOOSTING IMMUNITY

NEW CONCEPT

Intro

- Problem/Solution
- Sources
- EPIDEMIC vs. PANDEMIC
- Studies

CONCLUSION

Problem:

- Hidden Epidemic – **INSULIN RESISTANCE**
- Resulting in POOR IMMUNE System

Fix:

- Change in Life Style
 - Feeding/Watering Our Bodies
 - Moving
 - Being at Peace

Leading edge Health Research
17 yrs. to Hit Doctors

BULK OF INFO FROM:

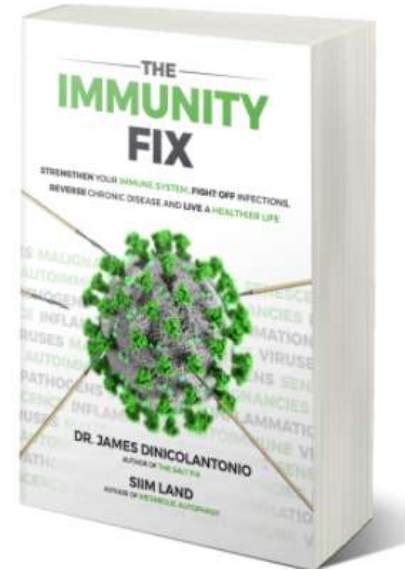
Immunity Fix

Strengthen your immune system, fight off infections,

REVERSE CHRONIC DISEASE and live a healthier life – **October 2020**

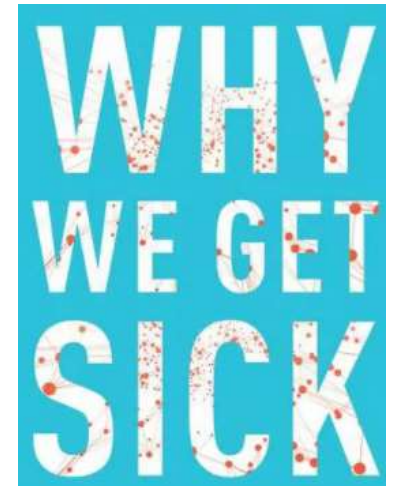
- Dr. James DiNicolantonio & Siim Land

Cardiovascular Research Scientist and Dr. Pharmacy - Saint Luke's Mid America Heart Institute in Kansas City, Missouri



Why We Get Sick

- The hidden EPIDEMIC at the
ROOT OF MOST CHRONIC DISEASE – and how to fight it – **July 2020**
- Benjamin Bikman, PhD



BYU Life Sciences - Cell Biology and Physiology: Ph.D. Bioenergetics & Postdoctoral Fellowship in METABOLIC DISORDERS

ANNUAL APPROX. DEATHS WORLD WIDE:

- **Cancer** - 10 m
- **Heart** Disease - 20 m
- **Alzheimer's** - 50 m
- AND
- ½ Billion Have
DIABETES

MORE INFO.....

- **40%** - Adults Overweight/Obese
- ~ ½ **Men** Over **45** lower-than-optimal testosterone levels
- ~**10%** Women experience menstrual irregularities or infertility
- **ALL** these & **MORE**.....

1 THING IN COMMON – **INSULIN RESISTANCE**

- IT **CAUSES** THE PROBLEM or MAKES IT WORSE

EPIDEMIC vs. PANDEMIC

EPIDEMIC

Affecting or tending to affect a DISPROPORTIONATELY LARGE number of individuals within a population, community, or region at the **same time**

Why We Get Sick

- The hidden EPIDEMIC at the root of most chronic disease – and how to fight it

PANDEMIC

Occurring over a **WIDE GEOGRAPHIC AREA** and typically affecting a significant proportion of the population

Our Current EPIDEMIC made **COVID** a **CRISIS !!!**

When Investigating

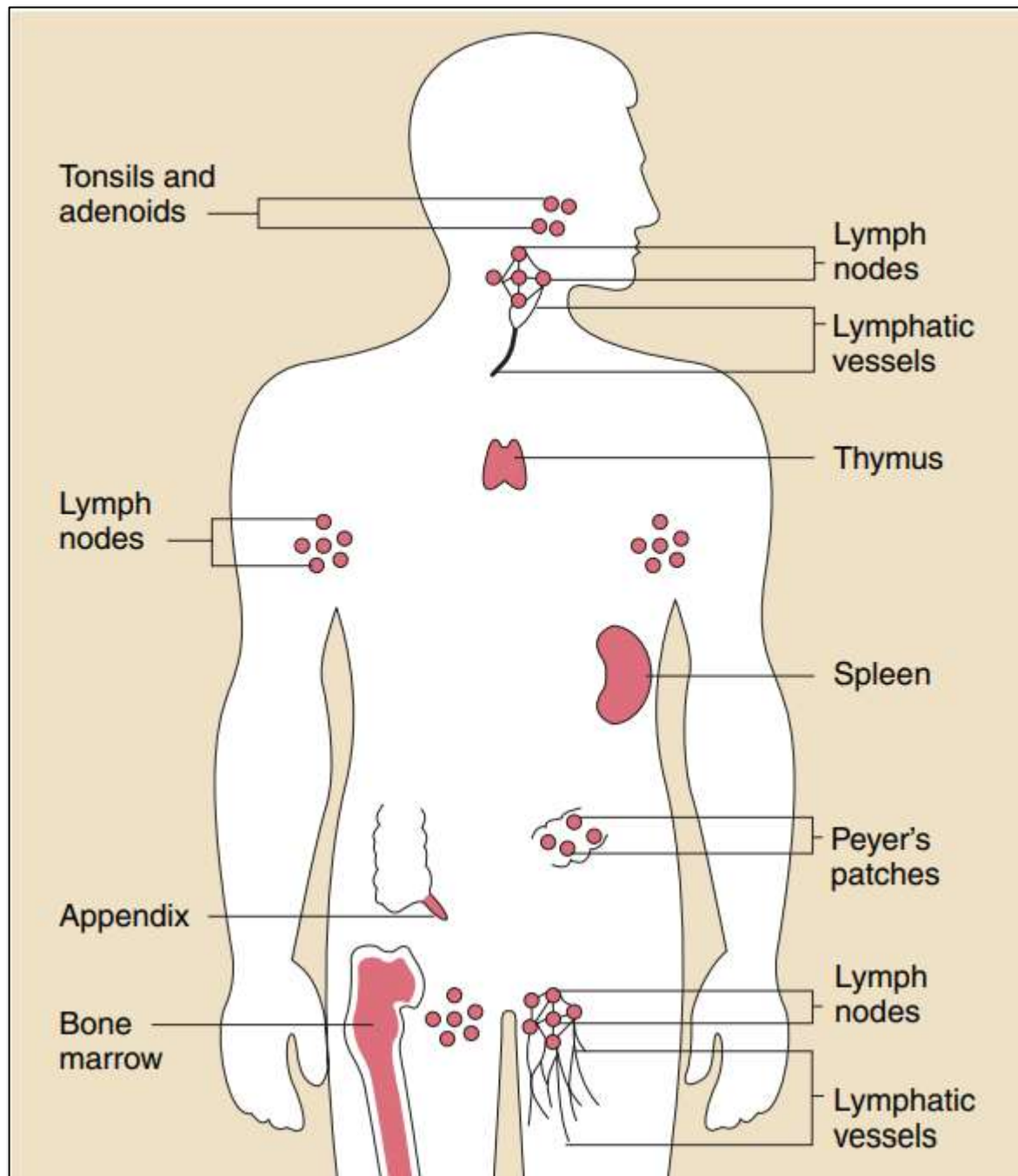
- Reading Research Papers - Whether Wastewater or Health Relate
- Evaluate **QUALITY** of the material your **reading**
----- **I'm still learning**
- NOW I rely look to EXPERIENCED folks for choosing **QUALITY RESEARCH**

Type of Studies

NOT ALL =



- Publication Bias – **GROUP THINK**
- Epidemiological Studies
- Medi Study
- **CAUSE/EFFECT** vs **CORRELATION**
- Clinic trial – science , hypnosis prove or disprove
- Give examples... **QUESTIONNAIRES** (what did you eat last 6 months) vs. **HYPOTHESIS AND LAB ANALYSIS**



IMMUNITY SIMPLIFIED

THINK

Three Little Pigs

Abigail (3)

US



Pathogens



The Bad
Wolf

Liam (8)

Immune System Protect Against....

- Bacterial infections
- Virus infections
- Parasites
- Fungus
- Abnormal or Damaged Cells



IMPORTANT – LESS KNOWN

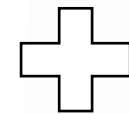
IMMUNE SYSTEM OVERVIEW

All Living Organism - HAVE: **INNATE** – BORN WITH

- Make ANTI - microbial substance
- ENGULFING larger particles – Amoeba like
- COMPLEMENT CASCADE

WE Humans & JAWED vertebrates

HAVE: **ADAPTIVE** - LEARNED



- Recognize, Remember & Destroy pathogens over time

INNATE
SYSTEM


INNATE – BORN WITH

MAIN Parts ① **BLOODBORNE** ② PHYSICAL BARRIERS

① **BLOODBORNE** (pathogens)

- **PHAGOCYTES** (AMOEBA LIKE ACTION)

- Ingest & **KILL** microbes

- Holdup  (antigens) to ID for “OTHER GUYS”

- scavenge **DEGENERATING** material

- Release mediators – **BRAKES** on Inflammation

INNATE – BORN WITH

• TYPES OF PHAGOCYTES

- Microphages - *ingest* chiefly bacteria

- **MACROPHAGES** –

 - ✓ Largely scavengers

 - ✓ **INGEST DEAD TISSUE &**

 - ✓ **DEGENERATED** Cells



INNATE – BORN WITH

② PHYSICAL BARRIERS

- Skin
- Mucous Membranes
- Tears
- Saliva
- Stomach Acid – HCl acid
- Breast Milk

2 Dimensional

A SECOND

LOOK at INNATE

INNATE – BORN WITH

Pathways – **FOR** LARGE INTRUDES

3 Barriers
1-Surface
2-Chemical
3-Mechanical

† SURFACE BARRIERS

- Skin – chloride (Salt)
- Mucous membranes – Lungs/Digestive/Mouth/Nose/Eyes/Urinary

† CHEMICAL BARRIERS

- Skin secretes **ANTI-microbial** substance (chloride based)
- Antibacterial enzymes
 - Salvia
 - Tears
 - Breast milk
 - Stomach acid – Chloride based (HCl)

INNATE – BORN WITH

Pathways – **FOR** LARGE INTRUDES

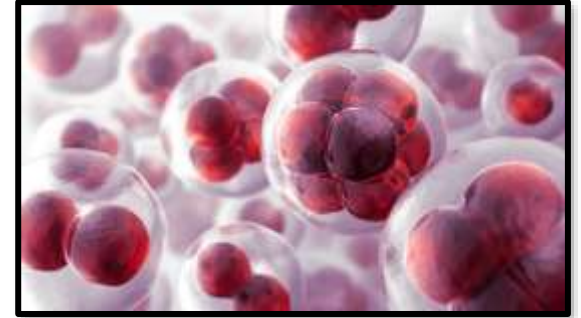
† PARTICLES GET IN BODY – NOSE/MOUTH

- Mechanical Reaction – get rid of threat
 - Sneezing
 - Coughing
 - Urination

INNATE – BORN WITH

Pathways – **FOR** small intruders

MICROSCOPIC BACTERIA & VIRUS



†ID's & Reacts to Foreign Substances

- Pattern Recognition Receptors PRRs
- Innate immune system cells – *dendritic, macrophages, monocytes, NEUTROPHILS* – (Amoeba Like)
 - **P**athogen-**A**ssociated **M**olecular **P**atterns – **PAMPs**
 - **D**amage-**A**ssociated **M**olecular **P**atterns – **DAMPs**

Immune Cells Use these

Neutrophil Next Slide

INNATE – BORN WITH

Pathways – FOR small intruders

MICROSCOPIC BACTERIA & VIRUS

†Reaction to PAMPs & DAMPs

- Starts COMPLEMENT CASCADE

1. Creates Inflammation
2. Dissolve or Destroy Cells Membranes
3. Make bacteria or other cells more susceptible to ENGULFMENT

ADAPTIVE SYSTEM

ADAPTIVE – LEARNED / ACQUIRED

① Cell-Mediated ② Humoral

① Cell-Mediated (T-CELLS)

- Focus on #@% INSIDE the CELL
- Focus on MICROBES & ~~ANTIGENS~~ (foreign substances) **IN CELL**
- Made in bone marrow & hangs out - thymus gland - MATURE
- Mature T-Cells → BLOOD, LYMPH NODES & SPLEEN
- **HOW IT WORKS** - T-Cells release ~~TOXINS~~ to ~~KILL~~ invaders or attack them directly, without antibodies

ADAPTIVE – **LEARNED/AQUIRED**

② HUMORAL (B-Cells) = BODY FLUIDS

- **FIGHTS** infection
- Method - Produces **ANTIBODIES**
- **ANTIBODIES** (in bloodstream) **TARGET** foreign material which **SEEN** as potentially **DANGEROUS**, **MARKING** for **destruction**.
- Specialized **WHITE BLOOD** cells
- MADE in **BONE MARROW**

ADAPTIVE – **LEARNED/AQUIRED**

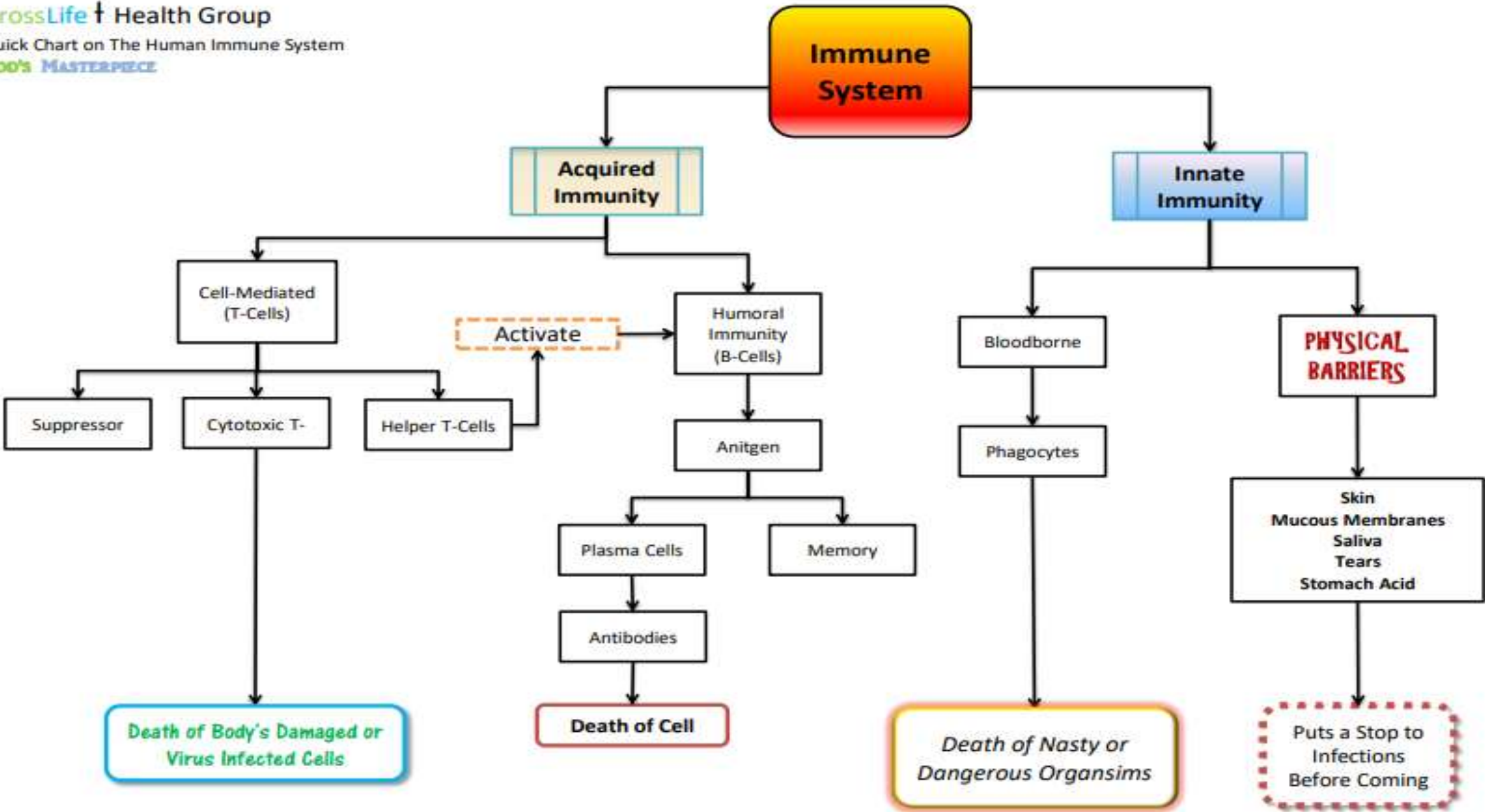
HOW HUMORAL SYSTEM WORKS

- **B-Cells** recognize **TARGET** (ANTIGENS)...what are they...
- ANTIGENS – specific material on the surface of a virus, bacterium or OTHER foreign material
- When B-Cell encounters **TARGETS** - MULTIPLY itself making a lots of them
- **B-Cells** → release ANTIBODIES made to attach to **TARGETS** (foreign materials, virus, etc.). **TARGETS** are **MARKING** ITEMS for destruction
- **MARKED** “invaders” will be **DESTROYED** by other immune cells.

GRAPHIC SUMMARIES OF IMMUNE SYSTEM

	Innate Immunity		Adaptive Immunity	
Type	Physical Barriers	White Blood Cells Phagocytes	T Cell Immunity	B Cell Immunity
Pathway	Skin Saliva Coughing Sneezing Stomach Acid Mucous Membranes	Macrophages Neutrophils Dendritic Cells Natural Killer Cells	CD8 Killer T Cells CD4 Helper T Cells y& T Cells	Antigen Presentation Antibody Creation Specific Antibody Response
Action	Prevents entry of pathogens	Eliminate active pathogens	Eliminate Infected host cells	Immunological Memory
Time Frame	→ HOURS →		→ DAYS →	

Information from: Immunity Fix, Dr. James DiNicolantonio & Siim Land



What Happens When Immune System GOES ROGUE?

Autoimmune Disease

- Immune System Miss IDs BODY'S CELLS and ATTACKS and destroy them
- Can't ID **SELF** from **NONSELF**
- **Overactive immune system**

CELLS

All Human **CELLS** live/function/divide
Using the **Same** Principles

All CELLS – including Immune
Divide
Make Energy
Process Nutrients
Get Rid of Waste
Die

CELLS Dividing

- Divide/Produce 2 cells - copies of original
 - Example - LIVER CELLS
- Adult stem cells within **TISSUES** make new replacement cells.
- White Blood CELLS – Stem CELLS in Bone Marrow(~10 days) – In blood for 3 to 6 hrs.
- Health Body **CELLS** are **NOT** stagnate !!!!

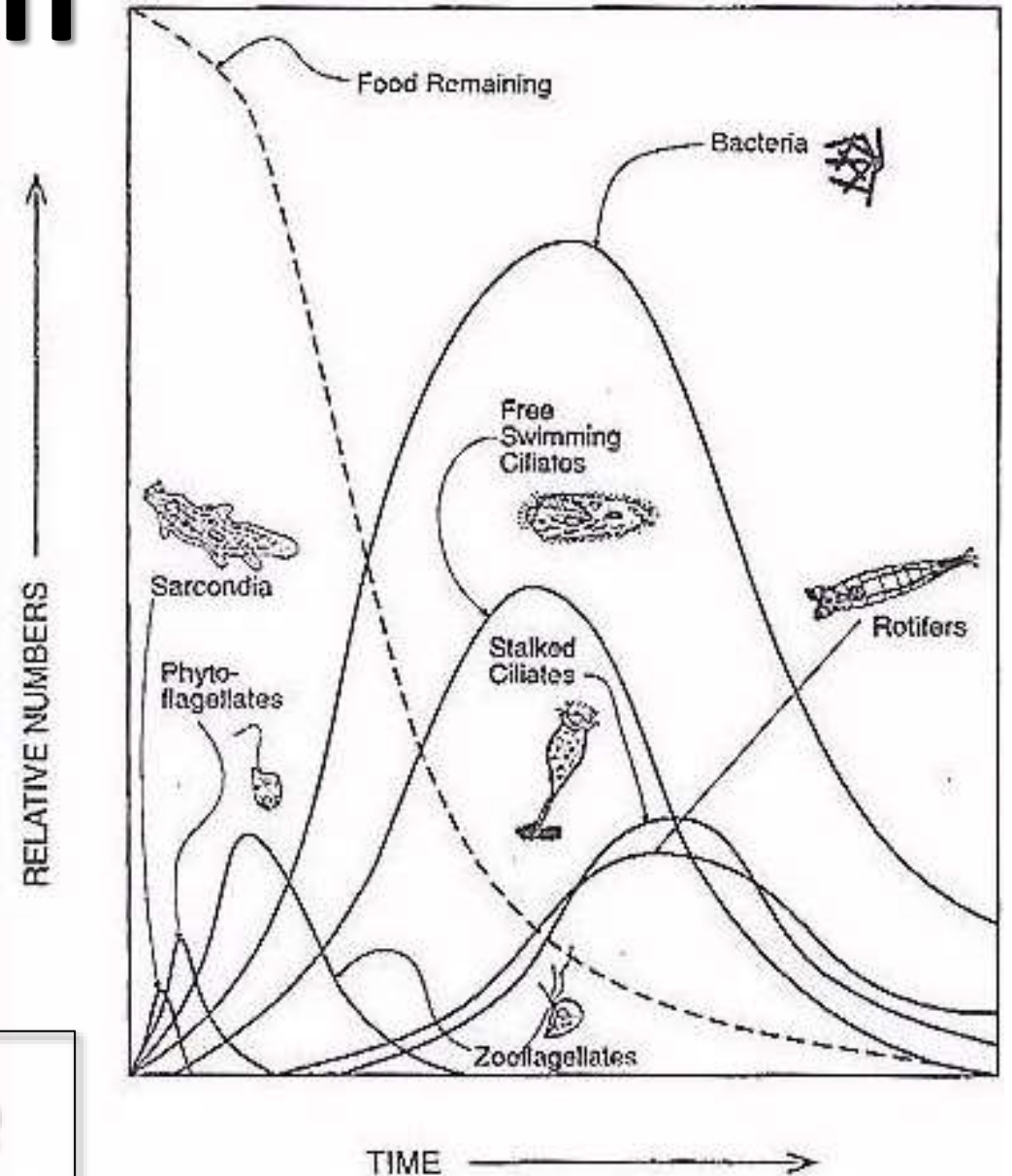
Speed of CELL growth

THINK of SRT change....

- BIOMASS changes
- Microbes (CELLS) need Time to reach equilibria - SIMILAR
- Human CELLS grow at Different RATES

PLAYS INTO RESOLUTION OF HEALTH ISSUES

Patience



Human CELLS REPLACED – At Different Rates Days to Life-Time

cell type	turnover time
small intestine epithelium	2-4 days
stomach	2-9 days
blood Neutrophils	1-5 days
white blood cells Eosinophils	2-5 days
gastrointestinal colon crypt cells	3-4 days
cervix	6 days
lungs alveoli	8 days
tongue taste buds (rat)	10 days
platelets	10 days
bone osteoclasts	2 weeks
intestine Paneth cells	20 days
skin epidermis cells	10-30 days
pancreas beta cells (rat)	20-50 days
blood B cells (mouse)	4-7 weeks
trachea	1-2 months
hematopoietic stem cells	2 months
sperm (male gametes)	2 months
bone osteoblasts	3 months
red blood cells	4 months
liver hepatocyte cells	0.5-1 year
fat cells	8 years
cardiomyocytes	0.5-10% per year
central nervous system	life time
skeleton	10% per year
lens cells	life time
oocytes (female gametes)	life time

Chart from: <http://book.bionumbers.org/how-quickly-do-different-cells-in-the-body-replace-themselves/>

Highlights

Immune System
Short Life Span

- **Days**

- Immune System
- Digestive System Surface
- Lung surface

- **Weeks**

- Skin
- Bone building cells

- **Months**

- Trachea
- Red Blood Cells

- **0.5 to 1 Year**

- Liver

- **Years**

- Skeleton
- Heart muscle

- Only a few body parts last **MOST OF YOUR LIFETIME**

- Neurons of the cerebral cortex
- Inner lens cells of the eye
- Muscle cells of the heart.

IMMUNE SYSTEM **Cells** Getting Replaced

- **B immune** (produce antibodies) ranges **4 DAYS TO 5 WEEKS**
- **T-Cells** can last either a **DAY OR TWO** or months
 - **DEPENDS** upon their battle with foreign substances
- **Neutrophils** can survive **3-4 DAYS** unless they digest bacteria - die in ~ 12 HOURS.
 - REMEMBER VIDEO
- Acid filled **STOMACH Lining** last ~ **5 DAYS**
- **Outer layer** of SKIN is recycled about **EVERY TWO WEEKS**.

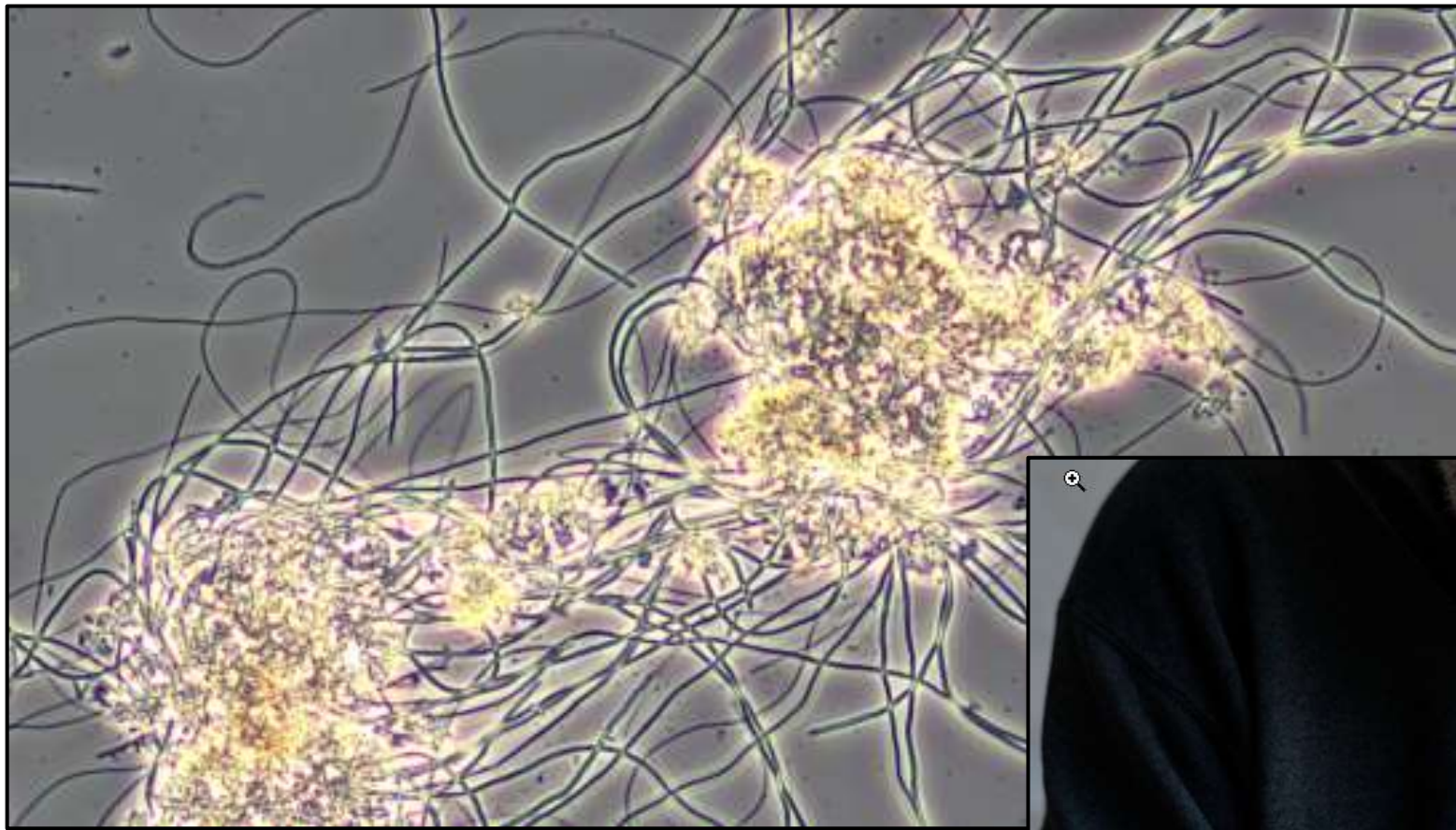
Note - Short Life Span

IMPORTANT - The **life span** of each type of tissue **depends** upon the **WORKLOAD** endured by its cells.

ALWAYS NEED BUILDING MATERIALS for cell replacement

CELLS BEING USED AND REPLACED

- **What are cells made of?**
- **THINK** - Influent WW determines what you grow in biological system
 - **High glucose/low nutrients – FILAMENTS**
 - **Fats in activated sludge PRODUCE scum/filaments**
 - **In anaerobic digester – fantastic and provides a lot of methane**
 - **Plus Environment – D.O. – HRT, Etc...**



Heart Disease
Diabetes
Alzheimer's
Depression
Depression & Much More

These Just Doesn't
Happen...
Something Caused It



MORE to Come

Insulin Resistance Causes or Play Role In....

- Cancer – Some - not all
- Weight loss
- Anti-inflammatory
- Multiple sclerosis
- Fragile immune system
- Autoimmune problems
- Thyroid issues
- Lupus
- Crohn's
- Inflammatory bowel
- Heart disease
- Irritable bowel
- ADHD

- Depression
- Anxiety
- Infertility
- PCOS
- Alcoholism
- Addiction
- Diabetes
- High Blood pressure
- Skin Issue
- Alzheimer's
- Swollen ankles
- Rotten sleep

25 & Counting
NOTE-All Parts of Body
Insulin touches All Cells

All HUMAN cells live/function/divide Using the Same Principles

- **BUILDING MATERIALS**

- Good building blocks –
health cells & function –
Results in **GOOD CELLS**
- Poor building blocks –
POOR CELLS and poor
cell function



Boosting
iMMUNity
by Boosting
OVERALL Cell Health

Keep MIND

There is A LOT I Don't Know
and

There Maybe Stuff I

Just Didn't Get Correct

(BUT it is ALWAYS – good to investigate)

Building Overall Cell Health - Foundational

FOUR PILLARS – Veritas Medical

Nutrition

Hydration

Movement

Peace



FOCUS

- Others Important – MY Opinion PEACE the most important – with NO PEACE – It's like peeping in the wind



Building Overall Cell Health

BASE LEVEL

GOOD BUILDING MATERIALS

- Fats
- Protein
- Minerals

Savannah (6)



**BEST
BRICK
HOUSE**

FATS

- Cell **Membranes**
- **Energy** Storage
- Cell SIGNALING
- Fat-Soluble Vitamins A,D, E & K

FATS

GOOD



Omega 3 vs 6 FATS

BAD



Omega-6



PROCESSED
FOODS



Making “Vegetable” Oil – REALLY SEED OIL

- Slightly **HEATING** & **CRUSHING** seeds
- Almost all commercial “vegetable” oil EXTRACTED USING HEXANE SOLVENT - recovered at the end of processing.
- **REFINED** using water precipitation and **ORGANIC ACID**
 - Remove gums & free fatty acids,
 - Filtering to **REMOVE COLOR**
 - **DEODORIZING** using steam distillation

Abigail (3)

Straw House



NON-FOOD USES OF “VEGETABLE” OIL

Current and potential uses;

1. Hydraulic fluid, biodiesel, cosmetics,
2. Engine oils, heat transfer oils,
3. Demolding agents, solvents,
4. Lubricants and printing ink formulations

PROTEINS

- Enzymes(Amino Acids)
 - Every CELLS Function
- Structure/Function & Regulation of Tissue/Organs
- Fat-Soluble Vitamins A,D, E & K

PROTEINS

GOOD

- Grass-fed Finished Beef
- Salmon & Other Wild Caught Fish
- Sardines
- Pastured Chickens/Pigs/Eggs

BAD

- GMO/Corn Fed Beef
- Farmed Fish
- **BIG FISH**
- Processed Meats
- **YOGURT WITHOUT SUGAR**

MINERALS

(BASE BUILDING BLOCKS)

(בסיסי בלוקים)

- Transport - IN/OUT of CELL
- Energy P/Ca/Mg/S/K/Fe/Cu
- Na -
 - Nerve & Muscle Function
 - Regulates flow IN/OUT of Cell
 - Playing with Charges (+/-)

Macro & Micro

MINERALS

(BASE BUILDING BLOCKS)

(בניין בסיסי)

Salt Fix

GOOD

- Liver (Bioavailable)



BAD

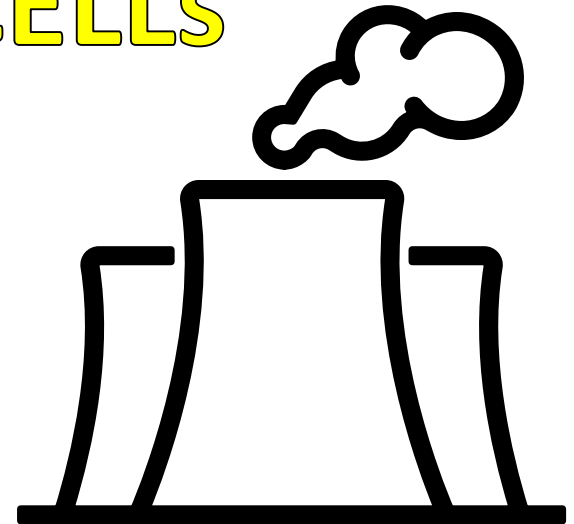
- Low Salt
- Electrolyte drink with SUGAR



Fueling the CELLS

BASE LEVEL

- **Stationary POWER** Generators - each CELL
- **MITOCHONDRIA** – **ATP** – **Energy for CELLS**
 - Needs Fuel
 - Needs minerals
 - Has Exhaust.....



Fueling the CELLS

WHAT

- **Carbohydrates – (Carbs)**
 - Glucose in Blood
 - Western Diet – HIGH in this
- **FATS**
 - Liver Converts to Ketone – When Insulin gets low
 - Liver Converts Protein to Glucose
- **MINERALS - ESSENTIAL**

Fueling the CELLS

WHEN

- Important
 - Body Needs Routine **FASTING**
 - NIGHT TIME
- Insulin Controls Glucose - needs a rest
 - Hence **FASTING**
 - During Body goes to FAT for fuel

PROBLEM with "MODERN" FUEL


HIGH CARBs - Produce
INSULIN
RESISTENCE

Questions:

What is Insulin?

What is Insulin Resistance?

WHAT IN INSULIN ?

- Made in Pancreas - Protein
- Circulates in Blood
- Hormone – signaling hormone
 -  KING of Hormones
- **Opens Doors** for Glucose to **GO INTO CELLS**
- **CONTROLS** Glucose Levels in Blood
- Used by **ALL** CELLS & Tissue in the BODY
- Growth Hormone

WHAT IN INSULIIN ?



WHAT IS INSULIN RESISTANCE?

Think - COFFEE

- A cell's reduced **Response** to INSULIN
- When a cell **stops responding** to INSULIN
- “Ultimately, as more cells throughout the body become insulin resistant, the body is considered insulin resistant.” ¹
- Certain cells NEED MORE THAN NORMAL amounts of insulin to get the SAME RESPONSE as before
- KEY FEATURE of insulin resistance is that **blood levels** of INSULIN are ↑ than **used to be**

WHAT DOES THIS HAVE TO DO WITH IMMUNE SYSTEM?

- Remember **ALL CELLS** are IMPACTED or TOUCHED by INSULIN
- GUILT by ASSOCIATION
 - High Glucose in Blood – **Inviting PATHOGENS**
 - High Insulin – messes with cell signaling/etc.

GLUCOSE VS. FATS – CELL'S Fuel

- Glucose – FAST burn – refuel a lot
- Glucose – spikes INSULIN
- Ketones – From FAT – slow efficient burn
- Ketones – **DON'T** spike INSULIN
- KETONES PRODUCE MORE ATP ENERGY FOR THE BODY PER UNIT
- Ketones have less waste product from the burn - less EXHAUST is:
 - Reactive Oxygen Species (ROS)
 - Why FOLKS promote ANTI-OXIDANTS

POOR BURNING FUEL
PLUGS POWER PLANT

EXAMPLES of Immunity Issue – short term

What is the impact sugar
(Halloween/Thanksgiving/Christmas)
immediately slows & depletes the immunity system function

- “Excess glucose decreases the ability of neutrophils to ingest and kill bacteria”¹
- **100 GRAM OF CARBS VARIOUS KINDS** – sugar, fructose, glucose, starch and honey – starch least harmful
 - After overnight fast
 - **40% drop in neutrophils**
- **HOW SUGAR IS IN ONE DRINK**
 - 27 grams in 8 oz glass of apple juice
 - 26 grams sugar in 8 oz glass of orange juice
 - 41 grams sugar in 12 can of Pepsi

IMPORTANT - “drop the dietary sugar, and the elevated blood sugar levels, so our immune cells function more optimally”¹

EXAMPLES of Immunity Issue – short term

Excess of SUGAR in blood – ISSUE

- **BY PRODUCT** of glucose breaks down *interfere* with antimicrobial peptides (microbe killing liquid)
 - High **BLOOD SUGAR FOLKS** have “worse outcomes when they are fighting infections”
 - “Some microorganisms can become more virulent and replicate faster in high glucose environments because they have access to more energy while simultaneously increasing their glucose and glycolysis”
- **BLOOD IN NUTRIENT IMBALANCE STATE –**
 - look watch happens in activated sludge in nutrient imbalance state –
 - you grow stuff you don't want to –
 - its all about the environment YOU create

EXAMPLES of Immunity Issue – long term

HORMONE SIGNALING VERY IMPORTANT ASPECT

- Insulin - **INSULIN KING**
- Every cell impacted – including **IMMUNE CELLS**
- WHY IT causes or evolves into;
 - Most chronic diseases

WWTP

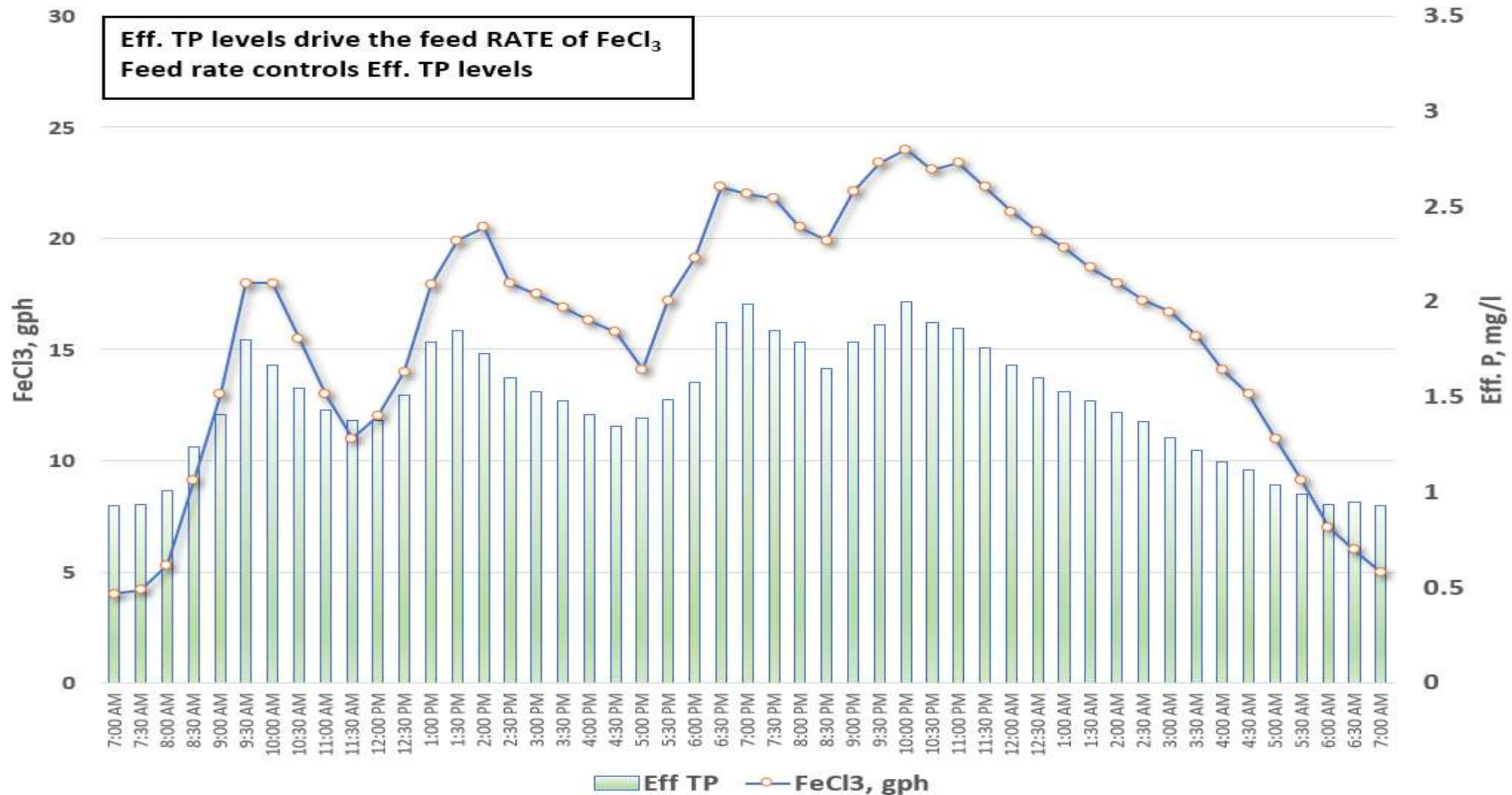
- Acute vs. CHRONIC – Toxicity test
- CHRONIC – Slow developing

WHAT CAUSES INSULIN RESISTANCE?

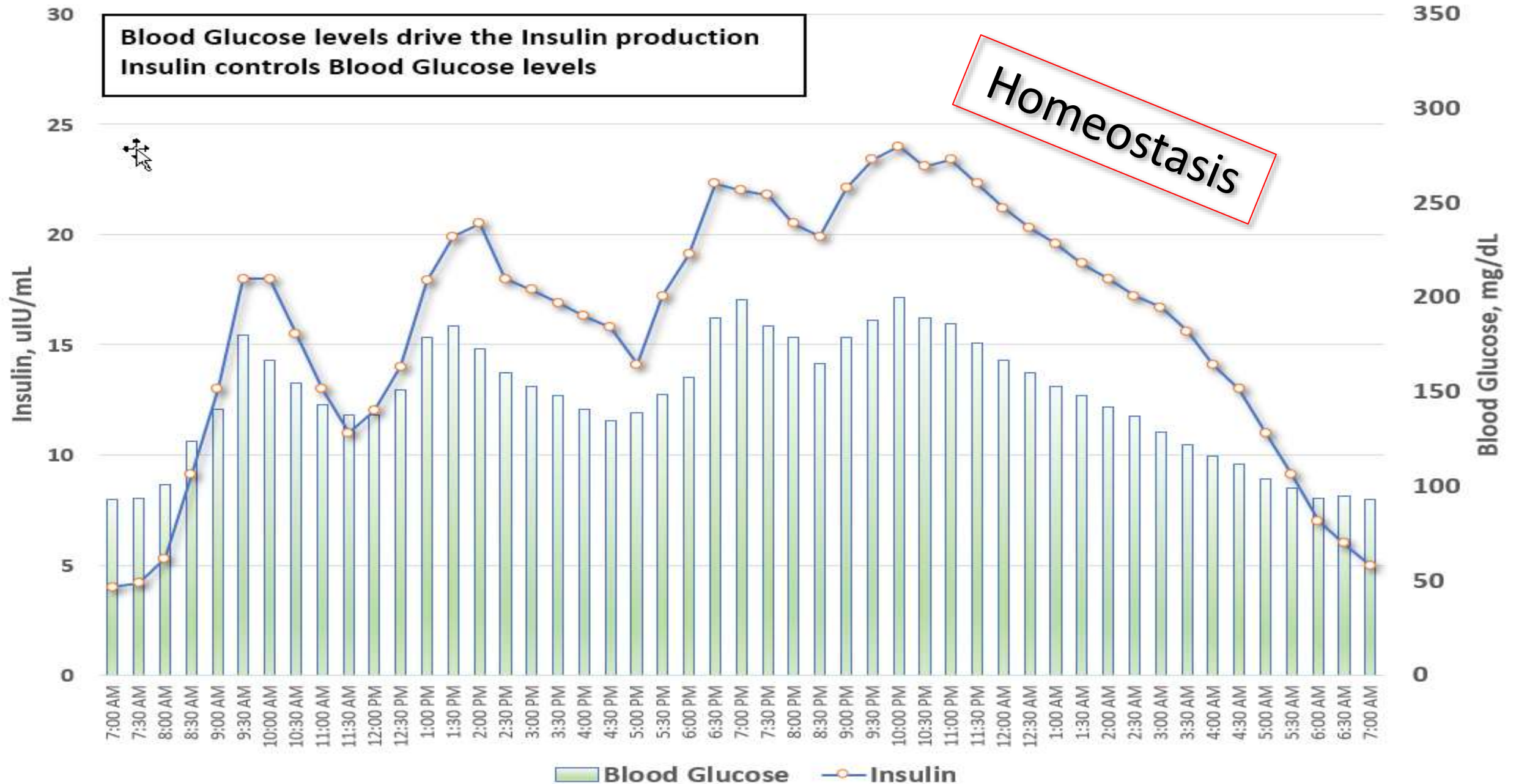
- HIGH CARB INTAKE
- Poor SLEEP
- STRESS
- REDUCED FASTING TIME - Overnight
 - Not enough time for INSULIN ↓

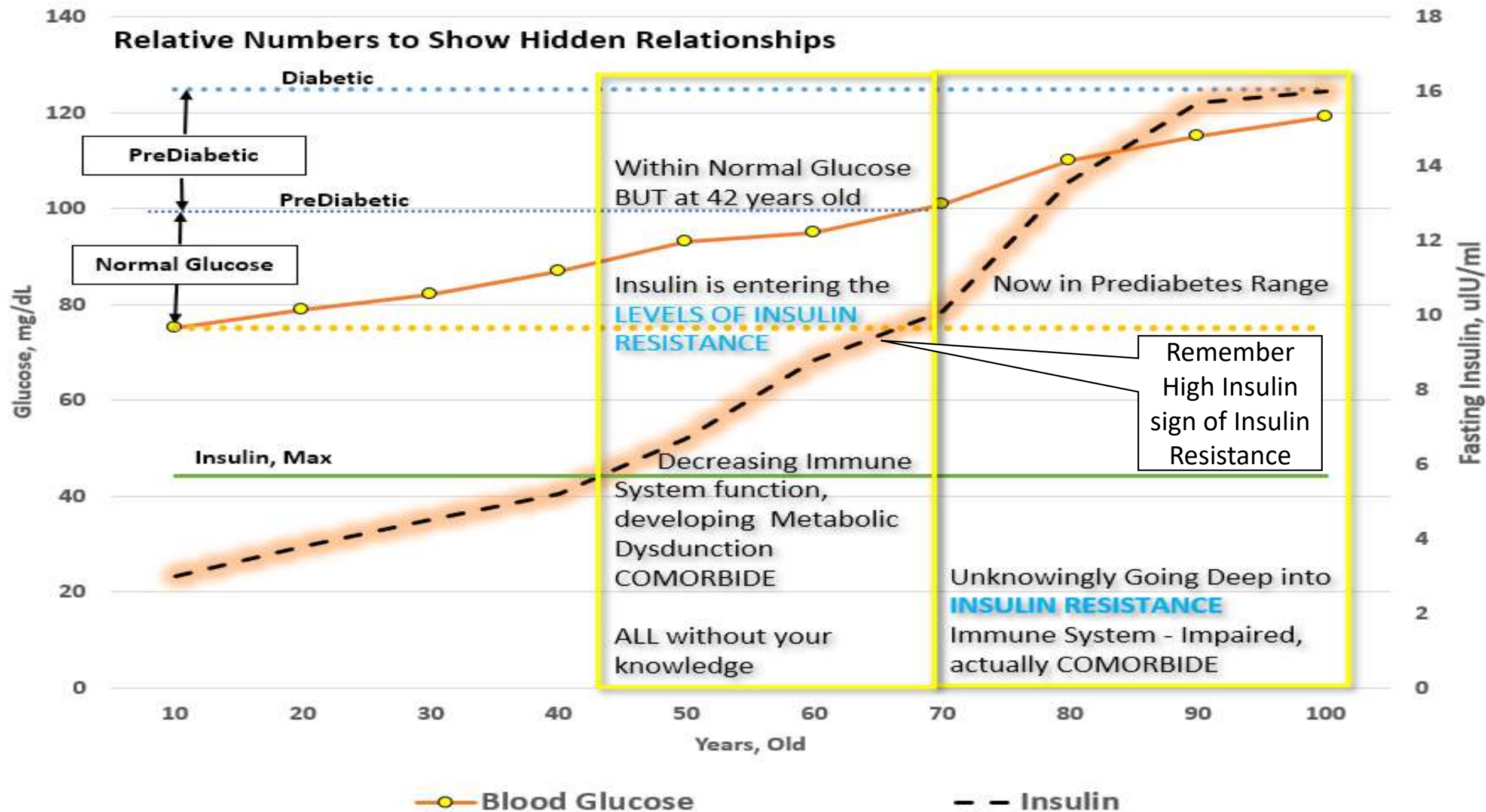
DIURNAL Pattern for Effluent TP vs. Ferric Chloride Feed

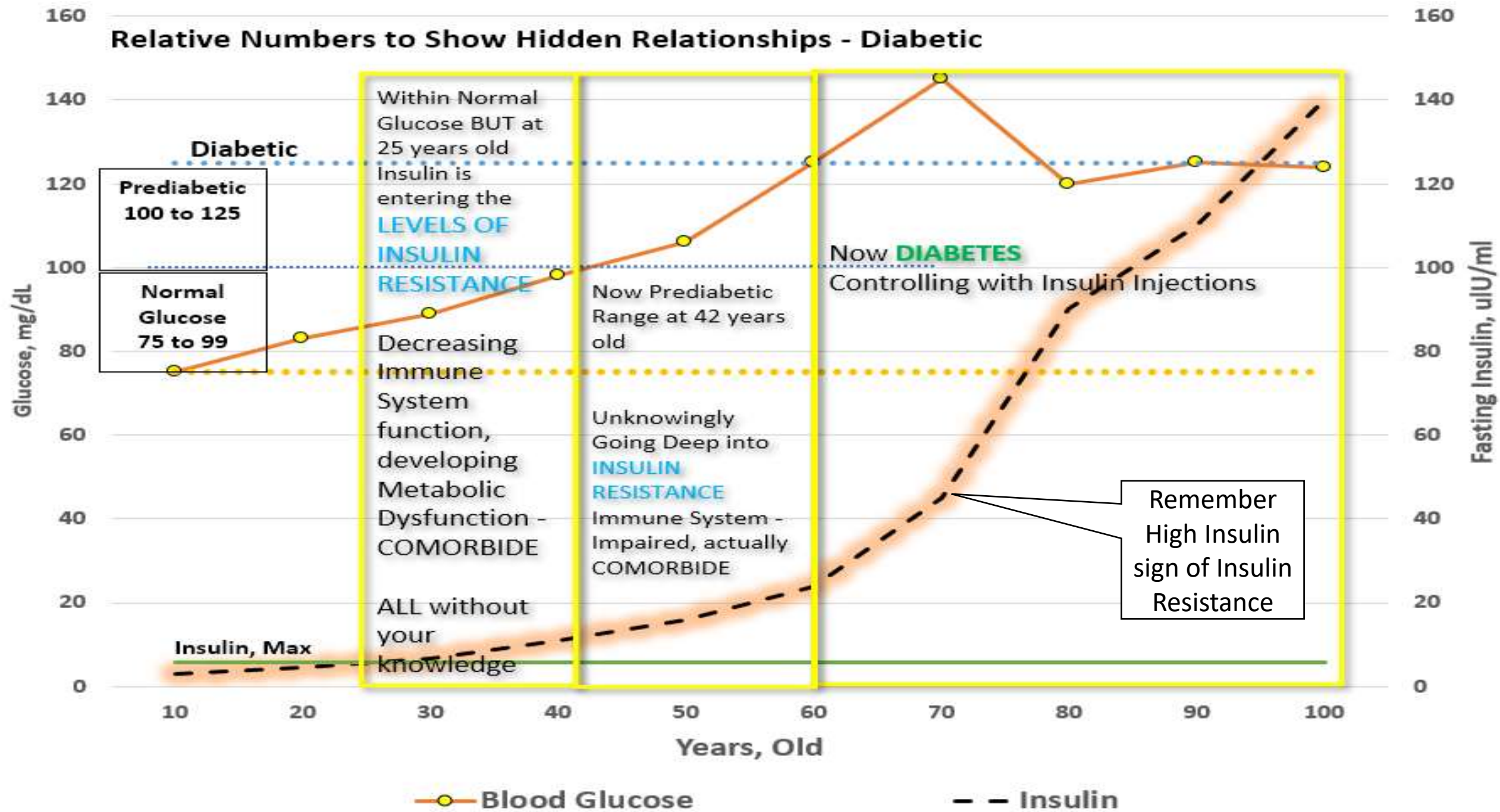
Eff. TP levels drive the feed RATE of FeCl_3
Feed rate controls Eff. TP levels



DIURNAL Pattern for Blood Glucose vs. Insulin





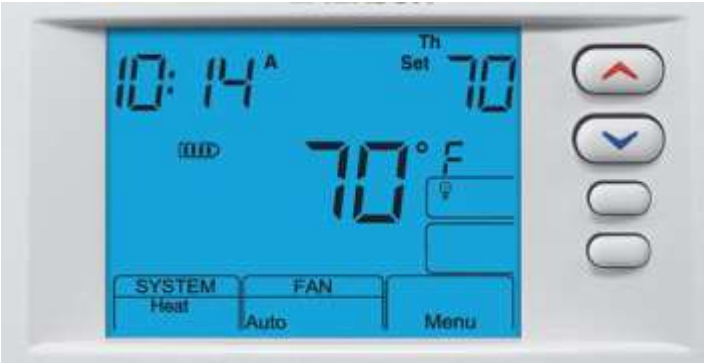
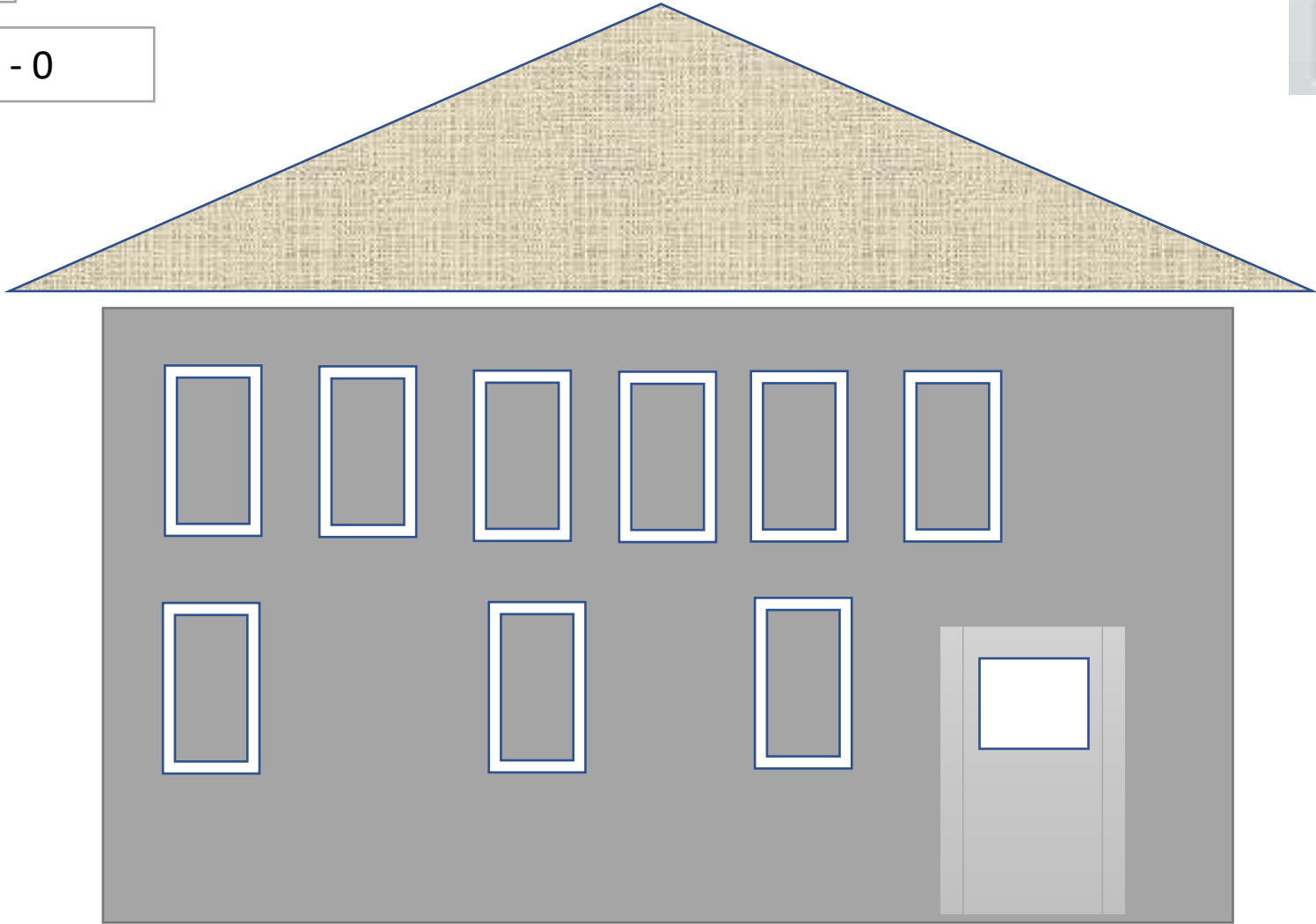


Furnace Runtime, hrs. 0

Air Temp – 70°

Windows Open - 0

Normal Glucose/Insulin

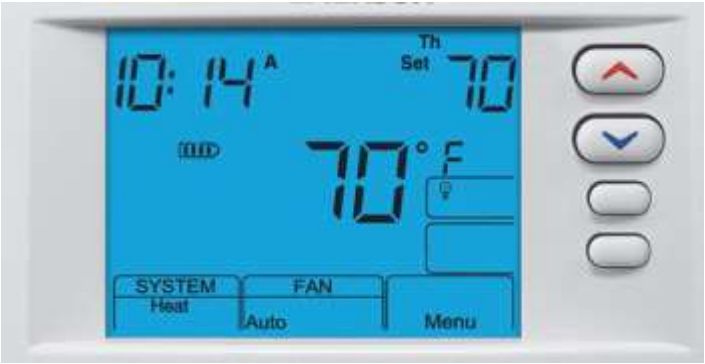
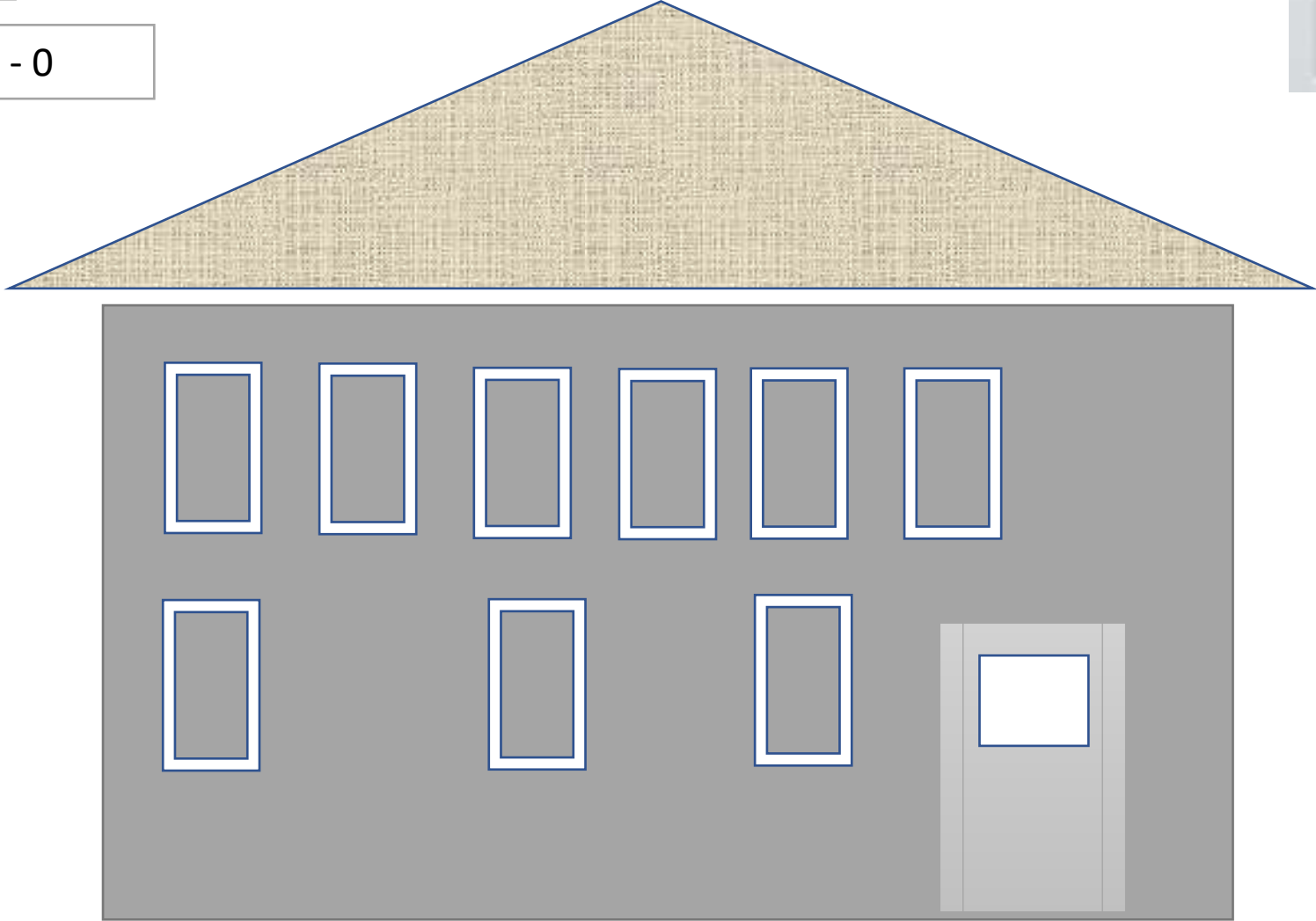


Furnace Runtime, hrs. 8

Air Temp – 30°

Windows Open - 0

Normal Glucose/Insulin

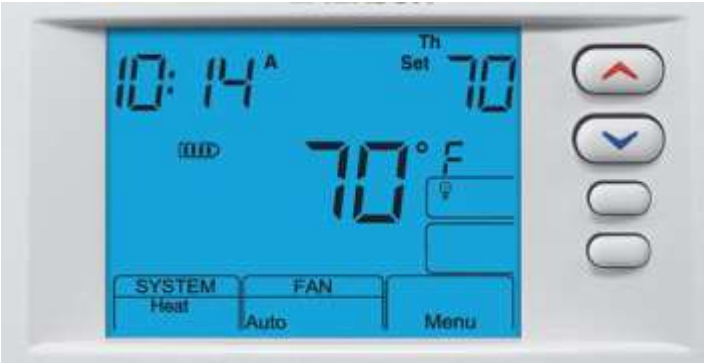
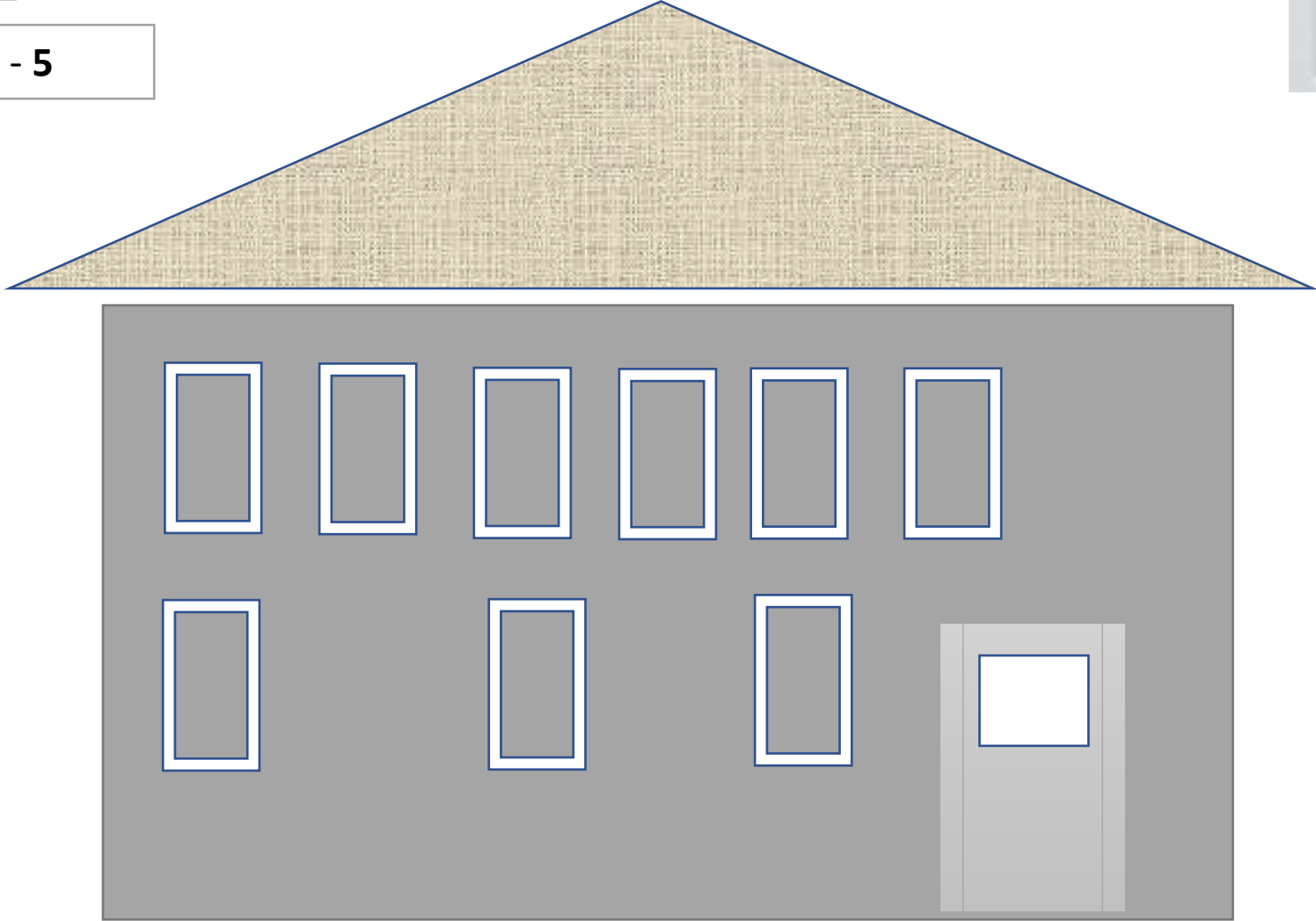


Furnace Runtime, hrs. **24**

Air Temp – 30°

Windows Open - **5**

HIGH Glucose/Insulin



Furnace Runtime, hrs. **24**

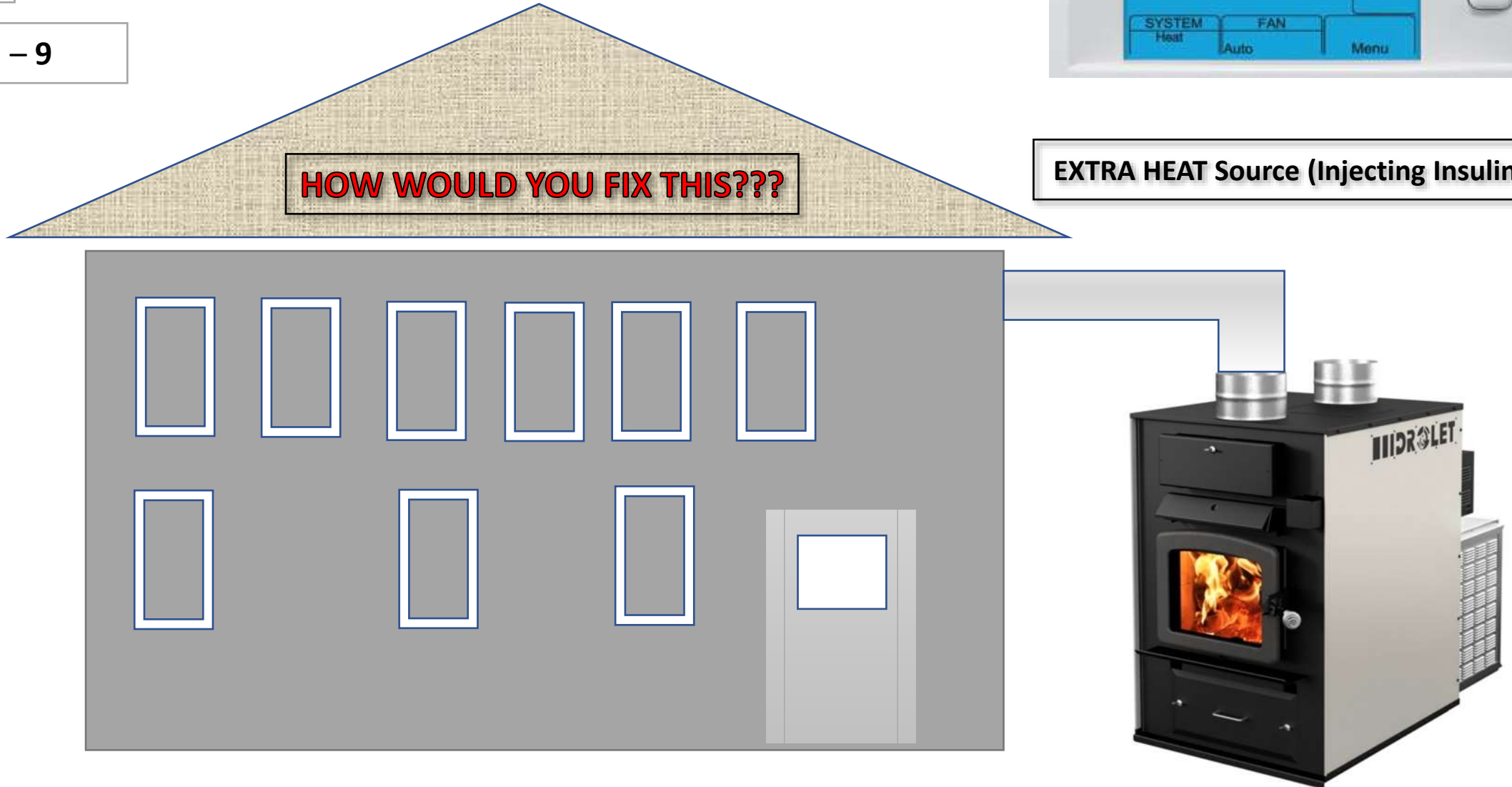
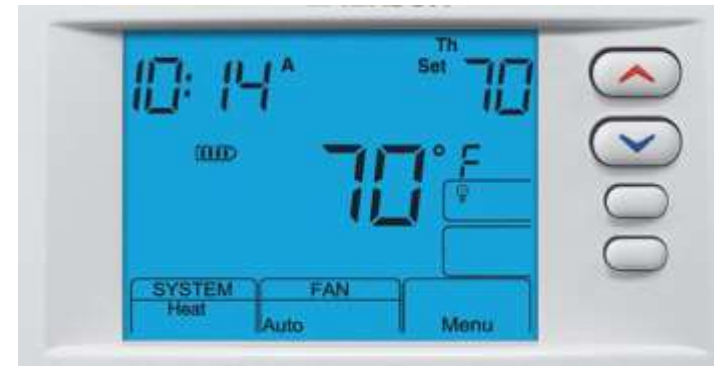
Air Temp – 30°

Windows Open – **9**

Out of Control **Glucose**/Not Enough Insulin

HOW WOULD YOU FIX THIS???

EXTRA HEAT Source (Injecting Insulin)



GLUCOSE VS. FATS – CELL'S Fuel

- Glucose – FAST burn – refuel a lot
- Glucose – spikes INSULIN
- Ketones – From FAT – slow efficient burn
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- KETONES PRODUCE MORE ATP ENERGY FOR THE BODY PER UNIT
- Ketones have less waste product from the burn - less EXHAUST is:
 - Reactive Oxygen Species (ROS)
 - Why FOLKS promote ANTI-OXIDANTS

POOR BURNING FUEL
PLUGS POWER PLANT

IMPACTS INSULIN RESISTANCE

PLUGGED

SLOWED DOWN

INEFFICIENT

(CELL) POWER PLANTS

MORE to Come

Insulin Resistance Causes or Play Role In....

- Cancer – Some - not all
- Weight loss
- Anti-inflammatory
- Multiple sclerosis
- Fragile immune system
- Autoimmune problems
- Thyroid issues
- Lupus
- Crohn's
- Inflammatory bowel
- Heart disease
- Irritable bowel
- ADHD

- Depression
- Anxiety
- Infertility
- PCOS
- Alcoholism
- Addiction
- Diabetes
- High Blood pressure
- Skin Issue
- Alzheimer's
- Swollen ankles
- Rotten sleep

25 & Counting
NOTE-All Parts of Body
Insulin touches All Cells

EXAMPLES of Immunity Issue – short term

What is the impact sugar
(Halloween/Thanksgiving/Christmas)
immediately slows & depletes the immunity system function

- “Excess glucose decreases the ability of neutrophils to ingest and kill bacteria”¹
- **100 GRAM OF CARBS VARIOUS KINDS** – sugar, fructose, glucose, starch and honey – starch least harmful
 - After overnight fast
 - **40% drop in neutrophils**
- **HOW SUGAR IS IN ONE DRINK**
 - 27 grams in 8 oz glass of apple juice
 - 26 grams sugar in 8 oz glass of orange juice
 - 41 grams sugar in 12 can of Pepsi

IMPORTANT - “drop the dietary sugar, and the elevated blood sugar levels, so our immune cells function more optimally”¹

EXAMPLES of Immunity Issue – short term

Excess of SUGAR in blood – ISSUE

- **BY PRODUCT** of glucose breaks down *interfere* with antimicrobial peptides (microbe killing liquid)
 - High **BLOOD SUGAR FOLKS** have “worse outcomes when they are fighting infections”
 - “Some microorganisms can become more virulent and replicate faster in high glucose environments because they have access to more energy while simultaneously increasing their glucose and glycolysis”
- **BLOOD IN NUTRIENT IMBALANCE STATE –**
 - look watch happens in activated sludge in nutrient imbalance state –
 - you grow stuff you don't want to –
 - its all about the environment YOU create

EXAMPLES of Immunity Issue – long term

HORMONE SIGNALING VERY IMPORTANT ASPECT

- Insulin - **INSULIN KING**
- Every cell impacted – including **IMMUNE CELLS**
- WHY IT causes or evolves into;
 - Most chronic diseases

WWTP

- Acute vs. CHRONIC – Toxicity test
- CHRONIC – Slow developing

HOW'D WE GET HERE?

Politics vs. Science

- Refined Sugar & Wheat – Cocaine !!!
- 1950-60s –
 - Number of Calories vs. Type of Calories
 - FAT & Salt BAD –
 - Make up ENERGY loss with CARBS
 - Loss of Essential Minerals
- ADDITION of “Vegetable Oils” –



Vs.



MY Experience - Immune System

- Calories **Restriction/Exercise** **DIDN'T** work
- Slows down METABOLIC RATE
- **After** diet - weight fast → slow metabolic rate
 - Body is going to put extra calories into FAT
 - **EXPECTING** decrease in food again

MY Experience - Immune System

- Peace – BE GIFTED A PEACE WHICH IS BEYOND ALL UNDERSTANDING...
- Nutrition – CHANGE CELLS ABILITY – BURN BOTH CARBS & FAT
- Exercise – START WITH WHAT YOU WILL DO!!!!
- Hydration – DRINK Electrolytes NOT just WATER

Took time to learn

Start and Persevere – Fail and pick up one self

Do it with some one!!!

NEW CONCEPT.....



Taking responsibility for health
using as many resources as possible

- Good consulting physician
 - Partner in Continuing Education
 - Looks for root of problem – not treat symptoms
- Take time to Learn – value is GREAT
- Operating one's own physical/mental being (WWTP)
 - Self-experimentation
 - Logging info related to health
 - Blood and urine

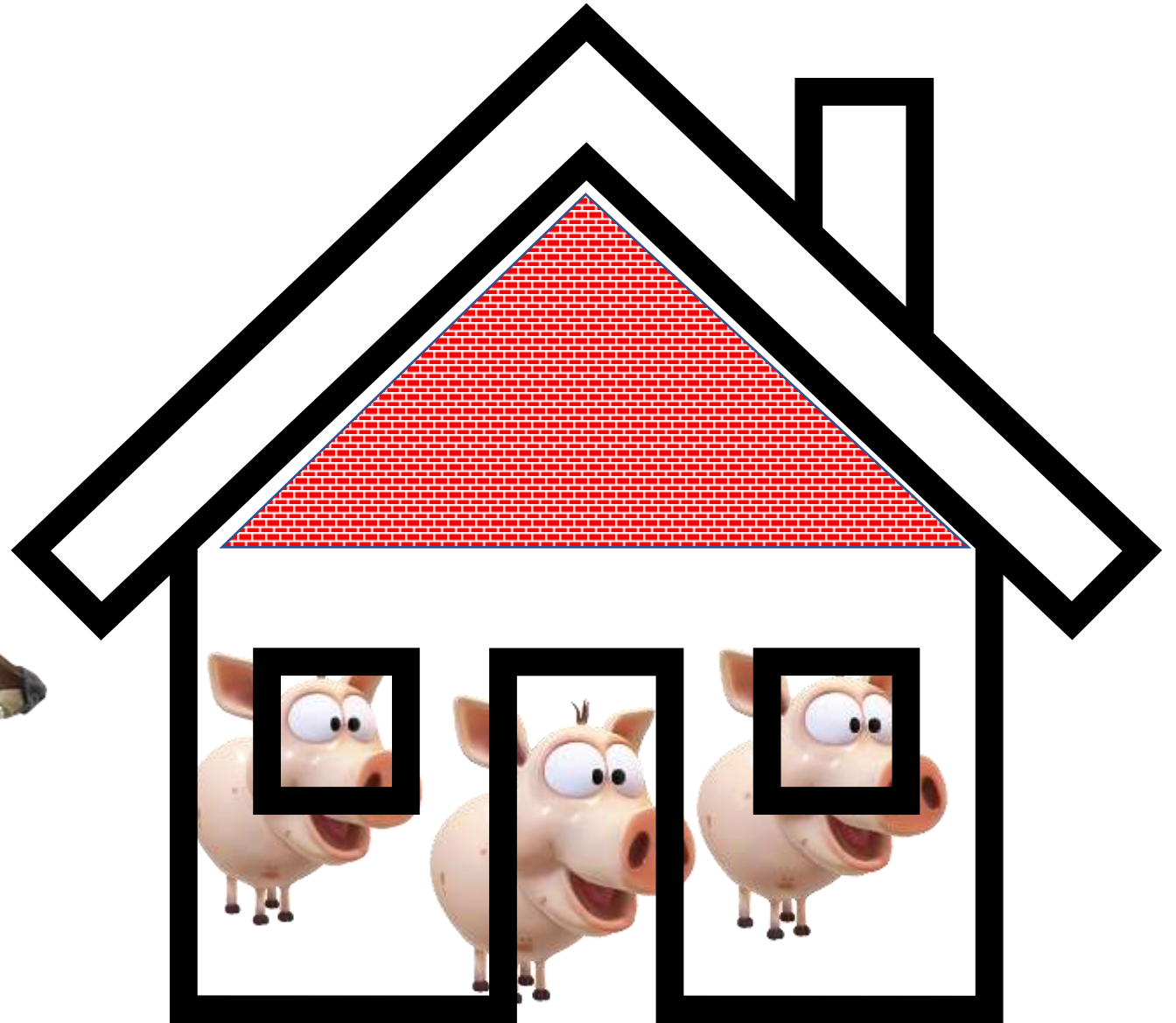
I'M SORRY

Help with Low Carb Eating

- **Annette Bosworth, MD** – Internal Medicine (Dr. Boz)
- **Ken Berry, MD** – Internal Medicine
- **Jaime Seeman, MD** – Obstetrician-Gynecologist (Doctor Fit and Fabulous)
- **Jason Fung, MD** – Nephrologist..Kidney
- **BOTH Book Authors**
- **Eric Berg, DC**
- Many others

Think/Act – Three Little Pigs And the
Big BAD Wolf
Keep Him Out!!!!

SAFE in Your BRICK HOUSE
A GOOD Immune System



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Cardiovascular research scientist and doctor of pharmacy at Saint Luke's Mid America Heart Institute in Kansas City, Missouri, and author of *The Salt Fix* and *Superfuel*.

Well-respected and internationally known scientist and expert on health and nutrition, he has contributed extensively to health policy and has even testified in front of the Canadian Senate regarding the harms of added sugars.

Serves as the Associate Editor of Nutrition and British Medical Journal's (BMJ) *Open Heart*, a journal published in partnership with the British Cardiovascular Society.

The author or coauthor of approximately 200 publications in the medical literature. He is also on the editorial advisory boards of several medical journals. He has shared his expertise on *The Dr. Oz Show*, *The Doctors*, and international news media outlets.

About Authors - Siim Land

Siim Land is an author, content creator, public speaker, coach, and biohacker. He talks about human optimization, optimal nutrition, and peak performance.

About Authors - Benjamin Bikman, PhD

Dr. Bikman's research focus is to elucidate the molecular mechanisms that mediate the disruption that causes and accompanies metabolic disorders, such as obesity, type 2 diabetes, and dementia.

Driven by his academic training (Ph.D. in Bioenergetics and postdoctoral fellowship with the Duke-National University of Singapore in metabolic disorders), he is currently exploring the contrasting roles of insulin and ketones as key drivers of metabolic function.

He frequently publishes his research in peer-reviewed journals and presents at international science meetings.