

The Science of Aging Gracefully

A visual field guide to the biology, nuance, and strategy of growing older.

Week 1 • What Is Aging, Really?



Hello!

I'm Suzanne

Educator. Learner. Advocate.



Education

- Ed.D. in Curriculum & Instruction
- M.Ed. in K-12 Education
- B.A. in Human Development and Science



Current Role

- Professor of Special Education (SSU)
- Intern Director, Educational Specialist Program



Outside of Work

- Family, nature, reading, travel, and good coffee



Fun Fact

I'm a mom to four amazing kids!
My oldest just started college. 🎓

THE SCIENCE OF AGING GRACEFULLY

Our Time Together

Four parts. One big picture. More living at every age.

Learn
Think
Discuss
Be Inspired

PART 1

Aging Is Lifelong



Big ideas, changing perspectives, and why aging matters.

~ 20 MINUTES



PART 2

Inside the Body



A look at the biology of aging and what influences it.

~ 30 MINUTES



BREAK



Take 7 minutes to stretch, refill, and refresh.



PART 3

Myths & Assumptions



Let's separate fact from fiction and explore ageism.

~ 20 MINUTES



PART 4

What Can We Influence?



Practical strategies for healthier, more fulfilling lives.

~ 20 MINUTES

More living. At every age.

TODAY'S BIG IDEA

Aging is real, complex, and full of possibilities.

Aging is not one single thing.

It happens in:



Cells



Bodies



Minds



Relationships



Environments



More living. At every age.

How we vote today

Simple, seated, optional.

MYTH



Touch your nose
like Pinocchio

TRUTH



Place your hand
over your heart

There are
no wrong
answers!

No grades. You can change your mind!

*Curiosity
ages well.*

Part 1

Aging is a lifelong process

*Not a cliff. Not just a birthday.
We are aging throughout
our lives.*

*Curiosity
today.
A brighter
tomorrow.*



MYTH OR TRUTH?

*Think it through...
Then choose!*

“Once you reach a certain age,
aging suddenly speeds up.”



MYTH

Touch your nose



TRUTH

Place your hand
over your heart

No grades. You can change your mind!

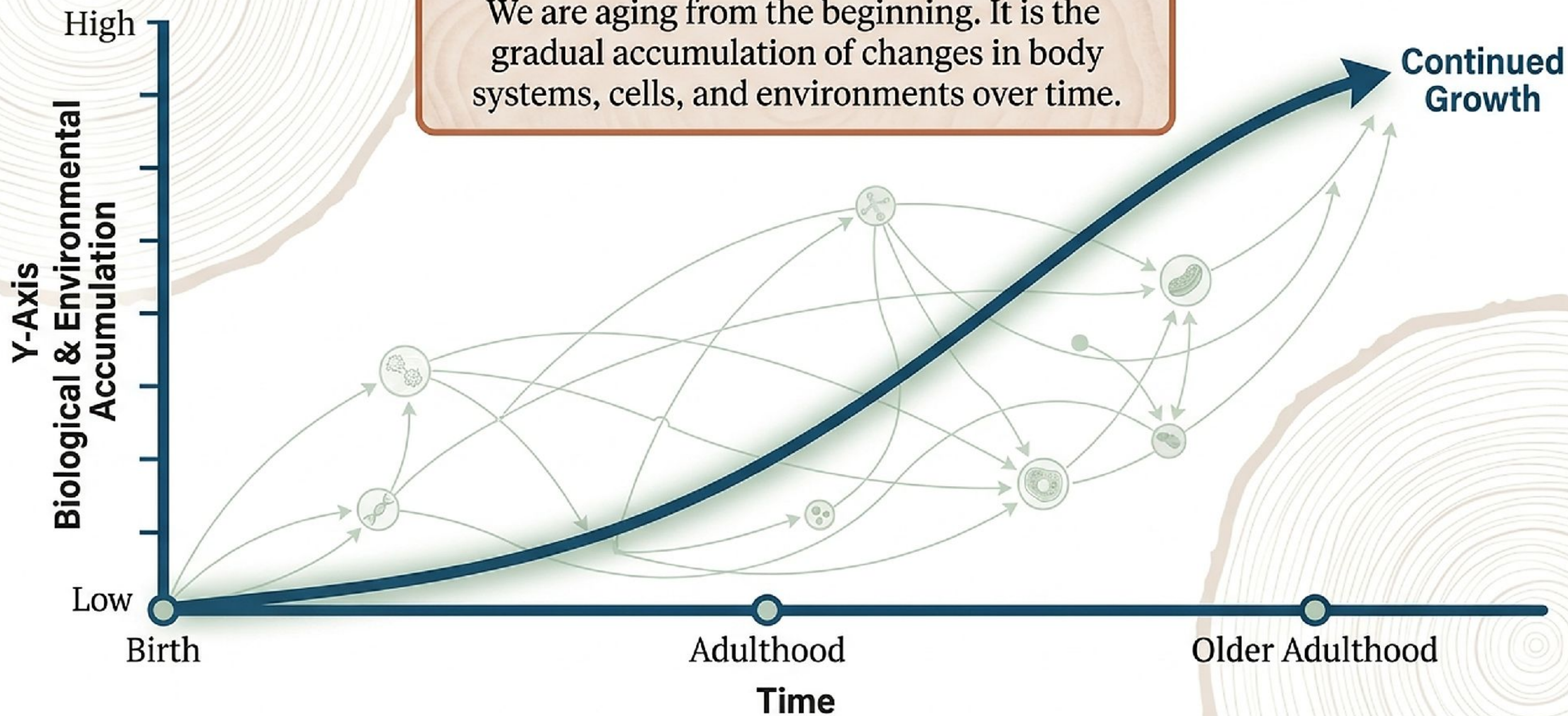


МҮТН



Aging is a lifelong trajectory, not a sudden cliff.

We are aging from the beginning. It is the gradual accumulation of changes in body systems, cells, and environments over time.



MYTH OR TRUTH?

Think about it...
Then choose!

**“Your genes determine how well
you will age.”**



MYTH

Touch your nose



TRUTH

Place your hand
over your heart

No grades. You can change your mind!



МҮҮТН



The Three Clocks of Human Aging

Same birthday. Different bodies.

	 Chronological Age	 Biological Age	 Social Age
Definition	How many years since birth	How body systems are functioning	Roles, expectations, and culture
What it Measures	Strict time	Cellular and systemic health	Societal participation
Key Influencers	None (fixed)	Sleep, stress, movement, health conditions, nutrition, genetics, access to care	Community, ageism, housing, purpose

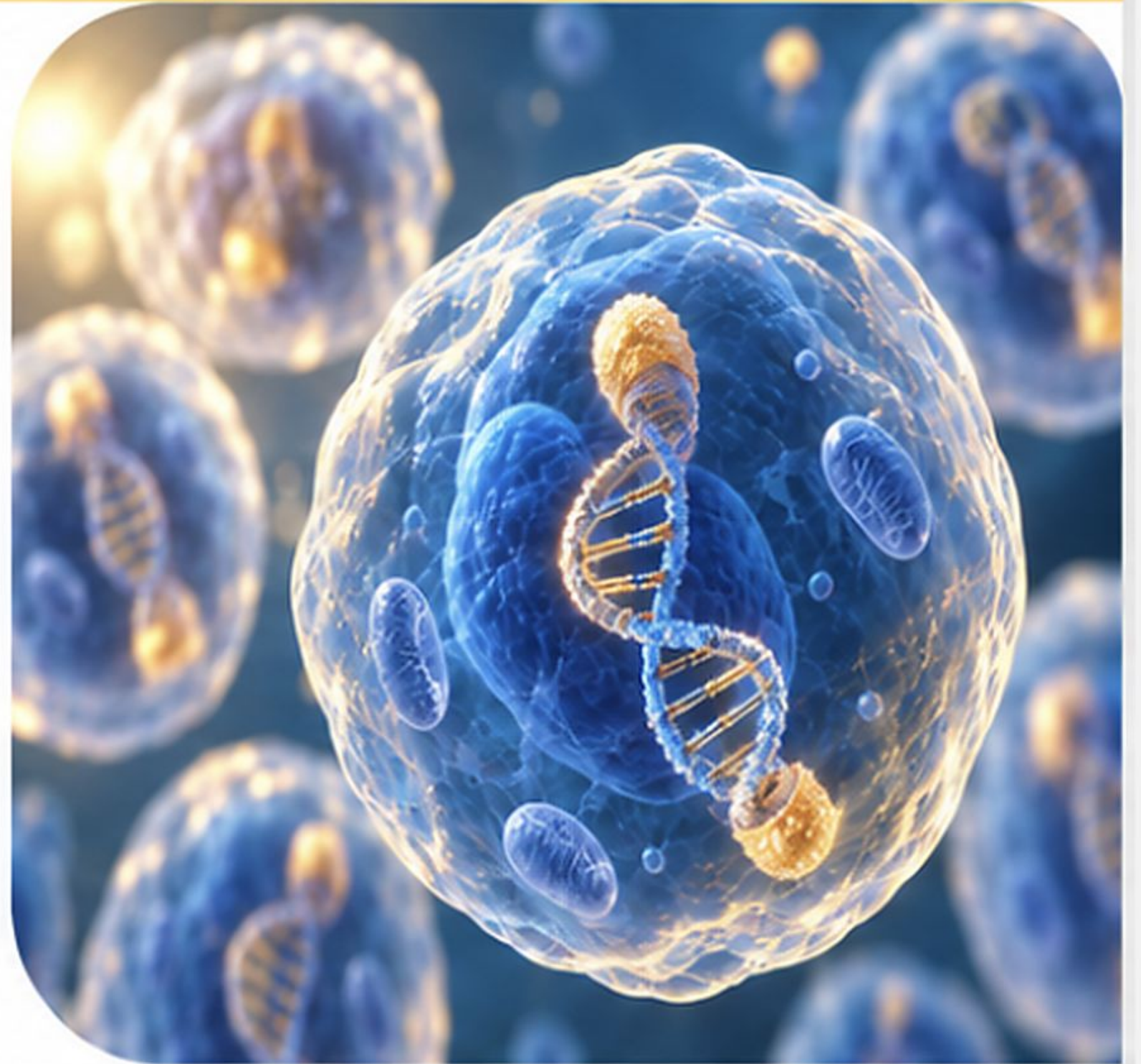


Part 2

Inside the Body

Cells work, repair, communicate, and adapt.

Remarkable
processes.
Real potential.



Inside the Body

Aging starts very small.

*Tiny changes.
Big impact.*

Cells are constantly working.



They divide.



They repair damage.



They use energy.



They communicate.



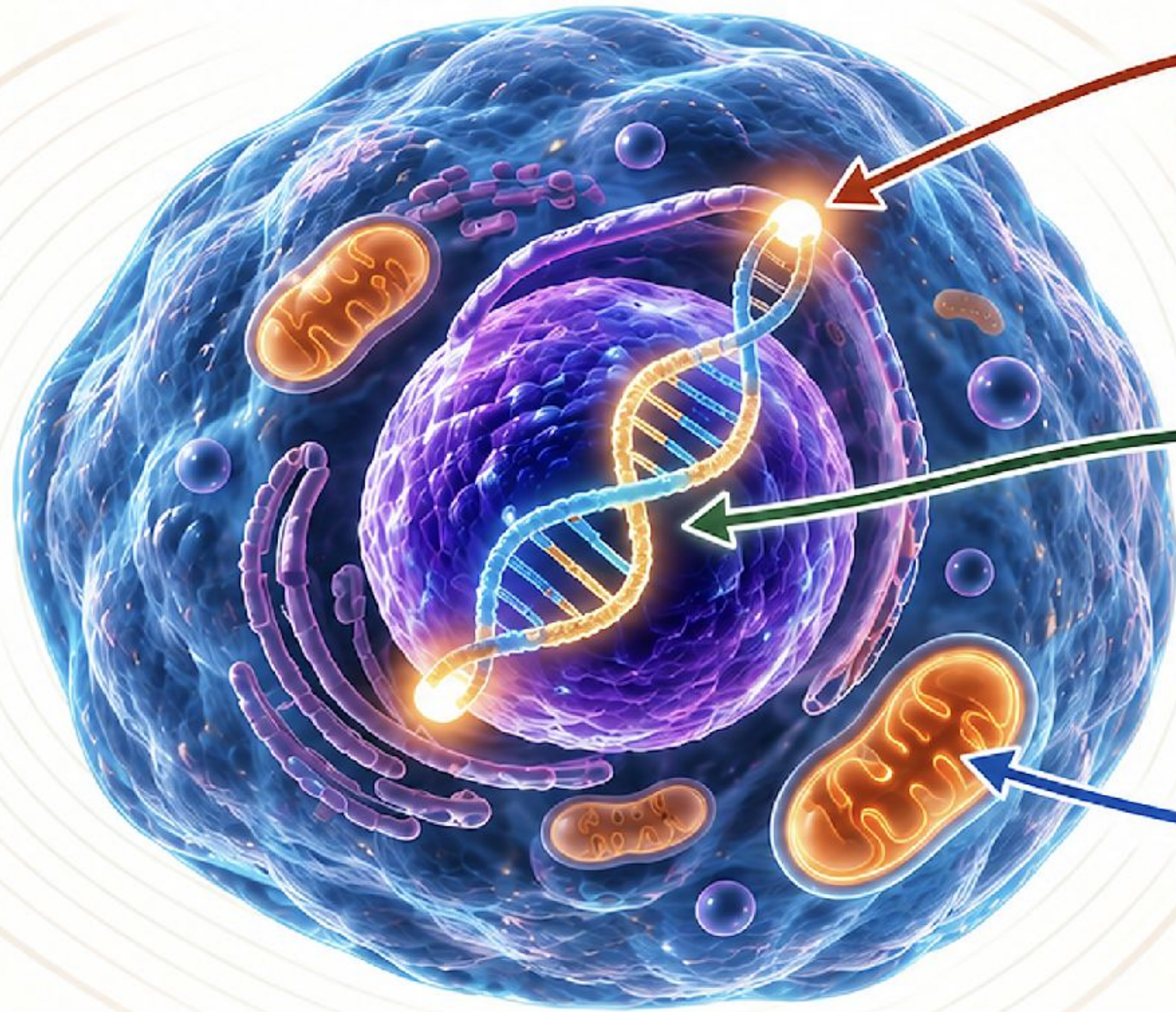
And sometimes slow down or stop dividing.



**Aging science looks for patterns
in these changes.**

Inside a Cell

Three important pieces in the story of aging



1 Telomeres

The protective ends of our chromosomes.



2 DNA Repair

The body's maintenance and fix-it system.



3 Oxidative Stress

A natural byproduct of energy production.



Let's take a closer look at each one...
They all work together inside our cells.

Same cell. A bigger story.

Telomeres

The body's shoelace caps.

*Shorter telomeres
are linked to signs
of aging.*



CORE ANALOGY

Telomeres are protective caps that keep chromosome ends from fraying — like the tips of shoelaces.

1

They get shorter over time.

Each time a cell divides, telomeres become a little shorter.

2

Short telomeres signal a stop.

When they get too short, cells stop dividing or stop working well.

3

Cell turnover keeps us looking and feeling younger.

New, healthy cells replace old ones, which helps maintain smooth skin, healthy tissues, and strong organs.



TAKEAWAY

Telomeres influence how long and how well our cells can keep renewing.

Healthy cell turnover supports youthful skin, energy, and overall health.



MYTH OR TRUTH?



*Think it over...
Then choose!*

“If we could stop our telomeres from shortening,
we could stop aging.”



MYTH

Touch your nose



TRUTH

Place your hand
over your heart



МУТН



WHY IT'S A MYTH

Stopping telomeres from shortening would not stop aging.

Telomeres are important, but aging is more complicated.



Aging has many causes.

Changes in DNA, protein buildup, inflammation, oxidative stress, and other factors all play a role.



Our cells still wear out.

Even if telomeres stayed long, cells would still experience other kinds of damage over time.



Old cells accumulate.

Aging also happens when old or damaged cells build up and don't work as well, even if telomeres aren't the problem.



Balance is key.

Cells need to divide and replace old or damaged cells, but if they grow and divide too quickly, it can increase the risk of cancer.

CELLULAR AGING

DNA Repair

The body's internal maintenance crew

BIG IDEA

Aging reflects both daily wear and constant repair.

1

Daily wear

Everyday life (metabolism, sunlight, toxins, and inflammation) can cause small changes or damage to DNA.

2

Repair crew

Built-in systems find and fix many of these changes. This helps cells keep working properly.

3

With time

Repair still happens, but it becomes less efficient as we age. Damage can gradually build up over time.

TAKEAWAY

Our bodies are always responding, adjusting, and repairing. That's a good thing!



CELLULAR AGING

Oxidative Stress

Managing “biological rust”

Oxidative stress happens when the body creates more damaging molecules than it can repair.



Everyday life creates stress

Normal life (sunlight, pollution, certain foods, stress, and inflammation) can produce damaging molecules called free radicals.



Damage adds up

These molecules can harm DNA, proteins, and cell membranes.



Your body fights back

Built-in antioxidant systems help neutralize damage, but this balance becomes harder to maintain as we age.



Less damage.
More living.
At any age.

TAKEAWAY

Our bodies are always working to keep damage in check.

Healthy habits can help reduce oxidative stress and support healthy aging.

MYTH OR TRUTH?



Think it over...
Then choose!

Healthy habits can influence how we age.



MYTH

Touch your nose



TRUTH

Place your hand
over your heart



TRUTH



THE BIG PICTURE



How Healthy Habits Support Healthy Aging

Healthy habits can't stop aging, but they help your body handle it better.



Move your body

Supports heart health, muscles, bones, and brain function.



Nourish well

Provides the nutrients your cells need to function and repair.



Get quality sleep

Helps your body clean up damage and keeps your brain and immune system strong.



Manage stress

Supports a healthy immune system and overall well-being.



TAKEAWAY

Healthy habits don't stop aging, but they can help you feel better, stay stronger, and enjoy a higher quality of life as you age.



07:00

COUNTDOWN

Part 3

Myths and assumptions

Sometimes the barrier is
the story we tell about age.

Let's
challenge.
Let's reframe.
Let's move forward.



MYTH OR TRUTH?

Think it over...
Then choose!

“Aging only means decline.”



MYTH

Touch your nose



TRUTH

Hand over your heart



МҮТН



MYTH OR TRUTH?



Think it over...
Then choose!

Change is constant, but decline is only a fraction of the story.



Losses

- Hearing
- Vision
- Speed
- Physical strength



Gains

- Knowledge
- Broader perspective
- Advanced emotional skills



Stability

- Core identity
- Foundational values
- Deep relationships



Adaptation

- Strategic use of tools
- Refined routines
- Customized environments



TAKEAWAY

Aging is a multi-directional process. It brings simultaneous loss, growth, and stabilization.

MYTH OR TRUTH?



*Think it over...
Then choose!*

**“Using a cane, hearing aid, or reminder note
means less independence.”**



MYTH

Touch your nose



TRUTH

Hand over your heart



МҮТН



MYTH OR TRUTH?



Think it over...
Then choose!

Adaptation is wisdom.

Tools are strategy, not surrender.



**Natural
Biological Loss**

Changing
physical abilities



Tools

Canes, hearing aids, brighter lamps.



Routines

Reminder notes, structured habits.



Environments

Quieter rooms, accessible spaces.



**Full
Participation
& Dignity**



TAKEAWAY

Using a tool is not giving up — it is the exact mechanism that guarantees continued freedom and engagement.

Part 4

What can we influence?

Not everything.
Enough to matter.

Small steps.
Real change.
A healthier, happier
tomorrow.



MYTH OR TRUTH?



Think it over...
Then choose!

**“Aging well means staying exactly like
your younger self.”**



MYTH

Touch your nose



TRUTH

Hand over your heart



МҮҮТН



What can we influence?

Not everything. Enough to matter.

Think it over...
Then choose!

Healthy aging is not about perfect control.



Movement



Sleep



Food Patterns



Social
Connection



Medical Care



Stress Tools



TAKEAWAY

It is about stacking small supports around real life.

Small supports for the body

Tiny actions count.

Think it over...
Then choose!

Some movement is better than none.

The goal is not athletic performance.
The goal is keeping daily life possible.



A short
walk



Chair
rises



Balance
practice



Light
strength



TAKEAWAY

Even small amounts of movement can make a big difference in your strength, independence, and quality of life.

Small supports for the brain

Novelty + attention + connection.

Think it over...
Then choose!

The brain likes practice.

Learning, conversation, movement, sleep, and stress support can all help the brain stay engaged.



Keep
learning



Stay
connected



Get
moving



Prioritize
good sleep



Use stress
support tools



TAKEAWAY

Many everyday activities can support brain health. Small, consistent choices add up over time.

Relationships are health supports

Connection is not "extra."

*Think it over...
Then choose!*



**People help us regulate,
remember, move, laugh, and
keep meaning alive.**

Aging well is partly biological and
partly communal.



**Build
connection**



**Have
meaningful
conversations**



**Share
activities**



**Be part
of a community**



TAKEAWAY

Relationships are a powerful tool for healthy aging. Small moments of connection can make a big difference.

We're wrapping up...

But before we do...

*Your
experience
matters!*

**What is one idea from today
that you want to remember?**



Take a quiet
moment
to think.

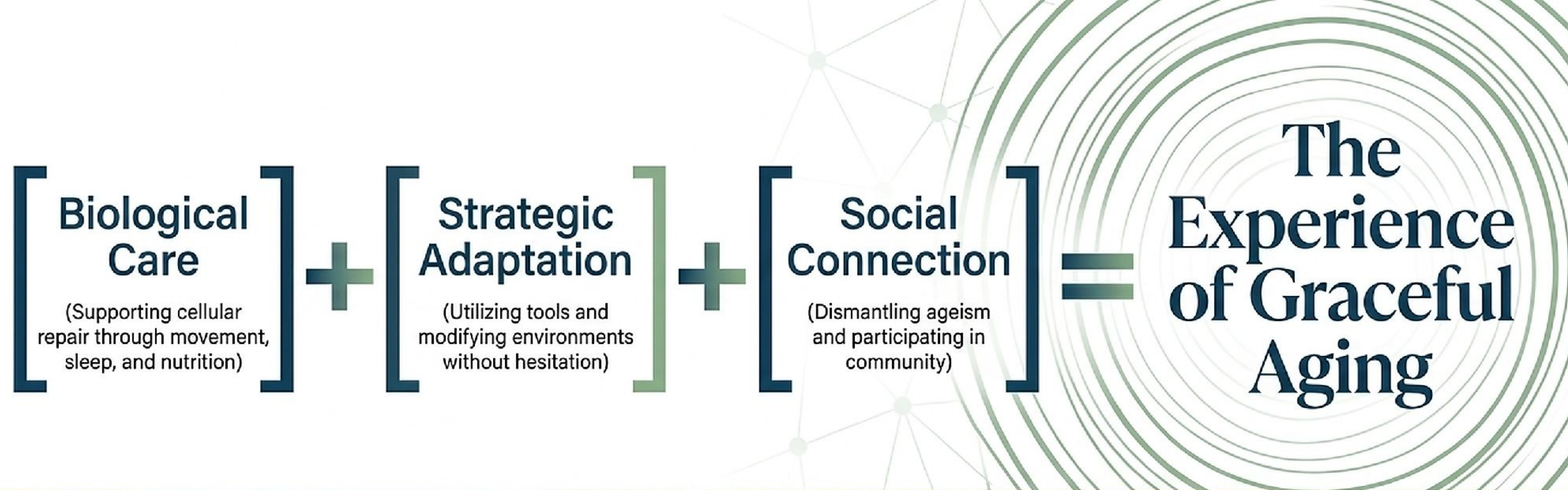


Turn to
someone
nearby.



Share
if you'd
like.

**There are no right or wrong answers.
Just one idea to take with you.**



Aging well is partly biological, partly communal, and entirely full of possibility.

Next time...

Week 2: The Brain at Every Age

*Same great
community.
New ideas!*

Memory, attention, learning, and neuroplasticity

We will explore what changes, what can improve, and how the aging brain can still surprise us.



Memory



Attention



Learning



Neuroplasticity



More to explore together!

We hope to see you next time.