

AVANT  
TECHNOLOGIES



Avai Bio  
Advancing Cellular Therapies



# AUSTRIANNOVA

REVOLUTIONIZING CELL ENCAPSULATION

Together, bring you



**A UNIQUE, REMOVABLE,  
CELL THERAPY TREATMENT  
DESIGNED TO PROMOTE LONGEVITY AND A HEALTHY LIFE**

A JOINT PROJECT BY AVAI BIO – advancing cell therapies, and AUSTRIANNOVA – armour plating for cells

# Summary



- Klothonova's innovative approach to **promoting longevity and health is based on**
  - **a unique cell therapy treatment**
  - that focuses on **enhancing Klotho protein levels** in the body.

## What is Klotho and why is it important?

Klotho is a protein that plays a crucial role in aging and longevity. Higher levels are associated with a reduced risk of age-related diseases and a 30% increased lifespan.

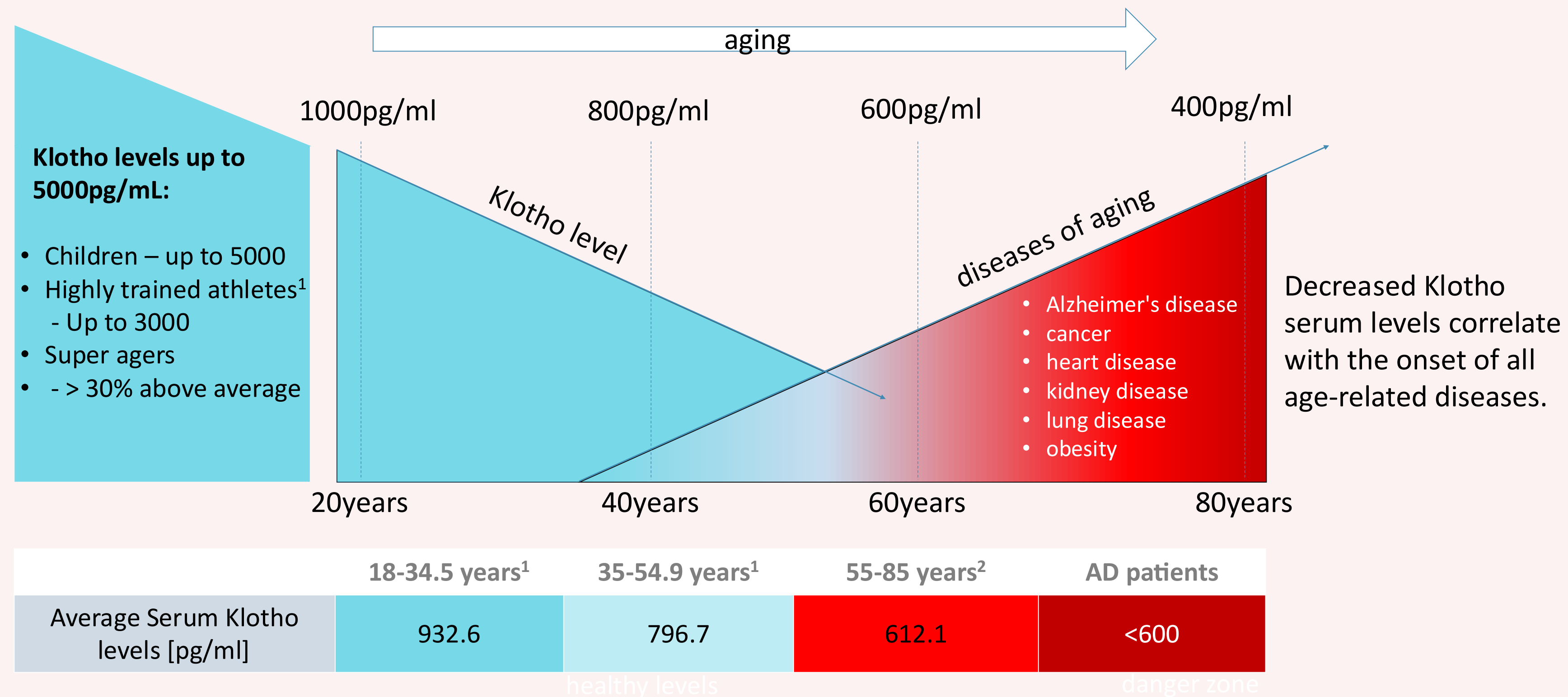
- The collaboration between Avai and Austrianova,
  - combines a **Klotho overexpressing cell line** and
  - Austrianova's **proprietary microencapsulation technology**
  - to **protect** injected cells producing Klotho **from immune rejection**.

## How does Klothonova's therapy work?

The therapy utilizes microencapsulated cells that continuously produce Klotho protein, which is then released into the bloodstream, potentially restoring youthful levels, promoting health and extending lifespan.

# Background

- Preliminary research by many independent research groups supports the role of Klotho in
  - extending lifespan,
  - reducing age-related diseases, and
  - the potential of Klotho treatment to shift the population into healthier Klotho serum levels.




<sup>1</sup>doi: 10.5812/numonthly.30245

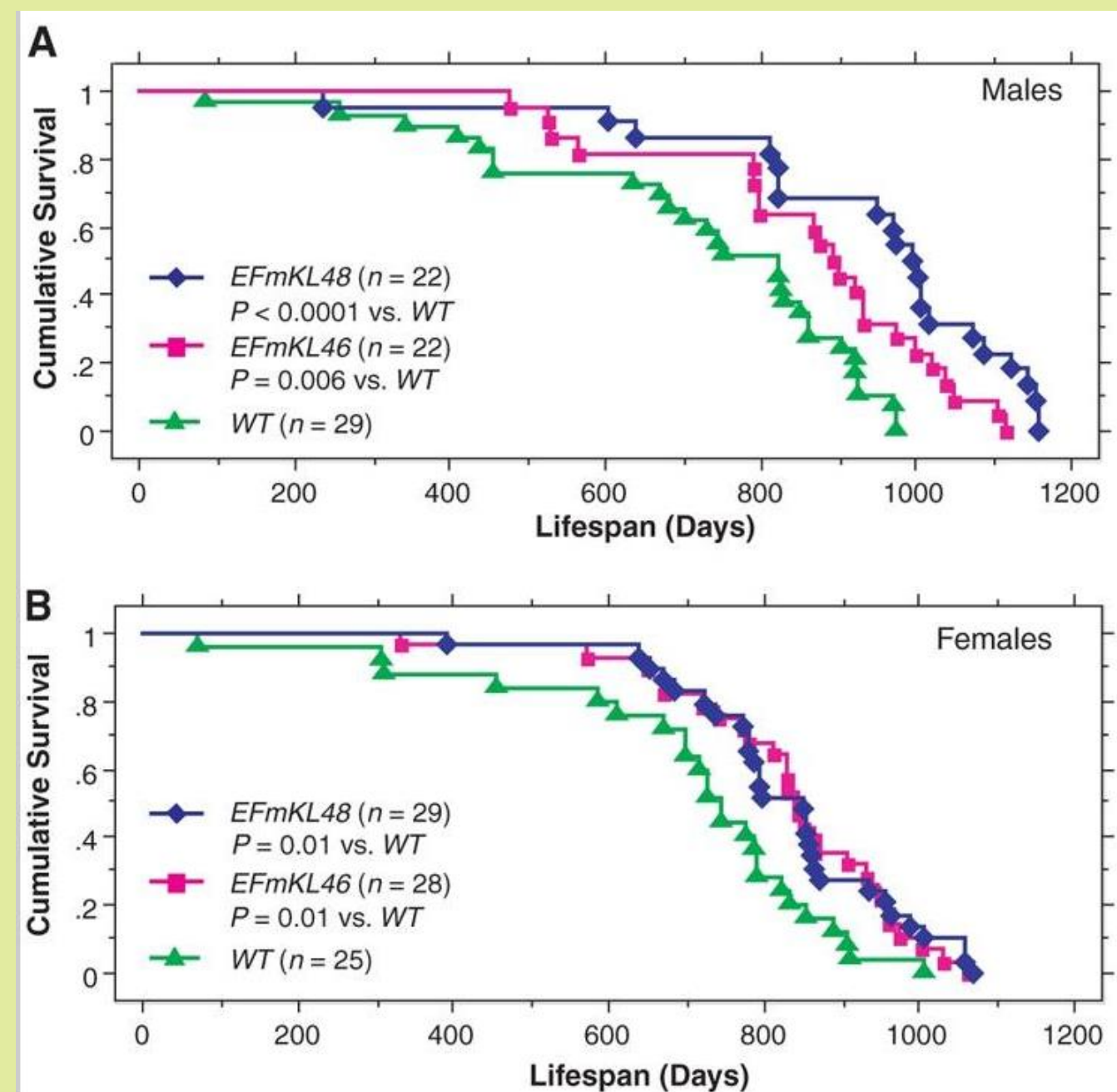
# Klotho Extends Lifespan



**KLOTHO NOVA**  
HEALTHY LONGEVITY

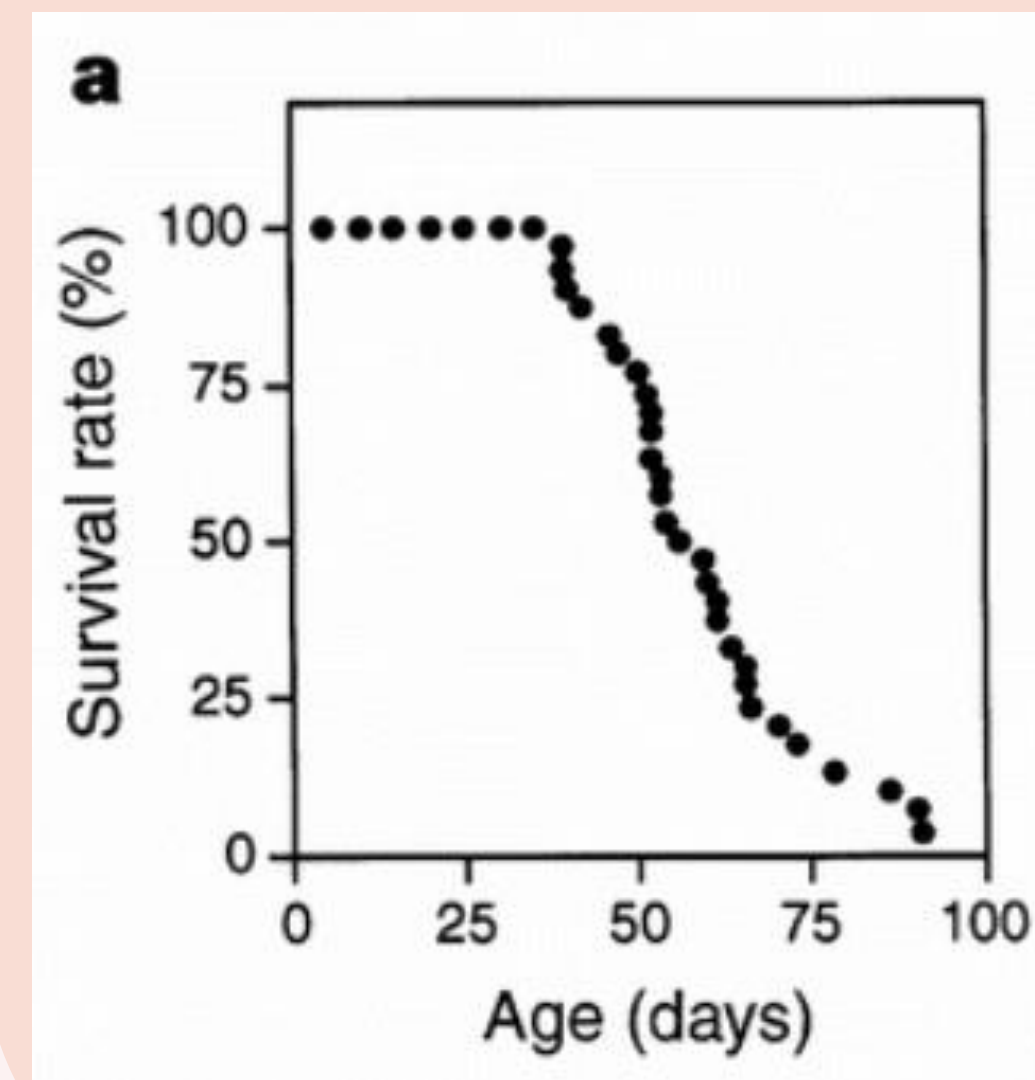
- 
**Research-backed results:** Independent studies indicate **increasing** Klotho levels can extend lifespan by up to 30%, whereas **decreasing** Klotho level leads to premature ageing

Transgenic mice that over-express *Klotho*, outlived wild-type controls (green) by 20.0 and 30.8% (A-blue/red), respectively, in males, and by 18.8 and 19.0% (B-blue/red), respectively, in females



Kuroso et al., 2025, Science.309(5742):1829-1833

Transgenic mice that knock-out *Klotho*, showed an aged phenotype at 3 weeks and stopped growing. Many died prematurely by the age of 8-9 weeks, with an average lifespan of 15 weeks, compared to wildtype mice with an average life span of 2.5 to 3 years



Kuro et al., 1997, Nature 390: 45-51

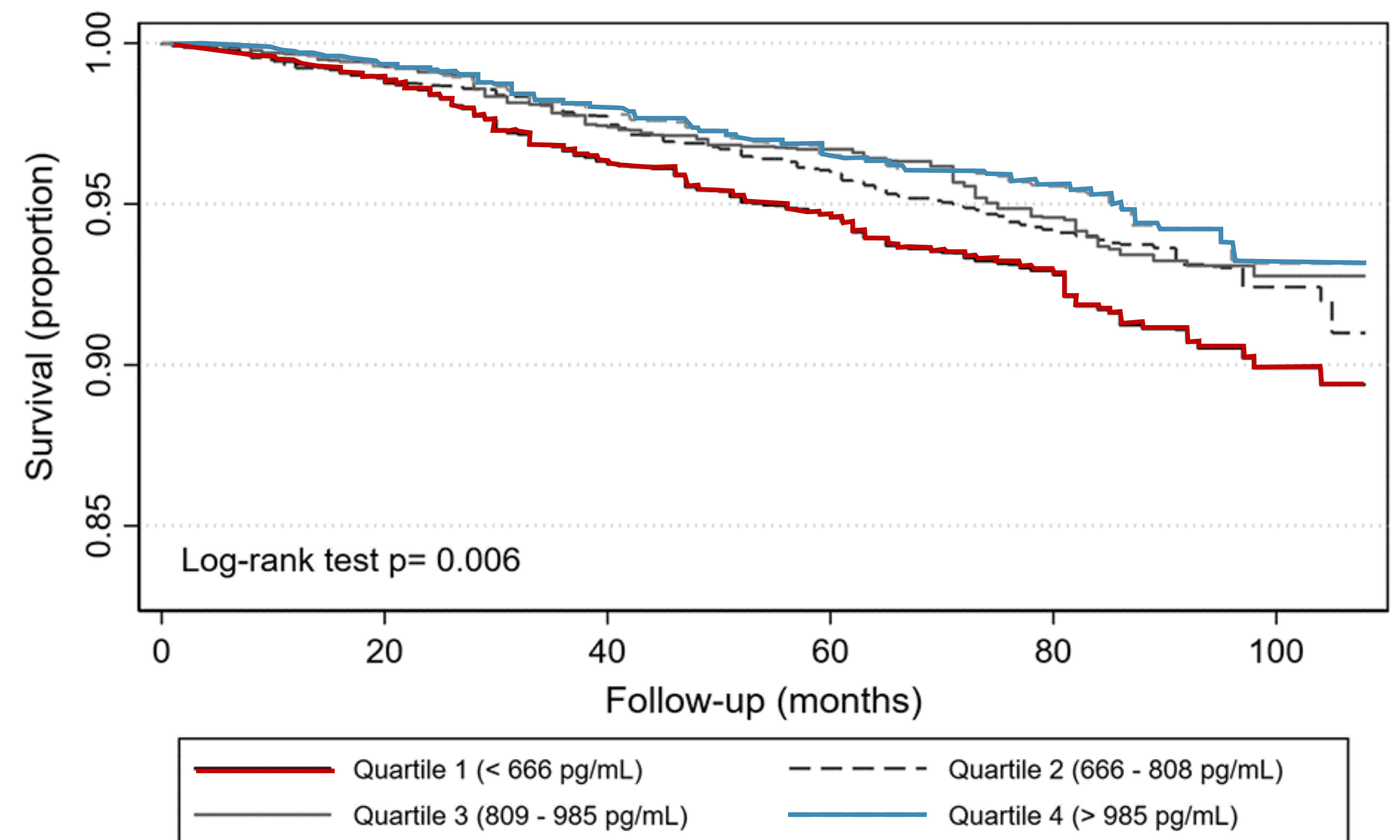
# In Humans, high Klotho serum levels correlate with longer lifespan and protection against cognitive decline



**KLOTHONOVA**  
HEALTHY LONGEVITY

- Participants with serum concentrations of Klotho in the lowest quartile (<666 picograms/ml) showed significantly worse survival over follow-up compared to those with higher Klotho concentrations.<sup>1</sup>
- Participants with the lowest Klotho concentrations had a 31% higher rate of death.<sup>1</sup>
- Participants with the highest Klotho serum levels show the highest overall survival rate.<sup>1</sup>


**SERUM KLOTHO WAS MEASURED BY ELISA IN 10,069 INDIVIDUALS AGED 40-79 YEARS, IN THE UNITED STATES**



<sup>1</sup> Jacob K Kresovich, Catherine M. Bulka  
<https://pubmed.ncbi.nlm.nih.gov/34628493/>

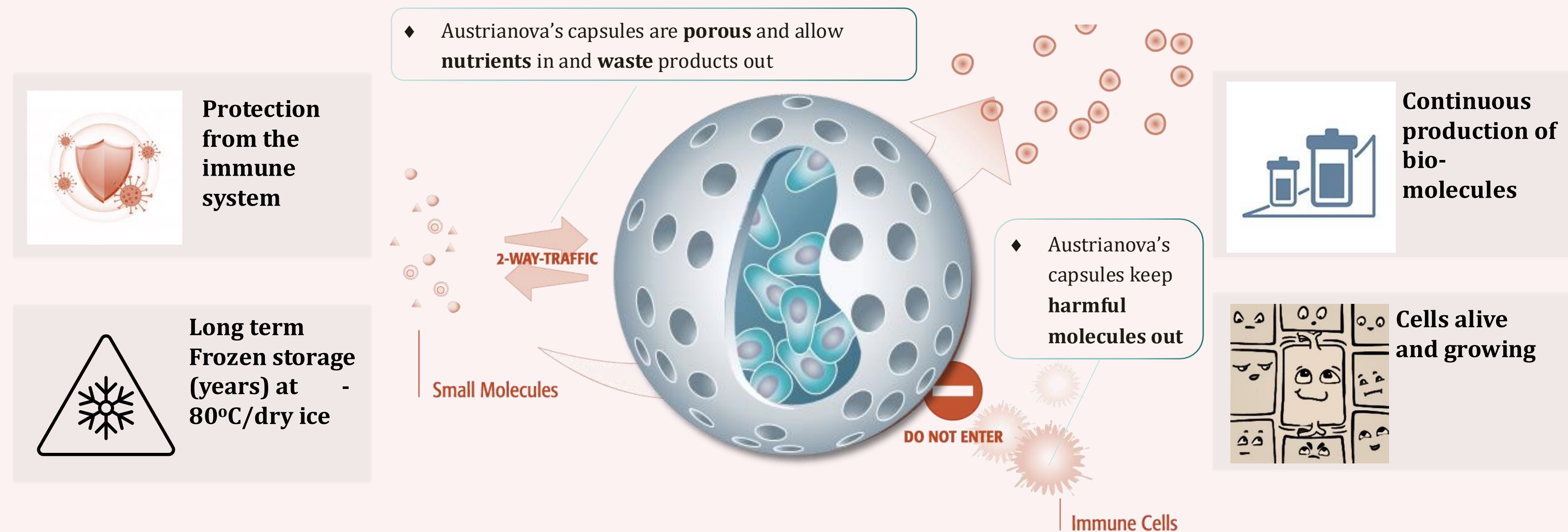
**Low Serum Klotho Associated With All-cause Mortality Among a Nationally Representative Sample of American Adults**

# Klothonova's Unique Cell Protection Technology

-  **Unique delivery technology:** Utilizes Austrianova's clinically proven microencapsulation protection technology (Cell-in-a-Box<sup>®</sup>) to protect and deliver Klotho-producing cells.

## What advantages does microencapsulation offer?

Microencapsulation protects the Klotho-producing cells from immune rejection and allows for sustained protein production over months, enhancing therapeutic benefits.



# Combining a Klotho expressing Cell Line with Cell-in-a-Box encapsulation technology: continuous production of Klotho to avoid short half-life issues



**KLOTHONOVA**  
HEALTHY LONGEVITY

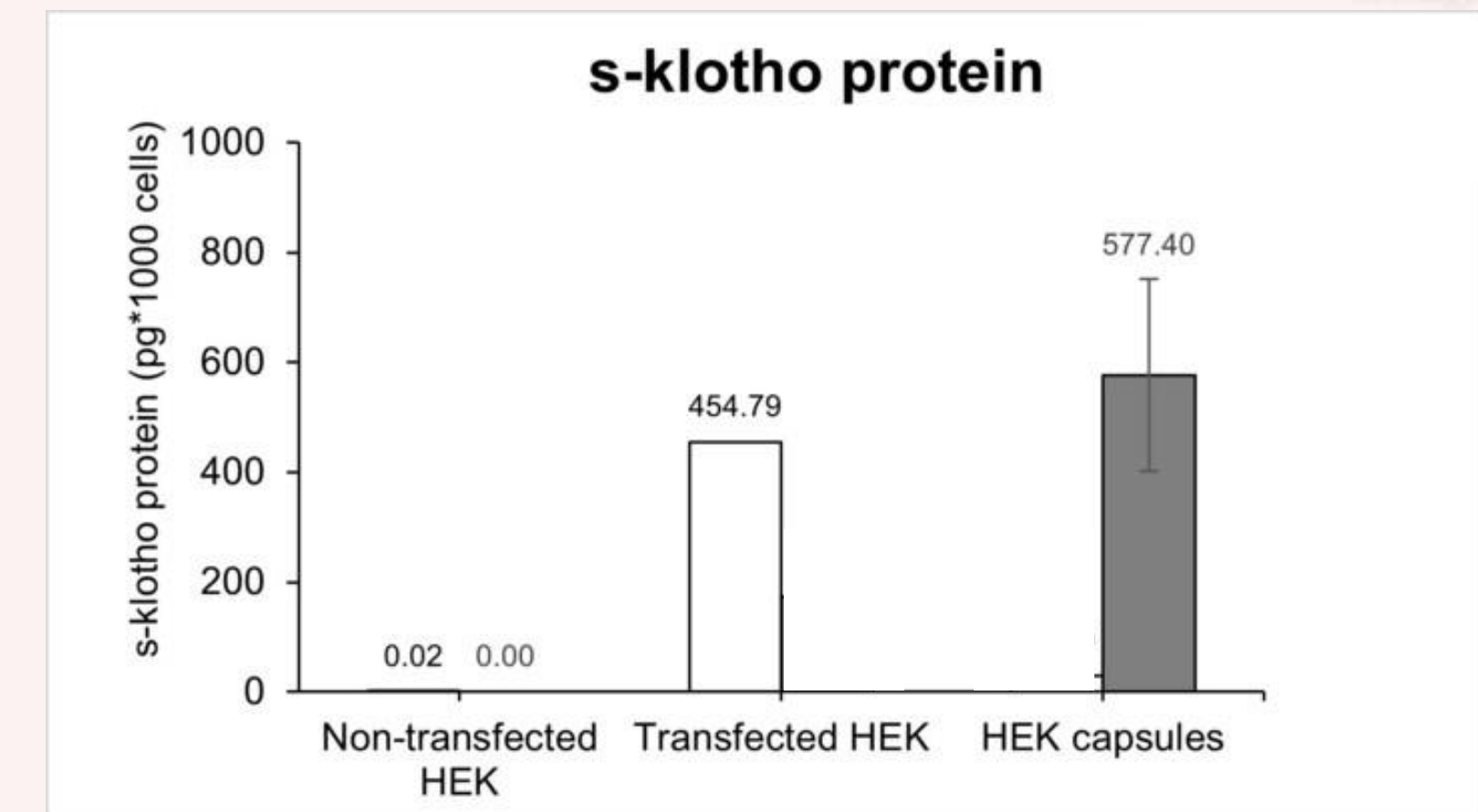
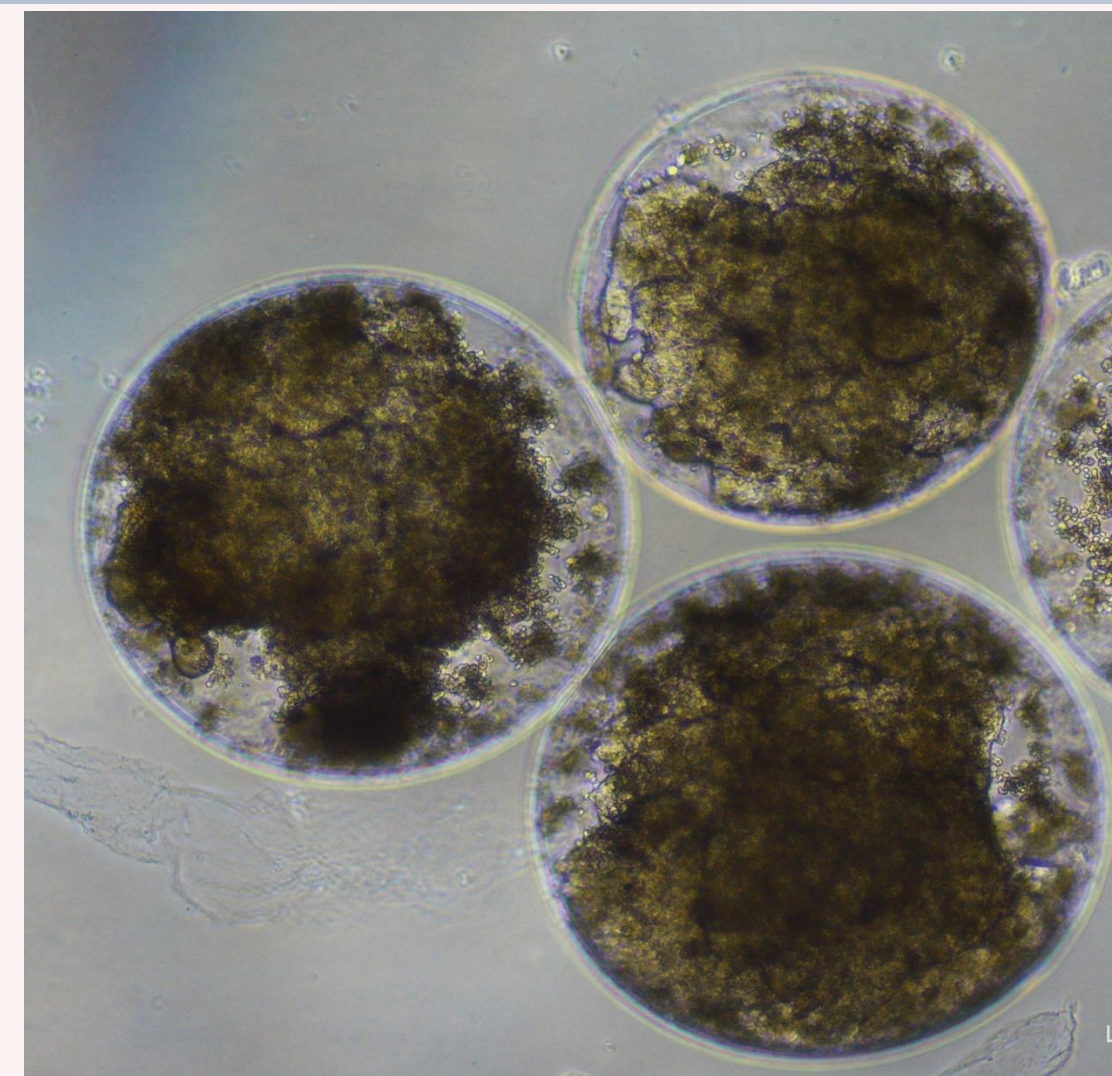
## PRECLINICAL DATA SHOWS HIGH LEVEL OF SECRETED KLOTHO FROM ENCAPSULATED CELLS

An example of a Klotho producing cell line, combined with Austrianova's micro-cell encapsulation, yielded

**~580pg Klotho protein/ 1000 cells /24 hrs**

**~8120pg Klotho protein/ capsule/24 hrs**

**In cell culture, Klotho producing cell lines can be encapsulated and have around 14,000 cells / capsule**



**Encapsulated Klotho Producing Cells produce ~ 580pg Klotho / 1000 cells**

- 14.000 cells per capsule
- 100 capsules in 1mL      24hr incubation
- Results:
  - 577pg/1000cells/24hrs
  - 8078pg/capsule/24hrs
  - Medium concentration after 24hrs: 807.000pg/mL
- A 70kg human has ~6.3L of blood
- To increase the serum Klotho levels by 200pg/mL 1.260.000pg are needed
  - ~1.5mL of the "unconcentrated" medium

**1.5 mls of medium or 150 capsules required to "boost" Klotho levels in man**

# Target Clinical Applications



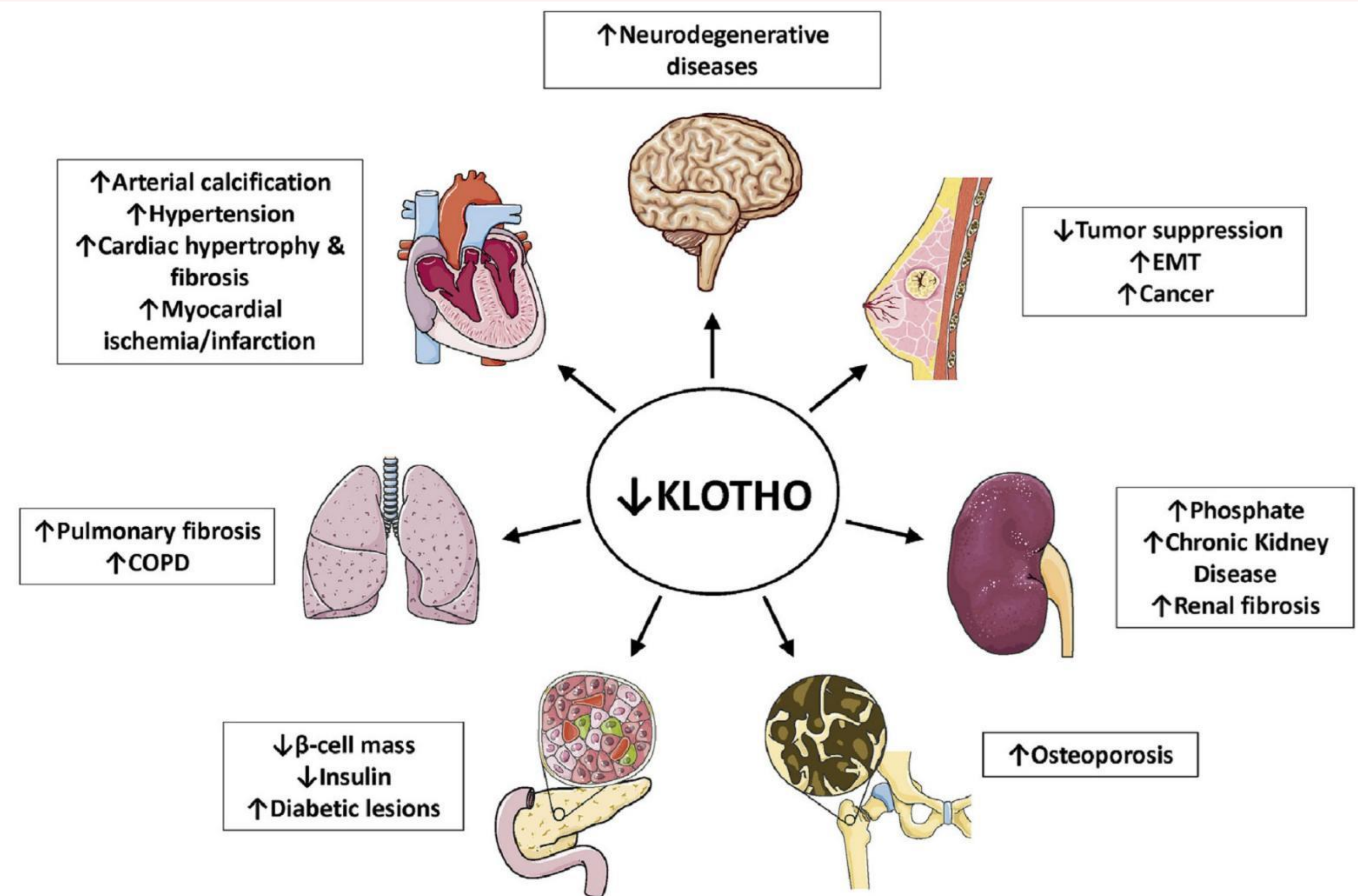
**KLOTHONOVA**  
HEALTHY LONGEVITY

- **Potential impact:** The therapy aims to address various age-related diseases, including Alzheimer's and heart disease.

## What diseases could the Klotho therapy address?

Research suggests that Klotho therapy could help in treating Alzheimer's disease, heart disease, cancer, and other age-related conditions, as well as promoting longevity.

**A Klotho intervention (boost) could prevent or treat many age-related diseases**

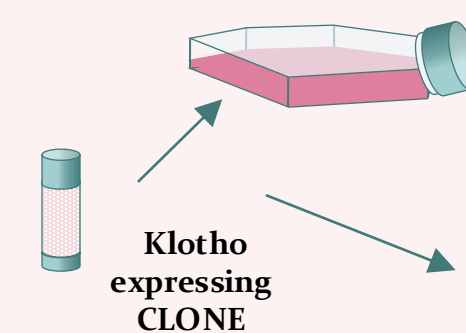


# Cell Line Choice

**GMP**

## Either

- (1) License-in Klothea's Klotho expressing cell line  
(no upfront, royalty or profit sharing model)



Adapt to serum free media and check production levels

~ Euro 20,000

Send to Virusure for Adventitious Virus Testing

~ Euro 80,000

3 months

## Or

- (2) License-in GMP qualified HEK293 cell line

Transfect cells with plasmid

Pick and select clone

Humanize existing Klotho expression plasmid

5 months

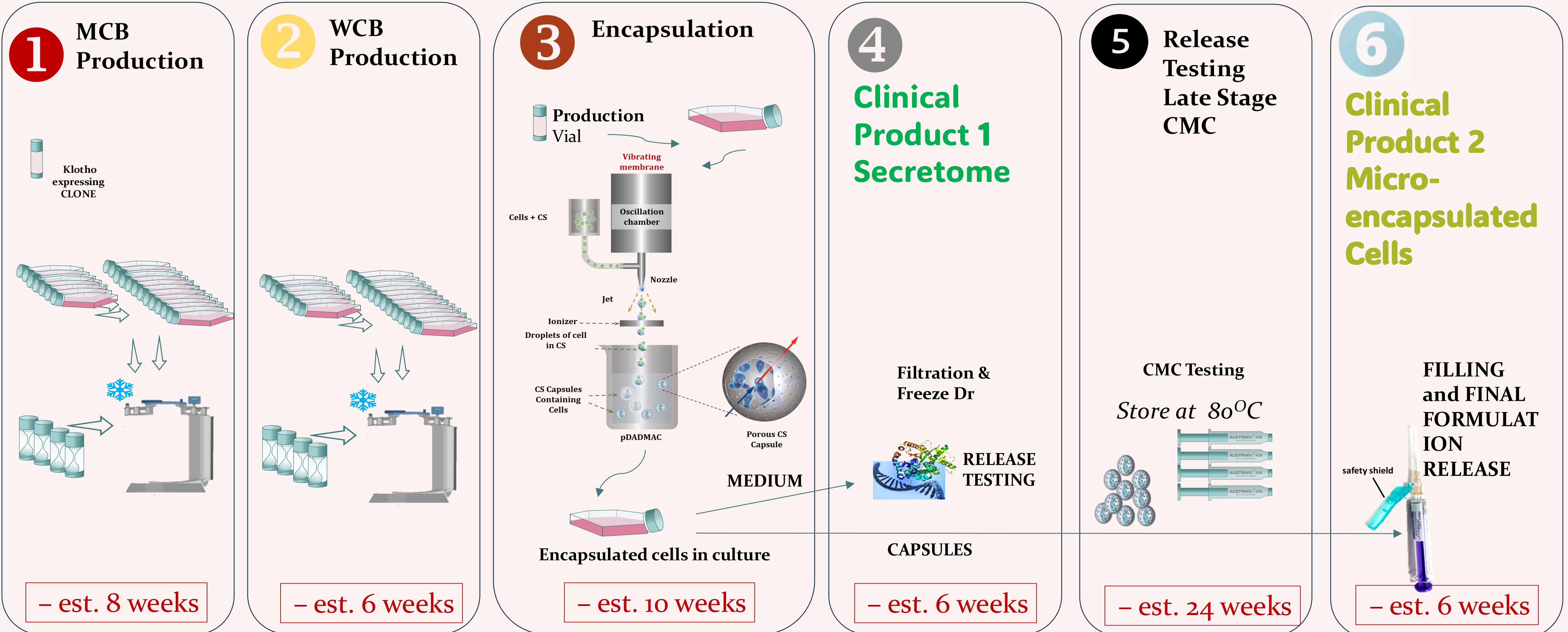
~ USD 100 - 150,000

# Clear Fast Path to Clinical Products



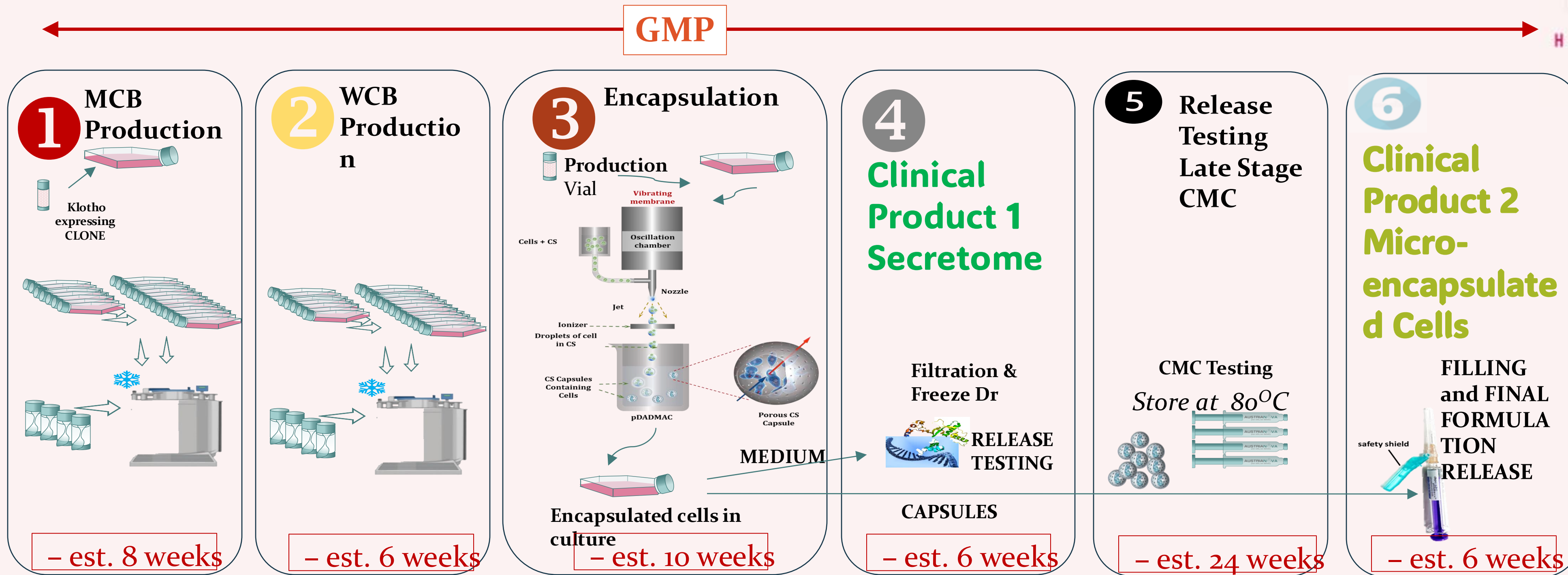
**KLOTHONOVA**  
HEALTHY LONGEVITY

**GMP**

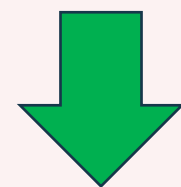




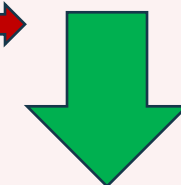
# First Revenue expected within 6 months of Project Financing



**Financing**



**6 months**



**1<sup>st</sup> Revenue**

**4 Clinical Product 1 Secretome**

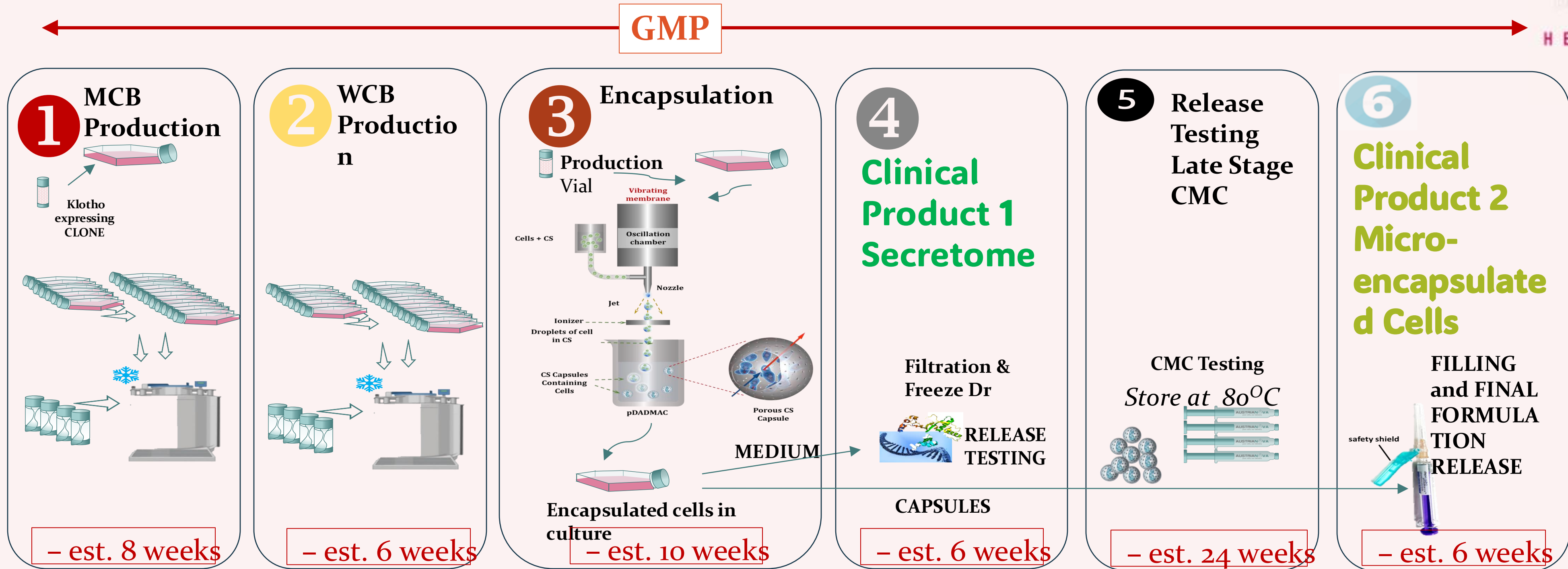


- Early Revenue Generating:** Expect first sales revenue within 1<sup>st</sup> year post project financing from Secretome Product

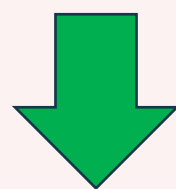
# Major Revenue expected within 18 months of Project Financing



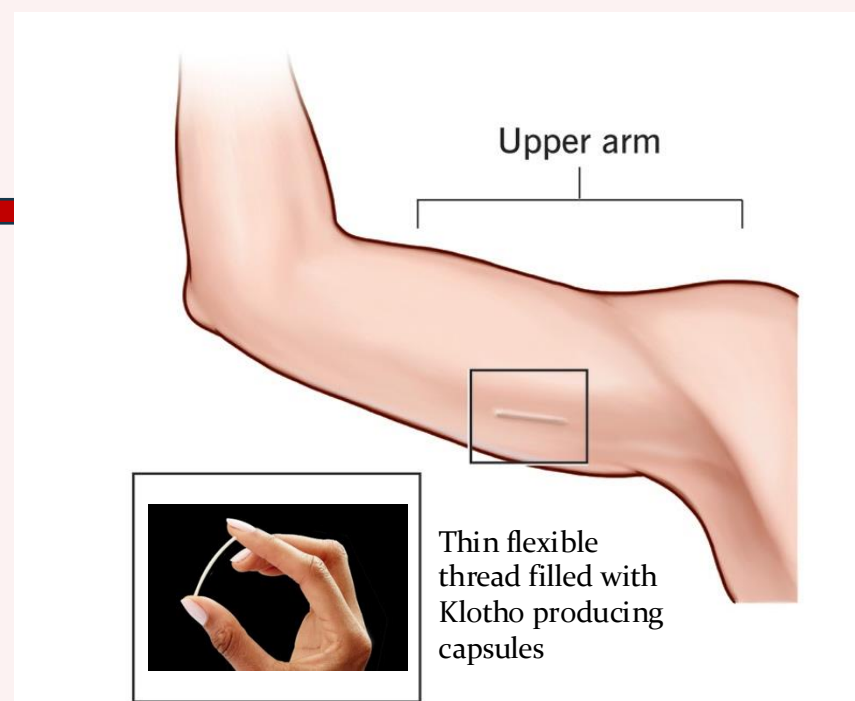
**KLOTHONOVA**  
HEALTHY LONGEVITY



## Financing



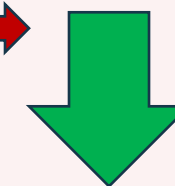
**Clinical Product 2 Micro-encapsulated Cells**



**18 months**

- Major Revenue Generating: Further sales revenue from implantable and removable Klotho secreting cells product (similar to long term removable contraceptive), expected within 1½ years post project financing

**Major Revenue**



# Sales



(1) Direct Sales to clinics and hospitals through Agustin's Sales Forces already set up in:

- Europe and US,

(2) and currently being set up in

- Latin America.

(3) Later, clinical trials to move towards product registration