



# Reversing the Aging Face & Protecting it against Free Radicals & Reactive Oxygens using IGF-1, Growth Hormone, Melatonin & Thyroid Gels, Sprays, & Sublinguals

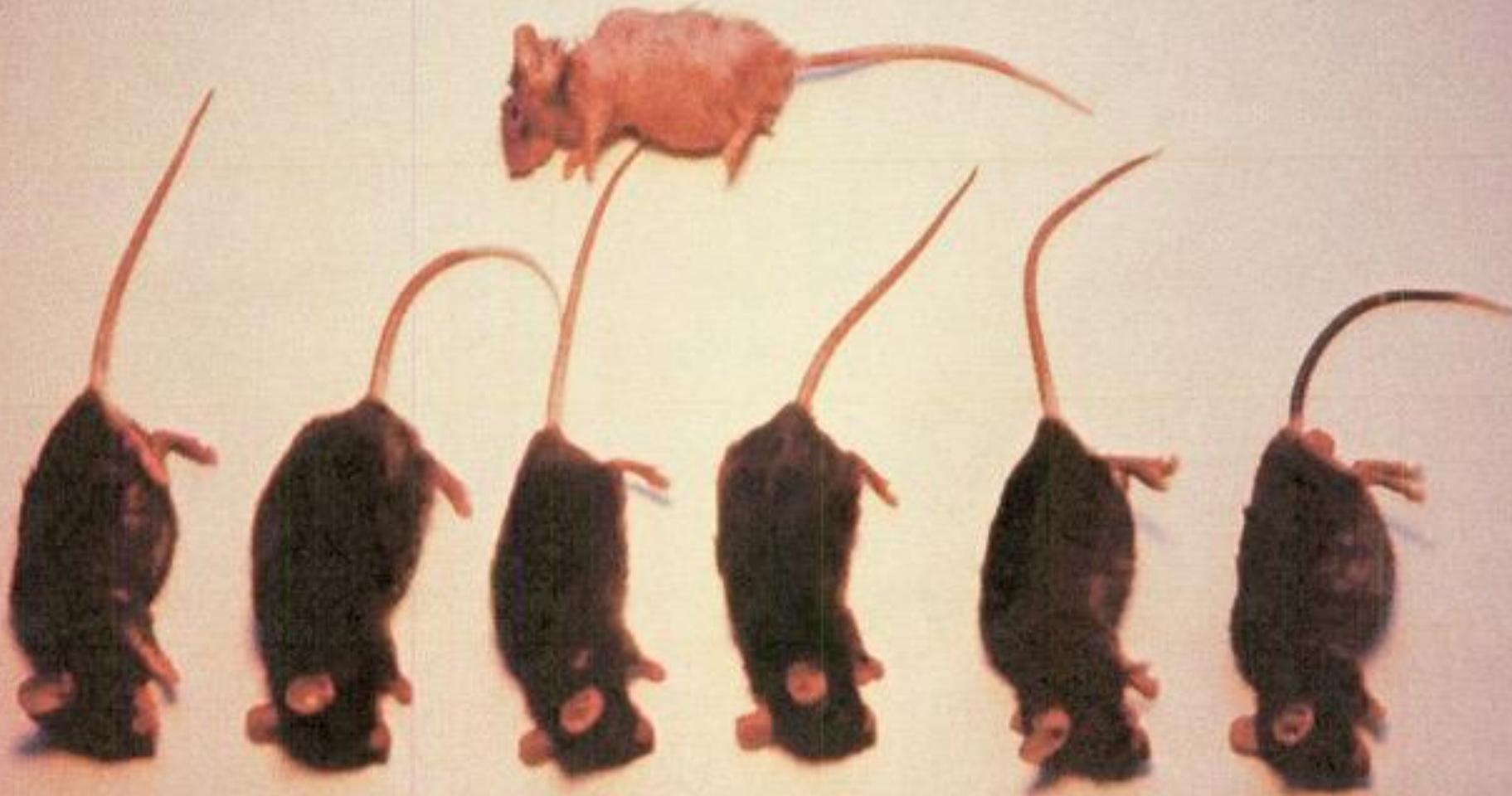
by Dr. Richard Lippman  
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Uppsala University, Uppsala, Sweden  
Currently affiliated with [NaturalsPro.com](http://NaturalsPro.com) in Canada

- There is a significant difference between chronological and biological aging. For example, the woman on the left, 45-year old cleaner, has aged much more rapidly than the 75-year old housewife on the right.

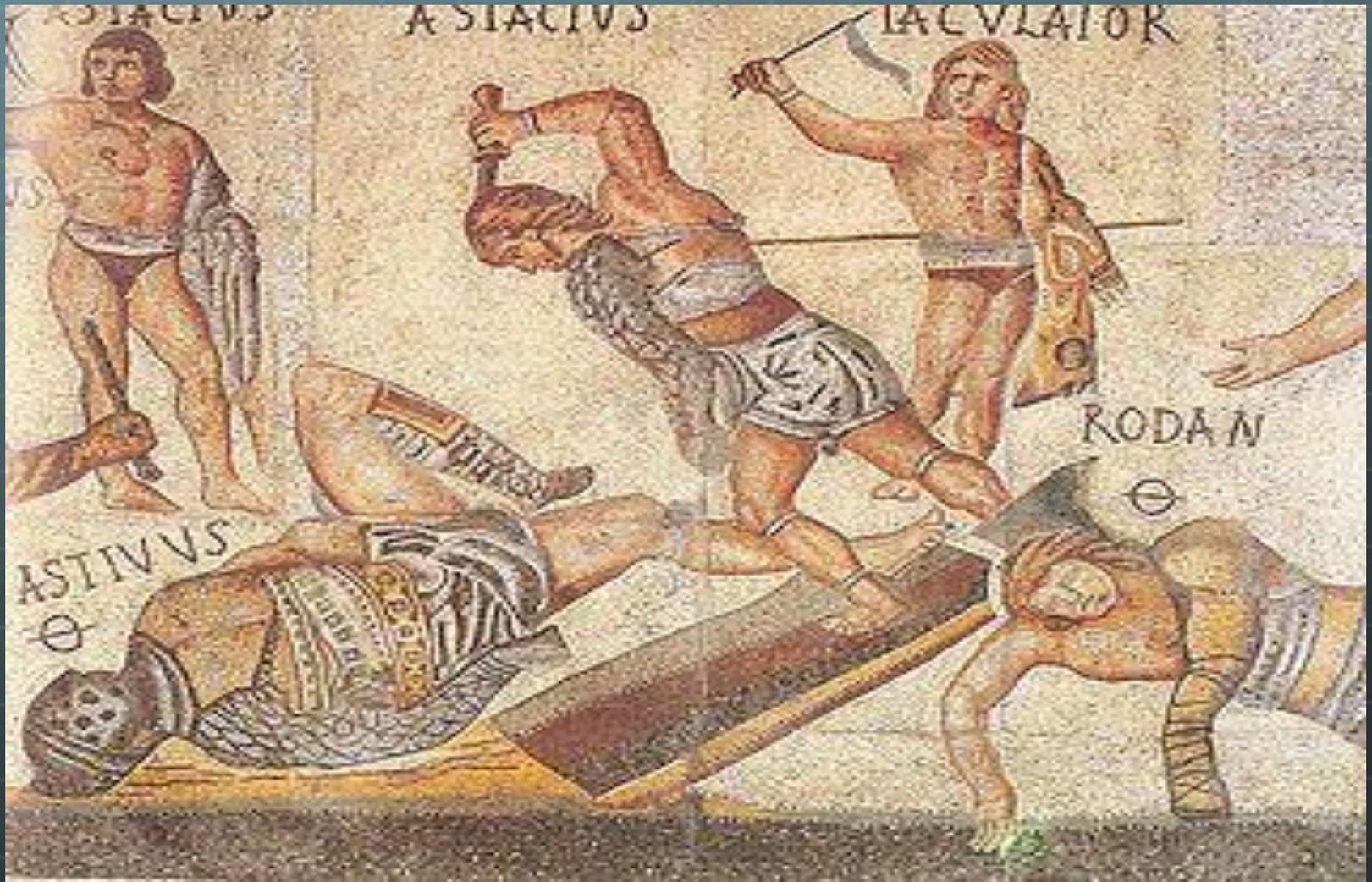


Seven lab mice remained at age 36 months. Notice the only remaining control mouse (top) fed standard lab chow versus the BHT (anti-oxidant) fed mice (bottom). Free radicals have taken their toll in skin lesions and hair loss in the remaining control mouse.

Source: Lippman, R.D. 1985, Experimental Gerontology, Vol. 20, pp. 1-5.



# Hormone-rich lotions were harvested from the sweat of Roman gladiators



**Hormone-rich lotions were sold to wealthy Roman matrons for sexual enhancement**



**Chinese emperors used  
hormone corrective therapy  
for over eight hundred years**



**During the Middle Ages, eunuch Chinese emperors bonded closely to their concubines thanks to hormone corrective therapy**





## Facial Enhancement with Hormone Corrective Therapies

- Upper lip vertical lines erased by estradiol. Crow's feet erased by transdermal aldosterone.
- Nasal-labial folds corrected by HGH + IGF-1. Jawline straightened by thyroid therapy.
- Turkey neck tightened with relaxin + HGH + IGF-1. Forehead wrinkling and flattened by HGH + IGF-1.
- Pale skin corrected by sex hormone therapy.

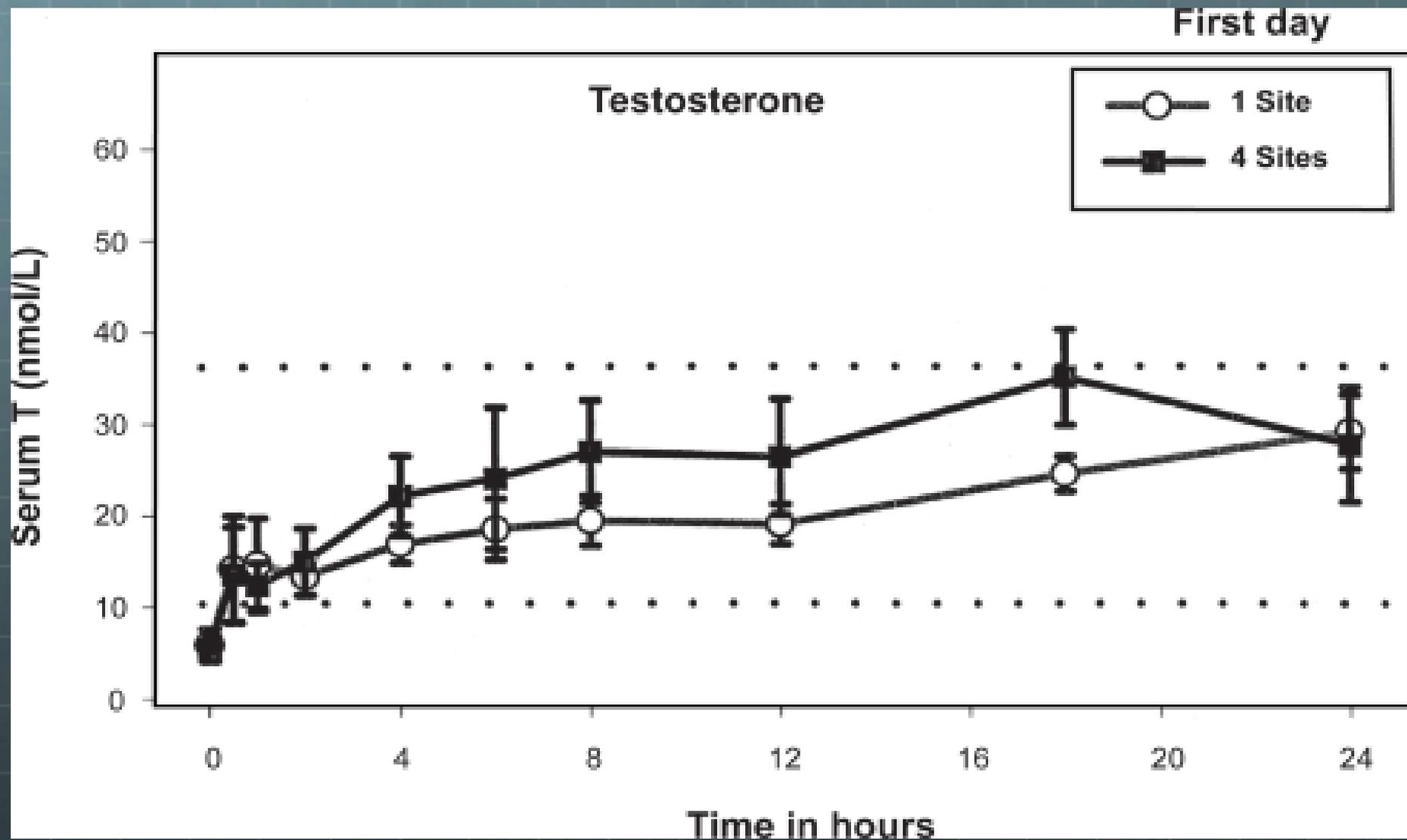
Reference: Hertoghe, T., *Picture Atlas of Endocrinology & Hormone Therapy*, 2010, Intern. Med. Books, Luxemburg.



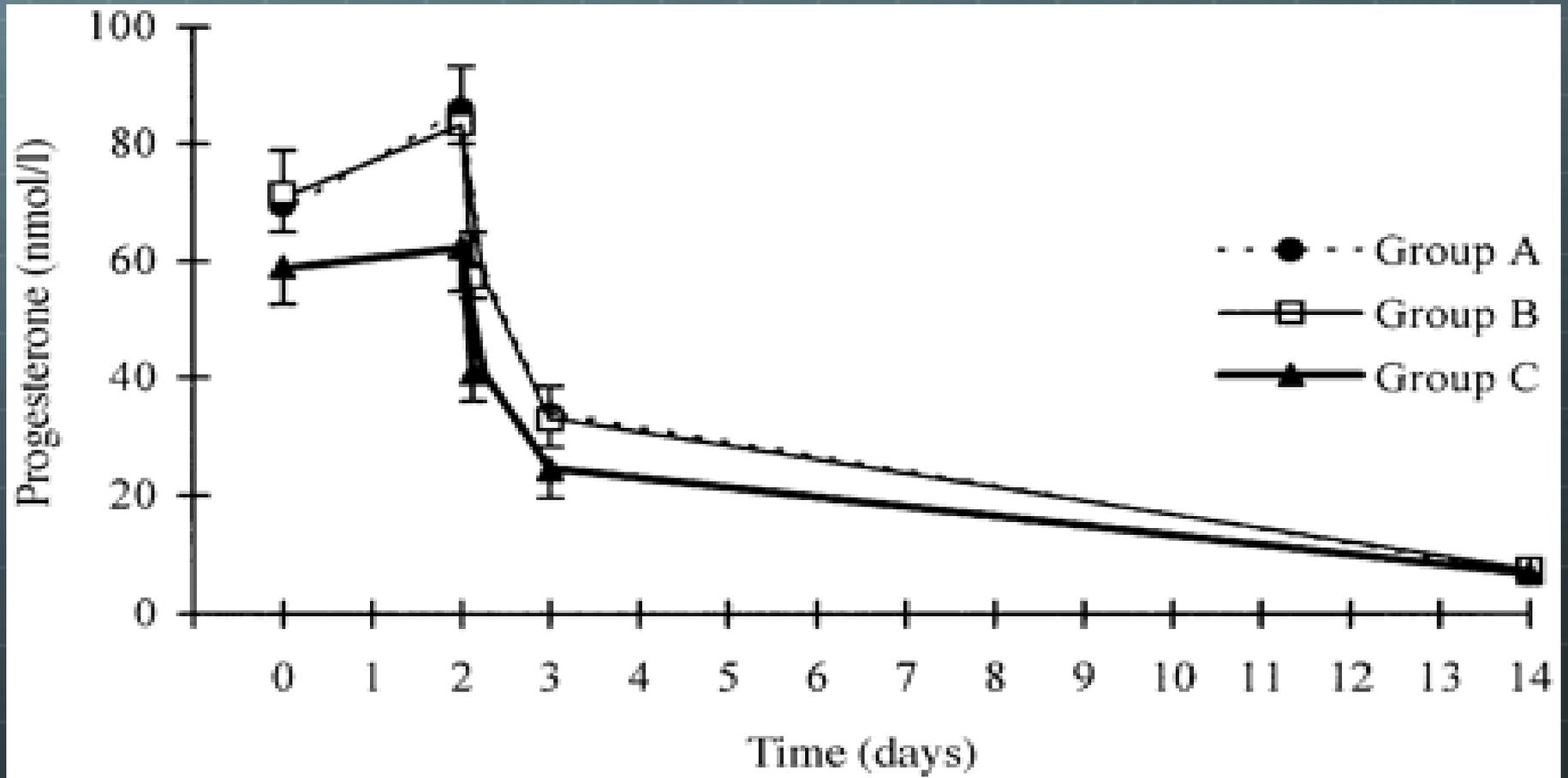
## Deficiencies Caused by Aging

- **RED:** GH + IGF-1 + relaxin deficiencies in both forehead wrinkles and turkey neck.
- **ORANGE:** GH + IGF-1 deficiencies in hooded and droopy eyelid. Cortisol and vasopressin deficiencies causing sunken eyes.
- **DARK GREEN:** Aldosterone and vasopressin deficiencies causing periorbital rhytids (crow's feet).
- **LIGHT GREEN:** Nasal-labial fold caused by GH + IGF-1 deficiencies plus loss of calcium in facial bones.
- **BLUE:** Myxedema of jaw line caused by thyroid deficiency. Also, tiny dehydration skin folds on the face.

# Androgel® pharmacokinetics



# Pharmacokinetics vary widely with different hormones such as progesterone vs. testosterone

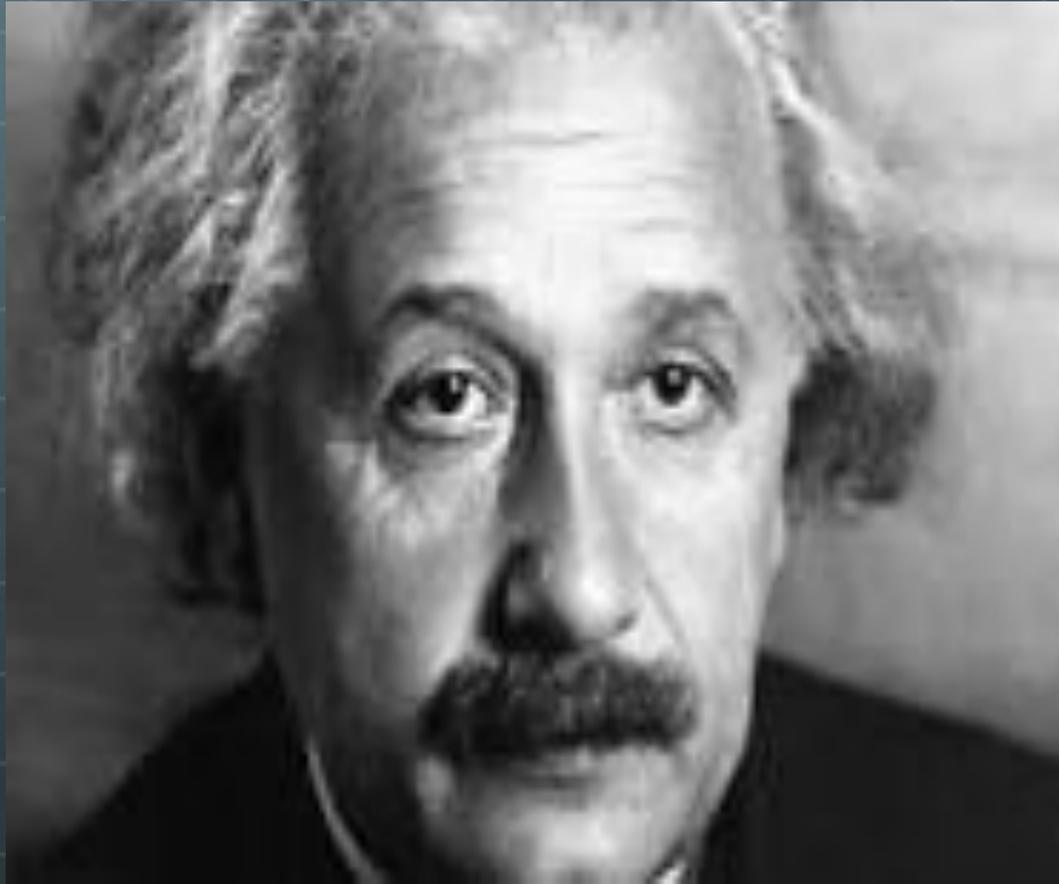


**A 29 gauge syringe used twice weekly  
(0.017ml) avoids testosterone spillover  
to estradiol**



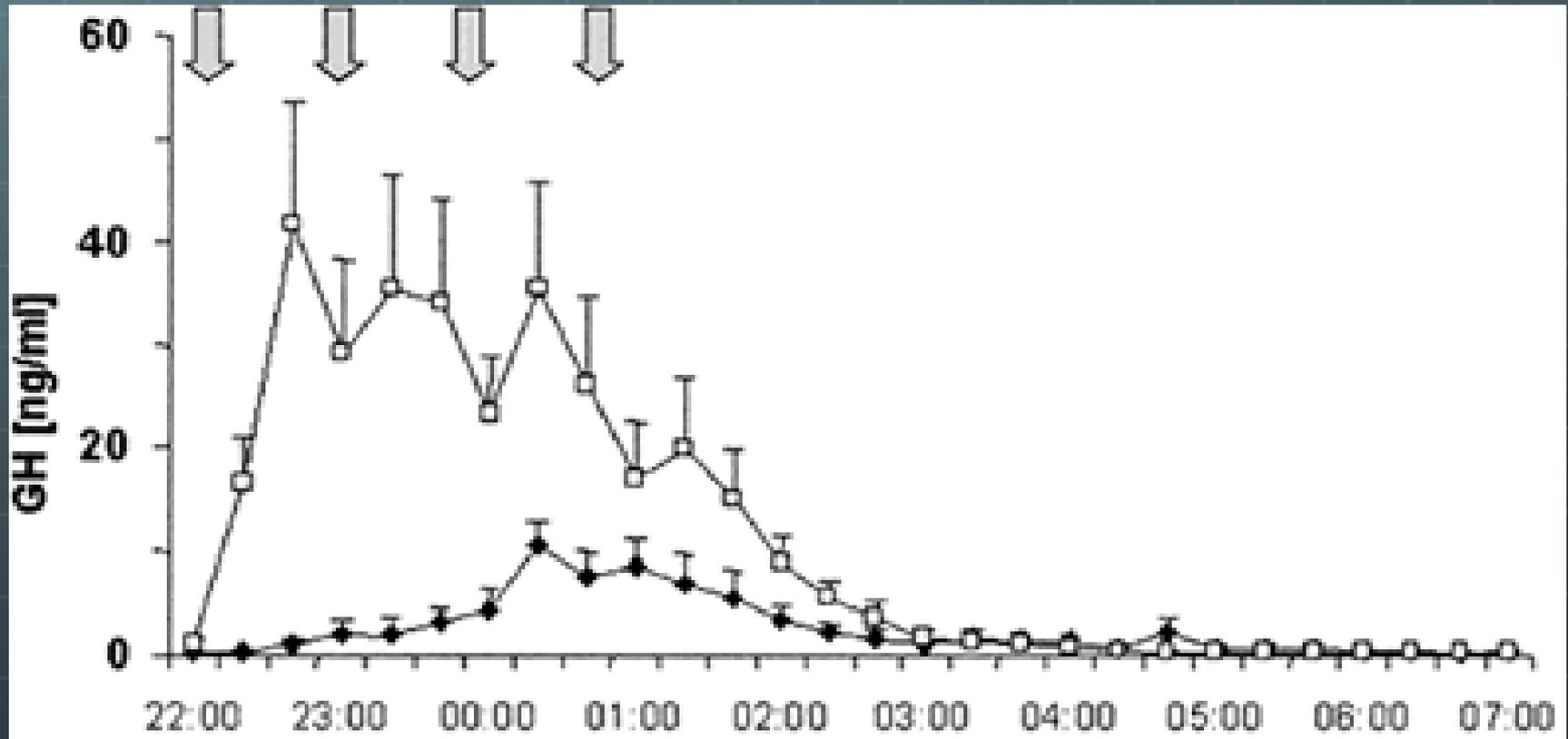
# Optimizing hormones by understanding pharmacokinetics

*“The reason for time is so that everything doesn’t  
happen at once!” Albert Einstein*



# Pharmacokinetics Matter!

Growth hormone is released from the anterior pituitary by pulsing about 6 to 12 times daily.



# Pharmacokinetics Matter!

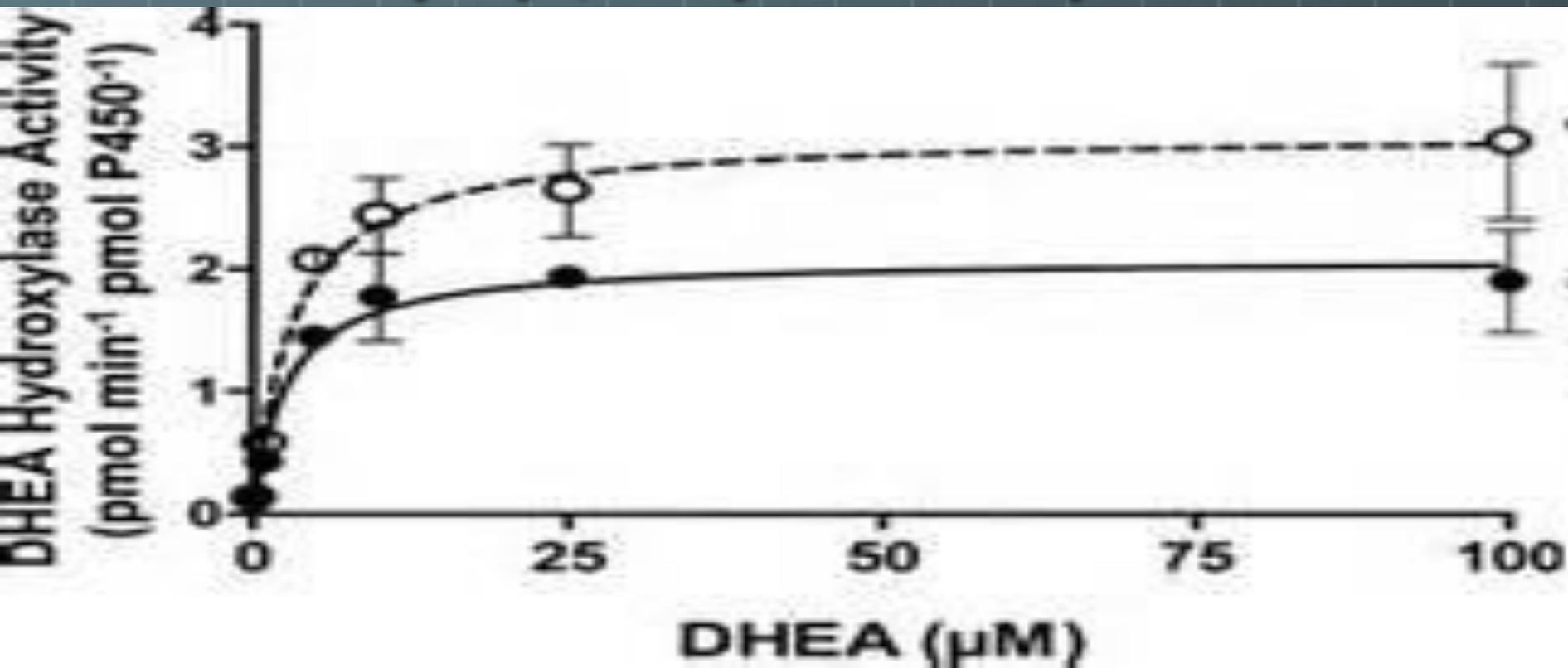
Correcting growth hormone plus IGF-1 with injections and gels results in increased muscle mass, hard buttocks, and firm back muscles



**Before and after mesotherapy, I recommend  
topical treatment with HGH, IGF-1, and sex  
hormones dissolved in hydrogel**



If we truly appreciate the pharmacokinetics and half-lives of hormones and nutrients, it would compel us to copy nature and consume them several times daily, or alternatively, consume them only once daily as time-release capsules, gels, sprays, or liposomal liquids.



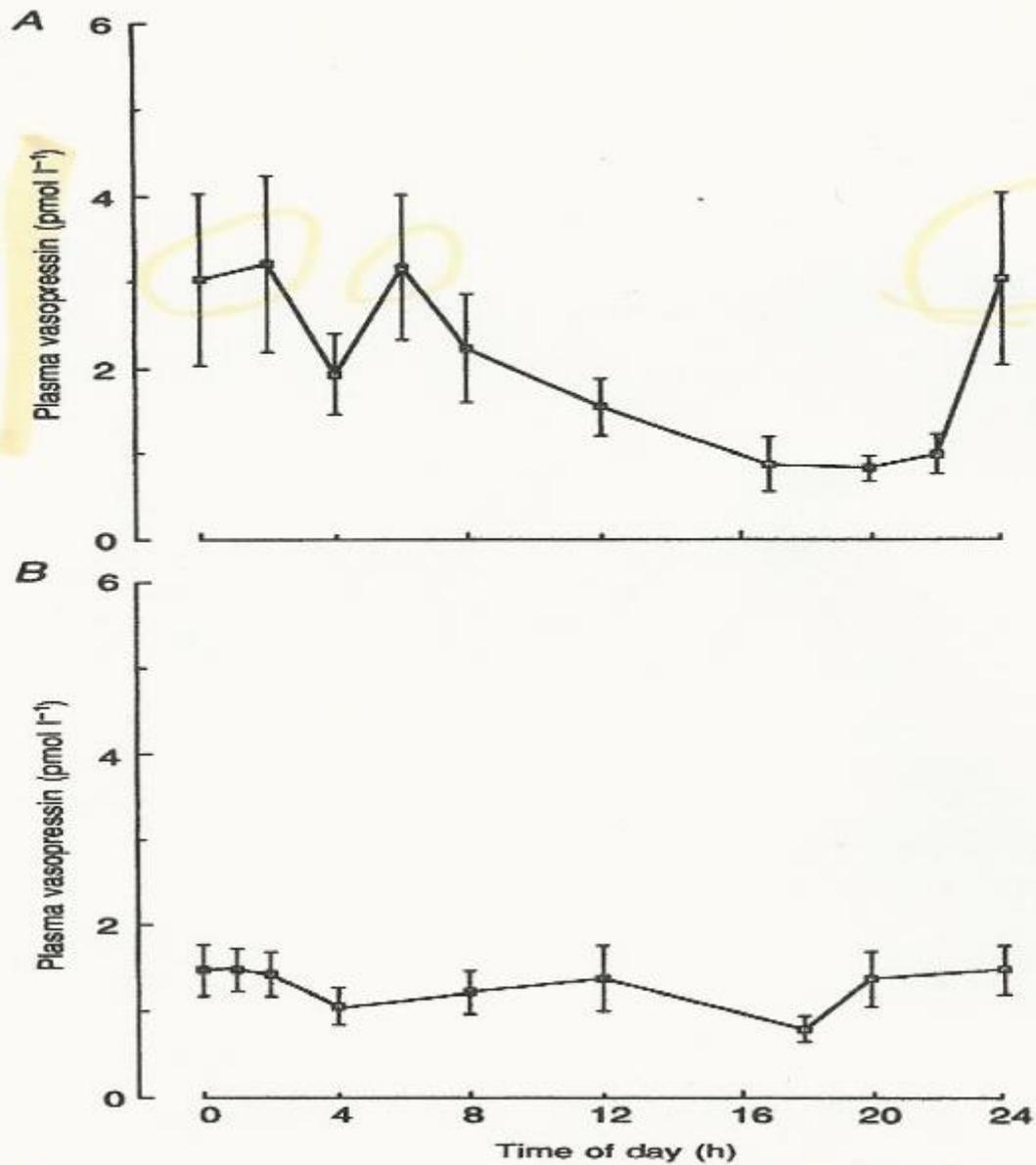
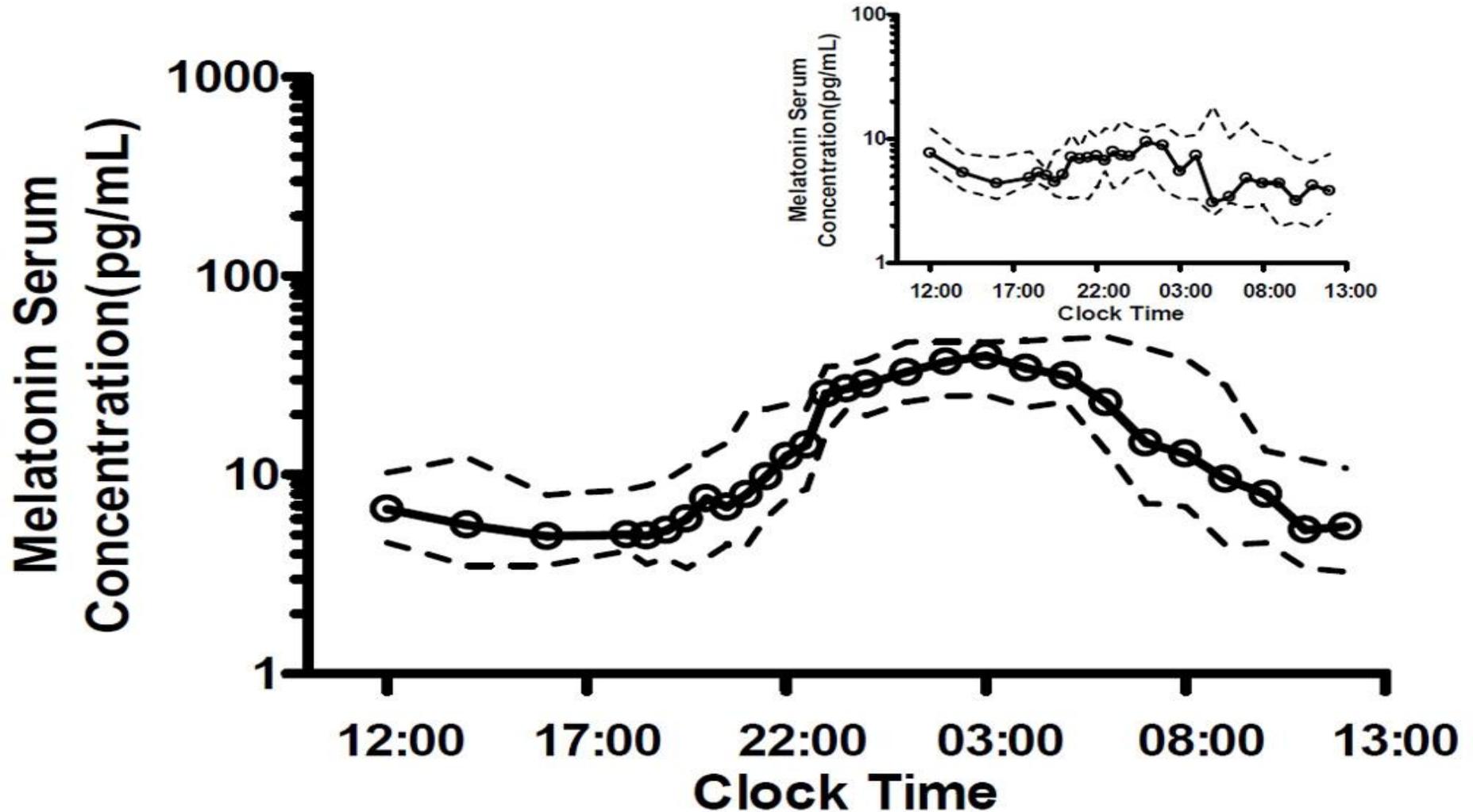


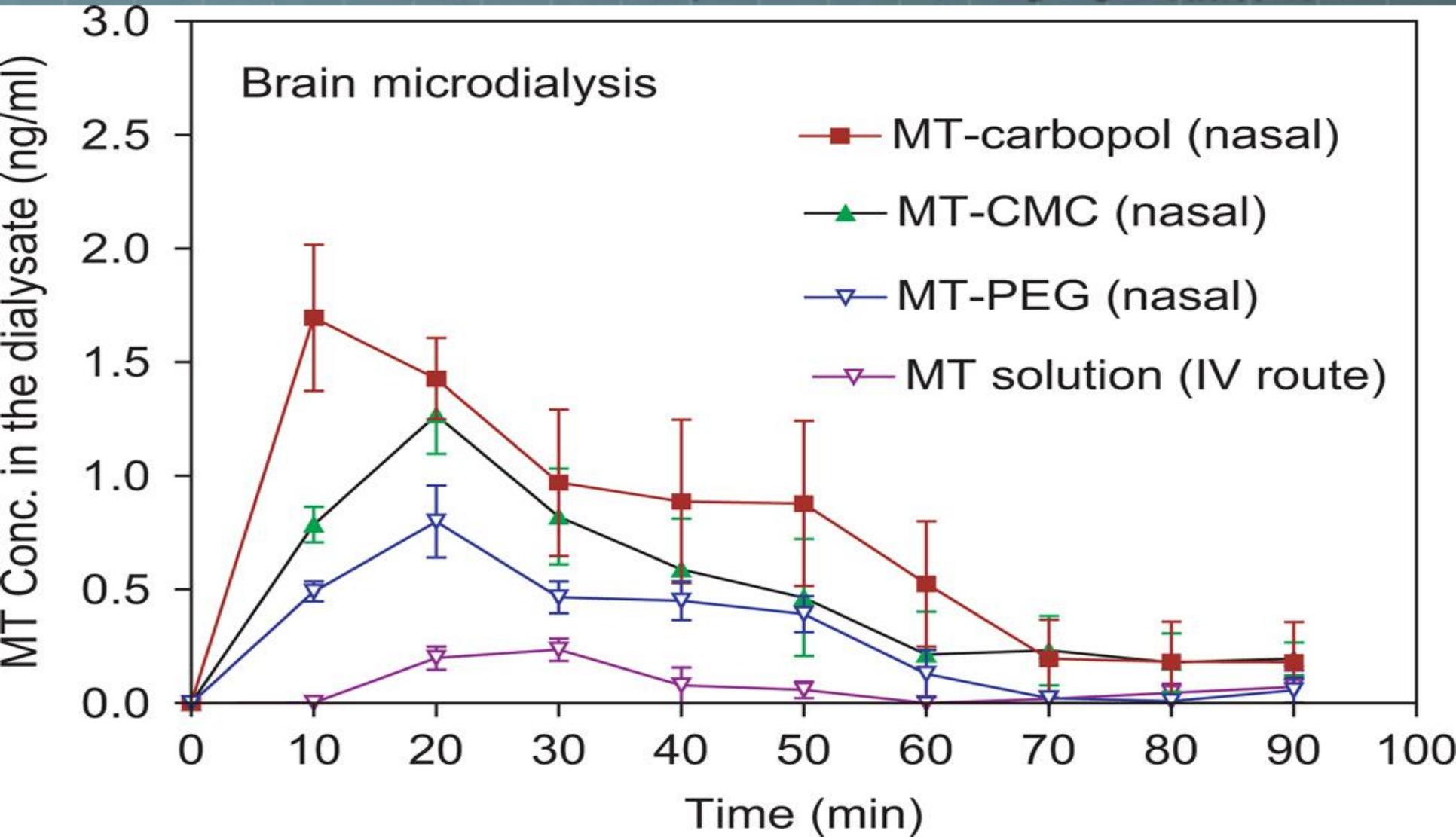
Fig. 2. Plasma vasopressin concentrations over 24 h in a group of 15 young subjects (A) and 9 elderly subjects (B). Values are given as means  $\pm$  S.E.M.

# Melatonin consumed bolus has a half life of only 1.5 to 2 hrs.

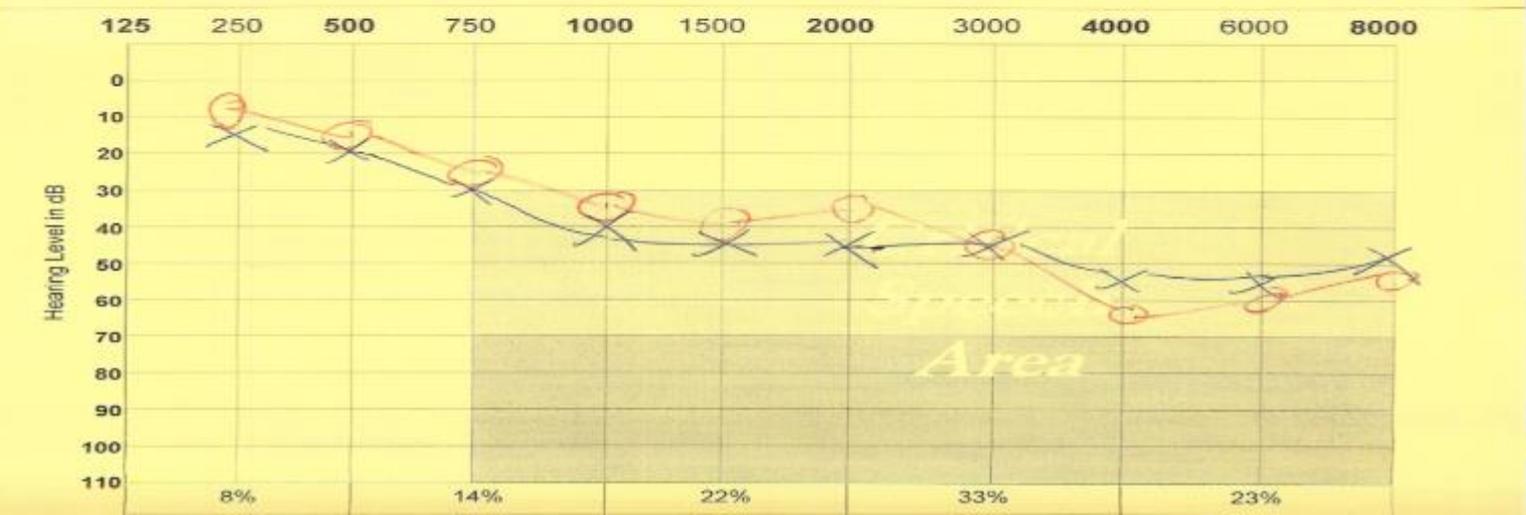
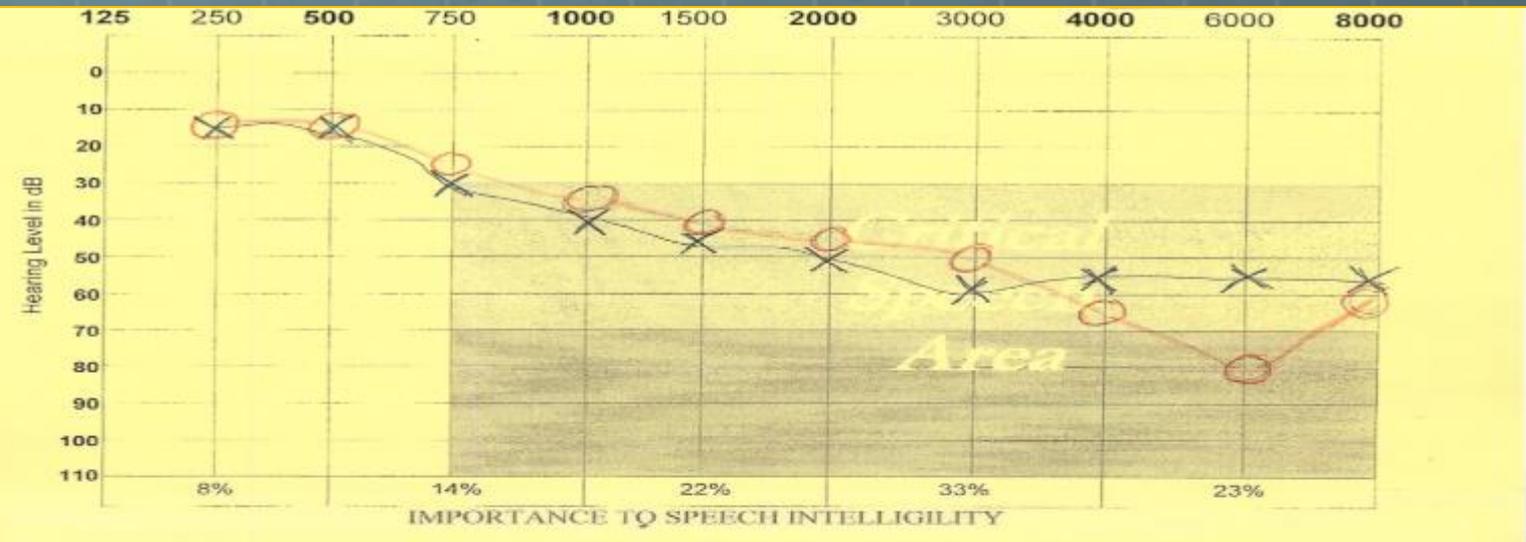


# Lipophilic melatonin is best applied intranasally by a carbopol carrier

Babu R J, et. al., Nov. 2011, Nose-to-brain transport of melatonin, *J Drug Target*, 19(9), pp. 731-740.

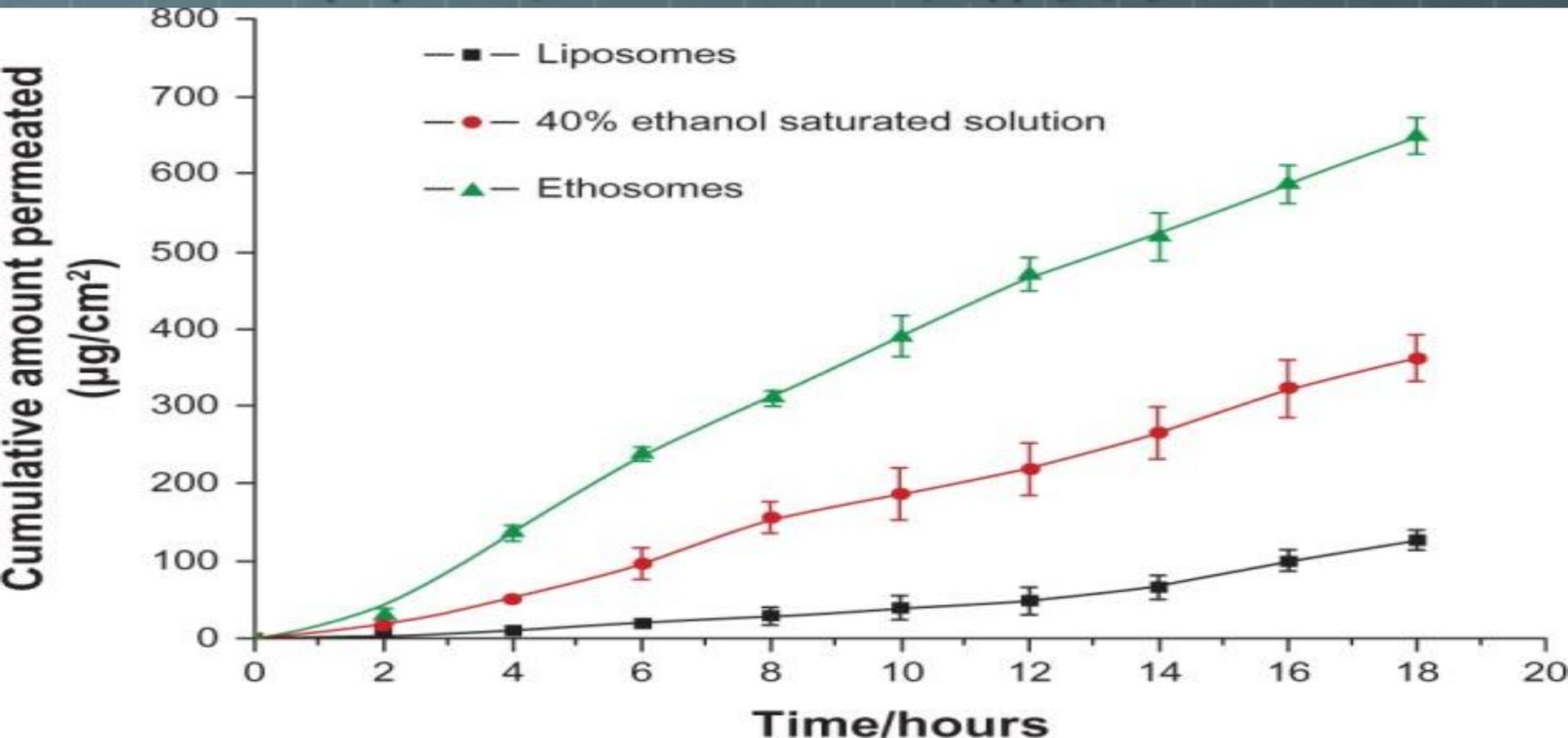


Top audiographs show hearing loss due to aging. Bottom audiographs: When volunteers sprayed 125 mcg aldosterone into each ear canal, hearing improved by about 33% after approximately 2 hours



# Liposomal testosterone is effective, but according to Chinese researchers, 'ethosome' creams containing 40% saturated ethanol are even more efficacious for transdermal hormone application

Meng, S et. al., 2013, Enhanced transdermal bioavailability of testosterone propionate, *Int. J Nanomedicine.*, 8, pp. 3051-3060.



# Low T<sub>3</sub> is a significant predictor of all-cause mortality (113.4 versus 18.2 events per 1000 patient years)

Eur J Endocrinol. 2013 Sep 12;169(4):409-19. doi: 10.1530/EJE-13-0540. Print 2013 Oct.

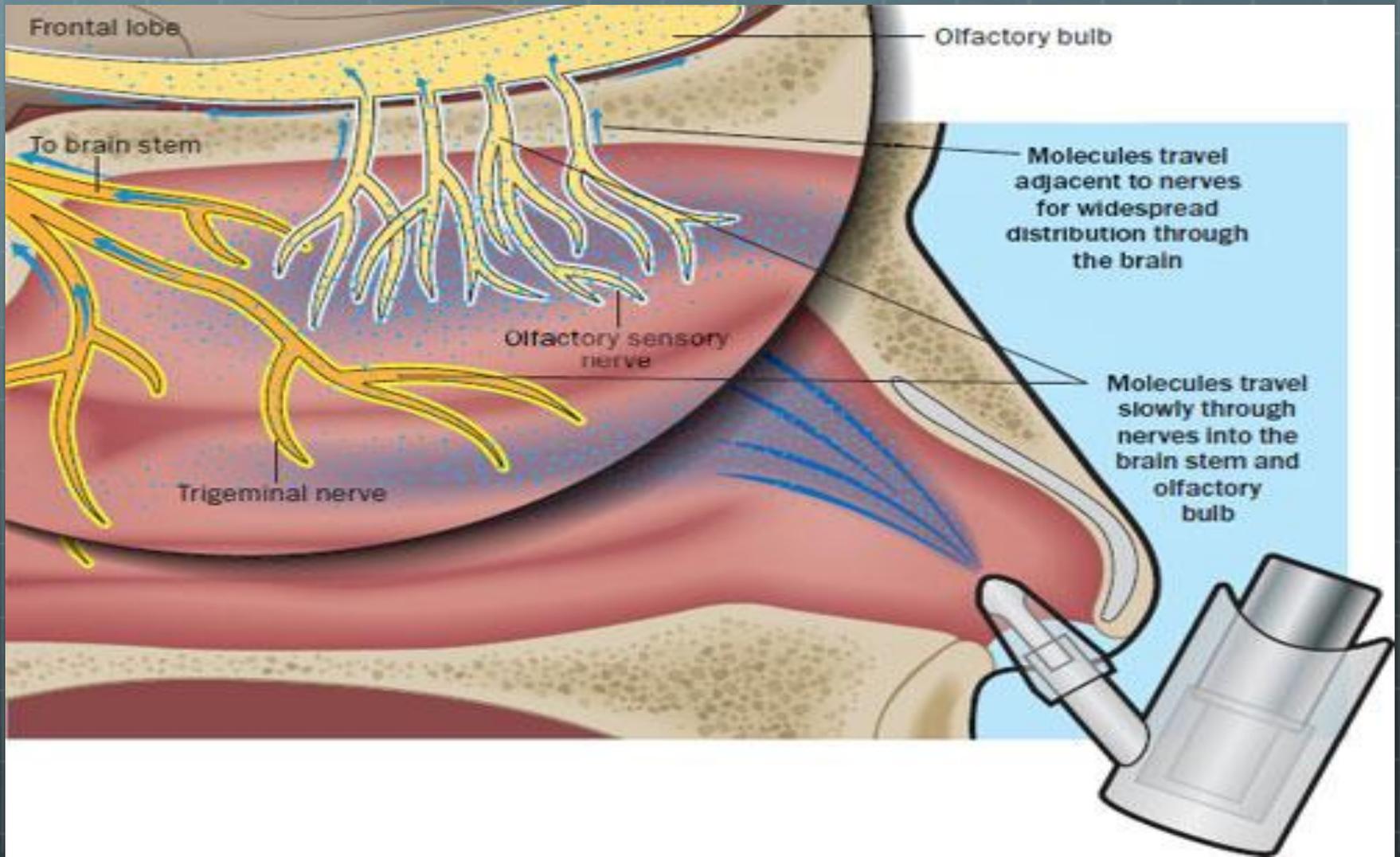
The impact of low triiodothyronine levels on mortality is mediated by malnutrition and cardiac dysfunction in incident hemodialysis patients.

Koo HM<sup>1</sup>, Kim CH, Doh FM, Lee MJ, Kim EJ, Han JH, Han JS, Oh HJ, Han SH, Yoo TH, Kang SW.

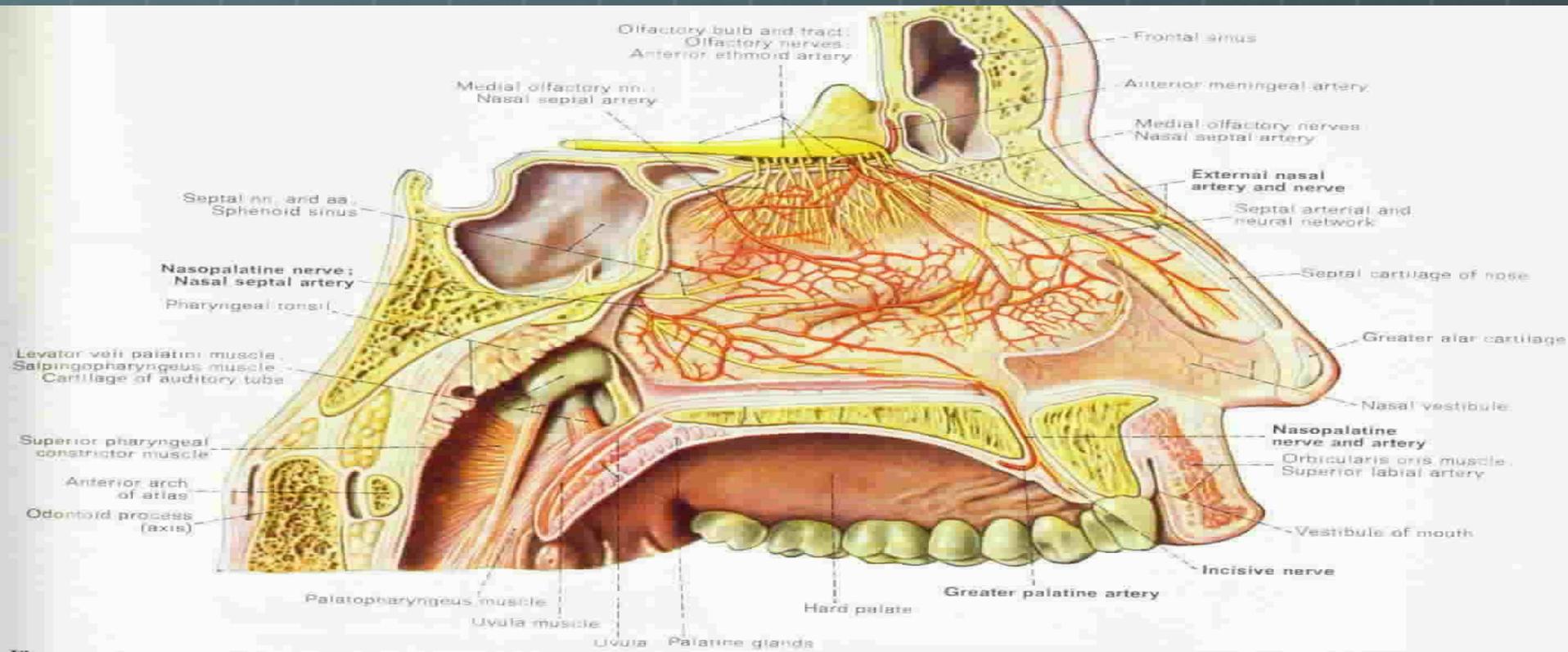
**Apply intranasally vasopressin, oxytocin,  
or growth hormone releasing peptide  
for improved health**



# Intranasal absorption through the nasal-brain pathway

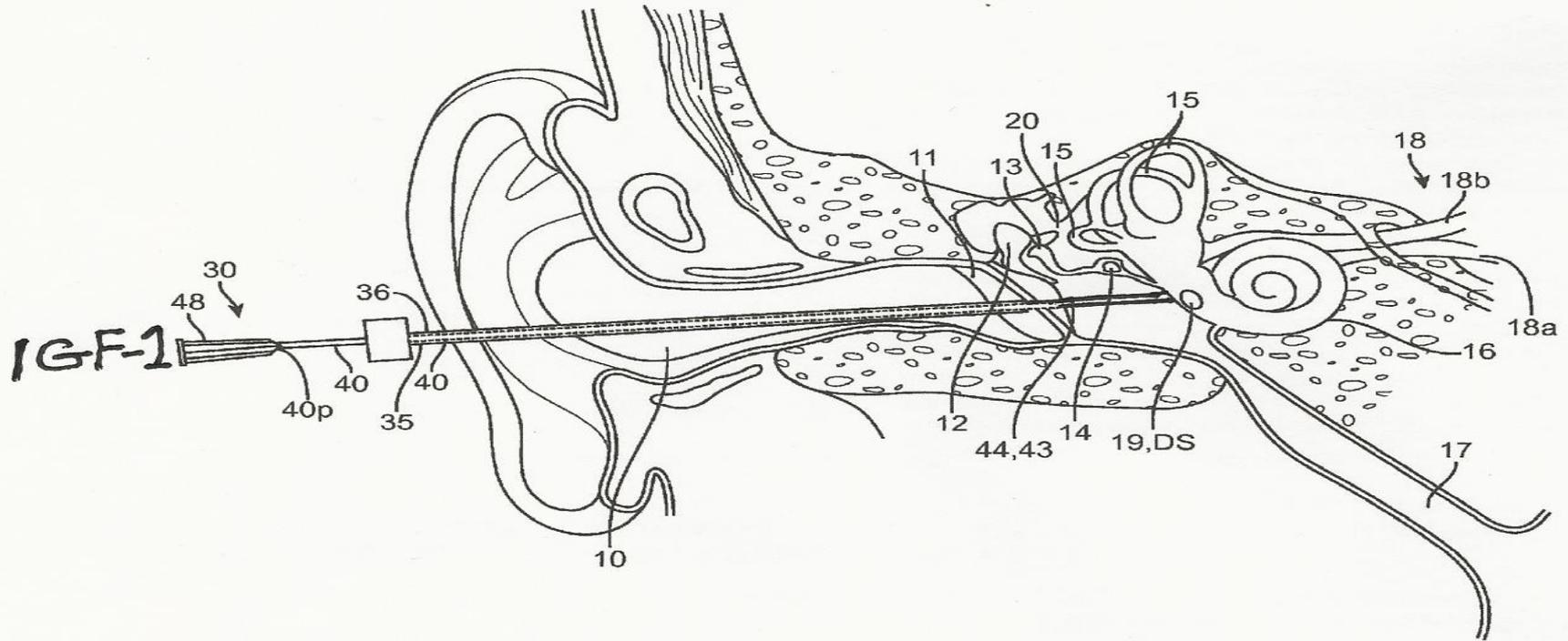


Intranasal absorption occurs by penetrating the phospholipid bilayer with a hormone and its carrier gel or liquid

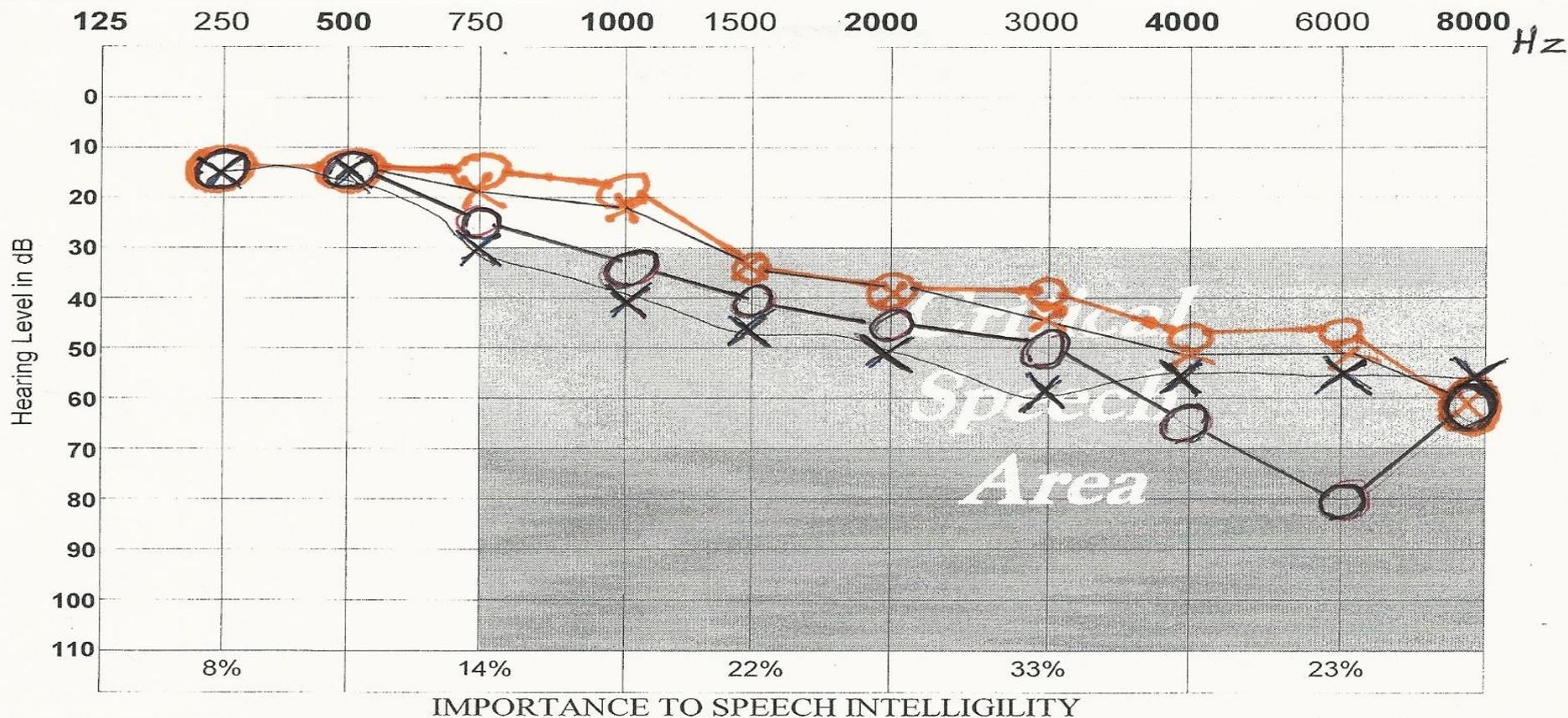


# IGF-1 and stem cells dissolved in hydrogel were injected directly into the cochlea of hearing-impaired patients

Nakagawa, T. et. al. Oct. 2007, Otol. Neurotol. 28(7), pp. 976-981.



The black audiographs were taken 1/15 of both untreated left and right ears. The orange audiographs were taken 5/15 after 4 mo. treatment with HGH/IGF-1 in hydrogel.



- Depicted below are before-and-after photos taken only 11 months apart. These people practiced *very heavy aerobic exercises* without protecting themselves with *effective* free-radical scavengers -- not vitamins. The right-hand photos show significant improvements in body and muscle tone. However, their whitened hair & changed faces reveal rapid aging due to extensive free-radical and cross-linking damages.



# My conclusions from studying site-specific probes and free radicals

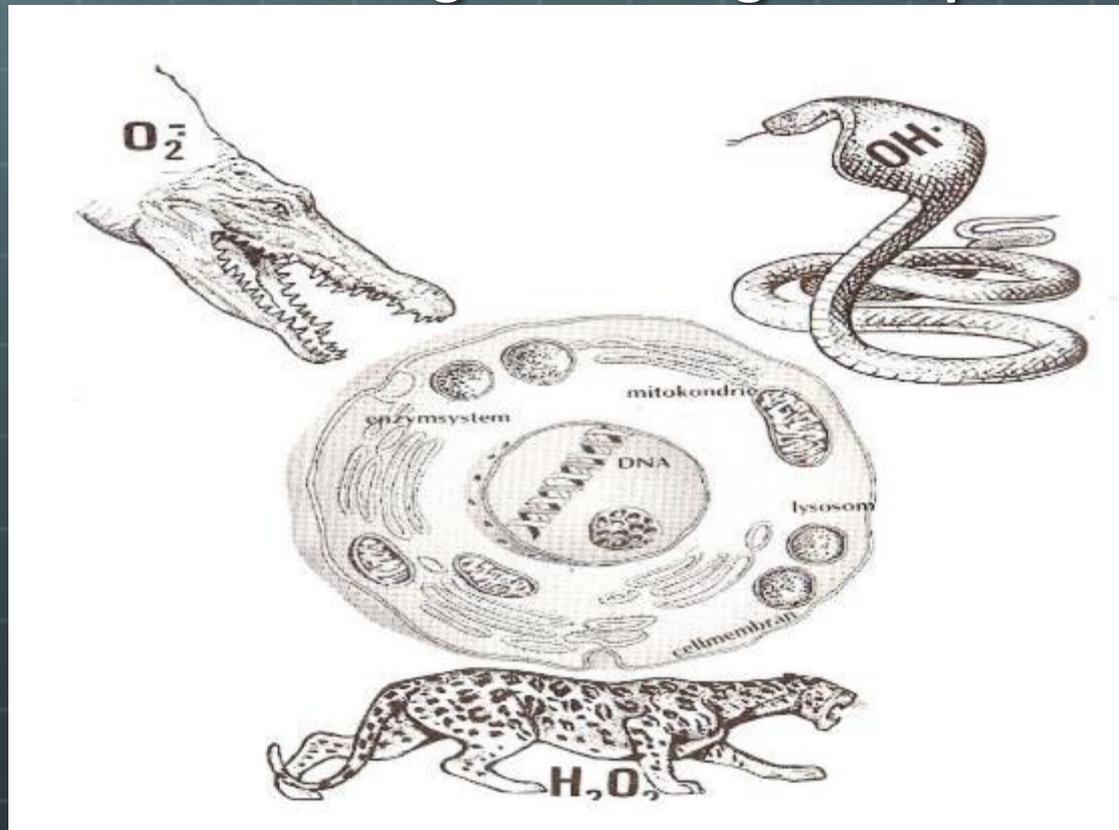
- In the mitochondria of both rat and man, 4 to 8% of all oxygen consumed is converted into free radicals. Thus, human mitochondria are 92 to 96% efficient which corresponds to a typical 97% efficiency seen in large electric motors.
- *In vivo*, free radicals are often rendered harmless by special *lines of defense*. These lines become more refined and elaborate the higher one climbs the evolutionary scale. Thus, humans have five lines of defense, whereas bacteria have only one or two.
- 2. • The most deleterious free radical to living organisms is the *hydroxyl radical*, symbol  $\cdot\text{OH}$  that is often generated by x-rays and nuclear radiation.
- Lines of defense against free radicals can be further enhanced by supplementing with strong and effective free-radicals scavengers such as BHT and only marginally by Vitamins A, C, E, selenium, and melatonin.

(sources: R.D. Lippman, J. Gerontology, Exp. Gerontology, Mech. Ageing & Dev.)

# Aging Facts (free radicals and exercise)

- Free radicals are the strongest toxins on our planet as evidenced by the tragic aftermaths of Hiroshima, Nagasaki, and Chernobyl.
- Prominent research journals have implicated free radicals in a growing number of ailments, especially insulin resistance, Crohn's disease, ulcerative colitis, inflammation, plaques, atherosclerosis, and Alzheimer's. *Nature* 2006 April 13;440(7086); pp. 944-948.
- Every cell in our bodies convert oxygen and food to energy by employing mitochondria. Mitochondria contain an energy conversion matrix called the electron transport chain. 24/7 this chain spits out large numbers of free radicals as an unwanted byproduct of metabolism. These free radicals render the mitochondria vulnerable to oxidative damage. As the mitochondria deteriorate from oxidative damage, the mitochondria "age" by steadily decreasing their energy production. Mitochondrial dysfunction rises with aging, and this general weakening in free-radical lines of defense lead to accelerated cellular senescence and death. This effect can be attenuated by such mitochondrial boosters as CoQ10, alpha lipoic acid, and L-carnitine. Other protective substances are strong free-radical scavengers.
- HGH, IGF-1 and seven other growth promoters help stem cells to rebuilt cell damages caused by free radicals and reactive oxygen species.

- During the lifetime of most organisms, free radicals and active oxygens (below) cause egregious damages to most cells, especially to the cell nucleus and mitochondria containing the genetic material or DNA. These damages are attenuated by a cell's lines of defense. These lines become more numerous and elaborate as one climbs the evolutionary scale from bacteria to mice to humans. Thus, more efficient lines of defense in higher organisms encourage fewer radical damages and longer lifespans.





**Type and order of defense lines:**

**Location in:**

**1st Manganese SOD**

**Mitochondrial Matrix**

**Cupro-Zinc SOD**

**Mitochondrial Inner Membrane & Cytoplasm**

**2nd Tocopherols**

**Mitochondrial Inner Membrane**

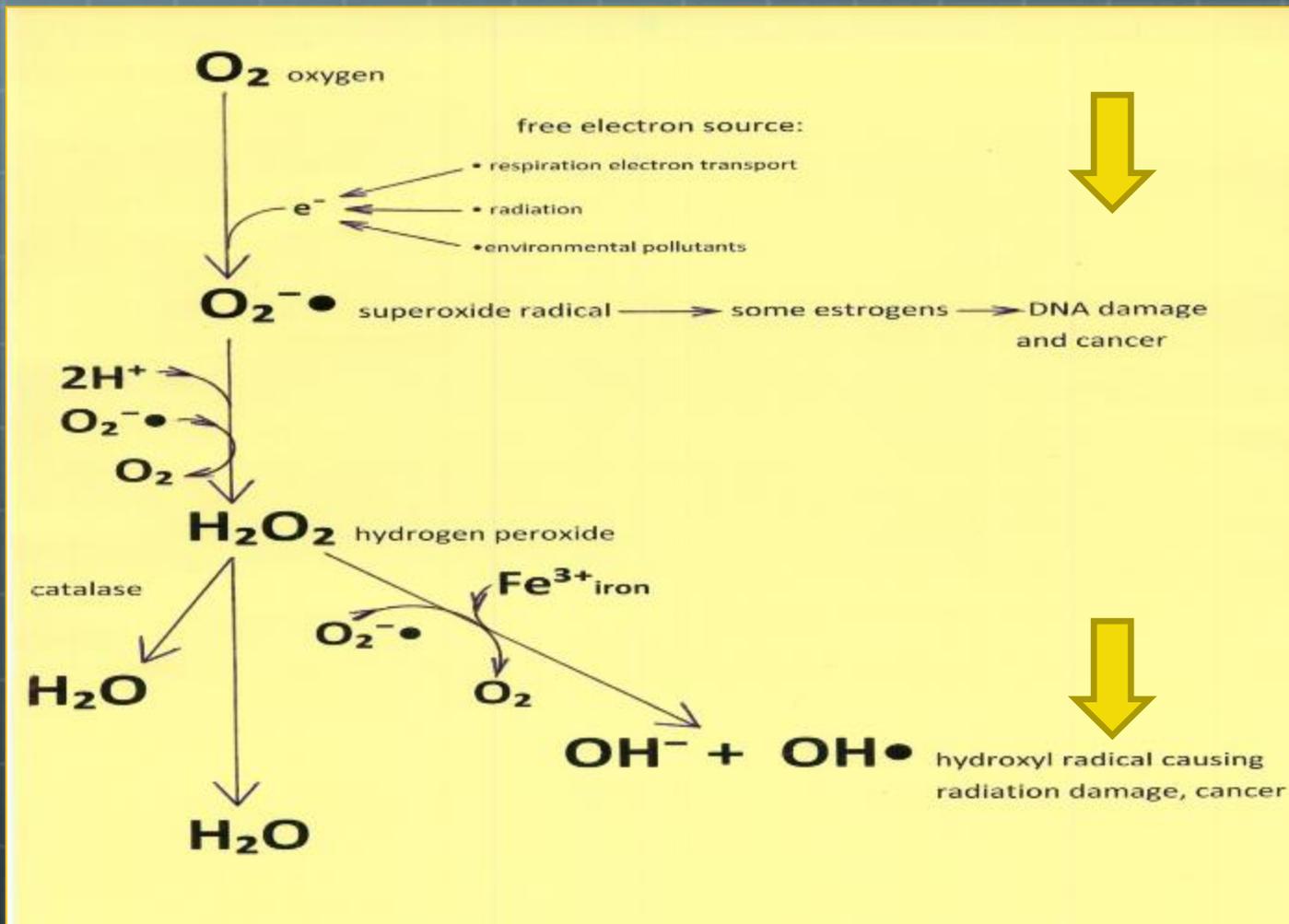
**3rd Catalase and Glutathione Peroxidase**

**Cytoplasm**

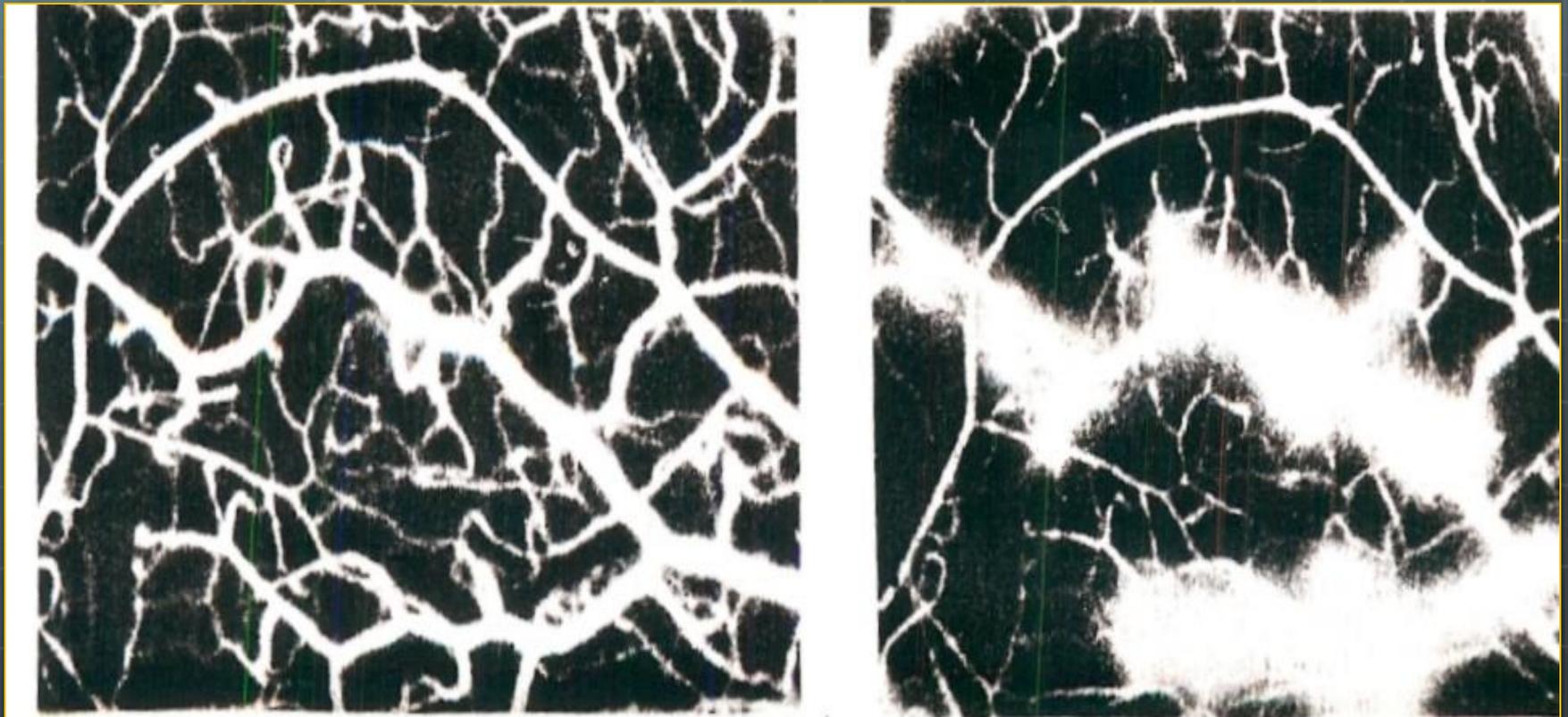
**4th Glutathione, Mercaptoamino Acids, free Tocopherols and Ascorbate**

**Serum, Tissues, & Cytoplasm**

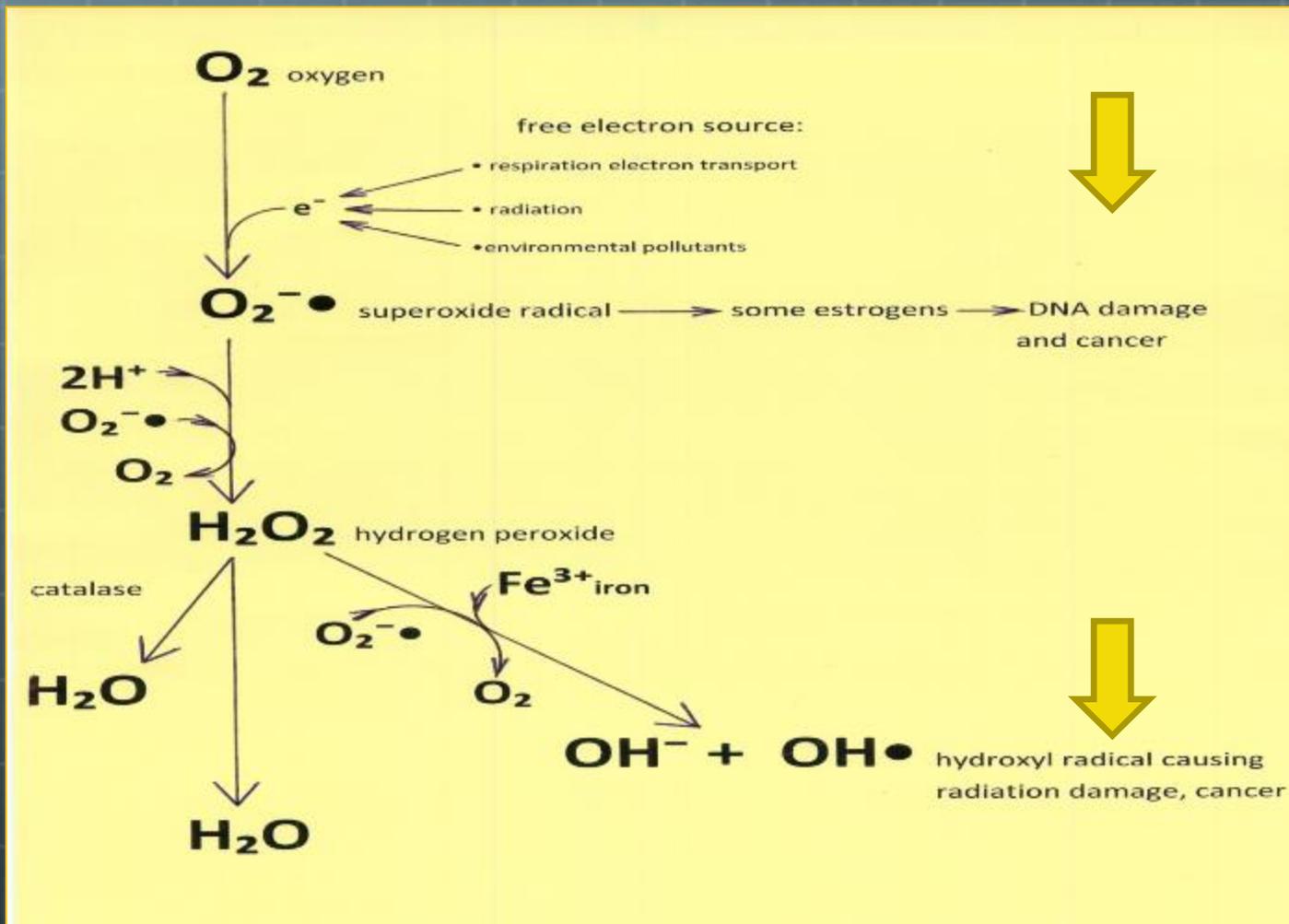
- Free radicals even cause damages such as cancer. Radicals are formed internally from burning oxygen in *mitochondria* in an unstoppable 24/7 cascade. Externally, radicals originate from radiation, especially x-rays, sunlight, and nuclear sources. Like the “*Terminator*,” free radicals and their byproducts do not stop. They cause continual relentless damages to our tissues during many decades of aging.



- In my research, free radical damage was demonstrated by injecting 0.1 ml of *superoxide* solution *in vivo* into the small veins of a hamster's pouch in the left photo, and damage occurred as revealed in the right photo. This *ischemic* damage was reversible by subsequent injection of an strong and effective free-radical scavenger.



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# As disclosed in the scientific literature, powerful connections exists between hormones and strong free-radical scavengers as follows:

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## *Mechanisms of Ageing and Development*

 Volume 126, Issue 3, March 2005, pp. 389-398.

## **Growth hormone alters methionine and glutathione metabolism in Ames dwarf mice**

 Holly M. Brown-Borg, Sharlene G. Rakoczy, and Eric O. Uthus

 Department of Pharmacology, Physiology and Therapeutics, University of North Dakota School of Medicine and Health Sciences, 501 N. Columbia Rd, Grand Forks, ND.

 Abstract

 *“ . . . the current results along with data from previous studies support a role for growth hormone in the regulation of antioxidative defense and ultimately, life span in organisms with altered GH or IGF-1 signaling. ”*

# The importance of growth hormone in its supporting role of l-glutathione production

 The body's strongest defense against free radicals and lipid peroxides, namely glutathione, is maintained *in vivo* by an adequate supply of growth hormone or glutathione supplementation.

 Since growth hormone together with other key hormones are well established players in the aging process, sufficient l-glutathione must also be a significant factor in the aging process. Sufficient l-glutathione can be supplemented by using liposomal glutathione or inhaling glutathione powder.

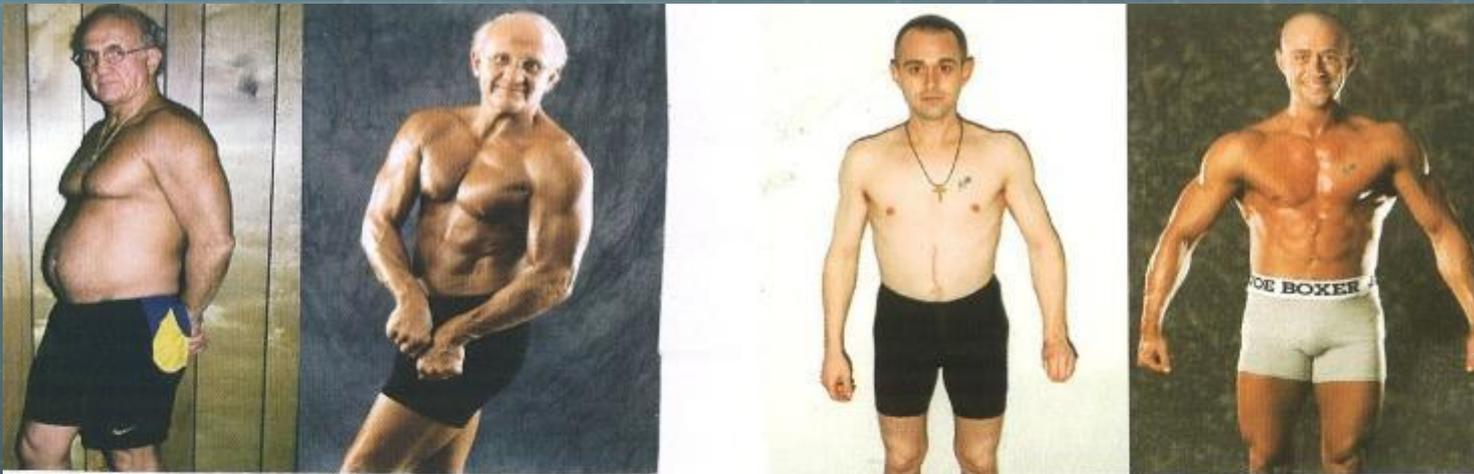
 Indeed, without sufficient l-glutathione in the lung's epithelial cells, it is well established that asthma and COPD – often associated with aging – will occur.

# Deficiencies in Our Four Lines of Defense

Inflammation caused by unchecked free radicals is damaging to even muscular and athletic men who are not on hormone replacement and radical-scavenger therapy



- Depicted below are before-and-after photos taken only 11 months apart. These people practiced *very heavy aerobic exercises* without protecting themselves with *effective free-radical scavengers* -- not vitamins. The right-hand photos show significant improvements in body and muscle tone. However, their whitened hair and changed faces reveal rapid aging due to extensive free-radical damages .



A close-up photograph of a young boy with dark hair, wearing a blue sweater over a white collared shirt. He is holding a white tissue to his nose, appearing to be crying or sniffing. The background is blurred, showing warm yellow and green tones. The text "Thank you" is overlaid in a bold, orange, sans-serif font across the center of the image.

Thank you

# New Remedy Against Alzheimers that Eliminates Amyloid and Cognitive Deficiencies

## BAN2401

- 🌐 **Target Type:** Amyloid-Related
- 🌐 **Condition(s):** Alzheimer's Disease
- 🌐 **U.S. FDA Status:** Alzheimer's Disease (Phase 2)
- 🌐 **Company:** Biogen, Eisai Co., Ltd.
- 🌐 BAN2401 is the humanized IgG1 version of the mouse monoclonal antibody mAb158, which selectively binds to large, soluble A $\beta$  protofibril Alzheimer's disease that is marked by particularly high levels of A $\beta$  protofibrils and relative absence of amyloid plaques (see Nilsberth et al., 2001). mAB158 was found to reduce A $\beta$  protofibrils in brain and CSF of tgArc-Swe mice (Tucker et al., 2015). (Söllvander et al., 2018).