

Introduction

- More research is being done on human eyelashes
 - Lashes are considered to be an important component of beauty
 - Various beauty and cosmetic treatments are available to enhance them:
 - **Lash “perms”(AKA “lifts”)**
 - **Lash extensions**
 - **False lashes**
 - **Lash dye**
 - **Lash (& brow) serums**
- Even if you have never been involved in “esthetics”(American English) or “aesthetics” (British English) there is a strong movement in optometry to integrate this into general and specialty optometric practices



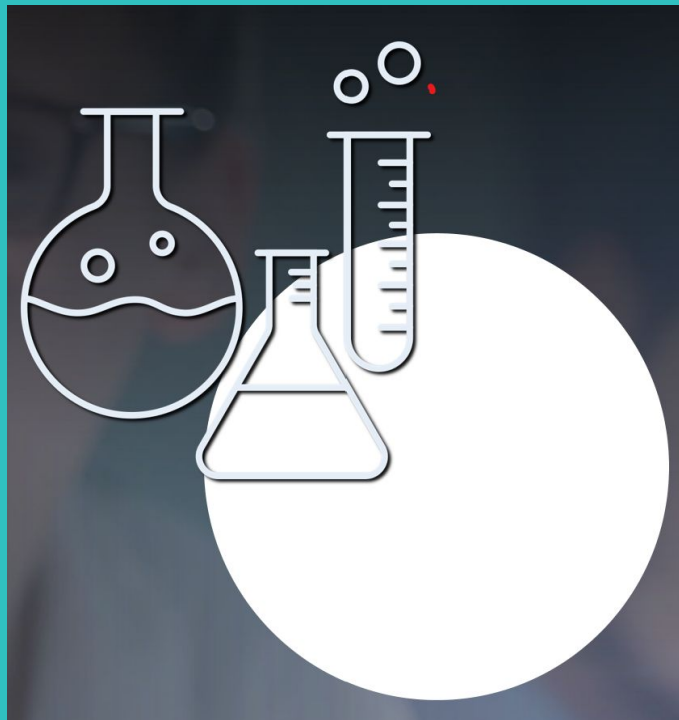
Indications

- **Chemotherapy – induced eyelash loss**
- **Alopecia areata**
- **Hypotrichosis**
- **Trichotillomania**
- **Cosmetic**



The Food, Drug, and Cosmetic Act of 1938

- The 1938 Federal Food, Drug, and Cosmetic Act (FDCA) is a set of United States (US) laws that authorize the Food and Drug Administration (FDA) to oversee and regulate the production, sale, and distribution of food, drugs, medical devices, and cosmetics. The FDCA intends to protect the general public from adulterated and **misbranded products** manufactured and sold in the US



"Legend drug" means any drug defined by the Federal Food, Drug and Cosmetic Act, as amended, and under which definition its label is required to bear the statement "Caution: Federal law prohibits dispensing without prescription."

<https://www.ncbi.nlm.nih.gov/books/NBK58504>

6/



The Federal Food, Drug, and Cosmetic Act (FD&C Act) defines cosmetics by their intended use, as "articles intended to be rubbed, poured, sprinkled, or sprayed on, introduced into, or otherwise applied to the human body...for cleansing, beautifying, promoting attractiveness, or altering the appearance



The Modernization of Cosmetics Regulation Act of 2022 (MoCRA)

- Most significant expansion of FDA's authority to regulate cosmetics since the FD&C Act of 1938
- Helps ensure the safety of cosmetic products
 - Makeup, nail polish, shaving cream and other grooming products, perfumes, face and body cleansers,

haircare products, moisturizers, other skincare products

www.FDA.gov/cosmetic

S



Are dietary supplements regulated?

(quoted from Office of Dietary Supplements: National Institutes of Health: Fact Sheet on Dietary Supplements/Background Information)

- The DSHEA defines and establishes the regulation of dietary supplements, which it reaffirms as a food category
- It is intended to prohibit the manufacture and sale of adulterated and **misbranded** dietary supplements and prohibit dietary supplement manufacturers from making **false claims** on supplement labels
- Supplement ingredients sold in the United States before October 15, 1994, are not required to be reviewed by FDA for their safety before they are marketed because they are presumed to be safe based on their history of use by humans
- FDA can either refuse to allow new ingredients into or remove existing ingredients from the marketplace for safety reasons.



United States versus Europe and the rest of the developed world

WE ALLOW MANY MORE BANNED INGREDIENTS!!!

**This includes food additives
AND
Cosmetic additives**



STILL relevant today!

Presence and Quantity of Botanical Ingredients With Purported Performance-Enhancing Properties in Sports Supplements

Pieter A. Cohen, MD^{1,2}; Bharathi Avula, PhD³; Kumar Katragunta, PhD³; [et al](#)

» [Author Affiliations](#) | [Article Information](#)

JAMA Netw Open. 2023;6(7):e2323879. doi:10.1001/jamanetworkopen.2023.23879

Cohen PA, Avula B, Katragunta K, Travis JC, Khan I. Presence and Quantity of Botanical Ingredients With Purported Performance-Enhancing Properties in Sports Supplements. *JAMA Netw Open.* 2023;6(7):e2323879. doi:10.1001/jamanetworkopen.2023.23879

- **23/57 products (40%)** did not contain a detectable amount of the labeled ingredient
- Of the products that contained detectable amounts of the listed ingredient
 - the actual quantity ranged from **0.02% to 334%** of the labeled quantity

Eyelashes: Form and function

- **Lower lid:** 75-80 lashes in 3-4 rows
- **Upper lid:** 90-160 lashes in 5-6 rows
- **Considered to be terminal hairs**
 - Coarse, more pigmented
- Lashes form a barrier between external and internal eye environments, as part of the **lid margin anatomy** (like Meibomian glands, lid skin, and biofilm...)
 - Important for eye health maintenance
 - If any part is inflamed = inflammatory cascade = dry eye disease
 - **MAINTAINING OCULAR SURFACE HOMEOSTASIS CAN BE IMPACTED BY WHAT WE DO TO A PATIENT'S EYELASHES, SO KNOWING WHAT IS IN A PRODUCT IS IMPERATIVE!!**





Eyelashes Are Hairs

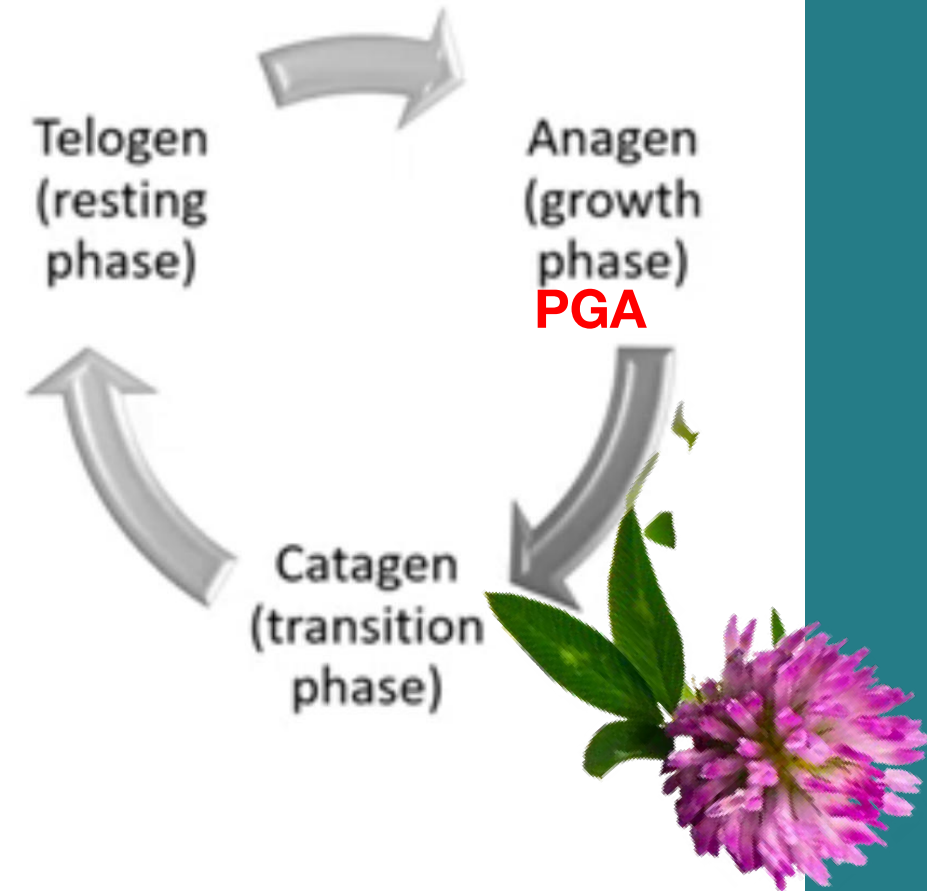
- Comprised of protein—keratin—that instead of shedding pushes outward
- As hair they are prone to:
 - Reduced growth cycles
 - Poor anchoring
 - Brittleness and breakage

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6147748/>



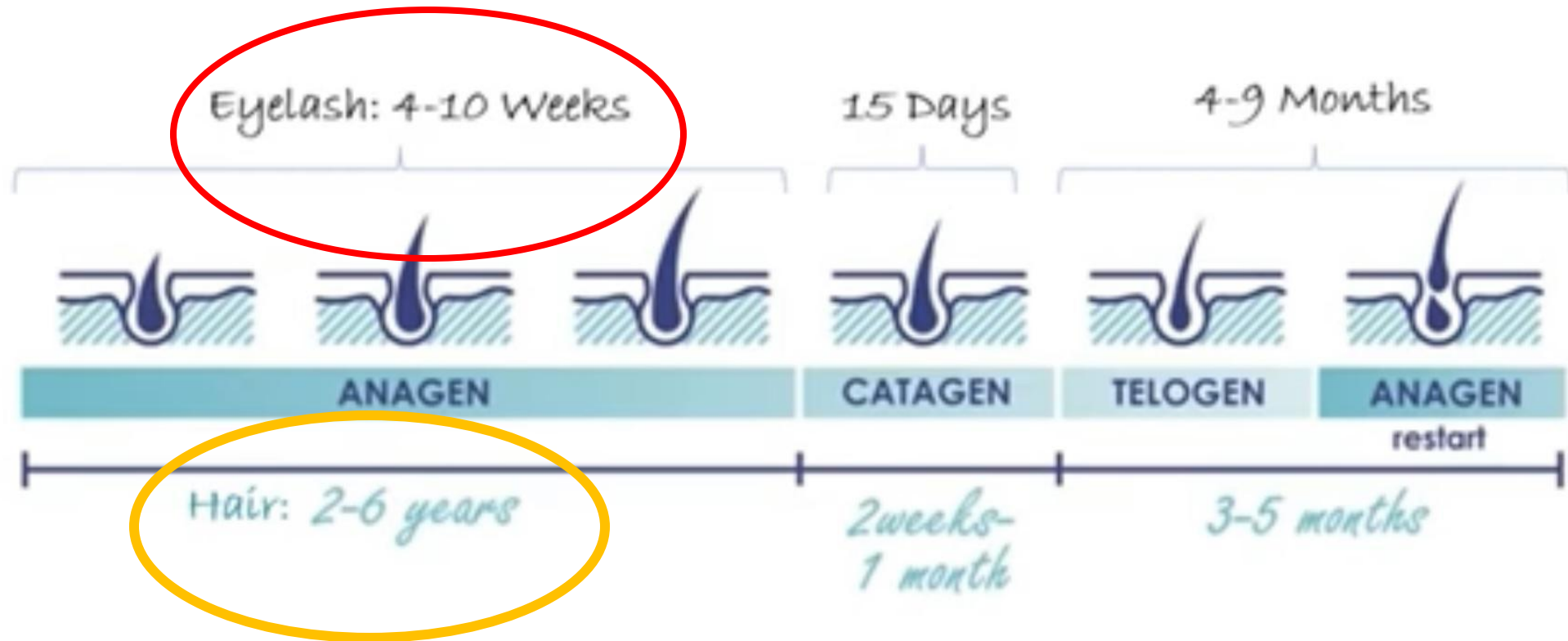
Eyelash Growth Cycle

- The anagen phase (4 and 10 weeks)
 - A typical eyelash grows approximately 1 mm per week
 - Lashes ≤ 12 mm before falling out
- The catagen phase (15 days)
 - Hair stops growing and the follicle begins to shrink.
- The telogen phase (4-9 months).
 - Eyelash falls out.



<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6147748/>

Comparison Growth Cycle



Lash Options



Lash Lift/Perm



- **AKA eyelash lamination**

- Uses chemicals (ex. ammonium, to breakdown the keratin shaft)

and curved silicone to add length and curl

- Lasts 6-12 weeks

- **Side Effects**: Ammonium is toxic to the cornea and conjunctiva

–
blisters, rash, redness, dry eye, watery eyes, inflammation,
brittle lash hair, loss of lash hair

<https://www.pmuhub.com/lash-lift/gone-wrong/>
<https://sundaybeauty.com/lash-lift-vs-lash-perm/>



Eyelash Extensions

- Eyelash extensions are semi-permanent lashes that are hand-glued on top of your natural lashes
 - **Glues:** butyl cyanoacrylate, octyl cyanoacrylate, or formaldehyde
- **Side Effects:** traction alopecia (loss of lashes due to the constant weight of repeated eyelash extensions), allergic reactions, damage to lashes



IG:enviouslashes

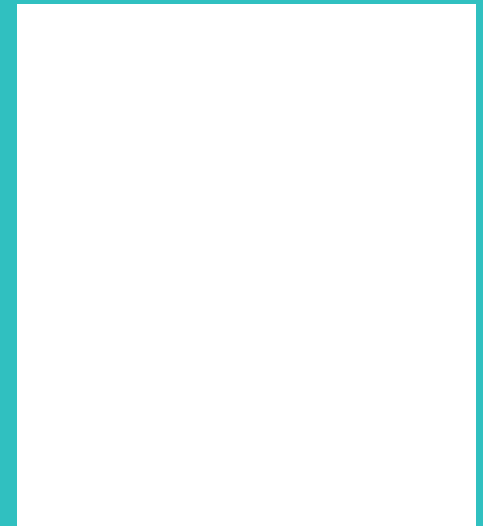




Photo: The Powder Blog/Facebook

<https://nypost.com/2022/08/24/i-had-zombie-eyes-was-blind-after-botched-lash-extensions/>

Prostaglandins...NOT a surprise

- **Endogenous** prostaglandins have a lot of influence over key natural bodily processes
 - **pain levels and inflammation**
 - normal inflammatory process is your body's way of protecting itself from further damage.
- Prostaglandins have a short half-life and have a short duration of action
 - = only affect cells that are close by
- **excessive amounts of prostaglandins = prolonged inflammation and intense pain**
 - high levels of prostaglandins can lead to chronic conditions and unpleasant symptoms

EXOGENOUS Prostaglandins in/on the eye:

The body is NOT FOOLED!

BIMATOPROST

- **Lowers IOP**
 - Meibomian gland dysfunction, DED
 - Darkening of iris (hazel eyes), lashes
 - ↑ expression of melanin
- **Lengthen lashes**
- **Darken lashes**
 - Periorbital fat loss
 - Darkening of lid skin
 - Redness and swelling in and around the eye



A well known prostaglandin lash product...
Of COURSE the results would be fantastic...

Works on

anagen

or growth
phase of lash
growth cycle



106% FULLER



25% LONGER



18% DARKER



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BUT SO ARE THE SIDE EFFECTS!!

Comparison of “brand” versus “generic”
* Side effects and efficacy

<https://webeye.ophth.uiowa.edu/eyeforum/cases/181-prostaglandin-orbitopathy.htm>



- <https://www.teawithmd.com/2014/09/review-of-latisse/>



Mechanisms MATTER!

What is DRIVING the “IMPROVEMENT?”



- Our **FIRST MEDICINES** came from **PLANTS!**

- Many of the medicines we use today are still plant-based!
- “Let food be your medicine...”



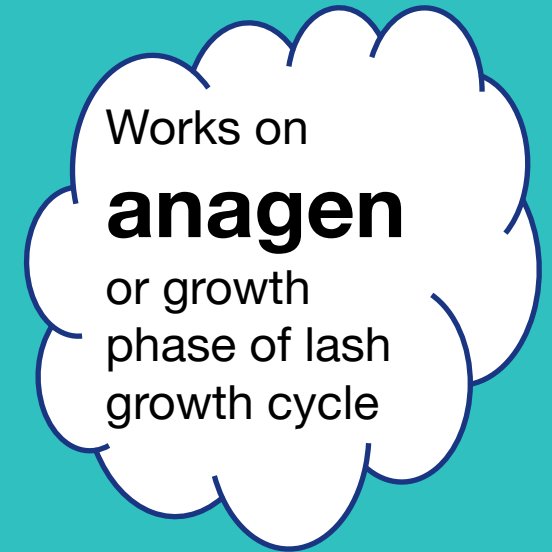
- **FUNCTIONAL MEDICINE** is “all the rage”

- Many people **WANT** to the **QUICK FIX** for everything (that is one of the reasons **WHY pharmaceuticals** are so popular)
 - Many want the supplemental form of the “fix”, which is why **supplements** are so popular
 - **SOME OF THEM WORK!**
 - Reactive oxygen species and antioxidant mechanisms



Synthetic Prostaglandins

- When we know better, we do better!
 - *Isopropyl cloprostenate*
 - *Isopropanol Phenyl-hydroxy-pentene*
 - *Dihydroxy-cyclopentyl-heptenate*
 - *Dechloro Dihydroxy Difluoro Ethylcloprostenolamide*
- PLUS conditioning and “boosting” ingredients like biotin, panthenol, sodium hyaluronate and other “proprietary compounds”



A \$38,000,000.00 Settlement has been reached in three **class action lawsuits** alleging that [REDACTED] failed to disclose information ...



**Confidence is
10% hard work and
90% lashes.**



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Providing the Best Environment to Optimize Growth

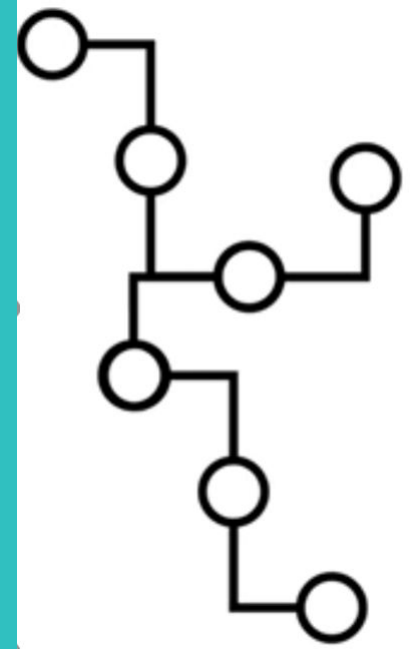
Products containing POLYPEPTIDES

What do PEPTIDES do for lashes?

- stimulate eyelash growth
 - stimulating keratin production (key structural protein of hair)
- May also help promote delivery of “key” ingredients to lashes
 - Improves anchoring of lash in follicle
 - Improves eyelash length
 - Improved eyelash diameter
 - Strengthens eyelashes

• **Examples:**

- **Myristoyl pentapeptide2/-16/-17**
- **Myristoyl octapeptide-1**
- **Copper tripeptide-1**
- **Acetyl tetrapeptide 3**



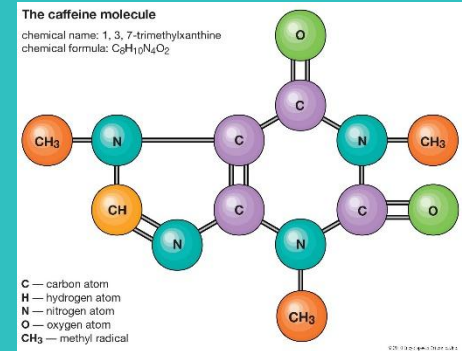
Works on

anagen

or growth
phase of lash
growth cycle

Miscellaneous Ingredients

- **Oils**
 - Sunflower oil
 - Castor oil
 - Argan oil
 - Coconut oil
- **Biotin**
- **Panthenol**
- **Selenium**
- **Arginine**
- **Hyaluronic Acid**
- **Vitamin E**
- **Caffeine**



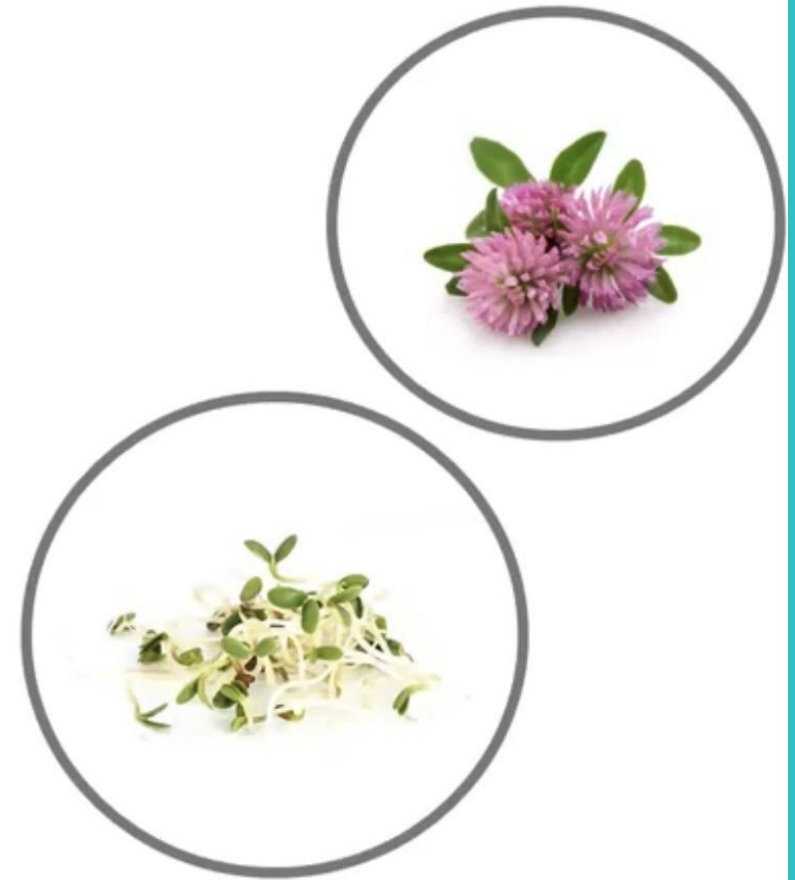
Plant Ingredients

- **Red clover**
- **Larch wood**
- **Camelia sinensis leaf extract**
- **Clover sprout extract**
- Mung bean oil
- Ginseng root
- Soybeans
- Pumpkin seed extract
- Cannabis seed extract
- Linoleic acid



WHAT POWERS IT

- Biotinoyl Tripeptide-1—helps eyelashes look thicker, longer, and stronger.
- Red Clover and Peptide Blend—helps hair look stronger, thicker, and fuller and helps prevent breakage.
- Myristoyl Pentapeptide-17—helps eyelashes look thicker, denser, and longer.
- Larch Wood and Camellia Sinensis Leaf Extracts— helps hair appear thicker and stronger.
- Clover Sprout Extract—helps visibly increase hair density and strengthen hair.



Can we HAVE IT ALL? Efficacy AND Safety?

- **The Plastic Surgeon-Developed:** \$150 for 1-month supply
- **The Peptide-Powered:** \$55 for 1-month supply
- **The Targeted Application:** \$48 for 1-month supply
- **The Preservative-Free:** \$52 for 1-month supply
- **The Mascara Hybrid:** \$45 for 1-month supply
- **The Biotin-Infused:** \$90 for 1-month supply
- **The Vitamin E-Enriched:** \$36 for 1-month supply
- **The New Arrival:** \$150 for 1-month supply
- **The plant-based, prostaglandin free, BAK free, fragrance free, oil free, Phthalate free, paraben free, silicone free, alcohol free:** \$79 for 3-month supply

Adapted from
Vogue.com



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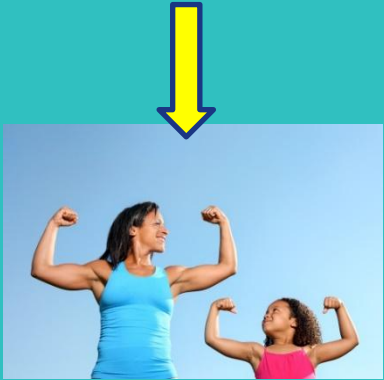
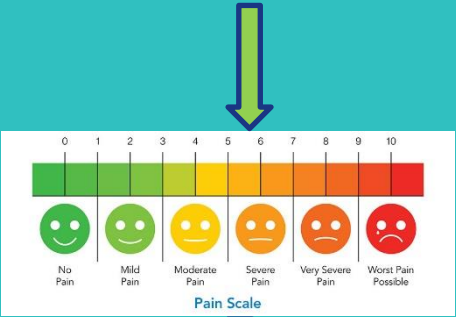
Common Drug Interactions

- Additive effect- takes place when 2 drugs are given together & double the effect is produced.

Alcohol + aspirin= Pain relief

FOOD IS FUEL.

FOOD IS MEDICINE.



<https://www.istockphoto.com/illustrations/good-vs-evil>

<https://www.superhealthykids.com/how-to-raise-kids-at-a-healthy-weight/>

<https://healthland.time.com/2012/10/09/10-ways-to-build-healthy-bones-and-keep-them-strong/>

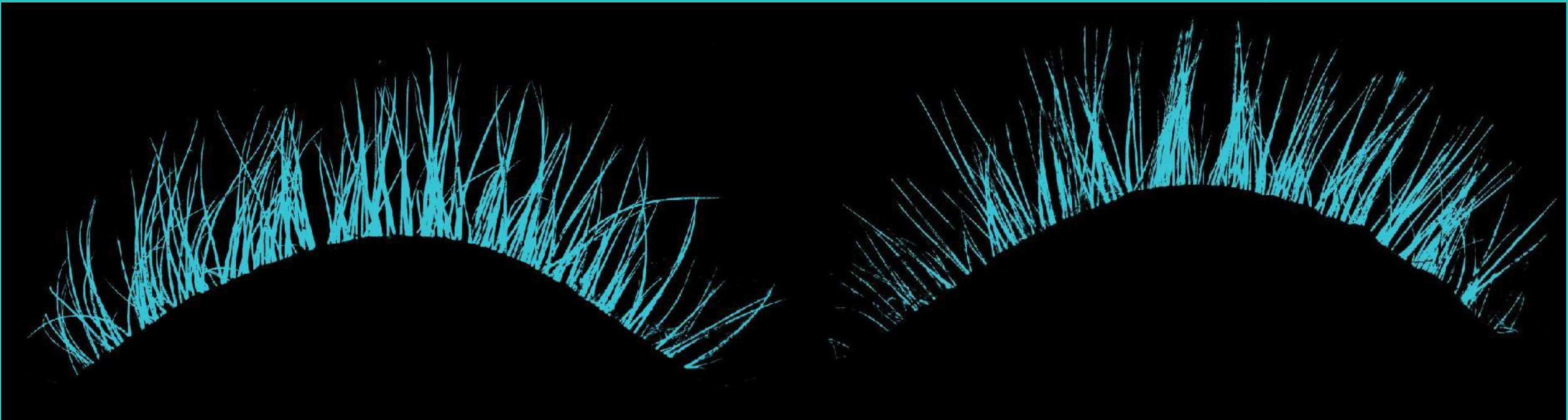
<https://www.inglewoodhealth.org/for-patients-and-visitors/your-hospital-stay/managing-pain-during-your-hospital-stay>

<https://realcarehealthclinic.com.au/do-we-need-vitamins-and-other-nutritional-supplements>

<https://draxe.com/nutrition/food-is-medicine>

<https://www.slideshare.net/diptisorte/introduction-to-pharmacology-1>

BASELINE



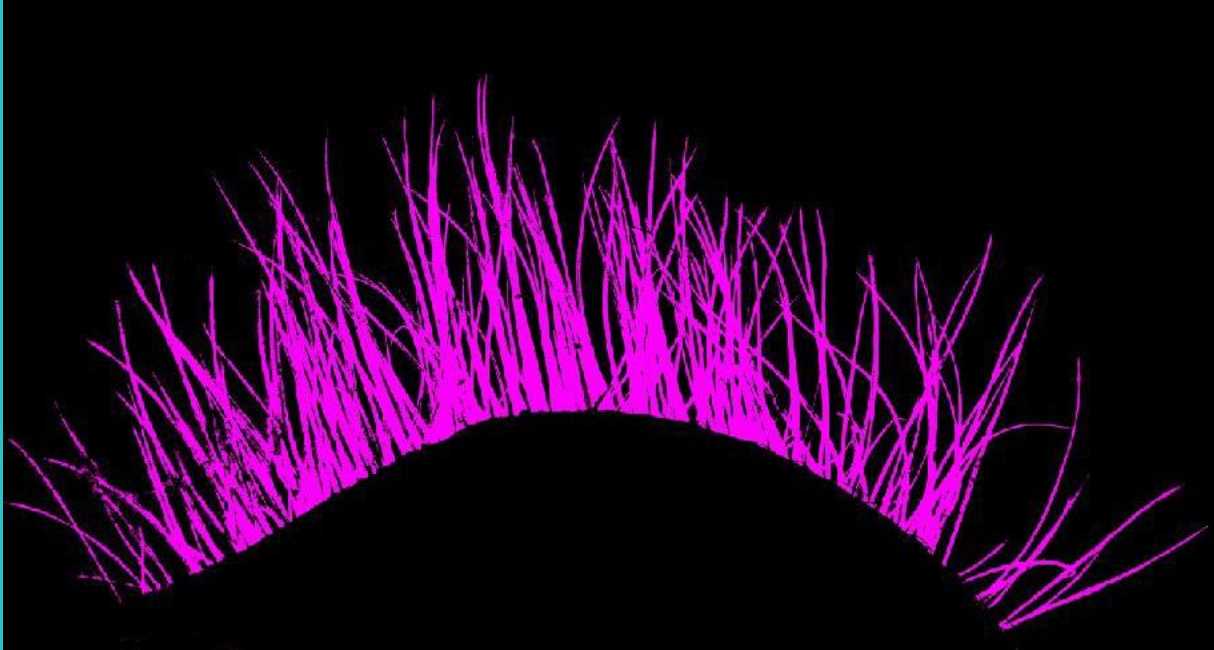
**LEFT
EYE**

**RIGHT
EYE**

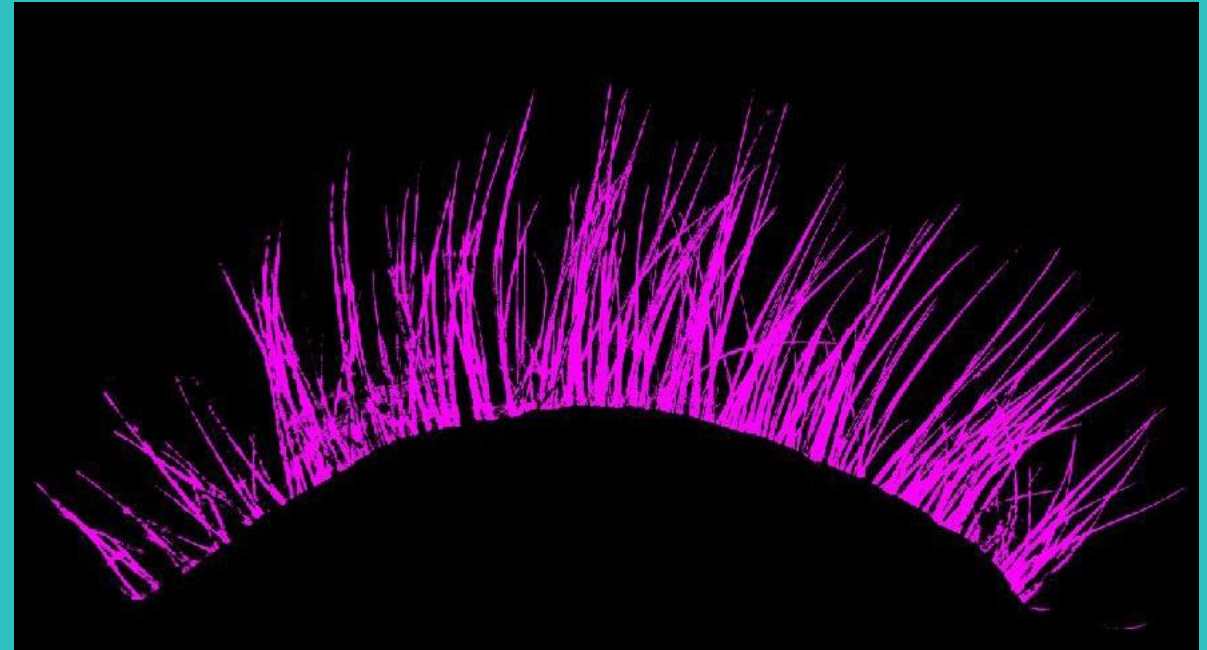


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WEEK 4

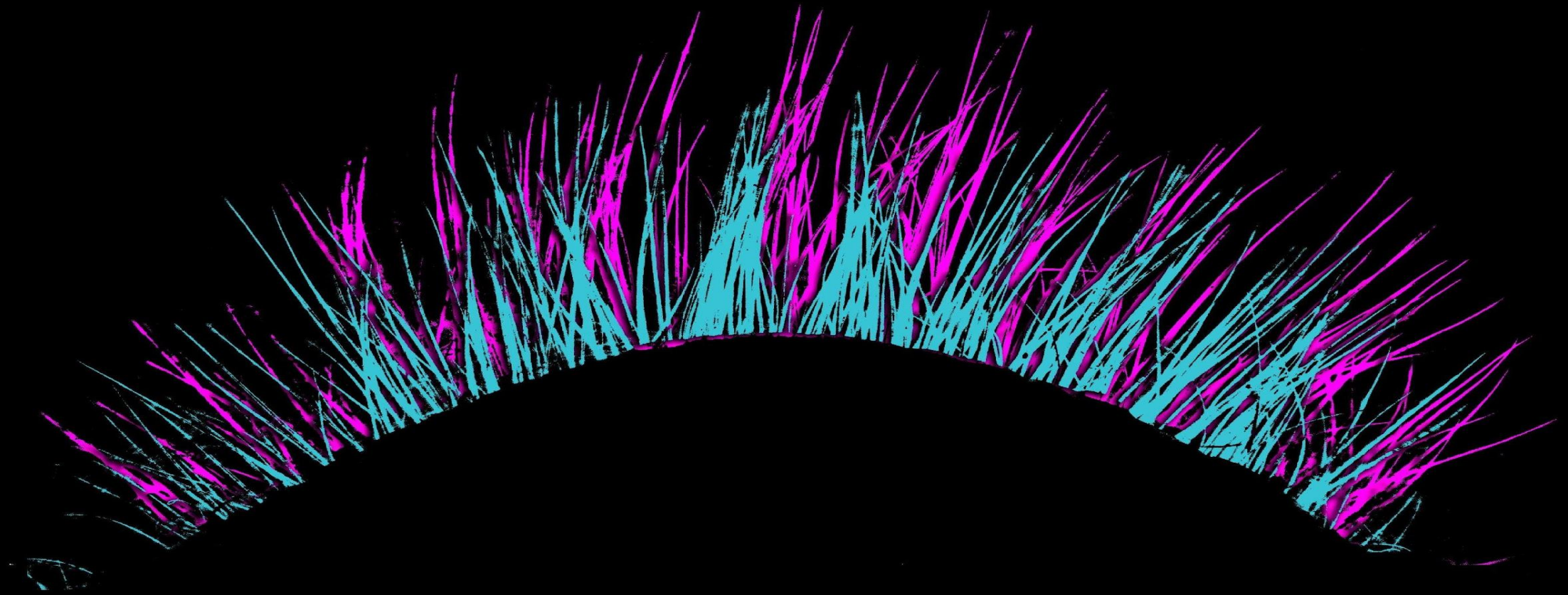


**LEFT
EYE**



**RIGHT
EYE**

46.09% INCREASE IN EYELASH DENSITY



BASELINE - 1,029,189 PX

WEEK 4 - 1,503,542 PX



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We CAN get this...

'My lashes are conditioned and protected.'	96.7%
'My lashes look thicker and more voluminous.'	96.7%
'My lashes look revitalized.'	96.7%
'My lashes feel nourished and conditioned.'	96.7%
'My lashes look fuller than before using this product.'	100.0%
'My lashes appear healthier after using this product.'	96.7%
'This product lengthens the appearance of my lashes.'	93.3%
'This product strengthens my lashes.'	96.7%
'My lashes look defined and separated.'	96.7%
'This product coats my lashes evenly.'	100.0%
'My lashes look more youthful.'	96.7%



Without the...



<https://herliaison.com/pages/other-lash-brands-in-trouble-for-using-this-1-ingredient>



<https://www.buzzfeednews.com/article/stephaniemcneal/rodan-and-fields-lash-boost>



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*Thank you
for joining
us!*

