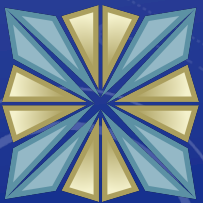


# COSMECEUTICAL PEPTIDES

EDWIN LEE MD, FACE

INSTITUTE FOR HORMONAL BALANCE

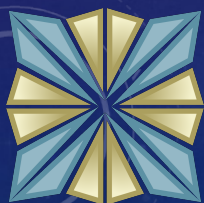
ORLANDO , FL



# HIGH SCHOOL



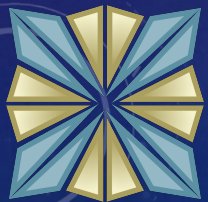
DR EDWIN LEE



# 10 YEAR REUNION

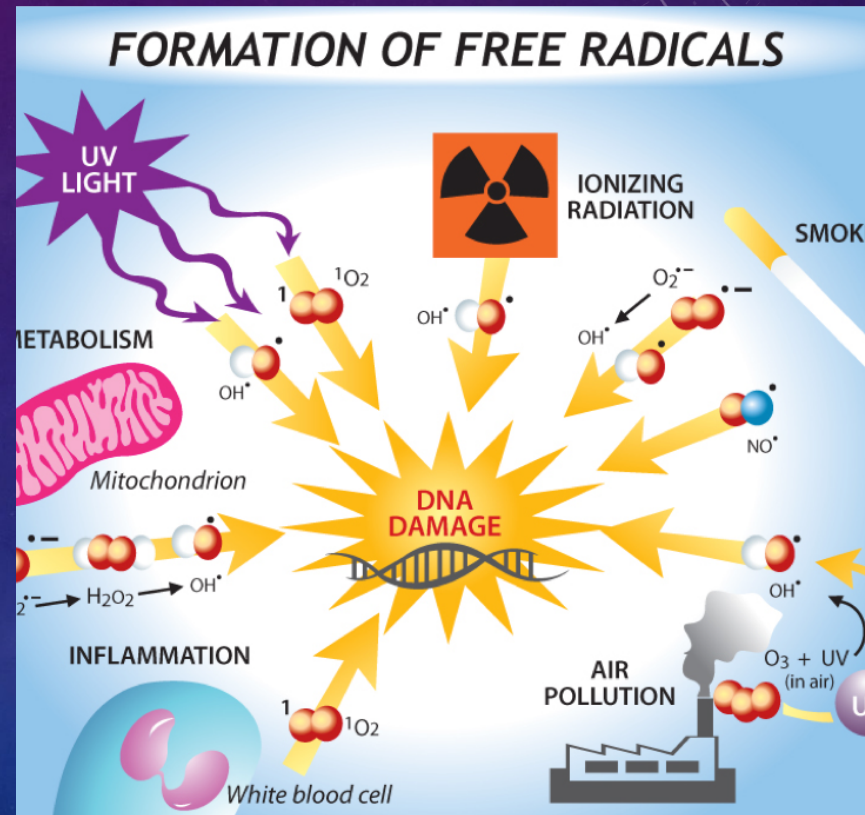


DR EDWIN LEE

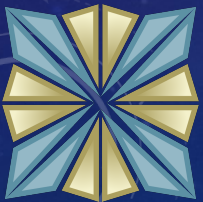


# SEVERAL REASONS FOR AGING

- Mitochondrial Dysfunction
- Loss of Autophagy
- Stem Cell exhaustion
- Proteins become less functional
- Hormonal Imbalance
- Environmental Toxins
- Nutritional deficiencies
- Loss of cell replication



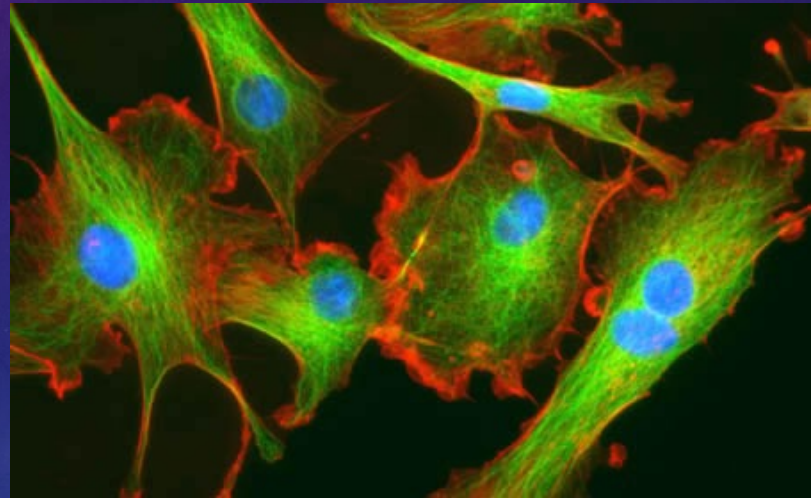
DR EDWIN LEE



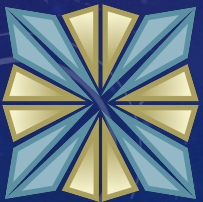
# REVIEW OF THE SKIN- FIBROBLASTS

SORRELL JM, CAPLAN AI, FIBROBLAST HETEROGENEITY: MORE THAN SKIN DEEP, JOURNAL OF CELL SCIENCE 2004 117: 667-675

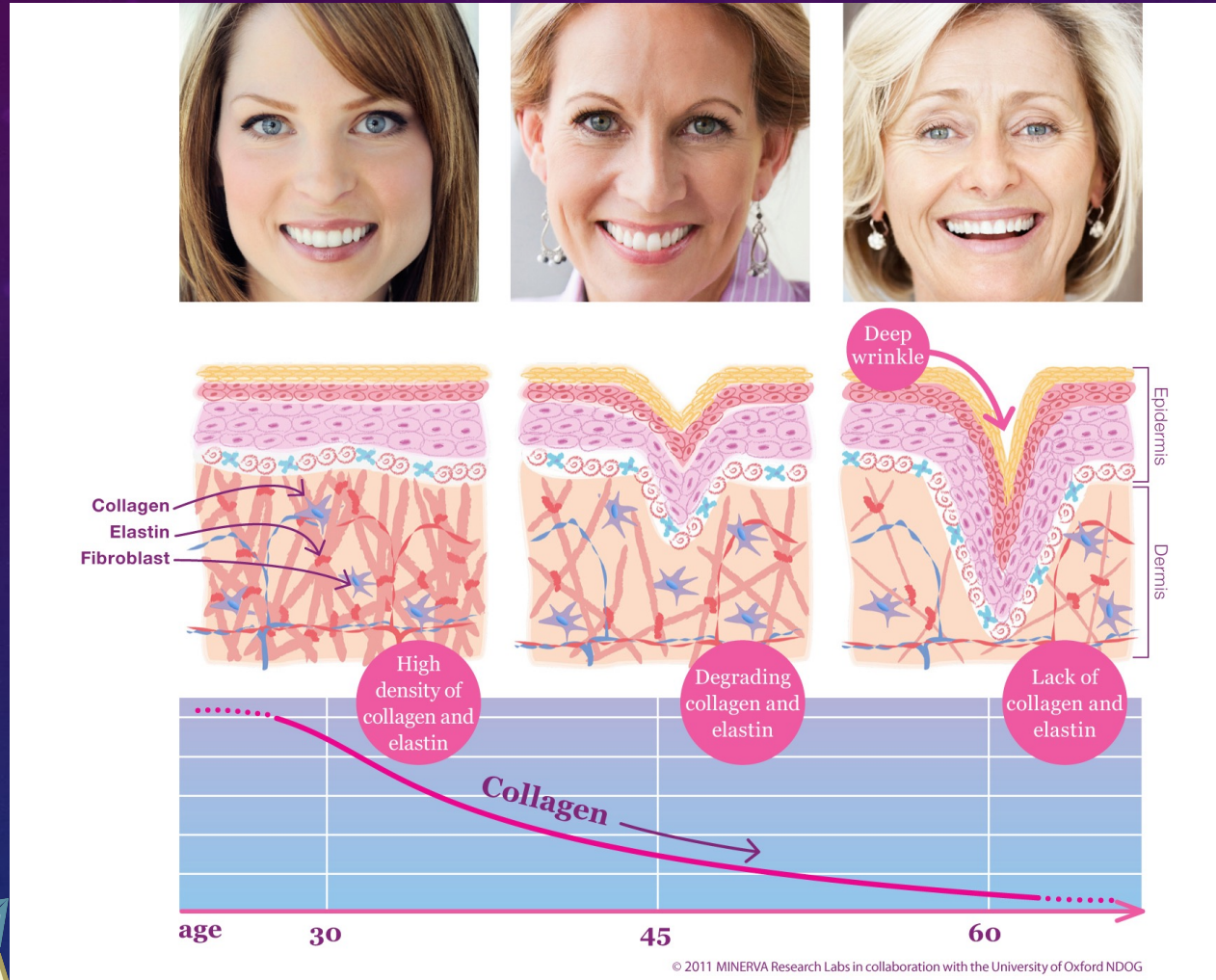
- Produces collagen
- Produces hyaluronic acid
- Produces Elastin
- Produces Fibronectin
- Produces Proteoglycans



DR EDWIN LEE



# ELASTIN AND COLLAGEN DECREASES



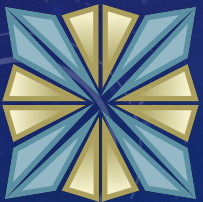
DR EDWIN LEE

# COLLAGEN CREAMS

- Cosmetic lotions/masks that claim to increase collagen levels are unlikely to do so, as collagen molecules are too large to be absorbed through the skin.



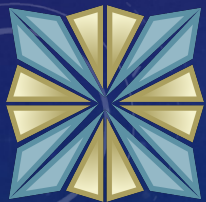
DR EDWIN LEE



# PEPTIDES



**The Power of  
Peptides in  
Skin Care**



DR EDWIN LEE

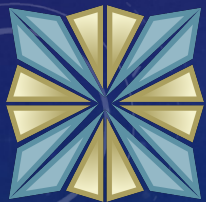
# FOUR TYPES OF PEPTIDES

**Signaling Peptides**

**Botox like Peptide**

**Enzyme Peptide**

**Carrier Peptide**

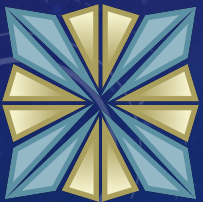


# SIGNALING PEPTIDES- GHK

- 3 Amino acid peptide glycine-histidine-lysine attached to Palmitic acid
- Used in Over 100 skin products



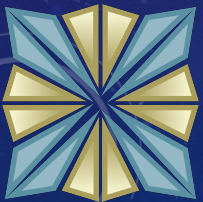
DR EDWIN LEE



# SIGNALING PEPTIDES- GHK

LINTNER, K, PESCHARD, O. BIOLOGICALLY ACTIVE PEPTIDES: FROM A LABORATORY BENCH CURIOSITY TO A FUNCTIONAL SKIN CARE PRODUCT. *INT. J. COSMET. SCI.* **2000**, 22, 207–218.

- GHK with Palmitic acid also known as Palmitoyl tripeptide-1
- Collagen and hyaluronic acid synthesis are stimulated
- Study with 15 women, a cream containing palmitoyl tripeptide-1 was applied twice daily for four weeks, leading to statistically significant reductions in wrinkle length, depth and skin roughness



DR EDWIN LEE

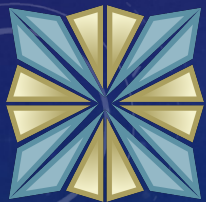
# FOUR TYPES OF PEPTIDES

**Signaling Peptides**

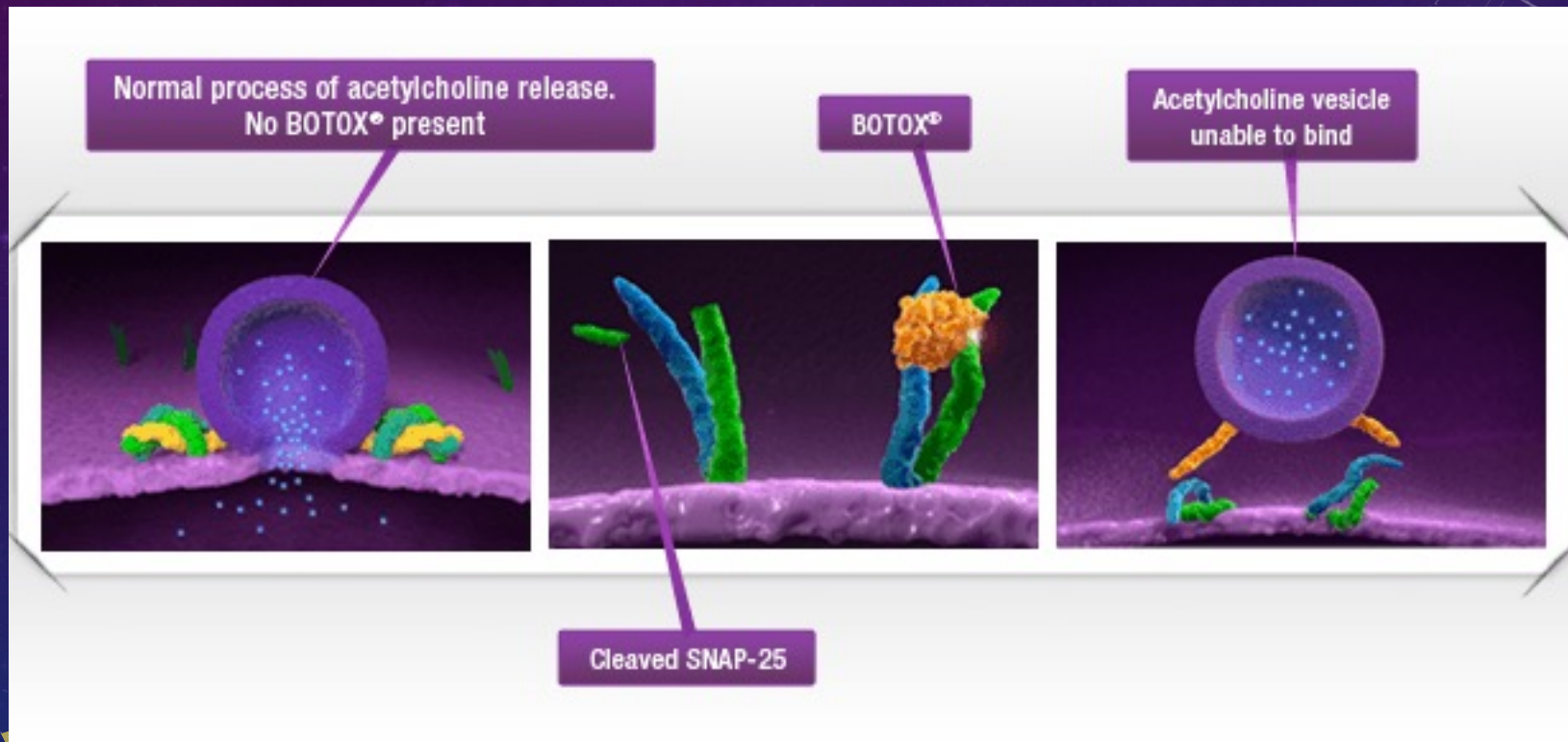
**Botox like Peptide**

**Enzyme Peptide**

**Carrier Peptide**



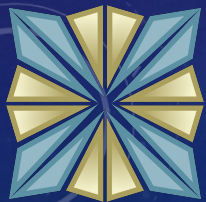
# MECHANISM OF BOTOX- CLEAVES SNAP 25 AND NO RELEASE OF ACh



DR EDWIN LEE

# BOTOX LIKE PEPTIDE- DESTABILIZES THE SNARE COMPLEX AND NO RELEASE OF ACh

- These peptides are similar to the mechanism of Botox or inhibit the release of other catecholamines besides ACh
- Some of the peptides work at the post synaptic receptor site
- They penetrate skin and relax muscles, causing the reduction and softening of wrinkles and fine lines

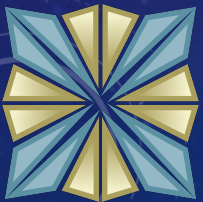


# BOTOX LIKE PEPTIDE

- Argireline®
- SNAP-8™
- Leuphasyl®
- Vialox®
- SYN®-AKE



DR EDWIN LEE



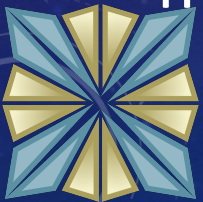
# BOTOX LIKE PEPTIDE -LEUPHASYL®

LEUPHASYL A NEW PENTAPEPTIDE FOR EXPRESSION WRINKLES. AVAILABLE ONLINE: [HTTP://DOCPLAYER.NET/15401907-LEUPHASYL-A-NEW-PENTAPEPTIDE-FOR-EXPRESSION-WRINKLES-CODE-PD080-DATE-JUNE-2005-REVISION-1-A-GMP-PEPTIDE-FOR-COSMETIC-APPLICATIONS.HTML](http://DOCPLAYER.NET/15401907-LEUPHASYL-A-NEW-PENTAPEPTIDE-FOR-EXPRESSION-WRINKLES-CODE-PD080-DATE-JUNE-2005-REVISION-1-A-GMP-PEPTIDE-FOR-COSMETIC-APPLICATIONS.HTML) (ACCESSED ON 25 JANUARY 2019)

- Study of 43 women using a cream with Leuphasyl® (0.05%) and with Argireline® (0.05%) and the combination of both peptides. Wrinkle reductions were measured



DR EDWIN LEE



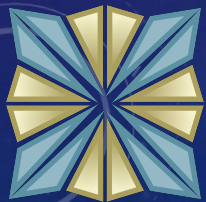
# FOUR TYPES OF PEPTIDES

**Signaling Peptides**

**Botox like Peptide**

**Enzyme Peptide**

**Carrier Peptide**

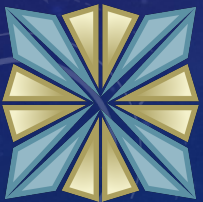


# CARRIER PEPTIDE

- Carrier peptides deliver trace elements like copper and manganese



DR EDWIN LEE



# CARRIER PEPTIDE – GHK

- GHK was discovered in 1973 by Dr. Pickart
- GHK acts as a main regulator of wound healing and skin remodeling processes
- GHK can increase collagen, elastin, proteoglycan, and glycosaminoglycan synthesis

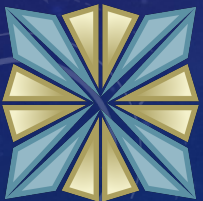
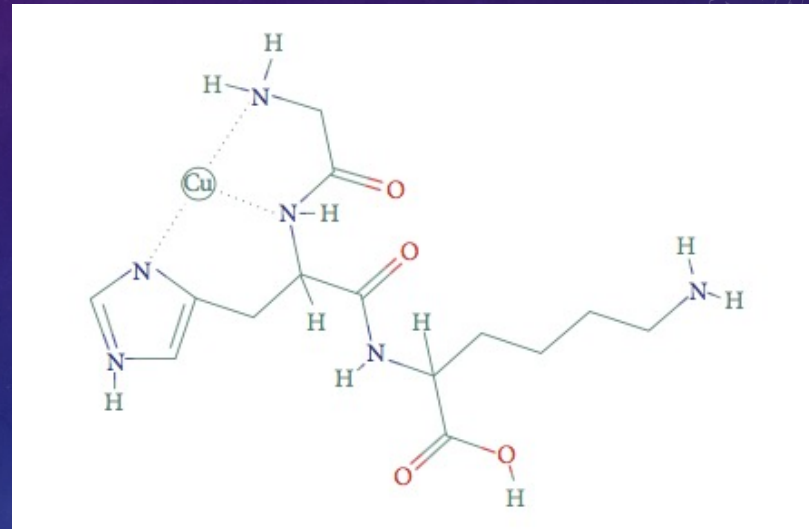


DR EDWIN LEE



# CARRIER PEPTIDE – GHK W/ COPPER

- GHK Cu is the most well examined peptide
- Not only it acts as a signaling peptide but delivers copper
- GHK peptide, a natural copper-binding and copper-regulating molecule



# CHEMICAL REACTIONS INVOLVING COPPER

HADMED HH AND CASTILLO RF, JOURNAL OF COSMETIC DERMATOLOGY, 15, 514-519

| Enzyme               | Metabolic Reaction                 | Benefit                       |
|----------------------|------------------------------------|-------------------------------|
|                      |                                    |                               |
| Lysyl Oxidase        | Production of collagen and elastin | Improve Skin Texture          |
| Superoxide Dismutase | Elimination of free radicals       | Slows down the aging process  |
| Cytochrome C oxidase | Increase in mitochondria function  | Better blood flow to the skin |



DR EDWIN LEE

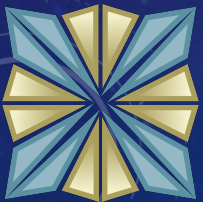
# GHK W/ COPPER APPLIED TO THE THIGH

ABDULGHANI, A.; SHERR, A.; SHIRIN, S.; SOLODKINA, G.; TAPIA, E.; WOLF, B.; GOTTLIEB, A. EFFECTS OF TOPICAL CREAMS CONTAINING VITAMIN C, A COPPER-BINDING PEPTIDE CREAM AND MELATONIN COMPARED WITH TRETINOIN ON THE ULTRASTRUCTURE OF NORMAL SKIN—A PILOT CLINICAL, HISTOLOGIC, AND ULTRASTRUCTURAL STUDY. *DIS. MANAG. CLIN. OUTCOMES* 1998, 1, 136–141

- 20 women compared the skin's production of collagen after applying creams containing Cu-GHK, vitamin C, or retinoic acid to thighs daily for one month.
- New collagen production was determined by skin biopsy samples
- After one month, Cu-GHK increased collagen by 70%



DR EDWIN LEE



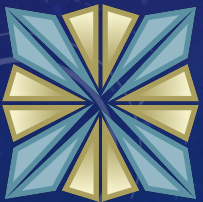
# GHK ON DNA REPAIR

CAMPBELL, J.D.; MCDONOUGH, J.E.; ZESKIND, J.E.; HACKETT, T.L.; PECHKOVSKY, D.V.; BRANDSMA, C.A.; SUZUKI, M.; GOSSELINK, J.V.; LIU, G.; ALEKSEYEV, Y.O.; ET AL. A GENE EXPRESSION SIGNATURE OF EMPHYSEMA-RELATED LUNG DESTRUCTION AND ITS REVERSAL BY THE TRIPEPTIDE GHK. *GENOME MED.* 2012, 4, 67.

- GHK significantly increased the expression of DNA repair genes, while 47 genes are stimulated and 5 genes are suppressed
- Stem cells treated with GHK regenerated and expressed more stem cell markers



DR EDWIN LEE



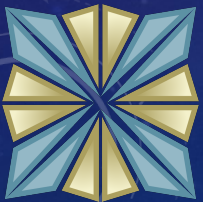
# GHK ON DNA REPAIR

PICKART L AND MARGOLINA A, REGENERATIVE AND PROTECTIVE ACTIONS OF THE GHK-CU PEPTIDE IN THE LIGHT OF THE NEW GENE DATA , *INT. J. MOL. SCI.* 2018, 19, 1987

- GHK improve tissue repair has been demonstrated for skin, lung connective tissue, bone tissue, liver, and stomach lining.



DR EDWIN LEE



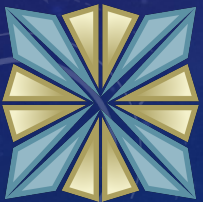
# GHK ON GENE EXPRESSION

PICKART L AND MARGOLINA A, REGENERATIVE AND PROTECTIVE ACTIONS OF THE GHK-CU PEPTIDE IN THE LIGHT OF THE NEW GENE DATA , *INT. J. MOL. SCI.* 2018, 19, 1987

- In 2010 MIT and Harvard created Connectivity Map to see what substances modulate gene expression
- Researchers are able to see if GHK-Cu is able to up- and down-regulate a significant number of human genes



DR EDWIN LEE



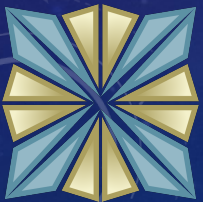
# GHK ON CANCER GENE EXPRESSION

Y. HONG, T. DOWNEY, K. W. EU, P. K. KOH, AND P. Y. CHEAH, "A 'METASTASIS-PRONE' SIGNATURE FOR EARLY-STAGE MISMATCH-REPAIR PRO CIENT SPORADIC COLORECTAL CANCER PATIENTS AND ITS IMPLI- CATIONS FOR POSSIBLE THERAPEUTICS," *CLINICAL AND EXPERIMENTAL METASTASIS*, VOL. 27, NO. 2, PP. 83–90, 2010

- In 2010, Hong et al. identified 54 genes associated with aggressive, metastatic, human colon cancer
- Connectivity Map found that GHK could reverse the differential expressions of these genes.



DR EDWIN LEE



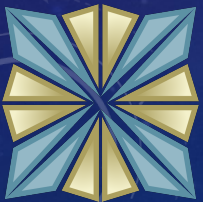
# GHK ON CANCER CELL DEATH

L. E. MATAKA, A. FORD, AND M. T. UNLAP, "E TRIPEPTIDE, GHK, INDUCES PROGRAMMED CELL DEATH IN SH-SY5Y NEUROBLASTOMA CELLS," *JOURNAL OF BIOTECHNOLOGY & BIOMATERIALS*, VOL. 2, PP. 1–4, 2012.

- GHK can reactivate the apoptosis system
- GHK inhibited the growth of human neuroblastoma cells, lymphoma cells, and breast cancer cells



DR EDWIN LEE



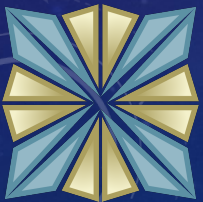
# GHK ON GENE EXPRESSION

PICKART L AND MARGOLINA A GHK AND DNA: RESETTING THE HUMAN GENOME TO HEALTH.  
BIOMED RESEARCH INTERNATIONAL VOLUME 2014, ARTICLE ID 151479, 10 PAGES

- The gene analysis computer program selected GHK from 1,309 bioactive molecules as the best choice to reset the diseased gene patterns to a healthier pattern.



DR EDWIN LEE

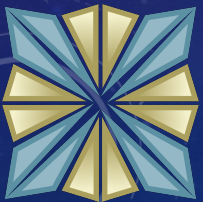


# GHK COPPER DOSING

- Suggested Dosing
- Topical pump dispenser  
2.5 mg- 5 mg/ gram Use  
2 pumps (1.25 mg – 2.5  
mg) per day
- 2 mg SQ qday in  
abdomen for 1 month  
and take 1-2 months off  
to prevent Copper  
toxicity

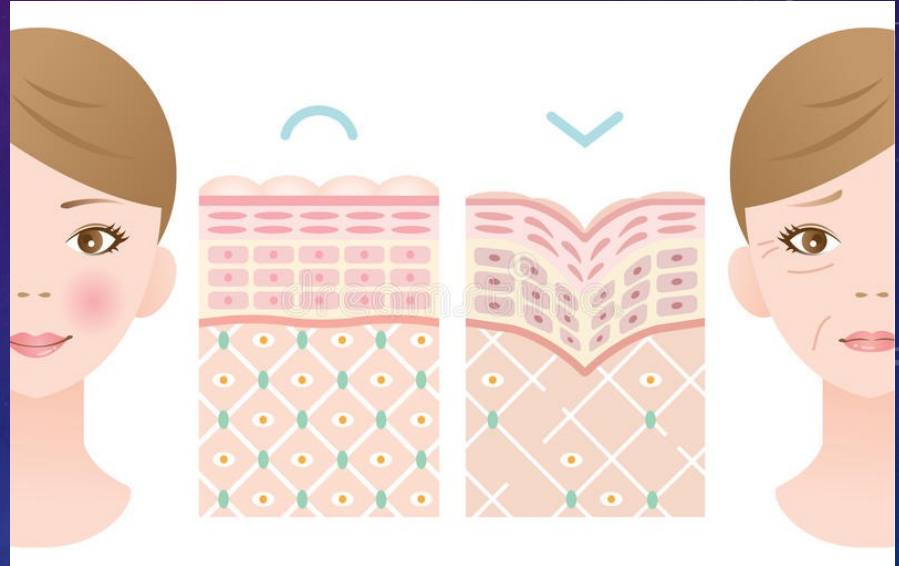


DR EDWIN LEE



# CONCLUSION

- GHK has inner and outer beauty
- Before using the Botox peptide creams use GHK Copper for 6 months to 1 year to build up the dermis.



DR EDWIN LEE

