

# GHK & DNA: Reducing the Diseases of Human Aging™



Just as a piano must be periodically fine-tuned to maintain melodic balance, studies suggest that GHK-Cu tunes gene expression to a healthier, younger state.

## REVERSE

### AGING WITH GHK

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### The Piano Key Theory of Human Aging: How to Reduce the Diseases of Human Aging with GHK-Cu

The main cause of human aging appears to be that the genes lose their optimal pattern of UP and DOWN settings (age 20-25). This is like piano keys. When the piano is new, it plays beautiful music, but with time the piano keys lose their proper tuning as the music is imperfect. Likewise, with time human genes lose their youthful settings and the diseases and conditions of aging set in. GHK, which was discovered during biochemical studies of human aging, resets human genes to a younger and healthier condition.

Most current theories and therapies to treat disease tend to target only one biochemical reaction or pathway. But for human aging, our data finds that we must think of simultaneously resetting hundreds or thousands of genes to protect at-risk tissues and organs. GHK may be a major step towards this resetting goal.

Below: GHK's effects on cellular changes and health problems associated with human aging.

System or Problem	Effect of system	Effect of GHK	GHK In Vivo Mammalian Data	GHK Cell Culture Data	GHK Gene Expression Data
<a href="#"><b>NERVES</b></a>	Improves outgrowth of nerves considered major factors in Dementia, Alzheimer's	Strongly increases	YES	YES	Over 700 genes strongly affected
<a href="#"><b>ANTI-OXIDANT</b></a>	Prevents damage to DNA and cells	Strongly increases	YES	YES	YES 15 antioxidant genes UP,

					2 oxidizing genes DOWN
<b><u>DNA REPAIR</u></b>	Repairs damaged DNA	Strongly increases	NO	YES	YES 47 genes UP, 5 genes DOWN
<b><u>CANCER</u></b>	Cancer increases aberrant cell growth	Suppresses mouse sarcoma, resets programmed cell death in cancer cells	YES in mice	YES	YES 9 caspase system genes UP, 80 growth-controlling genes altered for antigrowth effect
<b><u>INSULIN AND INSULIN-LIKE SYSTEM</u></b>	High levels reduce life span of nematodes	Decreases insulin and insulin-like gene expression	NO	YES	2 genes, UP 6 genes DOWN
<b><u>UBIQUITIN-PROTEASOME SYSTEM</u></b>	Removes damaged proteins  High in humans of age 100	Strongly increases	NO	NO	YES 41 genes UP, 1 gene Down
<b><u>COPD CHRONIC OBSTRUCTIVE PULMONARY DISEASE</u></b>	Causes rigidity in lungs	Resets genes to healthy state	NO	YES	Suppresses tissue destructive genes, increases repair genes
<b><u>FIBRINOGEN</u></b>	A Top Predictor of Cardiovascular Heart Disease and Death	Suppresses fibrinogen synthesis	YES mice and rats	YES	YES 1 key gene strongly DOWN
<b><u>STEM CELLS</u></b>	Repair Tissues	Increases stem cell production and activation	NO	YES	Not determined
<b><u>PAIN</u></b>	High in humans over age 85	Reduces Pain	YES in mice	Not applicable	Anti-pain genes 8 UP, 1 Down
<b><u>ANXIETY</u></b>	High in aged persons	Reduces Anxiety	YES in rats	Not applicable	Not determined
<b><u>AGED HUMAN SKIN</u></b>	Body's outer protection	Reverts to younger morphology	YES human	Not applicable	Increases numerous repair and remodeling genes
<b><u>WOUND HEALING</u></b>	Decreases with age	Increases strongly	YES humans	Not applicable	Increases numerous repair and remodeling genes

<b>CORTISONE</b>	Increases with age  Blocks tissue regeneration and repair	GHK reverses cortisone's anti-regenerative actions	YES rats, mice, pigs	Not applicable	Not determined
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**READ IMPORTANT OPEN ACCESS PUBLICATIONS ON ANTI-AGING COPPER PEPTIDES**  
INCLUDING INFORMATION ON CANCER, COPD, ANTI-ANXIETY, AND MORE!

<a href="#"><u>NEW RELEASE: Effect of GHK-Cu on Stem Cells and Relevant Genes</u></a> <i>OBM Geriatrics (2018)</i>	<a href="#"><u>GHK Alleviates Neuronal Apoptosis Due to Brain Hemorrhage</u></a> <i>Frontiers in Neuroscience (2018)</i>
<a href="#"><u>GHK-Cu: Endogenous Antioxidant</u></a> <i>International Journal of Pathophysiology and Pharmacology (2018)</i>	<a href="#"><u>Regenerative and Protective Actions of GHK-Cu Peptide</u></a> <i>International Journal of Molecular Sciences (2018)</i>
<a href="#"><u>Skin Regenerative and Anti-Cancer Actions of Copper Peptides</u></a> <i>Cosmetics (2018)</i>	<a href="#"><u>GHK-Cu Accelerates Scald Wound Healing Promoting Angiogenesis</u></a> <i>Wound Repair and Regeneration (2017)</i>
<a href="#"><u>GHK Peptide Inhibits Pulmonary Fibrosis by Suppressing TGF-β1</u></a> <i>Frontiers in Pharmacology (2017)</i>	<a href="#"><u>UNITED STATES PATENT: Non-Toxic Skin Cancer Therapy with Copper Peptides</u></a> <i>(2017)</i>
<a href="#"><u>The Effect of Human Peptide GHK Relevant to Nervous System Function and Cognitive Decline</u></a> <i>Brain Sciences (2017)</i>	<a href="#"><u>Effects of Tripeptide GHK in Pain-Induced Aggressive Behavior</u></a> <i>Bulletin of Experimental Biology &amp; Medicine (2017)</i>
<a href="#"><u>Selected Biomarkers &amp; Copper Compounds</u></a> <i>Scientific Reports (2016)</i>	<a href="#"><u>Tri-Peptide GHK-Cu and Acute Lung Injury</u></a> <i>Oncotarget (2016)</i>
<a href="#"><u>Effect of GHK Peptide on Pain Sensitivity</u></a> <i>Experimental Pharmacology (2015)</i>	<a href="#"><u>New Data of the Cosmeceutical and TriPeptide GHK</u></a> <i>SOFW Journal (2015)</i>
<a href="#"><u>GHK Peptide as a Natural Modulator of Multiple Cellular Pathways in Skin Regeneration</u></a> <i>BioMed Research (2015)</i>	<a href="#"><u>GHK-Cu May Prevent Oxidative Stress in Skin by Regulating Copper and Modifying Expression of Numerous Antioxidant Genes</u></a> <i>Cosmetics (2015)</i>
<a href="#"><u>GHK: The Human Skin Remodeling Peptide Induces Anti-Cancer Expression and DNA Repair</u></a> <i>Analytical Oncology (2014)</i>	<a href="#"><u>GHK &amp; DNA: Resetting the Human Genome to Health</u></a> <i>BioMed Research International (2014)</i>

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RESETTING YOUR GENES TO YOUTH

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Name: Loren Pickart PhD

**ABNORMAL GROWTHS**  
CANCER, CHRONIC, CELL CYCLE ARREST, ACCUMULATE TOXIC WASTE

**SLOW DOWN DISEASES**  
CELL CYCLE ARREST, INCREASE HEALING, ANTI-PAIN ANTI-ANXIETY, DNA REPAIR, ACTIVE STEM CELLS, AND INFLAMMATION, STOP COPD, MIND OUTGROWTH, ANTI-CANCER, UNRAVELLED DNA DAMAGE

<a href="#"><u>Enhanced Stem Cells with GHK</u></a> <a href="#"><u>Acta Biomater (2014)</u></a>	<a href="#"><u>Anxiolytic (Anti-Anxiety) Effects of GHK Peptide</u></a> <a href="#"><u>Bulletin of Experimental Biology &amp; Medicine (2014)</u></a>
<a href="#"><u>Emphysema-Related Lung Destruction and its Reversal by GHK</u></a> <a href="#"><u>Genome Medicine (2012)</u></a>	<a href="#"><u>TriPeptide GHK Induces Programmed Cell Death of Neuroblastoma</u></a> <a href="#"><u>Journal of Biotechnology (2012)</u></a>
<a href="#"><u>Stem Cell Recovering Effect of GHK in Skin</u></a> <a href="#"><u>Peptide Science (2012)</u></a>	<a href="#"><u>Skin Penetration of Copper Tripeptide in Vitro</u></a> <a href="#"><u>Journal of International Inflammation Research (2010)</u></a>
<a href="#"><u>Possible Therapeutics for Colorectal Cancer</u></a> <a href="#"><u>Journal of Clinical and Experimental Metastasis (2010)</u></a>	<a href="#"><u>UNITED STATES PATENT: Methods of Controlling Differentiation and Proliferation of Stem Cells</u></a> <a href="#"><u>(2005)</u></a>
<a href="#"><u>Effects of Copper Tripeptide on Irradiated Fibroblasts</u></a> <a href="#"><u>American Medical Association (2005)</u></a>	<a href="#"><u>--- CLICK TO VIEW ALL ---</u></a>

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 ---- MUST READ INFORMATION FOR ALL CONSUMERS



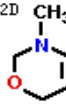
By Loren Pickart, PhD

## GHK and DNA: *REDUCING THE DISEASES OF HUMAN AGING*

*This information is for the use of medical researchers and persons interested in health sciences. It must be emphasized that GHK and other copper binding peptides have not been tested and approved for the treatment of human diseases.*

The primary cause of human aging and its attendant diseases are changes in the activity of the human genome. During aging there is an increase in the activity of inflammatory, cancer promoting, and tissue destructive genes plus a decrease in the activity of regenerative and reparative genes.

Regenerative copper peptides appear to help maintain wellness and youth. The human peptide GHK induces a plethora of health associated actions such as tissue repair, anti-inflammatory actions, anti-cancer effects, anti-infection, stem cell activation, increasing protein P63, and so on. Gene data from the Broad Institute indicates that GHK controls or strongly influences 31.8% of the human genes - increasing the output in 59%, and reducing it in 41%, of the genes.

 In 2010, The Broad's Connectivity Map predicted that GHK, at a low and non-toxic level, would reverse the effects of aggressive, metastatic human colon cancer on 38 critical cancer-spreading genes. Specifically, it found that the cancer was suppressing genes used to kill cancer cells; the programmed cell death apoptosis system. Cells have "checkpoints" to determine if DNA is made properly and if it is not, the programmed

cell death system terminates the cell. Recently, it was found that GHK did not harm certain normal cells, but acted reset the programmed cell death in human cancer cells and inhibit their growth. [GHK-CANCER](#)

In 2012, the Connectivity Map indicated that GHK would shift the gene output in severe emphysema in chronic obstructive lung disease (COPD) and shut down tissue destructive genes while increasing the output of genes associated with tissue healing and remodeling. This prediction was confirmed when tested on cells from patients with the disease where GHK, at a very low and non-toxic level, shifted the cellular genes patterns from tissue destruction to tissue repair. [GHK-EMPHYSEMA](#)

The Holy Grail of genome research is resetting the genes for health. GHK appears to do this on a wide range of tissues and diseases. Since GHK was originally isolated as a factor high in young persons but that declines with age, it is also possible that the molecule might restore humans to a biologically younger state.

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## Featured Topics

----- Published Studies on Tissue and Skin Remodeling Copper Peptides ▼

## About Dr. Pickart

HOW THE STORY OF MY LIFE AFFECTS YOU AND YOUR FAMILY

## Combined Topics

1. PUBLISHED STUDIES ON TISSUE AND SKIN REMODELING COPPER PEPTIDES
2. GENERAL BIOLOGY OF HUMAN SKIN

## Copper Peptide Experiments and References

2.1 BACKGROUND WORK ON COPPER PEPTIDES

2.2 PUBLISHED ARTICLES & PRESENTATIONS

2.3 IN THE HUMAN BODY

2.4 AGING REVERSAL EXPERIMENTS

2.5 THE COPPER SWITCH

2.5.1 SIMILARITIES & RECEPTORS FOR ALBUMIN-CU, GHK-CU, AND DIPS-SALICYLATE-CU

2.6 SKIN RENEWAL CYCLE

2.6.1 GHK'S CONTROL OF STEM CELLS

2.7 COSMETIC SKIN REMODELING

2.71 COPPER PEPTIDE AGING REVERSAL CLINICAL STUDIES

2.8 WITH LASER AND LED LIGHTS

2.9 WOUND HEALING

2.9.1 WOUND HEALING IN HORSES AND DOGS

2.9.2 ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION (ALC)

2.9.3 GHK RESETS GENES IN EMPHYSEMA AND COPD TO HEALTHY STATE

2.9.4 GHK AND INFECTION PROTECTION

2.9.5 GHK AND DNA REPAIR

2.10 SKIN AND HAIR TRANSPLANTATION

2.11 COPPER PEPTIDES: ANTI-OXIDANT AND ANTI-INFLAMMATORY ACTIVITIES

2.12 HAIR GROWTH

2.13 HAIR FOLLICLES AND SKIN REMODELING

2.14 STOPPING HAIR LOSS AFTER CHEMOTHERAPY

2.15 BONE HEALING

2.16 SUPPRESSION OF CANCER TUMORS AND CANCER METASTASIS GENES

2.17 STOMACH AND INTESTINAL HEALING

2.18 LIVER REGENERATION

2.19 NERVE REGENERATION

2.191 COMBINED WOUND HEALING, ANTI-PAIN, AND ANTI-ANXIETY EFFECTS

2.192 GHK AND UPS (UBIQUITIN PROTEASOME SYSTEM)

2.20 BLOCKING OF UV DAMAGE TO SKIN CELLS

2.21 FINGERNAIL GROWTH

2.22 ORGAN REGENERATION

2.23 TISSUE REGENERATION BIOCHEMISTRY

2.24 CHEMISTRY

2.25 NEED FOR IMPROVED COPPER PEPTIDES

2.26 FUTURE USES

3. A POSSIBLE MECHANISM WHEREBY SKIN REMODELING MAY SUPPRESS CANCER METASTASIS GENES - WOUND HEALING SOCIETY - 2011
4. BREAKDOWN RESISTANT COPPER PEPTIDES WITH IMPROVED HEALING ACTIONS - WOUND HEALING SOCIETY - 2009
5. GHK DEFINES THE BIOCHEMICAL REACTIONS OF TISSUE REMODELING - WOUND HEALING SOCIETY 2008
6. IMPROVING HAIR GROWTH WITH SKIN REMODELING COPPER PEPTIDES - COSMETICS & MEDICINE (RUSSIA) 2004 AND BODY LANGUAGE DERMATOLOGY (UNITED KINGDOM) 2004
7. SKIN REMODELING WITH COPPER PEPTIDES - COSMETICS & MEDICINE (RUSSIA) 2004
8. NUTRIENTS THAT TURN BACK THE CLOCK - BYPASSING CONFUSION AND FOOD WARS
9. METHODS AND COMPOSITIONS FOR INCREASING SKIN REMODELING US PATEN 8,184,204
10. THE ESSENTIALS OF COPPER: YOUR BODY'S PROTECTIVE AND ANTI-AGING METAL
11. SCIENCE REFERENCES

We will be loading many more articles over the next few weeks.

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## Questions or Advice?

Email Dr. Loren Pickart: [DRLOREN PICKART@GMAIL.COM](mailto:DRLOREN PICKART@GMAIL.COM)

Alternate Email: [GHKCOPPERPEPTIDES@GMAIL.COM](mailto:GHKCOPPERPEPTIDES@GMAIL.COM)

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 SAFER SUNTANNING - AVOID SUNSCREEN CHEMICALS

### INFORMATION

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