



Garry Gordon, MD

*Nutritional Uses of RNA Therapy  
in Management of Most Diseases*

Cubberly Community Center  
4000 Middlefield Road, Room H1, Palo Alto, California

August 19, 2004 at 7:00 PM

***Future Speakers:(on Third\* Thursdays)***

- **September 16** , Frank Shallenberger, MD, on Health, Aging and Disease. It's All About Energy.
- **October 21** , Ray Francis on "Aging and Disease are Mistakes" and Bill Grant on Health Benefits of Sun and Vitamin D.
- **November 11** , (\***Second Thursday**) Julian Whitaker, MD, on Orthomolecular Treatments for Chronic Diseases.
- **December 16** , Gerald Reaven, MD, on Insulin Resistance, Moderate Alcohol Consumption, and Risk of Cardiovascular Disease.
- **January 20**, Parris Kidd, PhD, on Phospholipids and Omega-3 Fatty Acids for Brain Vitality - Recent Advances.

# BioMed 101 - Session 4

Steven Fowkes

## "Towards a Designer Brain: A review of neurotransmitter precursors"

This talk will briefly review the metabolic pathways for making neurotransmitters and discuss examples of precursors, cofactors and pharmaceuticals that can modify the influence of neurotransmitters on the objective brain and subjective mind.

## Meet Dr. Garry Gordon

GARRY F. GORDON, MD, DO, MD (H), received his Doctor of Osteopathy in 1958 from the Chicago College of Osteopathy in Illinois. He received his honorary MD degree from the University of California Irvine in 1962 and completed his Radiology Residency from Mt. Zion in San Francisco, California in 1964. Dr. Gordon is on the Board of Homeopathic Medical Examiners for Arizona and is Co-Founder of the American College for Advancement in Medicine (ACAM). He is Founder/President of the International College of Advanced Longevity (ICALM) and Board Member of International Oxidative Medicine Association (IOMA). He is also a member of the Scientific Advisory Committee for The National Foundation for Alternative Medicine.

As an internationally recognized expert on chelation therapy, Dr. Gordon is now attempting to establish standards for the proper use of oral and intravenous chelation therapy as an adjunct therapy for all diseases. He lectures extensively on: "The End Of Bypass Surgery Is In Sight" and "The Future of Chelation".

Currently, he is President of Gordon Research Institute and a full-time consultant for Longevity Plus, a nutritional supplement company located in Payson, Arizona. He is responsible for the design of the majority of their supplements, which are widely used by alternative health practitioners around the world

## Overview

Dr. Gordon will be demonstrating how nutritional RNA (Ribonucleic Acid) based therapies assist in slowing down aging and chronic degenerative diseases. These include prostate cancer, stress, inflammation, weight, aging, joint support, memory, bowel conditions, autism and ALS. The current RNA based research in pharmacology is using RNA therapies to turn off specific genes with nutritional based products that provide these specific effects without waiting for RNA-I (Interference RNA ) therapies that are now on the drawing board.

## Background

From the mid 1950's to the late '70s, Dr. Benjamin Frank pioneered the use of nucleic acid in the therapy of aging and chronic diseases. He showed that it had profound effects such as: anti-aging, increased energy, anti-anoxia (oxygen sparing), anti-low temperature and freezing, anti-viral, and cognitive enhancing.

We have the same unique DNA in every cell in our body, yet something determines how different cells differentiate. The majority of these sophisticated genetic control factors are proteins which monitor metabolites and other chemical cues by selectively binding to targets. RNA can also form precision genetic switches called Riboswitches which can control fundamental biochemical processes. Riboswitches are dual function molecules that undergo conformational changes and communicate metabolite binding. By modulating the levels of RNA, one has the ability to specifically affect the levels of any protein in the body.

## How RNA Works

In the body, RNA helps to transfer genetic messages from the DNA to guide the manufacture of proteins using the amino acids that are extracted from foods or created by the body. What this means in practical terms for medicine is that the RNA has the ability to direct the synthesis of proteins. This is an amazingly powerful concept. It doesn't matter if the proteins are involved in heart disease, cholesterol metabolism, or weight management. By modulating the levels of

RNA one has the ability to specifically affect the levels of any protein in the body in a specific way. This process of modifying the RNA to make changes in the protein is a naturally occurring regulatory process. This natural process of RNA regulation is used by bacteria, by plants, and by animals as a central regulatory system. For instance, when your body is exposed to heat, your body responds by making a group of proteins called heat shock, or stress activated proteins. The way that your body translates the information to make these proteins after the body has sensed heat, or stress is by modifying the levels of specific RNAs that are necessary to direct the synthesis of the specific proteins. The way that your body is able to respond to environmental changes is by modifying the RNA levels so that different proteins can be made in response to a situation.

## **Natural vs. Allopathic**

RNA is an important nutrient involved in cell multiplication and development in every organ or tissue in the body. The body breaks down any ingested RNA that is not used into purines and pyrimidines - the basic components, or nucleotides of RNA. Natural RNA that is eaten as a food is digested via the action of pancreatic ribonucleases into these individual RNA nucleotides and nucleosides. As a consequence the use of natural unmodified RNA in allopathic medical drug development has been hampered by its degradation into its component building blocks. The direction of RNA in allopathic medicine has concentrated on developing synthetic degradation-resistant, patentable RNA molecules with elegant descriptions of proposed mechanisms of action. However, in alternative health care the focus has been on the beneficial effects of natural RNAs, regardless of their potential degradation or mechanism of activity

## **The Body in Stress**

For years RNA was not considered to be an essential nutrient. It was thought that the body was able to synthesize sufficient RNA nucleotides (purines and pyrimidines) for nucleic acid synthesis in the body. When the body is not under metabolic stress, rapid growth or limited food supply, these nucleotides are synthesized, catabolized and excreted from the body. However, under conditions of dietary need, a larger percentage of the ingested RNA is transported to the various tissues in the body where there is a conversion of these nucleotides into RNA in the relevant tissues. These purines and pyrimidines may also have some direct effect on cellular

regeneration functions in the body, as well as aiding in the production of the body's own RNA. Certain cells in the body such as bone marrow cells, lymphocytes, and erythrocytes are not able to synthesize purines. The intestinal mucosa is not able to synthesize enough purines to cover its metabolic requirements. Under the conditions above, it becomes essential to obtain purines and pyrimidine RNA nucleotides from food to address these imbalances.

## **Food Sources and RNA Mechanisms**

Dietary sources of RNA include fish and nuts. Specifically, foods rich in RNA include seafood, fish, beans, mushrooms, beef, broth and vegetable soups. Sardines are the most potent source containing 1.5 percent nucleic acid vs. red meat which contains 0.05% nucleic acid. While the basic RNA molecule is the same for dietary, nutritional, homeopathic and therapeutic purposes, several mechanisms of action have been suggested to describe the way in which the RNA functions in cells. It is well known that several naturally occurring RNA based mechanisms are used by mammals, plants and bacteria to regulate cellular processes.

## **Effects on Diseases**

Supplementation of dietary nucleotides has shown considerable ability to regenerate injured livers, and result in the recovery of damaged livers in experimental cirrhosis. Dietary nucleotides have also been found to increase HDL and decrease LDL ratios. Dietary sources of RNA purines and pyrimidines have been shown to be important for modulating inflammation. This is true for regulation of specific aspects of inflammatory responses, such as immediate or delayed type hypersensitivity, as well as for maximal helper T cell function. The addition of yeast RNA was effective in reversing effects in folate methyl deficiency, a critical pathway for methylation in the body. Dietary supplementation with RNA helped to promote healing of small bowel ulcers in experimental ulcerative colitis. Yeast RNA was found to accelerate healing in patients undergoing cardiac surgery. Patients had lower rates of organ dysfunction as well as lower rates of infection. Several studies have established the ability of dietary nucleotides to decrease mortality from bacterial infection, or to help the body deal with infection including multidrug resistant Staph aureus, or Candida infections. As early as 1976, Dr. Frank discussed the benefits of dietary RNA nucleotides to boost the immune system, increase energy, improve skin elasticity, aid in memory, improve transplants, and help protect the body from cancer. The

brain has the highest concentration of RNA in the body, so it is not surprising that dietary RNA has been found to have effects on memory and has also been suggested to affect neurotransmitter levels. Research at Massachusetts General Hospital supports the use of dietary nucleotides in infant nutrition and an infant formula that includes RNA. Cancer studies have found improvements in patients that were given supplemental RNA, prompting Sandoz and Novartis to offer medical foods with RNA for these patients whose primary indications are trauma, surgery, infection, cancer, burns, as well as individuals on ventilators. As a nutritional supplement total RNA is typically utilized in the dosage range from 0.5 to 1.5 grams daily.

Dr. Frank used RNA for various conditions including atherosclerosis and coronary artery disease, demonstrating that carbohydrates especially refined carbohydrates are major contributing factors in elevating triglyceride levels and the progression of atherosclerosis. He prescribed high-dose nucleic acids for atherosclerosis and found that patients had increased exercise tolerance, along with decreased shortness of breath with exertion and disappearance of heart (anginal) pains. He believed that mitochondrial dysfunction was caused by a dietary deficiency.

Congestive Heart Failure (CHF) was also found to have benefited from RNA treatment including the relief of shortness of breath and edema of the legs and ankles. Another example is that those who required three or more pillows to sleep were able to sleep on only one or two pillows. Such doses of RNA ranged from 2 to 9 grams. In addition, patients were urged to maintain an alkaline urine pH of 7.5 and to consume 400 mg of magnesium per day to prevent calcium kidney stone formation.

After performing numerous animal experiments on oxygen-sparing effects of nucleic acids, Dr. Frank found that RNA could affect the length of their survival. Nucleic acid seem to enhance CoQ10 synthesis which helped the electron transport chain resulting in more efficient oxygen utilization and more efficient ATP synthesis. He believed that this “anti-anoxia effect” had profound anti-aging effects. As a result, less oxygen was needed for a given amount of work. RNA supplementation resulted in increased exercise tolerance and muscular strength, improvements in EKG, normalization of liver enzymes, and increased mental acuity. According to his work, patients who had fatigue or low-level vitality who had taken 100 mg of nucleic acid daily for one week felt much better .

### ***Membership Notice***

All members should try to bring a friend to this meeting  
(no charge for first time visitors)

