

Pro-Biotic Bread of Our Ancestors

Four thousand years ago, the nation of Israel was instructed by God to eat no leavened bread, once a year. Israelites and Egyptians lived together when this instruction was first given. The bread they made 4,000 years ago, rose almost the same way the bread we eat today rises. The bread we eat today differs, however, in a very significant way.

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Short history of bread

In the 1950s, when the FDA was cracking down on hygiene and contamination in food, they brought the force of law to the growing trend to use one single strain of *saccharomyces cerevisiae* to leaven bread. This particular strain of yeast made a fluffy, light bread and it acted fast and consistently. Qualities everyone saw as good.

Bread manufacturers are now bound by law to not tamper with special blends of yeast or wild strains of yeast. One could not just brew up any wild strain of bacteria to leaven bread, intended for sale. One could use any whole grain, brown rye or any other interesting grain and recipe, but the strain of yeast was fixed by the FDA to one single strain of bacteria which everyone had to use.

Grocery stores provided this same strain to bakers of home made bread, as a cheap and convenient alternative to the difficult task of making one's own wild sour dough starter.

Curiously, shortly thereafter, we learned that cholesterol was bad for us. We noticed a gradual rise in food allergies and immune system ailments. The problems were slow to proliferate through out the population, but the problems were persistent. Currently, new digestive ailments can now be added to this growing list. Humanity had consumed fats, oils and butters steeped in cholesterols of every kind for thousands of years. Only after the middle of the century did we discover these things were bad. Perhaps, they only caused problems after daily dietary supplements of thousands of organisms which supplied our bodies with genetic tools to process cholesterol and regulate immunity were no longer present in our diets.

New genetic studies

In the late 19th century, microscopes were just getting to the point that we could see microbes crawling around on our food. The general public was horrified! We were clean people. Dr. Pasteur had just taught us that hygiene and cleanliness were essential to good health. People certainly did not want to think about these minuscule living creatures infesting food.

Scientific research found that no matter what we did, microbes were prolific. Studies showed that when we measured the bacterial count of the water in a toilet bowl and compared it to a swab of a freshly cleaned kitchen countertop, the countertop had more bacteria than the toilet bowl.

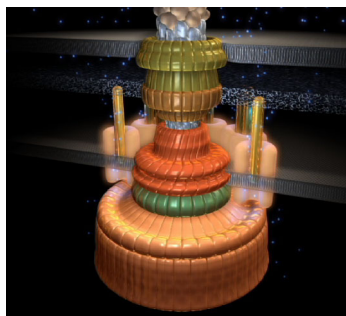
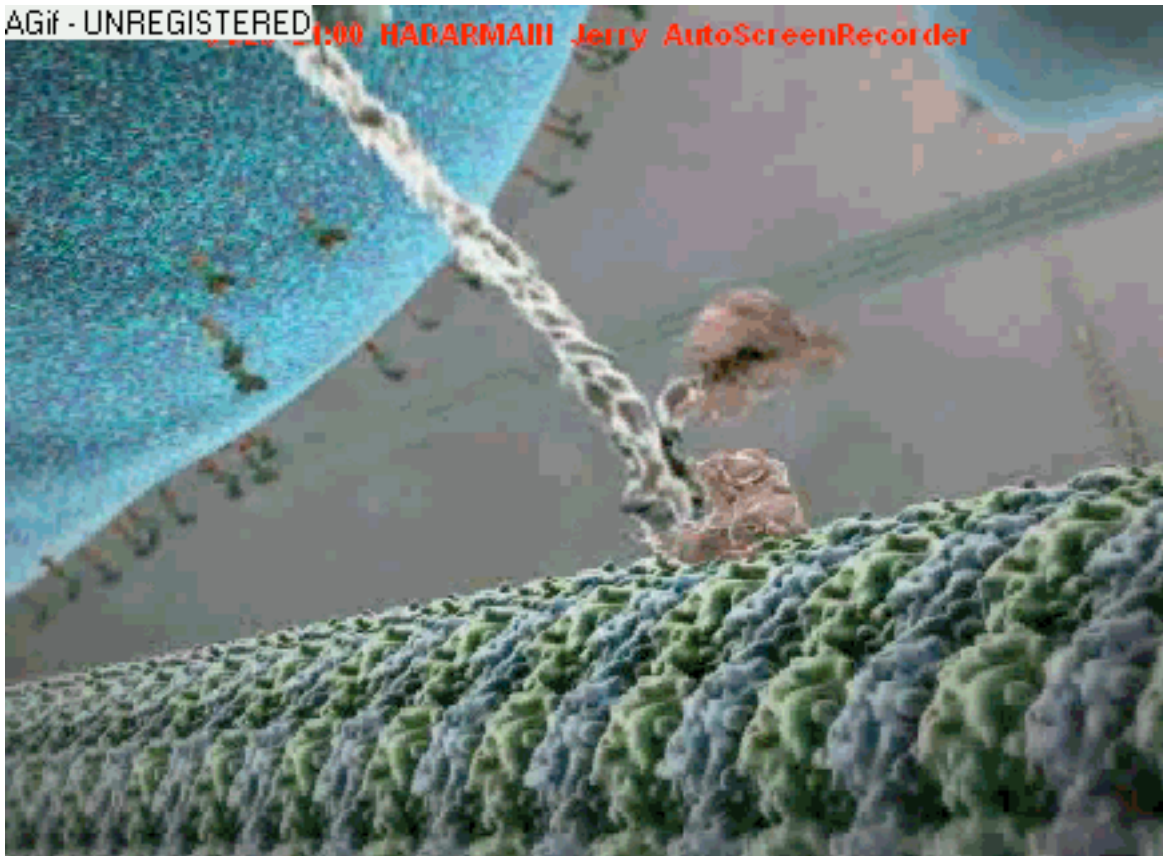
We discovered that while we could not get rid of them, we could change the proportions of which organisms were more numerous and which were less. Research continued to our current understanding of genetic mechanisms, which contain the very instructions of life.

We found that the shape of every bone and muscle, the color of our eyes, the strength of our teeth were all encoded in long strings of genetic instructions written in DNA. What was even stranger was that the instructions themselves did nothing. It was like writing in a book. These instructions were inert. They only contained information.

It took very complex molecular machines called proteins to read these instructions and carry out the chemical activity described by the instructions. Wondrously, complete instructions to build these complex molecular machines were also contained in the DNA instructions themselves.

Those instructions were read by existing molecular machines which then built their own replacements and read other

instructions to build the complex molecular machines that carry on the chemistry required to maintain our bodies and metabolisms. These are some of the complex machines for which DNA contains building instructions.



These "machines" move and undulate and carry on both chemical and mechanical activity. The vast majority of chemical activity going on in our bodies is simply not possible without the help of these machines.

(And we all thought that proteins and biology was just chemicals! These are chemicals. Each blob you see is an atom. The middle molecular machine is too large to see the individual atoms. It 400,000 atoms in size. These are the many of the nutrients that you eat every day. Pro-biotic bread will give your body the genetic instructions needed to build all of the nutrients that you need every day, even if you don't know which ones they are.)

There are two kinds of chemistry. Abiotic and biotic. Abiotic chemistry is natural chemistry. It is the natural ways that atoms of all kinds join together to make simple molecules. But atoms simply can not come together in the ways needed to build the very complex molecules one sees above.

The individual atoms are separately colored in the center picture. It is not possible for atoms to come together in that configuration by abiotic chemistry. Atoms are pushed apart by the natural laws of chemistry in ways that forbid coming to that arraignment. Instructions found in DNA, read by complex molecular machines instruct the molecular machines to manipulate the atoms around these obstacles and find a stable conformation which would have been other wise impossible to obtain.

Well over 99% of the chemistry going on inside our bodies right now is this sort of biotic chemistry. Chemistry which is impossible with out genetic instructions guiding it.

Until very recently, science had assumed that the genetic instructions which guided all the complex biotic chemistry that was taking place in our bodies was contained in our own genome. Very recently, this has been found to be in error. It turns out that the DNA in our bodies do not contain the genetic instructions to guide perhaps as much as two thirds of the chemistry taking place in our bodies all the time. The researchers making this discovery were suspicious of this for a long time. They

already had a good candidate for the source of the missing genetic instructions.

Intestinal microflora, millions of strains of bacteria that take up residence in our intestines communicate with our bodies in well regulated systems of communication.

Research then moved to discover the sorts of things about which our bodies and these organisms communicated. It turned out to be much more than just digestion.

Here are some examples of the communications which we have discovered.

One organism will ask another for a gene that helps them metabolize a problem food.

An organism will ask our bodies to grow more blood vessels in a particular part of our intestines because they plan to grow a new colony there.

Our bodies will ask for increased production of certain biochemicals. The organisms will offer several varieties of this biochemical for our bodies to choose which it prefers.

Our body's immune system will ask for help in dealing with a certain infection. The organisms will lend genetic instructions for the construction of proteins that help the body defend itself.

We are only beginning to catalogue the amazing communication going on between our bodies and these organisms. Clearly life is far more complex than science had ever imagined before this time.

The ancient way of making bread

Egyptians and Israelites were surely unaware of the incalculable value of the microorganisms which they were culturing in the bread they ate. Until very recently, we also, were still unaware of our body's tremendous reliance on the additional genetic instructions contained in these organisms.

But it is clearly evident that a large host of organisms were especially designed to augment human digestion, immunology and biochemistry such as food allergies. These organisms lived in the food grains we are used to cultivating and mankind was probably taught which grains to use and how to culture these organisms for our benefit at the same time we read that mankind was taught how to "...dwell in tents, and [tend to] cattle... [use] the harp and organ ... [use] brass and iron..."

Israelites would culture the organisms which populated the husks of rye and wheat and a few other food grains. We assume it was unknown to them, but this large variety of organisms provided their bodies with needed genetic instructions which our own genome lacks.

Limiting that variety to only a single strain of organism as we do today when we use grocery store yeast, severely limits the variety of the genetic instructions available to our bodies to carry on our daily metabolic needs. The limited supply of genetic instructions found in this one strain of modern yeast is sufficient to provide basic utility of metabolism. But should the body run into difficulty, it might lack genetic instructions for chemical processes which could aid metabolism immensely.

Besides the spiritual implications of unleavened bread which are not well understood, there may also be health benefits to restarting the cultures which were used for a year and then discarded, once a year.

The yeast culture which any family used during the year, modified itself continually, depending on seasonal changes in diet and the health of the family. Each time a member of the family tended the sour dough starter, that colony of organisms would sample the families chemical messages present on the hands of the family member tending the dough. This would cause adjustments to the colony.

Once a year, this starter was thrown out and on the first day of Passover, a new starter was begun. Starting with a fresh batch of wild yeast organisms which would require about a week to mature enough to leaven bread again.

The author's recipe

Ingredients:

Organic whole grain rye.

Organic whole grain wheat.

The best starter will come from grains that are not processed. Not overly washed. The hulls of the organisms provide shelter for the wild organisms we are looking for.

If you have the right stuff, you will see whole grains. It will not be ready to use out of the store. It will need grinding before you begin. Unbleached, malted general purpose flour. Do not use self rising flour.

Self rising flour contains exactly the single strain of modern yeast which will dominate the colony almost every time, suppressing all other strains. This commercial strain of yeast exists also in the wild. All the various strains are represented in the raw grain hulls. Chemical messages from the preparer's hands and other chemical conditions will result in some strains becoming more dominant and some strains becoming less dominant. It is this natural proportion having arisen by natural culturing that we are looking for. Introducing hundreds of billions of one strain from a commercially available yeast package defeats this natural equilibrium.

Select a porcelain, glass or plastic container with a loose fitting lid. Do not use metal. The presence of metal can effect the developing cultures severely. The lid should keep out dust and splatters, but the lid should not be air tight.

Grind the whole grain rye and wheat to obtain 1/3 cup of both.

mix

1/3 cup ground rye

1/3 cup ground wheat

1/3 cup unbleached, malted general purpose flour NOT SELF RISING
2/3 cup distilled water

Before beginning do not wash your hands with detergent or any other harsh chemical. Use only water to wash your hands. Handle the grain. Take a handful and sift it through your fingers as you measure it out. This ensures that the colony will have a sample of your specific biological chemical messages.

Stir with a plastic or wooden utensil. Do not use metal.

Cover and keep in a warm, dark place. Above the refrigerator is great. Make sure the temperature is warm but not too hot. 80 to 95 degrees. Over 100 degrees will kill the culture. It must be hidden from sunlight. UV light will kill the culture.

Let it culture for a day. (24 hours) When you look at it again, you should find it has nearly doubled in size. Pick your container accordingly. It may grow more slowly if the temperature is cooler. It should be frothy, with many bubbles. It will have a musty odor. If it has done nothing, something lethal to the organisms is present. Check the grain for pesticides. Check the container for soap residue. Check your hands for chemicals, bleach or soap. Check for metal. And start over.

If it is as described, measure out 1/2 cup of this "brew" and throw away the rest. Clean the container with water only, and replace the 1/2 cup of brew to the container. Add 1/2 cup of unbleached, malted, flour (remember no self rising) Add 1/3 cup of water. Mix with wood or plastic (no metal) washed only with water. This is "feeding" the culture.

Return to the dark, warmth for another 6 to 12 hours before feeding it again. It is ready to be fed again when it has doubled in size again.

Repeat this twice a day for a week. This gives the colony time to mature and find an equilibrium taking all the environmental circumstances into account. The brew will likely make a good loaf of bread before it is completely mature.

I use a week simply because God told us to wait about a week before using leaven again. I surmise, the culture may need a week to find some balance that we do not yet understand.

From time to time, you might find a brown liquid on top. This is fine. Just pour it off, or don't. It is harmless. Each brew will be different. Each brew will be unique.

To keep your brew indefinitely you will need to repeat this (feeding) just like above once a day indefinitely.

Or it is OK to refrigerate it. If you keep it in the fridge, it can go a week with out feeding. You will know when to feed it again, when it has doubled in size.

The culture or brew is very resilient. It will accommodate large errors in amounts and times of feeding. It does very well because its purpose is to adapt to the environment so that it can provide your body with many and varied genetic tools.

BAKING WITH YOUR BREW

If refrigerated, remove from the fridge to let warm over night. Feed it the night before. Do not throw away the excess. Leave the excess in the container.

Feed again as needed and allow it to grow until you have 3 cups. No need to measure it carefully. "A little leaven leaveneth the whole lump" Your brew will accommodate most any errors.

If there is not yet 3 cups, the temperature may be too low. Feed it again and do not throw away the excess. Just leave it in the container.

Use 2 cups of brew in place of commercial yeast in your favorite bread recipe. Do not use any commercial yeast. That will defeat any advantage of the wild yeast colony you have just grown. Feed and return the remainder to your usual way of storing it. (fridge or warm)

Each recipe will react a little differently. You will have to adjust for rising time. Wild yeast will sometimes rise faster but most often slower than commercial yeast. It depends entirely on what strains have found their balance with your family and home and local conditions.

Your dough has risen when you poke it with a finger and the hole doesn't come back.

-end-

The incredible power of a full genome of biological tools is that these organisms contain genetic instructions that can literally reform matter. They have the tools to turn sugar into protein. Starch into fiber. The kind of grain you use is far less important than the cargo of genetic information carried by this wild colony of yeasts.

You will soon have authentic bread just as our ancestors ate.

**Feel free to contact Jerry with any questions or
to tell me how it worked for you.
Soon, a companion booklet with more detail.**