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Bloodwork panel for longevity:

1. **Vitamin D 25OH test** - Ideal level is between 40 and 80. Vitamin D is the master regulator of 100's of functions in the body. It is a regulatory hormone not a vitamin
2. **Full Cholesterol panel.** My first choice is **Cardio IQ from Quest Labs** if not get the **NMR Lipoprofile blood test from Lab Corp.** These combine numerous tests that will give you a holographic look at your cholesterol by breaking it down into its components plus a lot of other valuable information. *Oxidized small particle cholesterol is the problem- you want "Light Fluffy LDL"* The **apoB number** is very important. Ideal is .8 or 80mg/dl. **Triglycerides** are an important number 70 is ideal. Triglyceride to HDL ratio is more important than LDL. A 1:1 ratio is ideal if you have a 2:1 it could indicate pre-diabetes.
3. **CBC** - a standard blood work - liver, kidney function ect and white and red blood cells, hemoglobin ect. **ALT** is a liver enzyme test it needs to be below 25 - above that is a sign of fatty liver.
4. **Fasting Insulin** - ideally it should be less than 10 - 5 is the ideal, above 15 is a problem.
5. **Uric Acid** - 5.5 is the upper limit anything over is a problem. 5.7% or below is ideal.
6. **HbA1C** - 120 day average of your blood sugar levels.
7. **ALT** - a liver enzyme test (often this is part of normal blood work) - *the upper limit is 25 if you are white and 20 if you are black (African decent)*. If ALT is high it could be an indicator of fatty liver.
8. **hsCRP** - inflammation marker (if you get the Cardio-IQ from Quest it's included in this test). Ideal <1.0 any level over 3.0 is high. (*only get this run when you don't have a cold or flu or infection of any kind or haven't fallen or injured yourself - ie bruised. This will cause the number to go up and you won't get an accurate number.*
9. **Homocysteine** - another important marker related to inflammation and the liver's ability to detoxify and process neurotransmitters - there is a big genetic component to this and it can be easily corrected with B-complex vitamins. *If your homocysteine levels are high it can contribute to many health conditions - inflammation, chronic depression, cardiovascular disease, Alzheimer's, osteoporosis.* 5 - 15 is good > 50 is bad.
10. **Omega-3 Index** - this checks the ratios of fats especially Omega 3's in your blood. The goal is to get to 8% total. Go to **OmegaQuant** to order the test - it comes to your home and you do a finger prick blood sample. The brain is 60% fat by weight. Every cell membrane has a lipid (fat) coating. When you have sufficient Omega 3 and low Omega 6 your body is naturally less inflamed.
11. The other test to look at is a **Calcium Score - Coronary CT Scan** - this costs about \$100.00 and is done at South Coast - it measures the amount of calcification that is in the arteries around the heart. Great information on cardiovascular disease and plaque buildup.

These tests will really give you the information you need to take control of your health. - all the above can be corrected if any of these tests show something out of balance.

8 processes that cause the chronic health problems ie. Diseases

They happen in the cells - you can't stop them you can only slow them down

1. **Glycation** - a glucose binds to a protein when it does this it makes the protein less flexible - it makes the cell more fragile and functional - this is what measuring hemoglobin A1c is. It is the cause of wrinkles, cataracts, the cause of cardiovascular disease. It is one of the causes of dementia (not the only cause) - glucose and fructose are the cause - fructose is 7x worse - 7x faster and releases 100x more oxygen radicals. SUGAR IS THE BAD GUY
2. **Oxidative stress** - Hydrogen peroxide - its made in your liver from sugar you shouldn't be making it in your liver. Environmental toxins contribute to this.
3. **Mitochondrial dysfunction** *Mitochondria is the energy producing system of the body* - fructose inhibits 3 separate enzymes that the mitochondria need. CPT-1, AMP-Kinase - which is the fuel gauge on the liver cell, A Cat dehydrogenases long chain - necessary to get the fatty acids oxidized. Bottom line is if your mitochondria are sick so are you. Exercise increases mitochondria. CoQ10 is a supplement that helps the body make mitochondria.
4. **Insulin resistance - get sugar and fructose out**
5. **Membrane instability - fish oil fatty acids (Omega 3 fatty acids) help this work better.** The membranes of your cells and especially your neurons.
6. **Inflammation** - the gut microbiome - lipopolysaccharides, sugar, bad fats - maintain the gut barrier - the mucin layer and proteins that guard the gap junctions to maintain the bacteria. If you don't feed the bacteria (good bacteria) - the body will consume the mucin layer. Fiber is the key - feed the gut. Sugar hurts the tight junctions. Fructose creates a leaky gut. Fructose has to be phosphorylated to get across that depletes the ATP. Bottom line keep your gut happy feed it fiber
7. **Methylation** - keeping it in balance. Keeping homocysteine levels in balance. B1,B2,B6, B12 and Folate
8. **Autophagy** - the body makes junk every day. You have to recycle it daily to make room for the new cells. Intermittent fasting, High quality deep sleep and exercise helps the body clean up the junk.

Robert Lustig MD - Mark Hyman MD - The Doctor's Pharmacy Podcast.

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The true dangers of sugar

www.robertlustig.com read his book Metabolical