



## **Aging Intervention Program**

### **System Therapies Metrics**

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### **Personal Aging Intervention Program**

#### **Small/Pilot Study / N=1 Format**

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Updated frequently. You may not have the current version. Check frequently for updates.

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Current version:

<https://www.aginginterventionfoundation.org/AgingInterventionProgram.pdf>

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**Disclaimer:** These are ideas that I use in my own age management program. It's not my intention to provide specific medical advice, but rather to provide others with information to better understand their health. This is not medical advice including diagnosis and treatment. Always seek the advice of a trained health professional for medical advice, diagnosis or treatment.

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Intro: This is kept simple and to the point with details on the most important aspects that can vastly improve your healthspan, lifespan, and quality of life.

The most important parts are yellow highlighted so you can find them easily.

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***Attn Scientists Who Are Aging SOLUTION CREATORS:***

If you are developing a new aging therapy with outstanding potential, then I can help – along with my wide network – in many ways including:

funding, patent, business, legal, scientific, promotion among others.

Conversations are CONFIDENTIAL.

You stay in control.

We're in this to solve aging.

Call me at 1 949 922-9786

or email JAdams -at- AgingInterventionFoundation.org

or JAdams -at grg.org

***Attn Others Active in Aging: Let's Partner Together***

If you would like to work together to advance on biological aging solutions

Call me at 1 949 922-9786

or email JAdams -at- AgingInterventionFoundation.org

or JAdams -at grg.org

## **PART 1: SYSTEM**

### **MISSION**

**There are many ways to say it:**

- **Increase Healthspan and Lifespan**
- **Slow and ultimately reverse biological aging and age-related decline for more years of healthy living**
- **Reverse these effects of aging, among others: loss of function, decreased fitness, increased mortality rate, decreased fitness, damage accumulation**
- **Shift objective biological measures toward youth.** These include lab tests like general health and safety, DNA methylation age, proteome age and profile, inflammation, phenotypic age and other calculations derived from lab tests, and cognitive and physiological measures
- Increase healthy lifespan
- Gain healthier and longer lives.
- Solve the problem of aging so we can stay young and healthy, feeling great, doing the things we love to do for a very long time.
- Age reversal / Rejuvenation / Regeneration
- Skip the misery that comes with growing old
- Stay out of hospitals and crematoriums, and on this side of the grass - and feeling good about it
- “Fountain of Youth”

### **Terms for the specialties**

**These were kindly provided by Philip Lee Miller, MD**

- Age Management
- AntiAging
- Longevity medicine
- Functional medicine
- Complimentary Medicine
- Alternative Medicine
- Rejuvenation Medicine
- Regenerative Medicine
- Integrative Medicine

**Methods and therapies range from conventional and common sense to experimental pharmaceutical and biological.**

**Here our focus is on practical SOLUTIONS -- therapies, methods, biomarkers, etc. -- we can use right now to stay younger longer, along with aging intervention therapies to be developed in coming years that will have much greater healthspan and lifespan increasing effects.**

**Biological measurements are taken to evaluate the results and improve. Frequency and dosing are fine tuned, and methods and therapies are carefully combined for best effect.**

## **End Results We Seek**

It's easy to get immersed in the mechanics of studying and implementing therapies, and testing and evaluating biomarkers like lab markers.

Let's keep our eye on the end results we seek. Most of us are looking to maintain or enhance these end results – and have them last a **very long time** (ie stay alive). You might categorize them as physical, mental, emotional and spiritual.

- **Physical**

- **Mobility\*** – ability to easily move around in, and interact with, our environment
- **Sensory** – vision\*\*, hearing, smell, taste, touch, kinesthetic, balance, proprioception.
- **Healing** – rapid recovery from injuries, infections, other damage. Or avoid them completely.
- **Freedom from infection - immune function**
- **Pain-free living.**

**Some practical examples of this is being able to walk comfortably and briskly anywhere we want to go, and maintaining hand strength in order to open various plastic packages and twist containers.**

- **Cognitive/Mental function** – clarity of thought, problem solving, productivity  
Words like memory, focus, accuracy, learning, concentration have been used.  
**One useful practical application is being able to remember a series of numbers from a sheet of paper, then enter them into a keypad or phone without looking back and forth from the paper to the keypad.**

- **Emotional and Spiritual - Subjective feeling of well-being, enjoyment of life, fulfillment, joy, connection with others, feeling that life is meaningful, engagement in life.**  
**Although measures of emotional state exist, this one usually relies more on subjective perception of well-being and happiness, and connection.**

You could list others, but most affect the above. There are sophisticated systems to quantify physical, mental, emotional, social functioning and other domains, but here it's kept simple.

\* Re Mobility -- you have to be on crutches for a while, or in a walker, or stuck in a wheelchair or hospital bed to truly appreciate this.

\*\* Since I've had six eye surgeries, and many kinds of strange instruments and needles stuck in my eyes, and several laser treatments including a spot weld job, and countless ophthalmologist visits and tests for the last 35 years or so, maintaining vision happens to be near and dear to my heart.

A recent research study reminded us that in addition to being the windows to the soul, the eyes are also windows to measuring aging. The eyes and olfactors are extensions of the brain.

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## **A practical question:**

Are you happy and fulfilled right now on the journey toward longer healthier life? If not, what makes you think you'll be happy after achieving it?

**OK, maybe after implementing a health and age management program our physiology and mental structure will be better tuned and we'll get more joy out of life. Just suggesting you induce – and expect - feelings of joy and well-being right NOW.**

Another one: Why? What will you do with all the extra years, decades, centuries after aging is solved? I suggest considering a purpose, and that might be creating a better world.

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#### **The SYSTEM in SIMPLEST terms:**

1. **Select a therapy we believe will facilitate healthspan and lifespan, and make us biologically younger.**
2. **Select an appropriate set of biomarkers and objective measures -- typically lab tests, and cognitive and physiological tests.**
3. **Do the tests**
4. **Take/do the therapy**
5. **Retest -- look for a shift towards a more youthful profile.**

I wish it were always that simple, but that's basically it.

Then consider combinations and dosages.

We may be faced with the personal decision of taking an approach where only one therapy is tested at a time and in a controlled manner (requires time and organization) – or multiple therapies are mixed (and there is some uncertainty as to which one works or whether it's the combination). This decision may depend on things like your risk tolerance, and number of expected years remaining in your life.

We'll continue this program until more effective aging intervention therapies are developed.

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#### **A few core concepts I keep in mind:**

- **SAFETY** - Be safe, and rely on supervision by an EXPERIENCED physician or qualified medical expert.

Note: A number of so called “experts” don't know much about practical application. I found out the hard way once.

- **Self reliance**
  - **Aging is 100% fatal. After thorough study and under physician guidance you are free to choose how to take intelligent risks accordingly.**
- 

**MEASURING RESULTS** with biomarkers and other objective measures is key.

They are indicators of how well a therapy is working, and how we might expect to enjoy the core benefits we are seeking (some are described above) into the future.

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### **My Short term Plan (since 1999 and into the future):**

**Use currently available therapies to slow aging, reverse some of its effects**

**A list is in part 2.**

Test, refine and measure results of aging intervention therapies, and evaluate combinations and dosing program, using currently available therapies and methods to gain added years or a decade or two.

Biomarkers/objective measures will be applied to determine the best personal program.

### **Long term Plan ongoing:**

**Create, and partner with researchers and labs, in the development of new therapies that will keep us youthful and healthy, and making the world a better place, for a great many years to come – perhaps someday as long as we choose.**

### **Right now top new candidates look like:**

#### **Most important**

- Reset the epigenome (DNA methylation and others) to a more youthful biological age / cellular reprogramming -- possibly using Yamanaka factors and others
- Gene editing/therapy -- great interest in knock-ins and plasmid “minicircle” gene therapies to place youth enhancing genes.  
Analyze an individual’s genome with gene analysis and annotation system, create personalized gene therapy

#### **Next**

- More effective senolytics - therapies that remove senescent cells, which are basically old worn out cells that stay around causing problems and influencing surrounding cells to become senescent
- Remove harmful pro-aging factors from blood and tissues
- Add youth enhancing factors found in young blood
- Restore mitochondria function
- Microbiome – personalized, probiotics and transplants
- Personalized biomarker tracking systems
- Personalized programs for GDF-11, klotho and others
- Further development and refinement of high value therapies offering at least some healthspan and lifespan improvement. Example SGL2 inhibitors like Jardiance for glucose control, rosuvastatin for lipid management
- And this one will seem highly visionary and extreme, and even bizarre -- full body transplant with lab-grown bodies (obviously this one is very long term).

And many other innovative advances yet to be conceived.

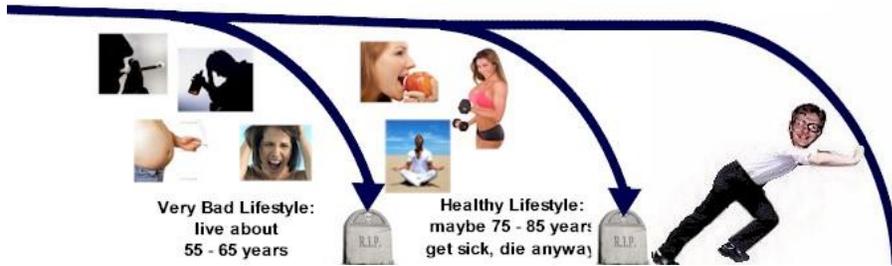
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### **Goal setting**

High achieving people tell us we need goals, and they should be factual and specific, with dates for accomplishments.

Here’s mine: You, and me and everyone we care about – everyone in the world via whatever form of social media exists – to join us at my big 100<sup>th</sup> birthday party on Dec 17, 2049 1:00 pm. We are all in great health. There’s music, singing, dancing, great conversation.

That's when the long-term planning will begin.



These quotes come to mind:

*There is no wealth but life*

*Too soon old, too late smart*

*What we can conceive, we can achieve*

*Impossible only means that you haven't found the solution yet*

*Success is where opportunity meets preparation*

*Nothing is impossible for the person who refuses to listen to reason*

*Do not go gently into the night . . .*

*take wise and decisive action to keep the lights on*

I am often reminded of this one in particular:

*History is littered with the sun bleached bones of those, who at the dawn of victory sat down to rest . . .*

*and while resting, died.*

Someone really smart once said

*"Be careful what you wish for, lest it come true."* -- Aesop

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**VERY IMPORTANT: Before pharmacological therapies, start with the fundamentals of conventional medicine and health practices, and common sense:**

**SOME TOP ONES:**

- **Regular health and disease screenings -- get early diagnosis and treatment for disease conditions -- medical and dental checkups, blood tests, eye screenings, flu/pneumonia/shingles/tetanus shots, pap smear and others advised by your doctor.**
- **Catch problems early and fix them.**
- Some prominent researchers in our aging intervention community are now dead, but had they detected diseases and received treatment early would probably still be with us today.
- **Great nutrition with reduced calories** (may include some form of **fasting**) Chew food slowly and thoroughly.

- **Exercise** – like weight/resistance training, aerobics, high intensity interval training, moving the body in all possible ways, vary it with others
- **Good Sleep**
- **Mental/brain health** – includes stress reduction, meditation, laughter, positive thinking, compassion, forgiveness, and grounding in the present with a vision for the future.

**Add to that:**

- Human interaction, dental care, moderate and appropriate amounts of well-designed nutritional supplements from trustworthy sources, adequate amounts of pure water (my personal program it's around 1/2 gallon a day spread with small amounts throughout the day – glass containers - possibly filtered or alkaline), reduce toxicity, reduce risks, personal safety and security, sexuality, spirituality
- Challenge the body (not in excess of course). Have variety. Plan for tomorrow, but live for today.
- Personal development, variety, art, music, and appreciation of the wonders of the world each day.
- Well rounded life – tending to health, family, social, financial, business, civic, spiritual aspects.
- Laughter, joy and fun!
- **ONLY THEN** on to careful evaluation and use -- with emphasis on safety and under guidance and approval by a qualified physician or medical practitioner -- of more advanced pharmacological therapies like metformin, rapamycin, senolytics, NAD, GDF-11, acellular nanoparticles, and others described in PART 2.



**Key Words and Concepts:**

**Small study / N=1 format**

Self Directed Aging Intervention Researchers, Aging Solutions, Healthspan, Longevity "Fast Trackers", innovators, visionaries, early adopters, explorers, creators, adventurers, pioneers, citizen-scientists, DIY biohackers, "self selected lab rats".

Fast track, practical, ethical, small, informal, cautious and low risk with high potential for increasing healthy years. Safety, reducing risk, informed consent and do no harm, forward thinking, even bold – but not reckless

**As a Self-Directed Aging Intervention Researcher**

I use what you would call a **Fast Track Proof of Concept Trial, or pilot/beta/small study format in humans**

Conducted by a small group of associates, or individually (N=1) as opposed to a large formal clinical trial.

**N=1 can render valuable information under the right conditions – especially if the N = you.**

Everyone's different, and different people experience a wide range of responses to different therapies.

What works in one person may not work in another – and another may experience a negative effect.

Personalized dosing can be important.

How therapies are combined is important. Results can be improved (linearly or exponentially), or therapies can negate one another, or effects can be negative – sometimes very much so.

**Uses aging biomarkers and biological/health outcome measures for**

- Safety (such as liver, kidney, blood, lipids)
- Efficacy

**MD or qualified professional monitored/supervision**

In my personal view an Investigational Review Board (IRB) is optional.

**Be aware of potential negative consequences of self-diagnosis and independent action.**

**First do no harm -- be as sure as possible that no harm will come from it.**

**There are some risks to any therapy. Hardly anything – like driving to your doctor's appointment -- is completely risk-free.**

We're on a frontier here. Uncharted territory.

Weigh risk vs reward carefully.

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**Essential part of the strategy: Find the best personalized aging therapy dosing, combination and rotation that works best.**

**Dose intervals, and skipping intervals can be important depending on the therapy.**

Look to expert input and use your best judgment.

If you are doing doses at different intervals, keep in mind the time after the therapy for it to become effective, and how long it maintains / point at which the effect declines. You will probably only know that by your biomarkers and other objective measures.

ADME / Tox

absorption, distribution, metabolism, excretion, and toxicity.

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**You Can't Manage What You Don't Measure**

MEASURING RESULTS with biomarkers and other objective measures is key.

Measure indicators of any harm that may be done.

If you are testing a compound that has had a positive effect in animal studies, measure for those effects in the humans.

**Be cost-effective, but don't scrimp on lab work.**

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**Highly accomplished age management physician, Philip Lee Miller MD, advises:**

I have some repeated sayings these days. Virtually everything you read is wrong. So when you read any citation be careful. Is this original thinking? Is this a regurgitation or part of an echo chamber? Which is usually the case. This is why even at the Longevity Therapeutic conference, which I thought was excellent, I still think there is imprecision of language and specificity of critical thinking. So I question everything. I take nothing at face value. I ask how did you come to these conclusions? What is your mission? What are you trying to sell me? Everyone in their own way is trying to sell you something. Whether it be goods or ideas or conclusions.

I don't trust rodent studies. These are synthetic models. This is how I come to original thinking.

Specificity of language is so important. Precisely what do you mean? Define your terms.

In presentations and in the literature I see a lack of specificity and transparency. Overuse of acronyms. "We found this result." How? In what compartment?

My motto is, "question everything." Assume nothing. That is how we arrive at great discoveries.

So often I look at various experiments, most notably hormonal studies, and ask the question, "what if you did the opposite?"

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**Partial day fasting**

I'm still not necessarily sold on long-term fasts. Early in my training I learned that the body has a continued need for protein, and if it doesn't get it it will start to consume muscle, organs, and neurons.

OK, I may need to update the knowledgebase on that. Today we hear about how fasting results in the consumption of senescent cells. But for now I'm still clinging to some of that old thinking and doing moderate forms of fasting - in moderation and balance in other components of a personal aging intervention program.

Previously, I would start a fast in the evening. Mornings are my most productive time, and the main problem was that I need full brainpower (limited as it may be) starting from the time I get up.

What follows made partial day fasting much easier for me. It might work for you.

If you're like this, initially try starting your fast just after noon at about 12:30 or 1 pm, or maybe a little later then gradually move it back to earlier and earlier. You will be sleeping during the last part of the fast.

Then start a little earlier, say, 11:30.

Initially just go 12 hr or so. Or less. With repeated effort you will probably find it gets easier and you can fast longer and longer. This morning I did 20 hr -- sure, no big deal for those of you with more experience or of it happens to come easy. But since we are all individuals it's a big deal to me.

Our GRG member and friend Ted Coombs sent this useful guide:

<https://www.healthline.com/nutrition/6-ways-to-do-intermittent-fasting>

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### **Research grade pharmaceuticals/compounds**

A GRG member and friend Dayan Goodenowe advises us:

It comes down to

- Where sourced from
  - Buyer beware.
  - Certain compounds are touchy - and they have temperature considerations depends on the research molecule using. There's no one answer.
  - Comes down to whether you trust the supplier.
  - Be cautious about res gr matls coming fr 3<sup>rd</sup> parties -- where are they getting it
  - The biologics - proteins and antibodies (certainly injectibles) have more purification and stability issues
  - Others like lipids are more simple and stable.
  - Whether they're the source or whether they're reselling it can be important.
  - You have to look at the stability issues.
  - Sometimes it's actually pharmaceutical grade that's labeled as research grade.
  - Find out who's manufacturing it, who their other customers are.
- 

### **Testing Pharmaceuticals Purchased Offshore and Elsewhere for Safety and Efficacy**

**I do not trust drugs from sources other than licensed pharmacies. I've been burned.**

Counterfeit products is a huge international problem. It's not just jeans, Gucci bags, Barbie dolls and GI Joes -- others include counterfeit airplane parts, pharmaceuticals and other mission-critical products. Whatever makes money. A doctor once told me about fake Lasix medicine made seriously ill patients even sicker because it had been mixed in a container that had previously been used to mix pesticide, and had traces of the pesticide in the "Lasix".

Appearance and packaging are VERY convincing. I read that a phoney Apple store was opened in China with real looking Apple products.

So I do not automatically trust that offshore suppliers will provide pharmaceuticals that are pure or contain the specified content.

**This concept also applies to nutritional supplements.** Some suppliers use cheap ingredients that do not contain the specified amounts, and may even contain toxins.

**According to some of my sources:** So-called “Canadian” pharmacies are usually not in Canada – they’re usually in Asia, India or somewhere else. It is illegal for a Canadian pharmacy to ship to the US, with or without a prescription. Unless the web address has a “.pharmacy” extension it is not legitimate. The legitimate way to get a Canadian pharmaceutical is to go to Canada and get it from a Canadian doctor, then go to the pharmacy.

**Pharmaceuticals can be tested against a generic (known) sample using high-performance liquid chromatography (HPLC) and other methods.** Testing labs can be found on Science Exchange [www.scienceexchange.com](http://www.scienceexchange.com). For example, my close circle of associates and I compared dasatinib from a US pharmacy and dasatinib from an offshore pharmacy with a generic (known) sample of dasatinib, which I [acquired from Sigma](#): CAS: 302962-49-8. [www.sigmaaldrich.com/catalog/buildingblock/product/matrixscientific/mat370173661?lang=en&region=US](http://www.sigmaaldrich.com/catalog/buildingblock/product/matrixscientific/mat370173661?lang=en&region=US)

### **Testing Resource:**

Qualitative testing evaluates for purity, and that it contains the indicated pharmaceutical.

Quantitative evaluates for the exact amount of the pharmaceutical.

For a more detailed discussion on qualitative vs quantitative, along with other useful information pertaining to senolytics, see this document:

<https://www.aginginterventionfoundation.org/Senolytics.pdf>

This lab is for qualitative testing.

Echelon now has qualitative test data and reports for dasatinib and rapamycin. They are available to test samples from other members of our community. My group has covered the initial cost, which is greater than the cost of testing additional samples.

**Contact me if you plan to utilize Echelon’s services. Inefficiency and confusion will be eliminated if you have me in the loop.**

**Johnny Adams** [JAdams@grg.org](mailto:JAdams@grg.org) (949) 922-9786

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801-588-0455 ex 308

I will send you a contact for a quantitative testing lab upon request.

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### **World Health Organization adds extension code for 'aging-related' via ICD-11**

The World Health Organization's ICD-11 Task Force recently implemented an extension code for "Ageing-Related", XT9T.

<https://icd.who.int/browse11/l-m/en#/http%3a%2f%2fid.who.int%2fcd%2fentity%2f459275392>

### **Prescriptions May Need a Diagnosis Code**

I have yet to have a physician submit diagnosis code XT9T as a diagnosis code for a prescription. Once a physician submitted R54 and the prescription was approved. Recently though, it was declined.

**2019 ICD-10-CM Diagnosis Code R54 -- Age-related physical debility**

<https://www.icd10data.com/ICD10CM/Codes/R00-R99/R50-R69/R54-/R54>

The above web page reference begins with:

### Age-related physical debility

2016 2017 2018 2019 Billable/Specific Code Adult Dx (15-124 years)

- R54 is a billable/specific ICD-10-CM code that can be used to indicate a diagnosis for reimbursement purposes.
- The 2019 edition of ICD-10-CM R54 became effective on October 1, 2018.
- This is the American ICD-10-CM version of R54 - other international versions of ICD-10 R54 may differ.

#### ICD-10-CM Coding Rules

- R54 is applicable to adult patients aged 15 - 124 years inclusive.

#### Applicable To

- Frailty
- Old age
- Senescence
- Senile asthenia
- Senile debility

#### Type 1 Excludes

- age-related cognitive decline ([R41.81](#))
- sarcopenia ([M62.84](#))
- senile psychosis ([F03](#))
- senility NOS ([R41.81](#))

The following code(s) above R54 contain annotation back-references that may be applicable to R54:

- [R00-R99](#)  
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified

#### Approximate Synonyms

- Frailty

ICD-10-CM R54 is grouped within Diagnostic Related Group(s) (MS-DRG v36.0):

- [884](#) Organic disturbances and intellectual disability

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Some major pharmacies have an application and qualification process for off label drugs. CVS required the completion of forms and a qualification process to get dasatinib. But on one occasion an associate found a university pharmacy required less formality and was faster.

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### Feedback Inhibition

Homeostasis is where a body's mechanisms go into action to achieve a stable, often preset state. When augmenting a substance (often "natural"), you may get a boost in biological measures, and feel great -- at first. You may even want to write a glowing testimonial about the product that's causing it. Then homeostasis begins and the body may compensate by reducing its own production, seeking to achieve the previously set level.

Eventually the body can become dependent, so if the external source is stopped you are now deficient, and dependent on the external source -- very possibly with feelings like weakness,

illness, emotional upset or depression, and other really bad things because you're now deficient. It takes a long time to get back to where you originally were – if ever.

A classic example of this is **testosterone and other hormones**. Early on (circa 1999) I got into physical trouble with large amounts of testosterone and other mega doses of nutritional supplements and pharmaceuticals.

A user feels good at first, later not good. I would only take testosterone if diagnosed as deficient by a highly qualified endocrinologist – definitely not one who had minimal training in age management/anti-aging medicine, such as a few courses. Hormone actions are complex. Same goes for any hormone.

If you wrote a testimonial about a product, try to get it removed and the current story posted.

This might be a pretty good case for intermittent use -- of any exogenous substance.

The senior scientist associated advised:

“one way to minimise this is to ingest supplements in a "pulsed" manner.

For example, if a dose of a supplement is cleared from the body in, say 24 hours, then I would not take that supplement daily but perhaps on alternate days.

For what it's worth.”

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### **Sometimes Things Don't Go Exactly To Plan**

Welcome to small trials and N=1.

Some benefits of small/N=1 trials are that they're quick turnaround and tailored to you.

Drawbacks: Some certainty (for you) mixed with uncertainty mostly due to circumstances beyond our control.

We're not lab rats living in a big controlled environment. “Life” may well happen – right at a critical time in your self directed age management therapy experiment. This can be a problem particularly when you have a lab test or other objective measure scheduled in a particular window of time, so you would now be taking it under an unusual condition.

You may get sick just at the time followup tests are planned. You may be unexpectedly called to travel and help someone in distress. A heat wave may hit and you feel not completely well – and not sure whether it's the therapy or the weather. Your phlebotomist may miss the appointment or quit, leaving you to find another and delay a lab test or therapy. Or you're about to start a mental test or other test that requires concentration and gardeners or workers will come and start lawnmowers and jackhammers. Your work may require unexpected travel during the testing time period. A loved one may die and your state of mind, concentration and even physiology will be different. Relatives may visit for a few days. And a thousand other things that can throw it off.

For example, I recently had lab work scheduled at an exact time following a therapy. But I had an unusual swelling in a finger, and had picked up about an extra 1.5 pounds of body weight and was concerned this might have an effect on the results, particularly inflammation.

I did the lab work anyway, and noted it in my summary.

And how will flu season affect your experiment? Will you get the flu just at the time of an important followup measurement?

After completing your therapy, you may discontinue. Then you learn of a new test, or remember a different kind of test you once had before. That would provide useful information. So now, after the gap you restart the therapy and do the new test later.

So I do what successful businesspeople, doctors, and others do – make the best possible decisions based on often incomplete information, or dealing with the uncertainties that life throws at you.

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### **Multiple therapies can have synergistic, or multiplicative, or negative effects.**

One reason is they may be competing for the same clearance channel.

Safety first, follow doctor's guidance, measure results.

**If you have side effects or don't feel well, under your physician's guidance consider stopping immediately.**

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### **Personalization, Dosing and Combinations**

Different people can experience a wide range of responses to different therapies.

What works in one person may not work in another – and another may experience a negative effect.

And personalized dosing can be important.

Re combinations – it's good to affect multiple aging systems. Sometime therapies with the intended effect or target that don't work individually will work when combined or will work better when combined.

And it would probably be desirable to combine different therapies with different effects or targets on aging systems.

Dosing becomes even more important, as sometimes when combined therapies that worked well with no side effects will now result in side effects. For example, they may compete for the same clearance pathways resulting, in effect, to something like overdoses.

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### **To be determined – the order or therapies**

Example recently discussed and being researched -- first senolytics THEN cell or other therapies.

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### **Seasonal Influences**

#### **Holiday months -- November and December**

Mistakes by service providers and labs – and our own mistakes -- happen a lot more during the holidays.

Delivery people are overwhelmed and shipments get lost or delayed – and that's a big problem if it's a sample on dry ice and the dry ice melts and the sample thaws and is ruined. Delivery people and service providers go to the wrong locations. Labs and medical people are

overwhelmed due to large numbers of patients using up their medical insurance deductibles and holiday overload in general.

Lab work may be time sensitive. Many customer support and lab staff are out for the holidays. Or the A-team, and B-team are out and this results in disorganization and samples being stored longer than usual – and increases the potential for mistakes, especially errors in lab values.

For example in Dec. 2017 I sent two blood samples to a lab. One of them either arrived there damaged or was damaged by the lab. Also around the same time a delivery driver missed my sample delivery on his route, which was frozen. Fortunately I had a great relationship with this lab and they called me. Most don't.

I had to waste time and call the UPS supervisor and demand the driver backtrack to the lab and deliver it – otherwise I would have to drive to the main facility myself, pick it up and take it over to the lab. It was delivered later that day.

My preferred shipper is FedEx. This seems to be the case with other major labs.

And since we're humans many of us partake in holiday indulgences, which is outside our normal routine and could make a difference. If we have a therapy and lab work during that time, I suppose it's best to continue the same eating and lifestyle habits until all followup lab and biomarker work is complete. Counterproductive, and is that condition the norm in which to test a therapy?

And how will flu season affect your experiment? Will you get the flu just at the time of an important followup measurement?

Seasonality, or even seasonal affective disorder may affect your results.

At a major academic conference on aging a researcher at a university described the same kind of problem. The lab shut down completely for weeks during the holidays. They were unaware of this when they began working with them, and it resulted in serious problems.

In future it will be extremely unlikely that I will test an important therapy during the holiday months of Nov. and Dec., or during July and Aug.

### **Spring**

Allergies may affect your results. Then there's spring fever.

### **Summer -- vacation months of July and August**

If you are working with scientists, my experience has been that they are on vacation or otherwise unavailable during August, and almost as much in July.

From the above you may conclude that there is no time to do an experiment.

I suggest dramatic changes will occur under just about any conditions.

Take action, wisely.

### **References**

[www.fightaging.org/archives/2018/03/how-to-plan-and-carry-out-a-simple-self-experiment-a-single-person-trial-of-senolytic-peptide-foxo4-dri](http://www.fightaging.org/archives/2018/03/how-to-plan-and-carry-out-a-simple-self-experiment-a-single-person-trial-of-senolytic-peptide-foxo4-dri)

[www.fightaging.org/archives/2018/05/how-to-plan-and-carry-out-a-simple-self-experiment-a-single-person-trial-of-a-mitochondrially-targeted-antioxidant](http://www.fightaging.org/archives/2018/05/how-to-plan-and-carry-out-a-simple-self-experiment-a-single-person-trial-of-a-mitochondrially-targeted-antioxidant)

[www.joshmitteldorf.scienceblog.com/2017/06/06/aging-gets-personal](http://www.joshmitteldorf.scienceblog.com/2017/06/06/aging-gets-personal)

## PART 2: THERAPIES

### Aging Intervention Therapies as Part Of A Personal Aging Intervention Program

Aging Intervention Therapies I'm doing, have done and plan for the future are below in SECTION 3-- but first:

#### WHAT AGING INTERVENTION THERAPIES ARE YOU CREATING, OR KNOW OF?

\*\*\* Be assured our conversation will be CONFIDENTIAL if you want. \*\*\*

Contact me at

JAdams@AgingInterventionFoundation.org

or call (949) 922-9786 (US)



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### SECTION 1

When I learn of a new aging intervention therapy, some of the many questions I ask include:

#### Top 2:

How do we know it works in HUMANS?

Is it safe?

Others:

Are there any side effects? Everyone's different and you may have an undesirable effect that most other people don't have.

Where would it fit in the priority of available therapies?

How do we get it?

What's the cost and is it cost effective?

Legal considerations

How to test/evaluate results? How to test/evaluate results?

Combining aging therapies can be complicated.

Would there be undesirable effects from interactions with other aging therapies?

Examples:

Is it anabolic or catabolic? - Would it be necessary to use it during rebuilding or repair cycles?

Would it compete with another therapy for a clearance channel, resulting in a higher amount in the system? Metformin drug advisory says not to take metformin with grapefruit juice. I believe metformin and some other drugs have the same effect.

Would we become dependent on it –

Would there be **feedback inhibition** like testosterone or other hormones if we're not deficient? (The body reduces its own production so you're now dependent on the external source)

Allergies

Would it result in replication senescence – example: a therapy that stimulates stem cell production and draws on capacity to produce later

#### More questions:

What pathway does it act on? (Multiple therapeutics may become less effective as more therapies acting on the same pathway are introduced)  
What's the right personalized dose?  
Where would it fit in the priority of available therapies?  
How do we get it?  
What's the cost and is it cost effective?  
Legal considerations  
How to test/evaluate results? How to test/evaluate results?

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ADME/Tox: absorption, distribution, metabolism, excretion, and toxicity.

**The body may well have problems clearing excess supplements and drugs.  
I want found out the hard way and got very sick on an overly aggressive and naïve drug plus and supplement program.**

**Sometimes nutritional supplements contain undesirable ingredients that are not on the label.**

**And surely feedback inhibition applies to nutritional supplements as well as drugs.**

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### **Personalization, Dosing and Combinations**

Different people can experience a wide range of responses to different therapies.  
What works in one person may not work in another – and another may experience a negative effect.  
And personalized dosing can be important.

Re combinations – it's good to effect multiple aging systems. Sometime therapies with the intended effect or target that don't work individually will work when combined -- or will work better when combined.

And it would probably be desirable to combine different therapies with different effects or targets on aging systems.

Dosing becomes even more important, as sometimes therapies that worked well with no side effects, will now result in side effects. For example, they may compete for the same clearance pathways resulting, in effect, to something like overdoses.

To be determined – order of therapies. For example, first senolytics to clear old cells (including stem cells) THEN any stem cell therapy.

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### **SECTION 2 – Some Aging Intervention Therapies I have heard of – planning to evaluate many of them.**

**Let me know of others you know of.**

**\*\*\* Be assured our conversation can be CONFIDENTIAL if need be. \*\*\***

**Contact me at [JAdams@AgingInterventionFoundation.org](mailto:JAdams@AgingInterventionFoundation.org) or call (949) 922-9786.**

**These would be considered ONLY AFTER conventional, medicine and health practices, and common sense methods like regular health screenings, nutrition, exercise, brain/mental health, and others listed in PART 1.**

**I AM NOT ENDORSING ANY OF THESE. It's just a list.**

**Everyone is different. This is not intended as a list for you to follow -- but rather information on what I have done, and plan to do in the future -- so you and your doctor can make informed choices about what's best for you.**

**You should study and understand these therapies before beginning. Everything should be done with emphasis on safety and doing no harm, and under guidance and approval by a qualified physician or medical practitioner.**

**A list of therapies I have personally done and plan for the future is BELOW this list in SECTION 3.**

ADME/Tox: absorption, distribution, metabolism, excretion, and toxicity.

**Again, a GENERAL WARNING:**

**The body may well have problems clearing excess supplements and drugs. I want found out the hard way and got very sick on an overly aggressive and naïve drug plus and supplement program.**

**Sometimes nutritional supplements contain undesirable ingredients that are not on the label.**

**And you and your doctor consider these AFTER the conventional common sense fundamentals in section on approx. p 5 labeled:**

**VERY IMPORTANT: Before pharmacological therapies, start with the fundamentals. Begin with a foundation of . . . (see the list below it)**

Cellular reprogramming (resetting DNA methylation and others) to a more youthful state - possibly using Yaminaka factors and others	Gene editing - mostly knock-ins at first	HIF-1 $\alpha$ enhancers
Therapeutic catalysts	Circulating Cell-Free Respiratory Competent Mitochondria	Immunity super gene - Expansion of cytotoxic CD4 T cells
Engineer the electrical blueprints that orchestrate life See 11:52 and 13:34 <a href="#">Michael Levin: The electrical blueprints that orchestrate life   TED - YouTube</a>		
Extracellular Vesicles / acellular nanoparticles	Senolytics (dasatinib, quercetin, fisetin, FOXO4-DRI, theaflavins and others) <b>*SEE WARNINGS BELOW*</b>	Metformin, alternatively berberine, or diaxinol?
Nutritional supplements -- Safe, effective and proven. **	Conservative program with basics of ongoing health checkups, great nutrition with reduced calories, exercise, stress reduction and others.	GDF-11

Umbilical cord plasma	Rapamycin and rapalogs	GCSF granulocyte-colony stimulating factors
Alpha-ketoglutarate (AKG)	Amniosomes	salicylate
NAD – Infusion, patch, RealNAD buccal lozenges, nicotinamide riboside, other NAD precursors and supplements	Stem cells	Combinations – and whether therapies are used with (or on the same days as) exercise and fasting. Examples: on exercise days don't take metformin, rotate through different therapies on different days or weeks or months.
Heart Rate Variability (HRV) management	Fasting -- Partial day fasting (16:8), Valter Longo prolon fasting mimicking diet. Will also evaluate 5:2, DASH diet, Warrior diet and others.	Compounds that promote ketogenesis – beta-hydroxybuterate (BHB), others
High intensity interval training (HIIT)	Antibiotics – azithromycin, doxycycline, tetracycline, minocycline and others as senolytics and other age management effects	HMR (Health Management Resources) diet, nutrition and fat loss program
Microbiome management -- probiotics and prebiotics. Test whether akkermansia muciniphila will promote cholesterol reduction and weight loss, and veillonella or Fitbiomics probiotic improves athletic performance.	Oxytocin – upregulated by lactobacillus reuteri 6475. BioGaia Osfortis.	LDL reduction through diet and statin (rosuvastatin and others)
Resveratrol 1 teaspoon (1 gram) daily, 98+% pure, from legitimate seller, and pterostilbene (chemically similar)	Under guidance of expert neuro endocrinologist: hGH, testosterone DHEA, other hormones and precursors	Proprietary anti-inflammatory with novel delivery system. Soon to be disclosed and available by a leader in our community
Meditation, Yoga, Mindfulness -- Examples: meditation, chanting, mudras, pratyahara, QiGong breathing, Inner Balance by HeartMath, Muse meditation headband, NuCalm and other methods to reduce stress, improve quality of life and cognition, improve heart rate variability and blood pressure	Peptides – BPC-157, Khavingon peptide bioregulators, others	Ultrasound, electromagnetism, ontogenetics or other medium with particular attention on frequency.
Platelet rich plasma	Methylene blue	C60
Plasmalogens	Telmisartan - Sartans group may contribute to regeneration of blood vessels	FGF1 – regenerate blood vessels. Company Zhittya Genesis Medicine
Everolimus	Statins	Low dose naltrexone
Deprenyl	boron (may be included in multivits)	Nutrition and supplement recommendations based on genetic and microbiome test recommendations. Viome and GenoPalate are two of them.
Nitric oxide nitric supplement for athletic performance/endurance	RTB101	Repatha
Spermidine	Nilotinib	Percepta
Florbetaphir	oxytocin	Semorelin
SS-31 / elamipretide	PBT-2 (quinoline)	Algebrum / ALT-711
Klotho	CoQ10 (Note: one scientist advised me that CoQ10 is harmful, another advised <u>excess</u> CoQ10 is harmful)	Low dose lithium
Alk5i (with oxytocin)	J147	X39
Grounding exercises to connect you to the Earth	Astaxanthin	Leucine or hydroxy methylbutyrate to allow increase in protein synthesis

		without adding more protein to the diet. So eat less protein while getting the benefits of mTOR stimulation that promotes muscle growth
Anti-retrovierals / HIV drugs	Green, white and black tea, and coffee	Lion's mane
Bacopa for mood improvement, creativity, memory	Cat's claw (Percepta brand)	Purple sweet potatoes
Viagra (so-called surprise blockbuster age management benefits of PDE5 inhibitors)	Sulforaphane	Epigenetic reprogramming
Magnesium (for aches)	Ozone, ozone dialysis, ozone sauna	Develop new therapies and find personal combination of methods/therapies available now with human on a chip
Unique proprietary plasma fraction containing youth enhancing components under development by two of our associates	Therapy to simultaneously turn on the rejuvenation process, and block cancer	Nanotechnology -- nanobots to repair cellular components and DNA, and remove debris
TEX264 and other enzymes to remove toxic proteins adhering to DNA, causing them to become damaged and cause aging on a cellular level	Find your personal weak link and fix – kidney, liver, eyes, ears, etc	Engineering new mitochondrial genes to restore mitochondrial function – example take some of our own cells, grow them up in quantity, isolate the mitochondria from them (maybe after testing for low mutation load), and inject them back into ourselves
Solution for autodigestion -- digestive enzymes escape the gastrointestinal tract and digest your body resulting in cell and tissue loss so loss of function	Cultivate cytotoxic T cells (CTL) shown to attack tumor cells and protect against viruses (in mice). Needs research	Very long term and this is way out there -- Lab grown bodies for full body transplant (head onto new body)

**\* SENOLYTICS WARNING -- Caution is advised re. excessive senolytics.**

**Note: What's excessive may be different between individuals**

**Vince Giuliano** advises senolytic signaling is critical for cell renewal – you need enough inflammation and senescence to signal for regeneration factors -- so if you go overboard in senolytics therapy it's bad, you will miss out on cell renewal.

[www.anti-agingfirewalls.com/2018/09/02/aging-cell-and-tissue-repair-renewal-and-regeneration-inflammation-and-the-sasp](http://www.anti-agingfirewalls.com/2018/09/02/aging-cell-and-tissue-repair-renewal-and-regeneration-inflammation-and-the-sasp)

More is often not better. Quote by **Reason**: **All senolytics, so far, look like things you would take once every few years at most.** More won't be any more effective than that one dose - it will kill the senescent cells it can kill the first time, and won't be helpful again until more senescent cells turn up in volume.

[www.fightingaging.org/archives/2018/03/how-to-plan-and-carry-out-a-simple-self-experiment-a-single-person-trial-of-senolytic-peptide-foxo4-dri#caveats-in-more-detail](http://www.fightingaging.org/archives/2018/03/how-to-plan-and-carry-out-a-simple-self-experiment-a-single-person-trial-of-senolytic-peptide-foxo4-dri#caveats-in-more-detail)

**Dave Kekich** was a leader in our community. Dave advised: In terms of chronic inflammation, the downstream consequences of inflammation accelerate most of the common age-related conditions and diseases, such as atherosclerosis and neurodegeneration.

However, 'good inflammation' is central to life!

Healing processes, such as regeneration from an injury, depend upon a clear cycle of inflammation that starts, progresses, and ends. The problem emerges when this naturally structured cycle becomes disrupted. This ‘disruption’ happens when the inflammatory signaling system becomes fused in place in a perpetual call to action which inadvertently assaults the tissues.

Senescent cell researcher ***Dorota Skowronska-Krawczyk PhD*** personally discourages us from having long treatments with senolytic drugs. In fact she suggests they should only be taken for short periods interspaced with longer recovery times.

***Stan Goldfarb*** has decades of applied nutritional supplement and aging intervention experience. He advises: I think even 2.5mg per KG is a higher than I want to take, especially when combining it with EMIQ (which in itself has no bad side effects till very high doses). I weigh 137 and am going to take 100mg once only. You should also be taking at least 10000iu of D3 to complete apoptosis and don't take any blood thinners such as aspirin or omega supplements as it has been proven to go after fat cells for several days before and after. Without doing all of this a person is simply taking an unnecessary risk. When I did my first test of this in 2015, there were some really sharp people to say exactly what to do and when. I don't see that now with the current crop of people and it concerns me. People have died from overdosing this drug! I also remember that several people who did take multiple doses experienced minor problems after the second dose (especially flu like symptoms but not after the first. One group is saying take what you're doing twice one week apart. This is potentially risky. The effect Dasatinib has lasts longer than many people seem to think and that is why I think a second dose just one week later makes no sense.

***James Kirkland MD PhD*** recommends not evaluating senolytics on our own at this early stage.

#### Senolytics resource

<https://www.aginginterventionfoundation.org/Senolytics.pdf>

**Similar cautions apply to other therapies. There's a lot we don't know about this new frontier.**

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**\*\* I have found some overlap, as well as variation in nutritional supplement programs.**

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### **PART 3: Therapies And Methods I Have Personally Evaluated and Current Personal Program**

#### **Contact me for details on this.**

As of this document date my program consists of carefully testing and evaluating (usually with lab, physiological and cognitive tests) multiple aging intervention therapies, from common sense approaches to advanced pharmaceuticals. The intention is to fine tune the program, dosing and combinations while implementing the *Plan To Get a Great Many More Years of Healthy Living - Maybe As Long As We Choose ie Open Ended Healthy Lifespan.*

#### **Comments:**

- **My personal system is diversified, and most components are done in moderation.**
- **With birth date in 1949, I believe I am in my prime. Not as far as stamina goes, like number of pushups or physical endurance, but mental/cognitive and the ability to get the most out of life. Subjectively I usually feel very good, am enjoying life, effective in my work. However, subjective impressions can be faulty so I rely on metrics -- biomarkers and objective measures.**

**Be sure to see the PAST section below.**

**Therapies and methods I have taken/used, tested and evaluated are below. Many are in the more distant past – and many didn't work out well.**

This included an overly aggressive and naïve program, with few objective measures, managed by an MD with a great presentation but who didn't know what he was doing - and later lost his license. This included hGH, testosterone, vitamin megadoses, “anti-aging drugs” often from questionable sources – although I am now on a very good path, this was a very bad beginning.

#### **Current Personal Program**

##### **Calorie reduction**

Began 3/13/2022 Two weeks to try to reduce glucose and cardiovascular health measures, and others.

#### **Continue to rotate through these on sequential days:**

- Day 1 (Mon and Thur around 6:30 pm)) Resistance training – Weightlifting and TRX style resistance straps. Good breathing and form, and since it takes about a week to recover, only one set of body parts each workout. Work out in home gym, listen to exciting motivating music. Take branched chain amino acids, balanced high protein/complex carb/essential oil meal after.

- Day 2 (Tues and Fri around 6:30 pm) ) High intensity interval training – Sets are 25 seconds. Specifically 5 min warm up, then 1 set of all-out high intensity on the elliptical machine, 5 min recovery consisting of slow movement moving and stretching every body part, or slow walk (1 stride per second). Then 1 set martial arts movements, 5 min recovery, one set of all-out high intensity on the elliptical.
- Day 3 (Wed and Sat)) 18-20 hr partial day fast beginning at about 12:00 pm. Around 6 pm -- 20 min relatively light aerobic movement consisting of moving every body part in every possible direction.
- Sunday – I was recently advised that our cycles consist of building, then recovery – rapamycin facilitates recovery so don't exercise for a couple days after taking it. Now after Sunday morning laughter yoga, I take just 1 mg of rapamycin (still evaluating different doses though). Then the 2 day cycle is clipped short because I want to lift weights Monday night.  
It's fairly consistent, but sometimes this schedule gets thrown off a little.
- Repeat
- Sometimes skip a day

### **Nutrition**

Excellent nutrition, mostly low calorie, balanced combination of vegetables, fruits, meats, essential oils, daily salmon.

Probiotic foods as advised by the Viome microbiome analysis, and recommended foods per GenoPalate DNA Analysis Recommendations

Often stay hungry, and sometimes have a little feast but not gorge.

A daily snack.

### **Supplements**

I have had bad experience with excess supplements and pharmaceuticals.

Many that follow are taken very conservatively, hoping to fill the reservoir.

Mostly following the Kaufmann protocol, still refining the frequency and amounts.

Contact me for current amounts of the following.

### **Daily**

Metformin (500 mg 2x daily), Vitamin C (500 mg 2x daily), EPA/DHA / fish oil (2400-3600 mg), Vitamin D (1000 IU 2x daily), Rejuvant Alpha-ketoglutarate (AKG).

Jardiance 12.5 mg

### **Every other day**

Multi vitamin supplement – alternate types.

Days with no multi-vitamin type supplement

Vitamin E 1000 IU

Rarely different teas – green, black, yerba mate.

**Nutritional supplements and nutraceuticals** – largely based around the Kaufmann Protocol and a few select others.

Vitamin C, vit E, multi-vitamin, fish oil, resveratrol, pterostilbene, astaxanthin, truniagen, curcumin, carnosine, alpha lipoic acid, apigenin, sulforaphane, egcg, astragalus/TA-65,

pyridoxamine, niacin, melatonin, brain supplement (ginko biloba, vinpocetin, huperzine alkaloids), betahydroxybutyrate.

### **2-3 times a week**

Various supplements to increase NAD - RealNAD, nicotinamide riboside (TruNiagen, Life Extension NAD+, Taylor Made Pharmacy and Revgenics NMN, Nuchido TIME), niacin.

Plasmalogen (ProdromeNeuro), Alpha-Ketoglutarate (AKG) (Rejuvant).

MCT, liposomal wrapped 4 herb synergy mix (Curcumin, Boswellia, Sensoril™ Ashwagandha, and Ginger extracts), BHB (betahydroxybutyrate), brain supplement (ginko biloba, vinpocetin, huperzine alkaloids), melatonin,.

Per recommendation from Empire Labs genetic test: SAME, magnesium, B complex, zinc picolinate, flax seed. Avoid tyranine (wine and cheese) and excess phenylalanine.

Astaxanthin (PurZanthin from Stop Aging), carnosine, nicotinamide (riboside), alpha-lipoic acid, sulforaphane, apigenin, pyridoxamine.

Astragalus (TA-65 or astragalus root).

Customized GenoPalate supplement formulated from genetic test, and food recommendations.

Continuing probiotic/prebiotic food recommendations from Viome microbiome test, includes Klaire Labs Vital-10 probiotic. Also evaluating and will probably implement recommendations from The Microbiome Diet by Raphael Kellman MD.

Khavinson Peptide Bioregulators

**\*\*\* See PAST section near the bottom of page 27 for specifics about many of these**

These vary, usually at bedtime

**Inner Balance by HeartMath heart rate variability and coherence level system, Muse meditation headband, NuCalm**

### **Senolytics**

Working out schedule, but for now about once a week before bed, and during partial day fast.

Senolytic Activator and Autophagy Renew (Life Extension), sometimes added aurocurtin and fisetin.

Add dasatinib about once every 4 months.

### **GDF-11**

Temporarily discontinued until starting an organized program with biomarker testing.

### **Rapamycin**

Sirolimus. Working out schedule. Due to response it will probably be just 1 mg one time/wk.

### **Many weeks, once during the week**

Laughter yoga – some yoga with a lot of laughter.

Water - Mostly drinking Mountain Valley brand spring water in glass bottles. Their web site says it's “. . . *Rising naturally from a spring in the Ouachitas, The Mountain Valley spring water filters through granite-based aquifers . . .*”

### **Occasionally**

Different formulations of multi-vitamins/minerals, B12, B1, CoQ10, B6, A, foliate/folic acid, K1, glutathione (before eating), SAME (before eating), acetyl-l-carnitine, cordyceps Cs-4, niacin, astaxanthin, LifEx Broccole and Cruciferous Blend (substitute for astragalus /TA65), astragalus (on order).

### **For injuries**

BPC-157 (peptide) creme (later maybe try injections), Boswella crème, DMSO.

### **Various intervals**

RaDVaC covid vaccine.

Grounding to connect to the Earth – stand on grass, dirt or concrete for a couple minutes.

### **Sometimes when a local gym is open**

Sauna to elicit heat shock response and sweat out toxins, followed by cold shower.

### **In the morning upon arising**

**“Happy Blast” (“Joyful Bubble-Up”)** Start the day by putting a big goofy smile on your face, with “forced” or “fake” laughter while doing a funny walk out of your room and down the hall.

Do this for a couple minutes, and whenever you can throughout the day.

This becomes habit and later while not doing it you will probably laugh and smile for no reason

Feel the the joy bubbling up from midsection to the head. Hold hands with palms facing up, close to the midsection, move hands upward toward the head as though cultivating and moving the joy and love through the body. Then move hands around kind of like dancy tai chi, with a bit of swagger. Put on a big goofy grin, do a happy walk – think Monty Python Ministry of Funny Walks - down the hall while doing these.

### **Occasionally umbilical cord plasma**

#### **Dental Care**

Morning shortly after rising (before eating per recommendation by 2 dentists), and just before bed: WaterPik, floss, brush with fluoride toothpaste (except when fasting).

#### **Throughout the day**

Maintain an optimistic, carefree, visionary, “can-do”, even “aggressive, devil may care” outlook. Feelin’ stud – in a non-toxic loving kind of way.

**Think about just how damn lucky we are!** For thousands of years people struggled and suffered much, much more than most of us today.

Stay loose and positive, be the detached observer, appreciate life, nature and the simple things as well as complex benefits of today's infrastructure (like being able to get water out of the faucet, roads, etc.), loose happy walk, etc.

“Happy blast” (“Joyful Bubble-Up”) sometimes during the day. When nobody's watching. Or when they are -- so what? who cares?

And never allow the luxury of a negative thought -- just solutions.

### **Other**

Adequate amounts of water (around 1/2 gallon a day spread with small amounts throughout the day, later possibly filtered or alkaline), reduce risks, reduce toxicity, personal safety and security, sexuality, spirituality.

Challenge the body (not in excess of course). Have variety. Plan for tomorrow, but live for today.

Personal development, art, music, joy, laughter and fun, and appreciation of the wonders of the world each day.

### **Evening before bed**

15-20 min meditation starting with about 2 min qi gong breathing (inhale for count of 7, hold for 8 count, deep exhale to 3 count).

Satanama with mudra – Satanama is translated as infinity (or birth, the beginning, infinity, the totality of everything that ever was, is, or will be), life, death, rebirth, so I just make it “sa” and “ta”. Mudra is touching the thumb to the index, middle, ring and pinky finger tips.

Continual study of aging interventions and personal advancement.

### **Discontinued pending more information**

Since my greatest interest is the end results we seek, I discontinued resveratrol pending more information.

Was taking: Resveratrol 1 gram, 98+% pure, from legitimate seller alternating with pterostilbene.

Recent study <https://pubmed.ncbi.nlm.nih.gov/23878368/>

Dr Brad Stanfield talked about it on May 9, 2021 - [https://youtu.be/vpxQoGk\\_ryg](https://youtu.be/vpxQoGk_ryg)

See 9:20 for study that showed “resveratrol stopped the positive effects of exercise” and “worsened cholesterol levels”, and in this 1 trial “SIRT1 was not affected”.

### **Others planned in the future**

Plasmapheresis - Plasma removal, replacing with saline and young albumin, possibly with IG push.

Acellular nanoparticles

Frequency Specific Microcurrent (FSM) technology

Niagen/nicotinamide riboside

More umbilical cord plasma, umbilical and amniotic fluid based products (Predictive Biotech, Golden Placenta),

maybe doxycycline

and others.

**To evaluate and probably add:**

Yoga, pratyahara and others throughout the day and during the evening.  
Frequent/continual stress and HRV monitoring with a watch device (Garmin comes highly recommended).



**PAST**

Contact me for details and lab/objective measurement results of these.

Now I often evaluate items like nutraceuticals, nutritional supplements and the like for mental ability improvements using the Trailmaking B and Human Benchmark tests, and exercise stamina using a high intensity interval test on an elliptical machine. This is simple but effective.

**As of today's date**

**Go here for a separate list of recent therapies**

<https://www.aginginterventionfoundation.org/JohnnyAdamsRecentRecords.pdf>

**Reduce stress, increase nighttime HRV, and improve sleep  
April 2022**

Inner Balance – it's a kind of meditation device

It's excellent. I use it to de-stress during the day, and when I wake up in the middle of the night. Have looked at Emfit nightly data and seen rise in HRV after using it.

<https://store.heartmath.com/technology-products/inner-balance/>

It emits tones to let me know how you're doing

<https://www.youtube.com/watch?v=2TqHbEkK4Aw>

Muse

<https://choosemuse.com/>

NeoRhythm - PEMF device.

<https://omnipemf.com/>

I started experimenting with my new NeoRhythm. For better (higher) HRV the "Energy and Vitality" setting, 1 hr a day, 1 time each day any time was suggested. I'm cautious, I

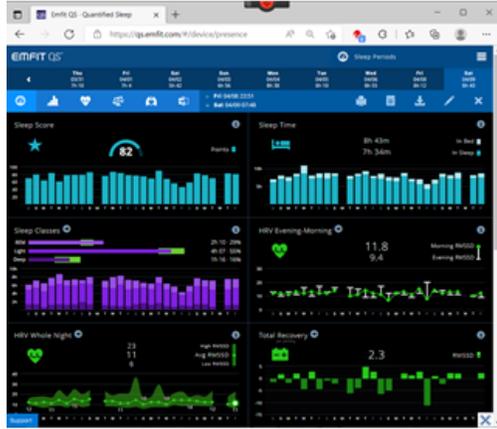
started with 15 minutes. I felt kind of dizzy. Planning to re-start and eventually work my way up to longer times.

Emfit – Outstanding device to measure sleep and important health measures

<https://us.emfit.com/>

Ask me for my Emfit notes.

Part of one of the Emfit screens (among others, and there's more below this one):



Fasting (of course not a device but related) - I have noted Oura measurements are consistently better for Recovery and Sleep on mornings where I have been fasting since around 2:00 pm the day before. But that's compared with after working then resting maybe 45 min then exercise at around 7 PM, and eat more after.

**No supplements or metformin for 2-1/2 days.**

March 2022

Felt about the same. Glucose increased.

**hGH Human Growth Hormone**

Oct 2021 – Feb 2022

Concurrent with Khavingon peptides. Four months. Lilly Somatropin 50 units 2x daily. Understood that's shorter than the usual amount of time. Definite measurable improvements in exercise stamina and strength, increased libido. Also increased ability to work harder and longer – but tended to fall asleep early many nights.

Voice became deeper. Appetite seemed greater, for whatever reasons it seemed I had less interest in limiting food intake.

Creatinine measurement reduced. One DNAm provider's test increased 1.8 yr, awaiting the other. Even with any error was looking for at least some reduction.

At first I didn't notice much subjectively, but toward the end I felt kind of excessively "driven" and had an almost constant abdominal ache, was looking forward to stopping.

**Calorie reduction**

Two weeks to try to reduce glucose and cardiovascular health measures, and others.

Some reduction in glucose, good reduction in CRP.

**Peptides (Khavinson Bioregulators)**

Started 2/20/2021 on monthly 10-day “pulse” peptide program designed for me. DNAm and telomere length were measured. It’s a multi-year program and results will be reported upon completion. So far there appears to be larger and more defined muscles, particularly in the arms. This appears to be attributed to the peptides, although I have also virtually eliminated sweet and fat foods.

I was traveling extensively starting in 10/2020, which had negative health effects. This appeared to have a negative effect on DNAm on 5/3/2021. But in 10/5/2021 before starting hGH, DNAm was back at an all-time low.

### **Inner Balance by HeartMath heart rate variability and coherence level system August 2021**

I have found this system effective in creating calm. Simpler to use than Muse.

### **Rapamycin April 2021**

Took first rapamycin dose, just .5mg on April 13. I had been greatly reducing calories for a number of days. Felt just a little weak in the legs and arms, and felt kind of odd and woozy. It took about 8 hours to feel mostly back to normal, OK next day.

Waited until Apr 15 for another one. On this day I also began a partial day fast around 1 pm, then before bed took senolytics. Next morning took betahydroxybutyrate just after waking. I was surely vigorously exercising the day before, but don’t specifically remember. That stacking appears to have overdone it, as I felt very weak throughout the next day. Felt stronger in late afternoon, on the way to returning to normal. Weight was low that morning. Although I resumed eating normally that day, weight was a little lower.

This experiment and use is ongoing – I have been advised by an associate skilled in studying rap and other therapies that the body goes through "building" and "repair" cycles. Rapamycin also facilitates repair so he advised don't exercise for a couple days after taking it. I take it Sunday morning after "laughter yoga" class, and don't exercise much more than a walk in the woods that day - but clip that 2 days short and lift weights on Monday at about 6:30 PM. It’s a compromise, but surely many of you who are passionate about your own age management programs face the same kinds of decisions.

I have been advised that in addition to inhibiting mTOR, rapamycin is also a calorie restriction mimetic. It appears with me is a highly effective calorie restriction mimetic. One accomplished and trusted associate who regularly practices fasting advised me he stopped rapamycin as he was losing too much weight.

### **Partial Day Fasting April 15, 2021**

I have been more frequently doing partial day fasting, and arrange exercise schedule accordingly.

### **Completed April 15, 2021 Calorie Reduction, body weight and phenotypic age**

My scales were in California, have not been doing the usual morning weight in. Recently had the scales shipped to Florida location.

Eating habits were very good, but recently had allowed a daily piece of pie, or candy bar, or both, into the mix. Weight was up from ideal 144.4 – 145.4 to around 146.4 to 147.6. Started making concerted effort to stay hungry much of the time, when very hungry eat only until satisfied (until the food no longer tastes really good), and chew food slowly and thoroughly.

After about 5 days it became a habit, and the desire for unhealthy foods was gone. Levine/Horvath phenotypic age was reduced.

	Albumin	Creatinine	Glucose	C-react Protein	Lymphs (Lymphocyte, % not absolute)	MCV (Mean Cell Volume)	RDW (Red Cell Dist Width)	Alkaline Phosphatase	WBC (White Blood Cells)	Chron Age	Phytic Age
↑ or ↓ better	↑	↓	↓	↓	↑	↓	↓	↓	↓		
3/30/2021	4.3	0.93	95	1.21	37	92	12.4	48	4.3	71.29	58.61
About 5 days of calorie reduction											
4/13/2021	4.4	0.91	92	1.07	41	92	12.6	51	4.1	71.32	57.74

After 7 days weight was down to 144.6.

### 10/22/2021 to 3/1/2022

#### hGH

Did baseline Clock Foundation and Zymo DNA methylation tests, IGF-1 and standard CBC/metabolic panel plus CRP then Levine/Horvath phenotypic age calculation.

At end did Clock Foundation, Zymo and TruDiagnostic DNA methylation tests, life extension age management panel, AgingSOS

Contact me to discuss results.

### 8/7/2021 to 3/1/2022

#### Omega supplement adjustment

Did the OmegaQuant test that is usually purchased along with the Life Extension age management panel. I used the results to modify omega supplements and bring results to better levels.

I increased Life Extension Super Omega-3 Plus and Synergy brand Mega EFA from one each on alternating days, to one each every day (along with frequent omega rich foods).

### Completed Aug 9, 2020

**RealNAD lozenges** (per recommendation of expert physician specializing in NAD).

Positive effects on cognitive tests - Trailmaking B and Human Benchmark.

Exercise stamina 3-4.4% better than baseline.

Uncertain subjective effects, will evaluate over time.

### Completed Aug 5, 2020

Laughter Yoga

We meet as a group online for 30 min and warm up with movement and breathing exercises, then on to funny exercises that make us laugh, then a brief meditation.

On three occasions I noted exceptionally positive subjective results, and most of the days I do it, it seem my spirits are lifted.

I suspected in addition to general markers, that the endocrine system might be affected.

Did the Life Extension Male Panel (Elite) Blood Test <https://www.lifeextension.com/lab-testing/itemlc100016/life-extension-male-elite-panel-blood-test> the day before, then the next day did a laughter yoga session and drove to the lab and repeated immediately after while trying to maintain a very happy joyful laughter state of mind.

Some movement of lab markers was unexpected. I was highly interested in cortisol which was 8.3 before and 7.1 after (14.5% less).

Contact me if you would like to discuss. And try it yourself <https://www.meetup.com/Laughter-Exercise-San-Diego>

## **June 26, 2020**

### **Microbiome**

For me, carefully following all food and supplement recommendations is not practical.

After generally following the personalized recommendations for microbiome “Superfoods” (usually at breakfast) – but not following the “Avoid and Minimize” list, there was virtually no change upon retesting.

Still, the list consists of healthy foods and makes sense, so I continue with it. Recently more fermented foods have been added.

I find answering all the questions and the required survey extremely time-consuming, sometimes more than once. I just clicked on a link to see recent report and it showed a blank screen.

I learned about BiomeFX at a conference in 2019, will probably use it going forward.

Probiotic/prebiotic food recommendations from Viome microbiome test.  
Klaire Labs Vital-10 probiotic.

## **2020 Nutritional supplements mostly based around the Kaufmann Protocol and a few select others.**

Vitamin C, vit E, multi-vitamin, fish oil, resveratrol, pterostilbene, astaxanthin, truniagen, curcumin, carnosine, alpha lipoic acid, apigenin, sulforaphane, quercetin, fisetin, egcg, ta-65, pyridoxamine, niacin, melatonin, brain supplement (ginko biloba, vinpocetin, huperzine alkaloids), betahydroxybutyrate.

Contact me for doses and intervals.

## **July 23, 2020**

### **ProdromeNeuro plasmalogen supplement.**

Informal objective and subjective evaluation. Excellent improvement and personal best in cognitive/mental ability on the Trailmaking B and Human Benchmark tests. When I looked at the Trailmaking B test paper I had that hard to describe experience where I just “got it” ie add an awareness and understanding.

And on the first exercise stamina high intensity elliptical test result was in the highest range, and a second was a personal best.

The improvement in exercise stamina came as a surprise. I spoke with the creator, Dayan Goodenowe, and he said he expected improvements in recovery but not performance.

I often take it before important meetings and believe it enhances performance.

### **July, 2020**

Branch chain amino acids. This was not intended to be an experiment, and is simply an observation. Any effect may well be placebo, or random or something else like less hydration during summer months.

After beginning to take branch chain amino acids, 1 scoop (5 gm) about 15 min before weight/resistance workouts, and again as part of the high-protein meal after workouts, it appeared to result in increased muscle growth and a feeling of having more muscle.

About the same time I began working the triceps (overhead triceps extensions), and it appeared to grow the triceps larger.  
Had this been expected I would have taken photos and measurements.

There is controversy over whether metformin inhibits muscle growth, and this may provide at least some useful information or serve as a basis for an experiment.

There is also controversy about negative effects of leucine and BCAAs.

### **Monday May 25, 2020**

Cytowave pulse electromagnetic frequency (PEMF) device.

I had been nursing an injured foot for a couple months. Had one 30 minute treatment with a Cytowave PEMF device. It really seemed to help reduce the soreness the next day and throughout the week.

### **3/20/2020 – 5/29/2020**

#### **Supplement Program**

Contact me for info on lab work, and cognitive and physiological tests.

I may or may not continue depending on results. But frankly, I'm glad it's over. Taking all these pills etc was tedious and on one hand I feel I'm in my prime and often work with great energy and enthusiasm. But on the other hand to this may be resulting from many years experience, and ideas whose time has come. I felt I may have been kind of revved up as a result of all this, and would often run out of energy at about 3 pm. And I didn't really feel that great.

This is another one of those things where life intervened. Shortly into the experiment the coronavirus hit resulting in some upheaval, and there was some other turbulence going on in my life for a while. All that was settling down around mid-May. But I was really looking forward to ending this and moving onto the next big thing.

This program was arrived at by personally consulting with 4 experts who have spent great amounts of their lives studying nutritional supplements and devising their own personal plans, and concepts from the Kaufmann Protocol, and other resources.

About 20 years ago I had a real bad experience with excess supplements and pharmaceuticals. Many in this experiment follow were taken very conservatively, hoping to re-fill the “reservoir”.

It’s diversified, and for many it uses different brands. I was hoping to reduce or avoid the possibility of sensitivity to binders and fillers, and any added ingredients not on the label.

It relies on managing multiple categories of aging, for example the seven principles in the book *The Kaufman Protocol* – Information system/Genetic, Mitochondria, Aging Pathways, Quality control, Immune system, individual cell needs, and waste management.

It’s based on a foundation of good nutrition.

About every few weeks I give it a one day break and take only Metformin, maybe vitamins C and D.

- **2019-2020 Oxidized LDL (oxLDL or oLDL) although fairly low, it was reduced to** somewhere in the “very good” to “significant” range with:  
Fish oil / EPA and DHA capsules - 3 to 4 1200 mg capsules daily, along with 500mg vitamin C 2x daily, and continuing vitamin D 1000 IU 2x daily  
partial day fasting  
and maybe some recently added nutritional supplements contributed (B12, B1, CoQ10, A, foliate/folic acid, K (K-2), LifeExtension mix, cordyceps Cs-4, magnesium glycinate, glutathione, SAME, niacin)  
Continued three day cycle of day 1) resistance/weight training, day 2) 20 min aerobic with three 20 second all-out high intensity bursts, day 3) partial day fasting (worked my way up to 18-20 hr). Note: I have done some variation of fasting and calorie reduction for a long time. My records do not show the exact date partial day fasting was started or when it ramped up. But it will continue, to be sure.
- **March 2020**  
Three members of our GRG group took BioGaia Osfortis for Lactobacillus Reuteri 6475 (one morning and one evening) hopefully to upregulate oxytocin production and possibly provide other benefits. Before and after phenotypic age measurements were taken using the LevineCramer spreadsheet.  
No discernible improvement could be detected.
- **2020 BPC-157 peptide for injuries**  
BPC-157 (Body Protective Compound) is used for age management, and is sometimes combined with hormones. It is said to accelerate the wound healing wounds, tendons, ligaments, muscles, nervous system and other organs.  
Ironically, the three injuries I was seeking to improve are all a result of my aging intervention program or activities relating to it!  
Physician prescribed BPC-157 injection vial and cream from Tailor Made Compounding Pharmacy.

Started with cream. It's simpler, but would move to injectable if no result. Within a few hours of application, the thumb seemed to feel better. Placebo? That's OK – I'll take it. Label says apply once a day.  
After 3 applications/days all original injuries are noticeably improved.

- **2019 BHB (betahydroxybutyrate).** HVMN brand D-betahydroxybutyrate ketone ester and Longevity Edge brand KetoGen. Planning to try this for around 6 weeks then evaluating results with biomarkers and objective measures.

I was taking small amount (1 mL, 5 gram HVMN ketone ester) either first thing in the morning before a meal, or in the middle of the night. On one hand it objectively appeared to have resulted in weight loss. Subjectively appetite was reduced, maybe increased energy and creativity.

But twice I tried HVMN and began to feel ill (first time: abdominal ache and slight nausea, second: felt kind of ill for about 1-2 days). Discontinued HVMN and then tried KetoGen. After a couple consecutive days on small amounts (1/6 and 1/3 recommended dose) felt kind of ill for about 1-2 days. Now taking small amounts 2 – 3 times a week.

To be clear: this is not to be considered evidence that the BHB made me sick. But time is marching on and I've made the decision that BHB "probably" or "possibly" just does not agree with me. One close associate takes 1/2 the recommended dose of HVMN daily and reports no bad effects.

Also I'm fairly certain one senior scientist and friend was taking large amounts of it – and he suddenly died with what initially appeared to be a gastric ulcer that had become perforated or bled out.

Welcome to the uncertainties of N=1. Despite all that, nearing age 70 I still believe the self-directed/small trial age management system -- under my own control -- is better than waiting for the results of others conducting large trials etc.

- **Performance enhancing energy drink increased exercise stamina – but with negative effects.** I applied an objective measure of endurance measurement method with "Bang Energy Drink". During the tests I felt I was doing better and measured performance increased 9%, but it took a toll in that after I felt it was really hard on me, and recovery took a lot longer. Something was wrong and I won't be testing this again. Awaiting DNAm age test results.

- **Cycling through each of these on separate days:**

- Day 1) Weightlifting,
- Day 2) 20 min aerobics including high intensity interval training,
- Day 3) 18-20 hr partial day fast beginning at about 12:00 pm with 20 min relatively light aerobic movement at around 6 pm on that day.

LevineCramer physiological age was a little higher than last check, but C-reactive protein tested at an all time low at .35.

- **6/2019 Acellular nanoparticles**

Two associates had acellular nanoparticle injections. Biomarkers described in Part 4 section **Here's ONE EXAMPLE -- used for our recent small study** were used. No discernible improvements could be detected.

Contact me for details.

- **2019 Partial day fasting (16:8) along with Vitamin C 500 mg 2x daily plus vitamin E 200 IU daily for epigenetic maintenance and prevent LDL oxidization, plus fish oil, and occasional multivitamin mental enhancement/brain mix (ginkgo biloba leaf extract, vinpocetine, and huperzine alkaloids).**

A high level epigenetic scientist advised me that vitamin C has positive effects on the epigenome. Another researcher who has devoted considerable time to studying vitamin C advised it prevents LDL from oxidizing, and should be used in combination with vitamin E.

Also I continue hearing about the positive effects of fish oil.

These have been added to my daily nutritional supplements (along with a multivitamin and brain supplement [ginkgo biloba, vinpocetin, huperzine a all lkaloids] about every other day).

- **2019 Dasatinib plus Quercetin**

One light dose 40 mg dasatinib and 400 mg quercetin.

After taking I felt OK, slight headache, maybe just a little wobbly and giddy for part of the day. Slight headache seemed to continue on and off, and I felt kind of “bad”, for a few days.

Several other measures of inflammation, aberrant cells and others were inconclusive.

An innovative senescent cell test for before and after senolytics therapy that measures gene activity by isolating RNA was developed by scientists at a top research lab. We are awaiting a final report with rejuvenation score.

Lead researcher’s comments after preliminary report:

*Without too much generalizing the data I think it is safe to say that senescence is much less present in the analyzed samples after treatment, which I think is a nice sign.*

But at 14 days after the therapy, DNA methylation age had increased by .7 years, and LevineCramer phenotypic age increased 1.66 years. So maybe the D+Q did age me, but maybe this increase has something to do with artifact or measuring components that were released into the system.

- **2019 Heart Rate Variability (HRV).** Note: Higher HRV is associated with better health, better performance and greater relaxation. Used Elite HRV software and CorSense finger monitor. Followed breathing exercise instructions built into the Elite HRV software. HRV before: 45, after: 61. Repeated a some time later, HRV before: 40, after: 45. Will continue.
- **2019 Reduced LDL** I had allowed dietary “indiscretions” in the form of fatty foods creep in so I greatly reduced foods with fats in them. Over 7 weeks reduced LDL 18.9%, HDL by 2%, total cholesterol 11.6%, VLDL by about 5-8.3%, Total cholesterol/HDL ratio 12% and LDL/HDL ratio 19.7%.
- **2019 Dianetic processing**  
I have learned many valuable concepts from this group, and frequently apply them. However, this method of self-improvement processing did not work for me.  
Contact me for details.

- **Sept 2018 Anti-inflammatory herbal mix**  
I had lab tests to measure inflammation before and after a liposomal wrapped 4 herb synergy mix. Inflammation values were lower after taking the mix.
  
- **2018-2019 High intensity interval training (HIIT)**  
Although this was not well controlled as data was taken 5 months prior to starting HIIT, not immediately before, I am confident the objective and subjective measures demonstrated positive results.  
HIIT should be worked up to, and previously as part of my walking 3-4 days a week I have been doing some fast running, but not nearly as intense as HIIT.  
**Zymo DNAm showed a reduction of 3.25 yr, and the Levine/Cramer spreadsheet results indicated about the same -- 3.35 reduction in phenotypic age.**  
My subjective feeling is that it feels good and is very producing positive results. Next morning upon waking I definitely feel I had deeper more replenishing sleep.  
Like a car, sometimes it just feels good to open it up and run it on the autobahn.  
  
Also I got married (but we were together for 10 years and living together for 6 so no big change). And my brother and my cats died so this brought a lot of sadness. Re. the cats though, there's a lot less hair, dander etc floating around, and I no longer deal with cleaning up litter and breathing the fine particles so there could be a relief on the immune and other systems. Or maybe unfavorable shared microbiome was involved.  
  
**Change was positive and significant, and I attribute it to HIIT although not completely certain.** This can be the case in N=1 human studies. We're not lab rats in a controlled environment.
  
- **2018-2019 HMR (Health Management Resources) diet, nutrition and fat loss program through the Univ of California Irvine Weight Management Program**  
I personally didn't do this, but since it had a positive result it's worth describing here. Monitored close female associate (age 64) who lost about 1 pound per week for ten weeks.  
Glucose, LDH, LDL Cholesterol went from high out of range to within range.  
Levine/Cramer spreadsheet phenotypic age reduced 2.5 yr. Appearance improved.  
Persistent cough decreased dramatically.
  
- **2018 Proprietary anti-inflammatory supplement with novel delivery system.**  
Briefest summary: **VERY** informal test. Had CRP, IL6, Fibrinogen, TNFa tested. Next day took 1-1/2 teaspoon, retested. CRP, IL6, Fibrinogen decreased significantly.  
More detail is available, but I expect this is what you would predict.  
So many therapies to evaluate, so moved on to some others. Planning to ultimately include this as part of my program.
  
- **2017 Lanasterol, canine eye drops in left eye for cataract**  
Result: It did not remove the cataract. It's possible that it slowed the progression, but I wanted clear vision so went ahead and had a lens replacement. Replacement worked and I'm happy with it.
  
- **2017 Umbilical cord plasma – 100 mL**  
Note: no babies are harmed in gathering the umbilical cord.

Result: Shifts in multiple biomarkers and objective measures to a somewhat more youthful profile.  
Contact me for details.

- **2016 Started utilizing DNA methylation (DNAm) testing.**

Eight person evaluation of Zymo DNA methylation test.

Result: This proved to be a valuable measure of biological age and results of therapies. One subject did this before and after GDF-11 and had a positive result with lowered DNAm age.

- **2016 Lanosterol eye drops for pets. Lanomax brand**

In an attempt to reduce a growing cataract, I tested lanosterol eye drops for several weeks. Devised a home “E” chart to measure vision changes, if any. I asked 3 high level ophthalmologists about safety before doing this, and they found it interesting and did not advise it was unsafe. One ophthalmologist who appeared to be just beginning his career advised not doing anything outside mainstream medicine.

No negative effects were detected, but it did not improve my vision so I went ahead with the cataract lens replacement surgery that fixed it.

- **2015 Novel therapy intended to upregulate oxytocin**

**Cultured lactobacillus reuteri 6475 in yogurt. Age 1 cup 2x daily**

Result: Our biomarkers and objective measures were simple and in early development – we only used CBC, CRP and grip strength. At first with CBC and CRP there appeared to be no discernable effect. However recent breakthrough was created consisting of an analytical method to evaluate phenotypic age i.e. apparent biological age, and apparent DNA methylation age, as implied by blood variables from a standard CBC and CRP tests. “Levine/Cramer spreadsheet”. It showed a 4.6 year reduction in phenotypic age.

- **2014 approx. Calorie Reduction**

- Made ongoing conscious effort to eat less, and stay at least a little hungry constantly, and only eat when it’s at the point where it’s pretty uncomfortable and difficult to function.

Methods included:

Consider just one less bite of food a big win.

Eat only when food tastes REALLY good and is highly satisfying, stop eating at the point where the food tastes really good and is highly satisfying.

Result:

This was early, and before I was aware of objective tests and measures. Surely it would have shown positive results.

Started at weight of about 150 lb. This was not overweight for me. **Lost a pound a week for 8 weeks.**

I felt good and mentally sharp.

Several times I would reach approx. 141.5 and begin to experience mild flu-like symptoms. This was not a good sign, so I started eating more and they went away.

- **2008 approx. Metformin**

Result: Assuming positive effects based on research. Minimal side effect, somewhat greater inclination toward dessert foods.

- **2002 The Soy Experiment**

I had heard that soy was good for you, so I began consuming large amounts of soy, like soy beans, soy milk, tofu. Later hormone panel indicated high, out of range estradiol. Estradiol is a form of estrogen, a female sex hormone. The negative, and feminizing effects of estradiol unappealing to me so soy consumption was greatly reduced.

- **2001 hGH**

It may have had some regenerative effects but I did not have access to nor any skill to interpret lab test results and other measures. But there were side effects -- I felt uneasy and sometimes angry.

- **2000 Conservative program with basics of great nutrition with reduced calories, exercise, stress reduction and other common sense approaches.**

Result: Positive results. Improved lab results, increased sense of well being.

- **1999 Testosterone, megadoses of multiple nutritional supplements and multiple “anti-aging drugs” often from questionable sources.**

Result: This overly aggressive and naïve program making me sick, even though it was under the supervision of an MD who had a great presentation and who I trusted. The MD later lost his license.

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**NOT ON MY LIST**

**No plan B – it’s do or die.**

- Cryonics.
- Upload the mind into a computer. Reasons why this is not such a good idea would take up too much space here. You’re welcome to contact me to discuss, or google “arguments against uploading mind into computer”  
[https://www.google.com/search?q=arguments+against+uploading+mind+into+computer&rlz=1C1CHBF\\_enUS723US723&oq=arguments+against+uploading+mind+into+computer&aqs=chrome..69i57.9273j0j7&sourceid=chrome&ie=UTF-8](https://www.google.com/search?q=arguments+against+uploading+mind+into+computer&rlz=1C1CHBF_enUS723US723&oq=arguments+against+uploading+mind+into+computer&aqs=chrome..69i57.9273j0j7&sourceid=chrome&ie=UTF-8)

OK, maybe transplant the brain into a device or onto a robot body would work. But personally, I’ll take a regular body -- enhanced to withstand disasters like assaults and plane crashes etc.

**Enough visionary, for now working on the MY LIST “here are now” above.**

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**DEVICES**

**I have heard criticisms about the high variability of various devices, and the way the charts and analytics look is their greatest selling feature. I can’t get much correlation between what appear to be similar measures with the Emfit and Oura, and no time to dive deep and study them. My expectation is that they be intuitive and make sense right out-of-the-box.**

**Plan to get:**

Garmin continuous monitor

Dexcon continuous glucose monitor

<https://www.dexcom.com>

Various HRV software

Precision Xtra ketone meter

Ketone breath strips

**Used/Using:**

Tanita RD-545IM scale – has metabolic age, BMI, basal metabolic rate (BMR), bone mass, muscle quality score, tracking and graphing software (cell phone)

Elite HRV software with CorSense finger sensor.

Note: recently I had some unexpected results – lower HRV at rest and higher when moving or exercising. So I'm more carefully evaluating it, along with several others.

Previously used the Polar H7 sensor strap, finger sensor is much easier.

[www.elitehrv.com/corsense](http://www.elitehrv.com/corsense)

iHeart

Includes pulse oximeter, calculates “internal age” from aortic pulse wave velocity.

Measures bpm (pulse rate), SpO2 (blood oxygen level), AoPWV (aortic pulse wave velocity).

[www.concordhealthsupply.com/iHeart-Your-Internal-Age-p/75007.htm](http://www.concordhealthsupply.com/iHeart-Your-Internal-Age-p/75007.htm)

[www.concordhealthsupply.com/Articles.asp?ID=261](http://www.concordhealthsupply.com/Articles.asp?ID=261)

Muse meditation headband

Useful for relaxation and meditation.

<https://choosemuse.com>

InnerBalance by HeartMath

Meditation device. Outstanding, easy to use.

<https://store.heartmath.com/innerbalance>

Oura ring

Measurements related to sleep include readiness score, sleep score and nightlong HRV.

<https://ouraring.com>

Freestyle Libre Continuous Glucose Monitoring

Emfit

Strip that installs under a bed mattress. Sleep analyzer operates automatically providing sleep, recovery and bio-signals.

<https://us.emfit.com/>

Keto-Mojo Blood Ketone and Glucose Testing Kit

Monitors ketones, glucose, hematocrit, hemoglobin

<https://keto-mojo.com/products/ketone-glucose-meter-basic-starter-kit>

I was not able to get consistent readings.

**What therapies are you planning?**

**What devices do you know of?**

**Let me know at JAdams@AgingInterventionFoundation.org  
or call (949) 922-9786**

Misc. reference

<https://www.colorado.edu/today/2018/03/28/pill-staves-aging-its-horizon>

Protocol statement: <https://clinicaltrials.gov/ct2/show/NCT02921659?term=Nicotinamide+Riboside&rank=6>

Abstract: <https://www.ncbi.nlm.nih.gov/pubmed/29599478>

PubMedCentral: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5876407/>

Published paper: <https://www.nature.com/articles/s41467-018-03421-7>

## **PART 4: METRICS**

### **Biomarkers and Objective Measures -- Practical, at a Reasonable Cost**

**These are biomarkers and objective measures I use. They may vary depending on the therapy. I have found these to be practical and reasonably priced for my own self-directed age management program and for the use of others.**



**This list is not perfect. I don't claim to know it all, or even very much.**

**CONTACT ME with your improvements and corrections.**

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### **In its simplest form, here's our method to evaluate and use therapies:**

- Select a therapy we believe will facilitate healthspan and lifespan, and make us biologically younger.
- Select an appropriate set of biomarkers and objective measures -- typically lab tests, and cognitive and physiological tests.
- Do the tests
- Take/do the therapy
- Retest -- look for a shift towards a more youthful profile.

I wish it were always that simple, but that's basically it.

Then combinations and dosages.

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### **Reason for Biomarkers and Objective Measures**

**\*\*\* YOU CAN'T MANAGE WHAT YOU DON'T MEASURE \*\*\***

We hope an aging therapy will make us feel younger, but may not subjectively experience the effect of an age management therapy. Biomarkers and objective measures are useful indicators of the end results we seek, and how long we might expect them – or to feel as good as we feel now -- into the future.

We will generally have objective measures done as a baseline before an aging intervention therapy, and at some time interval after – and are looking for a shift to a more youthful value. Some measures actually render a biological age. Or we might look for lower LDL cholesterol, or decreased inflammation.

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### **When I learn of a new biomarker or objective measure, some of the practical questions I ask include:**

Variability - how variable are duplicate measures from the same subject under the same conditions?

To check this, will the test company let you submit samples with no names or identifying information?

What's the cost?

Is it available from a standard testing lab (LabCorp, Quest)?

Will your physician write an order, and can you get it paid for by insurance?

Can you buy it and pay for it yourself without a physician's order?

If your researcher, will they give you a discount on multiple tests?

Does the test organization have special requirements to get the test, like subjects are participants in their clinical study?

How difficult is it to obtain samples, or run the test?

Is any special equipment required (whether physical test, blood test or other)

If blood draw, are there any special processing requirements after the draw?

Are there any special shipping requirements – dry ice, cold pack overnight, labeling?

Remember shippers may miss target dates during peak seasons, like holidays causing the samples to no longer be usable. Big problem if the therapy has already been started.

Experience has shown FedEx is most reliable and seems to be used by institutions. Still the driver may not be able to find your location (even though same driver has been there before) and you may have to go to their shipping address or even meet the driver at one of their stops.

Will baseline and followup samples be run in the same batch?

Does the tester save samples for future use? Example, if there is a new version of the test, or a completely new test available later.

Will the test be uncomfortable? Will the subject tolerate the test well?

Are you asking subjects to undergo the inconvenience of such a large number of tests that they won't participate?

Will the company be in business when you want to run the same tests later?

Suggest doing comparable (probably less comprehensive and sophisticated) "off the shelf" test from established provider.

Example: For inflammation, run sophisticated test like Myriad InflammationMAP (46-biomarker Multi-Analyte Profile), along with Labcorp or Quest inflammation tests (C-reactive protein, IL-6, fibrinogen, TNFalpha).

Note: in my experience Myriad InflammationMAP had unacceptable high variability (25+% plus for some). Their rep said this was the case with low inflammation. It's understood that many tests follow an S curve (higher variability in low and high values) – but that doesn't do us much good if we're trying to make low inflammation even lower.

We wound up sending duplicates, an unreliable and expensive proposition.

Is the test validated? If so, how?

Is it FDA approved, research grade, or experimental (or something else)?

How long does it take to get test results from the lab?

How easy or difficult is it to place an order?

How easy or difficult are the people to work with?

Is the phone answered by a person, or complicated system requiring you to navigate menu layers, answer a lot of questions, then ask you to leave a message or disconnect?

Are calls returned promptly?

Are support staff knowledgeable, and leave an impression they want to help you?

Are instructions clear?

Will the test process and results be the same into the future, allowing you apples-to-apples comparison in whatever timeframe is important to you?

If it's a new and sophisticated test, will you have similar standard tests to use for comparison, and as a fallback if the new one becomes no longer available?

Will you have to complete pre-test processing, like questionnaire? Is that easy to navigate?

To get the test must you enroll in a clinical study?

In addition to a basic panel, what specialized tests will be used if the therapy involves a specific condition?

---

**Categories of tests I suggest are most important.**

May vary depending on therapy.

- Various tests for Safety – these are MOST important. Your qualified physician or medical practitioner can best determine what to measure. Liver, kidney, blood, lipids, cerebrovascular are considered at the top. Many of these may be included in a Chemistry Panel & Complete Blood Count (CBC)
- Chemistry Panel & Complete Blood Count (CBC)
- DNA methylation (DNAm)
- Phenotypic Age Calculation
- Inflammation
- Spreadsheet or web page <https://agingmetrics.org/CalculatePhenAgeResp.aspx> to calculate phenotypic age (apparent biological age implied by blood variables) and other measures from CBC and CRP. Details below.
- Mental / Cognitive
- Physiological – grip strength, measures of stamina etc.
- Subjective / self assessment

Worth consideration, may require expert interpretation:

- Immune
- Endocrine

Others are below.

We use a number of tests (but not too great a number) and look for shifts in all or most of them toward a more youthful profile.

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**DEFINITELY read all the VALUABLE information after this section, and consult with your physician or project investigator to select biomarkers and objective measures that are best for your therapy.**

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**1) A simple yet effective test set for some therapies**

I often evaluate items like nutraceuticals, nutritional supplements and the like using a simple but effective method that reflects some of the most important end results we seek.

**Mental:**

Trailmaking B <https://www.aginginterventionfoundation.org/TrailMakingAandB.pdf>

and

Human Benchmark <https://www.humanbenchmark.com/>

tests,

**Physical:**

Exercise stamina using a high intensity interval test on an elliptical machine or stationary bicycle.

Grip strength

Time can stand on one leg

Heart rate variability

6 Minute Walk

Also the Short Physical Performance Battery Protocol And Score Sheet can be useful.

<https://geriatrictoolkit.missouri.edu/SPPB-Score-Tool.pdf>

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**2) An example using a wider range of tests used in our recent small study of a biological. This set can be adapted for many other therapies.**

**Basic Biomarker Set****Biomarker/objective measure plan for our recent small study**

Protocol Number/Identifier: E1

Johnny Adams

JAdams@grg.org

(949) 922-9786

Updated Nov 30, 2019

References:

[www.AgingIntervention.org/AgingInterventionProgram.pdf](http://www.AgingIntervention.org/AgingInterventionProgram.pdf)

<https://www.lifeextension.com/Vitamins-Supplements/Blood-Tests/Blood-Tests>

Best done first thing in the morning.

Some subjects' tests may vary depending on injuries and other variables.

**DNA Methylation Age**

**Before, and typically approx. 10 days and again at 6 weeks after therapy. Perhaps other dates depending on the situation.**

Project lead schedules phlebotomist visits and logistics, and communications with Zymo Research.

**Phenotypic Age Calculation (Morgan Levine, Steve Horvath)**

<https://agingmetrics.org/CalculatePhenotypicAge.html>

Added 9/2020

AgingSOS available at <https://www.jinfiniti.com/products/AgingSOS/>

**Items for members to arrange**

**ONE SET BEFORE AND OTHERS AT INTERVALS AFTER TO BE DETERMINED**

Blood tests through LabCorp either through subjects' physician and insurance, or through Life Extension.

**Advised if your budget permits - Life Extension Age Management Panel would be better:**

Join the Age Reversal Network at <https://age-reversal.net/>

<https://www.lifeextension.com/lpages/2019/ine801e>

\* Call me if this is going to be done to avoid duplication with some of the tests below.

**Chemistry Panel & Complete Blood Count (CBC)**

[www.lifeextension.com/Vitamins-Supplements/itemLC381822/Chemistry-Panel-Complete-Blood-Count-CBC-Blood-Test](http://www.lifeextension.com/Vitamins-Supplements/itemLC381822/Chemistry-Panel-Complete-Blood-Count-CBC-Blood-Test)

**Advised if your budget permits - ProdroneScan Blood Test**

Measures key biochemical systems to understand biochemical health.

<https://prodrome.com/blood-test/>

and

**iAge inflammation age test**

<https://edificehealth.com/iage/>

**Effective tests for CHRONIC inflammation are being developed, but for now using the following which are probably better suited for short-term inflammation.**

**C Reactive Protein**

<https://www.lifeextension.com/Vitamins-Supplements/itemLC120766/C-Reactive-Protein-CRP-Cardiac-Blood-Test>

**Tumor Necrosis Factor alpha (TNF-α)**

[www.lifeextension.com/Vitamins-Supplements/itemLC140673/Tumor-Necrosis-Factor-Blood-Test](http://www.lifeextension.com/Vitamins-Supplements/itemLC140673/Tumor-Necrosis-Factor-Blood-Test)

**Fibrinogen**

<http://www.lifeextension.com/Vitamins-Supplements/itemLC001610/Fibrinogen-Activity-Blood-Test>

**IL-6/IGF-1 LEF: Item# LC375046**

<http://www.lifeextension.com/Vitamins-Supplements/itemLC375046/IL-6-IGF-1-Blood-Test>

Possibly add IL-10

**Advised if your budget permits – UCLA IAC Immune Panel**

**CONTACT ME if you're going to do this. I have an account with them, and know the ends and outs. Includes**

<u>Live Gated</u>		<u>Reference</u>	
<u>Population</u>	<u>Population</u>	<u>Range</u>	<u>Optimal</u>
CD3+	T-Lymphocytes Absolute	767 - 2318	
CD3+	T-Lymphocytes %	53 - 87	
CD4+	T-Helper/Inducer Absolute	467 - 1350	
CD4+	T-Helper/Inducer %	32 - 59	
CD8+	T-Suppressor/Cytotoxic Absoute	201 - 868	
CD8+	T-Suppressor/Cytotoxic %	13 -38	
T Cell Ratio	CD4/CD8		.96 - 3.93
CD19+	B-Lymphocytes Absolute	74-447	

CD19+	B-Lymphocytes %	5-22	
CD56+/CD16+NK	Absolute	51 - 543	174 - 420
CD56+/CD16+NK	%	3 - 26	8.75 - 20.25
CD8+/CD28-	Senescent Suppressor Cells Absolute	17 - 364	< 50
CD8+/CD28-	Senescent Suppressor Cells %	4 - 51	< 10
CD8+/CD95-	Naïve Suppressor Cells Absolute	32 - 347	250 - 500
CD8+/CD95-	Naïve Suppressor Cell %	11 - 57	30-57

<https://www.uclahealth.org/departments/pathology/research-services/immune-assessment-core-iac>

### **Cardiovascular - Carotid Intima-Media Thickness Test (CIMT)**

**Available through Cedars-Sinai**

[Carotid Intima-Media Thickness Test \(CIMT\) | Cedars-Sinai](#)

### **Start of OPTIONAL lab tests – CANCER AND OTHER MARKERS**

We paid attention to these cancer markers and some others because we were working with a therapy that may have some effect, and were following the lead of one provider

May not be relevant to all therapies.

CEA (Carcinoembryonic Antigen)

<https://www.lifeextension.com/Vitamins-Supplements/itemLC002139/Carcinoembryonic-Antigen-CEA-Blood-Test>

Carbohydrate antigen 19.9

<https://www.lifeextension.com/Vitamins-Supplements/itemLC002261/Carbohydrate-Antigen-199-Blood-Test>

PSA

Prostate Specific Antigen (PSA) Free with Total Ratio

<https://www.lifeextension.com/Vitamins-Supplements/itemLC480780/Prostate-Specific-Antigen-PSA-Free-with-Total-Ratio-Blood-Test>

or

Prostate Specific Antigen (PSA)

<https://www.lifeextension.com/Vitamins-Supplements/itemLC010322/Prostate-Specific-Antigen-PSA-Blood-Test>

PT/I – bleeding or excessive clotting disorder

<https://www.lifeextension.com/Vitamins-Supplements/itemLC020321/PT-PTT-INR-Blood-Test>

UA -- Uric acid. Included in CBC

### **End of OPTIONAL lab tests**

Also optionally -- exact tests to be determined

Immune

Hormone / Endocrine

Enter CBC and CRP data into Levine/Cramer spreadsheet. Calculate phenotypic age and others.

[https://www.AgingInterventionFoundation.org/DNAmpHenoAge\\_gen\\_Enhanced.xlsx](https://www.AgingInterventionFoundation.org/DNAmpHenoAge_gen_Enhanced.xlsx)

**Items med tech or administrator (Johnny) arranges**

**Optional Inflammation Test**

Worth considering: Myriad InflammationMAP is an advanced 45 marker inflammation panel. My results had way too high variability. I asked their sales rep about it at a conference and he said that's true with (only) low inflammation. You choose whether to believe that. Also interpretation of many of the markers is specialized.

There is variability so we do replicates (2) – one set before therapy and one set after so total of 4 for each of us.

Previous cost: \$283 per sample. Myriad does not negotiate a discount for small quantities.

Scheduling phlebotomist, dry ice shipping (phlebotomist handles it), purchase order beforehand, sending manifest, and probably reformatting their data reports into a spreadsheet.

<https://myriadrbm.com/products-services/humanmap-services/inflammationmap/>

Others FYI

[www.myriadrbm.com/products-services/humanmap-services](http://www.myriadrbm.com/products-services/humanmap-services)

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**Physiological**

**Med tech or administrator (Johnny) meets with subjects to administer, under normal, consistent conditions, usually at subjects' locations at around 11:00 am.**

**Materials:**

cell phone with HRV software (currently Elite HRV, but evaluating others), and iHeart (calculates “internal age”) but evaluating others

CorSense HRV Sensor

iHeart pulse oximeter sensor

heart rate (bpm), blood oxygen saturation (SpO2)

grip strength meter

Trailmaking B printout

blood pressure meter (Omron 10)

tape measure

scale

Optional - Tanita RD-545 body composition monitor or similar

**Software installed on cell phone:**

Elite HRV software (but evaluating others)

iHeart Finger Sensor -- includes pulse oximeter, calculates “internal age”

Measures bpm (pulse rate), SpO2 (blood oxygen level), AoPWV (aortic pulse wave velocity)

Most efficiently done in the following order

**Measure**

Height

Weight

Waist – tape measure, snug at navel  
Hips – snug at widest part  
Waist/Hip Ratio  
Blood pressure  
Heart rate variability (CorSense finger monitor with EliteHRV software)  
Pulse Oximeter – iHeart, calculates “internal age”

### **Mental / Cognitive**

Trailmaking B <https://www.aginginterventionfoundation.org/TrailMakingAandB.pdf>  
Human Benchmark number, verbal, and visual memory, and reaction time. Optional hearing and typing.  
<https://www.humanbenchmark.com/>

### **Back to Physiological tests**

Grip strength  
30 Second Chair Stand <https://www.cdc.gov/steady/pdf/STEADI-Assessment-30Sec-508.pdf>

Balance and stamina test -- How long can stand on one leg with arms held to the side

Walking speed / gait speed – walking at normal speed, the time it takes to cover 25 ft.

6 minute walk test – Some variations

<https://pulmonaryrehab.com.au/patient-assessment/assessing-exercise-capacity/six-minute-walk-test/>

<https://www.sralab.org/rehabilitation-measures/6-minute-walk-test>

[https://www.physio-pedia.com/Six\\_Minute\\_Walk\\_Test\\_/6\\_Minute\\_Walk\\_Test](https://www.physio-pedia.com/Six_Minute_Walk_Test_/6_Minute_Walk_Test)

Pushups -- Number of pushups can do

### **Exercise stamina – subject must be in excellent physical condition**

**Get your doctor’s OK first.**

Procedure: On an elliptical machine or stationary bike.

Note: this is identical to my high intensity interval training, except for consistent measurement it’s done in the morning after all other tests.

1. Warm up for 5 minutes at a consistent, slow and comfortable pace. I do one step per second (right for one second, left for one second).

2. Going all out -- count the number of strides a subject can do on an elliptical machine, or the number of revolutions on a stationary bike machine, during a 20 second burst.

Write down how many strides or revolutions you did.

3. Recovery for 5 minutes at a consistent, slow and comfortable pace. I get off the machine and walk at one pace per second.

Repeat 2 and 3 two more times. Average the results. Make note of any thing important or useful.

You may want to adapt it to what works for you, for example just one burst, and/or only 10-15 seconds.

Do not pass out and fall off the machine. You may want to have someone on both sides to spot you. This can be adapted to a stationary bike machine.

Use the same machine each time.

There can be great variation in resistance, therefore your results may be different on different machines.

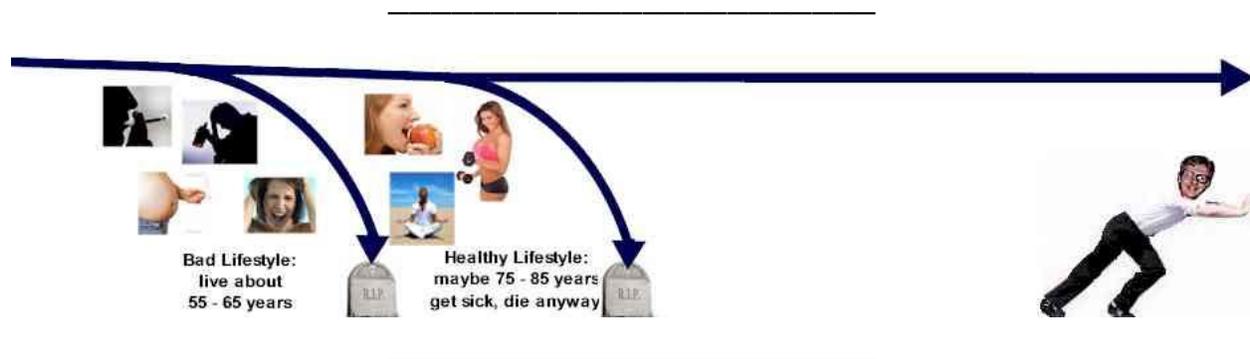
Contact me for the complete procedure.

### Also consider

#### ASSESSMENT & PROGRESS QUIZ

Kaufmann, Sandra. The Kaufmann Protocol: Why We Age and How to Stop It (p. 319).

**That concludes ONE TEST SET EXAMPLE. Continue reading . . .**



**There are comprehensive biomarker systems consisting of a great number of tests. With increased complexity, questions and problems can arise, like**

- The logistics of doing a large number of tests.
- Costs of a large number of tests. Costs add up.
- Will the phlebotomy lab or mobile phlebotomist be able to handle it?
- What is the published – and real – error of the tests? (I've seen 50% error between replicates from an advanced state-of-the-art lab)
  - o Will you need to do replicates (2 or 3) or multiple days to get desired accuracy?
- Will the test be available in the future?
- Do you get expert interpretation of the tests?
  - o Will interpretation, or the same interpretation, be available in the future?
- Will the test change in the future, making for difficult comparisons? One example is reliance on Illumina chips, which have had upgrades resulting in modifying or upgrading the panel so apples to oranges comparisons.
- Be prepared to have to deal with managing the data.
  - o Consider the practicality of sophisticated online systems
- Will data management systems be available in the future?
  - o Will costs increase, will the design change, how will that affect interpretation

If you have complex testing, also having standard, simple lab tests done for ongoing comparison over the years might be a good idea.

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Usually we use a basic set of tests - but ones that can be specialized depending on the therapy.

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Most tests listed below have a link to one resource (Life Extension) where you can buy the test without a doctor's order, like this:

<https://www.lifeextension.com/Vitamins-Supplements/itemLC381822/Chemistry-Panel-Complete-Blood-Count-CBC-Blood-Test>

And one with a link to the LabCorp site where you would get it with a doctor's order, and insurance may cover:

TEST 005009 CPT: 85025 <https://www.labcorp.com/test-menu/23041/complete-blood-count-cbc-with-differential>

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### At home test kits

Check to see the requirements to do the tests. Sometimes the requirements are difficult to meet. Get a doctor to interpret the results.

Some could be listed here, but it's ever changing so best to just Google it.

<https://www.google.com/search?q=in+home+test+kits&oq=in+home+test+kits>

CDC advisory

<https://www.cdc.gov/coronavirus/2019-ncov/testing/at-home-testing.html>

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### Types – from James Kirkland MD PhD presentation at IAGG/GSA conference 2017

Dosing and pharmacokinetics biomarkers

Pharmacodynamic biomarkers

Mechanism biomarkers

Surrogate endpoint biomarkers

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**Life Extension (LEF) blood tests – doctor's order not needed, probably not covered by insurance (but you can try).**

[www.lifeextension.com/Vitamins-Supplements/Blood-Tests/Blood-Tests](http://www.lifeextension.com/Vitamins-Supplements/Blood-Tests/Blood-Tests) 1-800-678-8989

I list them because I have found them easy to use with very good customer support. Others experience varies.

Others:

Empire Labs

HealthLabs <https://www.healthlabs.com>

WellnessFX [www.wellnessfx.com](http://www.wellnessfx.com)

LabsMD [www.labsmd.com](http://www.labsmd.com)

Kiosk Labs [www.koslabs.net](http://www.koslabs.net)

Walk In Lab NOTE: I had a problem clicking on this. You may have to type it in your browser.  
[www.walkinlab.com](http://www.walkinlab.com)

Google around for others.

**The main lab I most rely on is LabCorp. My circle of associates standardizes on LabCorp. Quest is also top tier. They're similar, but methods, reference ranges etc. are different and not exactly comparable, so suggest standardizing on LabCorp.**

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**Age Management Blood Test Panel**

[www.lifeextension.com/INE801E](http://www.lifeextension.com/INE801E)

**HealthLabs CBC+CMF+UA+LP+TSH**

<https://www.healthlabs.com/standard-health-testing-panel-cbc-cmp-ua-lp>

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**Some categories and a few details**

**SAFETY -- By far the most important.**

Like liver, kidney, blood, lipids, cerebrovascular, and others.

Chemistry Panel & Complete Blood Count (CBC) covers some of these. Discuss with your doctor.

**Suggested Safety Panel (Dec 2015) – Yours may differ. Follow your doctor's recommendations.**

**Comprehensive Metabolic Panel (CMP)**

Kidney functions

- Albumin
- Calcium total
- Chloride
- Carbon dioxide
- Creatinine
- Glucose
- Potassium
- Sodium

Liver functions

- Alkaline phosphatase (ALP)
- Alanine Aminotransferase (ALT)
- Aspartate Aminotransferase (AST)
- Bilirubin total
- Protein total

**Complete Blood Count (CBC) with Auto Differential WBC**

**Red blood cells (RBC)**

- Hematocrit (HCT)
- Hemoglobin (HGB,Hgb)
- Mean Corpuscular Hemoglobin Concentration (MCHC)
- Mean Corpuscular Hemoglobin (MCH)
- Mean Corpuscular Volume (MCV)

-Platelets (PLT)

**White blood cells (WBC)**

- Basophils

- Eosinophils
- Lymphocytes
- Monocytes
- Neutrophils (ANC)

### **Inflammation**

High sensitivity C-reactive protein (hsCRP)

### **Lipid Panel**

- Cholesterol
- High density lipoprotein (HDL)
- Low density lipoprotein (LDL)

### **Muscle function (damage)**

Creatine Kinase (CK) also known as creatine phosphokinase(CPK)

### **Misc**

Hemoglobin A1c (HbA1c ) ( glycated hemoglobin)

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## **Chemistry Panel & Complete Blood Count (CBC)**

### **A basic test for any therapy**

**From LEF – doctor’s order not required** <https://www.lifeextension.com/Vitamins-Supplements/itemLC381822/Chemistry-Panel-Complete-Blood-Count-CBC-Blood-Test>

Description from the web site: A comprehensive metabolic panel (CMP) is a blood test that measures your sugar level, electrolyte and fluid balance, plus kidney and liver function. Our CBC/chemistry profile also includes a lipid panel and complete blood count (CBC) so you have the opportunity to detect signs of heart disease, anemia, clotting, and immune disorders, as well as metabolic conditions that could threaten your health.

LEF instructions say

This test may be done fasting (note from Johnny: that’s about 12 hr) or 2-6 hours after eating. Both ways provide valuable information, though 2-6 hours after a meal provides a more realistic assessment of the state of your blood in everyday life. Stay hydrated and take your medications as prescribed.

**From LabCorp directly – with doctor’s order, insurance may cover** TEST 005009 CPT: 85025 <https://www.labcorp.com/test-menu/23041/complete-blood-count-cbc-with-differential>

Description from the web site: To determine your general health status; to screen for, diagnose, or monitor any one of a variety of diseases and conditions that affect blood cells, such as anemia, infection, inflammation, bleeding disorder or cancer.

## **DNA METHYLATION AGE / EPIGENETIC CLOCK**

I rely on Zymo Research.

There’s also Osiris Green, Steve Horvaths lab, Cygenia, MD Anderson, Malav at Nova Southwestern, Willard Freedman’s “Targeted DNA Methylation & Mitochondrial Heteroplasmy Core” at the University of Oklahoma Health Sciences Center

## **INFLAMMATION – an effect and cause of aging**

**Note: Chronic measures of inflammation are highly important.**

**As of 11/24/18 CRP, IL-6, TNF-alpha are beginning to be considered somewhat transient measures, and questions raised as to their validity as chronic measures.**

**Research is being conducted into whether measures like CXCL9 (Chemokine (C-X-C motif) ligand 9) = MIG (Monokine induced by gamma interferon), TRAIL, IFNG (Interferon gamma), EOTAXIN, GROA and some others are better long term measures, and how they can be measured. Stay tuned.**

C-Reactive Protein (CRP) – has been considered the most useful and reliable measure of inflammation

Fibrinogen

RANTES (T-Cell Specific Protein)

TNF-alpha

IL-6 Do IL-6 measurements in the morning as there's a trough in the morning, peak in the afternoon.

One expert advised: FYI for anyone considering doing an IL-6 test for this purpose it would be best to not do any exercise for 1-2 days prior to taking the test to make the results are more reliable and comparable. This is because IL-6 is a myokine that is released from muscles into the blood circulation in response to exercise so if you exercised not long ago it's possible that IL-6 levels in the blood are still elevated in response to the exercise. I'm not sure how long it is elevated but it would depend on the half-life of IL-6 and the intensity and length of the exercise. 1-2 days of no exercise prior to the test would probably be sufficient for accurate results.

Other advanced

Haptoglobin

IL-10, IL-17, TNF tumor necrosis factor

Cystatin?

Top level inflammation biomarkers: Myriad RBM InflammationMAP

And do complete blood test and metabolic panel

**Note: Myriad is state-of-the-art, but some of these can have high variations. Replicates are suggested.**

[www.myriadrbm.com/products-services/humanmap-services/inflammationmap](http://www.myriadrbm.com/products-services/humanmap-services/inflammationmap)

Others

[www.myriadrbm.com/products-services/humanmap-services](http://www.myriadrbm.com/products-services/humanmap-services)

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## **Some “basic” inflammation biomarkers on a budget**

C-Reactive Protein

**LEF Item# LC120766:** <https://www.lifeextension.com/Vitamins-Supplements/itemLC120766/C-Reactive-Protein-CRP-Cardiac-Blood-Test>

**Labcorp directly:** TEST: 120766 CPT: 86141 <https://www.labcorp.com/test-menu/23381/c-reactive-protein-crp-high-sensitivity-cardiac-risk-assessment>

Tumor Necrosis Factor alpha (TNF- $\alpha$ )

**LEF LC140673:** [www.lifeextension.com/Vitamins-Supplements/itemLC140673/Tumor-Necrosis-Factor-Blood-Test](http://www.lifeextension.com/Vitamins-Supplements/itemLC140673/Tumor-Necrosis-Factor-Blood-Test)

**Labcorp directly:** TEST: 140673 CPT: 83520 [www.labcorp.com/test-menu/36231/tumor-necrosis-factor-%CE%B1](http://www.labcorp.com/test-menu/36231/tumor-necrosis-factor-%CE%B1)

Fibrinogen

**LEF LC001610:** <http://www.lifeextension.com/Vitamins-Supplements/itemLC001610/Fibrinogen-Activity-Blood-Test>

**Labcorp directly:** Fibrinogen Activity TEST: 001610 CPT: 85384  
<https://www.labcorp.com/test-menu/25316/fibrinogen-activity>

IL-6/IGF-1 LEF: Item# LC375046

<http://www.lifeextension.com/Vitamins-Supplements/itemLC375046/IL-6-IGF-1-Blood-Test>

Not available through LabCorp directly(?)

Interleukin 6 (IL-6) LEF Item# LC140916

<http://www.lifeextension.com/Vitamins-Supplements/itemLC140916/Interleukin-6-IL6-Blood-Test>

**Labcorp:** Interleukin-6, Serum 140916 CPT: 83520

<https://www.labcorp.com/test-menu/29791/interleukin-6-serum>

Haptoglobin Special order through Life Extension

**LabCorp direct** Haptoglobin

TEST: 001628 CPT: 83010

<https://www.labcorp.com/test-menu/26926/haptoglobin>

Just found, **considering – checking whether the reports have exact values, Myriad InflammationMap has reference range as “<XX”**

Cytokine Panel LCCYT

[www.lifeextension.com/Vitamins-Supplements/itemLCCYT/Cytokine-Panel-Blood-Test](http://www.lifeextension.com/Vitamins-Supplements/itemLCCYT/Cytokine-Panel-Blood-Test)

LEF site [www.lifeextension.com/Magazine/2003/5/report\\_inflam/Page-01](http://www.lifeextension.com/Magazine/2003/5/report_inflam/Page-01)

### **SPREADSHEET FOR CALCULATING PHENOTYPIC AGE (APPARENT BIOLOGICAL AGE AS IMPLIED BY BLOOD VARIABLES) AND OTHER MEASURES.**

A highly useful spreadsheet that uses measures from inexpensive and easy to obtain blood tests to calculate phenotypic age (apparent biological age as implied by blood variables) and other measures.

**You can download it here -- includes some background information and enhancements I put in.**

Download it here:

[https://www.AgingInterventionFoundation.org/DNAmpPhenoAge\\_gen\\_Enhanced.xlsx](https://www.AgingInterventionFoundation.org/DNAmpPhenoAge_gen_Enhanced.xlsx)

It was developed by John Cramer from a Levine Paper:

<https://www.ncbi.nlm.nih.gov/pubmed/29676998>

Download the original spreadsheet directly from John's dropbox

Note: click the download link on the upper right.

I suspect there will be upgrades.

[https://www.dropbox.com/s/8wj94be281t9k7q/DNAmPhenoAge\\_gen.xls?dl=0](https://www.dropbox.com/s/8wj94be281t9k7q/DNAmPhenoAge_gen.xls?dl=0)

Values:

LinComb = linear combination of variables times weights that is the final input that generates the mortality scores and ages.

MortScore = Mortality Score (probability of death in the next ten years)

Ptypic Age = Phenotypic Age, i.e., your apparent biological age as implied by your blood variables.

est. DNAm Age = apparent DNA methylation age

est. DMScore = revised estimate of probability of death in 10 years, based on the estimated DNAm age.

### **MENTAL / COGNITIVE**

Note: Some experts advise some cognitive tests like Trailmaking B and others can be terribly misleading because practice effects will give a "blizzard of false positive results".

On the other hand, one expert scientist with outstanding experience in human performance testing advised that with loss of cognitive function we lose our ability to learn with practice, so it is valid.

Trailmaking B (and A)

It can be downloaded here (it's a powerpoint):

<https://www.AgingIntervention.org/TrailMakingAandB.PPT>

Info <https://www.sciencedirect.com/science/article/pii/S0887617703000398>

\* Be aware some of the B tests you can find to download (typically the numbers and letters are in a box) are missing number 13.

After an innovative intervention one scientist had a pronounced improvement in Trailmaking B results. Upon retesting over a period of time (after no treatment) it went back, almost to baseline. Then within an hour after re-treatment a pronounced improvement in Trailmaking B – suggesting it had to do more with signaling than rebuilding neurons.

If any member would be interested in locating a version of the Trailmaking B test that varies the position of the numbers or letters – or a programming whiz would create an online version that places the numbers and letters in random positions – please proceed and keep us informed.

Reaction time, number memory, verbal memory, visual memory

Human Benchmark [www.humanbenchmark.com](http://www.humanbenchmark.com)

New digit-span measurement page that can enable visitors to check the earliest cognitive changes at the very start of the 20-year pathway toward age-associated cognitive decline, MCI and Alzheimer's:

Digitspan Online Measurement [www.HealthspanStudy.com/digitspan](http://www.HealthspanStudy.com/digitspan)

*Useful: Biomarkers of Alzheimers, see Early Indicators of Alzheimer's Disease*  
[www.maxwellbiosciences.com/articles/research/biomarkers-alzheimers-disease](http://www.maxwellbiosciences.com/articles/research/biomarkers-alzheimers-disease)

background on the central importance of digit-span data:

<https://www.ncbi.nlm.nih.gov/pubmed/?term=wrap+blsa+digit+span>

Worth considering

<http://www.memtrax.com> \$4.99/mo \$48/yr Try it once for free

Along with these measurement pages, web pages currently used for the 2002-2018 Wild Blueberry Health Study will also be available to participants in the Microbiome SIG.

<http://www.blueberrystudy.com>

## PHYSIOLOGICAL/PERFORMANCE/STAMINA

### Basic

- Body weight
- Temperature
- Blood pressure
- Body Mass Index (BMI)
- Heart rate variability
- Grip strength
- Number of stand ups (chair rises) can do -- sit in chair, number of times can stand up and sit down. This is different from the usual 30 sec chair rise test.
- Number of push ups can do
- How long can stand on one leg with arms held to the side (hopefully >20 sec)
- Reaction time [www.humanbenchmark.com/tests/reactiontime](http://www.humanbenchmark.com/tests/reactiontime)
- How many times subject can lift a weight from the ground to above head in a circular motion.
- Walking speed / gait speed
  - 4 meters, walking normally, how many meters/sec
  - or
  - 400 meters, walking normally, how many meters/sec at 0 and each 100 meter mark (measuring slow down)
  - or
  - How much ground you can cover in a minute, or 6 minutes

### Cardiac Stress Test / Echo cardiogram

#### **Athletic stamina – subject must be in excellent physical condition**

Count the number of strides a subject can do – going all out -- on an elliptical machine, or the number of revolutions on a stationary bike machine, during 3 20 second bursts.

You may want to adapt it to just one, and/or only 10-15 seconds.

Do not pass out and fall off the elliptical machine.

You may want to have someone on both sides to spot you.

This can be adapted to a stationary bike machine.

Use the same machine each time.

There can be great variation in resistance, therefore your results may be different on different machines.

#### Warmup

Set your feet at the back of the pedals, and hold the handles at a comfortable place. Do one stride per second (right leg is one stride, then left is one stride) for five minutes.

Measure seconds on your stopwatch, or cell phone stopwatch.

#### Test

Stop striding. If you're using a cell phone clock to timer, set it to alarm after 20 sec. Start the timer or stopwatch, and start striding all-out. Count the number of strides at the end of 20 sec.

At the end you'll be very tired. Get off the elliptical machine.

Write down the number of strides.

Between high intensity intervals:

Set the cell phone to stopwatch so it shows seconds. Walk at a rate of one step per second for whatever time period it takes for you to feel you're ready for another high intensity interval on the elliptical machine. I just do 5 minutes, but you may be ready at less.

Repeat the above high intensity bursts two more times.

Keep track of your results. Contact me and I'll send you a spreadsheet to do this. And we can compare notes.

Bike machines – You can adapt the procedure above for elliptical machine.

**Rowing machine** – I have never done this, but it should work.

Concept 2 or other with digital readout. (benefit is that it's working all muscles)

Ten pulls on the rowing machine -- measure calories (per hour), peak power, maybe watt output or other.

This depends on what machine in that lab is set up to do.

#### Stair ascending test (SAT)

I have never done this, but heard about it from a high level researcher.

Example: At start of trial and appropriate number of days after therapy (one senolytics test used 21 days). Subjects warm up, rest 5 min, then climb 180 steps at a rate of 2 steps per second.

Measure blood pressure before, 10 minutes and 20 minutes post-exercise. Look for reductions in post-exercise blood pressure resulting from therapy.

After warming up with fast walking for 10 min, measure how much ground you can cover in 20 sec on an about a 15-20 degree upward hill.

#### Pulse Oximeter

iHeart -- includes pulse oximeter, calculates "internal age" from aortic pulse wave velocity  
Measures bpm (pulse rate), SpO2 (blood oxygen level), AoPWV (aortic pulse wave velocity).

<https://goiheart.com/faqs>  
[www.concordhealthsupply.com/iHeart-Your-Internal-Age-p/75007.htm](http://www.concordhealthsupply.com/iHeart-Your-Internal-Age-p/75007.htm)  
[www.concordhealthsupply.com/Articles.asp?ID=261](http://www.concordhealthsupply.com/Articles.asp?ID=261)

Ketones

KETO-MOJO Blood Ketone and Glucose Testing Kit

Monitors ketones, glucose, hematocrit, hemoglobin

<https://keto-mojo.com/pages/glucose-ketone-index-gki>

<https://keto-mojo.com/products/ketone-glucose-meter-basic-starter-kit>

The next are measures of stamina. Consistency from test to test is important. This may be individualized depending on one's available equipment, whether a track is available, and inclination.

There's an element of subjectivity involved, but I suggest you know when you "really want to stop" so for your consideration.

Examples

- Time walking as fast as possible until you \*really\* want to stop  
(somewhat subjective, but useful and fairly accurate)

and/or

- Time on a treadmill at a fast speed and incline until you \*really\* want to stop

- **BE CAREFUL NOT TO FALL WITH THIS ONE:** Running on treadmill with 4% incline at 5 mph, how long until you feel a need to grab rails –

Evaluates how old a person looks from uploaded photo.

Might be useful but I haven't evaluated it.

[www.how-old.net](http://www.how-old.net)

Info: [www.lifewire.com/website-that-can-guess-your-age-3486143](http://www.lifewire.com/website-that-can-guess-your-age-3486143)

- Quality of Life self evaluation

Daily or Weekly, rate from -10 to +10.

0 is neutral, plus or negative numbers indicate better or worse than neutral.

Overall health

Peacefulness

Sharpness

Energy

Mood

Sleep quality

Aches and pains

Total for Score

Weekly

List anything new, like change to routine, exercise, foods, medicines, supplements etc this week

Worth considering but I don't do these now

- Variability of blood cells (and mortality)

- Visual contrast sensitivity (eyes and olfactors are extension of the brain)

- FEV1 -- forced air velocity, although this takes a long time to change. (takes long time bef you can see changes)

- Is this energy production?-->Resting Metabolic Rate [www.bodyspec.com/what-is-rmr](http://www.bodyspec.com/what-is-rmr)

- VO2 max testing [www.bodyspec.com/what-is-vo2](http://www.bodyspec.com/what-is-vo2)
- lean body mass, total body fat, visceral adipose tissue, and bone density  
DEXA scan [www.bodyspec.com/what-is-dxa](http://www.bodyspec.com/what-is-dxa) (takes 2 yr bef you can see changes)

Various other assessment batteries are available

H-Scan

InSilico Medicine [www.aging.ai](http://www.aging.ai) Is this ready for prime time?

[www.aging.ai](http://www.aging.ai)

### **HRV – Heart Rate Variability**

CorSense finger sensor (better than Polar sensor strap)

Software:

EliteHRV software – cell phone, download from Android PlayStore or iPhone App Store

Cystatin C – kidney, and general measure of youthfulness

### **SENESCENT CELL MEASUREMENT**

I worked with some high level scientists at a university lab to develop an innovative senescent cell test for before and after senolytics therapy. It measures gene activity by isolating RNA. It determines the differential expression of a panel of senescence associated genes in human PBMCs (peripheral blood mononuclear cells) before and after administering senolytic drugs. We're evaluating it now, used it in our small D+Q test. More later. As of Oct 2018 our group is using this in a senolytics small study.

Here's a selection of LabCorp tests (available through Life Extension) for a relatively simple and low cost measurement of before and after senolytics results collected by our senior scientist friend Bryant Villaponteau. Note: this was created specifically for his product Senex, and may be useful for other senolytics.

<b>Description</b>	<b>Tests For</b>
C-Reactive Protein (CRP)	Inflammation
Carbohydrate antigen 19.9	Aberrant Cells
Carcinoembryonic antigen	Aberrant Cells
Fasting Glucose	Energy Metabolism
Hemoglobin A1C	Glycation
Interleukin 6 (IL6)	Inflammation
Insulin-Like Growth Factor 1	Growth & Repair
Insulin	Energy Metabolism

C-Reactive Protein (CRP)

<https://www.lifeextension.com/Vitamins-Supplements/itemLC120766/C-Reactive-Protein-CRP-Cardiac-Blood-Test>

Carbohydrate antigen 19.9

[www.lifeextension.com/Vitamins-Supplements/itemLC002261/Carbohydrate-Antigen-199-Blood-Test](http://www.lifeextension.com/Vitamins-Supplements/itemLC002261/Carbohydrate-Antigen-199-Blood-Test)

Carcinoembryonic antigen

[www.lifeextension.com/Vitamins-Supplements/itemLC002139/Carcinoembryonic-Antigen-CEA-Blood-Test](http://www.lifeextension.com/Vitamins-Supplements/itemLC002139/Carcinoembryonic-Antigen-CEA-Blood-Test)

Tumor Necrosis Factor-alpha

[www.lifeextension.com/Vitamins-Supplements/itemLC140673/Tumor-Necrosis-Factor-Blood-Test](http://www.lifeextension.com/Vitamins-Supplements/itemLC140673/Tumor-Necrosis-Factor-Blood-Test)

Hemoglobin A1C (HbA1C)

<https://www.lifeextension.com/Vitamins-Supplements/itemLC001453/Hemoglobin-A1C-HbA1C-Blood-Test>

Fasting Glucose AND Insulin (combined in one test)

<https://www.lifeextension.com/Vitamins-Supplements/itemLC302186/Fasting-Glucose-and-Insulin-Blood-Test>

Interleukin 6 (IL6) AND Y Insulin-Like Growth Factor 1 (combined in one test)

<https://www.lifeextension.com/Vitamins-Supplements/itemLC375046/IL-6-IGF-1-Blood-Test>

## **IMMUNE**

My circle of associates and I are seeking immune testing with interpretation from the Advanced sources below.

Note: Trying to be our own immunologist or relying on a physician who is not highly skilled in immunology can be a problem, in that we might miss something as basic as evaluating whether a pneumonia vaccination is needed.

If going to use the Stanford HIMC, then would becoming the patient of a Stanford immunologist be advised?

Advanced

We all need comprehensive testing with expert interpretation, standard for our group.

**UCLA Immune Assessment Core is upgrading its panel to include more age related measures, starting with TEMRA, and naïve memory cells or naïve T cells.**

[www.pathology.ucla.edu/iac](http://www.pathology.ucla.edu/iac)

[www.pathology.ucla.edu/iac-services](http://www.pathology.ucla.edu/iac-services)

Stanford HIMC <http://iti.stanford.edu/himc.html>

Stanford Immunological Center

<http://iti.stanford.edu/human-systems-immunology-center.html>

Quantrex

National Jewish Labs [www.NJLabs.org](http://www.NJLabs.org)

A major initiative is underway to develop markers as a fee for service. Details later.

CD4/CD8 ratio

Senescent T cells

Produce naïve T cell (production)

Primary NK cells

T cells

B cells

Streptococcus pneumoniae Antibody IgG 23 Serotypes lab test

Evaluates the immune system in action by evaluating it's ability to mount a defense after a pneumonia inoculation.

IgA, IgG, IgE, IgM  
Lymphocyte subset panel 5-quest  
CBC with adiff blood, comprehensive metabolic panel

NLR, LMR, PMR

Most of the studies I could find were done on patients with diseases.  
I would look forward to hearing from you about your experience using NLR, LMR and PLR.  
neutrophil to lymphocyte ratio (NLR)  
NLR, LMR, PMR and age. See table 2  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6039688/>

Individuals aged 18 to 50 years had significantly lower NLR ( $p=0.019$ ) and PLR ( $p<0.05$ ) than older individuals aged 51 to 85 years.

[www.omicsonline.org/open-access/reference-values-of-neutrophillymphocyte-ratio-plateletlymphocyte-ratio-and-mean-platelet-volume-in-healthy-adults-in-north-centra-.php?aid=68492](http://www.omicsonline.org/open-access/reference-values-of-neutrophillymphocyte-ratio-plateletlymphocyte-ratio-and-mean-platelet-volume-in-healthy-adults-in-north-centra-.php?aid=68492)

For cancer patients this study suggests that the survival advantage is in part due to having a low NLR.

[www.nature.com/articles/s41598-018-22425-3](http://www.nature.com/articles/s41598-018-22425-3)

lymphocyte to monocyte ratio (LMR) – Is higher better (unless out of range)?  $>5$  is good

platelet to lymphocyte ratio (PLR)

In this study lower PLR associated with younger subjects (and higher in males than females)

<https://www.omicsonline.org/open-access/reference-values-of-neutrophillymphocyte-ratio-plateletlymphocyte-ratio-and-mean-platelet-volume-in-healthy-adults-in-north-centra-.php>

Also mean platelet volume (MPV) – not on LabCorp, but said to be part of standard CBC.

### **These LEF/LabCorp are useful**

LC100041 Autoimmune Disease Screen Blood Test

<https://www.lifeextension.com/lab-testing/itemlc100041/autoimmune-disease-screen>

LC259317 Helper/Suppressor (CD4+:CD8+) and Natural Killer Cell Profile Blood Test  
Item #

<https://www.lifeextension.com/lab-testing/itemlc259317/helper-suppressor-and-natural-killer-cell-profile>

CBC/metabolic profile and the following 2 are included in the above test LC259317

LC096925 T-Lymphocyte Helper/Suppressor Profile (has CD4, CD8 and ratio)

[www.lifeextension.com/Vitamins-Supplements/itemLC096925/T-Lymphocyte-Helper-Suppressor-Profile-Blood-Test](http://www.lifeextension.com/Vitamins-Supplements/itemLC096925/T-Lymphocyte-Helper-Suppressor-Profile-Blood-Test)

LC505016 Natural Killer Cell Surface Antigen (CD3-CD56+ Marker Analysis)

[www.lifeextension.com/Vitamins-Supplements/itemLC505016/Natural-Killer-Cell-Surface-Antigen-CD3-CD56-Marker-Analysis-Blood-Test](http://www.lifeextension.com/Vitamins-Supplements/itemLC505016/Natural-Killer-Cell-Surface-Antigen-CD3-CD56-Marker-Analysis-Blood-Test)

What else?

## **HORMONE / ENDOCRINE**

hGH

Testosterone

Free T4

Cortisol

TSH

Prolactin

FSH

Leutenizing Hormone

ACTH, Plasma

IGF I, Lc/Ms

    Z Score (Male

Others?

LEF/LabCorp Male/Female panels can be useful

[http://www.lifeextension.com/Search#q=male%20panel&sort=relevancy&f:hierarchicalcategory=\[Products\]](http://www.lifeextension.com/Search#q=male%20panel&sort=relevancy&f:hierarchicalcategory=[Products])

[http://www.lifeextension.com/Search#q=female%20panel&sort=relevancy&f:hierarchicalcategory=\[Products\]](http://www.lifeextension.com/Search#q=female%20panel&sort=relevancy&f:hierarchicalcategory=[Products])

## SELF ADMINISTERED HEALTH EVALUATIONS

Normally we don't like subjective measures, but how we feel (even placebo) can be useful – or may even be the most important. *“If it's placebo – I'll take it!”*

Medical Outcomes Study Questionnaire Short Form 36

Health Survey (SF-36)

[https://www.brandeis.edu/roybal/docs/SF-36\\_website\\_PDF.pdf](https://www.brandeis.edu/roybal/docs/SF-36_website_PDF.pdf)

[https://www.rand.org/health/surveys\\_tools/mos/36-item-short-form.html](https://www.rand.org/health/surveys_tools/mos/36-item-short-form.html)

Credit to Rolf Martin for these [healthspanstudies@gmail.com](mailto:healthspanstudies@gmail.com)

Do it yourself

Daily

Quality of Life           rate from -10 to +10

Overall health

Peacefulness

Sharpness

Energy

Mood

Sleep quality

Aches and pains

Score (total of the above, or apply weights to each according to what's important to you)

Weekly

List anything new, like observations, changes to routine, exercise, foods, medicines, supplements etc this week

[www.HealthspanStudy.com/HowAreYouToday](http://www.HealthspanStudy.com/HowAreYouToday)  
[www.HealthspanStudy.com/MyDiary](http://www.HealthspanStudy.com/MyDiary)  
[www.HealthspanStudy.com/DietSurvey](http://www.HealthspanStudy.com/DietSurvey)

## TELOMERES

[www.LifeLength.com](http://www.LifeLength.com)

Worth considering, less extensive [www.TeloYears.com](http://www.TeloYears.com)

**The following may be too specialized and expensive:**

**MICROBIOME** – our Microbiome Special Interest Group is researching this

uBiome

Second Genome – mostly for larger scale partnerships

Zymo?

Mapmygut?

AmericanGut [www.americangut.org](http://www.americangut.org)

Others to be determined

## **ENERGY PRODUCTION. BIOLOGICAL**

- Sit in chair -- number of times can stand up and sit down

- Resting Metabolic Rate [www.bodyspec.com/what-is-rmr](http://www.bodyspec.com/what-is-rmr)

- Zymo ATP test??

- Actions similar to pushups and chair stand-ups like: How many times about a 15 lb weight can be lifted from the floor to above the head with arms extended (in a somewhat circular motion)

- Indirect calorimetry

- The Urinary Metabolic Profile, US BioTek

- Mitochondrial energy assay

## **DNA DAMAGE**

CONSIDERING 8-hydroxyguanine

<https://www.cellbiolabs.com/8-ohg-rna-damage-elisa> \$419

[www.cellbiolabs.com/8-ohg-rna-damage-elisa](http://www.cellbiolabs.com/8-ohg-rna-damage-elisa)

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## **Day of the Week to do lab draws**

This developed after conversation with my long time MD friend, recently retired head of pathology and lab.

I do lab tests on Tuesday mornings (or Wed if cannot do Tues)

Later in the week it's possible the blood will be sitting around over the weekend or lab techs may not be as attentive.

Not Monday because I usually take Sunday completely off and rest, so hormones etc may not be representative of normal – and lab techs are coming off a weekend.

## **Time of day**

Mornings, consistently same time. I go in 10:00-10:15 after fasting from 11:00 pm the previous night.

---

Different labs use different techniques and different normalization standards for the same tests, so one to one comparisons of the same biomarker will not be accurate.

My circle of associates uses LabCorp

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Ratios of 2 different biomarkers can be useful.

Neutrophil/Lymphocyte ratio

CD4/CD8 (standard)

---

Two professional statisticians recommended doing tests in sets of three and averaging them. If there is an outlier, omitted and average the two.

---

When you get an unexpected lab measurement, repeat it.  
Sometimes it's wrong.

---

We want parameters that don't have daily/weekly/monthly/yearly fluctuation  
That show changes over a short period of time (like 3 month)

Do tests at the same time of day of the week.

---

### **Lab Tests -- no MD order required**

Life Extension Foundation blood tests

You do not need doctor or prescription -- order through them. It's done at LabCorp.

They send requisition and list of LabCorp locations near you

They often have sales

[www.lifeextension.com/Vitamins-Supplements/Blood-Tests/Blood-Tests](http://www.lifeextension.com/Vitamins-Supplements/Blood-Tests/Blood-Tests)

800-678-8989

LabsMD

[www.labsmd.com](http://www.labsmd.com)

Kiosk Labs

[www.koslabs.net](http://www.koslabs.net)

Walk In Lab

**NOTE: I had a problem clicking on this. You may have to type it in your browser.**

[www.walkinlab.com](http://www.walkinlab.com)

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Over the counter urine, saliva tests at drug stores, internet like  
glucose  
ketone

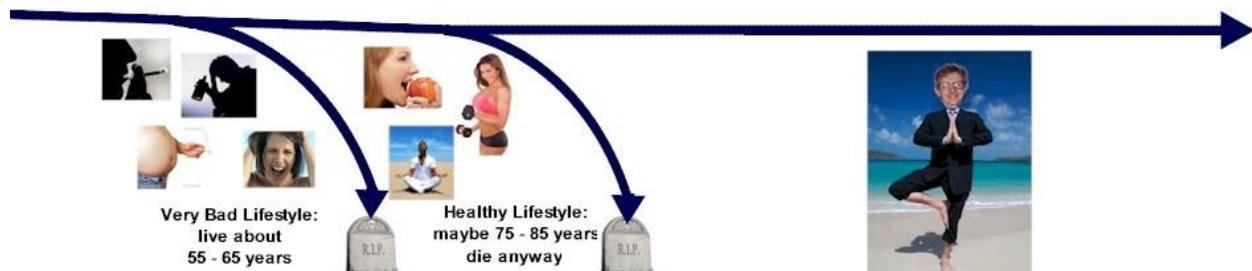
others only available w/physician prescription

Labs don't want to be liable for self diagnosis – they could get sued.

Be aware of potential negative consequences of self-diagnosis and independent action

A rather large, not particularly up to date or well organized biomarker list collected over the years is also at

[www.aginginterventionfoundation.org/1\\_BiomarkersOfAgingAndHealthMeasures\\_AllInfo.pdf](http://www.aginginterventionfoundation.org/1_BiomarkersOfAgingAndHealthMeasures_AllInfo.pdf)



***Attn Scientists Who Are Aging SOLUTION CREATORS:***

***If you are developing a new aging therapy with outstanding potential, then I can help – along with my wide network – in many ways including:***

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***You stay in control.***

***We're in this to solve aging.***

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***or email JAdams -at- AgingInterventionFoundation.org***

***or JAdams -at grg.org***

***Others Active in Aging: Let's Partner Together***

***If you would like to work together to advance on biological aging solutions***

***Call me at 1 949 922-9786  
or email JAdams -at- AgingInterventionFoundation.org  
or JAdams -at grg.org***