



[Rapamycin Anti-Aging Medicine: An Interview with Alan S. Green, M.D.](#)

Rapamycin, a drug used as an immunosuppressant in the treatment of organ transplant patients, may be the most potent life-extension drug currently available, and the practice of rapamycin anti-aging medicine is just getting started. Mikhail Blagosklonny, a doctor and scientist at the Roswell Park Cancer Institute in New York, has been the most notable and vocal [advocate of rapamycin to extend human lifespan](#). While rapamycin has adverse side effects in humans who take it daily for immunosuppression, recent research has found that [pulse dosing](#), perhaps once a week, may confer most of the anti-aging benefits without any adverse side effects.

Will rapamycin fight aging in humans and extend lifespan? Unfortunately, clinical trials of rapamycin for this purpose are unlikely to happen any time soon, but some people would like to find out. Among them was [Alan S. Green, M.D.](#), who practices medicine in New York state, and who, beginning in early 2016, began to take rapamycin himself, along with metformin, an angiotensin blocker, and aspirin.

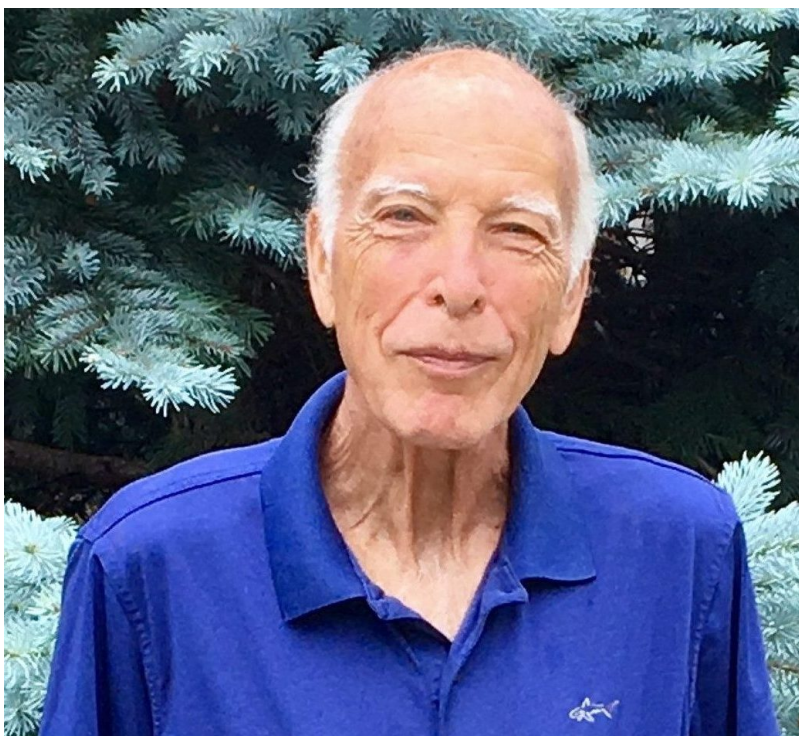
At the age of 72, Dr. Green found himself suffering from old age:

I attended college on a tennis scholarship and ran a marathon in just under 4 hours at age 40. But by age 70 my main physical activity was reduced to walking my two Shiba Innu dogs in the park. Then by age 72, I experienced angina and shortness of breath on small hills. As a trained pathologist I accepted the reality that I was in rather poor shape. My fasting blood sugar was up, my creatinine blood level was elevated indicating renal insufficiency and I couldn't fit into any of my pants. I then began trying to learn about aging. I discovered a story more extraordinary and improbable than anything I had ever encountered in my lifetime.

He began to take rapamycin on a weekly dosing schedule, along with the other drugs noted, and after only 4 months, he experienced vastly improved health.

Based upon empirical medicine principles, I decided rapamycin 6 mg once a week would be an aggressive treatment and 3 mg once every 10 days would be a conservative treatment. I decided to go with aggressive treatment. January 2016, I began the rapamycin-based Koschei formula with intent to take it for one year; in what could euphemistically be called a “proof-of-concept” experiment. I didn’t have to wait one year; **by 4 months the results were miraculous.** I lost 20 pounds, my waist-line went from 38 inches to 33. I bought a pair of size 32 jeans and didn’t have to wear joggers no more. **I could walk 5 miles a day and ride a bike up hills without any hint of angina.** Creatinine went from elevated to normal and fasting blood sugar went down. **I thought I was Lazarus back from the dead.** It’s now over 1 year and I feel great. I’ve also had no mouth sores, the most common clinical side-effect. For me, rapamycin is the world’s greatest medicine. [My emphases.]

Dr. Green reports: **“Subjective impression: Miraculous improvement in health; feeling old to feeling young.”**



Dr. Alan S. Green

Given all of this, and after reading through [his website](#), I decided it would be a good idea to interview Dr. Green, and he graciously consented to it. This is a tremendous interview with Dr. Green, who appears to be *the only physician in the world practicing anti-aging medicine with a rapamycin-based treatment regimen*, arguably the most potent life-extension intervention currently known.

As a practicing physician, Dr. Green has translated the scientific research on anti-aging and life extension and put it to work on humans, and as such, he's a true pioneer in medicine. I predict that the approach he uses will become more widespread, and quickly. While Silicon Valley startups and tech moguls reach for unproven and perhaps even phantom methods to fight aging, and are pouring lots of money into the effort, Dr. Green shows that potent anti-aging medicine is here now, and you don't need to be a billionaire to afford it. (Are you listening, Peter Thiel?)

Following are my questions and Dr. Green's answers.

P. D. Mangan: You said that earlier in life, you were physically active, having run a marathon at age 40. When you found yourself feeling the effects of aging at age 72, is there anything that prompted you to turn to rapamycin and other anti-aging drugs rather than trying to become more active again and/or changing diet? Did you feel that physical/dietary changes wouldn't be adequate for the health problems you were facing?

Alan S. Green, M.D.: My point was I had been in good shape with jogging and tennis so when I started going downhill it was very apparent. At about age 67 I stopped playing tennis due to slowness and fatigue. I tried to control increasing size of waist line with diet but without much success. However, I viewed all changes as normal aging which was the traditional medical view. It wasn't until age 72 when I developed angina and SOB walking up small hills in the park with my 2 Shiba Inu dogs, that I finally concluded that I had a progressive fatal disease and that disease was aging. As I didn't know anything about aging, I had no reason to consider diet or exercise as a remedy. My plan was to study aging to determine if there was any treatment.

PDM: I've learned a great deal from Mikhail Blagosklonny myself, have read all of his aging theory papers, and believe his quasi-programmed theory of aging makes more sense than almost anything else out there. Yet there are many other theorists of aging. Why did Blagosklonny's ideas resonate so much with you? Did you come across other theorists who weren't as convincing?

ASG: I believe in science, not metaphysics so "theories" not supported by scientific facts mean nothing to me. The start of understanding aging is that rapamycin increases life span of all living things and mean life span of mice by 25%. Further study showed that rapamycin blocked almost all key steps in progression of atherosclerosis and rapamycin prevented development of Alzheimer's disease. Furthermore, mTOR was the command and control of all cells of all living things. Blagosklonny had a theory which explained how reducing mTOR slowed aging and slowed diseases of aging, so this was very interesting theory as it dealt directly with mTOR. Blagosklonny also had an anti-aging treatment plan for reducing mTOR. I was impressed with Blagosklonny enough that his treatment plan was certainly worth a shot. After 4 months of the rapamycin based treatment, my body had undergone what I considered a miraculous change and I felt cured. Being cured was what resonated with me. Today I went for a 40 mile bike ride with a stiff headwind. I felt perfectly fine and when I came home I took my dogs for walk in

the park and those small hills which once caused angina now seemed like nothing more than Gopher mounds. So it is not the Blagosklonny theory which impressed me; but rather the results.

PDM: A very large number of Americans, perhaps as much as 80%, have some degree of insulin resistance, i.e. they're not in optimal health, and around the same fraction are overweight or obese. Do you have an opinion as to what degree the diseases of aging, such as heart disease and cancer, may be due to these factors, and to what degree they are strictly caused by old age?

ASG: I believe aging is a bundle of many disease mechanisms; but the most important one in the 60-95 age range is elevated mTOR. I would estimate that in general 75% of aging and age related disease in this age group is due to elevated mTOR. Specifically with atherosclerotic cardiovascular disease it is probably closer to 90% and with cancer probably less than 50%.

PDM: Do you think that rapamycin treatment will become widespread in the near future? What are the obstacles, if any, to it becoming more widely adopted?

ASG: Rapamycin may become more widespread; but probably not. The obstacle is lack of appropriate human trials. Rapamycin will never be an "on label" drug. Furthermore, rapamycin has been used by over a million people as a biologic poison in transplant medicine. It will be very difficult to overcome the bad name it has received in transplant medicine. Rapamycin is type-cast as a bad guy. Use of rapamycin once a day is harmful because it knocks out mTOR1 and mTOR2; but use once a week is safe because it only lowers mTOR1. The main obstacle is financial and not medical. Nobody has a financial incentive to promote rapamycin. But rapamycin could become more widespread, because Baby Boomers are very savvy and know how to use the internet to get information.

PDM: I note that of the drugs you advocate for anti-aging, metformin, aspirin, and ACE inhibitors/AR blockers are cheap, while rapamycin is more expensive. Does any other drug come close to rapamycin in efficacy or is it indispensable? Of the four drugs, what fraction of anti-aging effect is due to rapamycin in your estimation?

ASG: Rapamycin is only \$3.50 for 1 mg if you buy it on line with a prescription from Canada; therefore monthly cost might come to \$50-100 a month.

My rough guess of the relative value of each as anti-aging drug would be as follows: rapamycin, ACE inhibitor/AR blocker, metformin, aspirin: 75, 18, 6, 1.

PDM: Do you think that other, non-pharmacological anti-aging interventions,

such as intermittent fasting or perhaps even intense exercise, are superfluous for someone on a drug regimen such as yours? If the drugs activate AMPK and inactivate mTOR, then would the physical interventions make any difference, given that they do that as well, and perhaps not as effectively?

ASG: I think physical activity is of great value. I cycled 1000K in May. I understand value of HIIT for people in their 40s; but for people my age, I think a few hours of exercise at moderate intensity is probably best. Humans are the premier long distance runners of the animal world. Running and walking can be too traumatic for joints in old people; but cycling is easy and safe as long as stay on bike paths and away from cars. The effect of using legs muscle at the cellular level is it increases AMPK which increases GLUT4 transport of sugar into muscle which reduces insulin resistance.

Caloric restriction is also of great value. Men should get their waist hip ratio down to 0.9 range. If you had a 32 inch waist when age 21, there is no reason you should not have a 32 inch waist line at age 75 and with rapamycin you can do it. After get rid of extra waistline fat; then I favor eating about 8% fewer calories than required; but without any additional weight loss

With all due respect to victims of the Holocaust, and not to minimize one of the greatest atrocities in human history, I cite the case of Yisrael Krystal. Yisrael is the oldest living man in the world and in good mental and physical health. In August 1944 at age 40 he went to Auschwitz concentration camp. In January 1945 he was rescued by the Russians and his weight was down to 80 pounds. He was probably just a few weeks away from death from starvation. He endured 6 months of starvation and hard labor. Only a small handful of men 40 years old were rescued from the Nazi concentration camps; so hard to say that mere coincidence that Yisrael Krystal is oldest living man in world. In a possible related study, mice fed rapamycin for 3 months in middle age went on to have a remarkable long extension of lifespan after rapamycin was stopped. The most senior mouse lived 1400 days which was stated to be the equivalent of 140 in human years. I mention this mouse study to show that what happened to Yisrael in 1944 could have an ongoing effect for the next 70 years.

PDM: Since I'm not a fan of statins myself, I note that you stopped taking one due to adverse side effects. What do you make of studies showing that higher total cholesterol is associated with longer life? Have you revised your opinion at all on whether it's worthwhile to lower cholesterol or take a statin?

ASG: I agree with your basic point that you don't like surrogate markers. Lowering cholesterol doesn't prove statins prevent heart attacks. However, I have seen studies showing statins lower all cause mortality. So I would use statins, if it did not cause problems for me.

PDM: You stated after following your anti-aging regimen for 14 months, "Subjective impression: Miraculous improvement in health; feeling old to feeling young." I think that's fantastic; why aren't more people doing this? Do you know of any other physicians besides yourself that prescribe regimens like yours?

ASG: Anecdotal reports in medicine are always considered very unreliable and proving nothing. Aside from Blagosklonny, there are no anti-aging experts saying people should use rapamycin. If you showed my results to some anti-aging experts their response might be something like this: "Even taking all the results as true, it still proves nothing. It would require 30 years to show rapamycin increases lifespan or decreases age related disease and would need results in hundreds of persons for a statistical analysis. The results don't even show rapamycin is a good fitness drug as subject also used diet and exercise which in themselves could account for all positive results."

My interpretation is rapamycin is a miracle anti-aging drug; but some anti-aging experts would just poop-poop results as meaning nothing.

I know of no other physician who has a rapamycin based regimen like mine.

PDM: Did you have any trepidation about starting to take rapamycin, given that there's so little human data on it for anti-aging?

ASG: I had great fear that rapamycin would not work. I wasn't interested in something that would extend my lifespan. I wanted something that would reverse aging. I wanted to be restored to good health. I thought rapamycin based treatment might slow aging; but I never expected to feel young again. I consider aging to be the mother-of-all-disease; so while I certainly had fear, the fear was not about rapamycin.

I think one of the greatest days of my life was about 4 months into treatment when I suddenly had that "Holy shit" moment' as in "Holy shit, this stuff actually works."

When I say "Old" I mean you go for a walk in the park with your dogs and with a small hill you have angina, fatigue and shortness of breath and when I say "Young" I mean going for a 40 mile bike ride and feeling great.

PDM: Was your decision to take anti-aging drugs more or less sudden, i.e. did you give it any thought a few years earlier?

ASG: As soon as I had done enough research to know the score, there was no delay in starting treatment. I was very lucky in that by the year 2015 when I began my search for understanding of aging and treatment, there had been an explosion of scientific research and understanding of aging. By contrast, in the year 2005, nothing was known about aging, rapamycin, mTOR; it was all just gobbledygook.

From the start of research to the start of treatment was 8 months.

PDM: I was fascinated to learn about [angiotensin disruption for anti-aging](#), which I'm not sure if I had heard of before, and also that it fits the growth vs longevity paradigm. (On second thought, I had heard of it, but I forgot. Must be the effects of age.) Do you think hypertension is a "normal" manifestation of aging and that everyone can expect to have it to some degree as they age?

ASG: The two best characterized systems which promote aging are the mTOR system and the angiotensin-renin system. Angiotensin II is the primary cause of hypertension; but angiotensin II also promotes atherosclerosis, damage to mitochondria and increase ROS in tissues. I think all older persons probably suffer from higher activity from angiotensin II than is healthy. So probably most old people had some degree of hypertension and they would benefit from being on angiotensin blocker/inhibitor (ARB/ACE). The important thing is to use one that crosses blood-brain barrier.

PDM: There exists a remarkable indirect correlation between [insulin level and hypertension, heart disease, cancer, stroke, diabetes](#). What is relationship between insulin level and mTOR?

ASG: There is a direct correlation between insulin level and mTOR level in the cell. I believe that insulin level is the best surrogate test for mTOR level. So the chart showing very strong correlation between the 5 common diseases of aging and insulin level is not because insulin is bad per se; but that high insulin in blood indicates high mTOR activity in the cell.

PDM: Given that most of these drugs are cheap, and even generic rapamycin could come down in price, to what extent do you see major pharmaceutical companies as a hindrance to the adoption of this regimen? If they don't promote it to physicians, since there isn't enough money in it, will it catch on?

ASG: Our system is based on drugs being developed and promoted by Big Pharma. I don't think Big Pharma is an obstacle; they just will not help. There is no way for anybody to make any money from rapamycin because it is a generic drug. So you are correct, very difficult for rapamycin to catch on.

PDM: Given that the use of these drugs could radically cut healthcare spending, do you see that as more of an obstacle, or an incentive, to its adoption?

ASG: Saving money is an incentive to the payors. It is not an incentive to the medical industry or to Big Pharma. So to be a real incentive need a

different kind of health care system. You would need somebody in charge of entire system who could say need to save money by preventing diseases of aging and then that person would need the knowledge that such action was actually possible and then implement program to prevent diseases of aging.

In the system we now have, there is nobody to do that. There is nothing payors can do to implement preventive medicine and they certainly don't know it is even possible.

I believe healthy old people could make a great contribution to society instead of being a financial burden. So the failure to have preventive of diseases of aging is a tragedy of the highest order.

PDM: Do you see any other interventions in your future or on the horizon? Or is your anti-aging regimen the current state of the art? Do you plan to keep practicing medicine indefinitely, now that you've solved your aging and health problems?

ASG: The future is here now. The focus on treatments of the future not yet available is a distraction from the very excellent treatments now available.

Blagosklonny provided the state of the art treatment in Koschei 2014 paper. In May 22, 2017 paper, "From rapalogs to anti-aging formula", Blagosklonny updated treatment and I may include some of his new ideas in my office treatment plan.

I do plan to continue to practice medicine. Aging is an extraordinary complex disease and people should not be forced to fight aging on their own.

I thank Dr. Green for taking the time to answer my questions and for such a great interview. He's a real pioneer in the application of anti-aging science to medical practice.

PS: I wrote an extensive section on supplements for longer life in my new book, [Best Supplements for Men](#).



PPS: [Check out my Supplements Buying Guide for Men.](#)