InsideTracker

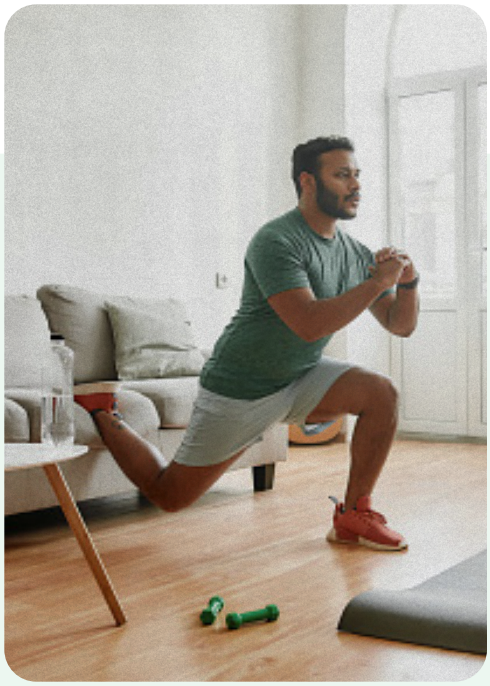
The top 5 biomarkers for longevity

How Blood Testing Can Help You Live A Healthier Longer Life.

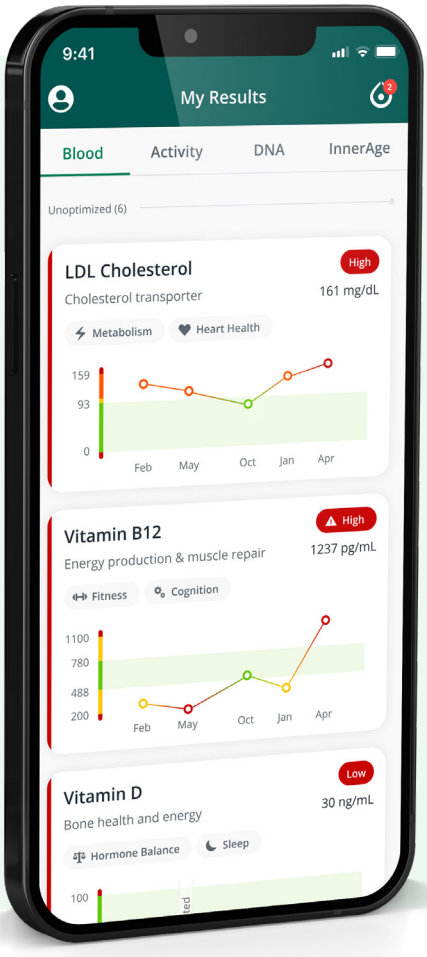
InsideTracker.com

Why is blood testing important as we age?

To live your longest and healthiest life possible, your body needs to be periodically tested and recalibrated. Blood biomarkers—objective measures of health status—change over time. They shift in response to lifestyle factors like what you eat, how you move, how you respond to stress, and the quality of your sleep. However, certain blood biomarkers are more closely associated with aging than others.



InsideTracker, **your personalized digital wellness platform that provides dynamic health insights and science-backed guidance**, has identified 5 essential blood biomarkers that correlate strongly with aging.



- Vitamin D
- hsCRP
- HbA1c
- LDL cholesterol
- Triglycerides

1. Vitamin D

Vitamin D is an important, fat-soluble vitamin that promotes healthy aging. It helps the body absorb calcium, which supports bone strength. Maintaining bone strength becomes critical as the years pass.

Inadequate vitamin D levels increase the risk of low bone mineral density, making you more susceptible to stress fractures and frailty as you age. [1]

Benefits of optimizing vitamin D

Longevity
Vitamin D supports the body's immune responses that fight off infection, illness, and inflammation. The immune system gradually declines with age through a process known as immunosenescence. But, optimal vitamin D levels can disrupt that process, and maintain the integrity of your immune system.

Muscle mass
Studies show that vitamin D acts directly on muscle to increase protein synthesis, enabling increased muscle mass and decreased muscle fiber degradation. Optimal vitamin D levels have also been shown to increase the size and number of muscle fibers associated with building strength.

Testosterone levels
Testosterone plays a role in maintaining muscle mass, strength, and red blood cell production. For males, testosterone levels decrease with age—dropping an average of 1-2% each year after age 40. Low vitamin D status is linked to low testosterone levels in middle-aged men. [2]

Cholesterol levels
Vitamin D supplementation appears to have a beneficial effect on reducing total cholesterol, LDL cholesterol, and triglyceride levels

Sleep
If your vitamin D is low, you may sleep less or experience less efficient, less restful sleep.

2. hsCRP

hsCRP is a general marker of inflammation, indicative of aging. Inflammation is a natural response by your immune system to protect itself from injuries, damaged cells, irritants, and pathogens. Inflammation plays a critical role in maintaining your body's immune system and heart function. So it's responsible for keeping us healthy, but too much or prolonged inflammation is detrimental to health.

Benefits of optimizing hsCRP

Heart health
Long-term inflammation is associated with age-related chronic diseases like heart disease.
The mechanism behind this is still under study, but we do know that a heart under stress triggers an inflammatory response.

Immune health
Internal inflammation is also connected to oxidative stress and accelerated aging.
So, mitigating inflammation should be a priority, as high hsCRP levels can put you at a greater risk of getting sick.

Longevity
In addition to heart health, research shows a connection between high inflammation levels and risk of developing age-related conditions like metabolic syndrome and diabetes.
Keeping inflammation levels at bay promotes the number of disease-free years of your life, not only contributing to long-life, but also a longer healthspan—the preservation of biological, physical, and mental health as we age. [3]

3. Blood glucose + HbA1c

Fasting blood glucose is a measure of your blood sugar after (at least) a 12-hour fast. Although glucose levels normally fluctuate throughout the day—especially after meals—high fasting glucose levels can indicate an issue with how the body processes glucose. If glucose isn't used for energy right away, it can bind to the hemoglobin inside your red blood cells. And hemoglobin A1c, or HbA1c, represents the average amount of glucose in your blood for the past 90-120 days.

Benefits of optimizing blood sugar markers

Metabolism

Glucose is the body's primary source of fuel, and properly regulated glucose levels are essential for maintaining a healthy metabolism. Metabolism refers to the way the body uses calories from food to produce energy. Consistently high glucose levels are associated with impaired metabolism. [4]

Longevity

Glucose regulation also can decline with age. Research and customer data show a strong correlation between blood glucose and age—a lower glucose level is associated with younger age and vice versa. Optimized HbA1c is associated with optimal glucose levels and increased longevity.

Sleep

Sleep influences glucose metabolism. Sleep loss and deprivation negatively impact insulin, a hormone responsible for helping to maintain blood sugar levels, raising morning blood glucose levels. However, getting more sleep may improve blood sugar in people who have experienced chronic sleep deprivation. [5] [6]

4. LDL cholesterol

It's well established that lower cholesterol levels, particularly low-density lipoprotein (LDL or *bad*) cholesterol, can be predictive of healthy aging. LDL carries cholesterol throughout your body, as it is an essential component of many compounds in the body like hormones and cell membranes. But high LDL levels for extended periods of time are associated with poor health—especially poor heart health.

Benefits of optimizing LDL cholesterol

Heart health

High levels of inflammation in the body can oxidize (a process that creates unstable molecules capable of causing damage) LDL particles, leading to the hardening of arteries. If these deposits build up, it can lead to blockages that may cause serious cardiovascular complications.

Metabolism

Cholesterol is essential for proper fat digestion in the body. It's also a precursor for several hormones that influence metabolic processes like testosterone, estrogen, and cortisol. Having optimal levels of LDL cholesterol ensures metabolic processes run smoothly, whereas unoptimized LDL levels may disrupt the system. [7]

Longevity

Healthy LDL cholesterol levels promote healthy aging. Research suggests that, for many people, LDL tends to creep up with age, and some people may also have a genetic predisposition for higher levels of LDL cholesterol. However, LDL cholesterol is also heavily influenced by lifestyle factors. But aging or a genetic predisposition doesn't mean achieving optimal cholesterol levels is out of reach. [8]

5. Triglycerides

Triglycerides are a type of fat found in your blood and are the primary storage form of fat found in the body. The body uses triglycerides to store excess energy. While glucose is the body's primary fuel source, triglycerides are broken down and used for energy between meals and during long fasting periods. Regularly consuming more calories than the body burns, particularly calories from simple carbohydrates and saturated fat, may result in above optimal triglyceride levels.

Benefits of optimizing triglycerides

Metabolism
Fat is the body's largest energy reserve. And everyone needs some fat stores that provide the body with energy when other fuels, like glucose or glycogen (stored carbohydrate), aren't available during fasts or endurance exercise.

Heart health
But high levels of triglycerides in your blood are a risk factor for atherosclerosis, or the thickening of artery walls. High triglyceride levels may also put you at risk for high blood pressure.

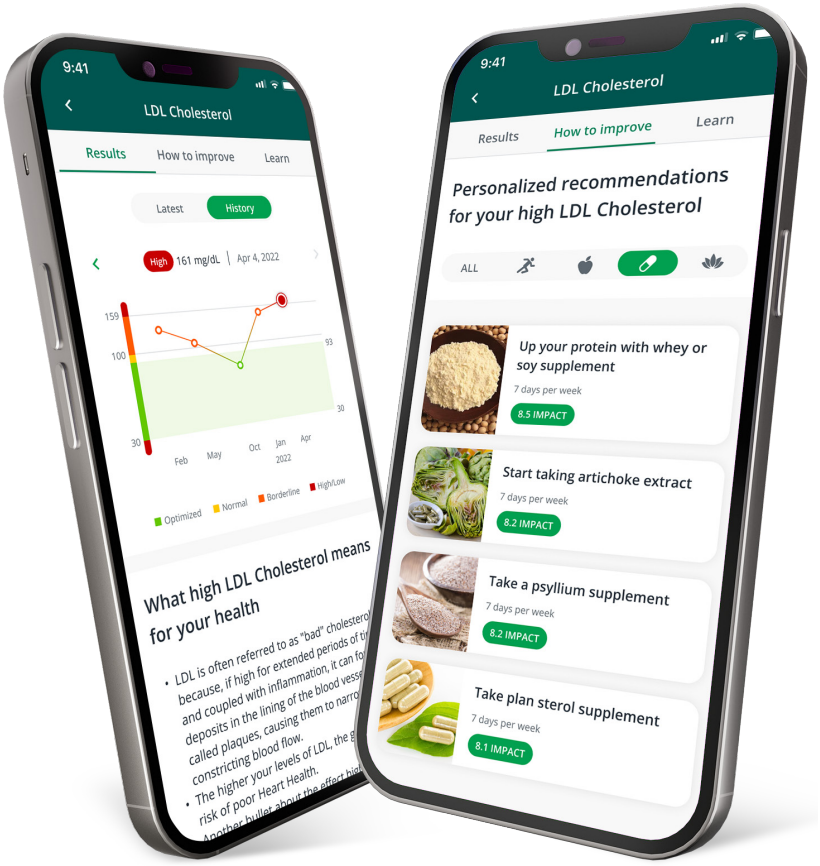
Longevity
Dyslipidemia, or elevated levels of triglycerides or cholesterol in the body, is linked to numerous age-related diseases. But maintaining optimal levels as you age (not too high and not too low) may promote quality of life and preserve your ability to perform activities of daily living. [9] [10]

Traditional blood testing is designed to catch illness—not promote longevity. That's where InsideTracker comes in.

A basic blood panel at a yearly doctor's appointment doesn't provide granular data or all the blood biomarkers necessary to evaluate if you're aging, optimally.
But InsideTracker does.

InsideTracker provides various blood plans that analyze your unique blood biochemistry as well as your fitness tracker and DNA data. The algorithm then determines what your optimal zone is for all markers measured—
a yearly physical usually only informs you whether you're within the normal range or not for a fraction of those biomarkers.

Your optimal zone is a precise range based on your age, sex, ethnicity, and activity level. The system then generates a customized Action Plan with targeted food, supplement, and lifestyle recommendations to improve unoptimized markers.
With InsideTracker, you can actively monitor your health, track your progress, and improve your healthspan from the inside out.



Add-on InnerAge to your InsideTracker plan to discover your biological age—and how to improve it. Your biological age reveals how efficient your body is working and how well it should be working given your chronological age.

You can also add-on InsideTracker's DNA Kit—which shows you how your genetics are influencing your health. It includes 38 wellness traits—many of which directly tie to your healthspan and lifespan. You'll also get recommendations to help you beat your genetic odds.

Ready to get started?

View InsideTracker Plans here

InsideTracker.com

InsideTracker

Recipes for longevity

5 recipes to help you live longer

Greek quinoa salad

Prep: 7 min. Cook: 20 min Makes: 2 servings

Per serving: 551 calories; 33g fat; 50g carbohydrates; 19g protein

Ingredients

- 1/3 cup quinoa, dry
- 2 cups raw kale
- 2 tbsp lemon juice
- 1 avocado, cubed
- 2 small tomatoes, chopped
- 1/2 onion, diced
- 1/2 tsp dried parsley
- 1/4 cup feta cheese

Directions

Cook quinoa according to package directions. After chopping vegetables, combine all ingredients in a bowl.

In a small bowl, whisk together lemon juice, olive oil, herbs, and pepper. Pour over salad and top with feta cheese.

Four bean salad

Prep: 15 min. Cook: 0 min Makes: 2 servings

Per serving: 636 calories; 35g fat; 61g carbohydrates; 21g protein

Ingredients

- 1/2 cup black-eyed peas
- 1/2 cup navy beans
- 1/2 cup adzuki beans
- 1/2 cup chickpeas
- 1/4 cup red onion, chopped
- 1/4 cup celery, chopped
- 2 tbsp fresh parsley, chopped
- 1 tbsp apple cider vinegar
- 1/4 cup olive oil
- 1/2 tsp table salt
- pinch of black pepper

Directions

To make the dressing, whisk together the vinegar, oil, salt, and pepper.

Rinse and drain beans, and combine in a bowl with the onion, celery, and parsley. Stir in as much of the dressing as you'd like.

Roasted sweet potato wedges

Prep: 5 min. Cook: 30 min Makes: 2 servings

Per serving: 113 calories; 3.6g fat; 19g carbohydrates; 2g protein

Ingredients

- 2 large sweet potatoes
- 1 tbsp olive oil
- 1/2 tsp cayenne pepper
- 1/2 tsp black pepper
- 1/2 tsp garlic powder
- pinch of salt

Directions

Preheat oven to 400 degrees F. Cut the sweet potato into wedges, about 1 inch wide.

Toss the sweet potato wedges in olive oil, cayenne, black pepper, garlic powder and salt.

Spray a baking sheet with non-stick spray. Spread the sweet potatoes across the baking sheet and bake for 30 minutes, or until the sweet potato wedges are tender, flipping halfway through.

For an added crisp, roast the wedges on a wire rack.

One pan salmon + veggie bake

Prep: 10 min. Cook: 25 min Makes: 1 serving

Per serving: 679 calories; 23g fat; 68g carbohydrates; 50g protein

Ingredients

- 6 oz salmon
- 1/2 cup sweet potato, sliced
- 1 cup green beans
- 1/4 red onion, sliced
- 1/4 tsp dried dill
- 1/8 tsp salt
- 1/8 tsp black pepper
- 3 lemon slices
- 1 tbsp olive oil
- 1 tbsp lemon juice
- 1 garlic clove

Directions

Preheat oven to 425 degrees F.

Line a baking sheet with parchment paper and set aside.

Thinly slice the sweet potato into rounds and place on the baking sheet with green beans and red onion.

Mix together the olive oil, lemon juice, and garlic. Drizzle over the veggies and toss to evenly coat.

Place the salmon in the middle of the veggies on the baking sheet and drizzle with any remaining dressing.

Place the lemon slices over the top of the salmon and sprinkle with dill, salt and pepper.

Place pan in oven and bake for 20 minutes or until veggies are tender.

Chickpea + avocado sandwich

Prep: 10 min. Cook: 0 min Makes: 1 serving

Per serving: 438 calories; 16g fat; 58g carbohydrates; 21g protein

Ingredients

- 1/3 cup chickpeas
- 1/4 avocado
- 1 large handful of spinach
- 1 tbsp sunflower seeds
- pinch of dill
- salt & pepper to taste
- 2 slices whole wheat or sourdough bread

Directions

In a small bowl, mash together the chickpeas and avocado. Add in the dill, sunflower seeds, and salt and pepper, and mix well.

Spread mixture onto toasted bread and top with a big handful of spinach and any other of your favorite sandwich toppings.