

Science Report

Self-Protective Measures

You should get your medical advice from your doctor or pharmacist, not from this Report or the internet, and *do* get vaxxed for Covid, [shingles](#), HPV (girls *and* boys as young as 9), [RSV \(>60\)](#), [RSV \(<8mo\)](#), and the flu per recommendation by FDA and CDC - unless your doctor advises against, based on your personal medical information.

- [What is Normal Temperature?](#) - Normal adult body temperature can be anywhere from 97 °F to 99 °F - the old 98.6 °F standard is mythological. Normal for infants and children is from 97.9 °F to 100.4 °F. It's important to know when you 'have a temperature' above *normal for you*, but first you must know what your personal baseline normal temperature actually is. So ... you should use your digital thermometer (you *do* have one handy, of course) to run a series of daily temperature measurements over about a week's time - at the same time of day, each day. Place the tip in one of the hollows on either side of the base of your tongue, and hold it there until the digital display stabilizes. Then you will have the normal temperature *for you* to compare the readings you make in the future - you *did* write that baseline temperature/range down, of course. [Details](#).
- [Florida Drug Importation Program](#) - to import certain drugs from Canada in an effort to reduce their cost has been [approved](#) by FDA. This is a first.
- [FDA Has Sent a Warning Letter to Amazon](#) - regarding the sale of 7 products containing either Sildenafil (marketed as Viagra), or Tadalafil (marketed as Cialis). The active ingredients weren't described on the label, no limitations for use were noted, and several other red lines were crossed. So, no more 'Big Guys Male Energy Supplement' from Amazon. Naughty.
- [Cinnamon Applesauce Pouches](#) - more bad news. [CDC reports 287 cases \(median age 1\) of lead poisoning](#) from 37 states, and FDA product testing has shown [Chromium contamination](#) along with the Lead.
- [Hydroxychloroquine and Covid-19](#) - About [17,000 people are estimated to have died](#) between March and July of 2020 in the 6 study countries researchers surveyed (Turkey, Belgium, France, Spain, Italy and the US) due to complications caused by this anti-malaria treatment. FDA granted temporary emergency use authorization as a treatment and preventive on March 28, 2020, and revoked it on June 15, 2020.
- [Outbreak of Measles in Philadelphia](#) - Several patients have been hospitalized, mostly children. Public health officials say that the [outbreak is due to refusal to be vaccinated or self-quarantine](#). Measles is **highly infectious**. Ninety percent of those in close contact with an infected person will be infected if unvaccinated.
- [America's Only 'Blue Zone'](#) - The residents of Loma Linda California live about a decade longer than the rest of us. See these [8 simple rules](#) for long life from a registered dietician, and try the yoga stretches in a sauna at 175°F [Chad C.]
- [NIH BMI Calculator](#) - Use the [NIH](#) National Heart, Lung and Blood Institute [calculator](#) to find your Body Mass Index (BMI) Above 25 - overweight. Above 30, check with your doctor, consider better nutrition, and exercise.
- [Estimates of Excess Weight Other than BMI](#) - [One other simple measure](#) is that waist size be less than half the height. That gets more directly at the health importance of visceral (abdominal) fat.

Vaccine and Therapeutic News -

- Novavax (Gaithersburg MD) - The company has [announced](#) that the latest version of its Covid-19 vaccine has been authorized for use in Taiwan by the Taiwan FDA - already authorized in the US and EU.
- Rheumatoid Arthritis - There are a variety of treatments for this condition, but it can take considerable time to settle on a treatment that works for a particular patient. There is a test, [PrismRA](#), that has the potential to speed up finding the optimum treatment. [Details](#). 1.3 million Americans have rheumatoid arthritis, a disease in which a person's immune system attacks their joints, causing crippling pain and, if improperly treated, disfigurement.
- New Medical Device for Uncontrolled Hypertension - 'Uncontrolled' means they've already tried everything else. FDA has approved the Medtronic 'Simplicity Spyral Renal Denervation (RDN) System' - uses radio waves to suppress an overactive sympathetic nervous system. [Details](#), videos. This is the [second](#) RDN system to gain FDA approval. The [one approved earlier](#) operates on a very different principle. Both are very interventional.
- Seborrheic Dermatitis (Scalp Eczema) - FDA has [approved](#) the [Arcutis Biotherapeutics](#) (Westlake Village CA) topical [foam Zoryve](#) (roflumilast) to [treat scalp eczema](#) - causes a [scaly, itchy rash on the scalp](#) and skin affecting more than 10 million people in the US. Zoryve is a once-daily, steroid-free topical treatment for use anywhere on the body, including hair-bearing areas, with no limitation on duration of use, and was previously approved to treat plaque psoriasis. Dandruff is a mild form of seborrheic dermatitis. Tune-up: eat whole foods rich in **antioxidants**, and avoid inflammatory foods like highly refined vegetable seed oils, refined (not whole) grains, and high sugar foods. [Video](#) [skip ads]. Commercial availability - end of January, 2024.

Other Health Science News -

- Atopic Dermatitis (AD), or Atopic Eczema - affects [7%-10% of adults and 20%-25% of young children](#). There have been some promising [recent studies](#) of the causes, particularly the role of Staphylococcus Aureus, but the gut microbiome is at the center of the most recent research - it's responsible for 70% of immune system regularization, and for maintaining skin barrier integrity. What you can do for yourself *now* is take care of your gut microbiome with smart nutritional choices of natural whole foods - probiotics, prebiotics and **antioxidants**.
- Eczema Creams - See a rank-ordered, medically reviewed list of over-the-counter eczema creams (moisturizers) [here](#). Tune-up: Non-comedogenic (non-pore-clogging) creams are generally best.
- Biomarker for Vascular Aging - A recently published [study](#) linked a specific signaling pathway Notch3 with a decline in vascular function and neurodegeneration. This more specific biomarker may point researchers to better therapies for vascular dementia. Details and a good video [here](#).
- Objective Biomarker for Suicidal Thoughts - Preliminary results of a 200 participant study using blood tests predicted a diagnosis of major [depressive disorder](#) and suicidal ideation with an [accuracy of 90%](#). [Publication](#).
- Driving to Work by Car, and Mental Health - One [study](#) showed that commuting directly correlates to decreased sleep, increased depression, and increased feelings of being under pressure. A [study in Sweden](#) showed that couples in which one partner commuted at least 45 minutes were 40% more likely to divorce. More than two-thirds of US commuters use their cars to get to work, rather than public transit. Time to reevaluate.

- Vibrating Pill for Weight Loss? - Harvard and MIT teamed up to test the [concept](#) in young pigs, with the result that the pigs ate 40% less with no observed side-effects. The vibrations are designed to emulate the stretching sensations of a full stomach. Would it work in humans? [Publication](#) with good illustrations.
- Scientists at the University of Maryland (UMD) Have Discovered Why Urine is Yellow - It all goes back to the gut microbiome, as everything seems to, and the chemical urobilin. At the end of a red blood cell's 6-month lifetime, one of its degradation products is bilirubin (bright orange). Once bilirubin is in the gut, the gut microbiome can convert it to urobilinogen (oxidizes to urobilin), which can turn yellow on exposure to Oxygen. [Publication](#). This UMD research opens up lines of study for understanding versions of Inflammatory Bowel Disease (IBD) - Crohn's Disease or Ulcerative Colitis. Promising.
- Are Your Stools Healthy? - Check the Bristol Stool Chart [here](#). Ideally you should be a Type 3 or 4. This simple check, that you can routinely do yourself in a few seconds, may help catch a problem early, and could provide important information for your doctor. [Details](#)
- Milk Protein Produced from CO2 and Electricity - [FGen AG](#) (Basel Switzerland), a subsidiary of US company [Ginkgo Bioworks](#) (Boston MA), has been awarded funding through the European Innovation Council's Pathfinder Challenge program, and aims to develop a new, [sustainable approach to milk protein production](#) using *only carbon dioxide and electricity*. They have been pleased to name the project 'Hydrocow'.
- Blood Pressure and Salt - A new study indicated that taking [1 teaspoon less salt per day](#) lowered blood pressure about as much as the usual blood pressure drug. [Details](#). Tune-up: Low Sodium iodized salt is available at the grocery store - 70% less Sodium.
- HDL (Good) Cholesterol - High Density Lipoprotein (HDL) is good for your heart, reducing the risk of heart disease and stroke. It also reduces the level of Low Density Lipoprotein (LDL), the bad cholesterol, which does the opposite. See a table giving optimal levels of both [here](#). See also a list of [things to avoid](#), and things to do. Note: Surprisingly, there is no direct link between *dietary cholesterol* and the *blood serum cholesterol*. The coming new FDA definition of 'healthy' may deal with that on food package nutritional panels when the Agency's pending final rule is issued, so look for that.

Practical Nutrition -

- 16 High Protein Casseroles to Reduce Inflammation - recommended by a registered dietician, [here](#).
- Healthy Breakfast Recipes - [here](#).
- 10 Whole Grain Breads Found in Groceries - [here](#).
- How to Choose Healthy Bread at the Grocery - The packaging will have meaningless marketing terms: 'seven-grain', 'multi-grain', 'cracked wheat', 'unbleached flour', 'made with whole wheat' or 'all-natural' - no guarantee that the bread is made with *whole-grain flour* instead of enriched white flour. The terms you want to see **first** on the ingredients label on the back are: **whole wheat, whole wheat flour, oatmeal, rye, sorghum**, or other **whole grains**. Ingredients are listed *in descending order* of percentage in the bread. Other tests - check to see if there are visible grains or seeds throughout the bread rather than just on the crust, the label should show at least 2 grams of fiber and 2 grams of protein (more is better), less than 4 grams of added sugar (less is better), squeeze test (should feel denser and heavier than standard squishy bread), choose thin-sliced. Also look for the "Organic" and "Whole Grain" symbols. [Here](#) are 10 healthy commercial choices - some may be kept in the freezer at your grocery. If you are lucky enough to live near an artisanal bakery, use the same health filter.

- 12 Most Nutritious Fruits - [here](#), as reviewed by a registered dietician - note the nutritional analysis of each, and what each does for your health Summary: Lemon, oranges, strawberries, lime, grapefruit, apples, blackberries, pomegranate, pineapple, bananas, avocado, blueberries. Tune-up: eat *all* rinds/skins except banana/grapefruit, light scrubbing of citrus, look for *Myers* lemons and *blood* oranges.
- Brown Rice or White Rice Healthier? - Rice consists of bran, germ, and endosperm. White rice is simply brown rice with the bran and germ stripped away, leaving behind the starchy, nutrient poor endosperm at the core. See why **brown rice is way healthier** [here](#). [Other species of rice can be healthy](#), especially black rice. White rice is just a nutrient empty comfort food. Note the Arsenic warning, and washing recommendations.
- **Fiber Fiber Fiber** - Getting sufficient fiber is essential to nutritional health. See the specific, rank-ordered list of fruits, vegetables, grains and **legumes**/nuts/seeds recommended by the Mayo Clinic, [here](#). Tune-up: add whole grain Bulgur wheat to the grains list.
- Capers - Good source of Vitamin K and Copper, and adds flavor and crunch to Mediterranean style dishes, but watch the Sodium. [Details](#).
- Garlic - A registered dietician says it's very healthy, and the closer to raw the better - her reasons, [here](#).
- Kale - is a very nutritious leafy green with many health benefits, [details](#). Tune-up: those on [blood thinner medication](#) should eat only moderate amounts (to limit vitamin K intake), those with an Iodine deficiency should eat only *cooked* kale.
- Black Krim Tomatoes (Solanum lycopersicum) - are a [sweet variety of tomato originally from Crimea](#), and were introduced into the US in 1990. Black Krims are one of the oldest varieties of black tomatoes, **the most nutritious**. Photos of Black Krims [here](#). Nutrient profile: high levels of fiber, vitamin A, and vitamin C; rich in antioxidants due to lycopene, anthocyanin, lutein, and beta-carotene. Store at room temperature until cut. The word 'krim' translates from Ukrainian as Crimea.
- Misleading Words For Sugar - High-fructose corn syrup, sucrose, barley malt, dextrose, maltose and rice syrup are all [forms of sugar](#).
- Nutrition and Longevity - The USC School of Gerontology describes a nutritional plan to promote longevity [here](#).
- #1 Food a Cardiologist Avoids for Heart Health - Conventional, name brand chips loaded with additives and Sodium. See what she (Mayo Clinic and Johns Hopkins) uses to displace her taste for chips, [here](#). Tune-up: there are tasty, low-Sodium chips based on nuts or veggies (like almonds or cauliflower) that can be used to dip heart healthy things (hummus, guacamole), so you don't really need to deny yourself - just be smart about what you bring home from the grocery, and read the labels on the back of the packages first.
- Is Your Favorite Food Ultra-Processed? - and if so, what's a good substitute. View the Northeastern University [TrueFood Dashboard](#).
- Most Nutritious Vegetables and Fruits Rank-Ordered by CDC - See the list [here](#). Chinese cabbage = bok choy.

Environmental Science News -

- Yale Predicts Peak Coal in 2026 - The Yale School of the Environment has made this [projection](#) based on hydropower in China recovering from drought, and [new wind and solar projects](#) coming online. China represents more than half of global coal demand.

- [Spain Produced More than Half of its Energy from Renewable Sources in 2023](#) - an historic first. This is not only an environmental success, since the price of electricity has also been reduced in the process. Success!
- [Concentrating Solar-Thermal Power \(CSP\) System](#) - See the US Department of Energy description of the technology [here](#) (good video). China has been operating a demonstration CSP system since 2019 - \$433 million, 390 million kWh annually, 12,000 parabolic mirrors covering 1,648 acres, molten salt receiver atop 900 foot tall central tower, avoids 386,000 tons of CO2 annually, and can provide continuous power for 24 hours. Description and photo [here](#).
- [Solar Power in Kentucky](#) - [National Grid Renewables](#) has just broken ground on what will be Kentucky's largest solar farm, '[Unbridled](#)'. When it comes on line in 2024 it will be the largest solar project in the state - 160 MW, power for 120,000 homes, 1,500 acres, 228,000 tons of CO2 avoided annually (equivalent to 50,000 cars), located in Henderson and Webster counties in western Kentucky
- [Wisconsin's Largest Solar Farm](#) - [Badger Hollow](#) is now fully online at 300 MW (power for 90,000 homes). It occupies 1,900 acres near Dodgeville in Iowa County, southwest Wisconsin. Its 830,000 two-sided panels are mounted on a sun tracking system - snow reflects missed light back into the panels from below. [Kevin M.]
- [Power From the Desert](#) - Intersect Power (Houston TX) announced that '[Oberon Solar+Storage](#)' near Riverside CA has commenced commercial operations: 679 MW, power for 207,000 homes, 1 GWh of co-located storage delivering power at up to 250 MW, approved under the Bureau of Land Management (BLM) Desert Renewable Energy Conservation Plan. Because the Tesla (Austin TX) [storage batteries](#), and the [First Solar](#) (Tempe AZ) solar panels used in the project were made (entire supply chain) in the US, the power produced by Oberon Solar is *entirely* compliant with the benefits requirements of the 2022 Inflation Reduction Act. [Mythological](#).
- [Crested Butte CO Goes Electric](#) - In this former coal mining Colorado town, most heat is currently from natural gas. The town wanted to begin changing that, and eventually eliminate fossil fuel use entirely, so they passed an ordinance requiring all new development to be electric only - the first such ordinance in the state. This was bitterly opposed by the local natural gas utility ... but they lost, and a new electric-only (induction cooking, heat pump heating/cooling) residential development is now under construction. Nearby Gunnison CO didn't do as well. Story [here](#). A small but symbolically important step forward, breaking new ground in CO. [Larry G.]
- [Microsoft Goes Solar](#) - [Qcells](#) (South Korea) has [announced](#) that it will supply Microsoft with 12 GW of solar panels (power for 1.8 million homes) through 2032 from its newly operational \$2.5 billion plant in Dalton Georgia, with federal Inflation Reduction Act benefits for both parties. Microsoft has a goal of reaching 100% sustainable power operations in 2025.
- [Virginia Off-Shore Wind Energy](#) - Dominion Energy is building the [Coastal Virginia Offshore Wind](#) project - \$9.8 billion, 2.6 GW, 176 turbines, 27 miles off-shore from Virginia Beach, currently on time and on budget. The Nature Conservancy, in partnership with NOAA, will use a hook and line to catch about 90 fish onsite (black sea bass, gray triggerfish, greater amberjack, summer flounder, channeled whelk) to tag electronically and track during construction to measure temporary or permanent displacement. The Bureau of Ocean Energy Management's [Environmental Impact Statement](#) projected only a temporary displacement during actual construction. [Mack W.]
- [Honeycomb-Shaped Wind turbine Design](#) - [Details](#) - bladeless, compact, goes on building roofs in urban environments, low noise, modular - from [Katrick Technologies](#) (Glasgow UK). How it works, [here](#). [Shane P.]
- [Green Ammonia from Norway](#) - The Australian [company](#) Fortescue (Perth Australia) will begin building its \$220 million [Holmaneset Project in the Svelgen area of Norway](#) in 2025, and expects

to start operations in 2027. Much of the ammonia, which will be produced using the Norwegian transmission grid's surplus renewable energy, will be used in the EU to supply industrial demand in place of natural gas.

- Enzyme to Degrade PFAS - [GreenLab](#) (Jonesboro AR) is partnering with [Ginkgo Bioworks](#) (Boston MA) to create and employ an [enzyme to break down the toxic 'forever chemical' group PFAS](#). GreenLab is a plant-biotechnology company producing complex proteins in corn.
- Algal Crop Protection - Algal biotechnology can be used to develop clean energy solutions such as the production of sustainable aviation fuel (SAF), but predation by microscopic pests in the outdoor ponds used to culture the algae have been a barrier to commercial scaling. The US Department of Energy has awarded funding to [Ginkgo BioWorks](#) (Jonesboro AR) to develop a new approach to algal crop protection. The approach is described in more detail [here](#).
- Norwegian Battery Maker Moving to US - [Freyr Battery](#) is deemphasizing a partially constructed battery plant in Norway in favor of pushing progress on finishing construction of [Giga America](#), its \$2.5 billion battery plant in Coweta County, Georgia (southwest of Atlanta). It has also announced that it will redomicile in Delaware to better [take advantage of loans and incentives](#) offered by the US Department of Energy backed by the 2022 US Inflation Reduction Act. [Freyr](#), mythological Norse god of fertility.
- Paris to Amsterdam for \$86 - in 3.5 hours by Eurostar train: comfortable, more convenient than flying, city center to city center, good scenery, low Carbon footprint. [Description](#).

Other Science News -

- Japan Sells Missiles for Patriot Air Defense System to US - [Missiles for this system are manufactured in Japan under license from US-Based Lockheed Martin and RTX](#). Japan is also considering selling 155 mm artillery shells manufactured in Japan under license from UK-based BAE Systems to the UK. Japanese law only allows weapons exports to countries that have licensed their manufacture in Japan. Elegant kabuki theater. *Arigato*.
- Moon Landings Coming Up - As part of the NASA funded Commercial Lunar Payload Services program aimed at sending [cargo and science experiments to the moon](#) 5 years ago, the first two missions are about to happen. [Astrobotic](#) (Pittsburgh PA) will launch Peregrine in January, and [Intuitive Machines](#) (Houston TX) will launch in February. Update: The good news is that the new Vulcan booster rocket worked just fine delivering Peregrine to Earth orbit. Unfortunately, Peregrine subsequently developed a propellant leak, and will not reach the moon. ;(
- JAXA 'Moon Sniper' Reaches Moon Orbit - The Japan Aerospace Exploration Agency (JAXA) has announced that it has [successfully](#) placed its [moon lander \(moon sniper\) in an elliptical polar orbit around the moon](#), passing as close as 9 miles to the surface. A soft [touchdown is planned for January 19](#) near the small impact crater Shioli, not far from the Apollo 11 landing site where NASA astronauts touched down in 1969. [Wade S]
- NASA's Boomless Supersonic Plane - NASA and Lockheed Martin have been collaborating on designing a low noise supersonic aircraft for 6 years, and the X-59 is due to be [rolled out](#) of its hangar for the first time on January 12. Details and a photo [here](#). [Testing](#) will run through 2027. Specs: 99 feet long, 14 feet high, cruise altitude 55,000 feet, top speed 925 mph (Mach 1.4), 75 PLdB boom (sound of door closing).
- Hypersonic Jet Ground Test - [Hermeus](#) (Atlanta GA) has completed a ground (non-flying) taxi and runway test for the 'Iron Bird' form of its hypersonic flight test program. See an artist's conception of the 'Quarterhorse' (crewless) version in its finished form [here](#). Details and two videos [here](#). This first round of testing was done at Arnold Air Force Base's Arnold Engineering and Development Center in Tullahoma TN. The intended engine type is a turbine-based

combined cycle ([TBCC](#)) design combining a ramjet or scramjet (for very high speeds) with a traditional jet turbine (for takeoff, landing, and low-speed flight). Greek mythology namesake - [Hermes](#).

- [Solar Maximum Arriving in 2024](#) - ahead of previous predictions, and in a more intense form than usual. The sun's storm/spot intensity rises and falls on an 11 year cycle, with the next maximum expected between January and October of this year. There could be some disruption in communications, with the possibility of a coronal mass ejection jet leading to more severe disruption also being higher during a solar maximum. Disruption of the earth's magnetic field may interfere with the internal navigation of birds like geese that use their direct magnetic sense to guide their migratory flights. [Details](#) with graph. [Gerry C.]
- [Biblical Stories Confirmed](#) - [Gath](#), a major Philistine city, and the home of Goliath the Giant, was destroyed by Hazael, king of Aram Damascus. Now we know more precisely the how (a nearly [30-foot-long break in the city's massive fortification system](#)), when and by whom. The city (modern Tell es-Safi) was destroyed and burned in 820 BCE. Its mud brick construction material and ceramics, heated to temperatures over 600 °C, recorded the date by recording the orientation of the Earth's magnetic field as they cooled. The Earth's magnetic field periodically changes in ways that can now be back-tracked scientifically. The 25 year excavation gives the details of what was, and science gives us the date it all ended in fire and death. As to how we know the by whom, see the brief mention of Gath in [2 Kings 12:17](#).

[Nice Thing](#) -

[Home Remedy for Dandruff](#) - [here](#).