

Betsy says HI!!!!

Announcements

The next LABQUEST meeting will be Wednesday, February 12 at 12:30 in the GSA trailer.

Science Report Highlights

Betsy and Dan thought all the items in following science report from Charles were interesting but most liked the following:

- Drinking Water Quality In DC
- New Hospital Opening In DC
- Teabags Release Nanoplastics
- PFAS In Food Containers
- Nocturia (getting up in the middle of the night to pee)
- Lower Net US Oil Imports In 2025

Science Report

Self-Protective Measures -

You should get your medical advice from official sources, your doctor, or your pharmacist ... not from this Report or the internet. Per recommendations by FDA and CDC, everyone should maintain current vaccinations for the three respiratory viruses: Covid, flu and RSV (for RSV, adults [over 60](#) and children [younger than 8 months](#)) - unless your doctor advises against it based on your medical record. Adults over 50 should have had the [Shingrix vaccine for shingles](#) (two doses 2 to 6 months apart, good indefinitely). Adults over 50 should have the [Pneumococcal Vaccine](#).

- [Drinking Water Quality In DC](#) - DC Water has already replaced 7,000 lead service lines, with a [goal of replacing all those with lead](#) on both the utility and customer side of the lines at no charge. With respect to [PFAS](#), DC Water's current test results are below the Maximum Contaminant Levels and Hazard Index set by EPA.
- [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.
- [Basal Metabolic Rate \(BMR\)](#) - Your BMR is how many calories you burn just sitting in your chair. Use the [calculator](#) to get your BMR. Then consult the exercise table to see how many calories you can consume daily with your current exercise plan and still maintain your current weight.
- [Body Roundness Index \(BRI\)](#) - is a new medical screening tool for estimating *visceral* fat, [details](#). Use a calculator to get your BRI [here](#). Additional background from Harvard, [here](#). Results to your doc.

Vaccine and Therapeutic News -

- [Non-Prescription Drugs With Additional Condition For Use Over The Counter](#) - FDA issued a [final rule](#) establishing requirements for nonprescription drug products with an additional condition for nonprescription use. This is a new channel for making drugs used for chronic conditions more available, safely.
- [Spinal Muscular Atrophy \(SMA\)](#) - The [Scholar Rock](#) (Cambridge MA) Phase 3 human trial for this condition has shown favorable results for its monoclonal antibody treatment candidate [apitegromab](#), and the company expects to file for an FDA Biologics License Application (BLA) in the first quarter of 2025. Muscle weakness from SMA impacts many of the activities of daily living: breathing, eating, self-care, work and social interactions.

Other Health Science News -

- [Peripheral Neuropathy](#) - The Australian Therapeutic Goods Administration (TGA) - is the Australian equivalent to the US Food and Drug Administration. The TGA has [discovered](#) an association between excessive doses of [vitamin B6](#) (a.k.a. [pyridoxine or pyridoxal](#)) and [peripheral neuropathy](#). TGA now requires that all products, **including multivitamins**, containing a [daily dose of vitamin B6 above 10 mg carry a warning](#) about peripheral neuropathy. [Publication](#). Tune-up: If experiencing peripheral neuropathy, check the label on any multivitamin or B-complex supplement you may be taking, and ask your doctor to test you for B6 levels. [Mack W.]
- [New Hospital Opening In DC](#) - Construction of the new, \$430 million [Cedar Hill Regional Medical Center](#) is now complete on the St Elizabeth's East campus in DC's Ward 8, and GW Health has begun recruiting the 500 staff members needed for its operation - 136 beds expandable to 184. The new hospital will be clinically integrated with the George Washington (GW) University Hospital. GW Medical Faculty Associates, and the GW School of Medicine and Health Sciences, are working on the clinical services and academic programs to be offered at the new hospital.
- [5 Hip Adduction Muscle Exercises](#) - recommended by a physical therapist, [here](#). Your hip adductors help you to maintain balance, execute lateral movements, walk and run.
- [Knee Replacement Surgery](#) - Knee arthroplasty is [most common in patients over the age of 50 with arthritis](#), and over 800,000 are done in the US annually. See a discussion of the preconditions, alternatives and likely postsurgery trajectories by an orthopedic surgeon at Sanford Health in Minnesota, [here](#). Lifestyle changes should be considered first. [Chronic systemic inflammation](#) is often at the root of arthritis and its complications. [Greg K.]
- [19 Ways To Take Care Of Your Liver](#) - from hepatologists and gastroenterologists, [here](#).
- [Teabags Release Nanoplastics](#) - A new study done by researchers at the [University of Barcelona](#) has found that many commercially available teabags [release huge amounts of nanoplastic particles](#) that can enter human cells. To avoid the problem: 1) Loose tea can easily be brewed in metal *tea balls* that don't contain plastic, 2) Tea companies are beginning to make plastic-free tea bags (check on box for this claim).
- [The Importance of Magnesium In Diet](#) - and 9 signs of deficiency to be alert for, [here](#).
- [PFAS In Food Containers](#) - FDA has issued a Federal Register [notice](#) acknowledging that the referenced 35 toxic [PFAS](#) chemicals are no longer produced in the US for the purpose of having contact with food - typically as grease-proofing in paper food containers. Although grease-proofing substances containing PFAS are no longer authorized for use in paper and paperboard food packaging, existing stocks may be used until June 30,2025. Enforcement ... The Agency has developed a [screening method](#) for grease-proofing agents containing PFAS in paper and paperboard packaging to monitor the paper food packaging market for PFAS.

- Nocturia - is the fifty dollar word for getting up in the middle of the night to pee. According to the [UK National Health Service](#), as you get [older nocturia may become more frequent](#) because your body produces less of a hormone called the *antidiuretic hormone* (ADH) to regulate the process. Summary: Young to middle age - once is normal. For most older adults - twice. [Over 90](#) - up to four times. Keep your doctor informed regardless.
- 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](#).

Practical Nutrition -

- Beans, Peas And Lentils .. Oh My - They're in the spotlight of the recently issued 2025 US Dietary Advisory Committee [recommendations](#) for incorporation into the 2025-2030 US Dietary Guidelines, due to be published at the end of 2025. That's Broadway stardom for food items. The changes and updates are mostly about the all important *fiber*.
- 10 Foods Thought To Lower Cancer Risk - [Here](#). Scientific studies that link particular foods to lower risk of cancer are often indecisive, but certain natural foods *do* contain substances, like antioxidants and anti-inflammatories, that *are* known to lower cancer risk. See item # 6 in the link above on the usefulness of dark chocolate.
- Dark Chocolate Is Nutritious - Choose chocolate that's at least 70% cacao, darker is better. Chocolate is loaded with antioxidants and other nutrients including fiber, but do avoid types that add soy and non-cocoa oils. See the experts rank the top 5 [here](#), and say why. Chocolate has saturated fat, and sugar, so eat in moderation. [Chad C.]
- Tea Is Healthy - All true teas are from the *Camellia sinensis* plant. When herbal teas like chamomile, peppermint and ginger are made from other plants, they are called *tisanes*. Further information on teas and tisanes [here](#). See a registered dietician's list of the 10 healthiest teas [here](#). Tune-up: [white tea](#) is harvested young, is the least processed, and thus has the highest concentration of antioxidants. Green tea is also good. Steep for about 5 minutes in hot water a little *below* the boiling point.
- 12 Soups NOT To Buy At The Store - [here](#). Mostly it's the excessive Sodium.
- Creamy Mustard Chicken Thighs - [here](#). Excellent protein, according to a registered dietician. Tune-up: to reduce saturated fat, substitute either vegan mayonnaise (cold case at store, based on avocado oil), or greek yogurt for the heavy cream, and be sure to use skinless thighs per the recipe. Also has collagen. [Karen W.]
- Misleading Words For Sugar - High-fructose corn syrup, sucrose, barley malt, dextrose, maltose and rice syrup are all [forms of sugar](#). Certain blood alcohols sometimes used as sweeteners, such as Erythritol and Xylitol, are made by the body and occur naturally in certain foods - but in very small amounts. They have recently been [linked to heart disease and stroke by Cleveland Clinic researchers](#), and should be avoided as food additives. Chemical sugar substitutes to be avoided: acesulfame potassium, advantame, allulose, aspartame, brazzein, lactitol, maltitol, mannitol, neotame, rebaudioside A (reb-A), saccharin, sorbitol, thaumatin and trehalose.
- 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 -

- [Lower Net US Oil Imports In 2025](#) - The US Energy Information Agency projects that [net crude oil imports will fall by 20%](#) to 1.9 million barrels per day, the lowest since 1971, due to higher US production (not much) and *lower US refinery demand*. Progress.
- [Southern Maryland Woodlands National Wildlife Refuge](#) - in December **became the newest unit** of the National Wildlife Refuge System, the first national wildlife refuge established in the Chesapeake Bay watershed in more than 25 years, and the first in Maryland in over 60 years. The [new refuge](#) will consist of four watershed-based units: the Lower Patuxent-Calvert Unit, Nanjemoy-Mattawoman Unit, Zekiah–Wicomico Unit and McIntosh Run-St. Mary's Unit. Thanks US Secretary of Interior Haaland. [Grady J.]
- [US Department Of Agriculture \(USDA\) Clean Energy Awards](#) - In December USDA [announced \\$4.37 billion in clean energy awards](#) to rural electrical cooperatives based in Arizona, Colorado, Florida, Georgia, Minnesota, Nebraska, and Texas ... through USDA's Empowering Rural America (ERA) Program, funded from the US Inflation Reduction Act. Example:
 - [San Miguel Electric Cooperative Inc \(SMECI\)](#) - The Christine Texas coop will use USDA's more than \$1.4 billion investment to procure 600 MW of clean, renewable energy through solar voltaic panels and a battery energy storage system to power 47 counties across rural South Texas. SMECI'S [lignite coal](#) burning power plant, **the dirtiest in Texas**, will be closed. Lignite (brown coal) is the dirtiest type of coal, in this case contaminated with mercury, arsenic, beryllium, boron, cadmium, cobalt, lithium, selenium and radium. See the types of contamination encountered at all the sites, pp 32-34, [here](#).
- [Last Hydroelectric Dam Removed From California's Klamath River - in October](#), and now the river is running free, 263 miles from the volcanic Cascade mountains in Oregon to the Pacific coast in northern California. In late November coho salmon were seen in the upper Klamath River basin for the first time in more than 60 years!
- [California Granted Waivers To Enact Stricter Emissions Standards](#) - The US Environmental Protection Agency (EPA) granted permission in January for CA to enact more strict emissions standards than EPA's. The recent waivers cover lawn mowers, leaf blowers, [refrigerated trucks](#), and [off-road vehicles](#) like mining trucks and bulldozers. Two other **waivers issued in December** covered [tailpipe emissions for cars and trucks](#). Thanks EPA Administrator Regan. Several other states may follow CA's lead.
- [Houston To Dallas In 90 Minutes At 205 MPH](#) - including a stop at College Station. The US Department of Transportation (DOT), through the Federal Railroad Administration, **has awarded AMTRAK a \$635 million grant** to develop the idea - with funds drawn from the US Infrastructure Investment and Jobs Act. Amtrak and Japan are in talks on using the existing N700S Series Shinkansen train (bullet train) for the line. [Details](#). Thanks DOT Secretary Buttigeig. [Mike and Jacqui K.]
- [DC METRO - Automatic train operations](#) are returning to the system, already started with the Red Line, and will extend system-wide this Summer. Details [here](#). See a comparative door opening sequence video [here](#). The reduced header times allowed by this, and by the increase in top speed from 59 mph to 75 mph, will allow schedule adherence with fewer trains. The annual operating cost savings estimated at \$7 million will allow **operating times to be extended to 2 am on Friday and Saturday nights**, the hours originally planned for the system. They didn't say when, however.
- [DC Water Breaks Ground On The Potomac River Tunnel](#) - designed to intercept combined sewer overflows (CSOs) into the Potomac and lower Rock Creek from NW/SW DC ... \$819 million, 5.5 mi long, 18 ft internal diameter, 93% reduction in overflows. See the yellow line on the map, [here](#). By 2030 it will join the completed Anacostia River Tunnel System, red line on the map, to carry CSOs to the Blue Plains Processing plant. Swimming in the Potomac! Not since the 30's.

- Green Hydrogen Reservoirs Discovered - Two scientists at the US Geological Survey have recently published a [study](#) describing their discovery of large reservoirs of naturally generated Hydrogen in rocks and reservoirs in the Earth's subsurface. See the model they created [here](#). Now researchers at the University of Nebraska ([\\$1 million DOE grant](#)) and the US Department of Energy are [investigating the Midcontinent Rift](#), a 1,200-mile-long geologic feature stretching from Lake Superior to Kansas. Their aim is to develop practical methods for extracting and utilizing the Hydrogen located there.
- Hydrogen Produced By Nuclear Power - The US Treasury will shortly release guidance on how to apply for [tax credits](#) for this activity under the US Inflation Reduction Act.
- China Plans To Build World's Largest Hydropower Dam - The Yarlung Tsangpo River flows across the Tibetan Plateau ... running through the deepest canyon on Earth, and [falling more than 25,000 feet](#) before crossing into India to become known as the Brahmaputra River. The project will require that at least four 12.5 mile tunnels be drilled *through* Namcha Barwa mountain, diverting the flow of the river. The project will generate [300 GWh annually, energy for 300 million homes](#). China will invest \$137 billion. BIG!
- Wave Energy Generation At The Port Of Los Angeles - [Eco Wave Power](#) (Tel Aviv Israel) has now received the [final permit](#) needed, from the US Corps of Engineers, to proceed with its project to [generate electrical power from shoreline wave energy](#). This project is the first of its kind in the US, but the company is already operating a grid-connected wave energy system in Israel, and is preparing to install projects in Taiwan and Portugal Stay tuned. Technology diagram, [here](#).
- Wildlife Highway Crossings Program - The US Department of Transportation's (DOT's) Federal Highway Administration (FHWA) [has awarded \\$125 million](#) in grants for [16 wildlife crossing projects in 16 states](#), including one Native American Tribe - through DOT's [Wildlife Crossings Pilot Program](#), a grant program under the US Bipartisan Infrastructure Act. Example: a \$25 million grant for protecting endangered red wolves [crossing US Highway 64](#) as it bisects the Alligator River National Wildlife Refuge in North Carolina.
- Salmon In The Desert - Saudi Arabia has just opened the '[Excellence Center for Salmon Production](#)', a 2.5 acre facility featuring recirculating aquaculture systems and aquaponics units, and integrating fish and vegetable production. The center aims to produce 100,000 tons of salmon annually. Imports are currently 23,000 tons.
- Lucid 'Gravity' - 450 mile EPA rated range SUV, 7 seats, main cabin cargo space 113 ft³ plus 8.1 ft³ frunk, 0-60 mph in ('launch mode') 3.5 seconds, doors open full 90°. [Lucid Motors](#) (Newark CA). Company [background](#).
- New Toyota Electric SUV - The [Urban Cruiser](#) has just been [revealed](#), probably for delivery in late 2025.
- EV Batteries Last Longer Than Standard Tests Suggest - Engineers at the SLAC-Stanford Battery Center have discovered that the [typical EV driver may get several more years of service](#) from their original battery before it needs to be replaced. [Publication](#).
- Silicon (Not Graphite) Anodes In EV Batteries - may be a possibility ... cheap, widely available, not from China. See the progress that two companies are making on this key EV battery component, [here](#). The world needs a better anode.
- Progress On US Sourced Antimony - at a [gold/antimony/silver mining project in Idaho](#), and a stibnite refinery in Montana. Antimony is an important material for munitions and other defense applications, as well as EV and alternative energy technology. Stibnite is the ore from which Antimony is refined. China, Russia and Tajikistan control 90% of the world's supply chain for Antimony, and in December China announced a ban on Antimony exports to the US.
- Antimony And Gold (Update) - After 8-years of process and review ([video](#)), the US Forest Service has issued a [final Record of Decision](#), essentially a permit, for [Perpetua Resources](#) (Boise ID) to

reopen an abandoned WWII era gold mine for the purpose extracting stibnite (ore from which Antimony is refined) and gold. The reactivated mine, 150 miles northeast of Boise near Yellow Pine ID, can supply more than [35% of US antimony needs](#) once it opens by 2028, and is also expected to produce 450,000 ounces of gold annually. The US [Department of Defense had previously advanced \\$59.4 million](#), under Title III of the Defense Production Act, to **fund the permitting process**. The total cost of the project is estimated at \$1.8 billion, and the [US Export-Import Bank](#) has **issued a letter of interest for a loan of up to \$1.8 billion**.

- [The 5 States Receiving The Most US Department Of Energy Clean Energy Money](#) - from the US Inflation Reduction Act, relative to the size of their economies, are [Nevada](#), Wyoming, Arizona, [Tennessee](#) and Montana. The largest *absolute* amounts are going to California (\$94 billion) and Texas (\$69 billion). [Mack and Karen W.]
- [Substantial Increase In US Battery-Based Energy Storage](#) - *Grid scale* battery-based storage was [up by record-breaking amounts](#), Q3/23 to Q3/24: power by 80% and stored energy by 60%. Texas and California led, with Arizona, Colorado, Florida, and Vermont doing well. *Residential* storage also broke records: power up Q3/23 to Q3/24: by 63%, led by California, Arizona, and North Carolina. Good progress toward a more robust grid.

Other Science News -

- [SpaceX Starship](#) - See a very detailed video explaining the choice of materials, and the robotic welding, [here](#).
- [FAA Licenses Blue Origin 'New Glenn' Rocket For Launch](#) - and the simultaneous test firing of the seven #BE4 engines, firing together for the first time for 24 seconds, has now been successfully completed. Details [here](#). Next step: [mate the encapsulated payload, and launch!](#) [Blue Origin Enterprises](#) (Kent WA).
- [Battery Workforce Challenge](#) - The US Department of Energy and Argonne National Laboratory have teamed up to offer the [Battery Workforce Challenge](#) collegiate competition, a three-year engineering competition for 12 universities and their community college partners to design, build, test and integrate an advanced EV battery pack into a Stellantis vehicle. Each team receives a 2024 Ram ProMaster EV from Stellantis, and works to design, build, test and integrate an advanced EV battery pack into their van. Details and a video, [here](#). [Montgomery College?]
- ['Fuse' At Mason Square \(Arlington VA\)](#) - will house George Mason University's [Institute for Digital Innovation](#), and the new [School of Computing](#), both part of the College of Engineering and Computing offering courses in artificial intelligence, data analytics, and cybersecurity. Construction of the \$254 million building was funded with \$90 million from George Mason University, \$90 million from the state of VA and the commonwealth's [Tech Talent Investment Program](#), and \$78 million from Edgemoor Infrastructure and Real Estate. About three quarters of the commercial space is already committed, with the building's first tenant being the cybersecurity and digital IT company Cybastion (spring 2025). The Wood & Iron restaurant will be on the ground floor.
- [Uncrewed Ukrainian Sea Drones Destroy Two Russian Helicopters With Missiles](#) - See a description of this world's-first event [here](#), including a photo of the Magura V5 sea drone with deck mounted missiles. Video with ironic holiday music, [here](#).

Nice Thing - [full screen, turn on subtitles]

The Tragedy of Hamlet, Prince of Denmark - William Shakespeare, 1599

- Hamlet's Soliloquy - from the play of that name, [here](#). Performed by Andrew Scott, 2019.
- Hamlet's Soliloquy - from the play of that name, [here](#). Performed by Adrian Lester, 2016.
- Hamlet's Soliloquy - from the play of that name, [here](#). Performed with *modern* English subtitles, 2023.
- Hamlet's Soliloquy - from the play of that name, [here](#). Performed by Richard Burton, 1955.