

Betsy says HI!!!!

Announcements

The next LABQUEST meeting will be this Wednesday, December 11, 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:

- Bird Flu Virus Detected In *Unpasteurized* California Milk - **Pasteurized milk is safe to drink.**
- Nationwide IV Fluid Bag Shortage
- Diabetes Treatment Drug Also *Prevents* Onset Of Diabetes –
- Modernized FDA Human Foods Program Now In Effect
- Polyunsaturated (Omega 3) Fatty Acids - associated by health experts with longevity.
- Reducing Dementia Risk With Whole Food Choices
- Older Adults May Need Vitamin D3 and B12 Supplements
- US Environmental Protection Agency (EPA) Rule On Carbon Emission From Coal *and* Gas-Fired Power Plants
- Final US Approval For Maryland Offshore Wind Project
- \$6.6 Billion Grant To Taiwan Semiconductor Manufacturing Company (TSMC) **Finalized** – In Arizona

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](#)

- [Walking Pneumonia \(Mycoplasma pneumoniae\)](#) - is on its usual seasonal rise in children: in 6 months up from 1% to 7.2 % for ages 2-4, and up from 3.6 to 7.4 for ages 5-17. Very treatable. Details and symptoms [here](#).
- [Cucumber Salmonella Typhimurium Outbreak](#) - CDC advises discarding fresh cucumbers described in [this notice](#). December 2 update from FDA, [here](#).
- [Bird Flu Virus Detected In Unpasteurized California Milk](#) - Recall facts [here](#). **Pasteurized milk is safe to drink.**
- [Nationwide IV Fluid Bag Shortage](#) - due to damage from Hurricane Helene at the Baxter International manufacturing facility in western North Carolina. Suddenly [60% of US IV fluid production](#) was either offline or inaccessible, *and* the only bridge providing access was washed out. HHS got together with FEMA, built a temporary bridge in record time, and helped

get [production partly back online](#) - full production expected early in 2025. Thanks for the quick action HHS Secretary Becerra. See how hospitals are coping in clever ways, [here](#).

- [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 -

- [Diabetes Treatment Drug Also Prevents Onset Of Diabetes](#) - A recently published [study](#), based on a three year Phase 3 human trial, found that the active ingredient in Eli Lilly's Mounjaro diabetes treatment, and their Zepbound weight loss treatment, cut the risk of developing Type 2 diabetes by 94 percent. [Details](#).
- [Biliary Tract Cancer \(BTC\)](#) - [FDA](#) has approved Ziihera (zanidatamab-hrii) from [Jazz Pharmaceuticals](#) (Dublin Ireland) for treatment of this condition.
- [Cardiomyopathy](#) - FDA has [approved](#) Attruby (acoramidis) to treat adults with cardiomyopathy (ATTR-CM), a rare and serious disease that affects the heart muscle. [Details](#).
- [AI System For Analyzing Echocardiograms](#) - FDA has cleared EchoGo, AI software from Ultramics that helps diagnose cardiac diseases by analyzing routine echocardiograms. [Details](#). **Results in 20 minutes.**

Other Health Science News -

- [Modernized FDA Human Foods Program Now In Effect](#) - **Finalized in October**, the new program involved more than 8,000 FDA employees and touched almost every part of the Agency. Details, [here](#). Well done, and *timely*.
- [Laboratory Accreditation For Analysis Of Foods \(LAAF\)](#) - The **FDA Final Rule** to instate this [program](#) went into effect on December 1, 2024. Under the LAAF protocol, for example, mycotoxin analyses must be conducted by accredited laboratories.
- [New US Surgeon General Report On Smoking](#) - The [report](#), **released in final form** on November 15 and summarized [here](#) so you can look yourself up, focuses on the disparities across various subpopulations in the US. Smoking by adults in the US has declined by 70% since 1965, but is **still the leading cause of death - 1 in 5 US deaths are smoking related** The report suggests reducing the maximum level of nicotine allowed in cigarettes, to reduce addiction. [John H.]
- [Polyunsaturated \(Omega 3\) Fatty Acids](#) - are associated by health experts with longevity. The body doesn't make these antioxidants/antiinflammatories on its own, so they must be taken in either as supplements or in natural foods (best). See a list of 10 Omega 3 rich natural foods [here](#). More background [here](#).
- [Reducing Dementia Risk With Whole Food Choices](#) - 44% of the US population has a family member or friend living with dementia, [publication](#). A study [published](#) in 2022 suggests that the risk of dementia may be reduced by eating blueberries, due to the antioxidant and

antiinflammatory compounds they contain. Anthocyanins and proanthocyanidins are the bioactive flavonoid compounds in blueberries, and are what give them their deep blue and purple color. Summary: one cup of blueberries daily, frozen is ok, frozen *wild* blueberries are even better. Smoothies (no added sugar) can be used, but nothing involving cooking, since heat denatures antioxidants. Other berries, and nuts, would probably be helpful since they also carry antioxidants. Enjoy ... and benefit.

- [AARP Advice On The Importance Of Knowing Your Resting Heart Rate](#) - According to the American Heart Association, a rate between [60 and 100 beats per minute is normal](#), with the lower end being better. See also information on how to measure it yourself, so as to be able to bring unusual readings to your doctor promptly.
- [Older Adults May Need Vitamin D3 and B12 Supplements](#) - The American Association of Retired Persons (AARP) advises that it's best to think plants, not pills, for vitamins ... [but that D3 and B12 are exceptions for two reasons](#): 1) you can't really get them from plants, 2) aging adults have increasing difficulty absorbing them in their natural form. By age 65, as many as 4 in 10 adults may have gastric issues that limit B12 absorption. By age 70, the body's ability to produce vitamin D from sun exposure is about half of what it was at age 20.
- [New Harvard Study Links 4 Diets To Longevity](#) - Short description of the 4 diets, [here](#). Publication [here](#). More details on the Harvard Diet [here](#).
- [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 -

- [Some US Foods Banned In Other Countries](#) - and why, [here](#).
- [Natural Foods To Reduce/Eliminate Stomach Acid](#) - and some to avoid, per a gastroenterologist, [here](#).
- [5 Foods A Cardiologist Never Eats](#) - See her 5 *dis*-recommendations, and how she applies them, [here](#).
- [60 Unhealthiest Grocery Store Foods](#) - usually due to saturated fat, sodium, sugar or additives - [here](#).
- [15 Healthiest Breakfast Cereals](#) - Some hot, some cold, some require soaking overnight, others are ready to go. See the list, and a description of the nutrient value of each, [here](#).
- [1 Spice To Reduce Inflammation](#) - According to a registered dietician it's [tumeric](#), and more particularly the curcumin in turmeric - an antioxidant with antiinflammatory properties. Tune-up: adding a dash of black pepper to a dish with turmeric can help increase the bioavailability of its curcumin content.
- [Is It Safe To Cook With Aluminum Foil](#) - [Generally yes](#). It's best to keep the temperature below 400°F, and not to use it for cooking very acidic or very salty foods. Cooking parchment is also useful, especially for fish (*en papillote* technique).
- [6 Food Experts Name The Best Olive Oil](#) - They describe the flavor as mild, buttery, and fruity, without an assertive olive oil taste. [Details](#). Summary: California Olive Ranch Extra Virgin Olive Oil.
- [8 Dijon Mustard Brands Ranked](#) - and why, [here](#). Useful to brighten up the flavor of healthy but otherwise bland foods without affecting their nutritional value. Summary: Maille, Grey Poupon.
- [Canned Goods Are Processed, But Some May Be Healthy](#) - canned tomatoes, and pulses (like beans, lentils, and chickpeas), are [healthy](#) if there are no additives or excessive salt. They are

also affordable. Check the nutritional panel on the back for salt. If you pour off the bean goop, most of the salt will go too.

- 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 -

- EV Batteries That Reach 90% Charge In 15 Minutes - [Amprius Technologies](#) (Fremont CA) is [now shipping sample quantities](#) of their SiMaxx battery to members of the US Advanced Battery Consortium (USABC) ... USABC is a subsidiary of the US Council for Automotive Research (USCAR), the collaborative technology company of Ford, General Motors, and Stellantis supported by grants from the US Department of Energy (DOE). Amprius has annual supply chain agreements in place for over 500 MWh of contract manufacturing, has a plan to scale-up to 5 GWh, and [will build a factory in Colorado](#). Their *Silicon* anode, and power density of 1200 W/kg, are their key innovations. In October, DOE **awarded Amprius a \$50 million cost-sharing grant** funded through the US Department of Energy from the Bipartisan Infrastructure Law. Go for it! Thank you DOE Secretary Granholm.
- Things To Come From BMW - The company's first 'Neue Klasse' EV just came off the assembly line in Debrecen Hungary. Details/photo [here](#). Upgraded performance specs: 30% more range, 30% faster charging, 25% overall improvement in vehicle efficiency, 3-D heads up display. Five more models are to come by 2028.
- Rivian EV Manufacturing Plant In Georgia To Proceed - The company has **secured a \$6.6 billion loan** from the US Department of Energy (DOE) Advanced Technology Vehicles Manufacturing Program ([ATVM](#)) to build out its planned [EV manufacturing facility on a 1,744 acre site 40 miles East of Atlanta](#). The plant will have two production blocks with an EV manufacturing capacity of 200,000 each. The ATVM program is funded from the US Bipartisan Infrastructure Act. Thanks DOE Secretary Granholm. [John A.B.]
- Hyundai \$7.6 Billion EV Plant In Georgia - was built in just two years, is qualified for the US Inflation Reduction Act tax credit benefits for US-produced EVs, is located in Bryan County near Savannah Georgia, and is **now** turning out EVs. See a time lapse video taken from space of the plant under construction, [here](#). The [Center for Automotive Research](#) projects that "Hyundai's EV plant will help create over 58,200 new jobs while **attracting over \$12.6 billion in investments in Georgia**". [John A.B.]
- More EVs In Georgia - [Kia is building its EV-9 at its facility in West Point GA](#) (southwest of Atlanta) and will begin building its new [EV-6](#) there in 2025. [Kia](#) (Seoul South Korea).

- Biggest Little Pick-Up Truck You Never Heard Of - And you won't have *seen* anything like it either. The electric [Telo Truck](#) has a load bed about the size (60") of a Tacoma, but the overall footprint (152") of a MiniCooper ([comparison photo](#)). Very cool comparison photo with a Tacoma [here](#). Room in back for a stack of 8x4 plywood sheets, or full-size surfboards, with the tailgate up! Many more technical details, and a video, [here](#). Power 500 horsepower, 4-wheel drive, range 350 miles, charges from 20-80% in 20 minutes, 0-60 mph in 4 seconds, 4 doors, 5 people, parks in a Prius-sized space, coming to the US in early 2025. [Telo Trucks](#) (San Carlos CA).
- DOE Loan For New EV Battery Manufacturing Capacity In Indiana - The US Department of Energy (DOE) has **announced a loan of \$7.54 billion** to StarPlus Energy, a joint venture between Stellantis and Samsung, to help build [two large EV lithium-ion battery plants in Kokomo IN](#). The first is scheduled to open in 2025, the second in 2027 - total 67 GWh capacity sufficient to power 670,000 EVs annually. Funding is from the [ATVM](#) Loan Program. DOE statement [here](#).
- Two More US Department Of Energy Clean Energy Loans Awarded With US Inflation Reduction Act Funds -
 - [Eos Energy Enterprises](#) (Edison NJ) - was **awarded a \$303.5 million loan** to construct two production lines for enough stationary batteries (zinc, grid connected) annually for the 130,000 homes. DOE announcement [here](#).
 - [Sunwealth](#) (Cambridge MA) - was **awarded a \$289.7 million guarantee** for its Project Polo to finance up to 1,000 solar photovoltaic and battery energy storage systems to commercial and industrial facilities across 27 states. DOE announcement [here](#).
- Final Approval Of Nevada Lithium Mine Permit - The Interior Department's Bureau of Land Management issued the permit 5 days after a Fish and Wildlife Service study concluded that the mine would not jeopardize the survival of [Tiehm's](#) buckwheat. [Details](#). Construction of the Rhyolite Ridge mine by Australian company [loneer](#) (Sydney Australia) should start next year in the high desert halfway between Reno and Las Vegas. Worldwide demand for Lithium is [expected](#) to grow from 2020 to 2030 by a factor of 6.
- Polestar 3 - Since mid-2024 the Swedish EV maker has [been delivering](#) its luxury, US-made EV (SUV) from the Charleston South Carolina factory it shares with Volvo. Photo, [review](#), specs and prices [here](#). Update: the new, cheaper, faster, longer range, more powerful model is now *also* being made in Charleston, [here](#).
- Tonopah Flats Nevada Lithium Project - In 2022 the [American Battery Technology Company](#) (ABTC, Reno NV) received a Department of Energy (DOE) **grant in the amount of \$57 million** (Bipartisan Infrastructure Act) to design/construct/commission/operate a \$115 million commercial-scale facility to demonstrate ABTC's novel process to manufacture battery grade lithium hydroxide monohydrate from lithium-bearing *sedimentary* resources. This is *first-of-kind technology* for selective [extraction of lithium from claystone resources](#). Building on work completed under a previous grant from the DOE's Advanced Manufacturing Office, this grant funds construction of a 5,000 ton/year LiOH*H2O commercial processing plant at the resource site, [grants](#).
- Lithium Ion Battery Recycling - ABTC was recently **awarded a \$150 million DOE grant** for a *second* Lithium Ion battery *recycling* plant, the first having been built in Reno NV.
- Rural Utility Gets Energy Transition Grant - The US Department of Agriculture, under the Inflation Reduction Act, **has awarded a \$2.5 billion grant** to [The Tri-State Energy Transmission Association](#), a rural electric cooperative serving four states and 41-member distribution companies in Colorado, Wyoming, New Mexico and Nebraska. Tri-State will invest in over 1,200 MW of solar, wind and storage, and will retire (along with those already retired) coal plants in three states. Thank you Secretary Vilsack.

- First Fully-Integrated Rare Earth Magnet Manufacturing Facility In US - [MP Materials](#) (Las Vegas NV) was **recently awarded a \$58.5M advance tax credit** toward building this facility in a competitive process managed by the Department of Energy - funds from the US Inflation Reduction Act. The facility has been under construction at FT Worth Texas since 2022, expects to produce its first refined materials this summer, and finished magnets by late 2025. NdPr (Neodymium/Praseodymium) oxide produced at the company's [Mountain Pass CA mining location](#) will be reduced to NdPr metal, converted to NdFeB (Neodymium/Iron/Boron) alloy and then into finished magnets important in key defense applications and for EVs. Currently more than 90% of the world's [sintered](#) NdFeB magnets are produced in China. Thank you DOE Secretary Granholm.
- China's CO2 Emissions May Have Peaked In 2023 - to be confirmed if 2024 turns out to be a plateau year due to [massive additions in sustainable energy](#) projects throughout China. Great news if so. [Details](#).
- World's Largest Operational Flywheel Energy Storage Project - The Dinglun [Flywheel](#) Energy Storage Power Station is now connected to the grid in Changzhi China - decades long lifespan, no expensive metals required, makes use of magnetic levitation. Photo and [details](#).
- US Environmental Protection Agency (EPA) Rule On Carbon Emissions From Coal and Gas-Fired Power Plants - The Supreme Court will allow this **final rule** to go into effect while the matter is litigated. [Details](#)
- Clean Ports Grant Program - EPA, with funds from the US Inflation Reduction Act, **has awarded a total of \$3 billion** under this program to 55 award selectees across 27 states and Puerto Rico. Baltimore MD \$147 million, Port of Oakland CA \$322 million, New Jersey \$344 million, Delaware \$127 million. Map and a full list [here](#).
- Final US Approval For Maryland Offshore Wind Project - The US Bureau of Ocean Energy Management ([BOEM](#)) has announced its **final approval** of the Construction and Operations Plan for the Maryland Offshore Wind project, following the Department of the Interior's September 2024 Record of Decision. 30 GW by 2030, power for 718,000 homes, 9 miles offshore from Sussex County DE, 114 turbines. The two phases (MarWin and Momentum Wind) already have offshore renewable energy certificates from the State of Maryland.
- World's Largest Offshore Floating Solar Power Plant - offshore from Changhua County on the western coast of Taiwan has now been commissioned - Hexa Renewables (Taipei City Taiwan), 860 acres, 374 MWac, power for 74,000 homes. [Details](#).
- Lakeland Florida's Sixth And Largest Solar Farm Approved - 74.8 MW, [450-acre facility](#) near Florida Polytechnic University. The land is a reclaimed mine, not suited for other uses. Nice!
- Sin City Goes Green - Most resorts in Las Vegas have gotten a good start by taking advantage of the desert city's 50% tax abatement program, now concluded after 10 years, and *all* resorts are required to comply with the state of Nevada's requirement that 40% of their electrical power be derived from sustainable sources. [Las Vegas ranks second for solar capacity on a per capita basis](#) among US cities. Sun ... they have a lot of sun ... and it's free! Water use has also been greatly reduced, with over 97% of the city's water being recycled.
- Cuban Solar Energy Plans - with a little help from China's [Hangzhou DuoJia Technology](#). 10 shipping containers of [solar panels and batteries are on the way](#) for a (very) small start. Massive scale-up required. Details [here](#).
- Pope Francis Gets A New Ride - See a photo of the new, all electric Popemobile [here](#).

Other Science News -

- [\\$6.6 Billion Grant To Taiwan Semiconductor Manufacturing Company \(TSMC\) Finalized](#) - The [grant to TSMC](#), using funds from the 2022 US Chips and Science Act, is expected to generate up to \$65 billion in additional investment to boost production of critical semiconductor chips at a new facility *in Arizona*. Reliance on foreign supply chains will be reduced.
- [31,800 Year Old Kitten](#) - sabretooth cub actually (*Homotherium latidens*), was found in the Siberian permafrost in 2020, and is now described in a [publication](#) for the first time. Story and photos [here](#). The muscles, bones and skin were well preserved in the permafrost, and extracting DNA will be the next step. Want a feisty kitten?
- [Strange Discovery By Deep Water Robot](#) - off the continental shelf West of Chile, an iridescent (*emits light*) bristle worm. Video [here](#). [Peter P.]
- [Secret Service Use of Robot Dogs For Presidential Security](#) - Details and a brief video, [here](#). White House next?
- [Run Your Own 3-D Virtual Wind Tunnel Simulations](#) - with the [MicroCFD software system](#). See a validation study of the Space Shuttle, simulation compared to real world data, [here](#).
- [Storm Shadow Cruise Missiles](#) - After the US approved wider use of the tube-launched missile system [ATACMS](#), range 186 miles, the UK has recently provided dozens of additional Storm Shadows (Scalp is the French equivalent) to Ukraine, with [permission to use them on military targets within Russia](#). Their range is up to 155 miles, and their terrain hugging approach makes them hard to detect and intercept. [Update](#) and video.
- [Poland Buys Surveillance Drones](#) - Poland will buy 52 FlyEye day and night surveillance drones (produced in Poland by WB Electronics), and will set up a drone inspectorate in the Polish army. [Details](#)

[Nice Thing](#) - [full screen]

[Barber of Seville](#) - Gioachino Rossini - a comic opera in two acts first performed in 1816 under the title 'The Useless Precaution'.

- [Largo al Factotum](#) - Baritone and piano concert performance by Vito Priante & accompanist Michael Shannon, 2020, [here](#).
- [Largo al Factotum](#) - Baritone Vito Priante and the Royal Opera in concert performance, [here](#). [wait out ads]
- [Largo al Factotum](#) - performed by baritone Lucas Meachem at the 64th Annual Viennese Opera Ball, 2019, [here](#).