

Betsy says HI!!!!

Announcements

The next LABQUEST meeting will be Wednesday, January 8 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:

- FDA Defines The Food Nutrient Claim 'Healthy'
- Cookware That Can Leach Lead Into Food
- Environmental Contaminants Associated With Reduced Fertility Rates
- Growing Plants In The Dark
- PMJ Interconnect Foresees Electrical Grid Reliability Crisis Toward End of Decade
- Heat Pumps Good In Cold Country
- Solar Weather Effect On Satellite Communications/Navigation

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](#).

- **FDA Defines The Food Nutrient Claim 'Healthy'** - The Agency [announced](#) a [final rule](#) on 12/19/24 (formal Federal Register publication scheduled for 12/27/24) to update the definition of this health claim. It's intended to "... to help consumers find foods that are the foundation of a healthy dietary pattern, and could also result in the development of healthier foods." Manufacturers can *voluntarily* use the term 'Healthy' if their product meets the definition by including a sufficient amount of at least one of the food groups given in [Dietary Guidelines for Americans](#) (fruits, vegetables, protein foods, dairy, and grains), and also meets certain limits on saturated fat, sodium, and added sugars. Note the updated Nutrition Facts Label, [here](#), requiring *added* sugar information. FDA is developing a symbol that manufacturers can *elect* to put on the *front* of packaging to help consumers locate qualified products. This is a *very* important step forward.
- **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 -

- Congenital Adrenal Hyperplasia (CAH) - FDA has [approved](#) Crenesity (crinecerfont) from [Neurocrine Biosciences](#) (San Diego CA), to be used together with glucocorticoids (steroids), to control androgen (a testosterone-like hormone) levels in patients with CAH.
- Metastatic Cutaneous Squamous Cell Carcinoma - FDA has [approved](#) Unloxcyt (cosibelimab-ipdl) for this condition.
- Cookware That Can Leach Lead Into Food - FDA has [informed](#) distributors of cookware in the US that cookware made of certain metals or metal alloys (Hindalium/Hindolium or Indalium/Indolium) may leach Lead into food, and should not be distributed or sold in the US. See the brand names, photographs of the cookware, and results of the X-ray fluorescence testing for Lead, [here](#). Thanks to the Public Health Department of Seattle and King County in Washington state for their collaboration with FDA - smart, cost-effective sharing of resources!
- Adverse Effects On Dogs Treated With Librela (bedinvetmab injection) - FDA warning letter [here](#). Librela is a monoclonal antibody drug used for the [control of pain associated with osteoarthritis in dogs](#).

Other Health Science News -

- Ligaments, Tendons And Joints - Ligaments connect bones to each other at the joints. The anterior cruciate ligament (ACL) that links the femur to the tibia in the knee, is an example. Tendons connect muscles to bones, and are the motion drivers. Both must be in good condition to maintain mobility. You can help yourself with that, [here](#). When doing resistance training, work your way into any new routine gradually to avoid injury. Tendon, ligament and joint issues affect 25% of the US population. [Publication](#)
- Your Gut Microbiome Has 39 Trillion Bacteria - at work maintaining your health, and you can help them help you by giving them the right food. Supporting bacteria like [Akkermansia muciniphila](#) is important, for example, because it helps with insulin and metabolism control to lower the risk of Type 2 diabetes. Mucus is the 'food' that Akkermansia needs to grow, certain kinds of polyphenols (ellagitannins) will prompt your gut to secrete more mucus, and pomegranate juice has plenty of polyphenols. Summary: [drink pure \(no additives, especially no sugar\) pomegranate juice](#), or eat pure pomegranate arils, to reduce the risk of metabolic disorders like Type 2 diabetes. You will [find the juice](#) in the cold case at a good grocery, not on the shelves (no preservatives). Fresh pomegranate arils are found under refrigeration (no preservatives) in the produce area in better grocery stores.
- 7 Morning 'To-Dos' For A Stronger Immune System - [here](#), according to registered dietitians.
- Cancer And Seed Oils - About 70% of prostate cancer patients are diagnosed early, before chemotherapy or surgery is required. 60% of those elect to wait and monitor. So, for those patients the question is [what lifestyle changes can slow or halt the progression](#) of their cancer. A recent [UCLA study](#) showed that patients who ate less seed oil (high in omega 6 fats), and more oily fish like salmon (high in omega 3 fats) had a 15% *lower* Ki-67 index (biomarker for cancer aggressiveness), while those eating seed oils had a Ki-67 that was 27% *higher*. Seed oil

examples: canola (rapeseed) oil, corn oil, sunflower oil, safflower oil, cottonseed oil, grapeseed oil. A second [study by researchers at the University of South Florida](#) linked seed oils to the increase of colon cancer in young people. Summary: Use pure olive oil, pure avocado oil and nothing else. Don't eat prepared foods cooked with seed oil. ~~fast food french fries.~~

- [Environmental Contaminants Associated With Reduced Fertility Rates](#) - [here](#). The [birth rates](#) in 93% of all countries worldwide will fall below levels necessary to prevent population shrinkage by 2100, and about [1 in 6 people are affected by infertility](#). [Chad C.]
- [A2 Milk](#) - You will be hearing more about this, and A2 dairy products (milk, yogurt, kefir, cottage cheese, cheese) are offered in better DMV groceries, so [here's](#) a very brief video to get you started. There is no connection between this issue and lactose intolerance. More details [here](#). A2 milk producers: [Alexandre Family Farm](#) ... [Family Farmstead](#) ... [a2 Milk Co](#) ... and others. Note that some are 'low temperature' pasteurized (generally termed 'pasteurized'), and others are 'ultra-pasteurized'. Not much difference in taste or nutrition.
- [Is Grey Hair Reversible?](#) - The answer *was* no, and now it's moved up to *maybe someday*. Researchers at NYU School of Medicine have had a breakthrough in understanding the *mechanism* of greying ... press release [here](#), publication [here](#). Knowing how it happens is a step toward knowing how to prevent or reverse the process. Not happening tomorrow, sorry.
- [Cleaning Your Reusable Water Bottle](#) - They *do* need to be cleaned periodically. Tips on how [here](#). [Jenna D.]
- [Red Dye No. 3 \(erythrosine\)](#) - [FDA](#) has received, and is reviewing, a [petition](#) for disapproval of the use of this petroleum-based bright red chemical in human food under the 1960 Delaney Clause ... prevents FDA from finding a color additive safe if it has been found to induce cancer in humans or animals at *any* dose. Stay tuned.
- [Pharmaceutical Manufacturing Expansion In Wisconsin](#) - Eli Lilly (Indianapolis IN) will invest an **additional \$3 billion** in its [existing plant](#) in [Pleasant Prairie WI near Milwaukee](#), expanding the company's US manufacturing capacity to meet the growing demand for its diabetes (Mounjaro), obesity (Zepbound) and future medicines.
- [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 -

- [Temperature For Baking Salmon](#) - [here](#). Summary: Skin side down on baking parchment, for 11 minutes with the oven preheated to 275°F and a dab of oil. Then flip and turn up the broiler for the last two minutes for a good finish color. Do *not* use butter or seed oil - make up a little avocado oil, or olive oil, with the stirred-in powdered seasonings of your choice. Healthy and tasty
- [3 New Varieties Of Apples](#) - are on their way. Summary: CrimsonCrisp, EverCrisp, FireStorm. [Details](#)
- [Washing Fruits and Vegetables](#) - See [advice](#) from a California food scientist on how to do it properly.
- [Is Cooking With Avocado Oil or Olive Oil Healthier?](#) - [Both are way healthier than saturated fats from oils like butter and cream](#), or Omega-6 heavy seed oils. Smoke temperatures: [extra virgin olive oil](#) 376°F (good for sautéing or roasting, avocado oil 482°F (good for full temperature range including high temperature roasting or frying). The raw oils are the most nutritious. As to taste, olive oil has a bit more attitude. [Avocado oil](#) is a bit more mellow. Choose organic when

available California sourcing is fine - doesn't have to be Italian. Store both in a cool dark place, but don't refrigerate. Both should be either in dark glass bottles, or cans.

- [Healthy Chicken Cranberry Dinner](#) - [here](#). Tune-up: Use avocado oil rather than olive oil, low Sodium salt.
- [Quick, Healthy Black Bean Quinoa Buddha Bowl](#) - [here](#).
- [Food For Cancer Patients To Avoid Or Seek Out](#) - [here](#). Summary: avoid foods high in omega-6 fatty acids ([ultra processed](#) or cooked with seed oil), seek out foods high in omega-3 fatty acids (fatty fish, shellfish).
- [Complex Carbs Are Healthier Than Simple Carbs](#) - CDC advice [here](#).
- [Steel Cut Oats Or Rolled Oats](#) - [Similar in nutrition, with some texture differences](#). Oats are harvested, cleaned and hulled - yielding **groats**. Groats are chopped into pieces yielding *steel cut oats* that cook more quickly (25 minutes) than groats and have a smoother texture. Groats can also be steamed, flattened, dried in a kiln and toasted to yield **rolled oats** that are less grainy and microwave in 4 minutes without affecting nutrition.
- [Are Black Beans Healthy?](#) - [Yes](#), and canned beans are fine, but watch the Sodium. Pouring off the fluid from canned beans eliminates much of the Sodium. [Publication](#)
- [Anti-Inflammatory Nutritional Choices For Help With Stress](#) - What to eat, what to avoid, and why ... [here](#), according to a nutritional psychiatrist.
- [10 Most Unhealthy Bottled Salad Dressings Not To Eat](#) - according to a registered dietician, [here](#). You do need some (*unsaturated*) fat to help your system extract the fat-soluble nutrients from leafy greens ... either from food you eat at the same time, or from a dressing (a little avocado oil or extra virgin olive oil will do). Summary: a dressing is unhealthy if it has too much *saturated fat*, Sodium, or sugar.
- [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. 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 -

- [Growing Plants In The Dark](#) - Photosynthesis is inefficient. Only 1 % of solar energy gets converted into a form that plants can use to grow. Bioengineers at the University of California Riverside are now [proposing](#) to use solar power to generate *acetate* from CO2 ... acetate being the same energy source that seedlings use to get a plant started *without* requiring light. They estimate that this approach would use 94% less land than conventional agriculture, since vastly less water and fertilizer would be needed by moving the new growing process into vertical, multi-story indoor farms. [Details](#). Mushrooms, yeast and certain algae already use acetate for energy, so the process is well understood. Development would begin with bioengineering plants like tomatoes and lettuce to take in their energy in this form. The new direction is called '**Electro-Agriculture**'.

- [World's First Artificial Energy Island - Princess Elizabeth Island](#) will be 28 miles offshore from the Belgian coast. The North Sea is going to be the center of many sustainable energy projects, and Princess Elizabeth has an important role to play in those developments. Details and a cool time-lapse video of one of its water tight supporting caissons being built, [here](#). The new island is expected to eventually provide Belgium with [3.5 GW](#).
- [100 Million Salmon Can't Be Wrong](#) - See the details on how a tidal energy turbine's blades can be designed to pass salmon without harm, [here](#). [Photo](#)
- [Desert Bighorn Sheep Fly Back To West Texas](#) - They've been extinct there since the early 1900s. Recently a restoration project has [brought them back](#) from New Mexico and Nevada to make a new beginning in their original Texas mountain habitat in [Franklin Mountains State Park](#) - first by truck, and finally up into the West Texas mountains by helicopter. Details and a [video](#).
- [Old Land-Based Wind Turbine Farms Getting Efficiency Upgrades](#) - [Twin Ridges Wind Farm](#) in Pennsylvania is getting a [\\$200 million upgrade](#), swapping out old parts while keeping the existing towers on the existing land footprint - 40 of 68 towers are now done. When fully repowered, the project should be 30% more efficient.
- [England's Largest Onshore Wind Farm](#) - Cubico Sustainable Investments (London UK), will build its new wind farm next to the Scout Moor wind farm at a site just north of Manchester, adding 21 turbines alongside the existing wind farm for a total capacity of 100 MW, power for 100,000 homes. In the past, mines and quarries had been located on the site. More background [here](#).
- [Battery Powered Trains Outperformed Diesels in UK Tests](#) - Recent trials in the UK by Hitachi Rail, Angel Trains, and TransPennine Express showed that battery and hybrid battery powered (no diesel) trains achieved a [35-50% fuel saving over diesel](#) ... without requiring heavier locomotive weights that could lead to track degradation, and without needing expensive infrastructure like overhead wires in tunnels or stations. [Phil J.]
- [High Speed Rail For India](#) - India is preparing the infrastructure, starting with a [37 mile test track](#) rated for speeds up to 140 MPH, due to be ready for operations by the end of 2025.
- [Hydrogen Powered Trains For India](#) - The first prototype is due to begin running shortly. [Details](#).
- [Record AMTRAK Ridership In 2024](#) - AMTRAK carried an [historic 32.8 million riders](#), and has also made an unprecedented investment in major infrastructure upgrades and fleet projects - the largest [boom in rail construction](#) in Amtrak's history, totaling more than [\\$10 billion in competitive federal grant funds](#). [Details](#) [Harvey B. and Dyane P.]
- [Washington METRO Returns To Automatic Train Operations](#) - for the first time in 15 years, [starting with the red line now](#), and extending to all lines by the end of 2025. Smoother rides and more timely trains are expected.
- [Massive Solar Farm Goes Online In Texas](#) - Danish energy company Ørsted's new 468 MW [Mockingbird Solar Center](#) in Lamar County Texas is now providing a major boost to the Texas grid, powering 80,000 homes. See the details, and the [collateral benefits](#) the project is bringing to the area, [here](#).
- [New Solar Power In Florida](#) - [Florida has installed the second most new solar power](#) by the end of the third quarter of 2024, over 3.1 GW. 30,000 Floridians have installed solar power in 2024, bringing the number of installations to over 253,000 according to a [new report](#). [Bette Anne S.]
- [Largest Energy/Storage Project In US](#) - [Sunstone Solar](#), to be built by [Pine Gate Renewables](#) (Asheville NC), will connect to the grid via the Bonneville Power Administration and Umatilla Electric Coop - 7,000 acres, 4 million panels, 1,200 MW, power for 240,000 homes, 9.5 miles of grid lines. The Oregon Energy Facility Siting Council has given its final approval for the [site](#) in [Morrow County Oregon](#) - [construction 2026, power 2028](#).

- [Kentucky Coal Company Fined For Discharges At West Virginia Mine Site](#) - [details](#). Thanks Sierra Club.
- [Battle Of The Batteries](#) - Make way Tesla PowerWall, here comes the new contender for home/EV power storage ... GM PowerBank is available in all 50 states. And the price may be more to the customer's liking. Specs, tax credit qualifications and price comparison [details](#).
- [Accelerated Development of Advanced Small Modular Nuclear Reactors \(SMRs\)](#) - In October the US Department of Energy announced a [competitive funding opportunity](#) to assist industry in accelerating the deployment of a fleet of Gen III+ SMRs, based on up to \$900 million from the Bipartisan Infrastructure Act. Some of the design goals are: "... greater modularity, safe operation, more factory-style construction, and the ability to be matched with loads and scaled to meet demand" Three different designs are already before the NRC for safety certification. Summary: build the reactors in a factory, load them onto a truck, plunk them down on site, plug them into the grid, and push the on button. There *may* be a few additional details.
- [PMJ Interconnect Foresees Electrical Grid Reliability Crisis Toward End of Decade](#) - PJM Interconnection is the grid operator for Maryland, DC and 13 states ([map](#)) across the mid-Atlantic, South and Midwest. PJM expects to process more than 200 GW of mostly renewable projects in the next three years, but [projects that renewables will not be built fast enough](#) to keep up with the retirement of existing coal-fired plants. Clashes with environmental groups are expected. [Two coal fired plants](#) in Anne Arundel County MD use 4.8 million tons of coal annually - delivered by barge. Stay tuned.
- [Not Your Grandad's Nuclear Reactor](#) - [Amazon has chosen to invest in three 'pebble bed' type nextgen small modular nuclear reactors](#) - one to be built in **Virginia**, and two in the Northwest. The three reactors, among others, will be built by start-up [X-Energy \(Rockville Maryland\)](#), and will be up and running in the early 2030s - safe power sufficient for 1 million homes. [X-Energy](#) subsidiary [TRISO-X LLC](#) (TRISO-X, **Rockville MD**) **has been awarded a \$148.5 million tax credit** through the US Department of Energy, with funds from the US Inflation Reduction Act, for construction of an advanced nuclear fuel fabrication facility at Oak Ridge TN. [Mack and Karen W.]
- [Heat Pumps Good In Cold Country](#) - They are [booming in Norway, Sweden and Estonia](#) despite the cold climate for two reasons. New versions work well in *cold* weather, and the three countries have high electricity costs.
- [Electric Tractors From John Deere?](#) - [They're heading in that direction](#), starting with smaller farm machinery. They are also looking at autonomous operations including driving, weed pulling, planting and more. But slowly.
- [Cross Lake Tahoe CA In Half The Time](#) - by electric hydrofoil ferry, photo and details [here](#). Transit in 30 minutes

Other Science News -

- [Solar Weather Effect On Satellite Communications/Navigation](#) - The 11 year sun activity cycle will peak in what is called a 'solar maximum' in 2025. The auroras you've been reading about are a side-effect of the increased activity ramping up a bit sooner than expected. In the rare case of a coronal mass ejection event (extreme solar storm), satellite-based communications/navigation/internet could be affected. [Details](#). NASA's [Parker Solar Probe](#) is improving our understanding of solar weather, and has actually flown through the upper atmosphere of the sun for data. Timely. The sun is an average of 8.3 light minutes from Earth. [Gerald C.]

- Giant Cyborg Cockroaches - are being designed for use in search and rescue (S&R) missions: details and a photo [here](#) Bioengineers at the University of Queensland (Australia) biorobotics lab are attaching guidance and surveillance 'backpacks' to giant (3 inch long) burrowing cockroaches with Search and Rescue missions in mind Roaches can go where humans *can't* ... and take risks that humans *shouldn't*.
- \$10 Billion AI Data Center In Louisiana - [Meta Platforms](#) (Menlo Park CA) has broken ground in Richland Parish (Northeastern LA) for a [4 million square foot data center campus](#) on the 2,250 acre former Franklin Farm, with construction to continue through 2030, and will invest \$200 million in local infrastructure improvements, including roads and water systems. The company is also committed to partner with Entergy Corp to bring on line at least 1.5 MW of renewable power, and will restore more water than it uses by investing in LA water restoration projects. The project will be the [largest private investment in LA history](#). [Harvey B.]
- Wind Tunnel For Tidal Energy Turbine Blades? - *Water* tunnel? Engineers at North Carolina State University have devised [modeling software for evaluating marine hydrokinetic devices](#) designed to convert the mechanical energy of the ocean's tides, current and waves into electricity ... *before* the expense of building prototypes for real world testing. A blind alley avoided is a problem solved. Excellent! [Publication](#)
- Massive United Airlines Hub Expansion at Dulles International Airport (IAD) - The new half billion-dollar Concourse E project will add a 435,000-square-foot, 14-gate concourse, and [allow additional direct flights](#) by late 2026. There are 250 daily departures now, with plans to grow to 280 daily flights by April 2025. Busy
- Zumwalt Class Destroyers Finally Find A Purpose - They will be the first Navy ships to serve as [launching platforms for hypersonic \(>Mach 5\) missiles](#). Each destroyer would have four missile tubes, each with three missiles, for a total of 12 hypersonic weapons. The first retrofitting from a gun system is currently underway in Pascagoula Mississippi. The missiles were ridiculously expensive, even by military standards.
- Ukrainian 'Sea Babies' Shoot Back - These uncrewed surface vessels (USVs) can now return fire, either with machine guns or missiles. Details, and a Russian helicopter point of view showing why that's needed, [here](#).
- Norway Provides \$242 Million To Ukrainian Navy - to [support new technology and independent operations](#) in the Black Sea, protect the export of grain and other products, and to detect and defuse mines along the coastline.

Nice Thing - [full screen, skip ads]

Frosty The Snowman - 1969 made for TV animation narrated by Jimmy Durante, [here](#).