

## **Betsy says HI!!!!**

### **Announcements**

**The next LABQUEST meeting will be Wednesday, February 12 at 12:30 in the GSA trailer.** John Sackett will be attending the February meeting. John is the President/CEO of Adventist HealthCare.

### **Science Report Highlights**

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

- Physical Activity For Those Over 65
- Tobacco Products To Be Made Non-Addictive By Limiting Level Of Nicotine
- Red Meat Increases Risk Of Dementia And Cognitive Decline - and highly processed red meat *magnifies* the risk
- FDA Announces Dog Food Recall Due To Salmonella
- First *Non-Opioid* Drug For Treatment Of Moderate To Severe Acute Pain
- HHS Grant For Vaccine Development Platform
- Mechanism For Transmission Of H5N1 Bird Flu From Cattle To Humans Discovered
- Best Place To Retire, And Why
- Sodium-Ion Battery Technology

### **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](#).

- [Physical Activity For Those Over 65](#) - CDC advises a minimum of 150 minutes per week of moderate intensity activity - for example 30 minutes per day, 5 days per week, details [here](#) The Agency also recommends balance enhancing routines to help prevent falls.
- [Tobacco Products To Be Made Non-Addictive By Limiting Level Of Nicotine](#) - FDA's recent (1/16/25) [Proposed Rule](#), when made final, would accomplish this. "... cigarette smoking is the leading cause of preventable disease and death in the US and is a major driver of chronic disease nationally."
- [Red Meat Increases Risk Of Dementia And Cognitive Decline](#) - and highly processed red meat *magnifies* the risk. See the details in the *Results* section of a recent publication, [here](#). Summary: "Higher intake of red meat, particularly processed red meat, was associated with a higher risk of developing dementia and worse cognition."
- [FDA Announces Dog Food Recall Due To Salmonella](#) - [Details](#). 'Natural Mix' from Blue Ridge Beef was sold in eight states: VA, MD, PA, CT, MA, NY, TN, and RI. [Mack and Karen W., Betsy B.]

- [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 -

- [First Non-Opioid Drug For Treatment Of Moderate To Severe Acute Pain](#) - On January 30 FDA [approved](#) Journavx (suzetrigine) from [Vertex Pharmaceuticals](#) (Boston MA). Journavx works by targeting a pain-signaling pathway (sodium channels) in the peripheral nervous system, *before pain signals reach the brain*, and is the first drug to be approved in this new class of pain management medicines. According to the [company's announcement](#), Journavx is effective, well tolerated and "... without evidence of addictive potential ..". Quite a claim. Vertex estimates that "... about 85,000 patients develop opioid use disorder annually."
- [Metastatic Colorectal Cancer](#) - FDA has approved Lumakras (sotorasib) with Vectibix (panitumumab) for KRAS G12C-mutated metastatic colorectal cancer, and a corresponding screening kit. [Details](#).
- [Mantle Cell Lymphoma](#) - FDA has approved Calquence (acalabrutinib) with bendamustine and rituximab for this condition. [Details](#).
- [Breast Cancer](#) - On 1/17/2025 [FDA](#) has approved [Datroway](#) (datopotamab deruxtecan or Dato-DXd) from [AstraZeneca](#) (Cambridge UK) and Daiichi Sankyo (Japan) for the treatment of metastatic HER2-negative breast cancer. This is a new treatment alternative to conventional chemotherapy. [Publication](#).
- [HHS Grant For Vaccine Development Platform](#) - On January 17 the U.S. Department of Health and Human Services (HHS) [announced](#) that it **had awarded a \$590 million grant** to [Moderna](#) (Cambridge MA) to accelerate the development of mRNA-based pandemic influenza vaccines, and enhance mRNA platform capabilities. This funding allows Moderna to accelerate Phase 3 development of an H5N1 mRNA influenza vaccine candidate (mRNA-1018) that is well matched to strains currently circulating in cows and birds (bird flu). In addition, Moderna will design and test an H7N9 mRNA pandemic influenza vaccine in a Phase 3 clinical study - may become the first licensed vaccine for H7N9. The company will also design up to four additional new pandemic influenza vaccines, and test them through Phase 1.
- [Mechanism For Transmission Of H5N1 Bird Flu From Cattle To Humans Discovered](#) - Recently published details [here](#). Summary: The hemagglutinin protein from the cattle-infecting H5N1 virus has acquired slight binding to human receptors. This clue will assist vaccine development.

### Other Health Science News -

- [Is Going Barefoot At Home Healthy?](#) - A podiatrist and a dermatologist say generally yes, provided that the floors are clean and free of small, edged objects. An exception would

be while standing in one place for an extended time, such as while cooking, and when dealing with psoriasis, eczema or athlete's foot, Details [here](#). Barefoot = no shoes/socks.

- [Be Aware Of The Potential Interactions Between Vitamin D Supplements And 8 Drugs - here](#).
- [Best Place To Retire, And Why](#) - According to the 'Seniorly Resource Center', [Washington DC outranked all 50 states](#), with the runner-up not even close. See the entire rank-ordered list [here](#). Pluses: availability of doctors (769 per 10,000 older adults), long-term care spending through Medicaid (\$12,993 per senior), and recreational opportunities such as golf courses, museums, theaters, and sports arenas (775 per 100,000 older adults). The only negative - cost. NJ was last.
- [Incidence Of Cancer Shifting: Men To Women, Old To Young](#) - The *good* news is that incidence of cancer is down 34% from 1991 to 2022, 4.5 million fewer deaths over those two decades. The other news is that rates for women under 50 are now 82% higher than for men under 50, and we don't know why. Details [here](#). Publication [here](#).
- [Tire Wear Generates Microplastic Dust Carrying Two Toxic Chemicals](#) - A recent [study](#) of 150 volunteers found two toxic chemicals in their blood - [6PPD and 6PPD-Q are rubber additives](#) commonly used in tires.
- [Examples Of Foods Affected By FDA's Ban On Use Of Red Dye No. 3](#) - [here](#). You won't miss them.
- [Association Between Vitamin A And D3 Deficiencies, Omega-3 Deficiencies, And Tiredness](#) - CDC finding on percentage of the US population that felt tired most days in the last 3 months, [here](#). The percentage *declines* with age, and is higher for women than for men. [Details](#). Get tested to know.
  - [Vitamin D3](#) - 40% of US adults are deficient. Vitamin D is found in natural foods such as salmon, sardines, freshwater rainbow trout, fortified dairy, and egg yolks. Your skin also makes Vitamin D from UV in sunlight (not in mid-winter at latitudes North of Charlotte NC).
  - [Vitamin B12](#) - 20% of US adults are deficient. Vitamin B12 is found in meat, fish, dairy and eggs. Vegetarians and vegans should consider taking a vitamin B12 supplement.
  - [Omega-3 Fatty Acids](#) - More than 80% of US adults are deficient. Omega-3 fatty acids are found in fatty fish, flaxseeds, chia seeds and walnuts.
- [Dopamine \(Intropin\)](#) - is the medication form of a neurotransmitter that the body makes for itself to maintain heart pumping strength and blood pressure (routinely used for that in hospital intensive care units). It also increases blood flow to the kidneys, and has many other functions. At low doses it acts as a [vasodilator](#). At high doses it acts as a vasoconstrictor. It's also a diuretic (increases *production* of urine). Details [here](#). Notes: Effects of dopamine are [dose dependent](#). Some patients may be [unable to urinate \(acute urinary retention more likely in men\)](#), due to medications including dopamine ([See list in Table 2 here](#)). A review might produce a more target approach.
- [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 -

- [22 Healthy Breakfast Foods](#) - according to a registered dietician, [here](#). Do eat breakfast, and have coffee or tea *then* (before noon).
- [Is There A Difference Between Sea Salt And Table Salt?](#) - [No nutritional difference](#), and little difference in taste. Table salt is a bit more soluble. Choose a *low Sodium, iodized* version of salt.

- 7 Signs That You're Being Wronged By Your Bread - according to a registered dietician, and two readily available alternatives, [here](#). Note: [Ezekiel Bread](#) is usually found in the *freezer* at the grocery, [Dave's Killer Bread](#) on the shelves. To be sure that bread is fully whole grain, look for terms like '100 percent whole', or 'whole', in front of the wheat or grain entry on the contents label. Big difference in nutrition.
- 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 -

- All Chicago City-Owned Buildings Now Use 100% Renewable Energy As Of 1/1/2025 - all 400 municipal buildings: 98 fire stations, two international airports, and two of Earth's largest water treatment plants. Accomplished with a Power Purchase Agreement through Constellation Energy (Baltimore MD) to its contractor/developer [Swift Current Energy](#) (Boston MA) for half of the output of its new 3,800-acre, 593-megawatt solar farm in central Illinois - [Double Black Diamond Solar](#).
- RiverHouse - The present three building apartment complex in Arlington Virginia is about to gain a lot more residents. 2,785 housing units will be added, bringing the total to 4,461 residences *on the existing site*. Two acres of open park space will be created in the process, connected by a 'green ribbon'. The developer's magic is accomplished with high-rise construction, and by moving the ugly, polluting, storm water run-off-intensive surface parking underground. See 6 views of the present and future for this [Pentagon City](#) complex [here](#). [click on image to advance] [Liz S.]
- Vertical Axis Wind Turbine (VAWT) - VAWT-X Energy, in partnership with Adelaide's Flinders University Advanced Wind Energy Technology research group, has developed a [vertical axis wind turbine](#) that is quieter, lowers risk for birds, and is more useful for low and variable wind speeds than the very tall, traditional horizontal wind turbines you've heard about. The partners will build a small (6kW) prototype this year, and have also designed an 80 kW version. [Harvey B., Sarah F.]
- Wind Power In Ukraine - Never mind the bombs, even if the Ukrainian electrical utility DTEK *did* lose [90%](#) of its generating capacity that way in 2024! DTEK plans to invest \$468 million to expand the [Tyligulska](#) Wind Power Plant near the Black Sea coast, details [here](#). The facility will grow from 19 to 83 turbines, will increase power capacity fourfold from 114 MW to 500 MW, should be completed by late 2026, and will generate 1.7 terawatt-hours (TWh) of electricity annually ... enough power for 900,000 Ukrainian homes. The turbines will be manufactured by the Danish company Vestas. Courageous and awesome at the same time!
- Sodium-Ion Battery Technology - has some [advantages over Lithium-ion tech](#): Sodium batteries: are made of more widely available materials, cheaper, take an 80% charge in 15 minutes, are less likely to go boom and burn intensely, last 1,500 cycles, retain 92% capacity at -20°C (-4°F). The

two-wheel and three-wheel electric vehicle maker [Yadea](#) (Wuxi China) uses and will improve them.

- [UK's Largest Commercial EV Fleet](#) - British Telecom (BT) has contracted to add 3,500 EVs to its commercial truck and van fleet over the next two years - bringing the EV fleet total to 8,000. BT expects its 27,000 vehicle fleet to be [all electric by 2031](#).
- [New Chinese Electric Hyper-Car](#) - **jumps** over spikes and potholes while self-driving: 1,287 horsepower, zero to 60 mph in 2.36 seconds, top speed 243 mph. Video and details, [here](#).
- [Sweden Building Final Storage Facility For Spent Nuclear Fuel](#) - in 1.9 billion year old rock strata 1,600 feet below Forsmark Sweden. The repository will hold 12,000 tons of spent nuclear fuel in 6,000 canisters for a planned 100,000 years, and will eventually consist of 37 miles of tunnels.
- [Wyoming Grants First-Ever State Permit For Next-Gen Nuclear Power Project](#) - Artist's concept view of the plant, and [details](#). [TerraPower](#) (Bellevue WA) plans to begin construction this year on the non-nuclear aspects of a 345 MW sodium-cooled [fast reactor](#) project that will use high-assay low-enriched uranium ([HALEU](#)) fuel. The reactor will have a molten-salt-based energy storage system for boosting output to 500 MW for more than five and a half hours when needed. The company has also submitted a permit application for the nuclear aspects of the project to the US Nuclear Regulatory Commission (NRC), and projects NRC approval by the end of 2026.
- [Nuclear Reactor Fuel](#) - Russia supplies about half of the world market for conventional reactor fuel, a vulnerability that is on the way to being resolved while existing stocks are being drawn down. However, [Russia has a monopoly on fuel for the new generation of fast fission nuclear reactors](#) that use High Assay Low Enrichment Uranium ([HALEU](#)) fuel elements - see above bullet. Work is being done on both ends of that chicken and egg problem. Stay tuned.
- [DOE Financial Support For Green Hydrogen](#) - [Plug Power](#) (Latham NY) has **closed (1/16/25) on a \$1.66 billion US Department of Energy (DOE) loan guarantee** to help finance the construction of up to six [facilities for producing clean hydrogen](#) with the company's own *electrolyzer* technology. The hydrogen will power fuel-cell-electric vehicles for the material handling, transportation, and industrial sectors, resulting in a 84% reduction in CO2 - not conventional hydrogen from natural gas (CH4) that ultimately produces CO2. Thanks DOE Secretary Granholm. [Peter M., Liz S.]
- [Fire Resistant House Designs](#) - No shrubs and plenty of concrete, [here](#).
- [Global Warming Reveals Montana Secrets](#) - Retreating alpine tundra up on Beartooth Plateau in the Yellowstone area has revealed the 5,500 year old remains of Whitebark Pine trees at an altitude well above the present tree line. As global warming continues, it looks like there's a future in which the Beartooth will be forested again. [Louise F.]

### Other Science News -

- [Blue Origin's New Heavy Lift Rocket Reaches Orbit](#) - The '[New Glenn](#)', the company's new 320 foot tall, two stage heavy lift rocket, reached orbit *on its first try*, 1/16/25. Payload: 13 tons to geostationary transfer orbit, 45 tons to low earth orbit. [Blue Origin](#) (Kent WA). Competition is good.
- [SpaceX Starship Blows Up - before reaching orbit](#) (1/16/25), but the booster was recovered. The debris streaks come down from space over the Turks and Caicos Islands, [here](#), and in this [Video](#).
- [Firefly Aerospace's Blue Ghost Lunar Lander](#) - was launched on [Rocket Lab's](#) Electron rocket on January 15. Blue Ghost is expected to land on the Moon at Mare Crisium 45 days later. Details, and a spectacular view of Earth, [here](#). Blue Ghost is carrying 10 scientific instruments to study the lunar surface and gather data to support future human missions to the Moon as part of NASA's Commercial Lunar Payload Services (CLPS) initiative.

- [NASA Probe OSIRIS-REx Brings Back Samples From Asteroid Benuu](#) - that suggest life on Earth may have been started with materials from asteroids. See the story [here](#). [Peter P.]
- [The Lynx KF41 Infantry Fighting Vehicle Goes To Ukraine](#) - They have already begun arriving from German defense manufacturer [Rheinmetall](#) (Düsseldorf Germany). Details and specs for this light tank (Kettenfahrzeug, tracked) [here](#). The plan is to mass produce them *in Ukraine*. Formidable!
- [New UK-Designed Air Defense System Goes To Ukraine](#) - [Gravehawk](#) is the size of a shipping container, and is designed to be retrofitted with [air-to-air missiles for ground launch](#). Ukraine already has suitable missiles. The first 17 systems will be jointly funded by the UK and Denmark, and will go to Ukraine this year. Very clever *make-do*.
- [Remote Control Ground Assault By Ukraine](#) - The ground unit can lay and clear mines, and run ahead of a ground assault with its mounted machine gun - crew about a mile away. [Details](#).
- [US Shipments Of Liquefied Natural Gas \(LNG\) To Ukraine](#) - began in December, under a contract between Ukraine's largest utility DTEC and US company [Venture Global](#) (Arlington VA).
- [US Army Announces Hydrogen-Powered Nanogrid](#) - to replace noisy, polluting diesel generators. Photo and details [here](#). Good for missions like silent surveillance camera systems and meteorological weather equipment.
- [Bulgarian Farmer Discovers 1,700 Year Old Roman Tomb](#) - in December, containing two adults, jewelry, and pottery. A child's tomb was also found nearby. Archeologists are planning to do a DNA analysis of the remains. See a photo of the huge limestone covering slab being lifted to reveal the contents, [here](#). Imperial medallion found, [here](#). The site is in Nova Varbovka, 130 miles NE of Sofia.
- [Secret Ancient Inca Labyrinth](#) - Ground penetrating radar has revealed a previously unknown tunnel system under Cusco Peru. The system was first hinted at in the writings of an anonymous Spanish Jesuit individual who wrote about a tunnel in 1594. Now, archeologists have used modern technological means - first acoustic prospecting to look for cavities, and then ground penetrating radar to map the tunnel system. What will they find when they finally open it?? [Sarah and Luis F.]

[Nice Thing](#) - [full screen, skip ad]

- [Lord of the Rings - Fellowship of the Ring - Galadriel's Prologue](#), [here](#).
- [Galadriel Explains Frodo's Task](#) - [here](#).