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GENTLE.NEWS

In Today's Edition

"It's been my experience that you can nearly always enjoy things if you make up your mind firmly that you will."

— Lucy Maud Montgomery

NASA’s Artemis II Breaks Agency Streaming Record

From left: The Artemis II crew—NASA astronaut Christina Koch; CSA (Canadian Space Agency) astronaut Jeremy Hansen; and NASA astronauts Reid Wiseman and Victor Glover—take time out for a group hug inside the Orion spacecraft on April 6, 2026. NASA NASA’s live coverage of the Artemis II mission mission drew unprecedented public interest – including more than 149.4 million views of the launch, lunar flyby, splashdown on NASA-owned platforms, including the 24/7 streams covering the mission and the Orion spacecraft views – demonstrating strong, sustained global engagement throughout the mission. Around the Clock Live Broadcast NASA’s Artemis II Crew Launches to the Moon broadcast set unprecedented viewership records across the agency’s streaming platforms, drawing a combined peak of 3,662,554 viewers—rising to 3.66 million when including more than 411,130 concurrent viewers on X and Twitch—surpassing previous milestones, including the launches of Artemis I (2022) and the James Webb Space Telescope (2021–2022). The launch generated 23.9 million total views across NASA platforms, with 16.6 million people watching live, underscoring the mission’s broad national and global appeal from liftoff onward. NASA en español’s dedicated broadcast also reached a landmark peak of 458,366 concurrent viewers and has since amassed 2.8 million total views, highlighting the mission’s strong resonance with Spanish-speaking audiences and expanding the global reach of Artemis

Source: NASA

communications. NASA’s Artemis II Lunar Flyby broadcast delivered one of the largest peak audiences ever recorded across the agency’s streaming platforms, reaching 1,471,069 total concurrent viewers – driven largely by 897,789 on YouTube, one of NASA’s strongest single platform performances – along with an additional 190,221 viewers on X and Twitch, underscoring the mission’s broad global reach and sustained excitement. Together, the Artemis II launch and Moon flyby broadcasts have redefined NASA’s livestreaming benchmarks, demonstrating record-breaking public interest in humanity’s return to the Moon. As of April 13, the flyby broadcast has accumulated 40 million views across NASA+, YouTube, X, and Twitch, highlighting the intense and enduring engagement surrounding Artemis II. Pre-splashdown coverage across major outlets emphasized the “riskiest moments” still ahead—particularly Orion’s reentry and heat-shield performance—framing the return as the mission’s climax and driving heightened public attention. As anticipation grew, audience interest that had already surged during the record-setting launch only intensified: Artemis II’s liftoff drew 3,662,554 peak viewers, but global curiosity about the crew’s safe return pushed splashdown viewership even higher to 3,838,418, a 4.8% increase that reflected widespread investment in the mission’s outcome as viewers tuned in to witness the critical reentry sequence, confirm crew safety, and celebrate humanity’s first journey around the Moon in more than 50 years. NASA’s Artemis II Crew Comes Home generated 29.5 million total views across NASA-owned platforms, with an estimated 24.1 million occurring during the live return sequence—

Source: NASA

an exceptional level of engagement that underscores the deep public interest carried through the mission's final and most critical moments. Major entertainment platforms including HBO Max, Netflix, Peacock, and Amazon Prime Video exponentially expanded NASA's global footprint by placing Artemis II in front of hundreds of millions of potential viewers worldwide, with HBO Max reaching 120–150 million global subscribers; Netflix reaching 325 million paid subscribers and covering 54% of global households; Peacock contributing 36–41 million U.S. subscribers; and Amazon Prime Video reaching up to 275 million global subscribers. Together, these partners enabled NASA to reach mainstream, international, and non-traditional audiences at a scale unattainable through NASA-owned channels alone. Four astronauts aboard NASA's Orion spacecraft atop the SLS (Space Launch System) rocket launched on the agency's Artemis II test flight on Wednesday, April 1, 2026, from Launch Complex 39B at NASA's Kennedy Space Center in Florida. NASA/Michael DeMocker Websites NASA's Artemis II mission drove a major surge in traffic across the agency's websites, with NASA.gov recording 125.1 million pageviews between April 1 and 10 – more than double the roughly 50 million logged in all of March – reflecting intense public interest in following the mission in real time. On launch day alone, NASA sites saw 17.6 million pageviews from 8.3 million visitors, with the Artemis Real-Time Orbit Website (AROW) drawing 797,796 pageviews, Interest spiked again during the April 6 lunar flyby, generating 16.5 million pageviews from 6.2 million visitors; AROW registered 1.9 million pageviews –

Source: NASA

boosted by more than 440,000 Google referrals – while the NASA homepage reached 2.3 million. Splashdown day brought another surge to NASA-owned websites, with more than 16 million pageviews from 6.1 million visitors as audiences followed the Artemis II crew's return; AROW drew over 1 million pageviews and surpassed 11 million cumulative views since launch. Together, these metrics show sustained, high-volume engagement across all mission milestones, with live hubs, broadcast pages, and real-time tracking consistently ranking among the most-visited content throughout launch, flyby, and splashdown. Social Media Public reaction to NASA's Artemis II mission remained largely steady across launch week, with neutral and positive posts dominating the online conversation. Neutral sentiment consistently led daily discussion, ranging from 47 to 60 percent, while positive reactions accounted for 30 to 42 percent, fueled by excitement over the crew's historic lunar journey, striking mission imagery, and renewed interest in deep space exploration. Engagement spiked around major mission milestones, with NASA accounts generating 35 million engagements on splashdown day content alone and 261 million from March 27 to April 13, underscoring how closely audiences followed each phase. Strong amplification from major news outlets, brands, and international partners, further boosted visibility and cemented Artemis II as a global cultural moment. NASA's Artemis II mission drove major social media growth across the agency's flagship and mission-specific accounts, with follower numbers climbing steadily from rollout through the lunar flyby and splashdown. Internal tracking shows NASA's flagship

Source: NASA

Instagram account added more than 4.6 million followers, while the Artemis-dedicated Instagram account grew by 2 million—a 66% increase over the course of the mission. Significant gains were also recorded across X, Facebook, and YouTube, including a 2 million increase in YouTube subscribers and NASA's flagship Facebook page climbing by 1.7 million. Collectively, these gains highlight how Artemis II's human-spaceflight narrative, real-time crew updates, and highly visual moments drew millions of new followers across platforms. From left: The Artemis II crew —NASA astronaut Christina Koch, CSA (Canadian Space Agency) astronaut Jeremy Hansen, and NASA astronauts Reid Wiseman and Victor Glover—pause for a group photo with their zero-gravity indicator "Rise" inside the Orion spacecraft on April 7, 2026. NASA Mission Images NASA has long shaped its legacy through unforgettable imagery—pictures that don't just document history but become part of it. Artemis II carries that tradition forward with a growing collection of images capturing every phase of the mission, from the anticipation of launch to the sweep of a lunar flyby and splashdown . For those eager to explore more, the mission's dedicated image galleries offer a rich visual journey, complemented by additional photos on the NASA Headquarters official Flickr account and the NASA Image and Video Library . NASA Campaigns Moon Mascot: NASA Artemis II ZGI Design Challenge Last year, the Moon mascot design contest received thousands of submissions from more than fifty countries for the Artemis II mission's zero-gravity indicator. This plush item serves a special purpose — it begins to float

Source: NASA

once the astronauts reach space, signaling the onset of zero gravity. It also provides a comforting reminder of Earth when the crew is far from home. Ultimately, the Artemis II astronauts selected “Rise” —inspired by the iconic Earthrise photograph captured during the Apollo 8 mission and designed by Lucas Ye of Mountain View, California—as the zero-gravity indicator that will accompany them around the Moon. “Rise” also features a small pouch that will carry an SD card containing all 5.6 million names submitted through the Send Your Name with Artemis campaign. Send Your Name with Artemis II NASA invited the public to join the agency’s Artemis II test flight as four astronauts ventured around the Moon and back to test the systems and hardware needed for deep space exploration. As part of the agency’s “Send Your Name with Artemis II” effort, anyone could claim their spot by signing up before Jan. 21, 2026. Participants launched their names aboard the Orion spacecraft and SLS (Space Launch System) rocket alongside NASA astronauts Reid Wiseman, Victor Glover, Christina Koch, and CSA (Canadian Space Agency) astronaut Jeremy Hansen. Online Collaborations Google Doodle The April 1, 2026, Google Doodle celebrated the launch of Artemis II, the NASA mission that sent astronauts around the Moon and back for the first time in more than 50 years. During the approximately 10-day voyage, the crew tested the spacecraft’s systems while traveling farther into deep space than any human had gone since the Apollo program. This critical test flight brought us one step closer to a long-term return to the Moon and future missions to Mars. Spotify Playlist: The Artemis II Crew’s Wake-up Songs NASA’s

Source: NASA

official playlist for the Artemis II mission featuring songs selected by the crew for their historic 10-day journey around the Moon. Merriam-Webster Dictionary Merriam-Webster highlighted the Artemis II mission on their official Facebook page, engaging with astronauts in deep space to discuss the experience of traveling farther than any human before. In New York, a digital display on the Nasdaq Marquee and special lights on the Empire State Building marked successful Artemis II mission milestones. In London, Piccadilly Lights celebrated the mission with a digital display following a successful lunar flyby. Offline Collaborations NASDAQ , New York Nasdaq celebrated the successful launch of NASA's Artemis II mission, marking humanity's return to the Moon after more than 50 years. Empire State Building , New York Red, white, and blue for the Artemis II crew. Welcome back to Earth. Sphere , Las Vegas As the astronauts on Orion reached their closest approach to the Moon, the sphere celebrated this milestone here on Earth. NASA provided the Sphere with a 3D model of the Orion spacecraft and unique soundbites from the April 1, 2026, launch to help design the moon, spacecraft, and flight path to match the real-life version. Piccadilly Lights, London London's Piccadilly Lights celebrated the lunar flyby of Artemis II, where the four astronauts aboard the Orion spacecraft went deeper into space than ever before. NASA's Artemis Program The Artemis II mission launched April 1, 2026, on NASA's SLS (Space Launch System) rocket from Kennedy Space Center in Florida. During the nearly 10-day test flight, the crew achieved the mission's primary objectives, including testing its life support systems;

Source: NASA

manually piloting the Orion spacecraft; performing maneuvers to propel Orion to the Moon and adjust its course; conducting a lunar flyby with unprecedented views of the Moon’s far side; and completing a safe re-entry and recovery. The astronauts also set a record for the farthest distance traveled by humans away from Earth. As part of a Golden Age of innovation and exploration, NASA will send Artemis astronauts on increasingly challenging missions to explore more of the Moon for scientific discovery, economic benefits, establish an enduring human presence on the lunar surface, and lay the groundwork for sending the first astronauts – American astronauts – to Mars. Keep Exploring Discover More Artemis Humans In Space Astronauts Destinations

Source: NASA

Predicting Future Northeast Ocean Conditions: Forecast Debuts in 2026 State of the Ecosystem Reports

Fishermen, fisheries managers, and scientists have observed changes in our oceans that are impacting the location and growth of fish stocks. Until recently, there was no reliable way to predict these changes. This year, the 2026 Mid-Atlantic and New England State of the Ecosystem reports contain the first operational seasonal and decadal ocean forecasts for U.S. coastal fisheries regions. These ocean forecasts provide predictions of future marine ecosystem conditions that could impact the availability of commercial, recreational, and protected fisheries species. They can help resource managers make more informed decisions. The Northeast Integrated Ecosystem Assessment team produces the State of the Ecosystem reports annually for the New England and Mid-Atlantic Fisheries Management Councils. They provide a synthesis of Northeast Shelf ecosystem information. They are part of a holistic approach to maintain healthy and productive fisheries by considering environmental and socioeconomic information in decision making. The reports: Contain current and long-term information about the Northeast Shelf ecosystems Document how well the ecosystems are currently meeting fishery management objectives Highlight potential risks to meeting those objectives. However, resource managers have long sought forward-looking ocean forecasts that predict future ocean conditions to help them make more informed decisions. “Due

Source: NOAA Fisheries

to limited resources, we have moved to more multi-year specifications for stocks, so the impacts of our decisions are now longer lasting. Given the increasingly dynamic nature of the ocean, and management's sometimes-limited ability to be as dynamic in response, delivery of ocean forecasts to the Council provides more tools at our disposal to make better decisions that span multiple years." — Megan Ware, member of the New England Fisheries Management Council NOAA scientists in the Northeast are now providing their Councils with predicted ocean temperatures in this year's" State of the Ecosystem reports using NOAA's Modular Ocean Model version 6 ocean forecasts, developed by NOAA's Geophysical Fluid Dynamics Laboratory . The inclusion of the forecasts marks the agency's first application of an ocean forecast in an ecosystem-based fisheries management product. Dr. Joseph Caracappa, research fisheries biologist at the Northeast Fisheries Science Center and one of the lead editors of the State of the Ecosystem reports, explains: "By including ocean forecasts in our State of the Ecosystem reports, we are providing scientists and managers with information that allows them to consider future environmental impacts on marine resources and ultimately be more informed on decisions." What do the ocean forecasts in the 2026 reports predict? The 2026 State of the Ecosystem reports contain MOM6 forecasts that predict conditions over two time periods: seasonal (3-month forecasts that are updated 4 times per year) and decadal (annual forecasts over the next 10 years that are updated once a year). The seasonal forecasts predicted cooler than average winter and spring (January–June) bottom temperatures

Source: NOAA Fisheries

in the Gulf of Maine and the Mid-Atlantic Bight in 2026 (depicted by the blue color in the maps below). This prediction was accurate, as early 2026 conditions in these areas were, and continue to be, cooler than average. As the year progresses, these areas are expected to return to historically near-average temperatures (yellow). Much of the Northeast U.S. shelf is predicted to experience above average bottom temperatures (red) by the fall (October–December). Much like weather forecasts, the uncertainty of these predictions increases as they extend farther into the future. Throughout the year, new iterations of the forecasts incorporate recent environmental conditions to produce more accurate, near-future predictions that can be delivered to and used by fishery managers. Most recent seasonal forecasts for the Northeast U.S. shelf There were cooler-than-average conditions in 2024 and 2025 along the Northeast U.S. shelf . The decadal model predicts a return to average temperatures in the region over the next 10 years. Scientists were happy to see that the decadal model accurately predicted the region's recent cold spell during its retrospective forecast trials . The cooler waters observed since 2024 are a reprieve from the anomalously high temperatures of the past decade. These ocean conditions are more suitable for bottom species like scallop, lobster, cod, and haddock. While this cold spell remains, scientists continue to monitor the ecosystems to measure their ability to bounce back from warm ocean temperatures. Variations in ocean temperatures can: Alter species migration and distribution patterns Effect metabolic rates and growth Influence predator-prey relationships, distribution, and movement outside

Source: NOAA Fisheries

of previously inhabited locations Affect overall ecosystem productivity Making Strides Towards Ecosystem-Based Fisheries Management This year’s delivery of the forecasts is a collaborative success and a major advancement in NOAA’s efforts towards adopting ecosystem-based fisheries management . Dr. Andrew C. Ross, research scientist at the Geophysical Fluid Dynamics Laboratory explained, “These forecasts are the first fruits from a years-long effort by many NOAA scientists in NOAA’s Office of Oceanic and Atmospheric Research and NOAA Fisheries working together. We hope to continue improving and applying the forecasts in the Northwest Atlantic and are working to develop similar forecasts for all of the U.S. coastline including the West Coast, Alaska and Arctic, and Pacific Islands regions.” While the delivery of the ocean forecasts is a highlight of this year’s reports, it is just a fraction of the whole report. These reports have been well-received by the fisheries management councils for 10 years and are considered in management decisions. Ware said, “The New England Council is currently in the process of integrating aspects of the State of the Ecosystem report into our updated risk policy, so we will be directly integrating information from the report into our management decisions. To me, that speaks to the value and weight this Council puts on the information provided in that report.” To learn more about the 2026 State of the Ecosystem reports and the bottom temperature forecasts, you can view the presentation .

Source: NOAA Fisheries

Big Fun and Fishing with Big Brothers Big Sisters

Big Fun and Fishing with Big Brothers Big Sisters It was all smiles at a Service hosted fishing skills training and fishing event in Lacey, Washington Jun 30, 2026 Written By Dan Spencer Image Details Dan Spencer, information and educational specialist Give someone a fish, they will eat for a day. Teach them how to fish, and they'll eat for a lifetime. This proverb was the theme of a U.S. Fish and Wildlife Service led fishing and skills clinic for Big Brothers Big Sisters of Southwest Washington this past April. Yet, this event went well past teaching the essential skills. The participating program youth, or "Littles", were provided with free essential fishing equipment thanks to grant funding from the Association of Retired U.S. Fish and Wildlife Service Employees in partnership with Rods and Reels in Need, whose mission is rooted in providing fishing gear to those facing financial constraints, ensuring that the joy of fishing is within reach for all. This combination of essential gear, training, and hands-on experience was geared to foster lifelong, self-sufficient anglers and lasting memories for Bigs and Littles to share! Big Brothers Big Sisters of Southwest Washington members and those on their waiting list signed up for this free event on April 19 th at the Woodland Community Park in Lacey, Washington. Lacey Parks, Culture & Recreation provided the park shelter free of charge for the check in, orientation, and skills instructional area. Service staff and AmeriCorps Service Members

Source: U.S. Fish & Wildlife Service

prepared the gear and the instruction. After checking in with the Big Brothers Big Sisters staff, both the Bigs and Littles rotated through fishing skills stations, which included rod and reel orientation, casting, fish identification, knot tying, fishing tackle, setting up bait and artificial fishing rigs and “playing” a fish (reeling it in effectively). Image Details Once learning station rotations were completed, the Littles rigged up their fishing rods using supplies from their new tackle boxes, and we walked over to Longs Lake for some trout fishing. The weather was perfect, but the fishing started off slowly. Patience eventually paid off as several Littles reeled in their first trout, which included a couple of monsters exceeding 18 inches! We used these occasions to instruct participants on how to both safely release fish and humanely dispatch them. And how did these activities go over with the participants? Image Details "I loved fishing - it was my first time. We learned how to use a spinning rod, how to cast, and even got our own tackle box and rod to keep! I can't wait to go fishing again!” said one Little. Yet the lessons did not end with fish catching and handling. Those who were interested in learning how to clean fish were provided with a demonstration along with simple instructions for preparing and cooking their bounty. While cleaning the fish, Service staff provided a lesson on fish anatomy and physiology. The Littles were captivated as they explored the size, form, and function of the organs such as the liver, spleen, swim bladder, kidneys, gills, and heart. "I learned a lot - especially patience. We also learned how to identify fish and even how to prepare the fish we caught for a meal! While we waited for the fish to see

Source: U.S. Fish & Wildlife Service

our bait, we got to sit by the lake and look at the water. It was a great day," said another Little. A Little named William was equally enthused. "I was quite lucky to attend with my Big Brother. And then I was lucky enough to catch a fish on my very first time fishing," he said. He went on to say, "I caught this strong old fish that had likely evaded being caught, for years perhaps, and I got to eat him for dinner." When asked if the recipe provided at the training was good, he said, "It was delicious." Image Details It was all smiles at the end of the clinic. Both the Bigs and Littles went home with the equipment, knowledge, and experience to confidently continue the sport together. As backup, all participants were provided with a resource booklet listing other local fishing lakes as well as images, descriptions, and instructions highlighting gear used and skills learned. And while some did not land fish, good times were had by all, and future fishing trips are in the works thanks to the Bigs, who also received the skills training. "My Little and I both enjoyed the fishing outing because it was outside and she had never been fishing before. Since she received a rod, we will definitely go fishing again. I want to help her catch her first fish!" said one of the Bigs. "The U.S. Fish and Wildlife Service team put on an incredible event for our Bigs and Littles," said Ashley Otheim, Director of Programs for Big Brothers Big Sisters of Southwest Washington. They had stations for the kids to learn how to cast, how to tie knots and gave great instruction on the basics of fishing. The fact that each of our Littles went home with a new fishing rod AND tackle box is incredible. I know the Bigs and Littles that attended benefited greatly from the

Source: U.S. Fish & Wildlife Service

event, had a TON of fun, and will continue their fishing journeys together. Thanks to everyone involved for creating such a fun day outside for our matches!” It was our pleasure to foster these youth and to promote lifelong skills, memories, connections with nature, and future fish feasts! Story Tags Internship programs Sport fishing Youth Recreational Activities Fishing Written By Dan Spencer Published Jun 30, 2026 Edited By Lena Chang Recreation Facilities Western Washington Fish and Wildlife Conservation Office Related Stories Our People Casting a Fly Toward Careers in Fisheries Aug 8, 2023 Recreation Fishing for All Jun 8, 2023 Latest Stories Get Involved Kootenai National Wildlife Refuge Seeks Public Comment on Compatibility Determinations Jul 1, 2026 Current Road Conditions at Pocosin Lakes National Wildlife Refuge Jul 1, 2026 Temporary Closure of Gravel Road Jun 30, 2026

Source: U.S. Fish & Wildlife Service

Six insights into the success of the Manufacturing Demonstration Facility

Published: July 2, 2026 Updated: July 2, 2026 The Department of Energy’s Manufacturing Demonstration Facility (MDF) at the Department of Energy's Oak Ridge National Laboratory is among the world’s most influential innovation hubs in advanced manufacturing. Since its launch in 2012, MDF has expanded from fewer than ten staff to more than 200, welcoming thousands of industry partners and visitors each year. Its model combines collaboration, technology transfer, bold demonstrations and workforce development — making MDF a blueprint for accelerating U.S. manufacturing innovation through six key approaches. Amiee Jackson, an ORNL technical professional and mechanical engineer, leads a tour of the Manufacturing Demonstration Facility for attendees of the Next-Generation Data Center Power and Security Workshop in February 2026. Credit: Alonda Hines/ORNL, U.S. Dept. of Energy 1. Place-based innovation drives results MDF thrives because it is anchored in ORNL’s unique position of being a DOE Office of Science laboratory that also excels in applied energy science research. ORNL’s strengths in materials, energy science, supercomputing and neutron-driven characterization provide the scientific depth that, when paired with applied manufacturing research, create a powerful engine for innovation and technology transfer. MDF’s role as the nation’s advanced manufacturing research leader allows it to

Source: Oak Ridge National Laboratory

serve as a central hub for industry, entrepreneurs and start-ups, and academia — connections made across sectors are natural in this environment. “Place-based innovation works because you’re not trying to build in isolation — you’re tapping into the surrounding expertise,” said Ryan Dehoff, MDF director. Working side by side at the Manufacturing Demonstration Facility helped Volunteer Aerospace accelerate technology development before the company grew into Beehive Industries, illustrating the power of MDF's co-location model. Beehive opened a 60,000-square-foot facility in Knox County in 2024. Credit: Beehive Industries 2. Colocation accelerates collaboration At MDF, industry engineers and ORNL researchers work side by side. This colocation eliminates barriers, increases direct communication around problem solving, and ensures projects focus on specific industry challenges. “When you put people together in the same space, you identify the right problems faster, and solutions are immediately relevant,” Dehoff said. The MDF Technical Collaboration Program allows industry partners to work side by side with ORNL’s technical experts on the more than 100 advanced manufacturing systems at MDF to solve their most important challenges. Credit: Amy Smotherman Burgess/ORNL, U.S. Dept. of Energy 3. Clear pathways for technology transfer MDF’s Technical Collaboration Program relies on cooperative research and development agreements (CRADAs) to formalize partnerships. This transparent intellectual property framework and a low-cost barrier to exploration builds trust and speeds technology transfer from the lab to the marketplace. Industry partners bring their most urgent

Source: Oak Ridge National Laboratory

challenges to MDF — ensuring the project is focused on a complex problem that demands collaborative innovation. With industry investing in its own effort and DOE supporting ORNL's work, the MDF team can focus on addressing early-stage challenges that industry cannot solve alone, while the company remains centered on moving the solution toward commercialization. 4. Ambitious demonstrations showcase possibility MDF is known for high-visibility, first-of-their-kind projects that prove emerging technologies can work at industrial scale — such as 3D-printing an entire car at the International Manufacturing Technology Show or debuting a new convergent manufacturing platform developed in only five months. These projects reduce technical risk, accelerate industry confidence and inspire new applications. "You need to demonstrate not just what's technically possible, but what's transformational," Dehoff said. These "moonshots" — a bold, high-risk effort to achieve a breakthrough — capture imagination and attract partners. In this photo from May 2025, Oak Ridge High School student Kira Colston demonstrates how to use a computer numerical control machine at the Wildcat Manufacturing iSchool. Credit: Carlos Jones/ORNL, U.S. Dept. of Energy 5. Talent development sustains innovation MDF invests in mentoring and training the next generation of leaders. "We start mentoring staff early," said Dehoff. "Our rising stars get the training and support they need to lead the next wave of projects." In addition to mentoring early-career researchers, MDF supports workforce development from the classroom to the factory floor. Alongside its leadership in America's Cutting Edge (ACE), which

Source: Oak Ridge National Laboratory

has trained more than 10,000 students nationwide, MDF partnered with Oak Ridge High School's award-winning Wildcat Manufacturing iSchool by providing advanced manufacturing equipment, robotics expertise and software that prepares students for careers in AI-enabled manufacturing. A strong workforce pipeline ensures innovation is continuous and technology is ready for deployment. 6. Ecosystem building keeps momentum going MDF connects national lab expertise with universities, state partners, and hundreds of companies to create a globally competitive, nationwide innovation network. “The strength comes from how all the pieces — labs, industry, government and community — fit together to keep momentum going,” Dehoff said. This network effect multiplies MDF’s impact far beyond its own walls, enabling companies to connect into emerging supply chains and strengthening U.S. manufacturing through shared technology advancements. MDF is supported by DOE’s Advanced Materials and Manufacturing Technologies Office and acts as a nationwide consortium of collaborators focused on innovating, inspiring and catalyzing the transformation of U.S. manufacturing. UT-Battelle manages ORNL for the DOE’s Office of Science, the single largest supporter of basic research in the physical sciences in the United States. The Office of Science is working to address some of the most pressing challenges of our time. For more information, please visit energy.gov/science . Media Contact Karen K Dunlap , Communications Coordinator, Energy Science and Technology Directorate , 865.341.1582 | DUNLAP-KK@ORNL.GOV

Source: Oak Ridge National Laboratory

How your brain preps your body for food

A new discovery explains how the brain prepares the body for food. Our brain prepares the body for an incoming meal before we even take the first bite. The aroma of food simmering on the stove, for instance, can trigger the brain to send signals to the pancreas, which in turn releases insulin into the bloodstream. A new Nature Metabolism study reveals how a key group of neurons helps mediate this process. The hypothalamus is the part of the brain that regulates appetite through different groups of neurons, including pro-opiomelanocortin (POMC) neurons that control satiety. Emerging research is finding that these neurons are not only activated while eating, but also by the anticipation of food. However, it has remained unclear what molecular factors are driving this process. Now, researchers have discovered that this anticipatory activation is powered by pockets of glycogen in POMC neurons. Glycogen is the main way we store energy—the body can break it down into glucose when it’s in need of fuel. Studying the neural circuitry driving hunger and satiety can help scientists better understand how to treat metabolic diseases like obesity, the researchers say. “Obesity is a dysregulation of the feeding circuitry at the level of the brain—it’s more of a disease of a brain than a disease of the body,” says Marc Schneeberger Pane, assistant professor in cellular and molecular physiology at Yale and the study’s co-principal investigator. “Understanding how these neurons function in physiology is an essential

Source: Futurity.org

first step to be able to target obesity properly.” To study how the sensory perception of food activates POMC neurons, the researchers presented mice food through a wire mesh so that the animals could see and smell it, but not eat it. Then, the team looked at which molecular signatures were activated in neurons following the presentation of food. They discovered that food exposure activates glycogen synthase, the molecular machinery that synthesizes glycogen. “That was the first observation that got us thinking that glycogen—how glucose gets stored for energy—is one of these molecular signatures responsible for that sensory response,” says Schneeberger Pane. The researchers wanted to understand what glycogen was doing in these neurons. So, they engineered mouse models that lacked glycogen synthase in the POMC neurons. When the scientists exposed these mice to food, they found that the mice did not respond as strongly as their normal counterparts. They were less likely to approach food over non-edible objects, spent less time eating, and failed to produce insulin pre-feeding. To make sure that it was the lack of glycogen causing these effects and not a developmental issue in the mutant mice, the researchers also injected normal adult mice with a virus that removed glycogen synthase. These mice were similarly non-responsive to the sight and smell of food. “Our study identifies a previously unknown molecular mechanism driving food perception, revealing that neuronal glycogen fuels the brain’s anticipatory responses to food,” says Marc Claret, who leads the Neuronal Control of Metabolism Laboratory at the Institut d’Investigacions Biomèdiques August Pi i Sunyer and the study’s co-principal investigator.

Source: Futurity.org

The team also explored which sensory components of food drive the activation of the neurons. They found that POMC neurons connect with the parts of the brain that process smell, but not those that process vision. The findings challenge previously-held beliefs about the brain's physiology. Scientists have believed the glycogen in the brain primarily resides in astrocytes, which act as support cells that provide nutrients to neurons. The study suggests that glycogen may play a more expansive role in the brain than previously thought. The researchers also assessed the consequences of impaired POMC processing. "This sensory aspect of food prepares the organism for what is coming," says Schneeberger Pane. The secretion of insulin, for instance, prepares the body for the change in glucose levels caused by incoming food. "Dysregulation will compromise the system's ability to properly respond to food." The research team compared the mice lacking glycogen synthase with their typical counterparts as they aged. Mutant mice exhibited significantly reduced metabolic health over time—they became obese and developed indicators of prediabetes. Obesity has become a massive global health crisis, but the emergence of novel anti-obesity drugs has been a powerful tool in curbing the pandemic. These drugs, including glucagon-like peptide-1 (GLP-1) receptor agonists, work by targeting the circuitry that drives satiety. Better understanding of the neural circuitry underlying appetite can offer further insight into future drug development. "These findings suggest that defects in how the brain anticipates food may contribute to obesity and diabetes, opening new therapeutic avenues for these diseases," says Claret. The

Source: Futurity.org

research reported in this news article was supported by the National Institutes of Health and Yale University. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. Additional support was provided by the McCluskey family, the E. Matilda Ziegler Foundation and Interstellar Initiative, and the Foundation for Prader-Willi Research. Source: Yale University The post How your brain preps your body for food appeared first on Futurity .

Source: Futurity.org

Activity Time - Word Search

Find the words below in the puzzle. Words go across or down only.

Words to Find:

D	M	W	N	I	Q	M	I	O	A	D
R	K	M	L	S	Y	D	J	O	Q	X
P	P	M	R	T	Z	I	B	T	L	J
T	E	I	Y	A	D	A	J	Z	E	B
S	O	Y	S	D	L	X	J	D	O	W
I	I	N	E	Z	B	H	Q	K	E	M
C	S	J	F	D	P	B	T	C	G	T
E	L	D	F	Z	Y	V	J	F	P	N
T	O	P	G	G	F	C	E	U	D	A
C	B	I	G	O	B	F	O	S	J	R
T	Z	B	O	S	V	M	Y	Y	M	F