Brotherhood of the Balloon Member Newsletter | March 2025

"The wound is the place where the Light enters you."

Dear Members (a note from Deb Hickey):

Life has a way of testing us in ways we never expect. My husband and I have faced infertility, the long and difficult road of adoption, my chronic health condition, and, most challenging of all, his terminal cancer diagnosis in 2014. Each of these challenges has pushed us to our limits, breaking us down in ways that made us question if we could keep going. The adoption process was filled with delays and setbacks, but ultimately led to the joy of bringing our daughter into our family. My corneal neuropathy has given me a deeper understanding of invisible illnesses, prompting me to treat others with more empathy because you never know what someone else is going through. And my husband's diagnosis has taught me to appreciate life more—to savor small moments and focus on what truly matters, letting go of the things I can't control.

Despite how difficult these experiences have been, I've come to understand something important: the storms we endure refine us. They shape us in ways nothing else can, making us stronger, more resilient, and more beautiful on the inside.

In our "Final Thought" section this month, we share a story that I believe captures this truth well—how life's trials, though difficult, ultimately contribute to our spiritual growth and inner beauty. I hope it speaks to you as it has to me, reminding us that even in the hardest seasons, something beautiful may be emerging.

In this month's *BOB Tales,* we begin with the revolutionary potential of FLASH radiotherapy, a breakthrough innovation that could transform cancer care by reducing side effects and accelerating treatment. We also examine how artificial intelligence is reshaping prostate cancer diagnosis and treatment, from more precise tumor mapping to predicting responses to immunotherapy.

In our Health section, we turn our attention to new research suggesting that common cooking oils may contribute to cancer risk, and how making smarter oil choices could help with prevention. A fascinating study on fasting shows how it might boost the immune system's ability to fight cancer by enhancing the function of natural killer cells. Next, we address the ongoing debate over soy and its potential link to cancer risk, offering expert insights into how soy could actually offer protective benefits. We also explore promising research that suggests a ketogenic diet may help boost the effectiveness of cancer treatments. And finally, we delve into a groundbreaking new saliva test, an innovative athome tool for early prostate cancer detection.

As always, we welcome any suggestions you have on improving the value of the *BOB Tales* to our members. Please send your feedback to <u>DHickey@protonbob.com</u>.

Deb Hickey



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news report

Flash Therapy— A New Frontier in Cancer Treatment

A revolutionary new radiotherapy technique, known as FLASH, could <u>transform cancer treatment</u> by making it faster, more effective, and less harmful to healthy tissue. Unlike conventional radiotherapy, which delivers radiation over multiple sessions, FLASH works in under a second, reducing side effects and potentially treating cancers previously considered untreatable.

The Birth of FLASH Therapy

FLASH therapy was first proposed in 2012 when Marie-Catherine Vozenin and her colleagues at Geneva University Hospitals discovered that delivering ultra high doses of radiation in less than a second could destroy tumors while sparing healthy tissue. This breakthrough sparked global research into FLASH's potential benefits.

Traditional radiotherapy, used by two-thirds of all cancer patients, involves multiple sessions over weeks, often causing severe side effects. Advanced imaging has improved targeting, but collateral damage to healthy tissue remains a problem, especially in pediatric brain tumors. These treatments can lead to long-term cognitive impairments, anxiety, and reduced quality of life.

Why FLASH Matters

FLASH therapy minimizes damage to healthy cells while increasing the radiation dose to tumors. In animal studies, FLASH-treated subjects experienced fewer side effects than those receiving conventional radiotherapy.

news briefs

<u>Vitamin K Precursor</u> <u>Targets Prostate Cancer</u>

Researchers are exploring pro-oxidants for prostate cancer treatment. A new study shows that menadione sodium bisulfate (MSB), a vitamin K precursor, kills prostate cancer cells by disrupting a key lipid kinase. MSB treatment slowed tumor progression in a mouse model, and its oxidative effects were linked to a novel form of cell death, termed "triaptosis."

Microplastics Found in Prostate Tumors Linked to Take-Out Food

A recent study found high levels of microplastics in prostate tumor tissue, with a strong link to takeout food consumption. Researchers found four types of microplastics in prostate tissue, while tumor tissue showed significantly higher microplastic concentrations than surrounding tissue. The study suggests a connection between microplastics and prostate cancer, though further research is needed to determine causality.

Billy Loo, a radiation oncologist at Stanford, explains that tumors are rarely isolated from healthy tissue. Traditional treatments often compromise effectiveness to minimize harm. FLASH's ability to deliver higher radiation doses safely could improve survival rates, especially for aggressive or metastatic cancers.

Human Trials and Future Prospects

Early clinical trials are under way. Cincinnati Children's Hospital plans to test FLASH on children with metastatic cancer in their chest bones, while Lausanne University Hospital in Switzerland is exploring its use for skin cancer. Researchers are also investigating the best type of radiation for FLASH.

Choosing the Right Particles

Radiotherapy can be delivered using X-rays, protons, electrons, and heavier ions like carbon. Each has distinct advantages:

- X-rays (photons) are widely available, but may not be as precise.
- Protons penetrate deep into the body, making them ideal for internal tumors.
- Electrons are effective for surface-level cancers.
- Carbon ions offer precision, but require massive, expensive facilities.

Protons have been the primary choice for FLASH trials due to their deep penetration and adaptability. The University of Cincinnati conducted the first human trial using FLASH protons on patients with bone metastases, showing promising results with reduced side effects.

Technological and Cost Barriers

One challenge is the size and cost of particle accelerators. Currently, proton therapy is available in a limited number of medical centers worldwide. To make FLASH even more widely accessible, researchers at CERN and Lausanne University

<u>Nubeqa + ADT Shows</u> <u>Strong Results in</u> <u>Metastatic Hormone-</u> <u>sensitive Prostate Cancer</u>

Bayer has submitted a supplemental new drug application to the FDA for darolutamide (Nubeqa) in combination with androgen deprivation therapy (ADT) to treat metastatic hormonesensitive prostate cancer. The submission is based on positive results from the phase 3 ARANOTE trial, which showed that darolutamide plus ADT reduced the risk of progression or death by 46% compared to placebo plus ADT. No new safety concerns were reported. and further trials are ongoing to explore darolutamide's potential in other prostate cancer settings.

Connecticut Approves \$80M Cancer Center with Cutting-Edge Proton Therapy

After a five-year battle, Danbury Proton has received approval from Connecticut's Office of Health Strategy to open an \$80 million proton therapy center. The approval allows construction of a 16,000-square-foot center. The project, previously delayed, marks a significant victory for the region's cancer treatment options. **4** Hospital are developing compact accelerators using very highenergy electrons, which could make FLASH available to patients worldwide.

Expanding Access to Treatment

FLASH therapy could significantly increase access to radiotherapy, especially in low-income countries. Today, only 10% of cancer patients in low-income nations have access to radiotherapy, compared to 90% in high-income countries. Sub-Saharan Africa, for instance, has just 195 radiotherapy machines, while the U.S. and Canada have over 4,000.

Organizations like the International Cancer Expert Corps (ICEC) and CERN are working to develop smaller, more reliable machines to bridge this gap. <u>Project Stella</u> aims to create accelerators that are easier to maintain in challenging environments.

A Potential Game Changer

FLASH could also improve healthcare systems in wealthier nations. By drastically reducing treatment time, hospitals could treat more patients daily, cutting costs and improving efficiency. Instead of weeks of radiation therapy, patients might receive treatment in just a few sessions, improving quality of life and reducing hospital visits.

What's Next for FLASH?

The next step is proving that FLASH is as effective as conventional therapy. Large-scale human trials are needed to confirm its benefits and determine the best radiation type and dosage. If successful, FLASH could revolutionize cancer treatment, making it faster, safer, and more widely available.

FLASH therapy is expected to markedly improve the treatment of complex tumors such as glioblastoma and many other previously untreatable cancers in both adults and pediatric patients.

Proton Therapy Coming to San Francisco

The UC Regents have approved a new UCSF cancer center, set to open in 2029. The \$80 million center will feature a stateof-the-art proton therapy facility, offering precise cancer treatment for Northern California patients. The project also includes research space, clinics, and a life sciences incubator.

Proton Therapy Coming to China

China's National Medical Products Administration has approved the first compact proton therapy system in the country. The system will feature a superconducting accelerator and integrated gantry, offering precise tumor targeting and faster treatment times.

Proton Therapy Coming to India

AIG Hospitals in Hyderabad has secured a contract for a cutting-edge proton therapy system, the first of its kind in South Asia. The system, set to begin treating patients in 2028, will enhance access to advanced cancer care in the region, with future upgrades to ensure the latest technology. In the past, we've written about three new cancer initiatives at Loma Linda University Cancer Center in California: theranostics, CAR-T Cell Therapy, and Boron Neutron Capture Therapy. Loma Linda has added Proton Flash Therapy to the list of new technologies it's helping to pioneer.

The future of radiotherapy may be here, and it might take less than a second to change the lives of cancer patients worldwide.

Al is Shaping the Future of Prostate Cancer Care



More Accurate Prostate Cancer Mapping

One of the most critical steps in treating prostate cancer is understanding how far the disease has spread. This determines the type of treatment a patient will receive. A breakthrough AI system developed by researchers at UCLA Health is making this process more precise. Traditional methods of mapping the extent of cancer, like MRI scans, can sometimes miss areas of cancer or inaccurately predict tumor size. This is because some tumors can be "MRI-invisible," making it difficult for doctors to detect their full extent.

To address this challenge, researchers have developed AI tools that assist doctors in accurately mapping the boundaries of prostate cancer. Using machine learning algorithms, the AI system helps doctors draw more precise contours around cancerous areas, ensuring that no critical parts of the tumor are overlooked. A <u>recent study</u> showed that AI-assisted cancer mapping was 45 times more accurate than traditional methods, leading to a significantly higher rate of negative margins—indicating more complete cancer

removal. This improvement could result in better treatment outcomes and fewer side effects, as doctors can tailor interventions like focal therapy, which targets only cancerous areas while preserving surrounding healthy tissue.

Comprehensive Cancer Diagnosis and Prognosis

A versatile new AI system developed at Harvard Medical School is taking cancer diagnosis and prognosis to the next level. The system, called CHIEF (Clinical Histopathology Imaging Evaluation Foundation), is capable of handling a wide range of tasks, from detecting cancer to predicting patient survival across 19 types of cancer, including prostate cancer.

Unlike earlier AI tools that are specialized in one task or one type of cancer, CHIEF can perform multiple diagnostic tasks at once. The system uses digital images of tumor tissues to identify cancer cells and predict the genetic makeup of the tumor, which can inform treatment decisions. But it doesn't stop there—CHIEF can also predict patient outcomes by analyzing the tumor's molecular profile, helping doctors understand how a patient might respond to treatments. The AI model has demonstrated an impressive 94% accuracy in cancer detection and has proven to be especially useful in identifying which patients are more likely to respond to certain therapies. By offering personalized treatment insights, CHIEF is poised to change the way doctors approach cancer care, especially in a multi-cancer context like prostate cancer.

Predicting Response to Immunotherapy

Immunotherapy is an exciting and evolving treatment option that leverages the body's immune system to fight cancer. However, not every patient responds to immunotherapy, and identifying who will benefit from these treatments has been a challenge.

A team of researchers has developed a new AI tool called LORIS (Logistic Regression-Based Immunotherapy-Response Score) to predict how well a patient will respond to immune checkpoint inhibitors—an important class of immunotherapy drugs. It works by analyzing a combination of clinical and genomic features that are routinely collected from cancer patients. This includes information such as the patient's age, cancer history, and levels of certain proteins in the blood. By examining this data, LORIS can predict the likelihood of a positive response to immunotherapy, as well as short-term and long-term survival outcomes.

The LORIS tool has been shown to outperform existing methods, making it a promising resource for clinicians looking to personalize treatment plans. With this tool, doctors can better identify which patients are most likely to benefit from immune checkpoint inhibitors, sparing others from unnecessary treatments and side effects.

Advancing Proton Therapy in Prostate Cancer Care

Beyond mapping cancerous areas and predicting responses to immunotherapy, AI is also making waves in the field of proton therapy for prostate cancer. As our members know, proton therapy is an advanced, precision-based treatment, that has the advantage of minimizing damage to surrounding healthy tissue, especially for tumors near critical organs. AI's role here is quickly expanding, particularly in optimizing treatment planning and predicting patient outcomes.

A recent review of AI applications in proton therapy examined 76 studies and demonstrated how AI tools are improving various facets of treatment, such as ensuring that proton beams are accurately targeted and personalized for each patient. These advancements help tailor treatment to individual needs, improving therapeutic efficacy while reducing side effects. With the potential for better treatment planning and outcome prediction, AI in proton therapy represents an exciting frontier in prostate cancer care, complementing traditional therapies like surgery and chemotherapy.

Looking Ahead

The combination of these AI tools is reshaping cancer care in meaningful ways. From better mapping of cancerous areas to more personalized and accurate treatment decisions, AI is helping doctors offer more precise, effective care tailored to each patient. As these technologies continue to develop and expand, we can expect even more advancements in the ability to detect, treat, and predict outcomes for patients with prostate cancer and other types of cancer. The future of cancer care is indeed being shaped by AI.

Breakthrough Spit Test for Early Prostate Cancer Detection

A new <u>at-home saliva test</u> for prostate cancer, PRODICTTM, is offering an exciting new option for early detection, potentially saving thousands of lives by identifying the disease earlier and with greater accuracy. This innovative spit test works by analyzing DNA from a saliva sample to assess an individual's risk of developing prostate cancer, and results suggest it outperforms the PSA blood test in detecting high-risk patients. Researchers at the Institute of Cancer Research have led a \$2.5 million trial of the PRODICT test, which could revolutionize how prostate cancer is diagnosed.

Previously, the test could only be used for individuals of white European descent, due to the limitations of genetic research, but in recent years, international efforts to increase genetic diversity in medical research have allowed the test to be safely and accurately used across multiple ethnic groups. The inclusion of this broader genetic pool is a major leap forward in prostate cancer research, making the test a valuable tool for more inclusive and accurate screening.

The PRODICT saliva test's expanded genetic data has opened the door for earlier prostate cancer diagnoses, offering a more personalized and accessible approach to screening. The NHS is recruiting 1,000 men aged 40 to 55 from various ethnic backgrounds for a large trial, aimed at assessing the test's effectiveness and its potential for nationwide implementation.

As you know, early detection of prostate cancer is crucial, as it significantly improves the chances of successful treatment. The PRODICT test represents an exciting step forward in making prostate cancer diagnosis more accurate, less invasive, and accessible to all men. With its potential to be implemented nationwide, this saliva test could empower patients to take control of their health by offering a simpler, at-home method for early detection.



flashback

We've been producing BOB Tales newsletters monthly for 24 years. During this time we've published thousands of articles that our new members haven't seen, and some older members may enjoy revisiting. So, we regularly spotlight articles from the past that we believe remain relevant. This one from November 2007 is titled:

Oncology Surgeon Chooses Proton Therapy for Prostate Cancer

Dr. Ted Copeland is founder of the University of Florida Surgical Oncology Program and former Director of the UF Shands Cancer Center. When he was diagnosed with prostate cancer, he knew his treatment options: surgery, X-ray radiation, seeds or proton therapy. According to an article in a University of Florida Alumni publication, Dr. Copeland wanted to make a choice that would give him the "best possible result." So, he chose to undergo 41 days of treatment at the University of Florida Health Proton Therapy Institute in Jacksonville.

"Cancer patients need the very latest in information and treatment options when faced with this disease" says Copeland, the Edward R. Woodward Distinguished Professor of Surgery.

Hmmm... a renowned oncology surgeon chooses proton therapy when he's diagnosed with prostate cancer. What does this tell us?

Bencie a difference by giving back Thank You, Members

As we've mentioned before, we receive a monthly summary listing members who have made contributions to Loma Linda University Health (LLUH) through the *Robert Marckini Chair for Proton Therapy Research,* as well as other initiatives like the *Stronger Together* campaign, a bold \$300 million effort to advance cancer research and care.



While we may not know the exact donation amounts, we make every effort to personally thank each donor with a phone call because Bob and Deb feel deeply honored by their support. Every contribution feels like a heartfelt "thank you" from our group. It's our way of expressing gratitude to the medical institution that pioneered proton therapy in a hospital setting and is now investing in groundbreaking fields like theranostics, CAR T-cell therapy, boron neutron capture therapy, and FLASH therapy to treat more aggressive and complex cancers.

We are deeply grateful for all gifts. Thanks to you, life-saving proton therapy research continues to help those battling cancers of the prostate, breast, lung, pancreas, brain, skull, spinal cord, eyes, head and neck, and central nervous system. Thanks to you, Loma Linda University Cancer Center (LLUCC) can treat a range of pediatric conditions, including severe, life-threatening cancers, while minimizing the damaging effects of radiation on children. Thanks to you, LLUCC is advancing treatment options for cancers that were once considered untreatable. Thanks to you, LLUCC continues vital research into other diseases as well.

Your gifts also fund clinical research, which is the foundation of successful patient treatments. This important work wouldn't be possible without the generosity of people like you. *Thank you*.

Giving Options

- Online: Donate here. From the pull-down menu, choose where you'd like to direct your gift 1) Cancer Center Vision; 2) Proton Research through the *James M. Slater Chair;* 3) Proton Research through the *Robert J. Marckini Chair;* or 4) Other (specify any area you'd like your gift directed)
- By Check: Make your check out to "LLUCC." Specify where you'd like to direct your gift in the memo line 1) Cancer Center Vision, 2) *Slater Chair*, 3) *Marckini Chair*, or 4) write "unrestricted" so LLUH can use it where it's needed most. Mail to: LLUH, Office of Philanthropy P.O. Box 2000, Loma Linda, CA 92354.
- By Phone: Call Regina Joseph at 909-558-5010.

health Could Common Cooking Oils Be Fueling Cancer Risk?

A <u>new study</u> has raised alarms about the potential link between certain widely used cooking oils and an increased risk of colon cancer. Oils like sunflower, grapeseed, canola, and corn, common in many kitchens and restaurants, have been found to contain high levels of bioactive lipids molecules produced when the body breaks down seed oils. These lipids are believed to cause inflammation, disrupt healing processes, and even promote tumor growth, particularly in colon cancer. The study analyzed tumor samples from over 80 colon cancer patients aged 30 to 85, revealing troubling findings about the role these oils may play in cancer development.

Health experts stress that the Western diet, rich in processed foods and unhealthy fats, contributes to inflammation and impairs the body's natural defense mechanisms, potentially making it easier for cancers to develop. While the study does not call for panic, it encourages people to be mindful of their cooking oil choices. Alternatives like olive and avocado oils, rich in omega-3 fatty acids, are recommended for their health benefits and lower risk profile.



This research emphasizes the importance of reevaluating common dietary habits and paying attention to the long-term health impact of the foods we consume. Though moderate use of seed oils is not directly linked to cancer, being mindful of oil choices could play an important role in improving overall health.

Fasting Enhances the Immune System's Ability to Fight Cancer



A groundbreaking study from Memorial Sloan Kettering Cancer Center suggests that fasting may significantly enhance the body's natural defenses against cancer by reprogramming immune cells known as natural killer (NK) cells. These NK cells are crucial for fighting cancer and viruses, and research on mice found that fasting helps NK cells survive and become more effective in tumor environments. By lowering glucose levels and increasing fatty acids, fasting allows NK cells to use lipids as an energy source, boosting their ability to combat cancer.

The study showed that fasting not only improved NK cells' cancer-fighting abilities, but also prompted them to relocate within the body, increasing their anti-tumor function. This reprogramming process led to higher production of vital proteins, such as interferon-gamma, which plays a key role in fighting cancer.

While these promising results highlight the potential of fasting in cancer treatment, more research and clinical trials are needed to confirm its effects in humans. Researchers also suggest that drugs could be developed to replicate the benefits of fasting without requiring patients to fast. The findings open up new avenues for combining fasting with traditional cancer treatments to strengthen immune responses. Patients are always advised to consult their doctors before making dietary changes.

Soy and Cancer Risk: The Truth



Many men avoid soy due to concerns it might increase the risk of hormone-related cancers, particularly prostate cancer. However, dietitian Erica Paulson, MS, RDN, of Loma Linda University Cancer Center, <u>clarifies</u> that these fears are largely unfounded.

The concern stems from soy's isoflavones, which resemble estrogen. Yet, current research shows these compounds don't mimic estrogen's effects in the body. In fact, isoflavones may help protect against certain cancers, including prostate cancer, by reducing inflammation and offering antioxidant benefits.

Soy is a nutritious, plant-based protein that's lower in saturated fats than animal products. It's rich in fiber, essential fatty acids, and vital vitamins and minerals, supporting heart health, digestion, and bone density. Studies, including one from <u>The American Journal of</u> <u>Clinical Nutrition</u>, show that regular soy consumption can lower prostate cancer risk by as much as 26%.

While misinformation persists, Paulson advises verifying claims with healthcare professionals. Integrating soy into your diet can be a healthy choice, benefiting cancer prevention and overall well-being.

Ketogenic Diet May Boost Cancer Treatment



A <u>study</u> led by Dr. Davide Ruggero at the University of California, San Francisco, shows how a ketogenic diet can boost cancer therapy in mice. The research focuses on the protein eIF4E, which helps cancer cells use glucose for energy. Fasting or a ketogenic diet shifts the body to using fat for energy, limiting glucose available to cancer cells. The team found that fasting and a ketogenic diet activate this protein, promoting the use of fat instead. When they combined a ketogenic diet with an anti-cancer drug that blocks the protein, pancreatic tumors in mice were deprived of both glucose and fat, slowing tumor growth.

These findings suggest that a ketogenic diet could work alongside current cancer treatments by cutting off vital energy sources for tumors.



You Can Beat Prostate Cancer: And You Don't Need Surgery to Do It



Still an Amazon Top Seller!

Bob's second edition book continues to make a meaningful impact, as seen in the positive feedback on Amazon and the numerous messages we receive daily from readers.

On Amazon, the book is *still* holding steady in the No. 2 position on a list of more than 6,000 books on prostate cancer. And, the first and second editions have a combined 795 reader reviews, averaging an impressive five-star rating.

Help Others by Sharing Your Story

If Bob's book played a helpful role in your treatment journey, we encourage you to share your experience with others. Many search the internet for guidance, and Amazon listings frequently appear in their search results. With over 2 billion visitors each month, over 90% of shoppers trust reviews to shape their purchasing decisions—particularly when seeking essential resources during life-changing moments. Taking just a few moments to <u>write a review</u> could make a profound impact on someone else's path. Your feedback is invaluable, and we truly appreciate your support. Thank you!

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on the lighter side

Last Month's Brain Teaser

Which word inserted in the space below produces two legitimate words when combined with the word on the left, and then the word on the right?

wild_____style

Answer: Life. The two words created are "wildlife" and "lifestyle."

Winner: BOB member George Underwood from Richardson, TX, is the winner of last month's brain teaser. In his response to Deb's email informing him of his win, he wrote: *The riddle was especially fun to solve because the answer, 'life,' is at the foundation of everything you, your dad, Loma Linda, and the Brotherhood of the Balloon do.*



It's been 11 years since George underwent proton therapy at LLUCC. Today, he reports being in excellent health, with a low PSA, and continues to feel immense gratitude for Dr. Lynn Martell, former director of patient services at LLUCC, along with all the dedicated staff who cared for him. Since completing his treatment, George has "gladly" recommended proton therapy to both friends and family.

George closed his email with: Deb, thank you for the most informative and enjoyable newsletter! But more importantly, thank you for your commitment to life! I found mine in Jesus.

New Brain Teaser

I can't be bought but I can be stolen with a glance. I'm worthless to one but priceless to two. What am I?

Send your answer to <u>DHickey@protonbob.com</u> for a chance to win a signed copy of Bob Marckini's second edition book, *You Can Beat Prostate Cancer*.

Dogs Welcome

A man wrote a letter to a small hotel in a Midwest town he planned to visit on his vacation. He wrote: *I would like to bring my dog with me. He is well-groomed and very well-behaved. Would you be willing to permit me to keep him in my room with me over night?*

An immediate reply came from the hotel owner, who wrote: *I've been operating this hotel* for many years. In all that time, *I've never had a dog steal towels, bedclothes, silverware* or pictures off the walls. *I've never had to evict a dog in the middle of the night for being* drunk and disorderly. And *I've never had a dog run out on a hotel bill. Yes, indeed, your* dog is welcome at my hotel. And, if your dog will vouch for you, you're welcome to stay here, too.

It's All in the Punctuation

An English professor wrote the following words on the chalkboard and asked his students to punctuate it correctly:

a woman without her man is nothing

All the males in the class wrote: A woman without her man, is nothing. All the females in the class wrote: A woman: without her, man is nothing.

Punctuation is everything.

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odds & ends

Artificial Sun: A Step Closer to Almost Limitless Clean Energy

China's <u>"artificial sun"</u> nuclear fusion reactor, the Experimental Advanced Superconducting Tokamak (EAST), has set a new world record by maintaining super-hot plasma for 1,066 seconds. This more than doubles its previous record of 403 seconds. The achievement is another step toward developing clean and virtually limitless energy.

Nuclear fusion works like the sun, where two light atoms merge into a heavier one, releasing energy. Since Earth's reactors lack the intense pressure of the sun, scientists compensate by using much higher temperatures. Fusion has the potential to provide vast energy without harmful emissions or significant nuclear waste. However, despite over 70 years of research, practical fusion power remains decades away.

EAST is a tokamak, a type of reactor that uses powerful magnets to contain plasma in a donut-shaped chamber. It has not yet reached ignition—the point where fusion reactions sustain themselves—but its latest achievement moves scientists closer to that goal. According to Song Yuntao, a director at China's Institute of Plasma Physics, future fusion plants will need to maintain plasma circulation for thousands of seconds to generate continuous power.

Currently, all nuclear fusion reactors consume more energy than they produce. In 2022, the U.S. National Ignition Facility briefly achieved ignition using a different method, but it still required more energy than it generated. EAST recently improved its heating system, doubling its power to enhance performance.

China is part of the International Thermonuclear Experimental Reactor (ITER) project, a global effort involving the U.S., U.K., Japan, South Korea, and Russia. ITER, under construction in France, will be the world's largest fusion reactor and is expected to begin operating by 2039. Though ITER is primarily for research, it could lay the foundation for future fusion power plants.

EAST's latest success provides valuable data to help advance fusion technology worldwide. While fusion power is still far from practical use, these milestones bring scientists closer to making it a reality. China plans to collaborate internationally to speed up progress and eventually harness fusion energy for the world.

Did You Know?

- The oldest living land animal on earth is a 192-year-old tortoise named Jonathan.
- Winds on Neptune can blow faster than 1,200 miles an hour.
- The average person blinks 14 17 times a minute
- Central Park in New York City is larger than the entire country of Monaco
- Allodoxaphobia is the fear of other people's opinions.

Quote of the Month

"Security depends not so much upon how much you have, as upon how much you can do without." - Joseph Wood Krutch



A stranger came by the other day with an offer that set me to thinking. He wanted to buy my old barn that sits out by the highway. I told him right off he was crazy. He was a city type; you could tell by his clothes, his car, his hands, and the way he talked. He said he was driving by and saw that beautiful barn sitting out in the tall grass and wanted to know if it was for sale. I told him he had a funny idea of beauty.

Sure, it was a handsome building in its day. But then, there's been a lot of winters pass through with snow and ice and howling wind. The summer's suns beat down on that old barn 'til all the paint's gone, and the wood has turned silver-gray. Now the old building leans a good deal, looking kind of tired. Yet, that fellow called it beautiful.

That set me to thinking. I walked out to the field and just stood there, gazing at that old barn. The stranger said he planned to use the lumber to line the walls of his den in a new country home he's building down the road. He said you couldn't get paint that beautiful. Only years of standing in the weather, bearing the storms and scorching sun, only that can produce beautiful barn wood.

It came to me then. We're a lot like that, you and I; only it's on the inside that the beauty grows with us. Sure, we turn silver, gray too and lean a bit more than we did when we were young and full of sap. But the Good Lord knows what He's doing. And as the years pass, He's busy using the hard weather of our lives, the dry spells and the stormy seasons to do a job of beautifying our souls that nothing else can produce. And to think how often folks holler because they want life to be easy!

They took the old barn down today and hauled it away to beautify a rich man's house. And I reckon someday you and I'll be hauled off to heaven to take on whatever chores the good Lord has for us on the great sky ranch. And I suspect we'll be more beautiful then for the seasons we've been through here ...and just maybe even add a bit of beauty to our Father's house.

Low PSAs to all,

Bob Marckini and Deb Hickey

