

# CROSSROADS

## HAPPY JULY!

July is Sarcoma and Bone Cancer Awareness Month.

Dr. Chethan Sathya is this month's Rising Star in Medicine! Learn more about his work as a pediatric trauma surgeon. Next, Mahima Bhat discusses the benefits and risks of red light therapy. Siri Nikku ends by discussing aspects that factor into the risk of colorectal cancer. Please enjoy the medical newsletter!

*Alana Saidou*

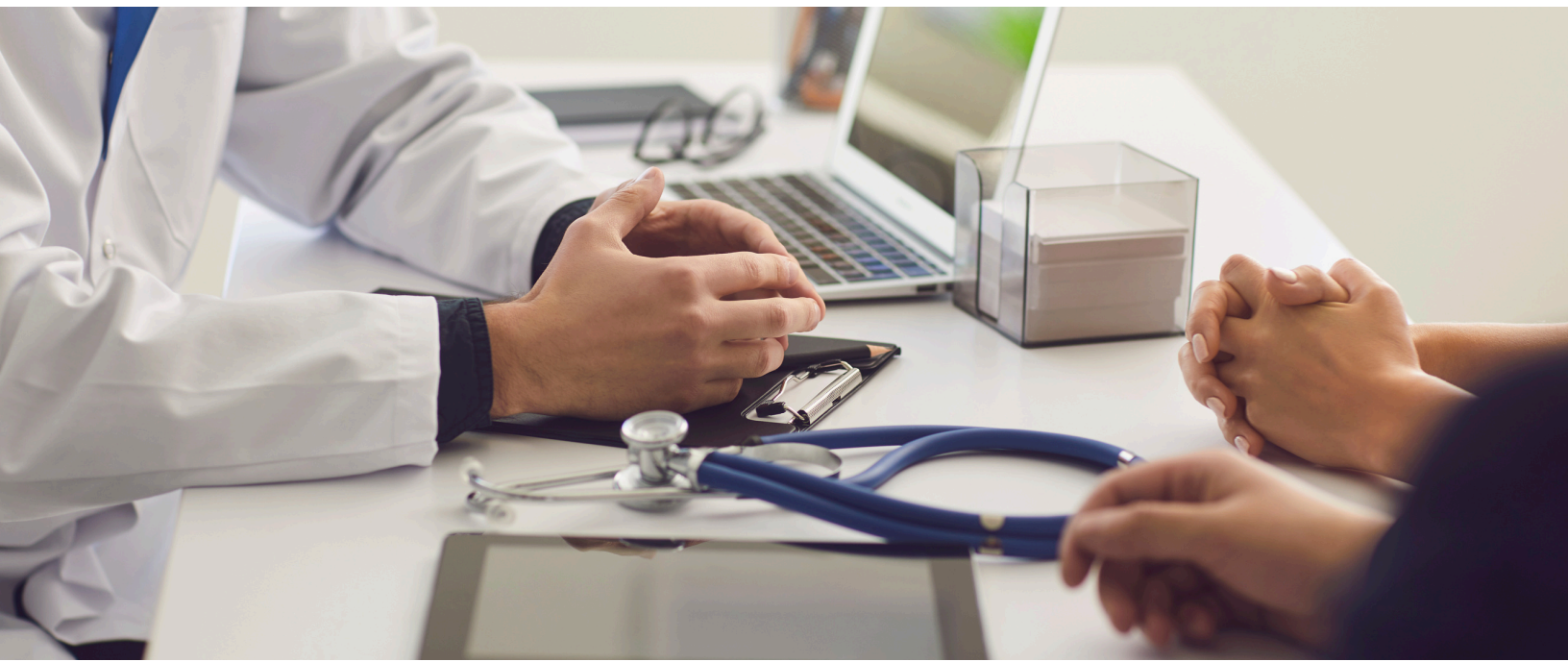
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## **SARCOMA AND BONE CANCER AWARENESS MONTH**

BY: ILANA SAIDOV

Researchers at the Garvan Institute of Medical Research identified several genes that are linked with the development of sarcomas. A sarcoma is a wide variety of cancers that begin in the bones. Sarcomas usually occur in young individuals, accounting for “20% of the cancers diagnosed in people under the age of 20”. Since it is currently unclear what causes sarcomas, it is vital to learn about the types of genes associated with its development. The new research study led to discovering a genetic pathway specific to sarcomas. The study revealed that “one in 14 individuals diagnosed with sarcoma carries a clinically important gene that explains why the cancer arose”. The findings of this discovery can help scientists create more effective sarcoma treatments and allow doctors earlier detection of this cancer. Professor David Thomas, the Head of the Genomic Cancer Medicine Laboratory at Garvan, believes that “genomics is the key to unlocking its secrets. This international collaboration has developed new methods for mapping the genetic basis for cancer and identified new heritable pathways that increase cancer risk. These findings fill important gaps in the missing heritability of cancer”. In the future, the new genetic map can help increase the survival rate of patients with this condition and allow individuals to test their genetic risk of developing sarcomas.

### Sources:

Garvan Institute of Medical Research. "Genes that cause rare hidden cancer revealed."

ScienceDaily. ScienceDaily, 19 January 2023.

<[www.sciencedaily.com/releases/2023/01/230119141536.htm](http://www.sciencedaily.com/releases/2023/01/230119141536.htm)>.

<https://www.mayoclinic.org/diseases-conditions/sarcoma/symptoms-causes/syc-20351048>



## **RISING STARS IN MEDICINE: CHETHAN SATHYA, MD**

BY: ASHBY GLOVER

Dr. Chethan Sathya is a pediatric trauma surgeon and the director of Northwell Health's Center for Gun Violence Prevention. Since witnessing the 350% increase in gun violence at the Cohen Children's Medical Center from 2021 to 2022, he has become an advocate for treating gun violence as a public health crisis. (1)

Using his platform, Dr. Sathya has been bringing the crisis of gun violence to the public eye. Through his articles at "major media outlets such as CNN, Scientific American, The Washington Post and TIME," as well as his speeches at functions like the American Hospital Association Leadership Summit on Violence Prevention, Dr. Sathya has been sharing his unique perspective as a pediatric trauma surgeon in this crisis. (2)

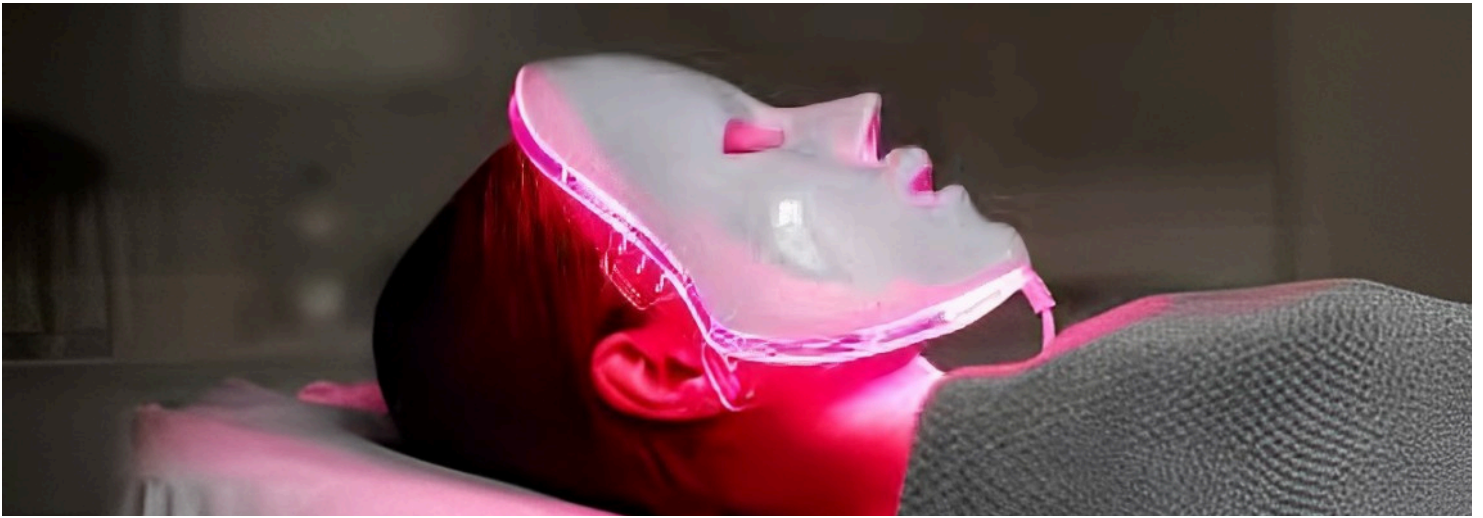
In addition to his work as a surgeon, Dr. Sathya researches firearm injury prevention. He was recently awarded a grant of \$1.4 million from the National Institutes of Health toward the "We Ask Everyone. Firearm Safety is a Health Issue" research study. This study "aims to shift the paradigm" to screen for the risk of firearm injury in the same way as other health risk factors, like smoking or substance use. (2) Dr. Sathya also established the National Gun Violence Prevention Learning Collaborative, "recruiting 600 hospitals across 38 states, and helped create a public awareness campaign about unlocked guns in homes."(1)

Dr. Sathya's experience as a pediatric trauma surgeon operating on children injured by firearms, many of whom die, "has fueled his passion to find solutions" to this crisis. (2) His work has and will continue to impact the national effort by healthcare professionals to prevent gun violence.

### Sources:

1. <https://www.beckershospitalreview.com/lists/rising-stars-42-healthcare-leaders-under-40-2024.html>
2. <https://www.northwell.edu/chethan-sathya-md>





## BENEFITS AND RISKS OF RED LIGHT THERAPY

BY: MAHIMA BHAT

Red light therapy (RLT) is a treatment that reduces the appearance of wrinkles, scars, redness, and acne on the skin by using low doses of red light. It is also advertised as a treatment for additional illnesses. Red light therapy is believed to function by affecting the mitochondria. More energy allows cells to carry out their functions more effectively, including skin healing, stimulation of the creation of new cells, and improvement of skin rejuvenation.

Red light increases blood circulation to tissues and decreases inflammation in cells.

Benefits include:

- treating skin issues, like stretch marks and wrinkles
- treating skin conditions, such as psoriasis, scars, and acne
- reducing inflammation or edema
- repairing muscle tissues
- promoting healthy aging

However, there are risks associated with the utilization of red light therapy, which include:

- risk of blisters
- lesions
- burns

Some people developed burns after leaving RLT on for more than 30 minutes, falling asleep with the unit in place, or due to device corrosion. There is also the risk of eye damage. However, LEDs are better than lasers for eye protection. Proper eye protective equipment should be worn when using RLT.

People with cancer or a history of cancer may decide to avoid red light therapy since it may potentially make cancer cells more aggressive. Although there are many red light devices online, it's best to speak with a doctor about any symptoms before trying any treatment on your own.

Sources:

<https://my.clevelandclinic.org/health/articles/22114-red-light-therapy>

<https://www.healthline.com/health/red-light-therapy#summary>

## CAN COLORECTAL CANCER BE CAUSED BY BACTERIA IN YOUR MOUTH?

BY: SIRI NIKKU

The human mouth is abundant with microbes, which are usually helpful in the mouth. However, if these same bacteria in the mouth travel somewhere else in the body, they can wreak havoc. *Fusobacterium nucleatum* is one of these microbes, moving down the digestive tract and grabbing onto gut cells. Current research reveals that this bacteria can aid colorectal cancer in developing and metastasizing. Specifically, in a study comparing the tissue of colorectal cancer patients and those without cancer, the *Fusobacterium nucleatum* subtype was more prevalent in the stool of colorectal cancer patients. It may seem peculiar that these bacteria cause colorectal cancer. Still, when these bacteria latch onto gut cells, the proteins on the external surface of the bacteria fold into amyloids, which are the same proteins that lead to plaques in the brains of those with Alzheimer's. The stomach acid does not remove the *Fusobacterium nucleatum* due to the hard exterior protein structure. This amyloid structure also has residue, which helps the bacteria connect to a particular area of the cancer cell. A cancer growth factor is activated, and cancerous cells multiply and spread quickly past the original tumor site. Much research still needs to be conducted to see other methods that the bacteria cause cancer, like inflammation. Additionally, there's no evidence that the *Fusobacterium nucleatum* causes cancer.

In addition to this knowledge, there is still the question of signs and symptoms. One prominent sign is gum disease. This is because gum disease is caused by a build-up of plaque on the teeth, which includes the bacteria *Fusobacterium nucleatum*. Gingivitis can impact the gums and make them bleed and inflamed. Usually, with proper oral hygiene, this condition goes away naturally. However, gingivitis can worsen the periodontium, which is the soft tissue and bone that keeps the tooth anchored. If the periodontium is impacted severely and worsens into periodontitis, bacteria like *Fusobacterium nucleatum* can lodge themselves into the gums and overgrow in the mouth of those afflicted. Smoking, diabetes, and hormonal changes can also heighten the risk for gum disease, increasing the amount of this bacteria in the oral microbiome.

*Fusobacterium* have also been connected to other types of conditions. They have also been discovered in inflammatory bowel disease and appendicitis. *Fusobacterium* has also shown the ability to cross both the blood-brain barrier and placental barrier, causing complications in childbirth and progressing Alzheimer's. With all this being said, everyone has this bacterium in their mouth, but not everyone will develop colorectal cancer. There are other aspects factoring into people's risk for colorectal cancer. Brushing and flushing consistently will reduce the chances of these conditions in the first place, reducing bacteria in the mouth overall.

Source: <https://www.verywellhealth.com/oral-bacteria-colorectal-cancer-risk-8624036>

