

ALAGAPPA BUZZ

EDITION - 11

ALAGAPPA SCHOOLS, CHENNAI 84



STEM ODYSSEY

THE QUEST FOR UNDERSTANDING

EDITOR'S NOTE

School is a place where we learn not only educational lessons but also life lessons.

It is a place where we start with bagful of books and end with heartfelt of memories.

Only in school we learn, explore and create memories.

'Alagappa Buzz'

is one such memory and opportunity where we learn and explore things.

We are grateful for our honourable chairman - Mr.Ramanathan Vairavan, Principal, Vice Principals and our teacher co-ordinator for giving us an opportunity to explore things and get to know more about the world.

So here we proudly bring you the 11th edition of the Alagappa Buzz magazine. It's made with our hard work and the unity of our teamwork.

"Here we bring you information about the STEM to know more about the developing world"

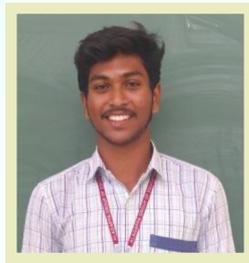
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CONCEPT SQUAD

EDITION - 11



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DR. ALAGAPPAS CHETTIAR

**THE VISIONARY WHO DREAMT IN SCIENCE AND
BUILT IN TECHNOLOGY!**



What happens when a man dreams big, not just for himself, but for his country?

DR. ALAGAPPA CHETTIYAR

A name that still shines bright in the world of Education, science and technology!

Dr. Alagappa Chettiar was not just a businessman, he was a visionary, a philanthropist and a pioneer in education. Born in Karaikudi, Tamil Nadu, he believed that knowledge is power and that India needed strong scientific and technological institutions to grow after independence



HIGH TECH POWERED VISION

In a time when India was still finding it's feet after freedom, Dr. Alagappa Chettiar focused on one thing, building a Stronger nation through science and technology

HERE'S HOW HE DID IT - INSTITUTES THAT STILL INSPIRE

He founded the Alagappa Chettiar College of Engineering And Technology and Alagappa College of Technology (Anna University).

These institutions have produced thousands of engineers and scientists who continue to shape the tech world today.



SUPPORTING SCIENCE EDUCATION

He also played a major role in establishing research Laboratories, supporting scientific research and encouraging young minds to explore physics, chemistry and other sciences long before science became a cool thing to do!

THINKING AHEAD OF HIS TIME

Dr..Alagappa Chettiar understood that technology was the Future and he made sure India was ready for it. He believed in blending Indian values with global knowledge and that's exactly what his institutions continue to do

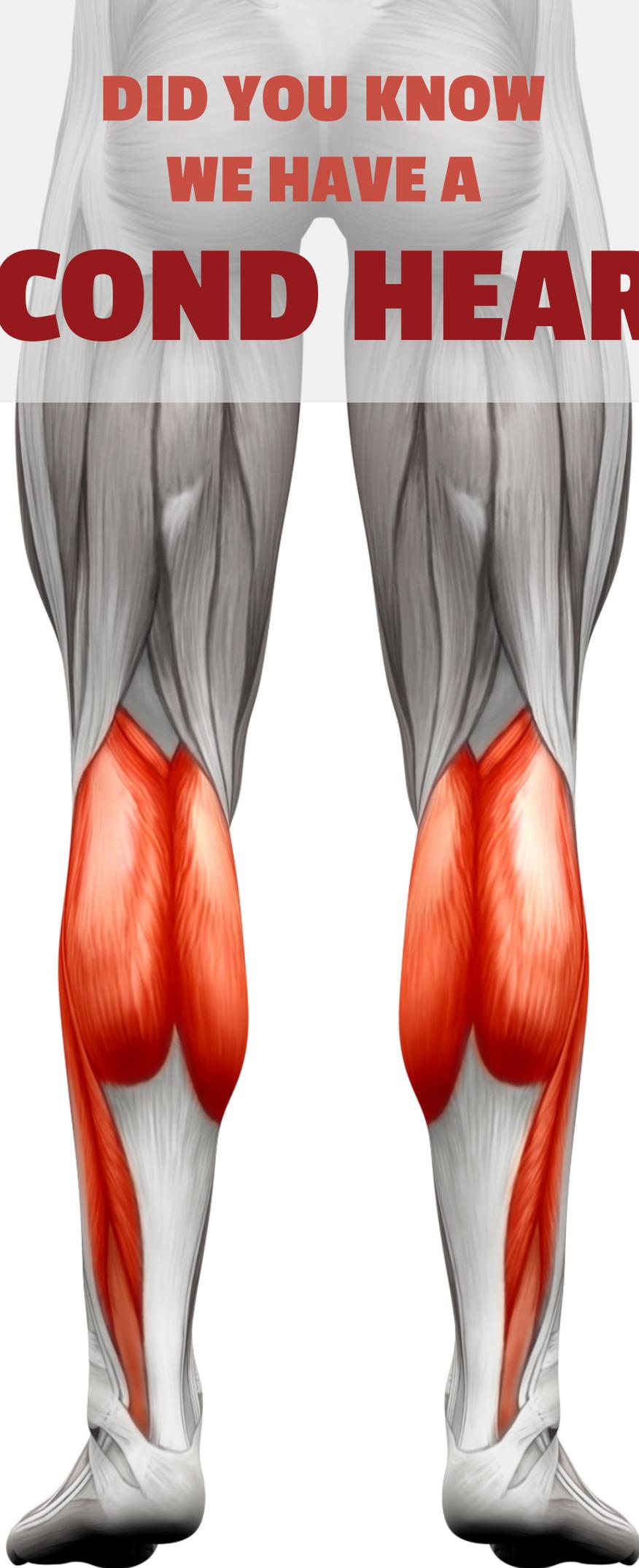


“The best way to serve the nation is to build minds that Can invent, innovate and inspire.”

That was Dr.Alagappa Chettiyar’s silent motto

Thanks to his vision, thousands of students across India are studying science and technology and turning dreams into discoveries!

**DID YOU KNOW
WE HAVE A
SECOND HEART?**





You've heard the heart is your circulation engine. But what if we told you your calf muscles, especially the Gastrocnemius and soleus are just as important? They are often called the second heart muscle

And here is why :

Every time you walk, fidget, tiptoe or rise on your toes, Your calf muscles pump contracts. This mechanical force pushes blood upwards through your vein fighting gravity in what's known as venous return circulation.

Without this pump, your legs struggle to return blood to your heart.



THAT'S WHERE THE PROBLEM BEGINS!

- **Leg's vein health suffers**
- **Blood pooling starts**
- **You risk deep vein thrombosis (DVT)**

You may experience swelling, fatigue or vascular strain

This is why physiotherapy for circulation includes Exercises that boost lower limb circulation especially for people with sedentary routines.

If you use a standing desk, sit long hours or live with poor mobility, this article is for you

Even short, daily movements offer huge calf muscle gain function and provide lasting compression benefits that protect your cardiovascular system.

Your vascular health depends not just on your heart, but on smart movement.

Let this be your functional anatomy insight of the day!

YOUR SECOND HEART NEEDS TO MOVE!



A BREW-TIFUL SCIENCE

Let's understand your daily Cup of Coffee



WHAT'S HAPPENING IN YOUR DAILY MORNING'S CUP

It's more than just a wake up drink, it's a **mini science lab** in a mug!



• FROM BEAN TO BREW

Coffee starts as a **green bean** from the coffee plant

It's **roasted at high temperatures** to create that rich colour, smell & taste

Roasting **changes** the bean's **chemistry**,
Releasing over **800 aroma** compounds!

• WHAT'S INSIDE YOUR CUP?

Your coffee contains :

CAFFEINE — The natural energy booster that wakes up your brain

ACIDS — Gives it that tangy flavour

OILS & ANTIOXIDANTS — Adds aroma and packs health benefits

SUGAR — Contributes to sweetness, be it drunk black!

• BREWING – EXTRACTION

When hot water meets ground coffee, it extracts flavors, oils and caffeine.

Too fast? Coffee tastes weak

Too slow? It becomes bitter

The perfect brew is all about balance — like a tasty science equation

• HOW CAFFEINE WORKS

Caffeine tricks your brain by blocking sleep signals (Adenosine)

Thus leading to misassumption making you feel alert and active instead of being tired

FUN FACT : Decaf coffee still has a little caffeine, about 2-5% Cold brew? It's less acidic and smoother, Thanks to the slow brewing



So, the next time you take a sip, remember :

Your daily coffee is a mix of chemistry, flavour & energy!

AXOLOTL

The Real- Life Regeneration Superstars!



Meet the Axolotl, the adorable underwater creature with a superhero secret - It can **REGROW** parts of its body!

They live only in one lake in Mexico (Lake Xochimilco)

Their name means “Water Monster” in the Aztec language



Axolotl
(*Ambystoma mexicanum*)

What makes the Axolotls so Special?

They can regrow legs, tail, heart, spine and even parts of their brain!

Unlike other animals, they stay young forever- which is Known as Neoteny

They have amazing healing powers with almost no scarring!

Regenerating Human Body Parts? Axolotls might show us how!

Scientists have discovered a key gene in Axolotls that may help humans regrow limbs one day, just like a Salamander!

Researchers recently identified a gene called 'Hand2', a key generator which plays a major role in guiding v



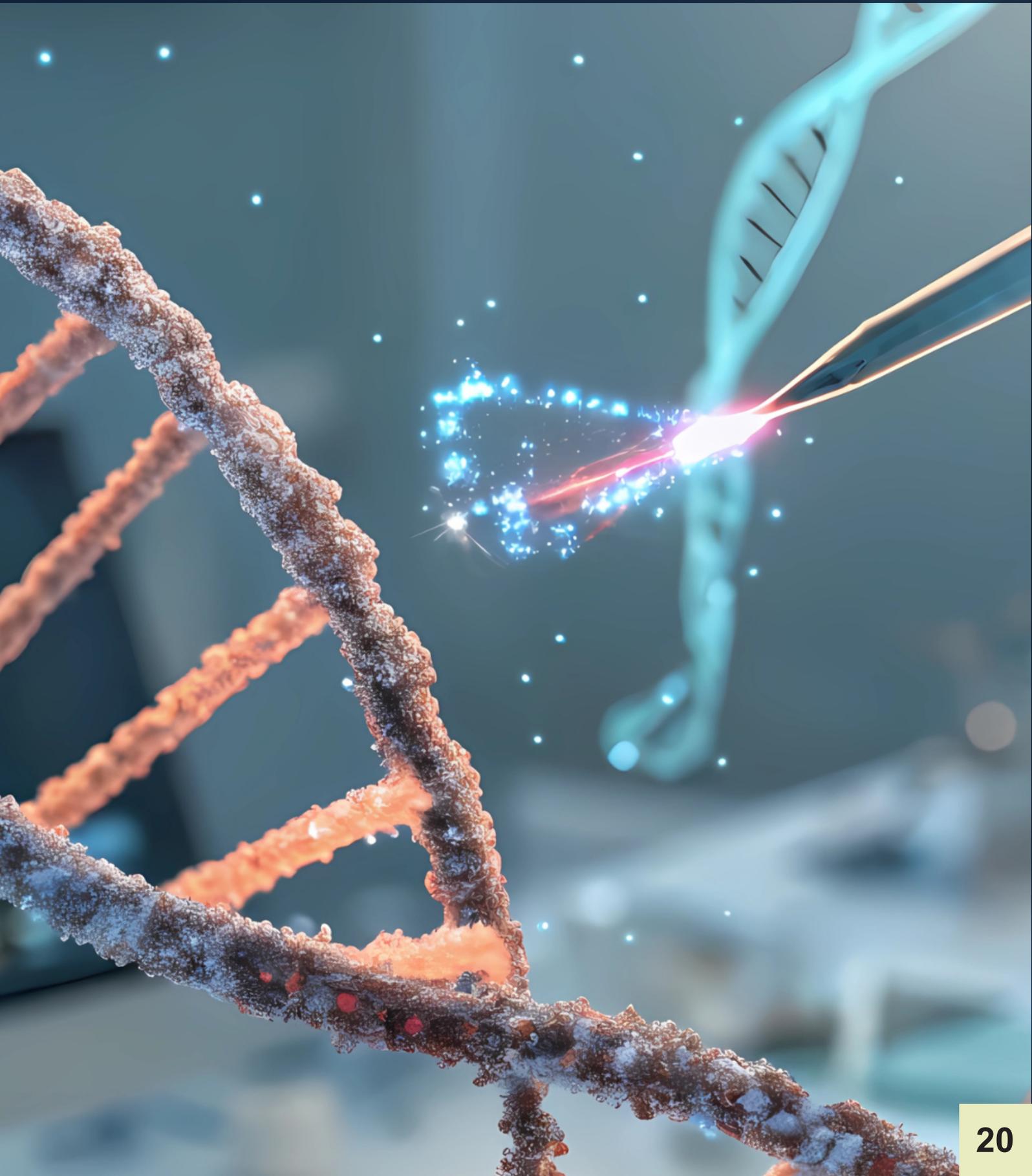
Scientists now believe it could be “switched on”
In special ways to heal or regrow tissues in
people someday

This could help in wound healing, spinal injuries,
or even growing new organs in the future!

Imagine a future where doctors help you regrow a
finger or repair your heart using your own
genes! That future just got one step closer.

CRISPR

The power of gene-editing



WHAT IS CRISPR?

CRISPR is a gene-editing tool that scientists use to cut out, fix or replace parts of DNA, like editing text in a document!

It stands for:

CLUSTERED REGULARLY INTERSPACED SHORT PALINDROMIC REPEATS

WHAT IS DOWN SYNDROME?

Down syndrome happens when a person has an extra copy of chromosome 21 (called trisomy 21). This extra genetic material affects how the body and brain develops.



HOW DOES CRISPR HELP IT?

Scientists are experimenting with using CRISPR to Target and “silence” or remove the extra chromosome 21 in cells. Imagine turning down the volume on an Extra radio playing in the background. That’s what Researchers are trying to do with this extra chromosome.

In a groundbreaking experiment, researchers successfully Shut down the extra chromosome in lab grown human cells Using the gene-editing technique inspired by CRISPR.



But it’s not that simple since the technology is still in Research Stage. Editing DNA in a safe and precise way inside a living person, especially for something as Complex as Down Syndrome is challenging.

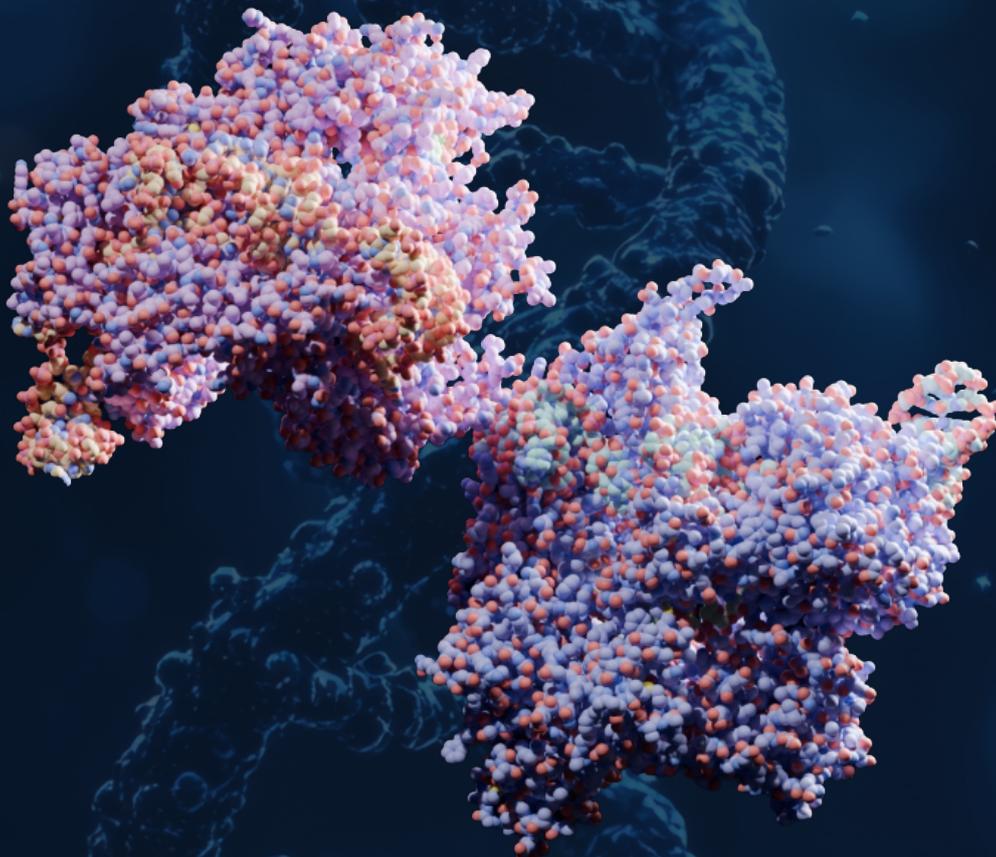
Scientists must be extra careful to avoid Unintended effects.

WHY IS IT EXCITING?

This research offers hope for future treatments that could improve the quality of life for people with genetic disorders.

CRISPR isn't a cure yet, but it's a giant step towards understanding and potentially treating conditions once thought to be permanent.

CRISPR IS CHANGING THE FUTURE OF MEDICINE AND ONE DAY, IT MIGHT EVEN HELP REWRITE THE STORY OF GENETIC DISORDERS!



How do

AEROPLANES

Stay in the air?



Have you ever looked up at a flying aeroplane and
Wondered how such a heavy machine floats in the sky?

The secret lies in four special forces :

○ **GRAVITY** ○ **DRAG** ○ **LIFT** ○ **THRUST**

GRAVITY

Pulls down the plane due to its hefty weight



DRAG

Or Air resistance that slows down the plane

LIFT

Wings create magic. Airplane wings are specially shaped (called airfoils) to generate lift. This shape creates high pressure above the wing, which helps the plane rise into the sky, even though its very heavy!



THRUST

The force from the engine that pushes the plane forward

When lift is stronger than gravity, and thrust is greater than drag, the aeroplane can fly smoothly through the sky

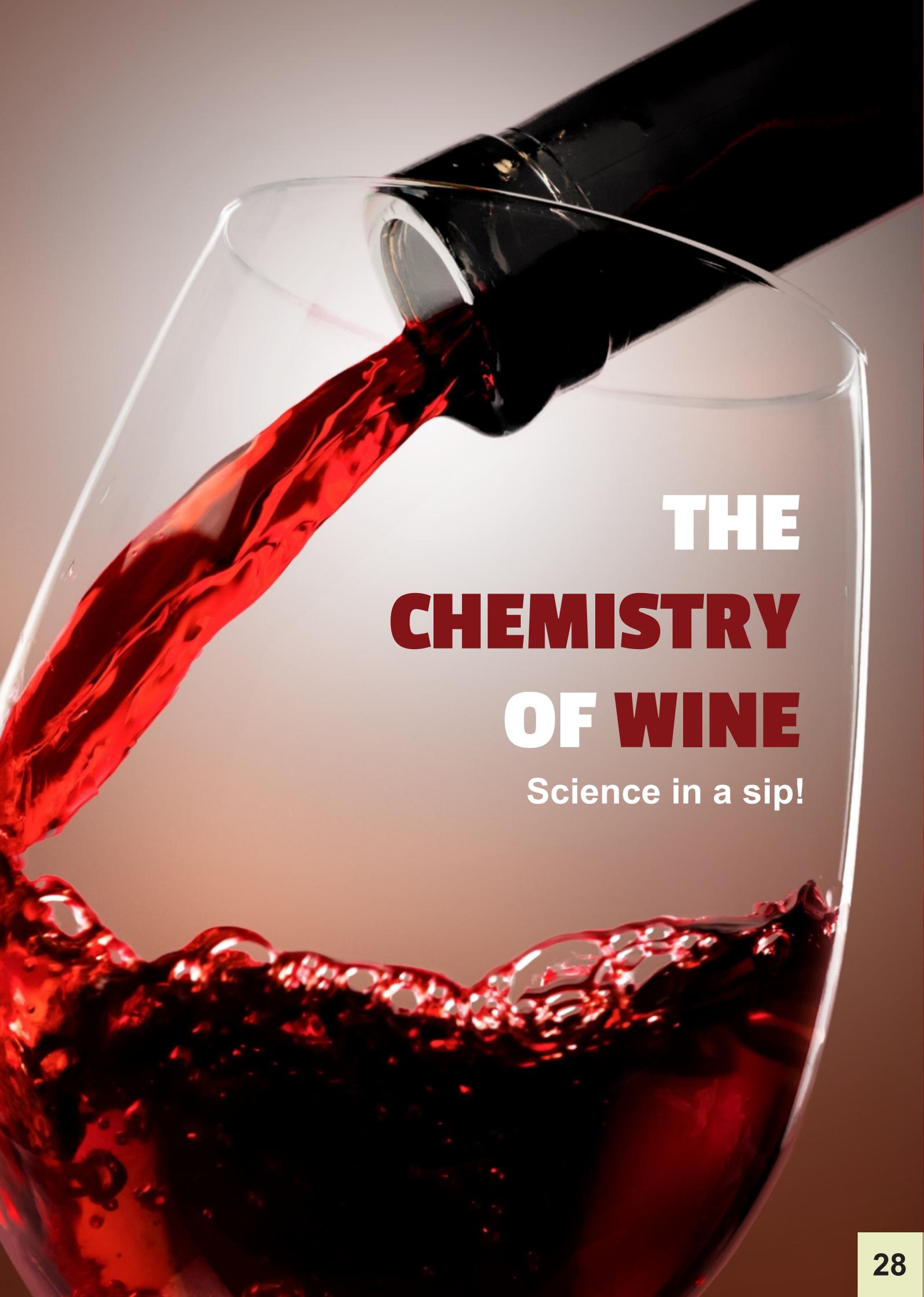
With the help of skilled pilots and smart design, aeroplanes travel safely across great distances, connecting people all over the world

DID YOU KNOW?



**A jumbo jet can weigh over 300 tons and still fly,
Thanks to the power of lift and thrust!**

Isn't that amazing?



**THE
CHEMISTRY
OF WINE**

Science in a sip!

**Wine isn't just a drink
- it's a science experiment in a
bottle!**



**Here's how
chemistry
makes it happen!**

○ **IT ALL STARTS WITH GRAPES :**

**Grapes contain Sugar, Water & Natural Yeast
on their skin which are
the key raw materials for wine!**

○ **FERMENTATION MAGIC :**

**When grapes are crushed, the sugar in the juice
meets the yeast. The yeast eats the sugar and produces:**

Alcohol (Ethanol) — gives wine its kick

Carbon Dioxide (CO₂) — the tiny bubbles (like in sparkling water)

Heat & Aroma compounds — flavors and smell!

Chemical equation :

Sugar (C₆H₁₂O₆) → Alcohol (C₂H₅OH) + CO₂ + Energy

○ **FLAVOURS FROM MOLECULES :**

The smell and taste of wine comes from esters, acids, and phenols — tiny molecules that create Fruity, Spicy and Woody notes!



Tannins (from grape skins/seeds) make the mouth feel dry

Acids (like tartaric and malic acid) gives the sour punch

Esters smell like fruits — bananas, berries and even bubblegum!

○ AGING CHANGES EVERYTHING :

As wine ages in barrels or bottles, Flavours soften,
Colour changes (reds turn darker, whites turn golden)

Chemical reactions continue like oxidation
and polymerization

So every time someone sips wine,
they're tasting chemistry!

From sugar to scent, its a natural lab full of molecules
And magic



WHAT IS

Dyscalculia

When numbers just don't add up!

DO NUMBERS FEEL CONFUSING OR FRUSTRATING ?

You are not alone. You might be hearing about something called **Dyscalculia** and its more **common** than you think?

Dyscalculia is a **learning difference** that makes it hard for people to understand and work with numbers

It's **like** dyslexia, but for maths instead of reading





HOW IT FEELS :

Students with dyscalculia may :

- **Mix up numbers or symbols**
- **Struggle to tell time or count money**
- **Forget math steps or formulas**
- **Get nervous during math tests**
- **Find word problems or mental math very hard**

It's not about being lazy or 'bad at math'.

The **brain** simply **processes** numbers **differently**

HOW TO HELP ?

Use **visual aids**, **number lines**, or **hands - on tools**

Take extra time with math tasks

Learn step - by - step **with** real life **examples**

Stay patient — every brain learns differently!

COOL FACT:

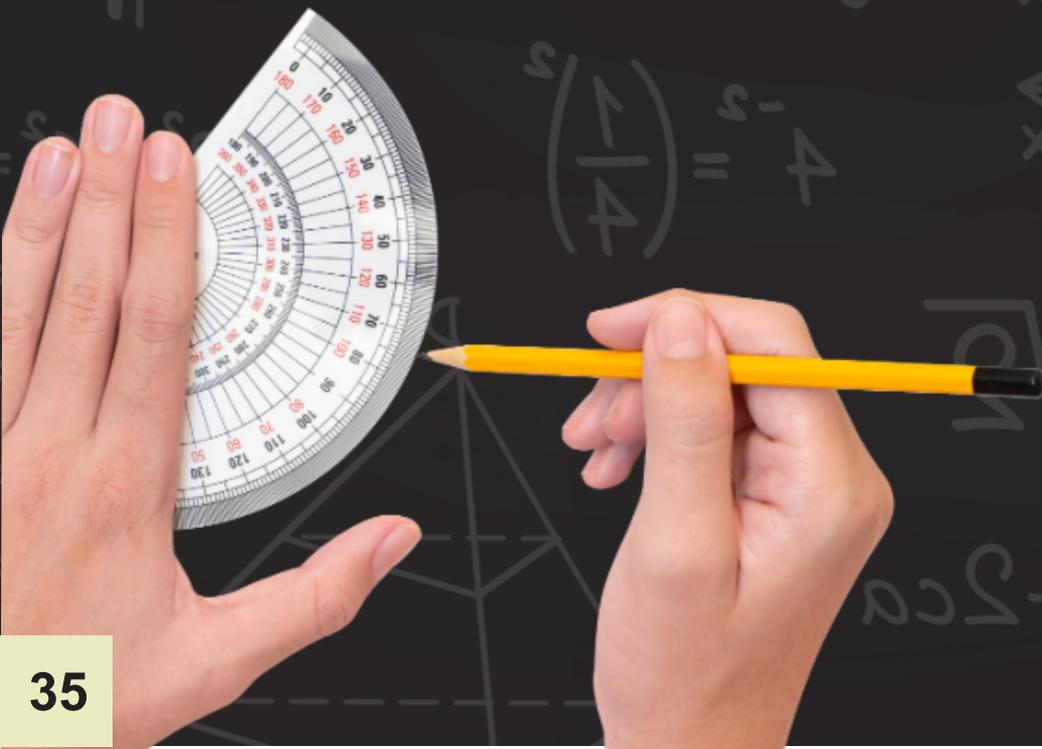
- **Even** brilliant people like Einstein are believed to **have** had **learning differences!**
- **Dyscalculia** **affects** around **5-7%** of the **students**

AND REMEMBER !

Dyscalculia **doesn't** **affect intelligence**, many people with it are great at art, music, storytelling or science

With **support**, even **students** with dyscalculia **can shine** bright in their own way!

Everyone has a **different** learning **style** and that's what makes classrooms **awesome!**



The Physics of a

Rainbow

— Nature's Colour Trick!

EVER SEEN A RAINBOW & FELT LIKE MAGIC PAINTED THE SKY?

Well, guess what? It's not magic, It's **physics!**
Let's **break** it down in a **fun way:**



○ **SUNLIGHT LOOKS WHITE - BUT IT'S RAINBOW INSIDE !**

Sunlight is actually made up of **7** colours:

Red
Orange
Yellow
Green
Blue
Indigo
Violet

We don't see them normally because they're
all **mixed** together!

○ RAINDROPS = TINY PRISMS



When **sunlight hits a raindrop**, three cool things happen :

REFRACTION : Light **bends** as it **enters** the drop

REFLECTION : Light **bounces** off the **inside** of the drop

REFRACTION (repeats): Light **bends again** as it **exits**

This bending and bouncing **spreads the colours** Apart!

○ COLOURS SPREAD OUT LIKE A FAN

Each colour **bends** a different amount.

Red bends the **least**,
Violet bends the **most**.

That's why **red** appears at the **top** and **violet**
at the **bottom** of the rainbow

○ YOU NEED THE RIGHT SPOT TO SEE IT!

To see a rainbow :

~**Sun** must be **behind** you

~**Rain** must be in front of you

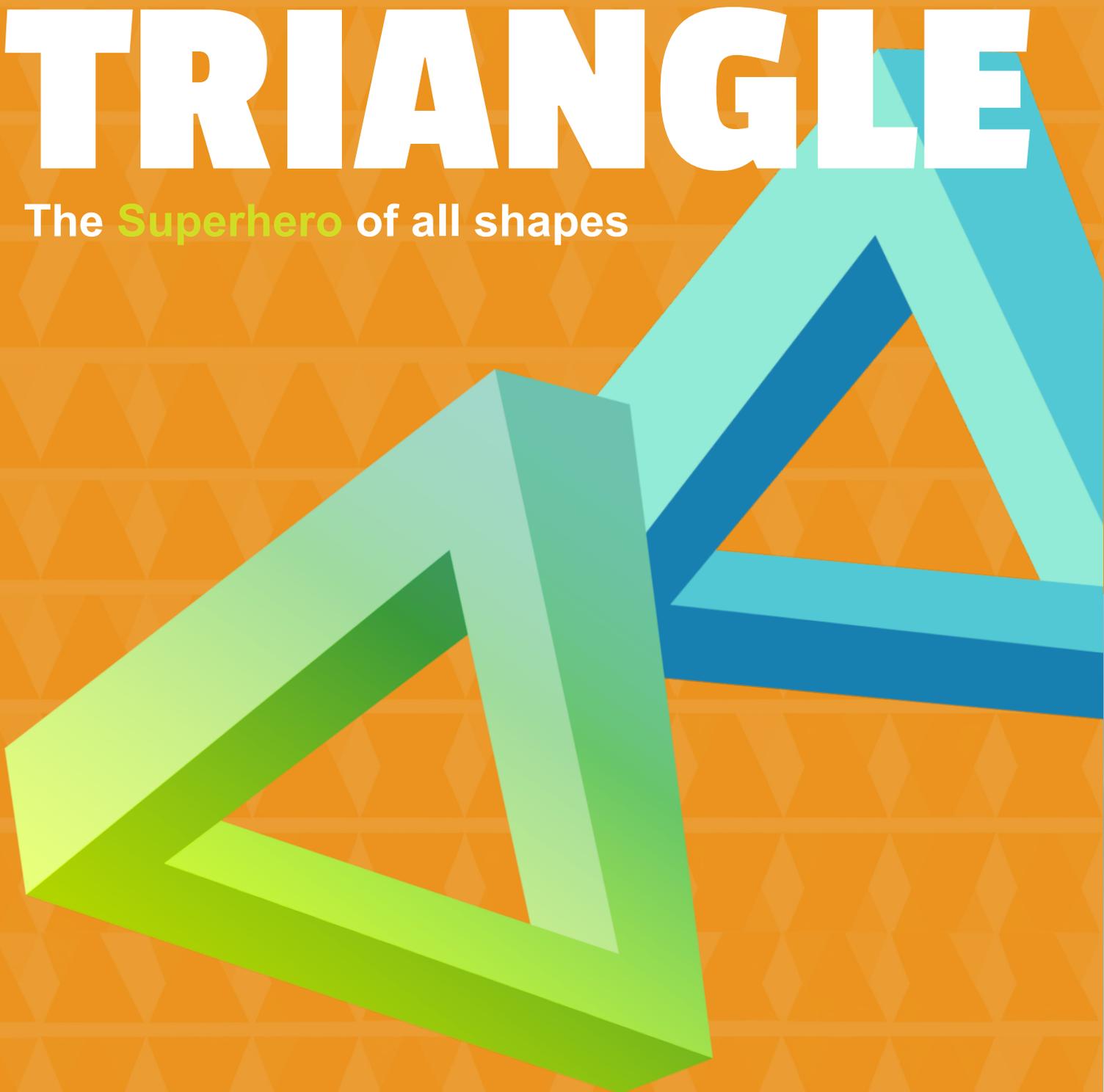
The rainbow always forms a **perfect circle**, but
we usually **see** only a **half-arch** from the **ground**

From an **airplane**, you can sometimes see a full
circular!

So next time you spot a rainbow, smile - you are
watching **light play** a colourful game of physics
in the sky !

THE SECRET BEHIND THE MIGHTY TRIANGLE

The **Superhero** of all shapes



EVER WONDERED WHY?

Bridges, towers and even roofs use triangle in their design?

That's because the **triangle** is the **strongest shape** in the world of structures and here is why

▶ **IT CAN'T BE SQUISHED!**

Push a **square**, it **bends easily**,
Push a **triangle**, watch it **hold its shape!**

The **force** gets **evenly spread** through all three sides

MEANING NO WEAK SPOTS!



▶ IT'S THE MASTER OF STABILITY

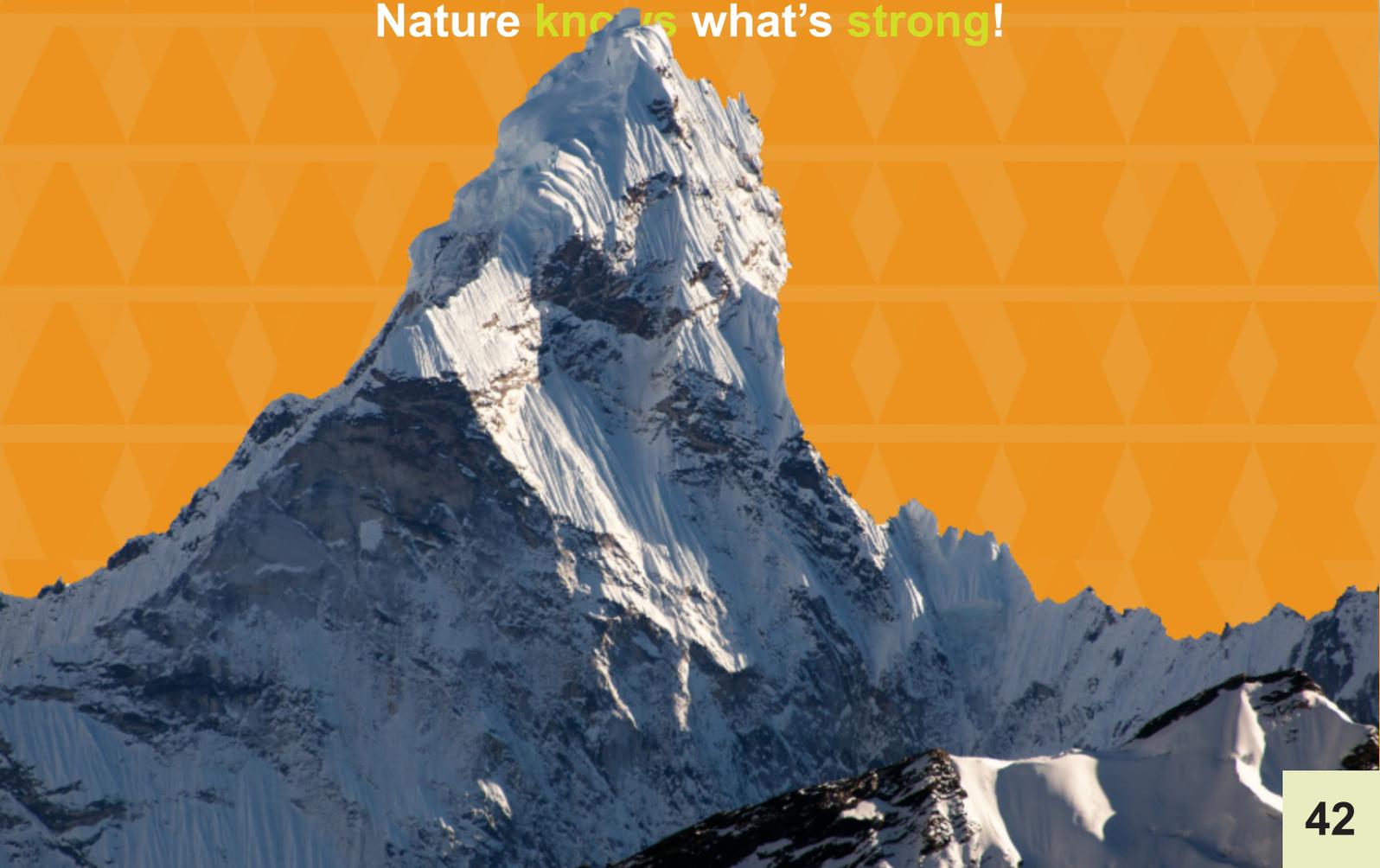
Triangles form a **solid base** because their **three sides lock** in place

They **can't twist** or collapse like other shapes and that is why **engineers love them!**

▶ IT'S NATURE APPROVED!

Even **beehives** use **triangle based hexagons** and **Mountain peaks** often **form triangle** shapes

Nature **knows** what's **strong!**



▶ USED IN EVERYTHING STRONG

- Eiffel Tower
- Pyramids of Egypt
- Truss bridges

They all use **triangles to stay** tough and tall for years!



So next time you draw a triangle
Remember,
You are sketching the **superhero** of all shapes!

FUN FACT:

Even a circle becomes **strong** when it's **filled with triangle** like sections.
That's how **bicycle** wheels support **heavyweights!**

WHAT IS SPARKLING WATER?

A tall, clear glass filled with sparkling water, garnished with several slices of fresh lemon and a sprig of rosemary. The glass is set on a teal-colored plate. The background is a soft, out-of-focus white and light blue.

The Fizzy Fun
in your glass!

WHAT MAKES THE WATER SPARKLE THOSE TINY BUBBLES OF GAS?

Sparkling water is just regular water that is filled with Carbon-di-oxide(CO_2), and when it is added under pressure, it creates those fizzy bubbles you can see and feel.

FUN FACT :

Nature makes it's own Sparkling water too!

Some natural springs deep in the earth add gas to the water all by themselves!

THE SCIENCE BEHIND THE SPARKLE

When you open a bottle or can of sparkling water, the pressure is released and the gas escapes, forming bubbles that rise and pop!

That's the hiss and fizz sound you hear like a mini science experiment in a cup.

FLAVORED AND FANCY

Some sparkling waters have a fruity flavours (like lemon or orange) infused in them with no added sugar making it a fun and healthy alternative to soda!



Men's Mental Health

– It's OKAY to talk!



WHY FOCUS ON MEN'S MENTAL HEALTH?

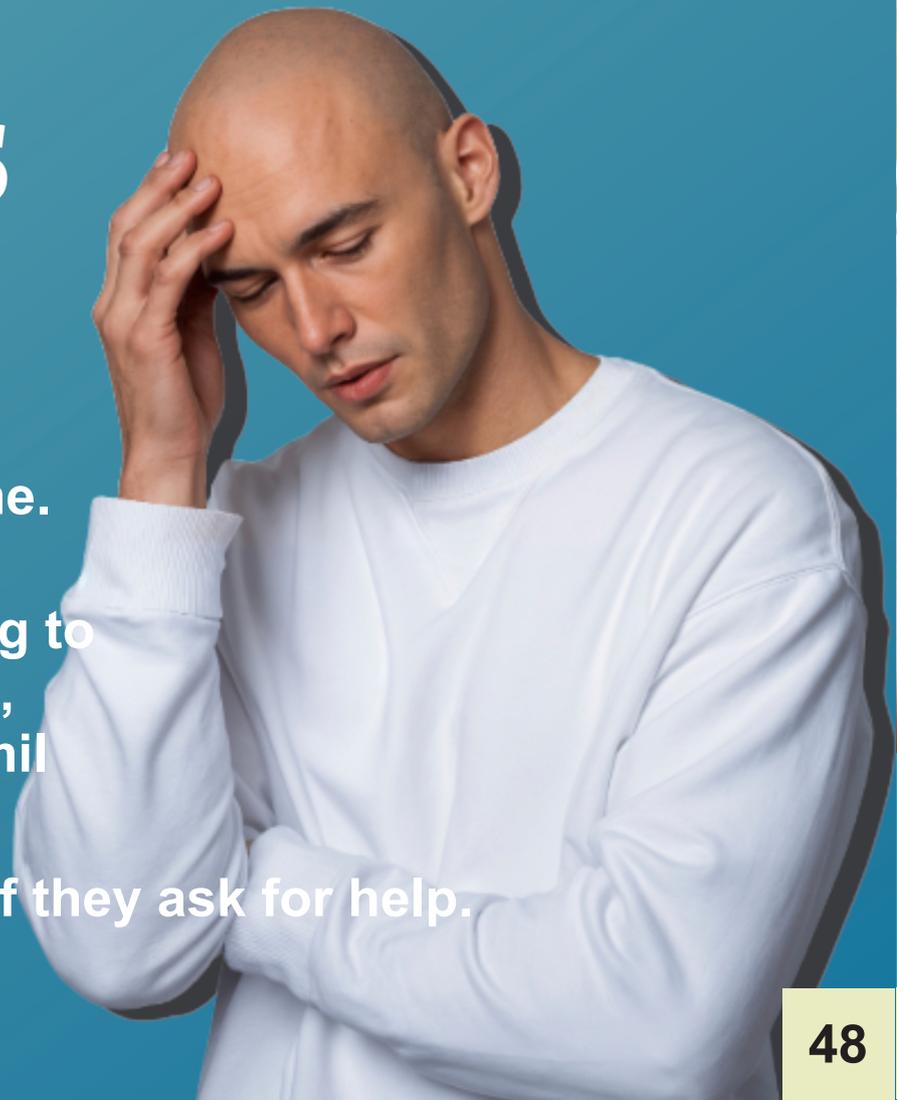
Many men are taught to “Be Strong” or “Hide emotions”

They may feel embarrassed to talk about stress, anxiety or even sadness

But bottling it up doesn't help in anyway, It only makes things harder

COMMON STRUGGLES MEN FACE :

- ❑ Feeling pressure to “BE TOUGH” all the time.
- ❑ Not knowing how to express feelings leading to Dealing with loneliness, academic stress or family Expectations.
- ❑ Fear of being judged if they ask for help.



THE GOOD NEWS: HELP IS RIGHT THERE!

Talking to someone (a friend, a teacher or a counselor)
is strong - not weak

Doing things like sports, journaling, or spending time
with loved ones can boost mental health

You don't have to fix everything alone - and you're not
supposed to!



Mental health is just as important as physical health

It's brave to ask for help



REMEMBER!

Real strength is being open about how you feel

Let's support each other — check in on your friends, be kind, and speak up. Because real heroes don't wear cape — they care!

**”IT’S OKAY NOT TO BE OKAY,
AND ITS MORE THAN OKAY
TO TALK ABOUT IT”**

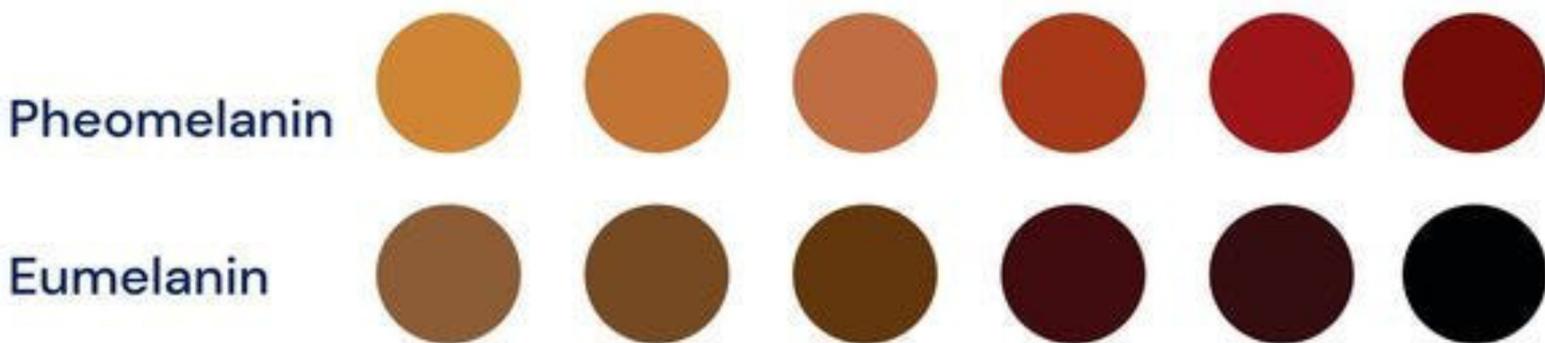
THE BIOLOGY
BEHIND
HAIR WHITENING

MELANIN!

People often have grey or white hair as they grow older as this is **due to** the amount of **melanin** produced in their **hair**

In addition, their **genetics** play a **major role** so if their parents or grandparents had grey or whitening hair, They are more **likely to inherit** it as well

Melanin Skin Pigments



TYPES OF MELANIN

Where there is barely any eumelanin, **phenomelanin** dominates and **results** in **red hair**

When there is a lot of **eumelanin**, it **results** in **black hair**

Moderate amount results in **brown** and **little eumelanin** results in **blond hair**



RELATION TO AGING

These types of melanin are present in hair follicle cells called **melanocytes** which produces melanin

As we **age**, melanocytes decreases in number and **less** of melanin gets **produced**. This creates a **lack of pigment** in the hair and causes a **silver-grey** colour

OTHER CAUSES

High amounts of **stress** can also cause a **decrease** in the amount of **stem cells** in your **hair follicles** and direct a **decrease in melanocytes** in hair as well



Smoking, Thyroid disorder and Autoimmune disease can pose various health problems which also greatly affects and hurts the hair

Vitamin B - 12 deficiency in the body can also hinder hair growth and colour



INTERSTELLAR



**WHERE TECHNOLOGY
MEETS THE
STARS**

Christopher Nolan's Interstellar isn't just a science fiction film, It's a masterpiece that blends technology, emotion and cosmic mystery into a visually stunning experience.

The movie is set in a future where Earth is dying, a group of astronauts travel through a wormhole to search for a new home for humanity.

What follows in the movie is a journey through black holes, time distortion, fifth dimensions and the limits of human resilience.

THE TECH THAT TAKES YOU BEYOND TIME

**WHAT MADE ME SELECT INTERSTELLAR
FOR THIS
NEWSLETTER?**

REAL SCIENCE:

The black hole, "Gargantua" was so accurately designed Using physics equations provided by physicist Kip Thorne, who later won a nobel prize. The visuals were so accurate, That the scientists published a research paper based on it.

TIME DILATION:

Explore how time moves slower on one planet because of its gravity. On Miller's planet in the movie, the background music has a prominent ticking sound for every 1.25 seconds indicating an entire day passing by on earth for each tick. A real concept from Einstein's theory of relativity.

ROBOTS - TARS & CASE:



Minimalist, cube-shaped witty robots. They may look like walking toasters but they were built to be practical and logical, exactly how a real space robot might be.

These AI companions prove tech doesn't have to be flashy to be smart.

WHY SHOULD STUDENTS WATCH IT?

It's not just a film, it's a science lesson wrapped in emotion and imagination.

It makes you ask big questions; What if Earth dies?
Can science save us? How far would you go for
Love and Survival?

It shows that STEM can be cinematic, creative and
deeply moving.

**INTERSTELLAR PROVES THAT SCIENCE AND STORYTELLING
CAN BE OUT OF THIS WORLD!**



WIFI

The invisible magic that connects us!



**Have you ever wondered how your phone or laptop connects to the internet without any wires?
That's WiFi in action, your invisible superhero!**

WHAT IS WI-FI?

Wi-Fi stands for Wireless Fidelity, and it uses the same type of waves as your TV or microwave, just at a different frequency.

**Think of WiFi like a magical mail carrier.
Here's how it works:**



STEP 1: THE INTERNET ENTERS YOUR HOME

The internet first comes into your house through a wire (like a water pipe). This wire is connected to a special box called modem.

STEP 2: ENTER THE WI-FI ROUTER

Now, The Wi-Fi router takes over. It acts like a post Office that sends letters (your data) through the air.



The router translates the internet signal into visible radio waves and spreads them around your house like a lighthouse shining signals in every direction.

STEP 3: YOUR DEVICES CATCH THE WAVES

Your phone and laptop has a tiny antenna that catches these radio waves, reads the message and replies back superfast. That's how you watch videos, play games and chat online.



**Even though you can't see Wi-Fi, it's always around you,
Helping your**

WRAP!

**What you are seeing now is the wrap of our
“11th EDITION ALAGAPPA BUZZ”**



**We will be back with more insights!
THANK YOU!**

Alagappa Group of Educational Institutions

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