



# *The* HORIZON

VOLUME 3, ISSUE 12, DECEMBER 2025

- VACCINATION MYTHS AND FACTS
- BRAIN'S CHEMISTRY OF CONNECTIONS
- THE SOUND OF HEALING: MUSIC'S ROLE IN SURGICAL SUCCESS
- MAKING A BABY WITH 3 PEOPLE / "THREE PARENT" BABIES

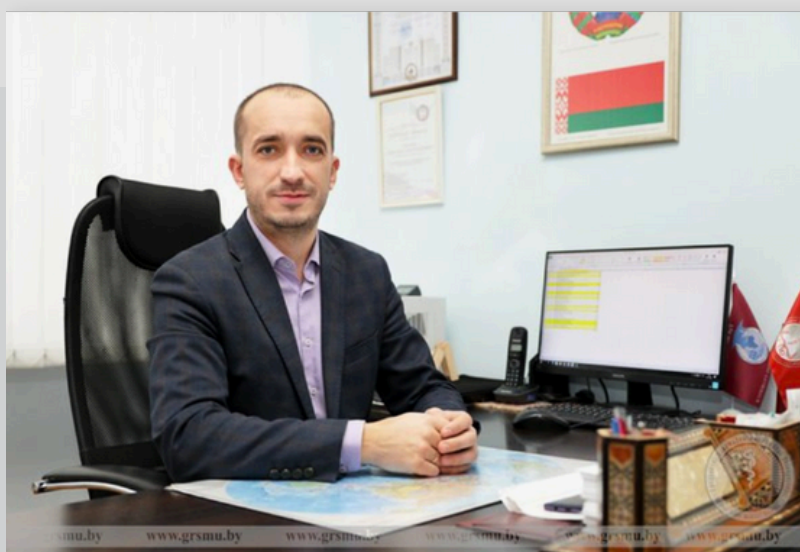




# DEAN'S DESK



Dear students, we at Grodno State Medical University strive to provide students with top-quality education, but that's not it. GRSMU is also a hub for Scientific, Cultural, and Sports related activities. We wholeheartedly acknowledge that International students are an integral part of our university, and we take immense pride in that. Grodno State Medical University is glad to work with students from different countries and provide them with a stage to represent their nation and culture.



**DEAN OF FACULTY OF INTERNATIONAL STUDENTS  
DR. ALEKSANDER ALEKSANDEROVICH STENKO**

GRSMU celebrates its uniqueness in diversity, for in its true essence our university is a junction where students from various backgrounds and cultures come together as one big family. GRSMU has always encouraged students to explore further and beyond in every field they try their hands at. I hope that you like the novel concept of 'The Horizon' - a magazine that serves as a platform for the students to voice their opinions, share their takes and present their points of view.

'**The Horizon**' is a medium of extended communication where we can learn a lot from one another. I highly appreciate this initiative and personally support it. I look forward to reading the interesting blogs written by you.

# WELCOME TO THE HORIZON



“We all have fascinating stories to share!” For the longest time, I have had this idea of starting a magazine. But not just any conventional magazine, one that shall serve as a platform for the students and alumni of International faculty at Grodno State Medical University to share their stories. A platform that enables students to share their takes on various curricular and extracurricular aspects of medicine. Thus, the idea of **‘The Horizon’**, came to life.



**DR. MEHUL H. SADADIWALA, FOUNDER,  
CLASS OF 2023**

**‘The Horizon’** will be a creative intersection where students can freely give commentaries about Lifestyle, Culture, Productivity tips, and more. Throughout the years, many individuals at GrSMU have inculcated valuable skills and gained experience with a fair share of success in various disciplines. Maybe you run a successful YouTube channel or an educational website, or maybe you are a successful student-researcher or an educator, and so much more. 'The Horizon' enables students to share their personal experiences. The insights that you share will encourage other students to take further strides and explore future possibilities.

**‘The Horizon’** is supported directly by the Dean of the International Faculty, and it will operate under the supervision of the International Students' Scientific Committee. Students from 1st to 6th year, and even graduates, can submit their blogs to this magazine. The articles should directly or indirectly revolve around student life to share knowledge and the collective growth of students.

For inquiries and submissions.

📷 - grsmu\_science

✉ - grsmuscience4life@gmail.com, socialmedia3490051@gmail.com

# EDITOR'S DESK



“Hello, I’m Osini. I’m a final year student at Grodno State Medical University. After reading countless articles on The Horizon about many interesting and inspiring topics which shape our lives as medical students, I’m very excited to be the editor-in-chief of The Horizon’s Autumn issue 2025. I’m looking forward to continuing the legacy of this platform with more engaging and insightful content that boost our confidence, creativity, and knowledge.

”



**OSINI RATHNASIRI,  
EDITOR, OCT-DEC 2025**



**MAHA IBRAHIM MOHAMED  
EDITOR, OCT-DEC 2025**

“

Hello, I’m Maha Ibrahim Mohamed, a final year medical student at GRSMU. I have long admired The Horizon Magazine for all the incredible passion, dedication and hard work that The Horizon team pours into it. I’m truly excited and very thankful to have been offered a chance to contribute to this wonderful experience as an editor. I hope to help make this issue as interesting, informative and thought-provoking as every previous issue has been.

”

And a message to our dearest readers, we would like to invite you all, students and alumni, to share with us the blogs that directly or indirectly revolve around student life, to share knowledge and experiences that has had an impact on your growth within and outside the bounds of our university.

Concluding, let us alter the limitations of our individual efforts and collectively explore limitless Horizons.

## Cover Credits

*Thisarani Kavindya*

For enquiries and submissions.

📧 - grsmu\_science

✉ - grsmusciencelife@gmail.com, socialmedia3490051@gmail.com

# VACCINATION MYTHS AND FACTS

Vaccination is a vital public health measure that reduces infectious diseases by preparing the immune system. It protect individuals while fostering herd immunity, safeguarding communities, particularly those unable to vaccinate. By addressing myths and promoting education, we can boost vaccination rates.Together, we can enhance public health outcomes for everyone. Vaccines truly make a difference! And now “Let’s go to get our flu vax!”

WRITTEN BY  
SHAFA  
MAHIR

CLASS OF 2029

## INTRODUCTION

Vaccination is a vital public health measure that reduces infectious diseases by introducing a harmless part of a germ, prompting the immune system to produce antibodies that prepare the body to fight the actual disease. This approach has been pivotal in controlling serious illnesses such as polio, measles, and smallpox, not only protecting individuals but also preventing the spread of illness through herd immunity. The practice began in the late 18th century with Edward Jenner's smallpox vaccine and has since evolved with advancements in vaccine technology. Notable initiatives like the Global Polio Eradication Initiative have led to significant declines in disease incidence, highlighting vaccination as one of the most effective health interventions to save lives and reduce suffering.



## 1. MYTH: VACCINES CAUSE AUTISM

Fact: Extensive research has definitively found no link between vaccines and autism. The study that suggested this connection has been discredited and retracted.

Major health organizations, including the CDC and WHO, affirm that vaccines do not cause autism. The suggestion of a link originated from andeiceitful study that has since been thoroughly debunked. Thousands of studies involving millions ofnchildren have shown no correlation between the MMR vaccine and autism.

## 2. MYTH: NATURAL IMMUNITY IS BETTER THAN VACCINE-ACQUIRED IMMUNITY

Fact: While natural immunity can be robust, it often comes at the cost of severe illness or complications. Vaccines offer a safe and effective way to build immunity without exposing individuals to the risks associated with the diseases themselves. For example, contracting measles can lead to pneumonia,encephalitis, and death, while a vaccine provides immunity without these risks. The World Health Organization (WHO) emphasizes that natural infection can lead to complications that vaccines do not cause.

## 3. MYTH: VACCINES CONTAIN HARMFUL INGREDIENTS

Fact: Vaccines may include trace amounts of preservatives and adjuvants, but these are present in safe quantities. The health benefits of vaccination far exceed any potential risks associated with these ingredients. Ingredients like formaldehyde and aluminum are used in extremely low doses, far belowlevels that could cause harm. The rigorous testing and regulation ensure that all components are safe for human use.



#### 4. MYTH: VACCINATION IS ONLY NECESSARY FOR CHILDREN



Fact: Vaccines are essential for people of all ages. Adults require vaccinations to maintain immunity against diseases like influenza, shingles, and tetanus. Lifelong vaccination is vital for community health and helps prevent outbreaks. For instance, pertussis (whooping cough) can be severe in adults and can be transmitted to unvaccinated infants. Regular booster shots are necessary to maintain immunity as protection can wane over time.

#### 5. MYTH: MOST DISEASES ARE NOT SERIOUS ANYMORE.

Fact: The diseases prevented by vaccines can lead to severe illness, complications, and even death. For instance, measles can cause serious complications in about 10% of cases, including hospitalization and death. Pertussis can be fatal for infants, highlighting the need for continuous vaccination. Diseases thought to be eradicated can resurface if vaccination rates decline, as seen in recent measles outbreaks in communities with low vaccination coverage.

#### 6. MYTH: NO ONE GETS THESE DISEASES ANYMORE

Fact: Vaccine-preventable diseases still exist, even if they are rare in some regions. With global travel and declining vaccination rates, these diseases can re-emerge. Unvaccinated individuals are at significant risk when outbreaks occur. For example, measles outbreaks can arise from travelers returning from countries where the disease is prevalent.

#### 7. MYTH: MY CHILD DOES NOT NEED VACCINES BECAUSE OTHERS ARE VACCINATED

Fact: Relying on herd immunity is risky. If too many parents opt out of vaccinations, diseases can spread quickly, endangering unprotected children. Vaccines protect not just the individual but the entire community, especially those who cannot be vaccinated for medical reasons. Herd immunity works effectively only when a high percentage of the population is vaccinated, typically around 90-95% for most diseases.

#### 8. MYTH: IT'S BETTER TO GET VACCINES ONE AT A TIME

Fact: Combination vaccines are safe and effective. They streamline the vaccination process, reducing the number of medical visits and minimizing discomfort for children. Studies show that combination vaccines do not increase the risk of side effects. Spacing out vaccines can leave children vulnerable to diseases for longer periods.



#### 9. MYTH: DELAYING VACCINATIONS REDUCES SIDE EFFECTS

Fact: Vaccines are designed to protect infants as early as possible. Delaying vaccinations can leave children vulnerable to serious diseases, and side effects do not increase with younger age groups. The recommended vaccination schedule is based on extensive research to protect children at the most critical times.

#### 10. MYTH: VACCINES ARE NOT ADEQUATELY TESTED

Fact: Vaccines undergo rigorous testing for safety and efficacy before they are approved for use.

Health authorities continuously monitor their safety even after approval, ensuring that serious side effects are exceedingly rare.

#### 11. MYTH: THIMEROSAL IN VACCINES CAUSES AUTISM

Fact: Thimerosal, a preservative, has been removed from most childhood vaccines. Research has shown no link between thimerosal and autism, and the rates of autism continue to rise despite its absence.

#### 12. MYTH: BREASTFEEDING ALONE PROTECTS MY BABY

Fact: While breastfeeding offers some protection against certain infections, it does not replace the need for vaccinations. Vaccines provide crucial, long-lasting immunity against serious diseases.

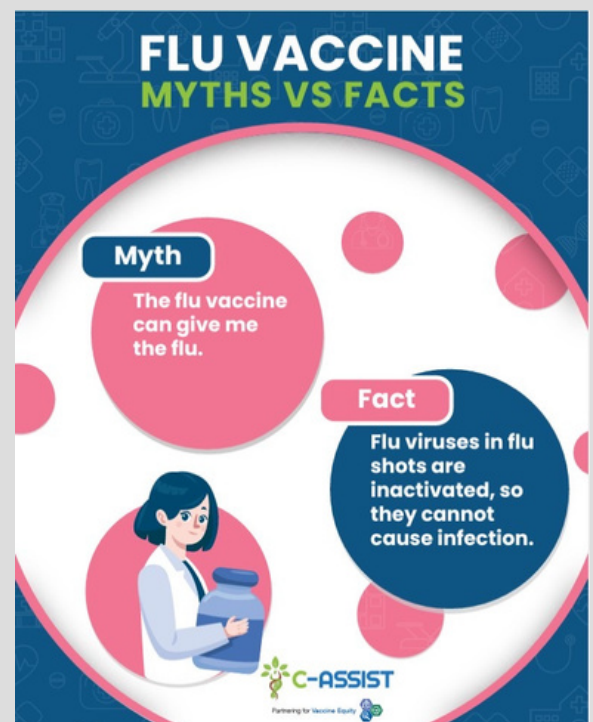
#### 13. MYTH: NATURAL IS ALWAYS BETTER

Fact: Many harmful substances are natural, and the germs that vaccines protect against can cause severe illnesses. Vaccines stimulate the immune system safely, allowing for the development of immunity without the associated risks of the diseases.



## CONCLUSION

Understanding the facts about vaccines is crucial for making informed decisions about health. This helps in higher vaccination rates and better public health outcomes. Vaccines are a cornerstone of preventive healthcare that protects individuals and communities. Through education, public health efforts, and continued research, we can combat misinformation and ensure a healthier future for all.



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# BRAIN'S CHEMISTRY OF CONNECTIONS

This post would dive into the fascinating science behind our most fundamental human experiences love, friendship, and parental bonds. It turns out, these feelings aren't just in our hearts; they're orchestrated by a powerful cocktail of chemicals in our brains.

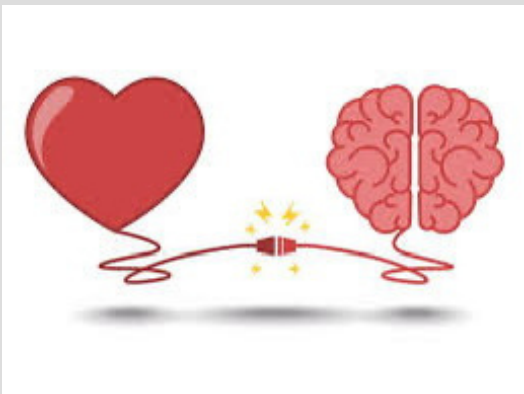
WRITTEN BY  
RAJPUROHIT  
PRANAV  
MANOHARSINGH  
CLASS OF 2030

## INTRODUCTION: THE CANARY IN THE COAL MINE

It's all in your head (And that's a good thing). Have you ever noticed how much better life feels after a heartfelt conversation or a warm hug? That understanding the brain and flexing emotional intelligence can transform how you show up your relationships. This biological perspective doesn't diminish the magic of connection but reveals the fascinating science that makes it possible. Our brain are, quite literally, built for bonding.

The key players: Your Social Brain's Chemical toolkit

Understanding neuroscience that could bring valuable insights for developing collaborative leadership and offer practical ways to connect, communicate and co-create effectively across the sectors.



## THE HUMAN BRAIN: A BLUEPRINT FOR CONNECTION

The human brain is the most complex bit of

kit in the known universe. As Brown and Brown said, “every one of us has a brain that is essentially similar to every other brain on the planet and yet completely unique” (2015). Our brain has the tough job of regulating our bodily systems, managing emotions, and making each of us the person that we are.

As the brain is deeply associated with the management of relationships, the need to understand and leverage the implications of neuroscience for effective collaboration becomes even more critical.

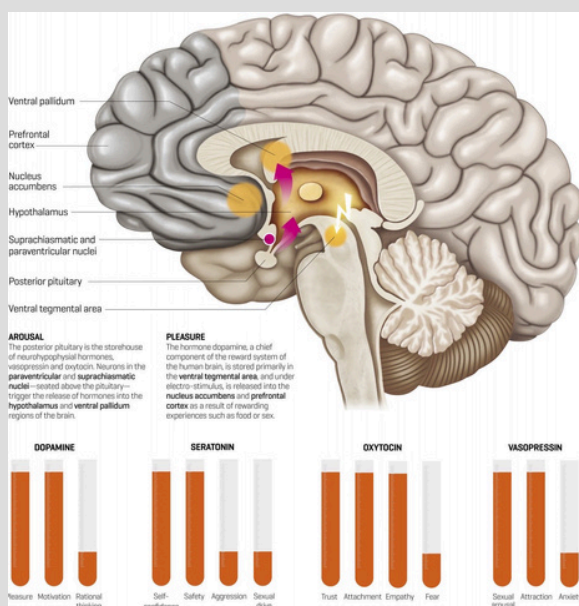
## THE SOCIAL BRAIN IN COLLABORATION

Humans are the inherently social creatures, and the brains are wired for interactions . Neurobiologists have studied the pair-bonding mechanisms in animal models of mate choice to elucidate neurochemical mechanisms underlying attachment and showed possible roles for oxytocin, vasopressin, and dopamine and their receptors in pair-bonding and monogamy.

When collaborating, our brains constantly process the actions, emotions, and thoughts of those around us. Different regions of our brains allow us to understand others’ intentions, empathise with them, and adjust our behaviour accordingly. This “social brain network” is finely tuned to pick up on subtle cues which help us understand the emotional state of our teammates, such as facial expressions and body language. By paying attention to these signals, leaders can foster authentic harmony and team spirit within their groups.



## CHEMISTRY OF LOVE: DOPAMINE, OXYTOCIN, AND SEROTONIN



### 1)Oxytocin: The neurotransmitter of trust - Love Hormone

One of the most important neurochemical players in collaboration is oxytocin, often referred to as the "trust hormone" or "bonding hormone." Oxytocin plays a critical role in forming and strengthening social bonds. It is released during positive social interactions and through collaborative work.

High oxytocin levels can also enhance empathy, reduce stress, and foster a greater sense of belonging in the team - enhancing success .

It's a saying that goes like : A Hug a day keeps the Stress Away.

### 2)Vasopressin - The Bonding Hormone

another key neuropeptide, significantly contributes to bonding, particularly in monogamous species like certain voles, where it enhances attachment by activating specific brain regions associated with emotional closeness and can also influence aggressive behaviors in the context of territory and relationship protection.

### 3)Dopamine - The happiness Hormone

a neurotransmitter integral to reward pathways, enhances emotional experiences tied to social interactions, reinforcing positive feelings toward a partner and increasing the motivation to seek companionship.

### 4)Serotonin - The Feel Good hormone

Widely known as a mood regulator and is often referred to as the body's natural "feel-good" chemical. Normal levels help people feel calmer, more focused, and emotionally stable, which provides a solid foundation for healthy relationships and interactions.

Fun Fact : Eating Banana instantly makes you feel good .

These changes help sustain long-term relationships, friendships, and family bonds.

The interplay of these chemicals occurs through their specific receptors in brain areas such as the nucleus accumbens and ventral tegmental area, which govern attachment behaviors and overall relationship dynamics as well as the interactions among oxytocin, vasopressin, dopamine and serotonin are pivotal in shaping the dynamics of various relationships, influencing emotional connections and attachment behaviours and help sustain long-term relationships, friendships, and family bonds.

For example, oxytocin release can be influenced by serotonin, and they work together to facilitate social reward and attachment.

## SYNCHRONISATION OF BRAINWAVES

Another remarkable aspect of neuro-collaboration is the synchronisation of brain activity. When people collaborate, their brainwaves can synchronize in a phenomenon known as neural coupling. when individuals work together on a task, their brain activity becomes more aligned, particularly in regions associated with communication and problem-solving. When we collaborate, we can dial up inter-brain synchronicity and "be on the same wavelength" to access the emergent power of the collaborative "system" we have co-created with diverse partners.

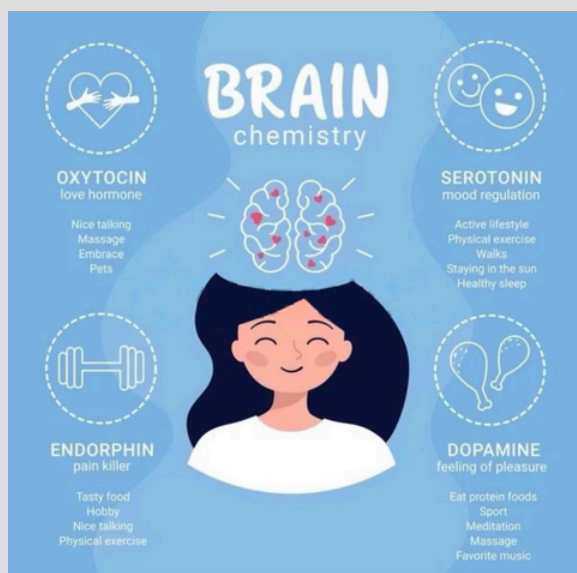
This synchronisation can enhance understanding, improve the flow of ideas, and make it easier for group members to coordinate their efforts. It is believed that the synchronization of brainwaves reflects a shared mental state, allowing them to process information more efficiently as they work toward a common goal. Whilst we reap the benefits of synchronization in collaboration, we of course benefit from diversity of thought and perspectives. "Rebel" ideas are embraced, and we celebrate different ways of thinking (left brain for logic, right brain for creativity) among different people.

## THE IMPACT OF EMOTIONS ON COLLABORATION

Emotions are contagious and play a powerful role in collaboration, both positively and negatively. Positive emotions, such as joy, excitement, and enthusiasm, fuel creativity, motivation, and drive to succeed. Negative emotions, on the other hand, such as frustration, anxiety, fear, shame, anger, or distrust, hinder collaboration by impairing cognitive function and communication. Trust is the most fundamental of the attachment emotions, creating energy that can flow outwards to achieve challenging goals.

The brain's amygdala, responsible for processing emotions, is particularly active in social situations. When collaborating, the amygdala helps individuals assess emotional cues from others, such as tone of voice, facial expressions and body language, to determine how to respond. If emotions run high during a collaboration, the amygdala may trigger a stress or threat response, which can impede clear thinking and decision-making.

Emotional response is not always detrimental to collaboration, though. In some cases, emotional responses based on intuition can signal to team members that a situation requires attention or intervention.



## CONCLUSION



In summary, While love and human connection remain some of the most profound and transformative human experiences, the interactions between oxytocin, vasopressin, dopamine and serotonin vary significantly across different types of relationships, dynamically shaping emotional connections and attachment behaviors.

Understanding the brain's role in love and connection can offer insights into our own romantic behaviors, strengthen relationships, and even help us navigate the challenges of love and loss. By optimizing our brain health through exercise, diet, sleep, and mindfulness, one can enhance the capacity for love and deepen our connections with others.

Ultimately, love and connection are powerful blends of biology, chemistry, and human interaction, proof that the heart and the brain are more intertwined than we ever imagined.

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# THE SOUND OF HEALING: MUSIC'S ROLE IN SURGICAL SUCCESS

Music is often played in operating rooms. It has been shown to reduce stress for the surgical team and help patients feel less anxious before surgery. However, there is also concern that music might cause distraction and split attention, which could affect the surgery process.

WRITTEN BY

THISARANI  
KAVINDYA  
FERNANDO

CLASS OF 2026

## HOW MUSIC CAN AFFECT THE SURGEONS

Surgeons can feel stressed during surgery, and this stress can affect their performance. It's important to find ways to reduce workplace stress to keep the quality of care high and ensure the well-being of healthcare workers. Background music is commonly used in operating rooms, with around 67-80% of them playing music globally. While noise is usually seen as a negative, many people believe that music can create a calm and positive environment in the operating room. However, there is still some debate, especially about whether music might cause distractions. There aren't many studies that look at the physiological and psychological effects of music on surgeons. One study looked at the stress levels of surgeons and patients but didn't measure the surgeons' body responses.



Heart Rate Variability (HRV) is a common way to study how the body reacts under stress. HRV measures how the heart rate changes from beat to beat and helps show how the autonomic nervous system works. In stressful situations like surgery, HRV changes, showing a shift in the balance of the nervous system with more activity in the sympathetic system and less in the parasympathetic system.

## THE IMPACT OF MUSIC ON PATIENTS



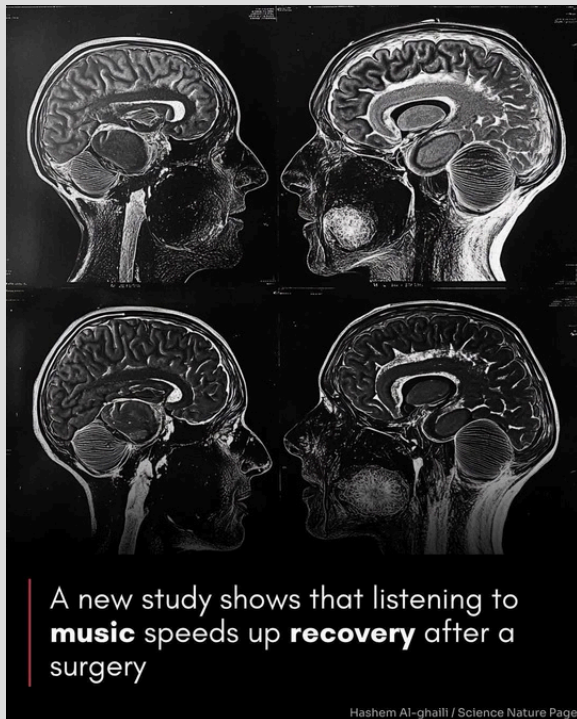
Negative feelings like tension and anxiety before surgery can cause problems such as trouble sleeping, changes in heart rate, and high blood pressure, which can affect the results of surgery. Research has found a link between pre-surgery anxiety and higher post-surgery pain levels. High anxiety levels before surgery can lead to more pain after surgery, and patients may need more painkillers and anesthesia, which can slow down recovery and hospital discharge. Using only sleeping pills can cause bad side effects and even lead to drug addiction. In contrast, music therapy has been widely accepted as a way to ease anxiety in medical settings. Patients often feel anxious during surgery, especially those who don't have general anesthesia, as they can feel various sensations during the procedure.

The nervous system can react by increasing heart rate, blood sugar levels, blood pressure, and causing other physical effects, which can reduce the effectiveness of the surgery and harm recovery.

## HOW MUSIC CAN USE FOR POSTOPERATIVE ANXIETY

After surgery, patients often feel anxious and nervous, which can activate the body's stress response, increasing heart rate, blood pressure, and other stress-related symptoms.

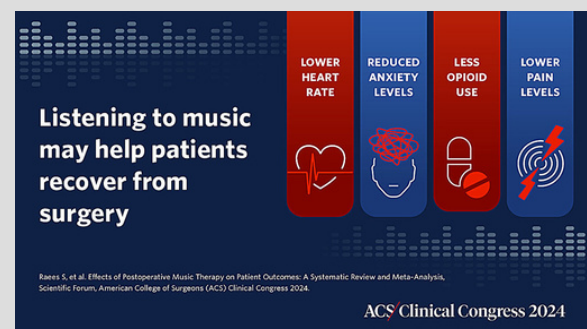
This can delay recovery and hospital discharge. Traditional treatments involve providing emotional support and psychological care, but these methods are often not very effective. Studies have shown that music can reduce the body's stress response by lowering the levels of stress hormones. Music therapy is considered a safe, non-invasive, and effective way to manage stress without using medicine.



## TREATING POSTOPERATIVE PAIN WITH MUSIC

Post-surgery pain is common due to the nature of the procedures and the amount of trauma involved.

Pain can stimulate nerves and hormones, leading to increased metabolism and oxygen use, which can cause the body to go into a negative nitrogen balance. Patients under high anxiety may feel more pain and require more strong painkillers. Traditional pain relief often uses opioids like fentanyl, but these come with side effects like dizziness, nausea, vomiting, and can lead to drug dependence. Music can help reduce the perception of pain by slowing down the brain's response to pain signals and stopping the transmission of pain messages, which can lead to pain relief.



## CONCLUSION

In summary, using music in surgical and treatment settings is a strong, non-medical tool that can improve outcomes for both patients and surgical teams.

Patients may feel less anxious before surgery, experience less pain, need fewer painkillers, and have more stable heart rate and blood pressure, leading to better satisfaction and shorter hospital stays. For the surgical team, music can help keep them focused, improve their mood, and reduce stress and mental fatigue, which can help them perform better. While some studies show that loud or fast music can cause distractions, overall, music can be beneficial when chosen carefully, like softer or classical music. Even though there is some evidence supporting the benefits of music, its use in medical settings is still limited because studies are not always consistent, and people's reactions to music are personal.

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# MAKING A BABY WITH 3 PEOPLE / “THREE PARENT” BABIES

A baby born by combining the genetic material of three separate individuals? That would have sounded almost impossible about a few decades ago. But the world’s first ever “three-parent baby” was born in Mexico in the year of 2016, while in 2023 the UK welcomed their own baby through this ground breaking procedure. Just this year, 2025, the UK also reported of eight healthy babies being born thanks to this hopeful yet controversial method.

WRITTEN BY

KADUBODA  
ARACHCHIGE  
MINURA  
MENAKA

CLASS OF 2026

## SO WHAT IS A “THREE-PARENT” BABY?

They are babies that come into being through a very recent method of in-vitro fertilization that involves the injection of genetic material of two individuals into an ovum of another entirely separate individual. But then You might ask yourself, “where does the genetic material of the third person come into the possible zygote?”, well the answer is the mitochondria. The mitochondria, also known as the power house of the cell whose main function is to provide ATP (Adenosine Triphosphate) for cellular functioning, has its own form of DNA embedded within.



## MITOCHONDRIAL DNA AND ITS ISSUES

Mitochondrial DNA has some key differences from the more famous nuclear DNA. While nuclear DNA has a double helix linear shape, mitochondrial DNA has a double stranded circular shape. Furthermore, mitochondrial DNA are much smaller in size to the nuclear DNA.

An organism inherits its nuclear DNA from both its parent organisms, but mitochondrial DNA are only inherited maternally. One important fact about DNA of the mitochondria is that comparatively, it has a higher a mutation rate thanks to its transcription process that happens in bulk for the entire strand unlike nuclear DNA which has individual gene transcription. As a result, mitochondrial DNA mutations give rise to multiple genetic disorders like leigh syndrome, mitochondrial encephalopathy and many more.

And now we can now prevent the occurrence of these diseases through this modern IVF method, Mitochondrial donation, giving rise to Three parent babies.

## THE METHODS

As of now, there are a few methods of this fascinating procedure. The first method is called mitochondrial donation technique. In this approach, If a woman has a risk of mitochondrial diseases being passed down to their offspring, mitochondrial DNA will be extracted from a healthy female oocyte of another woman that has no risk of mitochondrial diseases, and this can be inserted into a fertilized egg.

The alternative method is named as maternal spindle transfer technique. The opposite happens during this procedure,

which is the insertion of the nuclear genetic material of the biological female parent being inserted into the enucleated cytoplasm of the female donor's ovum. Afterwards the male biological parent's sperms are used to fertilized the reconstructed oocyte. A slightly different variant of this same technique is also present, which is termed as pronuclear transfer. Here, the male sperm is used to the fertilize the oocytes of both the donor and the biologicals mother. Then once fertilized, the nuclear DNA is removed from both fertilized oocytes. Next the nuclear DNA from the biological mothers fertilized egg is then inserted into the cytoplasm of the enucleated donor oocyte.

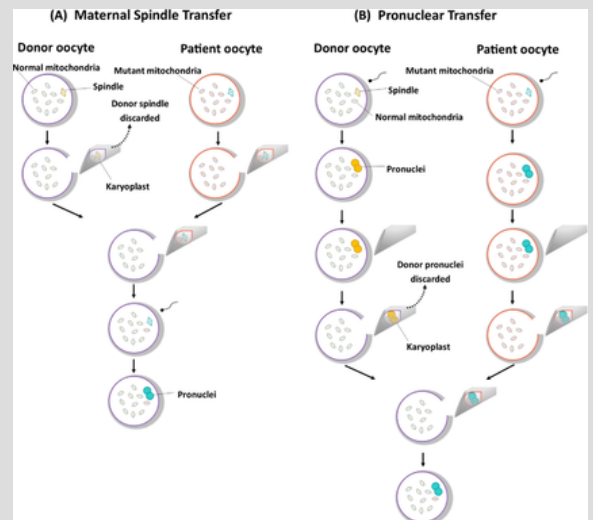
All of these methods allow us to remove the risky maternal mitochondria thereby bypassing the risk of the possible mitochondrial disorders

### CONTROVERSIAL OR NOT?

As miraculous and as advantageous this technique sounds, it also has its unavoidable shortcomings. First up are the technical imperfections. No matter how careful a lab is, it is always possible of the faulty mitochondrial DNA material, even small parts of it, being transferred to the modified zygote. In simpler terms, this means that a 100% success rate is never guaranteed. Also since it's a rather new procedure, there are chances of possible adverse effects that may not have been presented yet.

The next obvious issues would be the ethical issues. Many groups of people believe that these latest techniques are "trying to play God", by meddling with the holy process of making man. Further, a child having parts of three parents in him, may be viewed as an abomination of some sort. This may cause mental agony, discrimination and stress to the child in the future. Also when creating a baby through this technique, another potential baby is being killed,

because the extra ovum or embryo that is discarded has the possibility to develop into a healthy individual.



Additionally, a three parent baby is a gateway to many complicated legal issues, especially regarding the guardianship of the baby. On top of that, this technique being very expensive gives rise to the social issue of it being only accessible to those in power or high status, and may not be helpful to those that may actually benefit from it.

Whether it is right to carry out this technique or not, purely depends on the personal beliefs of individuals. Either way the fact that this new step in science is rather astonishing is something that we all can agree on. From finding out what a cell is and now modifying babies, human race has come a long way for sure.

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19	Kishnani Rohankumar Sadhuram (April- June, 2025)		
20	Eriiyanuoluwa Orekoya (Jul-Sep, 2025)		
21	Fathima Aysha Hafeel ( Jul- Sep, 2025)		

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