

## #TECHNOLOGY

### Battery-free Pacemakers

"Whereas right now, we have to shock the whole heart to do this, these new devices can do much more precise targeting, making defibrillation both more effective and less painful," said Igor Efimov.



Mtrial fibrillation – a form of irregular heartbeat, or arrhythmia – leads to more than 454,000 hospitalizations and nearly 160,000 deaths in the United States each year. Globally, it is estimated that approximately 60 million people are affected by the condition.

Pacemakers are lifesaving devices that regulate the heartbeats of people with chronic heart diseases like atrial fibrillation and other forms of arrhythmia. However, pacemaker implantation is an invasive procedure, and the lifesaving pacing the devices provide can be extremely painful. Additionally, pacemakers can only be used to treat a few specific types of disease.

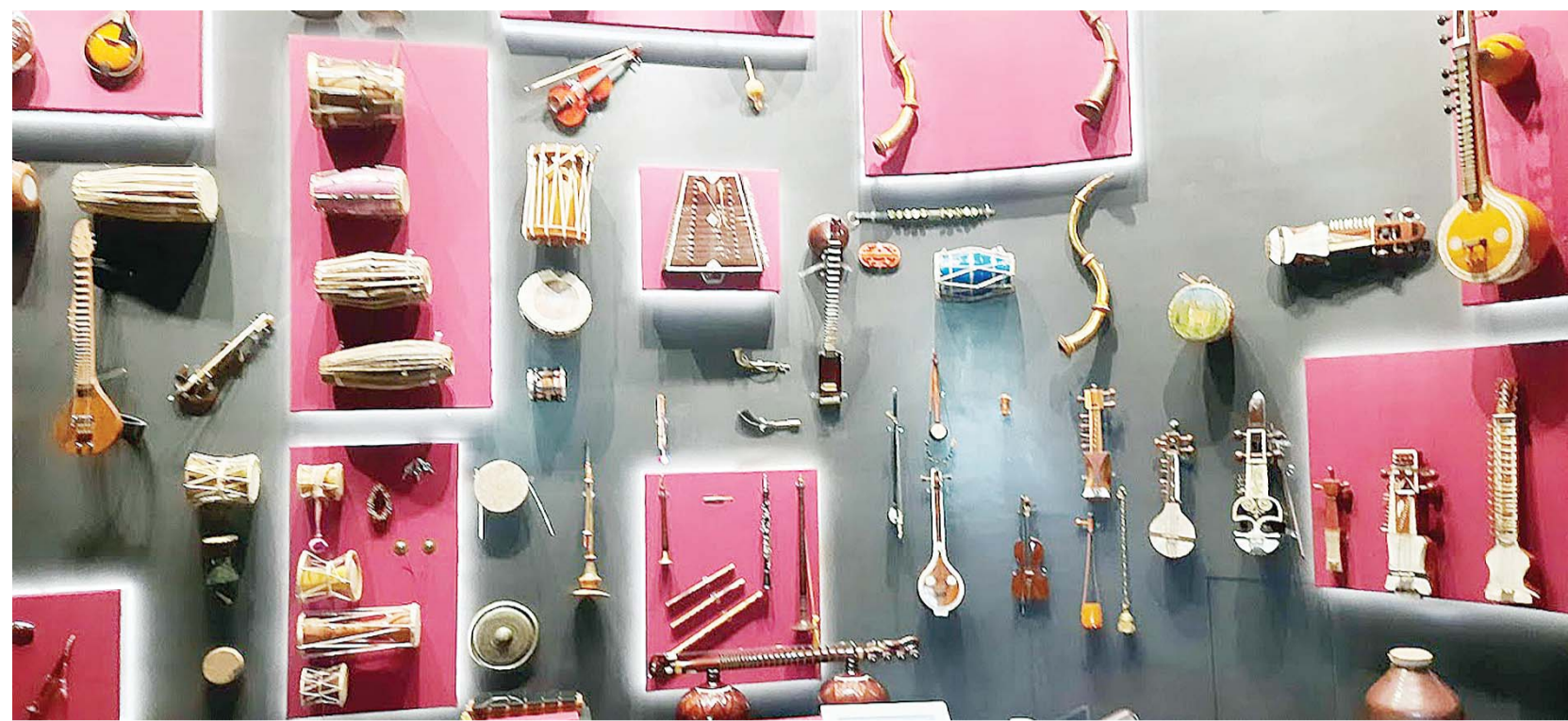
A University of Arizona-led team of researchers detail the workings of a wireless, battery-free pacemaker they designed that could be implanted with a less invasive procedure than currently possible and would cause patients less pain. The study was helmed by researchers in the Gutruf Lab, led by biomedical engineering assistant professor and Craig M. Berger Faculty Fellow Philipp Gutruf.

Currently available pacemakers work by implanting one or two leads, or points of contact, into the heart with hooks or screws. If the sensors on these leads detect a dangerous irregularity, they send an electrical shock through the heart to reset the beat.

"All of the cells inside the heart get hit at one time, including the pain receptors, and that's what makes pacing, or defibrillation painful," Gutruf said. "It affects the heart muscle as a whole."

The device Gutruf's team has developed, which has not yet been tested in humans, would allow pacemakers to send much more targeted signals using a new digitally manufactured mesh design that encompasses the entire heart. The device uses light and a technique called optogenetics.

Optogenetics modifies cells, usually neurons, sensitive to light, then uses light to affect the behaviour of those cells. This technique only targets cardiomyocytes, the cells of the muscle that trigger contraction and make up the beat of the heart. This precision will not only reduce pain for pacemaker patients by bypassing the heart's pain receptors, it will also allow the pacemaker to respond to different kinds of irregularities in more appropriate ways. For example, during atrial fibrilla-



## Indian Music Experience Museum Music First Hand...



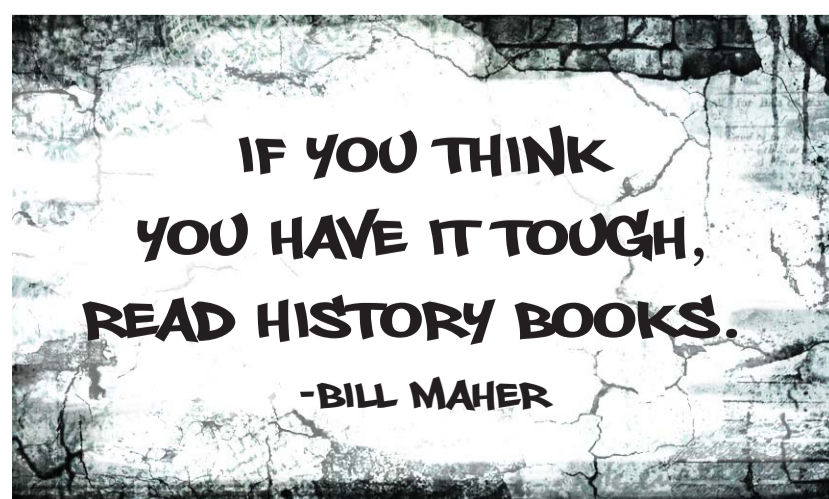
Dr. Durgaprasad Agrawal  
Senior editor

Bangalore is a beautiful city in South India. It is India's third-largest city and is the Capital of the state of Karnataka. A wonderful museum is located in JP Nagar locality of this city. A museum that every music lover must visit. The name of the museum is Indian Music Experience Museum. The word 'experience' has a special meaning in this name, which I will discuss later.

Situated in a very open space and picturesque environment, this museum is housed in a huge three-story building. Right in front of the entrance, you can see the museum's gift store, but we'll get there later! On the right is the ticket window aptly named Box Office. After taking a ticket and having an identification band on your wrist, you take the elevator to the museum's third floor. On reaching this floor, the first thing you get is the introductory theatre, which is unique in the sense that its screen is very large and in the shape of a crescent. You get to see a film of about twelve minutes on this screen. The film beautifully introduces the various types of music present in our everyday lives. In our walk, in the beating



## THE WALL



The museum's ground floor provides a unique attraction which is named the Sound Garden. There are many huge musical instruments installed here that you can play and compose music on them in any way you want. These are experimental instruments, not traditional instruments.

## #MELODIUS

of our hearts, in the dripping of the tap, in the hum of the whirlpool - music is present everywhere. And after knowing this we move towards the museum.

**Influences on Indian Music**

Its first section is Contemporary Expressions. Here we get to see and hear different hallmarks of Indian rock, modern and experimental music. The second section on this floor is Living Traditions. In this section, we get acquainted with the musical traditions and heritage of various gharanas of both Hindustani and Carnatic styles of Indian music. In this section, we also get a captivating introduction to Indian devotional music. The third section of this level is Songs of the People. In this section, we get an

opportunity to get acquainted with the folk music of all over India. It is very enjoyable to know how the common people of India express themselves in music and enjoy it. The fourth and last section of this floor is entitled Melting Pot. Here we get to know the various influences on Indian music such as colonialism and jazz and we also enjoy the band music of the Indian Navy.

From here we come down the stairs or by lift to the second floor. Many musical instruments on the front wall attract our attention when we move toward the stairs. Actually, these instruments are displayed in the first gallery on this second floor. The name of this gallery is Instruments Gallery. Here you get complete information about almost all Indian and foreign instruments used in Indian music. In this gallery of about one hundred musical instruments, you can also see many such instruments, whose names you may not have even

## opportunity to get acquainted with the folk music of all over India.

heard. Not only can you see them all, but you can also hear them. The description of the origin, development, and changes in musical instruments expands your knowledge wealth. The second section of this level is Songs of Struggle. Here you get to know many things about the songs and music of our freedom struggle era. This section also provides an introduction to the patriotic songs used in Indian films.

**Stories through Songs**

If the nearly 35 different forms of Vande Mataram here amaze us, then the copy of the original letter written in Mahatma Gandhi's handwriting to MS Subbalakshmi thrills us. The next section of this floor is very interesting. Its title is Stories Through Songs. This section focuses on Indian film music. Needless to say, here we get a chance to know about the music of films of all Indian languages. There is also a huge collection of movie posters here. The next section of this floor is very interesting and informative. It is titled - Reaching Out. Here the recording history is displayed. From how music was recorded in the beginning, today's latest recording technology can be seen and understood here. Along with this, the development journey of ways of



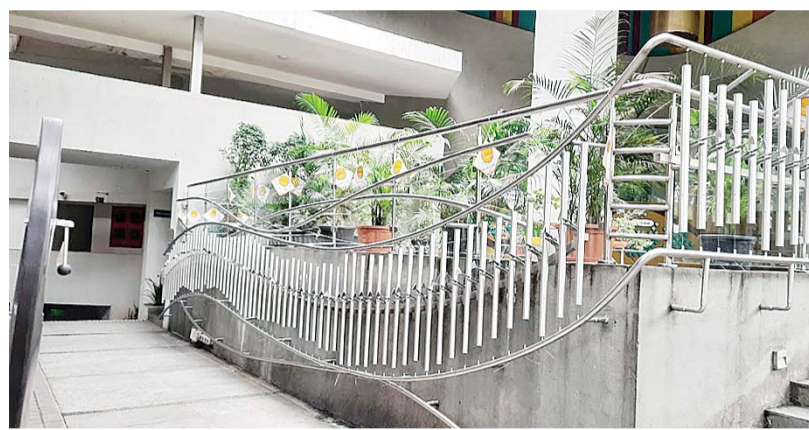
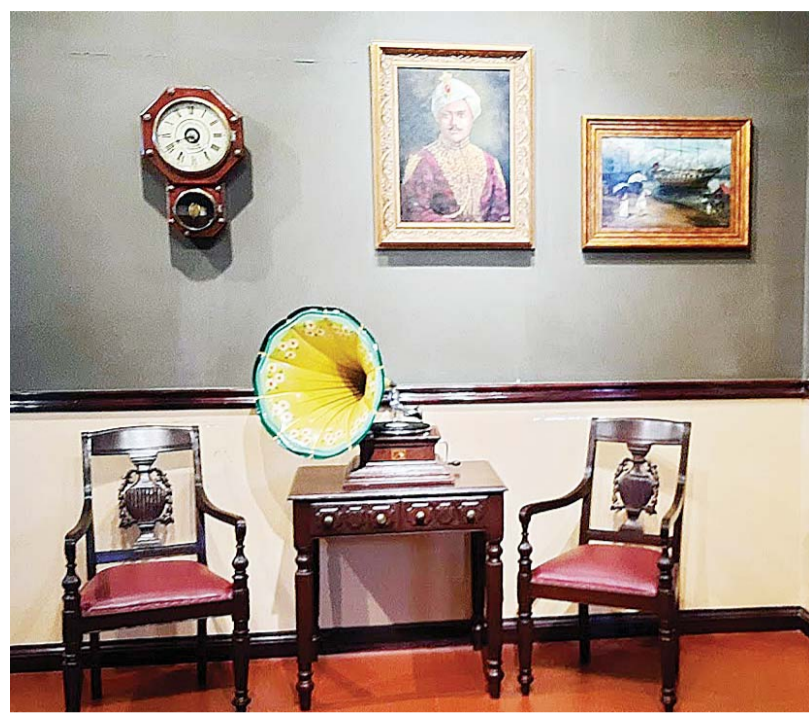
## BABY BLUES



## World Origami Day



Many people aren't aware of this particularly special day. In fact, it's an especially important one for all those paper folding fanatics out there. For all of those folks who look at a flat sheet of paper and dream of all of the exciting objects that could be made out of it, simply by folding. So for those who happen to love the art of folding paper and creating beautiful creations from paper, cloth, dollar bills, napkins, or anything that'll hold a crease, World Origami Day is for you.



listening to and storing music is also displayed here. This section is very informative.

The last section of this floor is The Stars. Here is some important, interesting, authentic, and thrilling information about one hundred great stars of Indian music. Needless to say, that the hallmarks of their music can also be heard. The feeling of seeing the invaluable items used by many great musicians like the tambura of MS Subbalakshmi, the costumes worn by Pandit Bhimsen Joshi and Daler Mehdi on stage, etc, is indescribable.

The museum's ground floor provides a unique attraction which is named the Sound Garden. There are many huge musical instruments installed here that you can play and compose music on them in any way you want. These are experimental instruments, not traditional instruments.

Headphones are hanging in front of

small screens all over the place. You select the artist or music of your choice on the screen and then listen to it on headphones. For example, when you read and read about the musical gharanas of India, you also have the option of listening to the selected compositions of the singers of the respective gharanas.

When you read about a musical instrument, you can learn more by listening to its sound. And as if that alone isn't enough, when you know something about taal, you also get a chance to compose taal yourself through this technique. If you want, you can also do your own vocal test and if you want, you can also compose a small composition by mixing many instruments. Needless to say, all these experiences not only increase your enjoyment but also expand your musical understanding. Due to this technical facility, 'experience' is associated with the name of this museum.

If you look at the museum with interest, it will not be less than a day for it. But even if you see it running and running, then you have at least three-four hours to go through it. I am writing this only to let you know how much material has been stored here. I went to this museum, learned many new things, and listened to a lot of music I was unaware of. After visiting this museum, now I will be able to take more interest in music. If you ever get a chance to visit Bangalore, do not miss visiting this museum.

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## #PARENTING

### Left-over & Expired Medicines



Nearly half of parents say they have leftover prescription medication at home.

"We found that it's common for parents to keep medicines long after they are expired or no longer needed, which creates an unnecessary health risk for children," says Sarah Clark, co-director of the C.S. Mott Children's Hospital National Poll on Children's Health at University of Michigan Health.

"Younger children getting into medicine in the home is a major source of unintentional poisonings. For older children, access to these medicines brings risk of experimentation, diversion to peers, or other intentional misuse."

The nationally representative poll was based on 2,023 responses from parents of children 18 and under who answered the survey between August and September 2022.

### Expired Medication

Less than half of parents believe that over-the-counter medicine is less effective past its expiration date, while one in five parents think it's unsafe. "Parents may not realize that medicine is expired until they need it to address their child's symptoms," Clark says. "At that point, parents must decide if they will give the expired medicine to their child or go out to purchase new medicine."



More than a third of parents say it's never okay to give their child expired medicine. But one in three parents believe it's okay to do so up to three months past the expiration date, and about the same number say it would be OK past six months or longer.

"The expiration date is the manufacturer's guarantee that a medication is fully safe and effective; over time, the medicine will lose its effectiveness," Clark says. "Parents considering whether to give their child medicine long past its expiration date should question how well it will work."

More than three in five parents say they are more careful about disposing leftover prescription medicine than over the counter medication. Most also believe it's important to properly dispose of expired or leftover medicine to prevent children from getting into the medicine and to protect the environment.

"Unused and expired medications are a public safety issue and pose health risks to children," Clark says. "It's important that parents dispose of them properly when they're no longer needed to reduce risks of kids getting sick as well as the negative impact on the environment."

## #TRIED&TASTED

To support long-term healthy cognitive functioning, it's best to eat a balanced diet rich in nutrients that support brain health.

## Breakfast Recipes For Brain Health

Sure, devouring a pastry might be easy when you're in a rush, but it may leave your brain in an unfocused fog, especially if you do it regularly. Eating a breakfast rich in nutrients that support your brain is one way to ensure you can stay focused and energized during your busy day to day. It's important to remember that

focus and concentration are cognitive functions, so they rely on your overall brain health. To support long-term healthy cognitive functioning, it's best to eat a balanced diet rich in nutrients that support brain health. With that in mind, we rounded up breakfast recipes made with key ingredients that support a sharp mind so you can start your day on the right note.

### Peanut Butter Overnight Oats

- Ingredients**
- 1 cup old fashioned rolled oats
  - 1 cup unsweetened vanilla almond milk
  - 1/2 cup plain Greek yogurt
  - 2 Tablespoons peanut butter
  - 2 teaspoons maple syrup
  - 1 teaspoon chia seeds
  - 1/2 teaspoon vanilla
  - Pinch of sea salt
- Toppings:** blueberries, extra peanut butter and chopped peanuts



### Preparation

- Add oats, almond milk, yogurt, peanut butter, maple syrup, chia seeds, vanilla, sea salt into a bowl. Stir well to combine, making sure peanut butter gets evenly dispersed. Divide oat mixture into two containers, seal with a lid and place in the fridge overnight.
- Take one container out of the fridge the next morning and stir the mixture.
- Top with a drizzle of peanut butter, blueberries and chopped peanuts.
- Overnight oats will keep for up to 5 days in the fridge in a sealed container.

### Avocado Smoothie Bowl



- Ingredients**
- 1 Avocado
  - 1 portion Ripe Banana
  - 2/3 cup unsweetened almond milk
  - 1/2 cup Fresh Baby Spinach
  - 8 leaf fresh mint leaves
  - 1.1/2 tsp Pure Lemon Juice
  - 1/4 cup raw sliced almonds
  - 1 tsp lemon zest

### Preparation

- Add the avocado, banana, almond milk, spinach, 2 tablespoons of the mint, and the lemon juice to a blender. Cover and puree until velvety smooth, about 2 minutes.
- Pour into two bowls. Cover well and chill overnight or enjoy immediately.
- When ready to eat, sprinkle with the almonds (preferably toasted), remaining 1/2 tablespoon mint, and lemon zest.

### Berry White Bean Smoothie



- Ingredients**
- 1 cup fresh strawberries (150 g)
  - 1 cup blueberries (150 g), plus a few extra to garnish
  - 2 bananas, cut into 1/2 inch slices, frozen
  - 1/2 cup white beans, cooked & drained
  - 1/2 cup soy milk (120 ml)
  - 1 cup cauliflower, frozen (130 g)
  - 1 tsp vanilla extract
  - 1 scoop vegan protein powder (optional)

### Preparation

- Add all the ingredients into a blender and process to obtain a smooth, deep pink liquid.
- Adjust to your taste and texture preferences, adding more plant-based milk, berries, or bananas for sweetness.
- Divide into serving glasses and garnish with hemp seeds, crushed almonds, and fresh blueberries if you like.
- Serve immediately and store any leftovers in a lidded glass jar in the fridge for up to two days. It might separate a bit when stored, so shake or stir it before serving.

### Middle Eastern Savoury Yogurt Jar



- Ingredients**
- 2 cups Plain Greek Yogurt Nonfat
  - 2 tbsp extra-virgin olive oil
  - 1/4 tsp sea salt
  - 1/4 tsp ground black pepper
  - 1/4 cup Crumbled Feta Cheese
  - 1 oz Chipotle Crunchy Chickpeas
  - 1 tsp fresh mint leaves
  - 2 Lemon Wedge Juice, Raw

### Preparation

- Add the yogurt to two 10-ounce capacity jars or bowls.

- Sprinkle with the olive oil, salt, pepper, feta cheese, and crunchy chickpeas, such as Saffron Road Chipotle Crunchy Chickpeas.
- Garnish with mint, if using, and serve with the lemon wedges.

By Rick Kirkman & Jerry Scott

## ZITS



By Jerry Scott & Jim Borgman