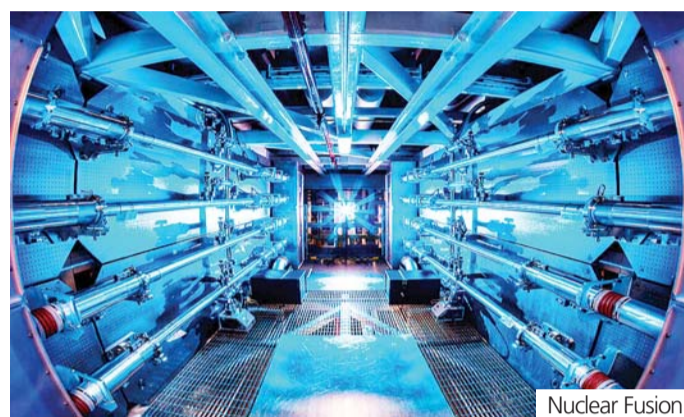


## #THE YEAR THAT WAS

# Biggest Scientific Breakthroughs of 2022

From photos of the infant universe to an energy advancement that could save the planet



Nuclear Fusion.

Scientists in many fields got little attention over the last two years as the world focused on the emergency push to develop vaccines and treatments for COVID-19. But labs and researchers remained busy, and this year they've reported a dizzying series of major discoveries and achievements. Here's a look at some of the most stunning scientific breakthroughs of 2022:

### Nuclear Fusion

Scientists at the Lawrence Livermore National Laboratory in California announced in December that they had produced the first fusion reaction that created more energy than was used to start it. The long-elusive achievement marked a major breakthrough in harnessing the process that fuels the sun. "This milestone moves us one significant step closer" to "powering our society" with zero-carbon fusion energy, Energy Secretary Jennifer Granholm said.

### The James Webb Telescope

Popular Science magazine this year named NASA's James Webb Space Telescope the Innovation of the Year in aerospace technology. Unlike the Hubble space telescope, which scanned the heavens from low Earth orbit, the Webb telescope is camped hundreds of thousands of miles farther out, sitting in Earth's shadow, where it is permanently blocked from sunlight. Its view further protected by a multi-layer sunshield, it sits at the temperature (-370 degrees Fahrenheit) best suited for its infrared sight.

### Transplant Promise

A group of Yale scientists reported in the journal Nature this summer that they succeeded in reviving cells in the hearts, liver, kidneys, and brains of pigs that had been lying dead in a lab for an hour. The researchers accomplished the feat by using a device much like a heart-lung machine to pump a custom-made solution, dubbed OrganEx, into the pigs' bodies. The pigs' hearts started beating and sent the solution through their veins.

The pigs weren't revived, but their organs started functioning again, and they "never got stiff like a typical dead pig."

### Changing an Asteroid's Trajectory

If you've watched Armageddon or Deep Impact or some other movie about an asteroid threatening to wipe out life on Earth, relax. NASA this year proved with its Double Asteroid Redirection Test (DART) mission that it has the ability



Creating Life without Sperm or Eggs.

to deflect a giant space rock off a collision course with our planet. NASA sent the 1,100-pound DART spacecraft slamming into a 525-foot-diameter asteroid, Dimorphos, at 14,000 miles per hour: to see whether the impact force would be enough to change its trajectory.

### AI for Artists

Artificial intelligence is opening up new possibilities for businesses and households, and now new text-to-image generators are giving everyone from artists to urban planners to reconstructive doctors a new tool to help them visualize ideas. DALL-E 2, which Open AI released in July, looks at hundreds of millions of captioned images to turn text prompts written by users into images.

### New Vaccines to Fight Malaria

Malaria, found in more than 90 countries, kills an estimated 627,000 people every year. Vaccines could help reduce or eliminate the toll, but scientists have struggled to develop a highly effective one. This year, though, the technology used to create mRNA vaccines against COVID-19 helped a research team led by George Washington University develop two experimental mRNA vaccine candidates that are highly effective in reducing malaria infection and transmission, according to a study published in December in npj Vaccines.

### Cancer Treatments Advance

Scientists reported progress on several fronts in the battle against cancer. A team led by Chris Jones, a professor of Pediatric Brain Tumor Biology at the Institute of Cancer Research, worked with the company BenevolentAI to use artificial intelligence tools to come up with a new drug combination to fight diffuse intrinsic pontine glioma, an incurable childhood brain cancer. The proposed combination extended survival in mice by as much as 14 percent and has been tested in a small group of children.

### Creating Life without Sperm or Eggs

In experiments at the Weizmann Institute of Science in Israel, researchers created mouse embryos inside a bioreactor that were made up of stem cells cultured in a Petri dish - no egg, no sperm. The embryos developed normally, starting to elongate on day three and developing a beating heart by day eight. It was the first time scientists ever managed to grow fully synthetic mouse embryos outside the womb.

Japan tried its best to woo the Indians and Indian soldiers during WWII through its posters depicting the cruelty of British Raj and the dreams of a free Asia. But did their strategy really work?



Sandeep Mukherjee  
The writer is a historian with a special interest Asian history.

The posters are moving, haunting and thought provoking. Each poster evokes a moment of misery under the Empire, and some even attempt to give alternative outcomes, should India free herself from the shackles of the Raj. The approach to south Asian figures is strange and sardonic, in a sweeping, over-generalised way - men and women drawn out as dark and meagre, with protruding eyes and a pointy chin. The highly stylised approach is evocative of cartoons, even manga, in places. The colours, still remarkably well-preserved, are often either garish or muted in tones - depending upon the printing techniques of lithography or offset.

Several figures are repeated. Among them are the rotund, crude caricature of Winston Churchill, portrayed as the ambassador of the Empire and the figure of a dark, sparsely-clothed, furious-looking Indian, who is often holding a weapon over the British Prime Minister. This dark, turbaned figure, appearing time and time again, can be viewed as a metaphor for self-empowerment against the Empire.

There is a desperate image of a woman-perhaps the embodiment of Mother India-holding a dying body and standing among a sea of bodies at the Jallianwala Bagh massacre of 1919. In the background can be seen a slew of Indians holding sticks and other weapons, a fluttering



Entire Asia is moving towards victory. Come let us break our shackles and fight for freedom.

tiranga with Gandhi's chakra emerging from within the crowd, chasing uniformed men carrying rifles. The text in Hindi and Bengali reads, "Any Indian whose blood doesn't boil at the memory of the Amritsar massacre cannot be called an Indian. This is the golden opportunity for revenge." This can be seen as a haunting reminder of Jallianwala Bagh, particularly juxtaposed against the fact that soldiers, fighting in World War I for the British, would have only just returned home to be greeted by news of the massacre. The sheer

# When a Japanese poster was worth a thousand words! (...2)

Indians, representing, we can assume, different communities. Behind Churchill, as always, is the figure of the dark turbaned man.

What is striking is the combined use of language and historical imagery in these posters, which served a two-fold purpose-to lure the common man with the prospect of a better life free from the Empire, and secondly, to attempt to convert the sepoys to the side of the Axis powers. Propaganda aimed at civilians seems to be mostly in Hindi, Bengali or Burmese and evokes plight and strife. In contrast, propaganda aimed towards the sepoys-martial races-seems to be in Urdu, the language most commonly read across the fighting belt of Undivided Punjab.

In this strand of propaganda, historian Yasmin Khan discusses one poster with the omnipresent figure of the sepoy's wife. There is a chubby child in her arms and one of the Urdu captions on the page reads: "After bidding farewell to you, we kept on looking for you on the horizon." The poster is labelled Milap, or reunion. There is no text in Gurmukhi or Nepalese, and so one can assume that the Axis pow-



This poster features UK's Prime Minister Winston and depicts how UK destroyed India's mulmul weavers.

ers knew it would be near-impossible to convert the Sikh and Gurkha soldiers, who since the Revolt of 1857, had remained loyal to the British Army.

### Home Rule

So who was helping create these images? A series of posters bears the signature of the "Azad Hindustan League." They are mostly text-based, appealing to fellow Indians in several languages (Urdu, Bengali, Burmese, English) to join their cause for independence, and help Nippon-Japan-in driving out the Devil-England-from India. The handwriting seems amateurish for a local and in places, reminiscent of the finesse of Japanese calligraphy, particularly in the smaller lines of text. There are several instances of hyphenation, line-breaks or merging of words in unusual places. In light of these oddities, it might be fair to conclude then that even if members of the Azad Hindustan League were consulted in the creation of these posters, it was the Japanese hand that rendered them.

Though this paper war is fascinating and a remarkable attempt at conversion of allegiances, it did not yield the desired effect it had intended. In retaliation, the British embarked on conversion of allegiances, it did not yield the desired effect it had intended. In retaliation, the British embarked on their own endeavour, printing and distributing pro-British, anti-Japanese and anti-German flyers within India and



Britain destroyed India's cotton industry.

consideration for detail and nuances from history in the poster is really quite remarkable.

### Awake, Arise & Destroy

In another image, Churchill can be seen at the centre of a web, his head placed upon the body of a spider that has spun a web of submission. In his hands is a bag of gold coins - riches from the subcontinent and around him are submissive figures of Indians in pleading or praying positions. They are clothed like ascetics, and their hands are shown folded in devotion, portraying the peace-loving nature of the locals. The caption, when translated, reads, "An unprecedented opportunity to win freedom presents itself. Awake, arise and destroy the English shackles."

Another poster shows Churchill seated at a table eating meat carved in the shape of India-allegorical of the sheer consumption of the subcontinent by the Empire-while a British officer carves the form of a Union Jack into the back of a withering Indian, whose hands and feet are bound with chains. Behind Churchill is a dark figure, holding a stick and coming towards him in anger. The text reads, "Beat the devil with sticks and save India."

Yet another poster evokes the tragedy of the Great Bengal Famine, depicting a British couple, possibly based on Churchill and his wife, indulging in a lavish meal of succulent meat and wine, while

## #HISTORY

beneath the dinner table lie starved Indians. The text reads, "Kill all the British who are sucking Indian blood."

There is another image that shows the thumbs of mulmul workers being cut in Dhaka and their looms destroyed so they can no longer weave the historic cloth locally. This leaflet referenced the "deindustrialisation of India," where Britain all but destroyed the cotton industry by imposing export duties and forcing the population to purchase imported British cotton. A similar image shows Churchill himself cutting off the hands of a weaver. There is another one that depicts what the conditions of life are under the British rule-death, disease and famine-and what they could be, should India gain independence-peace and prosperity.

There is a sole poster depicting a fluttering Japanese flag along with its grand armies-taking up more than half the page, a sign of the vastness of support and power-and the flags of Britain and America in another corner-much smaller and meeker in comparison. In the foreground, Churchill can be seen treating shackled Indians like slaves, and perhaps for the first time in this poster, one can see a difference in the kinds of facial features of the



The poster compares the life of Indians under British Rule with a life in independent India.

## #TRIED&TASTED

Discover some of our greatest vegetarian Indian recipes for a homemade feast.

# Vegetarian Indian Bash

When the New Year approaches there are two things that come to mind - one is the Grand New Year Eve party and the New Year Resolutions. As for any other party first of all draw out a list of guests you would like to grace your New Year party. Once that is done, design a menu that will be liked by all your guests. If you want to have a theme party then first of all inform all

your guests of the theme so that they come to party appropriately dressed. Then get down to planning the food around the theme. Once that is done, list out what you can prepare at home and what you will need to order from outside. Food taken care of, you should then concentrate on the décor which again should suit the theme. A buffet party is ideal because generally there are a large number of invitees. Not just that, by having a buffet you can more or less be assured that

food will not be wasted. For people will pick up what they want to eat rather than being in a dilemma of having to finish what is served to them on the plate for fear of offending the host. Also prepare a few dishes which should be in adequate amounts rather serving a number of dishes. Lastly remember that the food that you serve should be presented attractively. So go ahead have a great party and greater year that follows.

### Saag Paneer



### Ingredients

- 2 tbsp ghee, or cooking oil
- 1 tsp turmeric
- 1 tsp chilli powder or Kashmiri chilli powder
- 450g paneer, cut into 3cm cubes
- 500g spinach, mature fresh or frozen
- 1 large onion, finely chopped
- 3 garlic cloves
- thumb-sized piece of ginger
- 1 green chilli, roughly chopped, (include seeds for extra spice)
- 1 tsp garam masala
- ½ lemon, juiced, to serve

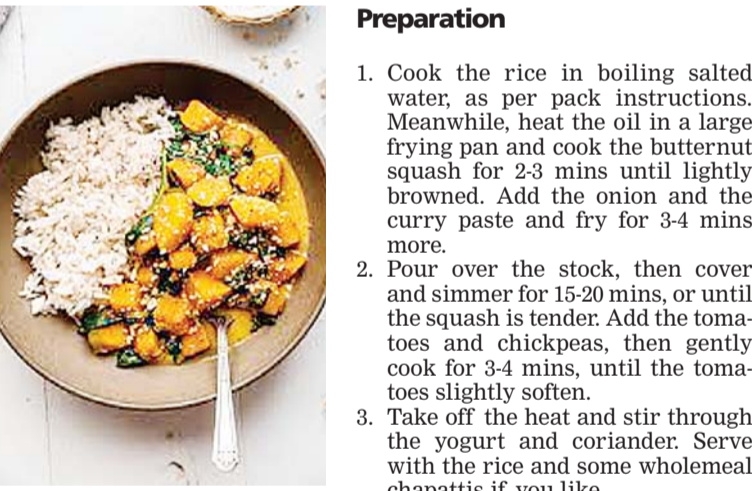
### Preparation

- Melt the ghee, whisk in with the turmeric and chilli powder, then add the cubed paneer and toss well. Set aside. If using frozen spinach, microwave for 3-5 mins, then drain and squeeze out most of the water.
- If using fresh spinach, place

in a colander; pour over boiling water; drain and cool, then put in a tea towel and squeeze out most of the water. Roughly chop. Blitz the onion with the garlic, ginger and green chilli. Cook the paneer in a large non-stick frying pan over medium heat for around 8 mins, tossing the pan so they become golden all over. Remove and set aside on a plate, leaving spices behind in the pan. Tip the onion mix into the pan, add a pinch of salt and turn the heat down.

Fry until caramel coloured, around 10 mins, adding a splash of water if it looks a little dry. Add the garam masala, stir to coat the onion mix, fry for 2 mins.

### Indian Butternut Squash Curry



### Ingredients

- 200g brown basmati rice
- 1 tsp olive oil
- 1 butternut squash, diced
- 1 red onion, diced
- 2 tbsp mild curry paste
- 300ml vegetable stock
- 4 large tomatoes, roughly chopped
- 400g can chickpeas, rinsed and drained
- 3 tbsp fat-free Greek yogurt
- small handful coriander, chopped

### Preparation

- Cook the rice in boiling salted water, as per pack instructions. Meanwhile, heat the oil in a large frying pan and cook the butternut squash for 2-3 mins until lightly browned. Add the onion and the curry paste and fry for 3-4 mins more.
- Pour over the stock, then cover and simmer for 15-20 mins, or until the squash is tender. Add the tomatoes and chickpeas, then gently cook for 3-4 mins, until the tomatoes slightly soften.
- Take off the heat and stir through the yogurt and coriander. Serve with the rice and some wholemeal chapatis if you like.

### Cabbage Koshimbir



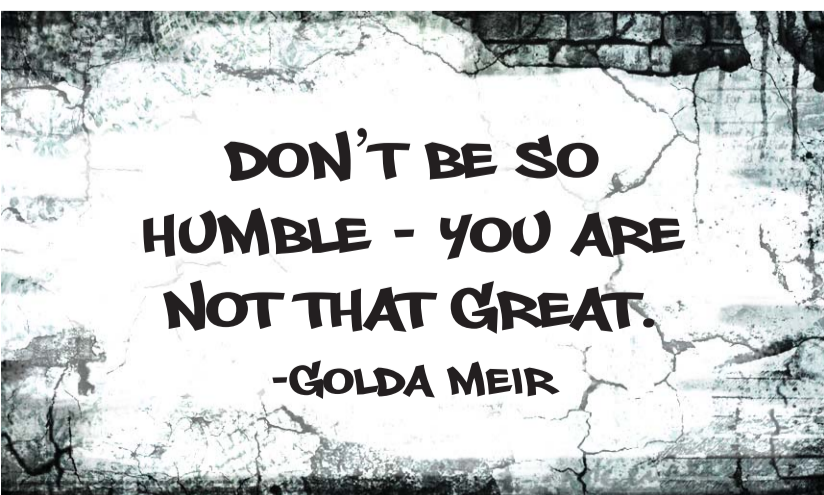
### Ingredients

- 1 tbsp sunflower oil
- 1 tsp black mustard seed
- 1 tsp cumin seeds
- ½ white cabbage, finely shredded or coarsely grated
- 1 red onion, finely sliced
- 1 green chilli, chopped (optional)
- ½ lemon, juiced

### Preparation

- Heat the oil in a frying pan and warm the mustard and cumin seeds until they sizzle and crackle, then remove from the heat. Combine everything together in a mixing bowl with a large pinch of salt and serve. (Can be made a day ahead and kept in the fridge.)

## THE WALL



## BABY BLUES



By Rick Kirkman & Jerry Scott



## ZITS



By Jerry Scott & Jim Borgman

