









## #INNOVATION

## Lab-Made Ovaries

This new data allows us to start building our understanding of what makes a good egg, what determines which follicle is going to grow, ovulate, be fertilized, and become a baby.



A new 'atlas' of the human ovary provides insights that could lead to treatments restoring ovarian hormone production and the ability to biologically relate children, engineers report.

This deeper understanding of the ovary means researchers could potentially create 'artificial ovaries' in the lab, using tissues that were stored and frozen before exposure to toxic medical treatments such as chemotherapy and radiation.

"Currently, surgeons can implant previously frozen ovarian tissue to temporarily restore hormone and egg production. However, this does not work for long because few follicles, the structures that produce hormones and carry eggs, survive through reimplantation," the researchers say.

The new atlas reveals the factors that enable a follicle to mature, as most follicles either grow without releasing hormones or an egg. Using new tools that can identify what genes are being expressed at a single-cell level within a tissue, the team was able to home in on ovarian follicles that carry the immature precursors of eggs, known as 'oocytes.'

"Now that we know which genes are expressed in the oocytes, we can test whether affecting these genes could result in creating a functional follicle. This can be used to create an artificial ovary that could eventually be transplanted back into the body," says Ariella Shikman, associate professor of Biomedical Engineering at the University of Michigan and corresponding author of the new study in *Science Advances*.

"This was the first time where we could target ovarian follicles and oocytes and perform a transcription analysis, which enables us to see which genes are active," Shikman says. "The majority of ovarian follicles, already present at birth, never enter the growing pool and eventually self-destruct." This new data allows us to start building our understanding of what makes a good egg, what determines which follicle is going to grow, ovulate, be fertilized, and become a baby."



Dr. Goutam Sen  
CTVS Surgeon  
Traveller  
Storyteller

making sure that the older generation is physically comfortable. It is gradually reshaping itself into specialised nursing/ medical care as well. It is interesting that adequate home care, according to Niti Aayog, can lower the number of hospital visits by twenty percent and reduce the cost of care by half.

With the ability to guide follicle development and two ovarian environments, the testes holding the second ovarian tissue could function for much longer than unmodified implanted tissue. This means that patients would have a longer fertility window as well as a longer period, in which their bodies produce hormones, that help regulate the menstrual cycle and support muscular, skeletal, sexual, and cardiovascular health.

Gathering of such people are usually a venue, where the discussion of day-to-day issues take a priority. It is a doleful litany of the shortcomings in life, along with the glorious days of the past. It commonly begins with a complaint of lack of attention by family and often do not have the desire or empathy for the task. It is forced upon them for economic reasons, while any other option while nursing care still remains a mission to a degree!

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the kind of care, given to the senior citizens, depends wholly on caregivers available in India. Most of them are basically domestic help, who have no experience or training in nursing care. They have learnt by observing and often do not have the desire or empathy for the task. It is forced upon them for economic reasons.

The number of senior citizens

will rise from one billion in 2011 to double the number by 2036. It is projected to rise to be one-fifth of our total population by 2050. On the other hand, the families are getting smaller from an average of 6 members to 4.5 members.

The whole generation is getting older with the responsibility of care of an older generation, both physical and emotional, at the same time and often, the distinction between the two is difficult to detect. The need for external care is rising rapidly. The 'care at home' is no more just

the behaviour of untrained caregivers has left an indelible scar on me.

My father, in his later years, became a hollow shadow of the great person he was. He could barely mumble a few words and was totally unable to care for himself. So, a caregiver was employed.

He looked supportive and was aiding my father well.

One day, I noticed that there were red spots on the arm. They looked like insect bites. I got the room fumigated and applied anti-mosquito cream.

Even then, the spots kept coming up.

It was later that an observant aunt told me that the help was pinching my father in his idle moments. I confronted him and dismissed him. So much for empathy!

room.) After that, we went back to looking after by ourselves!

Caregivers, who are well-trained and possess a proper long-term outlook, are in short supply.

They are either not exposed to the possibilities of this career or find it stressful, both for physical and mental reasons, since caring can mean a 24x7 job. It is rare where shift jobs are available. Most senior citizens and their families find it a costly proposition. Further, the caregivers often complain of being mistreated by families. While they should be limited to the care of the senior, they are tasked to perform domestic chores, which are outside the scope. This is because for the family, it seems that there are many idle hours in the senior citizen's life.

They are treated as menials.

There is, at present, no system of redressal for this shortcoming.

Mostly, it is the private sector that offers the bulk of these services.

Market estimates project the home-based care industry to grow at a rate of 15-19 per cent annually.

Provided that the scope of work becomes clearly defined.

There is a need for a degree of respect to be given to these personnel.

The ability for understanding and dealing with the growing demand for trained caregivers is essential.

This constitutes a desirable move towards

streamlining their vocational

training, nomenclature, roles,

and career progression.

Finally, all the efforts have now got an opportunity to have an insurance, nothing has been gained.

The policies are so designed that the initial Rs. 50,000/- has to be shelled out before any payout begins.

Further, there is a minimum payment block of 2-3 years for previous diseases like cancer and heart conditions.

Even rooms are decided on the value of

## International Family Day

S tep into a world, where the heart of our communities, our families, takes center stage on May 15th, once a year. It offers warmth and laughter that fill living rooms and the vibrant energy. It is a day that celebrates the indispensable role of families. The International Day of Families is a special time when we recognize the importance of families in our lives and society. This day shines a light on how traditional and non-traditional families form the backbone of communities around the globe. It's about understanding and addressing the economic, social, and demographic challenges that families face today.

## Do We Care for the Elderly?



There are two occasions where the behaviour of untrained caregivers have left an indelible scar on me. My father, in his later years, became a hollow shadow of the great person he was. He could barely mumble a few words and was totally unable to care for himself. So, a caregiver was employed.

The man was basically a person looking for a job, and finding none, accepted this task. He looked supportive and was aiding my father well. One day, I noticed that there were red spots on the arm. They looked like insect bites. I got the room fumigated and applied anti-mosquito cream. Even then, the spots kept coming up. It was later that an observant aunt told me that the help was pinching my father in his idle moments. I confronted him and dismissed him. So much for empathy!

the insured amount. Many investigations like MRI are out of the list. In fact, except for major surgery there is little to be gained by such insurance. The premium saved may help in the long run.

In fact, the government has, under its consideration, *The Maintenance and Welfare of Parents and Senior Citizens (Amendment) Bill, 2019*, which seeks to regulate home-based care for older people. This humanitarian bill, unfortunately, has a low priority and remains stalled at the committee level. If passed, the bill will make sure that the dependents are made legally responsible for the care of the elderly financially as well as for the social needs. Care at home is a different proposition than in an institution like a hospital or an old-age home.

At the present moment, the focus of the younger generation is on employment with a good income. Creating small unit families, who leave the older generation to their own devices, is a common practice. The government is responsible for the responsibility of the government to bring up schemes and laws, which will enforce the good care of senior citizens. The younger generation shirks the responsibility saying that is why we pay tax! There is still a need to create a 'cultural fabric,' which will nurture a feeling of ethical responsibility just as it is seen in Japan. Their experience shows that systems to care for older people are essential for the younger population to contribute to the country's economy. It is a society's moral and ethical responsibility to care for its people beyond their prime. It is a form, repaying the debt of care received earlier in life.

Old age care for the elderly have newer connotations. There is a mutual advantage in caring for the elders as they can contribute to the care for the third generation!

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## #MIS-CARED



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## #SPACE

## How The Moon Got A Makeover

The Moon's former surface sank to the depths, until volcanism brought it back.

Our Moon may appear to shine peacefully in the night sky, but billions of years ago, it was given a facelift by volcanic turmoil. One question that has gone unanswered for decades is why there are more titanium-rich volcanic rocks, such as ilmenite, on the near side, as opposed to the far side. Now, a team of researchers at Arizona Lunar and Planetary Laboratory are proposing a possible explanation for that.

The lunar surface was once flooded by a bubbling magma ocean, and after the magma ocean had hardened, there was an enormous impact on the far side. Heat from this impact spread to the near side and made the crust unstable, causing sheets of heavier and denser minerals on the surface to gradually sink deep into the mantle. These melted again and were belched out by volcanoes. Lava from these eruptions (more of which happened on the near side) ended up in what are now titanium-rich flows of molten rock. In other words, the Moon's old face vanished, only to resurface.

## What Lies Beneath

The region of the Moon, in question, is known as the Procellarum KREEP Terrane (PKT). KREEP signifies high concentrations of potassium (K), rare earth elements (REE), and phosphorus (P). This is also where ilmenite-rich basalts are found. Both KREEP and the basalts are thought to have first formed when the Moon was cooling from its magma ocean phase. But the region stayed hot, as KREEP ended up forming just about the same pattern as the anomalies that GRAIL found. The polygonal pattern seen in both the simulations and GRAIL data, is similar to the pattern that the sheets of volcanic rock were predicted to have made as they sank, which is why the research team decided to run a simulation of sinking KREEP to see how well the hypothesis matched up with the GRAIL findings.

Stun enough, the simulation ended up forming just about the same pattern as the anomalies that GRAIL found. The polygonal pattern seen in both the simulations and GRAIL data, is similar to the pattern that the sheets of volcanic rock were predicted to have made as they sank, which is why the research team decided to run a simulation of sinking KREEP to see how well the hypothesis matched up with the GRAIL findings.

The PKT region represents the most volcanically active region on the Moon as a natural result of the high abundances of heat-producing elements, the researchers said in a study.

If the hypothesis was accurate,

this would mean that there should be traces of minerals from the hardened KREEP magma crust in sheet-like configurations beneath the lunar surface, which could reach all the way down to the edge of the core-mantle boundary.

How could that be tested? Gravity data from the GRAIL (Gravity Recovery and Interior Laboratory) mission to the Moon possibly detected the residue due to their greater gravitational pull. GRAIL also suggested that there were many lesser anomalies in the PKT region, which made sense considering that a large portion of the crust is made of volcanic rocks, thought to have sunk and left behind residue after they melted and surfaced again through eruptions.

We now also have an idea of when this phenomenon occurred. Because there are impact basins that dated to around 4.22 billion years ago (not to be confused with the earlier far-side impact), but the magma ocean is thought to have hardened before that, the researchers think that the crust also began to sink before that time. This is just













मुख्यमंत्री भजनलाल शर्मा ने मंगलवार को रोहतक (हरियाणा) से भाजपा उम्मीदवार डॉ. अरविंद कुमार शर्मा के समर्थन में जनसभा को संबोधित किया। इस मौके पर उन्होंने कांग्रेस की रीतियों एवं नीतियों की जमकर आलोचना की और कहा कि, प्रधानमंत्री मोदी के नेतृत्व में भारत का गौरव देश-दुनिया में खूब बढ़ा है।

## 'कांग्रेस की नीति और नियत ठीक न होने से जनता ने दिखाया बाहर का रास्ता'

**मु.मंत्री भजनलाल ने रोहतक में भाजपा प्रत्याशी के समर्थन में आयोजित जनसभा में कहा**

बहादुरगढ़, 14 मई (का.सं.)। राजस्वन के मुख्यमंत्री भजनलाल शर्मा को हरियाणा के बहादुरगढ़ में रोहतक लोकसभा सीट से भाजपा प्रत्याशी डॉ. अरविंद कुमार शर्मा के समर्थन में आयोजित जनसभा को संबोधित किया। उन्होंने कांग्रेस की रीतियों एवं नीतियों की जमकर आलोचना की और कहा कि, प्रधानमंत्री मोदी के नेतृत्व में भारत का गौरव देश-दुनिया में खूब बढ़ा है।

मुख्यमंत्री ने रोहतक लोकसभा क्षेत्र से भाजपा प्रत्याशी डॉ. अरविंद कुमार शर्मा को विजयी बनाने का अपील करते हुए कहा कि, भाजपा के नेतृत्व में जनता को 100 रुपये भेजते हैं तो उनके खाते में 100 रुपये ही पहुंचते हैं, बीच में कट नहीं लगता। पिछले 10 वर्षों में भ्रष्टाचार और अतंकवाद में एक भी धूम सामने नहीं आई है। मोदीजी ने जनता को 100 रुपये भेजते हैं तो उनके खाते में 100 रुपये ही पहुंचते हैं, बीच में कट नहीं लगता। पिछले 10 वर्षों में भ्रष्टाचार की अतंकवाद के नियमों के साथ मानकर उनका हासला

**मुख्यमंत्री भजनलाल**  
इस समय हरियाणा के चुनावी दौरे पर हैं  
और मंगलवार को उन्होंने रोहतक के भाजपा प्रत्याशी  
अरविंद शर्मा के लिए सभा की।

बोट प्रधानमंत्री नेरेंद्र मोदी जी को मिलाया और वे तीसीरी बार देश के प्रधानमंत्री बनाकर भारत को प्रगति की नई चुनियों तक देख रहे थे।

भजनलाल शर्मा ने कहा कि, कांग्रेस भ्रष्टाचार, अतंकवाद, नक्सलवाद, तुषीकरण और गरीबी की जनता है। इस पार्टी को समस्याएँ बनाने का अपील करते हुए कहा कि, भाजपा के नाम से जनता में सुध नहीं ली। उन्होंने

कहा कि, कांग्रेस के राज में भ्रष्टाचार कोई वास्ता नहीं है। पिछले 10 वर्षों में प्रधानमंत्री नरेंद्र मोदीजी ने गरीब कल्याण की योजनाएं चलाकर 25 से 10 रुपये भेजते हैं तो जनता तक 15 पैसे ही पहुंचते हैं। आतंकवाद के कारण लोग डू के साथ में जीत थी और उन्होंने रोहतक के अतंकवादी आये दिन वर्ष फोड़कर चले जाते थे। देश की सीमाओं पर तीनों सैनिकों के सिर भी काट दिए जाते थे।

मुख्यमंत्री ने कहा कि, कांग्रेस 7.0 साल से गरीबी हटायें को नारा दे रही है। इंदिरा गांधी, राजीव गांधी, डॉ. मनमोहन सिंह, सोनिया गांधी के बाद अब राहुल गांधी भी गरीबी हटाने की बात कर रहे हैं, मगर गरीबी से इनका

कांग्रेस के राज में सर्वथा अधिकतम विश्व की बढ़ी है। इसके बाद जब जब डॉ. शंकर प्रसाद मुख्यमंत्री ने देखा कि, वर्ष 2014 के बाद प्रधानमंत्री नरेंद्र मोदी के नेतृत्व में देश ने हर क्षेत्र में प्रगति की है। गरीब कल्याण और देश के विकास के साथ ही दुनिया में भारत का गौरव भी बढ़ा है।

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बढ़ी पार्टी बन चुकी है।

### 18 साल से ...

(प्रथम पृष्ठ का शेष)

अव्यवहारिक और आर्थिक रूप से असंघर्ष है।

उन्होंने अदालत को कहा कि बी.पी.सी.एल. प्रदेश में नीति के बलावान को अपराध करने के लिए यह याचिका दायर कर रही है। इस सुनवाई के दैराने ही, यजवार हरी पट्टी को देखते हुए याचिका को प्राप्ति की नई चुनियों तक देख रहे थे।

याचिका में अधिकवक्ता दिनेश

यादव ने अदालत को बताया कि, याचिका की अवधिकारी ने शास्त्री नारा दिया था।

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