



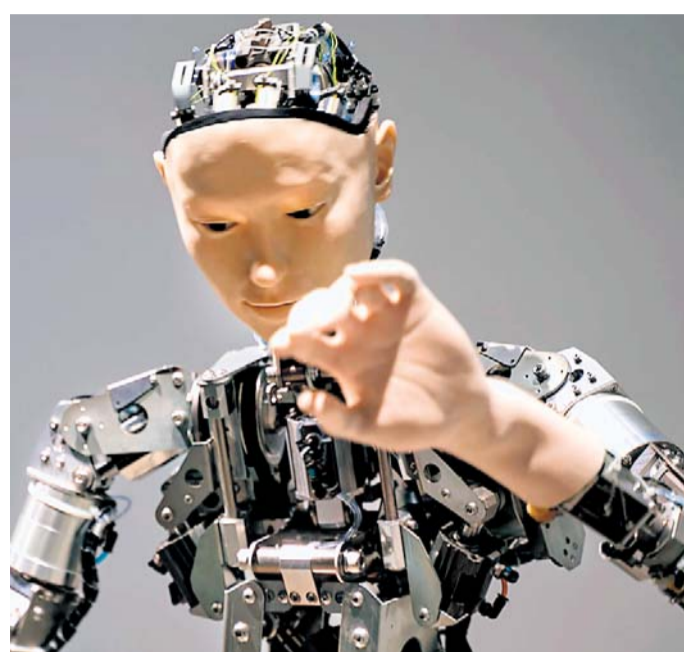
## International Harry Potter Day

Though the *Harry Potter* series of books dates back to 1998 and the films got their start in 2001, it wasn't until a decade later, after the books and films were both done and dusted, that *International Harry Potter Day* was officially announced. In fact, it was in 2012 that then prime minister of the United Kingdom made a declaration that the day would be celebrated on May 2 of each year. So, put on your robes, grab your wand, and celebrate with potions, spell-casting and Hogwarts-inspired fun.

## #TECHNOLOGY

# New 3-D Printed Skin

Creating an artificial skin isn't as simple as growing cells in a petri dish



A new bioengineered skin model could improve testing of skin care products and lead to better ways to heal damaged skin.

University of Oregon researchers teamed up with scientists of the French personal care company L'Oréal to develop the "multi-layered artificial skin" that more accurately mimics real human skin and can be grown in just 18 days.

The advance relies on a novel "3D printing" technique invented by Paul Dalton, an associate professor in the Phil and Penny Knight Campus for Accelerating Scientific Impact at the University of Oregon.

"This is the first known case of replicating quality skin tissue at full thickness, using different kinds of cells separated by a membrane," says Ievgenii Liaschenko, a research engineer in Dalton's lab.

Creating an artificial skin isn't as simple as growing cells in a petri dish. Real skin has multiple layers with different kinds of cells that perform distinct functions. And in the body, cells are supported by an external network of proteins and other molecules.

Called the "extracellular matrix," this system helps cells stay in position and communicate with their neighbours, which is key to keeping all systems working properly.

To replicate this complex environment, the researchers designed a two-layered artificial skin, with the layers separated by a membrane.

Researchers from Dalton's lab and L'Oréal co-developed plastic scaffolds that mimic the extracellular matrix via a network of finely structured 3D printed threads. Then, L'Oréal researchers grew cultured cells in those scaffolds to create the artificial skin, with different cell types growing in each layer. The membrane prevents the cells in the different layers from mixing as they develop.

"Other attempts don't have the same layering. It actually looks like real skin," says Dalton, a research professor in Transformational Science and Mathematics.



The underlying scaffolds resemble a mesh material, made of many spaghetti-like threads, each much thinner than a human hair. To make the porous scaffold, members of Dalton's team used a 3D printing technique that they've developed called "melt electrospinning." In that technique, an electric field pulls the molten printing plastic from a nozzle into a thin thread, enabling very precise control over the printing.

"Some 3D printing techniques can create very fine details, but only small objects," Dalton says. Other techniques allow easy fabrication of larger pieces, but at the expense of resolution. Melt electrospinning bridges that gap, allowing engineers to create relatively large objects with fine details.

The "new skin model" can be grown in just 18 days, the researchers found, rather than the 21 to 35 days it took to create previous scaffold-based artificial skin models. That makes it more viable to use in commercial lab testing.

L'Oréal is currently using the artificial skin to test cosmetics and skincare products. Going forward, both Dalton's team and L'Oréal researchers plan to explore the many other potential uses for the underlying scaffolding in skin tissue engineering.

Other potential skin-related applications include healing diabetic foot ulcers and creating skin grafts for burn patients. Beyond skin, the scaffolds, developed by Dalton's team, could support myriad biomedical applications such as artificial blood vessels and structures to help regrow damaged nerves.



# A 'GENTLEMAN' BIRD

In Rajasthan, *Blue Rock Pigeon* is considered more or less like a 'holy' bird and they are offered food grains (*chugga*) regularly, near religious and other common places. Thousands of pigeons can be seen on road near Albert Hall in Ram Niwas Garden, Jaipur. They are regularly feed there by the local people, every morning. Such *community feed sites* can be seen throughout Rajasthan, both in rural and urban areas. In Rajasthan, it is one of the most familiar birds, which is known by many names like *Kabutar*, *Kapot*, *Parewa* etc.



Dr. Satish K. Sharma  
Retired Assistant  
Conservator of Forests

The *Columbidae*, the family of pigeons and doves, comprises about 43 genera and 255 species. This family is typified by the *Blue Rock Pigeon*, which in its numerous domestic breeds, is universally known. Except polar zone and adjacent areas, pigeons and doves are pan-world species in distribution. The *Blue Rock Pigeon* or *Rock Dove* *Columba livia* is the forefather of all the domestic pigeons of the world. Our common pigeon, the *Blue Rock Pigeon* is not a bonafide Indian species but it is a European origin bird. This species was introduced in Car Nicobar Island in 1898 but has apparently failed to become established. Since it is abundantly present and not an Indian element, no legal protection is given to this species by the Wildlife (Protection) Act, 1972, one of the central acts of India. However, all the fruit-eating pigeons and doves are protected by the law in India. *Nicobar*

*Pigeon* (*Caloenas nicobarica pelewensis*) is a threatened pigeon of India, hence, included in schedule I of Wildlife (Protection) Act, 1972. Our common *Blue Rock Pigeon* is kept out of all the schedules but rest of pigeons and doves are included in scheduled IV, hence, all are protected.

*Blue Rock Pigeon* is well-known species in India. It is a cool, innocent and non-attacking bird. Truly, it is a 'gentleman' of avian kingdom. Since it is cool, calm and gentle in behavior, it is being kept by humans as pet since pre-historic time. Many breeds of this species have been developed by the man through selective breeding during last few centuries. Homing pigeon, Racing Homer, Fantail Pigeon, Indian Fantail, 'War pigeons' etc. are some famous breeds of *Rock Pigeons*.

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Pigeons, drinking water.

## #NATURE



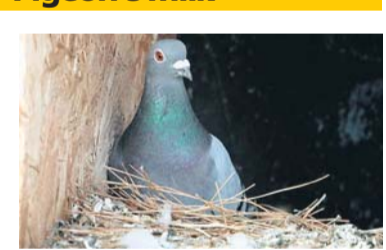
Thousands of pigeons on road, near Albert Hall in Ram Niwas Garden, Jaipur.

### Characteristic Drinking Method

Pigeons drink water in a manner 'unusual' among other birds. Most of other birds dip their bills in the water, sip, raise their heads up, swallow the water and repeat this action again and again till the thirst is

quenched. But, pigeons drink in a different way. It immerses its bill and then, instead of lifting the head and tipping the water down the throat, it keep on sucking. Same habit is seen in Sand grouses and Button quails.

### Pigeon's Milk



After hatching, most of the birds bring insects to feed their chicks. They go outside in search of proper sized insects and caterpillars, capture in their beaks like a forceps, return to nest to feed the chicks. Hungry chicks make begging calls and keep mouth widely open to grab the food from the parents. But this method is not adopted by the pigeons.

Pigeons produce a nutritive liquid called 'pigeon's milk' from their crop. Chicks are fed by both parents for the first few days on 'pigeon's milk,' a curd-like liquid secreted by special cells, making lining of inner wall of the crop. This is scooped up by the broad, soft bill of the young inserted deeply into the parent's bill to obtain regurgitated material. As

### Living and Nesting Sites

*Blue Rock Pigeon* is a resident bird and locally abundant in all parts, throughout the Indian Union. It affects rocky cliffs and gorges in the hills, old ruins, ancient forts and palaces on the countryside, factory and warehouse shades, residential and public buildings, temples, mosques, railway stations etc. in populous cities. A good population of *Blue Rock Pigeon* can be seen in gorges of *Vindhya*s in *Hadoti* area of South-Eastern Rajasthan. After harvesting of crop, flocks of pigeons can be seen in the fields, feeding there silently.

Pigeons build a simple, platform like nest on house cornices, holes in wall, fissures of cliffs, or on rafters and ceilings of dwelling houses, deserted or occupied. It commonly nests in deserted build-

ings and ruins of historical buildings. If a suitable hole is available in the wall of a well, bird occupies it for nesting. In whole Rajasthan, pigeons are commonly seen living and nesting in well and stepwells, which are out of use. Sometimes, dozens of pigeons are seen in a well or stepwell. Due to their droppings, not only walls become shabby but water also starts stenching. Unplastered wells and old buildings are much prone to be occupied by the pigeons. Nesting season is undefined in this species. They are prolific breeders. Practically, they breed round the year. Two white, smooth-textured, elliptical eggs are laid in a clutch. Male and female, both sexes, share nest-building, incubation and tending the young. Incubation period is about 16 days.

chicks grow, they demand more food and now partially digest the food is also regurgitated by the parents for their chicks.

Chicks of pigeon are prone to attack of house cats, snakes, mongoose, crows etc. To minimize this threat, nestlings grow rapidly. If eggs or young are lost through predation or other causes, the female will usually lay again. In a successful season, two or three broods may be produced. The fast 'breeding rate' contributed significantly to the success of pigeon as group. When some raptors are near them or attacking them, they start flying in a group in a circular way, relatively at a faster pace. When in group, they get more safety from the raptorial predators. Isolated individuals are prone to be attacked by a raptor.

The typical vocalization of pigeon is a *cooing* sound, usually produced while inflating the neck. Sometimes, a 'dancing' circular movement is exhibited by the bird. This arrogant posture and movement is seen on the ground, when neck is inflated.

Pigeons are famous for *pigeon racing*. *Racing Homer* breed is used in this activity. This breed is a fast flyer one. The average speed of this breed is about 97 kms/hour and maximum speed is up to 160 kms/hour. Pigeon racing is the sport of releasing specially trained homing pigeons, which then return to their homes, over a

carefully measured distance. The time taken by a pigeon to cover the specific distance is measured and pigeon's rate of travel is calculated and compared with all of the other pigeons in the race to determine which bird returned at the highest speed. Racing homers were ones used in as 'messenger pigeon' also. Because of this skill, domesticated pigeons were used to carry messages as 'messenger pigeons.' They are usually referred to as 'pigeon post,' if used in post-service or 'war pigeon' during wars. Until the introduction of telephones, homing pigeons were used commonly to deliver communication.

The 'white pigeons' are considered as a symbol of peace and love also. They are developed from common *Blue Rock Pigeon* only. During many festive and auspicious occasions, white pigeons are released in the sky as a symbol of peace. Pigeons are parts of many food chains in the nature. Their eggs are much liked by the house crows, house rats and house cats. Their nestlings are devoured by the snakes, house cats, mongoose and raptors. Adult birds are captured by house cats, jungle cats, desert cats, snakes, raptors, mongoose, jackals, foxes etc. for getting their flocks. Thus, they help in biological control of fast breeding pigeons in the nature.

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Homing pigeon, feeding crop milk to new born pigeon in home nest.

## #PET-FRIENDLY

# Bark Air, First Airline for Dogs

The first-class experience for dogs features calming music, warm towels, noise-cancelling earmuffs, treats and more



### Who let the dogs out?

**B**ark Air, a new luxury airline for dogs, will launch its first flight, this May. Experience VIP treatment for your pooch, with in-flight meals prepared by staff chefs. Tired of leaving your furry best friend behind when you travel? BARK Air has arrived, the world's first doggy jet service, designed to pamper your pooch on their next adventure. In a move that's as adorable as it gets, Bark, the company renowned for monthly subscription boxes of dog treats, has partnered with a charter airline to make every pet owner's life easier. Here's everything you need to know about the airline!

### What is BARK air?

Bark Air aims at a 'white-glove experience,' typical of a human's first-class experience and redirected all that pampering to pooches. The company proudly calls its 'first class.' Taking your dog on a plane is one of the most stressful things that you can do as a pet parent. It's a time-consuming process that requires a lot of planning and preparation. American and United Airlines, for example, allow small dogs to be carried under the seat while adhering to all safety guidelines, while larger dogs must be car-

ried in the cargo area. The airlines consider this a safe procedure, but it's a stressful one for many pet owners, who often avoid planning trips for their pets. Co-founder and Chief Executive Officer at BARK, Matt Meeker, in a statement, said, "We are excited to take the insights that we've learned over years to create an experience that is truly dog-first, which is drastically different from just accepting dogs, from the ground to the skies."

### How much one-way ticket for a dog cost on BARK?

Seeking luxury for your furry friend? But it won't come easy as you have to pay a hefty sum to have your pet fly with you. So far, a one-way ticket for one dog and one person will cost you around \$6,000.

### Route of BARK air

The inaugural flight, featuring several dogs and their owners, is all set to take off on May 23rd. As of now, only two routes are available, both departing from New York's Westchester County Airport. You will pay \$8,000 for a one-way ticket from New York to Stansted Airport in London and \$5,000 for a one-way ticket to Van Nuys Airport in Los Angeles. Sales of tickets begin on April 11.



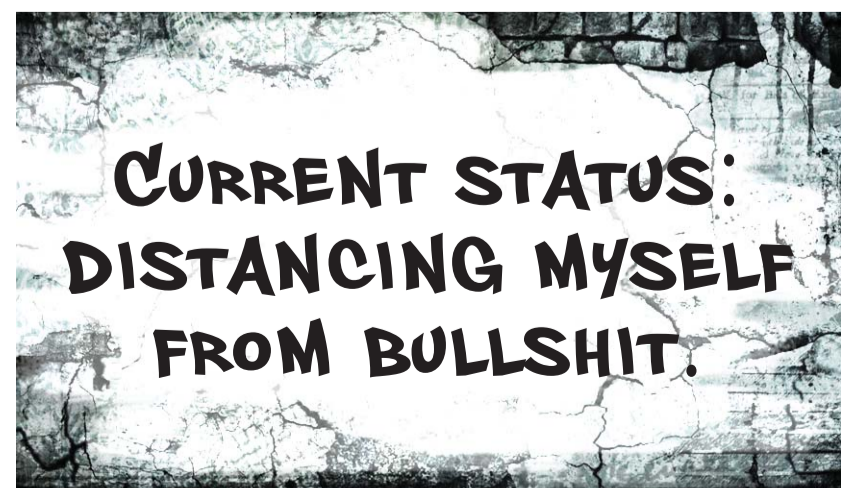
### The VIP treatment



BARK Air is a jet service that pamper dogs during their travels, living up to its name by providing a VIP experience. The airline's press release states that BARK Air passengers can breeze through TSA checkpoints and security lines and enjoy a hassle-free check-in process while mingling with other furry friends. To make the experience even more enjoyable for humans, the airline's staff chefs prepare in-flight meals onsite.

Bark, the company behind the popular *BarkBox* and other pet services and products, says that the canines will travel with a 'dogs fly first' mentality, complete with beverage choices like water or bone broth, warm calming towels scented with lavender, and treats and snacks. A Bark Air concierge will be at the gate to help socialize canines with fellow doggy passengers and prep them for their cabin experience. Before boarding, dogs will be treated to calming pheromones, music and colours that they like best. All dogs will have access to calming treats, noise-cancelling earmuffs and calming jackets. 'Just in case' bags will be provided at the gate, which include items like poop bags and leashes. Flights will not be filled to capacity to ensure that dogs and their parents have a comfortable amount of space. Bark Air is launching with limited destinations to start. The airline will kick off with routes between New York's Westchester County Airport, the Los Angeles area's Van Nuys Airport, and London's Stansted Airport. Flights, in May between New York and Los Angeles, will cost \$6,000 per dog and human pair, and \$8,000 for flights between New York and London for each pooch and parent couple. New routes will launch in the summer.

## THE WALL



## BABY BLUES



By Rick Kirkman & Jerry Scott

## ZITS



By Jerry Scott & Jim Borgman