Prelim Bits 05-11-2017

Reversing Antimicrobial Resistance

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- Antibiotic-resistant bacteria use the efflux pumps to expel antibiotics from the intracellular environment>
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- It thus prevents antibiotics from reaching the target thus helping the bacteria to survive.
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- IIT Roorkee have been able to reverse drug resistance by using a small molecule screened from a synthetic library of 8,000 molecules.
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- The molecule restores the efficacy of fluoroquinolone-group of antibiotics by inhibiting the proton gradient which drives the efflux pump.
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Rattan

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- Rattan is the name for roughly 600 species of old world climbing palms belonging to subfamily Calamoideae.
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- The climbing habit is associated with the characteristics of its flexible woody stem, derived typically from a secondary growth.
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- It makes rattan a liana rather than a true wood.
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- Generally, raw rattan is processed into several products to be used as materials in furniture making.[
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- Scientists have discovered that non-protected areas near the Agastyamalai Biosphere Reserve, Silent Valley-Mukurthi National Parks and Coorg-Wayanad in the Western Ghats are hotspots of rattan or cane species.
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- Urgent conservation attention in the face of threats including habitat loss

and excessive harvesting would be critical here.
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Superhydrophobic Cotton

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- Superhydrophobic i.e extremely water repelling medical cotton has been developed by a team of researchers at IIT Guwahati.
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- It removed up to 95% of oil-spill of different densities i.e both light and heavy oils repetitively at least 100 times using
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- The efficiency of absorption is very high i.e one gram of the superhydrophobic cotton absorbs 20 grams of either heavy or light oils.
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- The absorbed oil can be recovered through physical compression.
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Most Threatened Ape

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- Scientists have so far recognized six living species of great ape aside from humans.
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- They are Sumatran and Bornean orangutans, eastern and western gorillas, chimpanzees, and bonobos.
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- But researchers have now made the list into seven, based on a collection of evidence showing that an isolated population of orangutans living in Sumatra is actually its own unique species.
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- They've named the new species the Tapanuli orang-utan.
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- But there are only about 800 Tapanuli orangutans left.
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- This makes this newly discovered species among the most threatened great ape species in the world.
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Ozone Hole

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- NOAA and NASA collaborate to monitor the growth and recovery of the ozone hole every year.
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- Measurements from satellites this year showed the hole in Earth's ozone layer that forms over Antarctica was the smallest observed since 1988.
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- The polar stratospheric cloud formation and persistence of these clouds are important first steps leading to the chlorine- and bromine-catalyzed reactions that destroy ozone.
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- The smaller ozone hole in 2017 was strongly influenced by an unstable and warmer Antarctic vortex -- the stratospheric low pressure system that rotates clockwise in the atmosphere above Antarctica.
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- This helped minimize polar stratospheric cloud formation in the lower stratosphere.
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