



ABOUT US

With an aim to nurture skills of all students, the Dept. of Biotechnology and Bioinformatics, JUIT, has created a platform called Synapse, for students to develop and exhibit their technical, outreach, arts and other skills.

About the name: Atavism is a phenotypic trait that appears suddenly in an organism. Yes, it refers to that dolphin with legs and the baby born with a tail! And just like its name, this newsletter is a little something of the blue. It is an effort to reach out and bring all of us at Department of BT & BI together. We are working on bringing to you the latest news in the biotechnology world, bizarre but true science headlines, and conversations that you should hear more of.

HOW THE CORONAVIRUS PANDEMIC AND WEATHER FORECASTS ARE RELATED?

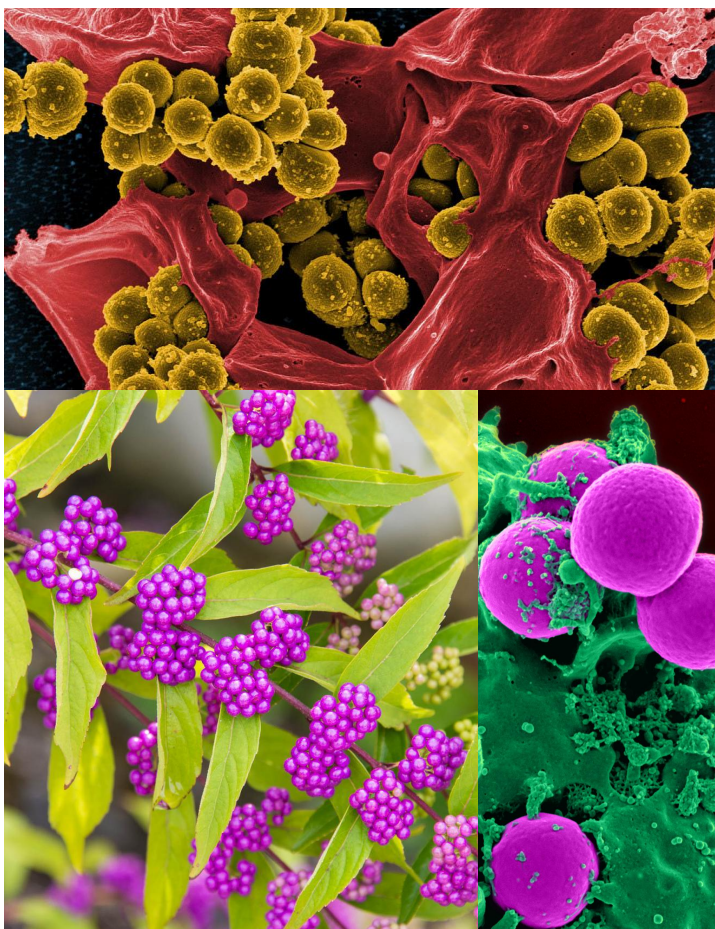
The relation between the pandemic and airplanes would seem absurd if you didn't know about the latest study published by researchers from the Lancaster Environment Center.

The study says that airplanes relay a large amount of meteorological information daily. Almost 700,000 reports from 40 airlines are relayed to meteorologists every day. These reports help in weather forecasts and also in the prediction of electricity usage by electric grids.

With the COVID-19 pandemic causing a majority of flights to be suspended, the accuracy of weather forecasts has reduced sharply. The regions most affected by this include the United States, Australia, Southeast China and lesser-visited regions like the Sahara desert. Want to read more? Click [here](#)

References & Photo credits:

1. Ying Chen. COVID-19 Pandemic Imperils Weather Forecast. Geophysical Research Letters, 2020; DOI: 10.1029/2020GL088613
2. Fauxels by Pexels. Available under the Creative Commons Zero (CC0) License. Lucas Allman from Pexels. Available under the CC0 License.
3. Qimono from Pixaby. Available under the CC0 license.
4. Courtesy Spring Hill nurseries.
5. National Institute of Health. Wikimedia commons. (Page 2, MRSA ingested by neutrophil. Page 2, MRSA superbug destroying the white blood cell.)
6. Photos by Tatyana Nekrasova from Stop the Spread. Available for use under the Creative Commons Zero (CC0 License) from Canva.

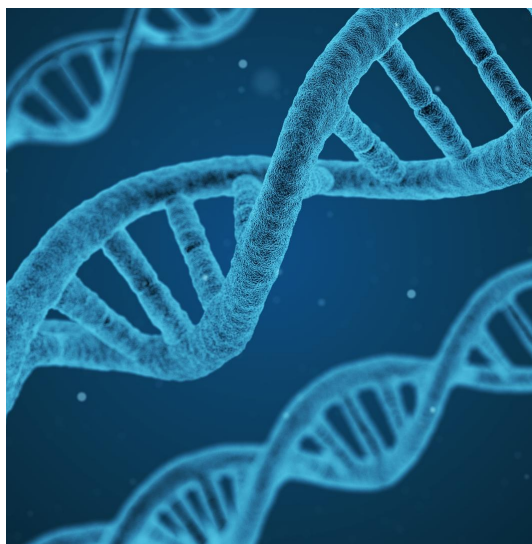


BEAUTYBERRY LEAVES CAN HELP FIGHT THE MRSA SUPERBUG!

The American beautyberry shrub has been used since long by native Americans to treat malarial fevers and rheumatism. And scientists from Emory University have utilised compounds from this shrub to activate beta-lactam antibiotics that are usually ineffective against methicillin-resistant *Staphylococcus aureus*.

Previous research done on beautyberry leaves has shown that these can repel mosquitoes and ticks, and also inhibit the growth of acne-causing bacteria.

Tests have shown that the compound, belonging to a class of chemicals called clerodane diterpenoids isn't effective alone. But, it can synergize with the beta-lactam antibiotic oxacillin to take down the MRSA Superbug. The scientists are now going to test the efficacy of this extract in animal models. Read [here](#).



BIOTECHNOLOGY AND BIOINFORMATICS TIDBITS

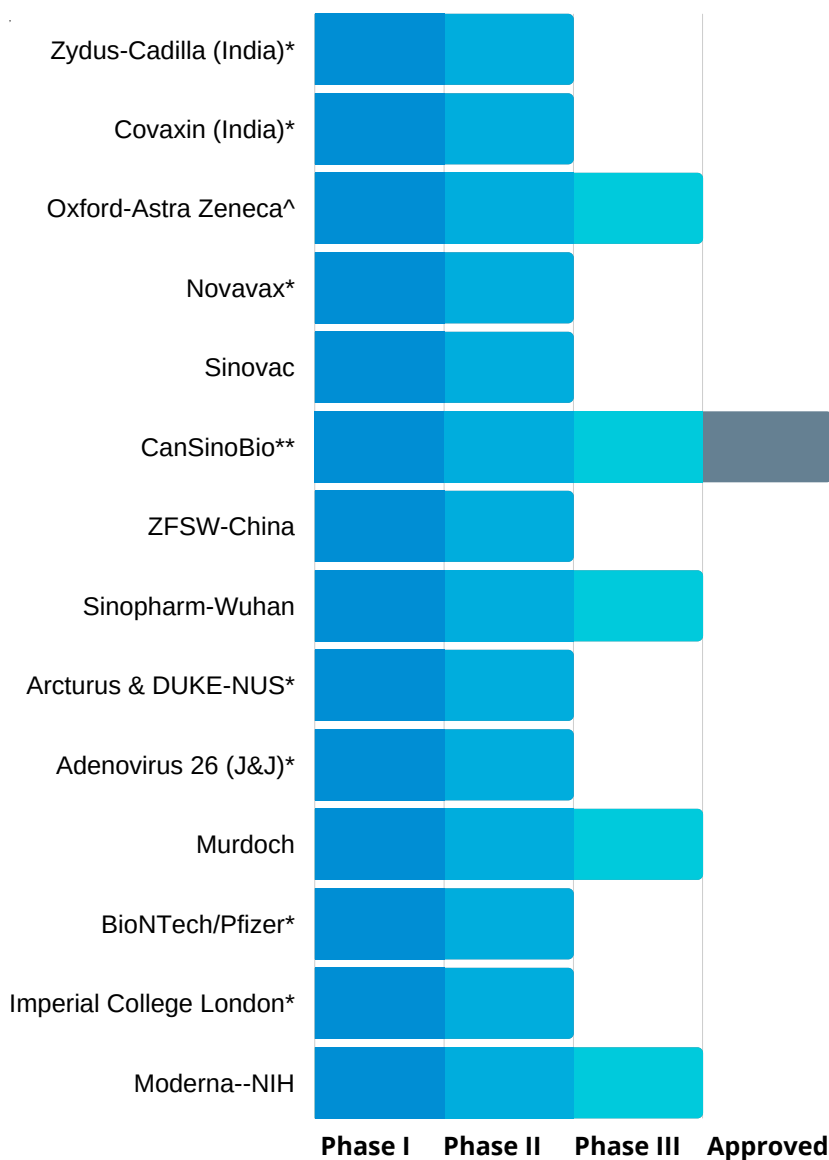
- **COVID-19 Lab test that delivers test results within 20 minutes.** Scientists at Monash University have developed a simple agglutination assay that uses antibodies to see if the person has contracted the novel coronavirus.
- **Deep-learning based computational architecture for patient stratification from Electronic Health Records.** Researchers from Icahn School of Medicine at Mount Sinai, New York, have developed and validated an unsupervised architecture based on deep learning to enable patient stratification at scale. [Paper link](#)

References & Photo credits:

1. Dettweiler, M., Melander, R. J., Porras, G., Risener, C., Marquez, L., Samarakoon, T., Melander, C., Quave, C.L. A Clerodane Diterpene from *Callicarpa americana* Resensitizes Methicillin-Resistant *Staphylococcus aureus* to β -Lactam Antibiotics. **ACS Infectious Diseases** 2020 6 (7), 1667-1673 DOI: 10.1021/acsinfecdis.0c00307
2. Landi, I., Glicksberg, B.S., Lee, H. et al. Deep representation learning of electronic health records to unlock patient stratification at scale. *npj Digit. Med.* 3, 96 (2020). <https://doi.org/10.1038/s41746-020-0301-z>
3. Alves, D., Curvello, R., Henderson, E., Kesarwani, V., Walker, J. A., Leguizamon, S. C., McLiesh, H., Raghuwanshi, V. S., Samadian, H., Wood, E. M., McQuilten, Z. K., Graham, M., Wieringa, M., Korman, T. M., Scott, T. F., Holl, M. M. B., Garnier, G., Corrie, S. R.. Rapid Gel Card Agglutination Assays for Serological Analysis Following SARS-CoV-2 Infection in Humans. *ACS Sensors*, 2020; DOI: 10.1021/acssensors.0c01050



THE NOVEL-CORONAVIRUS VACCINE TRACKER (As of July 27, 2020)



Following are the major phases in vaccine development:

Pre-clinical Phase: The vaccine is tested on animal models to see if it generates the required immune response.

Phase I Safety Trials: Scientists test if the vaccine is safe for use, along with the dosage that should be given in a small group of people.

Phase II Expanded Trials: This phase tests the safety of the vaccine further in a larger group of people and also sees if it generates an immune response.

Phase III Efficacy Trials: These trials involve administering the vaccine to a group of people and a comparison of the vaccine efficacy to a placebo group.

Combined Trials: To accelerate the production of a vaccine, combined Phase I/II and combined Phase II/III trials may be held.

Approved: Once the trials are completed the vaccine is approved for use.

- * Phase I/II combined trials
- ** Approved for military use.
- ^ Phase II/III combined trials

References & Photo credits:

1. Coronavirus Vaccine Tracker, The New York Times. Retrieved from their website, July 27, 2020: <https://www.nytimes.com/interactive/2020/science/coronavirus-vaccine-tracker.html>
2. Draft landscape of COVID-19 candidate vaccines, World Health Organisation. Retrieved from the website on July 27, 2020: <https://www.who.int/publications/m/item/draft-landscape-of-covid-19-candidate-vaccines>

Author: Janki Insan, 181824, Literary and Outreach Team Member, Synapse Club, Department of Biotechnology and Bioinformatics, Jaypee University of Information Technology, Waknaghat

Edited by: Literary Team, Synapse, Department of Biotechnology and Bioinformatics Club, JUIT.