Stop AMR Global Media Monitor

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Trial pours cold water on combo treatment for MRSA bacteremia

Clinical trial was conducted to test a proposed hypothesis to fight Methicillin Resistant *Staphylococcus Aureus* (MRSA). Previous in-vitro research and observations of small groups suggested that by combining daptomycin or vancomycin, the standard therapies for MRSA bacteremia, with antistaphylococcal beta-lactam antibiotics, potential benefits could be observed.
The trial was conducted at 27 hospitals and included 352 patients from 4 different countries. It appears that mortality did not significantly differ between the groups using the usual and the one using the combination of medications. The combination of medication significantly increased the rate of acute kidney injuries, leading to the end of the trial.
Researchers wrote "Given the early termination, the trial may have been underpowered to demonstrate an improvement in the composite primary end point; however, it is likely that any potential gains in efficacy with combination therapy would be offset by the increased toxicity,"

Further research must be conducted to approach the toxicity of multiple combinations and select a correct one.

Source: CIDRAP, 11 February 2020

Antibiotics discovered that kill bacteria in a new way: McMaster

New findings published in *Nature* today approached the mechanism of two newly founds antibiotics. Corbomycin and complestatin use an unprecedently seen way to kill bacteria. Bacteria, to grow and to multiply, have to modify the structure of their cell envelope. Usual antibiotics such as penicillin kills the bacteria by preventing its construction. The recently discovered antibiotics are operating by preventing its destruction, leading to an impossibility for the cell to grow, expand or divide.
Few other antibiotics from the same family, sharing the same mechanism, were found since the discovery of this one-of-a-kind.

Research has also demonstrated in mice that these new antibiotics can block infections caused by the antibiotic resistant *Staphylococcus aureus*

Source: EurekAlert!, 12 February 2020

Bacteriophages may play a role in childhood stunting... and be able to help treat it

Studies suggested that gut microbiomes could play a role in stunting while increased numbers of disease-causing of bacteria, leading to digestive and nutrient absorption malfunction, where found in stunted children.
As researchers mainly focused on bacteria, a team of the McGill University focused on another member of the microbiome, bacteriophages. Those bacteria-viruses are linked to specific bacteria and might be involved in the regulation of the microbiome.
It appears that phages founded in the gut of stunting and non-stunting children differ. They studied in-vitro the gut microbiome of non-stunting child and added the phages strain from stunting children. It appeared that a change in gut bacteria occurred, where bacteria involved in digestive malfunction raised.
The fact that bacterial community can be altered by phages in a specific way could lead to the development of cheap treatment with no risk of antibiotic resistance.
This discovery now needs to be validated on a larger sample, coupled by tests on animal models.

Source : EurekAlert!, 12 February 2020

Study: Diet makes a difference in fight against hospital-acquired infection

Clostridioides difficile, an intestinal infection often occurs when patients gut microbiome has been altered with antibiotics. Around 10,000 people dies each year in the U.S. only.
A recent study suggests that a high carbohydrate diet, leading to a lower diversity of gut bacteria compared to a low carbohydrate and high fat and protein diet, may be a key to prevent *C. diff* to propagate freely and infect the patients under medication.
If scientific papers usually align on the position that lower microbial diversity is bad for health, it is in that case the best disease outcome.

Source: EurekAlert!, 12 February 2020

Novel targeted drug shows promise in advanced kidney cancer

A novel drug, targeting transcription factor diverted by tumorous cell has promising results and has been launched in phase III.
MK-6482, the newly presented drug, disrupt the hypoxia-inducible factor (HIF) 2-a. This factor used by tumorous cells enhance the production of new blood vessels around the tumor, helping them to survive and grow. With the action of MK-6482, HIF-2a activity is disrupted, interfering with cancer cell metabolism.
Patients presenting advanced clear cell renal carcinoma were selected across the risk categories (poor, intermediate, and good and in a heavily refractory population). The overall response was around 24%, a promising result.

Source: EurekAlert!, 13 February 2020

'Unexpected' number of resistance genes on pig farm

The study focused on a single production cycle on a commercial pig unit "with a high historic and current antimicrobial usage". Using different methods, researchers managed to isolate 144 different genes related to antimicrobial resistance in pig's faeces. A highlight of this research suggest that those genes had become integrated into faecal microbial community, due to the relatively stable resistance gene counts over time.
Administrated antimicrobials remain effective but this "has led to concerns about the potential transfer of AMR genes from livestock to humans and into the environment".

Source: Pig Progress, 12 February 2020

Mass General Hospital researchers identify new 'universal' target for antiviral treatment

Viruses remains a real threat to humanity, reason why vaccines are developed and deployed against them.
As time was a key issue in the quick response against virus outbreaks, this may be a distant memory with a recent discovery made by researchers at the Massachusetts General Hospital (MGH).
Protein Argonaute 4 (AGO4) is uniquely antiviral in mammalian immune cells and plays a key role preventing cells to be infected by viral infections. It appears that only cells deficient in AGO4 were more likely to become infected.
It is suggested that boosting levels of AGO4 could help to raise the immunity of the body and protect peoples against a large range of viruses.
Further studies need to be done to precise the extent of possible protection and on how to boost the AGO4 level on cells.

Source: EurekAlert!, 11 February 2020

Huge bacteria-eating virus close gap between life and non-life

Atypical larges bacteriophages, that could be determined as bacteria-killing viruses, presenting complexity and capabilities normally associated with life where recently discovered. They were discovered by analysing a large database of DNA generated with around 30 different Earth environments.
351 different unusual large bacteriophages were discovered, with the largest ever discovered; nearly 15 times larger than a usual one.
"These huge phages bridge the gap between non-living bacteriophages, on the one hand, and bacteria and Archaea". Indeed, these phages are coding for proteins such as the ribosome, needed to transform RNA in protein. Genes coding for ribosome are usually found only in bacteria or archaea and are used as a key difference between alive and non-alive biological material

More surprisingly, some of the newly discovered phages carry genes variants of the well-known Cas and CRISPR machinery.

Source: EurekAlert!, 12 February 2020