

NEUROLOGY

Translating thoughts into speech

Nature **568**, 493–498 (2019)

Neural activity in the cortex can be translated into speech using a synthetic device.

The loss of ability to form speech as a result of neurological injury is devastating. Currently, those affected turn to other nonverbal means of communication. Furthermore, current brain–computer interfaces rely on slow cursor-based systems to spell out words.

A group of scientists based in California were able to develop a device that decodes the multiple instructions for articulatory movement that occur in the cortex into the directions for speech. The device was able to synthesize speech from decoded signals such that the speech was understood by other individuals.

The study shows the potential for neuroprosthetics to restore speech. HS

<https://doi.org/10.1038/s41591-019-0488-1>

GENETIC TESTING

Rapid neonatal diagnosis

Sci. Transl. Med. **11**, eaat6177 (2019)

An automated pipeline using genome sequencing can diagnose genetic disease in neonates from dried blood spots in a timeframe that would make a difference in the clinic.

In the United States, the most common cause of death in neonates is genetic

disease, and time is of the essence for these critically ill babies to receive relevant therapy. Current sequencing platforms are impractical in the clinic because they take too long and require specialists to interpret the data.

A group of scientists in the United States developed a pipeline that requires minimal human interpretation for neonatal genetic disease diagnosis by combining sequencing of neonate blood spots with the automated interpretation of symptoms from medical records. The median time to diagnosis of 20 hours in their test group of 95 babies shows that with some modification this technology could be used to identify treatments for seriously ill children in the intensive care unit. HS

<https://doi.org/10.1038/s41591-019-0487-2>

INFECTIOUS DISEASE

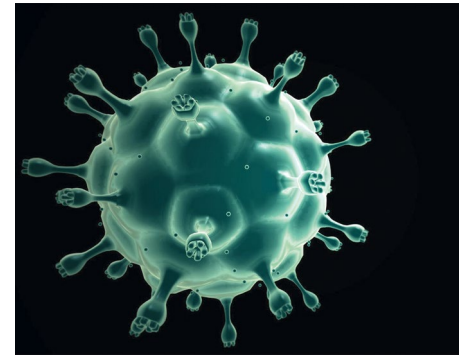
Preventing HIV transmission

Lancet [https://doi.org/10.1016/S0140-6736\(19\)30418-0](https://doi.org/10.1016/S0140-6736(19)30418-0) (2019)

Antiretroviral therapy (ART) is able to prevent transmission of HIV in condomless sex between men who have sex with men.

There was a lack of evidence of the risk of HIV transmission between men who have sex with men without condoms when the infected partner is taking ART, particularly when compared to the amount of data on heterosexual couples.

The PARTNER2 study followed almost 1,000 couples in 75 cities in 14 European countries over 8 years and found that, despite almost 77,000 condomless sex acts in which the affected partner was on



Credit: MedicalRF/Science Source

suppressive ART therapy, there were zero phylogenetically linked transmissions between couples.

The study reveals that men on suppressive ART are sexually noninfectious and shows promise for the elimination of HIV. HS

<https://doi.org/10.1038/s41591-019-0490-7>

NEURODEGENERATION

Treating Huntington's with oligonucleotides

N. Engl. J. Med. <https://doi.org/10.1056/NEJMoa1900907> (2019)

A phase 1/2 trial of an antisense oligonucleotide that targets the messenger RNA of the gene causing Huntington's disease shows that it is safe and has therapeutic potential.

Huntington's disease onset occurs in mid to late life and is characterized by disordered movement, cognitive decline and other symptomatic behaviors. It is caused by a triplet repeat expansion in the Huntingtin gene, and it is thought that strategies to target and degrade this expansion could have therapeutic benefit.

In a randomized control trial of 46 individuals with Huntington's disease, an antisense oligonucleotide targeting the triplet repeat expansion was injected into their spines. The trial showed that this approach is safe and that it resulted in reductions in the concentrations of the pathogenic protein. HS

<https://doi.org/10.1038/s41591-019-0491-6>

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OBSESITY

The processed food trap

Cell Metab. **30**, 1–11 (2019)

Consumption of processed food results in consumers eating more calories than if they are presented with only unprocessed food.

Ultra-processed foods are thought to contribute to adverse health outcomes, including obesity; however, this has not yet been proven.

A group of researchers in the United States recruited 20 inpatient adults to a diet study. They were fed a processed diet for 2 weeks and then an unprocessed diet for 2 weeks, or vice versa. The amounts of calories, sugar, fat, fiber and macronutrients were matched between the diets, but the individuals were able to eat ad libitum. Consuming the diet of unprocessed food resulted in elevated calorie intake, weight gain and associated adverse health outcomes. HS

<https://doi.org/10.1038/s41591-019-0489-0>