

Irradiated Ground Beef

Feb 2017
Ottawa, Canada

In response to a massive recall of beef products in Alberta in 2012 due to an *E. coli* infection, Health Canada has approved the sale of irradiated ground beef.¹ Irradiation is the process by which food is blasted with ionizing radiation in an effort to reduce salmonella, *E. Coli*, and other harmful bacteria.² This policy harbours promise of a safer food industry.

Rejuvenating Blood

Feb 2017
Lund, Sweden

Aging is associated with increased predisposition to a wide array of blood-related diseases including anemia, leukemia, certain types of blood cancer, and lowered immunity. As such, efforts have been made to rejuvenate blood stem cells. A group in Sweden has succeeded in isolating aged haematopoietic stem cells (HSCs) using genetic barcoding and reprogramming them into induced pluripotent stem cells in mice. This group is the first to show the capacity for functionally old HSCs being reversed to a younger state.⁴

No More Addiction?

Feb 2017
British Columbia, Canada

Scientists at the University of British Columbia may have generated a genetic construct in mice that makes them immune to cocaine addictions. The mice had an overexpression of the protein cadherin, an adhesive protein which binds cells together and strengthens synapses.⁶ Stabilization of cadherin in synapses of dopaminergic neurons prevents cocaine-induced changes to the glutamate receptors associated with the reward circuitry of the brain. As such, the mice lose the pleasurable memory of cocaine. This new research suggests that susceptibility to addiction may very well have a genetic basis and is not determined solely by judgment.

A New Male Contraceptive

Feb 2017
California, USA

Contraceptive development efforts have historically been female-oriented. Currently, the only options available for men are condoms or vasectomies.⁵ The Parsemus Foundation in Berkeley, California is now investigating a possible new male contraceptive that is non-hormonal, long-acting, and reversible. Vasalgel is a styrene-alt-maleic acid polymer dissolved in dimethyl sulfoxide. When injected, it forms a hydrogel in front of the vas deferens, the duct that transports sperm from the testicle to the urethra.⁵ To date, Vasalgel has been shown to be effective in rhesus monkeys and rabbits, and the Parsemus Foundation is currently preparing for clinical trials in humans.⁵

Moths Threaten Crops in Africa

Jan 2017
West Africa

The *Spodoptera frugiperda*, commonly known as the fall armyworm moth, is native to Latin America, but was first sighted in Africa in 2016. These moths, being an invasive species, attack over 80 types of plants, including maize, rice, sugarcane, and other grains and grasses. Due to warm temperatures in Africa, the moths are able to lay eggs in clusters of 100-300 at a time, which hatch in 2-3 days. This pest could have a disastrous impact on poor populations in Benin, Togo, and Nigeria, where maize is an important source of food.⁷ Currently, there is no method in place to combat the fall armyworm moth, but pest control methods such as the introduction of natural predators are being investigated.⁷

Chatty Viruses

Jan 2017
Rehovot, Israel

Viruses have been observed communicating with one another. Scientists in Israel have discovered that during bacteriophage infections in bacillus host cells, phages produce six amino acid-long communication peptides. These peptides help phages of subsequent infections decide whether to proceed to the lytic or lysogenic cycle. That is, the virus will decide to either lyse the membrane of the host cell and penetrate other cells, or remain dormant and replicate inside host cells. If concentration of the peptide is sufficiently high, the viruses will lysogenize and keep the host viable. If not, they will replicate and lyse the host.³

Outbreak of Flu in China

Dec 2016
China

A sharp increase in cases of avian influenza A (H7N9) has been reported in China since December 2016. The majority of these cases can be attributed to exposure to infected live poultry and their environments.⁸ The current outbreak of H7N9 has resulted in a greater number of cases than seen in the 2014-15 and 2015-16 epidemic.

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Ross River Virus: The Next Global Epidemic?

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Adelaide, Australia

Ross River virus (RRV) has been circulating around the South Pacific since 1979-80. According to researchers in Australia, new evidence demonstrates that it could be the next mosquito-borne global epidemic. Marsupial animals, specifically kangaroos and wallabies, are the reservoirs of this virus. Although RRV is not fatal, it causes rashes, fevers, and sore joints, and can be debilitating for months.⁹