

## Radiation-Induced Brain Cancer August 2017 /// Canada

Many adults that survive cancer in their childhood develop brain tumours, and research conducted at the University of Toronto may help to explain why. The study found that radiation to the head and spine, which is often used to treat leukemia or pediatric brain cancer, increases the risk of meningiomas. Meningiomas are the most common type of tumour originating from the central nervous system. Researchers compared scans of radiation-induced meningiomas with typical meningiomas. They discovered that both looked the same physically and were equally sporadic in occurrence. However, the radiation-induced meningiomas were found to be more aggressive, as they contained a mutation of NF2. NF2 is a gene which encodes merlin, a tumour-suppressing protein. Scientists suggest that there are likely more oncogenic mutations to be discovered.

## Egg-regious Insecticide Contamination August 2017 /// Europe

Millions of eggs across 40 European countries have been destroyed after they were found to be contaminated with fipronil, an insecticide normally used to exterminate fleas, lice, and ticks. The European Union has banned this pesticide for use on animals intended for human consumption because it can have toxic effects on the kidneys, liver, and thyroid if ingested in large quantities. Furthermore, ingestion can lead to nausea, vomiting, abdominal pain, dizziness, and epileptic seizures. This contamination was first discovered on poultry farms in the Netherlands, where fipronil was likely used to treat red lice found in egg-laying hens. Fortunately, there have been no reports of harm due to this multi-national scandal.



## Stay Awake for that Surgery August 2017 /// United States

A brain aneurysm is a weakened region of a blood vessel that supplies blood to the brain. 'Clipping' is a common therapeutic surgical procedure that risks rupturing the aneurysm, potentially causing disability or death. Recent research from the Saint Louis University found that conscious sedation – keeping the patient awake during the surgery, rather than using general anaesthetic – mitigates these risks. When patients are conscious, they can better demonstrate the warning signs of blocked blood flow, such as blurred vision or the inability to make a fist. Thus, conscious sedation allows surgeons to monitor patients and know when to readjust the clips to avoid ruptures.

## New Virus Takes Flight July 2017 /// Brazil

In a stroke of luck, researchers at the University of São Paulo have discovered a new virus, avian paramyxovirus 15, in a migratory bird species. The researchers were originally testing migratory birds for Newcastle disease, which is harmless to humans but deadly to domestic poultry and wildfowl. Avian paramyxovirus 15 is a pathogen in the same family as Newcastle disease virus. Co-infection of the viruses was discovered in a white-rumped sandpiper (*Calidris fuscicollis*). Experimentation indicates that this new virus is similarly harmless to humans. As Brazil is the world's largest exporter of chicken products, this new virus mounts concern for the industry.

## **CRISPR and Clearer August 2017 /// United States, South Korea, China**

Scientists from the USA, South Korea, and China successfully used CRISPR-Cas9 gene editing to fix a mutation in the MYBPC3 gene in human embryos. This mutation causes hypertrophic cardiomyopathy, a condition in which the heart muscle thickens, leading to heart failure and sudden death in seemingly healthy individuals. This major milestone in human genetic engineering marks a significant improvement in efficiency and accuracy over previous attempts; researchers found no evidence of off-target genetic mutations after this experiment. Furthermore, amongst 58 embryos, there was only one case where a cell contained different genetic sequences than the rest of the embryo.

## **Old Vaccine, New Protection? July 2017 /// New Zealand**

In a large-scale case-control study spanning 12 years, researchers in New Zealand found that individuals given a discontinued version of the meningitis B vaccine (MeNZB) were less likely to be diagnosed with gonorrhoea, a common sexually transmitted disease. MeNZB is the first vaccine which protects against gonorrhoea. However, this study did not establish a causal relationship; more research is therefore necessary before a dedicated vaccine against gonorrhoea can be made available to the public.

# **MEDPULSE**

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## **Potential Ebola Vaccines Bring Hope October 2017 /// Liberia**

Clinical trials have shown that two vaccines, rVSV-ZEBOV and ChAd3-EBO-Z, elicited a long-lasting immune response against Ebola. Within one month, most study participants developed antibodies that persisted for an entire year. Sustained vaccine durability is important, but researchers warn that the significance of this prolonged immune response is unclear. Investigators could not further study the vaccine's efficacy against Ebola, as the outbreak in Liberia ended before more clinical trials could begin.

## **Close the Borders! August 2017 /// Madagascar**

Every year between September and April, hundreds of cases of the plague are reported in Madagascar. In previous years, most cases were of the bubonic variety, which is the least severe form of the plague and is transmitted by flea bites. However, an alarmingly high death toll has been noted this year, as most cases have been attributed to the disease's most deadly and virulent form, the pneumonic plague. Pneumonic plague is transmitted from person to person via coughing and can be fatal within 24 hours if left untreated. In the past, the plague was mostly confined to mountainous, rural areas. However, the current outbreak has spread to several major Malagasy cities and the nearby country of Seychelles.