Demystifying the science behind the COVID-19 pandemic

Associate Professor Siouxsie Wiles
Bioluminescent Superbugs Lab
Scientist-communicator

Image credit: AM Show
Science/research doesn’t end with a journal publication...
Escherichia coli, better known as E. coli, is a common inhabitant of the human gut. Most E. coli strains are harmless but a few can cause serious illness and even death. One such group, known as enterohaemorrhagic E. coli (EHEC) or Shiga-toxin producing E. coli (STEC), cause bloody diarrhoea, and in some people, Haemolytic Uraemic Syndrome (HUS) which can lead to anaemia, kidney failure and death.
This week, scientist Dr Siouxsie Wiles talks about the devices that are letting hospital patients and care home residents stay out of bed, what to do when you've got hay fever, and how the sugar industry have played the same game as the tobacco industry.
NASA

SCANNING FOR MICROBIAL CONTAMINATION

OFFICIAL SELECTION
6th Annual imagine SCIENCE Film Festival

YouTube http://youtu.be/UUUtRoI-5g
Siouxsie & Eve Investigate

There are microscopic bugs all around us, on us and even living inside us. Some of these bugs are good, some are bad, but they’re all fascinating! Join New Zealand’s most colourful scientist Dr Siouxsie Wiles, and her daughter Eve as they investigate this hidden world of microbiology, and find out what’s living in our belly buttons, how to make cheese from it (Eww!), and much more...

Episodes

- Fungi
  Episode 1

- Bioluminescence
  Episode 2

- Poo
  Episode 3

Damian Christie
@damianchristie  Follows you

Story-teller, journalist, video-maker. Director of @AotearoaScience. damian@scienceagency.co.nz 2017 Prime Minister’s Science Communication Prize winner.
Antibiotic Resistance
The End of Modern Medicine?

Siouxie Wiles

This is an important new book on the pressing issue of anti-microbial resistance. Engagingly written, well informed and provocative, it is a clear call to action for New Zealanders on one of the most critical issues we face.

Professor Kurt L Krause, Webster Centre for Infectious Diseases, University of Otago

In ten years' time, will antibiotics still work? Have we let bacteria get the upper hand in the evolutionary arms race?

In the 1920s the discovery of the antibiotic penicillin started a golden age of medicine. However, experts warn that the end of that age may be just a decade away. In this BWB Text, microbiologist Siouxie Wiles explores the looming crisis of antibiotic resistance and its threat to New Zealand. Wiles concludes that New Zealand must

http://bwb.co.nz/books/antibiotic-resistance
Scientist-communicator

Image credit:
AM Show
Covid-19 and kids: How to talk to children about the coronavirus

People have started asking me how they should talk to kids about the disease. So, here are some handy tips.

Read on.

Covid-19: How do you contract the coronavirus, and who is most at risk?

A new report on the Covid-19 outbreak has some important insights into the way it has progressed, and underscores why we should take it seriously.

A practical guide to dealing with the arrival of the coronavirus in New Zealand

Do not panic. But do prepare. Here's what you need to do.

Read on.
IT TAKES A TEAM

thespinoff.co.nz
Important to remember that #Covid-19 epidemic control measures may only delay cases, not prevent. However, this helps limit surge and gives hospitals time to prepare and manage. It's the difference between finding an ICU bed & ventilator or being treated in the parking lot tent.

Adapted from CDC / The Economist
9th March

FLATTEN THE CURVE

NUMBER OF CASES

HEALTHCARE SYSTEM CAPACITY

TIME SINCE FIRST CASE

WHATEVER, IT'S JUST LIKE A COLD OR FLU.

@SIouxSiew @XTOTL @TheSpinoffTV

'ADAPTED FROM @DREWAHARRIS, THOMAS SPLETTSTÖßER (@SPLETTE) AND THE CDC' CC-BY-SA
FLATTEN THE CURVE

NUMBER OF CASES

HEALTHCARE SYSTEM CAPACITY

TIME SINCE FIRST CASE

DON'T PANIC BUT BE CAREFUL.
- WASHING HANDS
- NOT TOUCHING FACE
- STAY HOME WHEN SICK

@SIOUXSIEW @XTOTL @THESPINOFFTV

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If you only learn one thing about #COVID19 today make it this: everyone's job is to help FLATTEN THE CURVE. With thanks to @XTOTL & @TheSpinoffTV for the awesome GIF. Please share far & wide.
File:Covid-19-Eğişiyi-Düzleştirelim.gif
in Turkish

File:Covid-19-curves-graphic-social-v3-es.gif
in Spanish

in Portuguese

in French

File:Covid-19-curves-graphic-social-v3-de.gif
in German

File:Covid-19-curves-graphic-social-v3-id.gif
in Indonesian
THIS PERSON WORKED FROM HOME

THIS PERSON DIDN’T GO TO THAT BBQ

 Didn’t fly domestically

STAYED HOME
Your actions will save lives. This is why it's important to stay home:

- Worked from home
- Skipped the house party
- Didn't hug their mate

Dieses Video verdeutlicht, die Wirksamkeit von #WirBleibenZuhause. Durch die Einhaltung der Verhaltensregeln kann jeder und jede einen Beitrag dazu leisten, die Ausbreitung des #Coronavirus zu verlangsamen.

Hält sich an die Hygiene-Vorschriften


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COVID-19
TRANSMISSION 101

@SIOUXSIEW @XTOTL thespinoff.co.nz
*INFORMATION MAY CHANGE AS NEW VARIANTS EVOLVE

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4 FEB 2021
COVID-19: OUR BODY VS THE VIRUS

SEROLOGY TESTS LOOK FOR THE BODY’S RESPONSE TO THE VIRUS

ANTIBODIES
- IgM
- IgG

GENETIC TESTS LOOK FOR RNA OF VIRUS

VIRUS

AMOUNT OF ANTIBODIES

AMOUNT OF VIRUS

WEEKS SINCE FIRST SYMPTOMS

MAY INFECTION PERIOD

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3 MAY 2020
THE PFIZER/BIONTECH COVID-19 VACCINE EXPLAINED

It's basically the recipe that tells the body how to make the spike protein of the virus.
ALTERNATIVES TO HANDSHAKES, HUGS, HIGH FIVES AND HONGI

THE WAVE

THE HAND ON HEART

NAMASTE

NZSL: HOW ARE YOU?

THE ‘HI-BROWS’

THE ‘ALL GOOD’ NOD

THE ‘EAST COAST WAVE’

THE ‘WHAT A WORLD EH?’

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IT USUALLY MEANS...
a small replica, or a person who demonstrates clothes

BUT SCIENTISTS MEAN...
a simulation or representation of the real world

\[ \lambda_i = R_i \left(1 - \frac{N(t)}{N_{00x}}\right)C(t)F(t-T_{i,i}-T_{iso,i}) \int_{t}^{t+\delta t} W(t-T_{i,i}) \, dt \]
THE EMMENTAL CHEESE MODEL

Border closures, Border controls, Isolation for arrivals, Rapid testing, Contact tracing, Isolation of cases & close contacts, Limits on gatherings, Limits on movement, School workplace closures, Physical distancing, Handwashing, Safe coughing and sneezing, Wearing masks, Recording movements, Staying home if sick, Cleaning surfaces.

Test, trace, isolate, "lockdown"
MISINFORMATION

- Sunlight
- I HEARD...
- MIRACLE CURE

DISINFORMATION

- GOVERNMENT CONTROL
- I RECKON...

FAKE
Independent of government
Provide information in bitesize, understandable pieces
Make it engaging and sharable
COVID-19 explainer on masks: who should wear them, when and how

World Health Organization (WHO) 19 June

Alternatives to handshakes, hugs and high fives during COVID-19

World Health Organization (WHO) 18 hrs

WHO and UNICEF warn of a decline in vaccinations during COVID-19, due to disruptions in the delivery and uptake of immunization services caused by the pandemic.

As the situation evolves, it is important to catch up on missed vaccinations as soon as possible.
The bumper Toby Morris & Siouxsie Wiles Covid-19 box set