QIMR Berghofer
Medical Research Institute

Choose from the following four sessions in our Day in the Life of a Scientist program:

Session	**Overview**	**Learning intentions** *By the end of this session, students will…*			**Curriculum links**
		Know	Understand	Do	
Cell biology: Blood microscopy	Prepare blood samples for analysis under the microscope	• know the cellular and non-cellular components of blood and their functions • know how to assess each component of blood to determine if disease is present	• understand how blood functions as a suspension, a mixture and a solution • understand the effects of changing the salt-water balance of blood on its form and function • understand how Greek and Latin word roots help us to decipher technical terms in cell biology	• be able to separate components of blood using centrifugation • be able to prepare a blood smear • be able to correctly use a microscope to identify key features of blood	Year 11 Biology (Unit 1, Topic 1: Cells as the basis of life; Unit 2, Topic 1: Homeostasis)
Disease: Antimicrobial drug discovery	Discover new antibiotics using fluorescence	• know about different types of infectious and non-infectious diseases studied at QIMRB • know how scientists screen for natural antibiotics using bioassays	• understand how fluorescence is used to measure microbial activity • understand the role of positive and negative controls	• be able to set up and interpret a bioassay experiment to identify new antibiotics • be able to subculture bacteria using the lawn plate or streak plate method	Year 11 Biology (Unit 2, Topic 2: Infectious disease) ** Session content suits all abilities and requires no prior learning
Immunology: Diagnosing Ross River virus	Diagnose Ross River virus using patient information and samples	• know about innate and adaptive immunity in the human body • know how Ross River Virus infection occurs and the symptoms it causes in humans	• understand how doctors combine patient histories with laboratory tests to arrive at diagnoses • understand how an ELISA (enzyme-linked immunosorbent assay) tests for immunity	• be able to use a micro-pipette to accurately dispense liquids in the laboratory • be able to conduct a mock ELISA to test for the presence of antibodies	Year 11 Biology (Unit 2, Topic 2: Infectious disease)
Genetics: DNA and inheritance	Examine genetic traits within a family using gel electrophoresis	• know the structure and location of genetic material in living cells • know how polymerase chain reaction (PCR) is used to copy sections of DNA	• understand how gel electrophoresis allows DNA to be separated and visualised • understand how even non-functional genes convey information about inheritance and evolution	• be able to use a micro-pipette to accurately dispense liquids in the laboratory • be able to load and interpret the results of gel electrophoresis • be able to extract DNA from human cells (optional)	Year 10 Science (biology unit) Year 12 Biology (Unit 4, Topic 1: DNA, genes and the continuity of life)