



# Year 10: Genetic Science Toolkit Teacher Information Booklet

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## About the Perkins

### About the Perkins

The Harry Perkins Institute of Medical Research, commonly known as The Perkins, is the largest medical research institute in Western Australia working on diseases such as cancer, diabetes, heart disease, and rare genetic diseases.

With over 250 researchers located in three hospital campuses, the Perkins is uniquely positioned to fast track the development of new discoveries and treatments. Researchers at the Perkins are driven to find new ways of diagnosing and treating diseases.

### About the Lotterywest BioDiscovery Centre

The Lotterywest BioDiscovery Centre connects students, teachers, and members of the community to the world of medical science and the research happening at the Perkins. Through school visits, community events, and educator resources, we are dedicated to ensuring all Western Australians become more active participants in medical research.

### Where to find us

We are located in Nedlands at **6 Verdun St, Nedlands 6009**. See the map below.

### Bus parking

Bus parking is organized through QEII parking. Should you require to park your school bus for the day please contact:

- [Nicolette.Staal@health.wa.gov.au](mailto:Nicolette.Staal@health.wa.gov.au),
- [Qeii.parking@health.wa.gov.au](mailto:Qeii.parking@health.wa.gov.au)

Or alternatively, call on: (08) 6457 7248



## Parking Map





## About your Session

### Genetics Research at the Perkins

The scientific history of genetics began with the works of Gregor Mendel in the mid-19th century. Since then, with advances in all fields of genetics, coupled with new technology, researchers have a deeper understanding and knowledge of the role of genetics in disease. With an increasing range of tools in their tool kits, scientists are on the cusp of new discoveries.

In 2020, the Nobel Prize in chemistry went to Jennifer Doudna, and Emmanuelle Charpentier. Their research took CRISPR, a defence mechanism used by single celled organisms and developed it into a technique that allows scientists to edit genes, just like a writer edits a book.

The Cancer Epigenetics lab at the Perkins, led by Pilar Blancafort, is looking into how gene editing can be used in the development of new cancer treatments. Many cancers do not have targeted treatment options – methods that treat cancer cells with minimal effect on healthy cells. Without targeted treatment options, patients receive general treatments, such as chemotherapy and radiotherapy, that often come with side-effects such as nausea etc.

Researchers at the Perkins are using CRISPR to modify the DNA of cancerous cells to make them more susceptible to these general treatments. CRISPR is also being used to make cells less cancerous – hampering their ability to divide and spread rapidly.

### What this session covers

Discover how the latest genetic knowledge is helping us move closer to more effective, personalised treatments for disease. Your students' day at the Perkins is hosted by research scientists who will help your class discover how genetic tools are used to uncover clues to better understand disease. Students will learn about how CRISPR and bioinformatics work. They will discover how these tools are used to develop improved treatments and diagnostic tests for medical conditions. Students will also learn how to use technical tools such as a micropipette and mini-centrifuge to extract DNA from cells.



### Curriculum Links

Year 10 Science Curriculum		
Science Understanding	Science as a Human Endeavour:	Science Inquiry Skills
<p><b>AC9S10U01:</b> the function of chromosomes, DNA and genes in heredity and predict patterns of Mendelian inheritance</p>	<p><b>AC9S10H02:</b> investigate how advances in technologies enable advances in science, and how science has contributed to developments in technologies and engineering</p> <p><b>AC9S10H03:</b> analyse the key factors that contribute to science knowledge and practices being adopted more broadly by society</p> <p><b>AC9S10H04:</b> examine how the values and needs of society influence the focus of scientific research</p>	<p><b>AC9S10I02:</b> plan and conduct valid, reproducible investigations to answer questions and test hypotheses, including identifying and controlling for possible sources of error and, as appropriate, developing and following risk assessments, considering ethical issues, and addressing key considerations regarding heritage sites and artefacts on Country/Place</p> <p><b>AC9S10I03:</b> select and use equipment to generate and record data with precision to obtain useful sample sizes and replicable data, using digital tools as appropriate</p>





# Terms and Conditions of Booking

## Price

Visits are priced at \$50 per student for a group of 20 or more students. For a group of less than 20 students, a minimum fee of \$1,000 applies. Feel free to contact the education team to organise school sharing opportunities. Cost will be shared proportionately if multiple schools attend a singular day.

For bookings over multiple days, each day will be priced independently.

Once your booking has been confirmed, a \$100 per session booking fee will be issued within 10 business days. For bookings in the next calendar year, this booking fee will be issued in the new year, unless requested otherwise.

## Numbers

At the time of making your booking, provide an estimate of the number of students that will be attending. You will be emailed a reminder two weeks before your visit to confirm student numbers.

It is the responsibility of the organising teacher to confirm final numbers at least one week prior to their booking. A decrease in the number of participants will not be accepted after this point and schools will be invoiced accordingly.

## Photo Consent Policy

The Harry Perkins Institute of Medical Research may use photos taken during the session for publicity purposes unless otherwise agreed upon. The school can opt-out of this arrangement through the booking confirmation form, or through written notice to the education team at any time before or after the excursion.

## Timing

Sessions run from 9:30 am – 2:30 pm. Alternative times must be arranged ahead of the session.



### Cancellation Policy

The Lotterywest BioDiscovery Centre at the Harry Perkins Institute for Medical Research requests one month's notice for the cancellation of a school's booking. If this notice is not given, the school will be charged at 50% of the original cost of the excursion or session.

Cancellations will not be accepted with less than one week's notice.

### Shared Classes

If the total number of students in a shared class drops below 20, all schools attending that day will split the \$1000 minimum fee proportionally to the number students attending.

### Duty of Care

School staff are to always remain with students. Staff at the Harry Perkins of Medical Research do not hold duty of care over school students and are not responsible for personally caring for students. Should there be any attendee with a medical condition, disability, mobility issue or special learning requirements, the school is required to attend with two adults who can accept responsibility for duty of care.



## On the Day

### What your students need to bring

Students must bring their own food and drink. Pens and workbooks are provided.

**Note:** On-site cafés are not accessible for students or staff during their visit.

### PC2 Compliance

All teachers and students must comply by expectations for our Physical Containment Level 2 (PC2) as set by the Institutional Biosafety Committee (C-IBC). This means students and staff must wear fully enclosed shoes, and all hair/fringes tied back and off face. Phones, bags, food or drink (including water) are not permitted in the PC2 lab area.

### Working With Children Check Confirmation

It is a condition of employment at the Lotterywest BioDiscovery Centre that all demonstrator staff have a current Working With Children Card.



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