### Medical Researchers

Dr Ian Frazer, received the 2008 Prime ministers prize for science for his ground breaking work on:

- A) Kidney transplantation
- B) Human herpes virus
- C) Avian influenza
- D) Human papilloma virus

### Medical Researchers

Which of the following winners of the Australian of the Year award also won the Nobel prize for medicine?

- A) Sir John Cornforth AC CBE
- B) Sir Gustav Nossal AC CBE FAA FRS
- C) Professor Peter Doherty AC FAA
- D) Professor Fiona Stanley AC FAA

### Stem Cells

If a scientist used the somatic cell transfer method of cloning to clone a mouse, what colour would the baby mouse be if: The egg cell donor mouse is brown, the somatic cell donor mouse is black and the surrogate mother mouse is white?

- A) Brown
- B) Black
- C) White
- D) A mixture of brown, black and white

### Stem Cells

Which of the below correctly describes the stem cell differentiation pathway?

- A) Totipotent – pluripotent – progenitor – terminal
- B) Pluripotent – totipotent – progenitor – terminal
- C) Progenitor – totipotent – pluripotent – terminal
- D) Progenitor – pluripotent – totipotent – terminal
### Embryonic stem cells in a culture dish

#### 5. Genetics

<table>
<thead>
<tr>
<th>James</th>
<th>Lily</th>
<th>Mr Granger</th>
<th>Mrs Granger</th>
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Pedigrees for Harry, Hermione and Seamus, with a star indicating a wizard or a witch

© Murdoch Childrens Research Institute 2008

#### In the Harry Potter book series, the pattern of inheritance for being a wizard or a witch is:

A) X-linked dominant  
B) X-linked recessive  
C) Autosomal dominant  
D) Autosomal recessive

#### 6. Genetics

![Chromosome Diagram](http://www.treachercollins.co.uk/gene/chrom.gif)

Treacher Collins syndrome is a disorder that affects the development of the face. The mode of inheritance is:

A) Autosomal  
B) X-linked  
C) Autosomal dominant  
D) Autosomal recessive

#### 7. Human Development

![Embryo](Leonardo%20da%20vinci%27s%20Embryo%20in%20the%20Uterus)

What is the length of a normal human pregnancy?

a) 30 weeks  
b) 36 weeks  
c) 40 weeks  
d) 44 weeks
### 8. Human Development

**Pregnancy tests are based on detecting which hormone in urine?**

A) Estrogen  
B) Follicle stimulating hormone  
C) Gonadotrophin releasing hormone  
D) Human chorionic gonadotrophin

### 9. Health

**Malaria is an infectious disease that kills 2 million people each year. The malaria infection causes illness is due to**

A) Plasmodium falciparum  
B) Trypanosoma cruzi  
C) Toxoplasma gondii  
D) Giardia lamblia

[Cells infected with malaria](http://www.biology.ccsu.edu/doan/ProjectHope/Malaria%20red.jpg)

### 10. Health

**In 2009, the National Health and Medical Research Council of Australia recommended that the safe level for alcohol consumption during pregnancy is:**

A) Less than seven standard drinks per week  
B) No alcohol  
C) Less than three standard drinks per day  
D) Less than a blood alcohol reading of 0.05%

[Consumption of alcohol during pregnancy affects embryonic development](image)

### 11. The Immune System

**Human immunodeficiency virus type I (HIV-1) causes acquired immune deficiency syndrome (AIDS) and is thought to have originated by cross-species transmission into**
<table>
<thead>
<tr>
<th>12. The Immune System</th>
<th>The dengue fever virus is transmitted by which species of mosquito in North Queensland?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A) Aedes aegypti</td>
</tr>
<tr>
<td></td>
<td>B) Culex annulirostris</td>
</tr>
<tr>
<td></td>
<td>C) Anopheles gambiae</td>
</tr>
<tr>
<td></td>
<td>D) Aedes vigilax</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>13. The Scientific Method</th>
<th>What type of scientific reasoning starts with specific observations and then develops a general theory?</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>A) Deductive</td>
</tr>
<tr>
<td></td>
<td>B) Inductive</td>
</tr>
<tr>
<td></td>
<td>C) Conductive</td>
</tr>
<tr>
<td></td>
<td>D) Conclusive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14. The Scientific Method</th>
<th>After a heavy thunderstorm, you notice a tree has fallen over in the park. Applying Ockham’s razor leads you to conclude that:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A) The tree was infected with a rare tropical disease that caused it to rot and fall over</td>
</tr>
<tr>
<td></td>
<td>B) A car lost control and knocked it over</td>
</tr>
<tr>
<td></td>
<td>C) The tree was struck by lightning</td>
</tr>
<tr>
<td></td>
<td>D) A pink elephant fell out of a passing plane and hit the tree</td>
</tr>
</tbody>
</table>

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<tr>
<th>15. Blood</th>
<th>A blood vessel is made up of several layers. Which of the following is true?</th>
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<tbody>
<tr>
<td></td>
<td>A) The first layer is composed of smooth muscle</td>
</tr>
<tr>
<td></td>
<td>B) The middle layer is composed of a network of elastic fibers</td>
</tr>
<tr>
<td></td>
<td>C) The inner layer is composed of a waterproof lining</td>
</tr>
<tr>
<td></td>
<td>D) The outer layer is composed of a thick layer</td>
</tr>
</tbody>
</table>
### 16. Blood

**Arteries and veins carry blood around the body. Which of the following is correct?**

- **A)** The pulmonary artery carries oxygenated blood from the heart and the pulmonary vein carries deoxygenated blood to the heart
- **B)** The vena cava carries oxygenated blood to the heart and the aorta carries deoxygenated blood from the heart
- **C)** The vena cava carries oxygenated blood to the heart and the pulmonary vein carries deoxygenated blood from the heart
- **D)** The aorta carries oxygenated blood from the heart and the pulmonary vein carries oxygenated blood to the heart

### 17. Cancer

**Prostate cancer has one of the largest mortality rates of all cancers. The prostate is part of the:**

- **A)** Male reproductive system
- **B)** Female reproductive system
- **C)** Nervous system
- **D)** Digestive system

### 18. Cancer

**What form of cancer can be prevented by the Australian developed vaccine, Gardasil?**

- **A)** Breast cancer
<table>
<thead>
<tr>
<th>19. Medical Research in Australia</th>
<th>According to current ethical standards for Australian Universities, which of the following animals or animal groups does not require ethics committee approval before they can be used in experiments?</th>
</tr>
</thead>
</table>
| ![Ethics](ethics_icon.png)      | A) Wildlife  
B) Fish  
C) Insects  
D) Crustaceans                                                                                                                                                                         |

<table>
<thead>
<tr>
<th>20. Medical Research in Australia</th>
<th>The Australian Society for Medical Research (ASMR) is the peak professional society representing and promoting Australian medical research. ASMR holds special events during Medical Research Week® every year. The 2009 Medical Research Week dates are:</th>
</tr>
</thead>
</table>
| ![ASMR](asmr.png)               | A) Feb 29 – March 5  
B) March 29 – April 5  
C) April 29 – May 5  
D) May 29 – June 5                                                                                                                                  |

| Please direct your any queries to the ASMR quizmaster at adam.hart@med.monash.edu.au | Many Thanks to Amy Nisselle, Daniel Wallace, Kathy Andrews, Sharyn Pope, Natalie Jones, Katherine Lange, Gilda Tachedjian, Roxanne Toivanen, Justine Mintern and Alex Umbers for help with quiz questions and Claire Ciantar at ASN for assistance with production and editing of the 2009 online quiz. |

**Some generic health, science and medical research websites**  
Molecular Biology of the Cell  
ASMR 2009 QUIZ Answers and Web links:
Website/s with background information required to answer the question

1. D

2. C
http://nobelprize.org/nobel_prizes/medicine/laureates/

3. B
http://en.wikipedia.org/wiki/Somatic_cell_nuclear_transfer

4. B
http://stemcells.nih.gov/info/scireport/chapter1.asp
http://www.csa.com/discoveryguides/stemcell/overview.php

5. D
http://www.nature.com/nature/journal/v436/n7052/full/436776a.html

6. C
http://www.treachercollins.co.uk/gene/genes.htm

7. C
http://en.wikipedia.org/wiki/Pregnancy

8. D
http://en.wikipedia.org/wiki/Pregnancy

9. A
www.who.int/topics/malaria/en/

10. B
http://www.nhmrc.gov.au/your_health/healthy/alcohol/alcoholqa.htm#q1

11. C
http://www.thefreelibrary.com/HIV-related+viruses+still+cross+species.-a072058398

12. A

13. B
http://en.wikipedia.org/wiki/Inductive_reasoning
14. C
http://www.utm.edu/research/iep/o/ockham.htm

15. B

16. D

17. A
www.prostate.org.au

18. D
http://www.gardasil.com/

19. C

20. D
http://www.beamedicalresearcher.org