



# ASMR Medical Research Week® 2006

## Victorian Secondary Schools Medical Research Quiz

### 1. The Nobel Prize for Physiology and Medicine.



*The Medal for Physiology or Medicine*

Put these Australian Nobel prize winners in the correct chronological order beginning with the most recent

- A) Peter C. Doherty
- B) Sir Frank Macfarlane Burnet
- C) Barry J. Marshall & J. Robin Warren
- D) Sir Howard Florey

**CABD**

<http://nobelprize.org/medicine/laureates/index.html>

### 2. The Nobel Prize for Physiology and Medicine.



*Marie Curie, was twice awarded the Nobel prize: Physics 1903, Chemistry 1911*

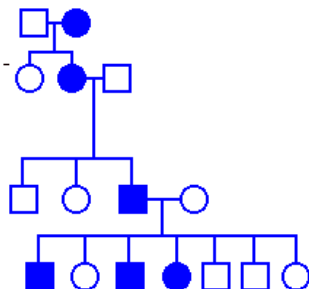
The 2005 Nobel Prize in Physiology or Medicine was awarded for

- A) Discoveries concerning the specificity of the cell mediated immune defence
- B) The discovery of acquired immunological tolerance
- C) The discovery of the bacterium *Helicobacter pylori* and its role in gastritis and peptic ulcer disease.
- D) The discovery of penicillin and its curative effect in various infectious diseases

**C**

<http://nobelprize.org/medicine/laureates/index.html>

### 3. Genetics



*A Family Tree*

The earliest discovery of the rules that govern inheritance of physical characteristics is attributed to

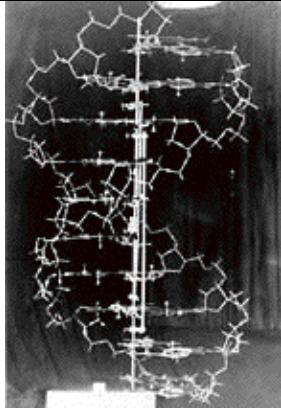
- A) Gregor Mendel
- B) Charles Darwin
- C) Thomas Hunt Morgan
- D) James Watson

**A**

<http://biology.clc.uc.edu/courses/bio105/genetics.htm>

### 4. Genetics

*Deoxyribonucleic acid (DNA) is made up of the four basic units*



*The original DNA model by  
Watson and Crick*

- A) alanine, glutamine, cysteine, tryptophan
- B) adenosine, guanine, cytosine, thymidine
- C) argon, gallium, carbon, titanium
- D) air, earth, fire, water

**B**

[\(Molecular Biology of the Cell\)](#)

### 5. Lifespan

#### Embryonic Development of the American Alligator



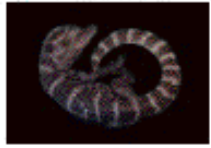
Age: 7 Days



Age: 19 Days



Age: 33 Days



Age: 56 Days

### Which of these has the longest gestation period

- A) Cow
- B) Human
- C) Dolphin
- D) Horse

**D**

<http://www.koolpages.com/hokuspokus/lifespans.html>

### 6. Lifespan



*Hippocrates, the father of  
modern medicine lived to the age  
of 93*

### Which lives the longest

- A) Galapagos Land Tortoise
- B) Elephant
- C) Camel
- D) Human

**A**

<http://www.tesarta.com/www/resources/library/lifespans.html>

### 7. Exercise and Health



*Rhythmic Gymnastics is a Commonwealth and Olympic sport*

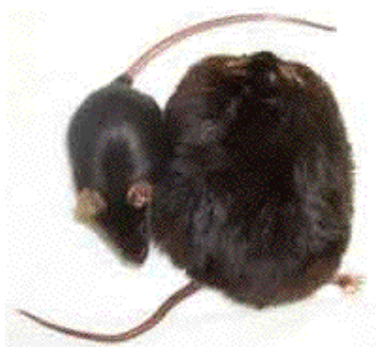
**Which sport was not a part of the 2006 Commonwealth games in Melbourne**

- A) Mountain bike racing
- B) Basketball
- C) Rowing
- D) Triathlon

**C**

(<http://www.melbourne2006.com.au/?s=schedule>)  
([http://en.wikipedia.org/wiki/Commonwealth\\_Games - List of Sports at the Commonwealth Games](http://en.wikipedia.org/wiki/Commonwealth_Games_-_List_of_Sports_at_the_Commonwealth_Games))

### 8. Exercise and Health



*A mutation in the leptin gene in the ob/ob mouse (Right) leads to morbid obesity and provides an excellent experimental model.*

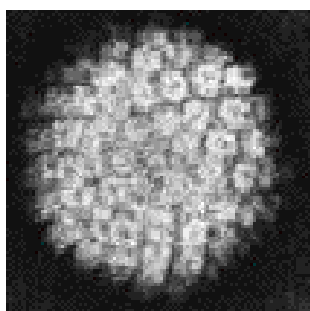
**Which of these medical conditions is not contributed to by weight gain/obesity**

- A) Cardiovascular disease
- B) Diabetes
- C) Stroke
- D) Epilepsy

**D**

(<http://www.betterhealth.vic.gov.au/>)

### 9. Viral infection and immunization



*A scanning electron microscope image of one human papilloma virus (HPV)*

**Treatment with the new cervical cancer drug “Gardasil” prevents cervical tumors by**

- A) Directly killing the Human Papilloma Virus
- B) Preventing the Human Papilloma Virus from entering a cell
- C) Stimulating the immune system to kill cells infected with Human Papilloma Virus
- D) Directly inhibiting Human Papilloma Virus replication

**C**

(<http://www.theage.com.au/news/National/Cervical-cancer-vaccine-breakthrough/2005/10/07/1128562982238.html>)

### 10. Viral infection and immunization

**The proportion of Australians who will have an Human Papilloma Virus (HPV) infection during their lifetime**

- A) 1.5%



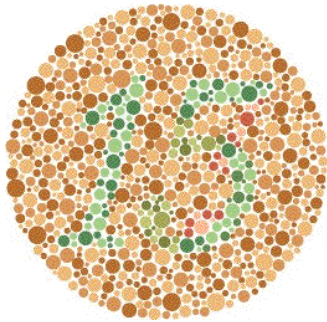
Australian of the year 2006, Ian Frazer pioneered the treatment of cervical cancer by immunization against HPV

- B) 10%
- C) 30%
- D) 80%

**D**

[http://www.abc.net.au/health/library/cervicalcancer\\_ff.htm](http://www.abc.net.au/health/library/cervicalcancer_ff.htm)

**11. The Eye**



Pseudoisochromatic plate tests are commonly used to screen for inherited color vision defects.

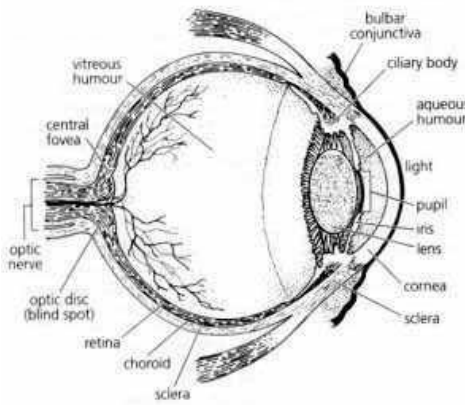
**Which of these does not describe Inherited Achromatopsia**

- A) A form of colorblindness caused by lack of cone receptors
- B) It occurs in 5-10% of Pingelap Islanders
- C) Is often accompanied by nystagmus
- D) Is always inherited from the father

**D**

[http://www.lowvision.org/achromatopsia\\_and\\_color\\_blindness.htm](http://www.lowvision.org/achromatopsia_and_color_blindness.htm)

**12. The Eye**



Anatomy of the eye

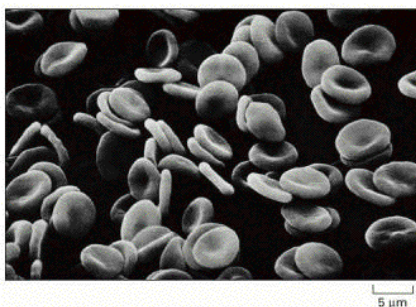
**Which of the following is not true regarding age related macular degeneration (AMD)**

- A) AMD is a degenerative retinal eye disease that causes the progressive loss of central vision.
- B) Smoking is a major factor contributing to the early development of age-related macular degeneration
- C) Incidence of AMD is linked to obesity in the elderly
- D) It is the leading cause of legal blindness in people over the age of 50 in the western world.

**C**

[http://www.healthinsite.gov.au/topics/Macular\\_Degeneration](http://www.healthinsite.gov.au/topics/Macular_Degeneration)

**13. Genetics**

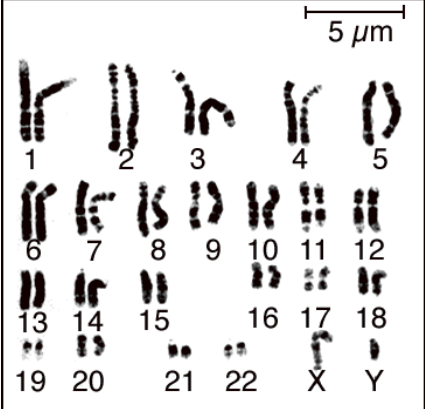

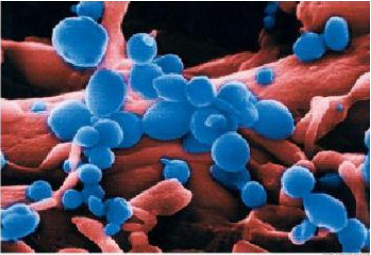


Choose the *most correct* response:



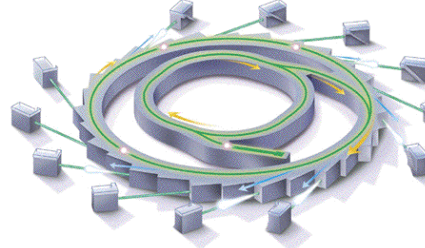

**A mother has blood type A and genotype AO. A father has blood type B and genotype BO. What blood types are possible for the offspring?**

- A) A, B and O
- B) AB, AO, BO and OO
- C) A, B, AB and O
- D) A and B

**C**

<p><i>A scanning electron micrograph of human red blood cells</i></p>	<p><a href="http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=rbcantigen.chapter.ch05ABO">http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=rbcantigen.chapter.ch05ABO</a></p>
<p><b>14. Genetics</b></p>  <p><i>This is a human male karyotype</i></p>	<p><b>Put these organisms in order starting with the highest number of chromosomes and ending with the least.</b></p> <p>A) Human B) Earthworm C) Camel D) Potato</p> <p><b>C, D, A, B</b></p> <p><a href="http://morgan.rutgers.edu/morganwebframes/level1/page2/ChromNum.html">http://morgan.rutgers.edu/morganwebframes/level1/page2/ChromNum.html</a> <a href="http://en.wikipedia.org/wiki/List_of_number_of_chromosomes_of_various_organisms">http://en.wikipedia.org/wiki/List_of_number_of_chromosomes_of_various_organisms</a></p>
<p><b>15. Viral infection and immunization</b></p>  <p><i>Australian blood products and vaccines developer CSL Ltd hopes to have a vaccine for bird flu ready by August 2006 or earlier in the event of an emergency.</i></p>	<p><b>What is the strain of virus that causes bird flu?</b></p> <p>A) N5H1 B) H5N1 C) Avian D) Avian flu</p> <p><b>B</b></p> <p><a href="http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-avian_influenza-index.htm">http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-avian_influenza-index.htm</a></p>
<p><b>16. Viral infection and immunization</b></p>  <p><i>Avian influenza virus</i></p>	<p><b>How does bird flu affect humans?</b></p> <p>A) Humans cannot be infected by bird flu B) Bird flu may infect humans exposed to infected birds but does not cause any symptoms C) Bird flu can pass from an infected human to other people D) Bird flu may infect humans exposed to infected birds and cause severe flu-like symptoms</p> <p><b>D</b></p> <p><a href="http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-avian_influenza-index.htm">http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-avian_influenza-index.htm</a></p>
<p><b>17. Addiction</b></p>	<p><b>Which of the following is NOT a potential consequence of Cannabis use?</b></p>



 <p><b>NATIONAL DRUGS CAMPAIGN</b> NATIONAL DRUGS CAMPAIGN</p> <p><i>For access to addiction support services, call 1800 250 015 (toll free)</i></p>	<p>A) Memory impairment B) Cancer of the lung, mouth, throat and tongue C) Hallucinations D) Teeth grinding</p> <p><b>D</b> <a href="http://www.drugs.health.gov.au/campaign/info.htm">http://www.drugs.health.gov.au/campaign/info.htm</a> - cannabis</p>
<p><b>18. Addiction</b></p>  <p><i>A cannabis plant</i></p>	<p><b>Which mental illness has been linked with Cannabis use?</b></p> <p>A) Schizophrenia B) Depression C) Anxiety D) All of the above</p> <p><b>D</b> <a href="http://www.smh.com.au/articles/2002/11/22/1037697875452.htm">http://www.smh.com.au/articles/2002/11/22/1037697875452.htm</a> <b>!</b></p>
<p><b>19. Science and technology</b></p>  <p><i>Illustration of the Australian Synchrotron machine</i></p>	<p><b>What is a synchrotron?</b></p> <p>A) A device for light amplification by stimulated emission of radiation B) A device in which nuclear chain reactions are initiated C) A vacuum filled tube containing argon and mercury gas which produces electromagnetic radiation D) A particle accelerator designed to visualize, measure and manipulate substances on a molecular scale</p> <p><b>D</b> <a href="http://www.synchrotron.vic.gov.au/content.asp?Document_ID=153">http://www.synchrotron.vic.gov.au/content.asp?Document_ID=153</a></p>
<p><b>20. Science and technology</b></p>  <p><i>The magnets in the Australian synchrotron during construction</i></p>	<p><b>How can a synchrotron help in medicine?</b></p> <p>A) By synchronizing human brain waves with computers B) By determining the molecular structure of proteins involved in disease processes C) By cryogenically preserving terminally ill patients D) By determining the genome code of healthy and diseased cells</p> <p><b>B</b> <a href="http://www.synchrotron.vic.gov.au/content.asp?Document_ID=153">http://www.synchrotron.vic.gov.au/content.asp?Document_ID=153</a></p>

**Some generic health, science and medical research websites**

Molecular Biology of the Cell

<http://www.betterhealth.vic.gov.au/>

<http://www.theage.com.au/news/>

<http://www.abs.gov.au/>

<http://www.health.gov.au/>

<http://www.abc.net.au/science/>

<http://www.science.org.au/nova/index.htm>

[http://en.wikipedia.org/wiki/Main\\_Page](http://en.wikipedia.org/wiki/Main_Page)

<http://www.bbc.co.uk/sn/>

<http://www.pbs.org/wgbh/nova/sciencenow/>