

UNIT 4 Blood and Circulation

	Learning Outcomes	Suggested Teaching Activities	Online Resources	Other resources
	<p>5 (a) Identify red blood cells, phagocytes and lymphocytes from drawings and photographs</p> <p>5 (b) State the function of red blood cells in terms of transport of oxygen and carbon dioxide by haemoglobin</p> <p>5 (c) State the functions of white blood cells in the defence of the body against infection: phagocytosis and formation of antibodies to counteract antigens</p>	<p>Students should observe a microscope slide of a blood smear or a transparency or from the internet.</p> <p>Students should make up a table giving the functions and structure of the blood components.</p>	<p>http://www.bioschool.co.uk/bioschool.co.uk/images/pages/blood%20smear.JPG.htm Blood smear</p> <p>http://web.ukonline.co.uk/webwise/spinneret/circuln/anphag.htm animation showing a phagocyte engulfing some bacteria.</p>	<p>P.Gadd pg 78-82 fig 9.2, 9.3 Summary tables pg 81</p> <p>D. Mackean pg 70-72 fig 11.1, 11.2 and 11.3</p>
	<p>5 (d) State the functions of plasma in the transport of the products of digestion and of carbon dioxide, urea, hormones and heat</p> <p>5 (e) Outline the function of platelets during the clotting of blood, soluble fibrinogen being converted to insoluble threads of fibrin</p> <p>5 (f) State that clotting protects the body from loss of blood and from entry of pathogens</p>	<p>If animal blood is available then students should see a demonstration of centrifugation of blood to show the percentage of liquid to cells.</p> <p>Students should discuss the function of blood clotting and see an animation of it from the inter-net. A diagram showing the steps in clotting can be given to the students</p>	<p>http://www.bloodless.com/BL/Video2.aspx?Category=3 Animation and game about clotting of blood</p>	<p>P.Gadd pg 80 fig 9.8 Summary tables pg 81</p> <p>D. Mackean pg 72</p> <p>P.Gadd pg 80 fig 9.6, D. Mackean pg 73</p>
	<p>5 (g) Identify from a drawing the structure of the heart, as seen in section from the front</p> <p>5 (h) Describe the action of the heart acting as a pump by contraction of muscles in the atria and ventricles, the direction of flow controlled by the tricuspid and pulmonary valves and the bicuspid and aortic valves</p>	<p>Students should see a demonstration of a heart dissection or do one themselves if possible.</p> <p>They should be given a diagram to label and annotate. An animation of the heart cycle should be seen.</p> <p>The students should be told that the pacemaker is responsible for keeping the rhythm of the heart cycle, when not under duress.</p>	<p>http://heartinstitute.saintthomas.org/animations/heartbeatanimation/ heart animation</p> <p>http://www.guidant.com/condition/heart/heart_bloodflow.shtml step through heart animation</p> <p>http://www.new-media.co.uk/heart/</p>	<p>D. Mackean pg 79-82 fig 11.12, 11.13, 11.14 and 11.15</p> <p>P.Gadd pg 87-88 fig 9.18, 9.19 and 9.21</p>

<p>5 (i) Describe the function of the pacemaker</p>		<p>free interactive heart from New Media http://www.idaross.cwc.net/cardiac_cycle.htm animation of pacemaker function and link to heart cycle</p>	<p>D. Mackean pg 81-82 fig 11.16.</p>
<p>5 (j) List the likely causes and effects of heart attacks</p>	<p>Students should engage in a discussion of what they know about keeping a "healthy heart" maybe local health leaflets can be obtained for study. Students could research the topic and produce their own leaflet.</p>	<p>http://sln.fi.edu/biosci/healthy/healthy.html http://www.bhf.org.uk/index.asp http://www.health.uab.edu/show.asp?durki=41581&site=782&return=63899 Heart attack symptoms etc. animation</p>	<p>P.Gadd pg 90 Health leaflets from http://www.bhf.org.uk/publications/index_home.asp?SecID=18</p>
<p>5 (m) Name the blood vessels to and from the heart, lungs, head, liver and kidneys. 5 (k) Describe the structure in relation to functions of arteries, arterioles, capillaries and veins.</p>	<p>Students should be given a diagram of the major blood vessels to label and annotate Students should look at slides of arteries and veins and draw them. Then copy or fill in a table summarising the functions of the vessels</p>	<p>http://www.worldinvisible.com/images/apolog/body/bloodjci.gif Circulatory system diagram http://www.bioschool.co.uk/bioschool.co.uk/images/pages/artery.JPG.htm artery http://www.bioschool.co.uk/bioschool.co.uk/images/pages/vein.JPG.htm vein</p>	<p>P.Gadd pg 84 fig 9.14 and 9.16 D. Mackean pg 76-78 fig 11.6 and 11.9 P.Gadd pg 82 fig 9.9 and 9.10 and summary table pg 85 D. Mackean pg 76-77 fig 11.5, 11.7 and 11.8</p>
<p>5 (n) State the origin and functions of tissue fluid 5 (o) State the origin and functions of lymph. 5 (l) Describe the structure of lymph capillaries, lymph vessels and lymph nodes (glands)</p>	<p>Students should see an animation of tissue fluid being formed and the relationship to lymph in a capillary bed. A diagram of this system needs to be provided for students to annotate. Students should be provided with a diagram of the lymph system to label along with the structure of a lymph vessel.</p>	<p>http://mail.stmarks.edu.hk/main/learning/resourcejs/mafe45.html Animation showing the formation of tissue fluid http://training.seer.cancer.gov/module_anatomy/images/ill</p>	<p>P.Gadd pg 83 fig 9.11 and 9.16 D. Mackean pg 78 fig 11.10 and pg 82 fig 11.17 P.Gadd pg 82 fig 9.9 and pg 91 fig 9.27 and summary tables pg 83 and pg 91</p>

			u_lymph_capillary.jpg lymph vessels with blood vessels	D. Mackean pg 83-84 fig 11.19 and 11.18
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