**UNIT OVERVIEW:** Transport in Animals

**ENQUIRY:** How have multicellular organisms evolved an efficient transport system

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| **Unit intention:**Students will explore the mass transport of substances in multicellular organisms and how organisms have evolved to have an efficient exchange surface.In large multicellular organisms, the immediate environment of cells is some form of tissue fluid. Most cells are too far away from exchange surfaces, and from each other, for simple diffusion alone to maintain the composition of tissue fluid within a suitable metabolic range. Students will look at structural adaptations and how it links with function as well as carry out dissection and examinations of tissue. |
| **Success criteria** | 🗸 | X |
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| I can describe the different types of circulatory systems and explain the need for transport system in multicellular animals |
|  I can describe the structures and functions of arteries, arterioles, capillaries, venules and veins |
|  I can explain the formation of tissue fluid from plasma |
|  I can describe the external and internal structure of the mammalian heart(ii) I Can carry out dissection, examination and drawing of the external and internal structure of the mammalian heart |
|  I can explain the cardiac cycle and calculate the heart rate |
|  I can describe how heart action is initiated and coordinated and interpret electrocardiogram (ECG) traces |
|  I can explain the role of haemoglobin in transporting oxygen and carbon dioxide analyse the oxygen dissociation curve for foetal and adult human haemoglobin |
| Maths opportunity to plot and interpret graphs, identify uncertainties, predict graph, represent linear relationship, calculate rates from graphs and measure the gradient on a curve.  |

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| **Unit summative and formative assessment details:**Weekly SenecaRecall quizExtended writing End of unit test |
| **Home Learning (What and how often):**Homework once a week (flip learning and Seneca)Revisit class content (make notes)Research activities for practical |
| **Topic Sequence**1. Circulatory Systems
2. Blood Vessels
3. Tissue Fluid formation
4. Heart and dissection
5. Cardiac cycle and heart rate
6. ECG
7. Haemoglobin
 | **Recommended reading:** Transport systems in multicellular organisms<https://rd.springer.com/chapter/10.1007/978-1-349-00021-0_4>https://alevelnotes.com/notes/biology/exchange-and-transport/transport-in-animals/the-mammalian-heart**Places to visit:**Natural History MuseumHorniman MusuemCentre of the cell |

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| **Success criteria** – Have you met them? Show your evidence in the boxes below.**End of Unit EVALUATION** |
| **1.** |
| **2.** |
| **3.** |
| **4.** |
| **5.** |
| **6.** |
| **How will you improve your work?** |