**UNIT OVERVIEW:** Exchange Surfaces

**ENQUIRY:** How have multicellular organisms evolved an efficient gas exchange system

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| **Unit intention:** Students will explore the need for efficient exchange system in multicellular organism.  As animals become larger and more active, ventilation and gas exchange systems become essential to supply oxygen to, and remove carbon dioxide from, their bodies. Ventilation and gas exchange systems in mammals, bony fish and insects are used as examples of the properties and functions of exchange surfaces in animals. | | |
| **Success criteria: I can** | 🗸 | X |
| the need for specialised exchange surfaces  Numeracy: To include surface area to volume ratio (SA:V), metabolic activity, single-celled and multicellular organisms.  the features of an efficient exchange surface  the structures and functions of the components of the mammalian gaseous exchange system  the relationship between vital capacity, tidal volume, breathing rate and oxygen uptake  To include analysis and interpretation of primary and secondary data e.g. from a data logger or spirometer.  the mechanisms of ventilation and gas exchange in bony fish and insects  To include,  • bony fish – changes in volume of the buccal cavity and the functions of the operculum, gill filaments and gill lamellae (gill plates); countercurrent flow  • insects – spiracles, trachea, thoracic and abdominal movement to change body volume, exchange with tracheal fluid.  the dissection, examination and drawing of the gaseous exchange system of a bony fish and/or insect trachea  the examination of microscope slides to show the histology of exchange surfaces. |  |  |
| **Unit summative and formative assessment details:**  Weekly Seneca  Recall quiz  Extended writing  End of unit test | | |

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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?** |

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| **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. Specialised Exchange surfaces 2. Mammalian gaseous exchange system 3. Measuring the process 4. Ventilation and gas exchange in other organism | **Recommended reading:**  **Places to visit:**  Royal College of Pat  Natural History Museum  Horniman Musuem  Centre of the cell |