

**Year 10 Science Personalised Learning Checklist- Autumn 1**  
**Human Biology**

	<b>Learning Statements</b>	<b>Tier</b>	<b>R</b>	<b>A</b>	<b>G</b>
1	Describe the purpose of cellular respiration, recalling the word & symbol equation for aerobic respiration	F			
2	Explain how the body responds to exercise in terms of heart rate, breathing rate and breath volume	F			
3	Explain when anaerobic respiration occurs in humans and recall the word equation for this process	F			
4	Explain what is meant by the term 'oxygen debt'	F			
5	Explain how lactic acid is converted back into glucose following a period of vigorous activity (HT only)	HT			
6	Explain anaerobic respiration in yeast, recalling the word equation for this process	F			
7	Describe how this process of anaerobic respiration (fermentation) is used by humans in the manufacturing industry	F			
8	Label the structure and describe the function of the human lungs (including how they are adapted for gaseous exchange)	F			
9	Describe the structure and function of the human heart	F			
10	Describe the roles of the four blood vessels associated with the heart	F			
11	Describe the 3 different types of blood vessel in the body and their structure	F			
12	Carry out rate calculations for blood flow	F			
13	Describe how our body controls our natural resting heart rate	F			
14	Describe the composition of blood and know the functions of each of the components	F			
15	Draw blood cells from under a microscope and recognise different types of blood cells from a photo or diagram, explaining how they are adapted to their functions	F			
16	Describe coronary heart disease	F			
17	Describe what a 'stent', 'statin', 'mechanical/biological valve replacement', 'pacemaker' and 'transplant' are	F			
18	Evaluate the advantages and disadvantages of treating cardiovascular diseases using drugs, mechanical devices or transplants	F			
19	Evaluate risks associated with the use of blood products	F			
20	Construct and interpret frequency tables and diagrams	F			
21	Apply the techniques of scientific sampling to disease incident information	F			
22	Discuss the human and financial cost of non-communicable diseases (individual, local community, national and global level)	F			
23	Describe the causal mechanisms of some risk factors for non-communicable diseases (causes of: cardiovascular disease, type 2 diabetes, brain and liver function, lung disease and lung cancer, cancers and foetal damage) including the effects of diet, alcohol and smoking	F			
24	Use a scatter diagram to identify a correlation between two variables (linking to disease incidence)	F			
25	Describe what the digestive system is	F			
26	Explain the role of enzymes in the digestive system making reference to 'lock and key'	F			
27	Explain how carbohydrates, proteins and lipids are synthesised, broken down and used, making reference to sugars, amino acids, fatty acids and glycerol	F			
28	Link carbohydrase (amylase), protease, lipase & bile to the breakdown of particular food groups, identifying where they are produced	F			
29	RP Food Tests: Use qualitative reagents to test for a range of carbohydrates, proteins and lipids	F			
30	Describe the effects of temperature and pH on the rate of enzyme reactions and investigate the effect of pH on the rate of reaction of amylase	F			
31	RP Enzymes: Investigate the effect of pH on the rate of reaction of amylase enzyme	F			
32	Define 'metabolism'	F			
33	Calculate the rate of given chemical reactions	F			
34	Explain the 5 processes that contribute to our metabolism (starch formation, lipid formation, protein synthesis, respiration and protein breakdown)	F			
35	Define 'diffusion' and give examples of diffusion in plants and animals (gas exchange and urea in the kidney)	F			
36	Explain how different factors affect the rate of diffusion (concentration, surface area, temperature)	F			
37	Calculate surface area: volume ratios	F			
38	Explain how surface area: volume ratio of a single celled organism (amoeba) allows sufficient molecule transport	F			
39	Explain adaptations for exchange materials in: small intestines, lungs, gills, roots and leaves	F			