Unit 4 Key Area 1

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| **Pathogens** | organisms that cause disease |
| **First line of defence includes** | skin, stomach acid, tears and mucus in the trachea |
| **Second line of defence is non-specific eg** | phagocytosis and Natural Killer Cells |
| **Third line of defence is specific eg** | response by T-Lymphcytes and production of antibodies |
| **Mast cells are produced** | from the same stem cells as white blood cells |
| **Mast cells release** | histamine |
| **Histamine is a chemical that causes** | blood vessels to vasodilate and makes capillaries more permeable |
| **An inflammatory response provides** | additional blood to an injured area and causes it to swell up |
| **Cytokines are**  | cell signalling protein molecules secreted by many types of cell including white blood cells |
| **Phagocytes are attracted**  | by cytokines to the site of damaged tissue |
| **Blood clotting at an injured site** | stops blood loss, prevents further infection and starts the tissue repair process |
| **Phagocytes detect** | surface antigens on a pathogen and move towards it |
| **Phagocytes engulf the invader by** | infolding of the cell membrane to create a vacuole |
| **Lysosomes in the phagocytes cytoplasm** | fuse with the vacuole and release enzymes which digest the invader |
| **Pus is an accumulation of** | dead bacteria and phagocytes |
| **Natural Killer (NK) cells attack** | virus infected cells and cancer cells |
| **Natural Killer cells release molecules**  | which form pores in the target cell’s membrane |
| **Pores in a target cells membrane allow a** | “signal” molecule from the NK cell to enter the target cell and trigger a genetically controlled series of events |
| **Target cells switches on** | suicide genes and suicide proteins are released |
| **Suicide proteins function as** | self-destructive enzymes break down cells DNA and vital proteins into useless fragments and the cell shrinks and dies |
| **Apoptosis is the**  | process of programmed cell death |