**Cells KUD, Biology**

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| **Know** | **Understand** | **Do** |
| The cell is the basic unit of structure and function in life. **(C-K1)**    All organisms are composed of one or more cells.\* **(C-K2 )**  Cells only come from pre-existing cells. **(C-K3)** | **Cell Theory**  The three components of cell theory. **(C-U1)** | Identify and explain how the three components of the cell theory are evident in a living organism. **(C-D1)** |
| Structure and function of the following organelles and cellular components: *Nucleus, mitochondria, cell membrane, cell wall, chloroplast, ribosome, ER, Golgi apparatus.* **(C-K4)** | **Structure & Function**  Cell structure relates to function (*i.e.* surface area: volume).**(C-U2)**  The composition and function of cells are related to diet. **(C-U3)** | Create stock and flow diagram of a cell. **(C-D2)**  Create a diagram that illustrates and explains the connection between the structure and function of an organelle and identifies the relevant stocks and flow(s). **(C-D3)**  Create a digital presentation depicting structure and processes of a *human* cell.   * Convey layers of complexity (nested systems) within a cell * Highlight dietary sources (of flows) and consequences (on stocks) and influence **(C-D4)** |
| The structure of the cell membrane determines what can flow into and out of the cell (selective permeability). **(C-K5)**  Cells maintain an internal balance (homeostasis) by moving materials across their membranes by diffusion & osmosis. **(C-K6 )** | **Cell Transport**  Cells maintain internal environments that are different than their external environments.\*  **(C-U4)** | Create a diagram that illustrates the structure and explains the function of the cell membrane and identifies the relevant stocks and flow(s) **(C-D5)**  Design an experiment that illustrates the direction of movement (flows) of materials (stocks) across the cell membrane in environments of varying concentration. **(C-D6)** |

\* = “Characteristic of Life”