Cell theory

Sheet 5

Student resources

- **Sheet 6 — The work of Remak, Virchow and Pasteur**
- **Sheet 7 — Studying cells: Microscopy**

If you have internet access you might find these other resources useful:

- **Video — The wacky history of cell theory** (TED Conferences)
  http://ed.ted.com/lessons/the-wacky-history-of-cell-theory
- **Website — Expansion microscopy stretches limits of conventional microscopes** (The New York Times)
  https://www.nytimes.com/2015/01/20/science/microscopy-stretches-limits-of-conventional-microscopes.html
- **Website — World's most powerful microscope** (AZO Nano)
  http://www.azonano.com/nanotechnology-video-details.aspx?VidID=354

Background

With the development of microscope technology, scientists were becoming more fascinated with the microscopic structure of organisms. The work of Schleiden led him to document the first 'cell theory' and the three original tenets (principles or beliefs):

1. All living things are composed of cells.
2. The cell is the basic unit of life.
3. Cells form by free-cell formation, similar to the formation of crystals (spontaneous generation).

Future scientific work paved the way for the refinement of the original three tenets into what we regard as modern cell theory. **Sheet 6 — The work of Remak, Virchow and Pasteur** provides details of additional historical evidence. Use this sheet and any of the other suggested resources to answer the following questions.

Evaluating cell theory

1. What main idea about the nature of the cell did historical scientists disagree on?

Sheet 5

2. Describe what and how investigable questions and scientific investigation helped solve this disagreement.

3. Evaluate the validity of each of the original cell theory tenets in light of further scientific evidence collected by Remak, Virchow and Pasteur. (**Hint:** You could use a table like the one you used in the lesson.)

4. Describe what changes were made to historical cell theory and explain why these changes were made.

Sheet 5

5. What impact has microscope technology had on modern-day understanding of cellular structure and function?