The Cell
A Very Short Introduction
By Terence Allen and Graham Cowling

Questions for thought and discussion

- What are the defining characteristics common to each and every cell on the planet?
- Each human is made up of around 100 trillion tiny microscopic cells, how do these relate to much larger structural parts of the body such as muscles and bones?
- Why is blood a good example of our cellular nature?
- Most cells spend their existence determined by three major events- all beginning with 'D'. Name them and define them in the correct order?
- Some components within eukaryotic cells are bordered by a double membrane, whereas the majority have a single membrane- how might this have come about?
- In terms of numbers and their distribution, which type of cell can be considered the most successful, and why?
- Why do eukaryotic cells have their DNA isolated within a nucleus, when prokaryotic cells do perfectly well with the DNA floating around amongst the rest of the cell components?
- Why do eukaryotic cells require so much internal membrane compared with prokaryotes.
- Why aren't viruses the same as cells- and do their modus operandi made them the ultimate parasite?
- Why do some cells divide every few hours, whereas other can last a lifetime?
- Cells can die in more than one way-how and why?
- What is the purpose of Chromosomes, and how is it achieved?
- How does the body defend itself from bacteria?
- Why do trees grow up to the sky?
- Why does a simple worm, no bigger than a comma on this page, have almost as many genes as a human cell?
- How do our senses work?
- Why is cellular change such a natural process and why has it been the driving force in evolution?
- Discuss the ethics and religious arguments in proposition that "It is acceptable to use embryonic cells in stem cell research"
- Why will the existence of putative cancer stem cells lead to a better understanding of this disease?
- Discuss what the ethical limits of cellular therapy should be.
- If it was possible to get a full read out of your genetic make up including the diseases you are susceptible during a lifetime, would you want to know the details?
- Should we try to recreate a synthetic cell in the laboratory?

Suggested further reading

David S. Goodsell, *The Machinery of Life* (New York: Springer-Verlag, 2009)

Lewis Wolpert, *How We Live and Why We Die: The Secret Lives of Cells*, (London: Faber and Faber, 2009)
Nick Lane, *Power, Sex, Suicide: Mitochondria and the Meaning of Life*, (Oxford: Oxford University Press, 2005)
Denis Nobel, *The Music of Life: Biology Beyond Genes*, (Oxford: Oxford University Press, 2006)
Rebecca Skloot, *The Immortal Life of Henrietta Lacks*, (New York: Random House, 2010)
Jonathan Slack, *Stem Cells: A Very Short Introduction,* (Oxford: Oxford University Press, 2012)
Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts and Peter Walter, *Molecular Biology of the Cell*, (New York: Garland Science, 2008)