

STEM CELL RESEARCH AND TISSUE ENGINEERING WITH DR DAVE HAY

TALKING POINTS:

- 1) Currently, patients with severe liver disease or failure have to wait for a suitable liver donor. Why do you think there's a shortage of liver donors in the UK? Why does Alex, who is of Asian descent, have to wait even longer? (See *Imagine this scenario*, p01)
- 2) What are pluripotent stem cells? (See *What are stem cells?* p01)
- 3) What does the liver do? Can you name some of its functions that aren't listed in the article? (See *What does the liver do?* p01)
- 4) What are some of the causes of liver damage? (See <https://www.nhs.uk/conditions/liver-disease/>)
- 5) Why is liver damage so bad for the body? (See *What does the liver do?* p01)
- 6) Severe liver disease is normally treated by transplanting a healthy liver from a donor into the body. What are the possible risks and complications associated with such an operation? (See *How is severe liver disease normally treated?* pX)
- 7) In the article, Dave mentions that his hepatocyte-like cells "possess major foetal and neonatal attributes". Discuss what this implies in terms of the stem cell's origin, and why that introduces ethical issues. (See *How do you make new liver cells?* p02)
- 8) From where is agarose derived and how is it used in the lab? (See *How do you make new liver cells?* p02)
- 9) What is a clinical trial? (See *How long will it be before lab-grown livers are used to treat patients?* p02)

ACTIVITIES YOU CAN DO AT SCHOOL OR COLLEGE

FACTORS AFFECTING LIVER FUNCTION

In this activity, students test the effects of toxic chemicals on a beef liver by adding hydrogen peroxide to various liver and salt solutions (NOTE – this experiment is better done in a laboratory, under the supervision of your science teacher).

To find the activity, use your chosen search engine to find: 'Hands-on Activity: Living with Your Liver'.

Or click on https://www.teachengineering.org/activities/view/cub_liver_activity1

INTRODUCING STEM CELLS

EuroStemCell has put together a PowerPoint presentation and some simple classroom activities for 11-15-year-olds and those aged 16+. The activities include discussion cards, worksheets and puzzles.

See <https://www.eurostemcell.org/introducing-stem-cells-presentation-and-classroom-activities>

SCIENCE COMMUNICATION

As an individual, or as a group, create a video explaining stem cells to kids. Discuss the different types of stem cells, and how they become the target cell type. Remember that you need to explain what they are to young children, so you'll need to describe it well using simple language and diagrams!