**Sixth-Form:  
Debating the Ethics of Healthy Ageing Research -   
Future scenarios**

Approximate timing: 45 minutes

Required resources: PowerPoint presentation, fact sheet, lesson plan, future scenarios worksheet

Summary: This lesson will introduce students to the principles of healthy ageing research, and the corresponding ethical consequences, such as those on the economy, and retirement age, that are currently being addressed. Students will discuss the socio-economic implications of a series of hypothetical future research scenarios.

Key stage 3

*Science - Applications and implications of science*

Examining the ethical and moral implications of using and applying science. The way scientific developments are achieved can raise ethical and moral issues, for example experiments on animals to produce drugs that may prolong human life.

Key stage 4

*How Science Works: Applications and implications of science*

Pupils should be taught to consider how and why decisions about science and technology are made, including those that raise ethical issues, and about the social, economic and environmental effects of such decisions

All pupils should develop their ability to relate their understanding of science to their own and others' decisions about lifestyles, and to scientific and technological developments in society.

Links to Babraham Institute research themes:

<https://www.babraham.ac.uk/our-research/healthy-ageing>

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| **Learning outcomes** | |
| All students will: | Describe the difference between health-span and life-span. |
| Most students will: | Engage in group discussion about some positives and negatives of research altering how healthy we are when we’re older. |
| Some students will: | Be able to explain, using healthy ageing as an example, how the advancement of science can result broad changes outside of just medicine. |
| Key word/s | Health-span, healthy ageing, lifespan, group discussion, opinion |

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| **Teaching notes** | **Student learning activities** |
| **Starter or ice-breaker activity** (10 mins)  Would work best if there was some free space in the room, teacher to ask students to read the statement and line up from one side of the room (deemed as ‘strongly agree’) to the other (‘strongly disagree’).   * Per statement: 1 minute to arrange themselves, 2 minutes to ask students why they’ve places themselves where they have.   Try and ask students in the middle (neutral) as well as those with strong opinions. | Slide(s) 3-7  Student actions   * Read each statement and decide whether you agree, disagree, or feel indifferent about it. Place yourself accordingly on the scale and be prepared to explain why you are placed there. * Is there a particular word that you like/dislike about the statement?   What could be changed about the statement to allow you to change your mind? |
| **Development** (10 mins)  Presentation designed in question / answer format: ask questions before showing the answer to help with engagement.   * Slide 9: Ask students to give examples of signs of ageing – what does it mean to be old? * Slide 9: Ask whether anyone knows the difference between lifespan and healthspan (fact sheet has answers). * Slide 10 & 11:   + Use factsheet and slides to explain why healthy ageing research is a government priority * Slides 12 - 14:   Run through examples of the current research Babraham Institute is doing around healthy ageing, to provide current context. | Slide(s) 8-14  Student actions  Listen & answer questions where appropriate |
| **Principal Activity** (20 mins)   * Print out future scenarios & worksheets. * Split students into 4 groups (dependent on numbers) * Provide one future scenario to each group and worksheets for each person. * Each group works together to answer the questions on the worksheet **(10 minutes)** * A spokesperson from each group reveals their group’s scenario and provides their three most important points   The class then has an opportunity to agree/disagree with those points, as well as add anything else **(10 minutes)** | Slide(s) 14-17  Student actions   * Work in groups to think about the implications of the future scenario you’ve been given * Think about :   + Who would this effect the most and why?   + What might limit availability?   + How would this affect population or food availability?   + Would this change retirement age?   + What benefits and drawbacks can you identify?   + What might health insurance companies do with this?   As a class, think about whether you agree/disagree with what your class have said about their scenario. Do you have anything to add? |
| Plenary (5 mins)  Ask students questions | Slides 18 & 19   * What are some examples of signs of ageing? * What is the difference between lifespan and health-span? * Why is it important, particularly now, that the Government wants to promote healthy ageing? * What are some potential impacts of future advancements of healthy ageing research? |
| **Extension work**  Suggested area of research or follow-up activity for further understanding of what researchers are doing currently to understand and improve healthy ageing.   * Healthy Ageing Research Ethics – lesson 1 what should our priorities be? * Healthy Ageing Research Web Quest * The ethics of the use of animals in research | **Healthy Ageing Web Quest:**  Start at: https://www.babraham.ac.uk/our-research/healthy-ageing and follow links to research pages, science services and other content on our website to inform your answers. For each question, keep a record of the web-pages you have visited.     1. What is the definition of healthy ageing research? 2. What do you think is the most important discovery the Babraham Institute has made relating to healthy ageing? Explain your reasons. 3. Which of our key discoveries could have controversial outcomes? Explain your reasons. 4. Which of the four examples of ongoing research do you think is the most important and/or relevant to you? Explain your reasons. |