

INTENS in schools

A workshop designed by Eleanor Mocatta, The University of Edinburgh

Over the past four months I have developed a school workshop for students aged 9-14 about the intestine, stem cells and their uses as a therapy for short bowel syndrome based on the work of INTENS. The workshop was designed to communicate the research in a fun, engaging, and interactive manner. Development of this workshop in schools has provided both teachers and students insight into the work being conducted by the research group and the workshop template developed will allow for future dissemination with this audience.

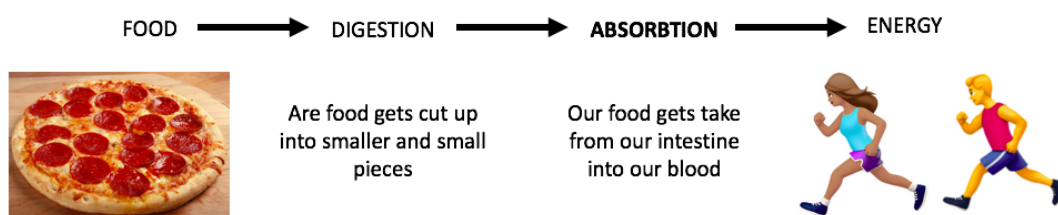
This workshop was developed in Edinburgh by a University of Edinburgh undergraduate student in conjunction with 10 local primary and secondary schools. During development, 25 workshops were conducted in a mixture of year groups with students aged between 9 and 14. The research involved student focus groups and teacher interviews to investigate the engagement and interest of both of these target audiences with the workshops' material. An interactive questionnaire was used to evaluate students' learning and engagement with workshop content. This information was then critically evaluated to assess the effectiveness of the workshop as a method of science communication with this age group.

Structure of the workshop

Part one: The Intestine

During this part of the workshop, students investigated the features of the intestine. Students looked at where the intestine is, what the intestine does and how long the intestine is. This final activity was conducted by placing a piece of masking tape on the floor of the classroom, getting all the students to stand somewhere along the masking tape and estimating how long they thought the intestine was.

What does our intestine do?

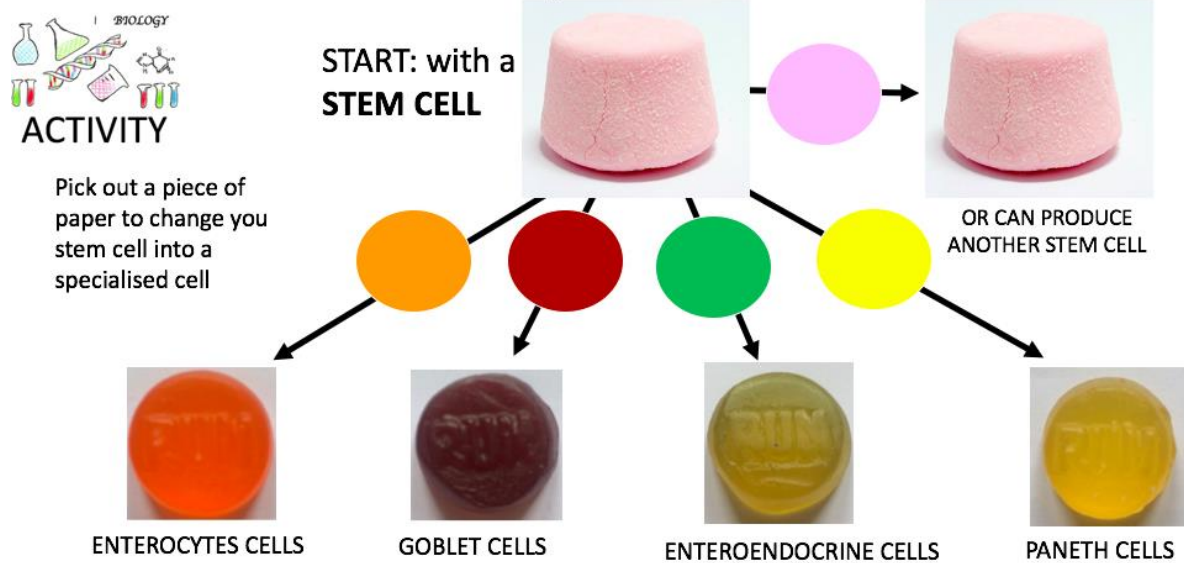


Part two: Stem cells

In the Scottish school, curriculum students do not come across stem cells until secondary school. As this study used students from both primary and secondary schools this meant that numerous students had never come across stem cells before. During this part of the workshop, the complex nature of stem cells was explained using common household sweets to give students a visual demonstration of how stem cells are able to differentiate. Firstly, a

demonstration was conducted where a pink marshmallow, which represented the intestinal stem cells, was dipped into either clear or colour food dye. Dipping the marshmallow into clear dye showed the students that, like other cells in the body, when stem cells divide they are able to produce exact copies of themselves. Dipping the marshmallow into a coloured dye showed students how stem cells are able to produce cells which then change into all the different types of cell needed in our bodies. Students were then able to replicate this process themselves by taking a different coloured dot out a bag. Each coloured dot symbolised the different fates of the stem cells.

How do we produce the cells?

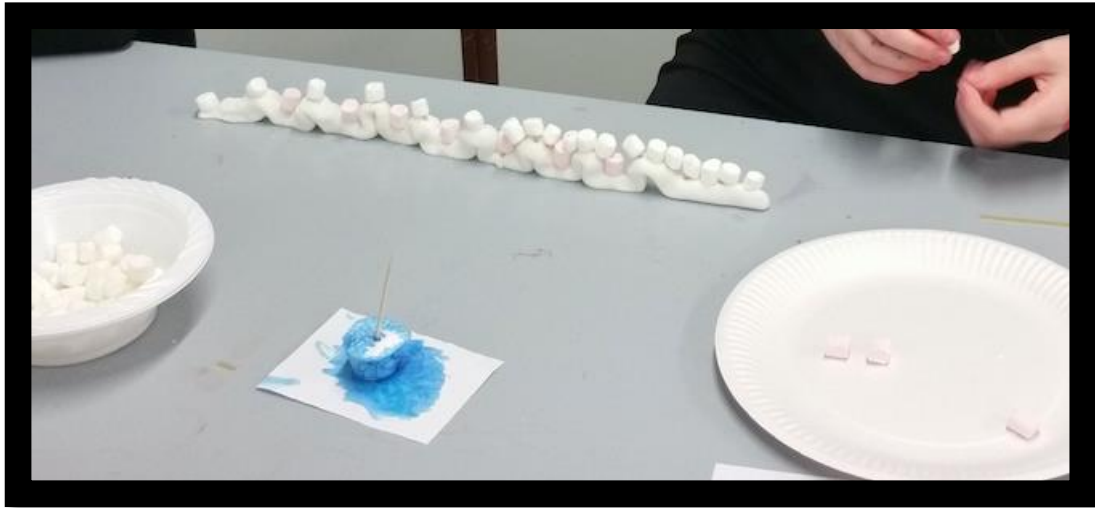


Part three: Reconstructing the bowel

The final part of this workshop involved an activity to explain how INTENS researchers are trying to produce a section of reconstructed bowel from patient's stem cells. The students were asked to imagine that part of their intestine had become damaged and they were going to have to build themselves a new section in order to survive. This construction involved using white fondant icing as the scaffold onto which they could place their cells. Students were then given two different coloured marshmallows (pink=stem cells and white=differentiated cells) which they were asked to place in the correct location in the intestine based on what they had learnt in the workshop. Younger students were challenged to see who could build



the longest (most accurate) section of the intestine.



Workshop feedback

Both students and teachers enjoyed the workshop and learned useful information on both the intestine and the work of INTENS researchers. Many of the teachers recommended the workshop to other members of the teaching community aiding the dissemination of the workshop and the communication of the research being conducted by the research consortium.