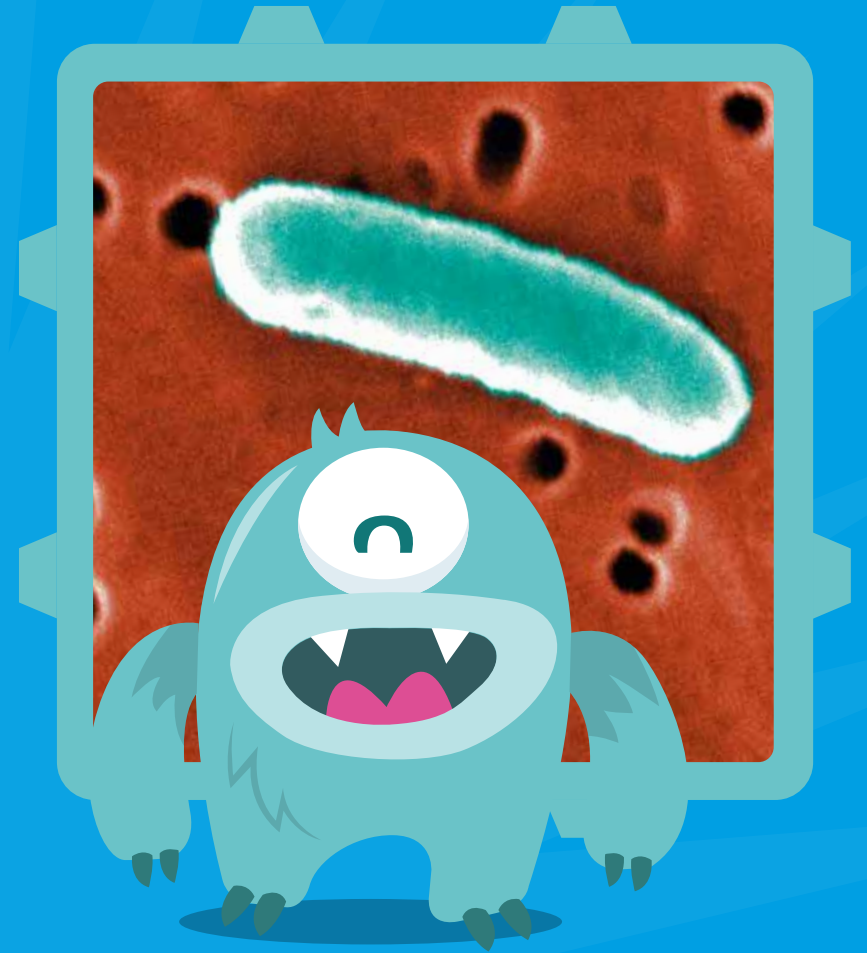


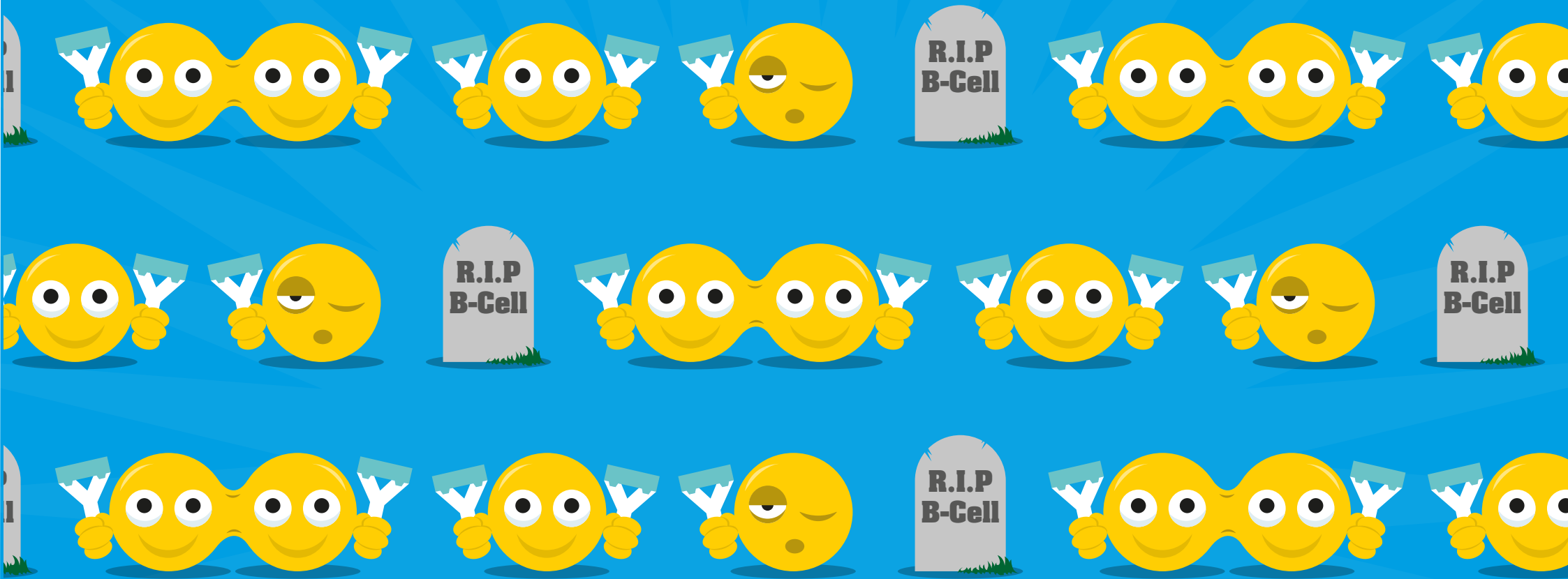
# What happens to B-Cells during an infection?



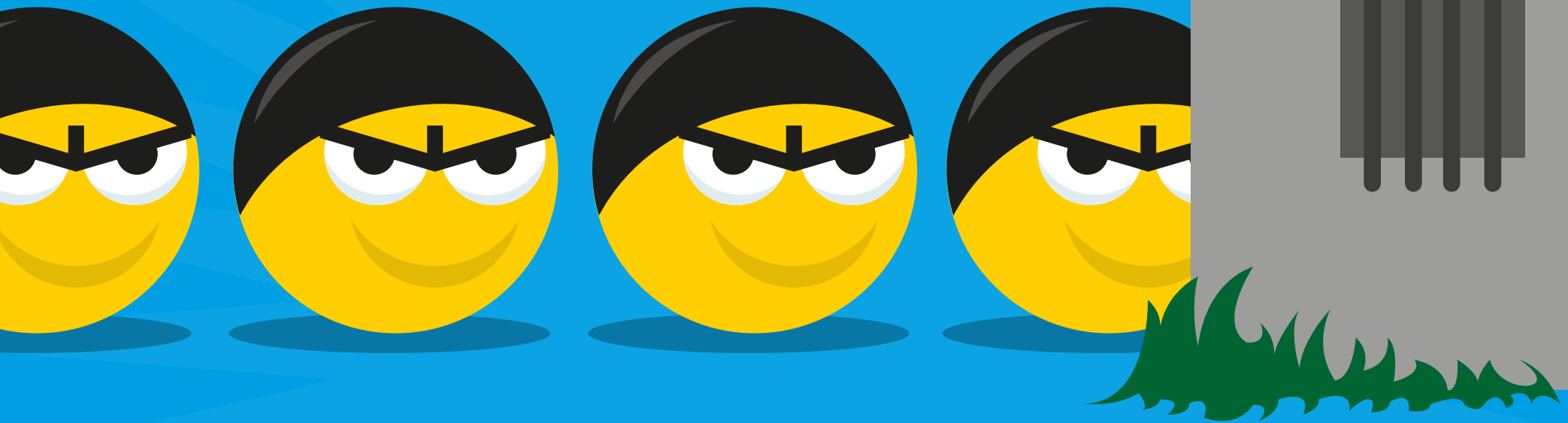
An infection activates naïve immune cells.



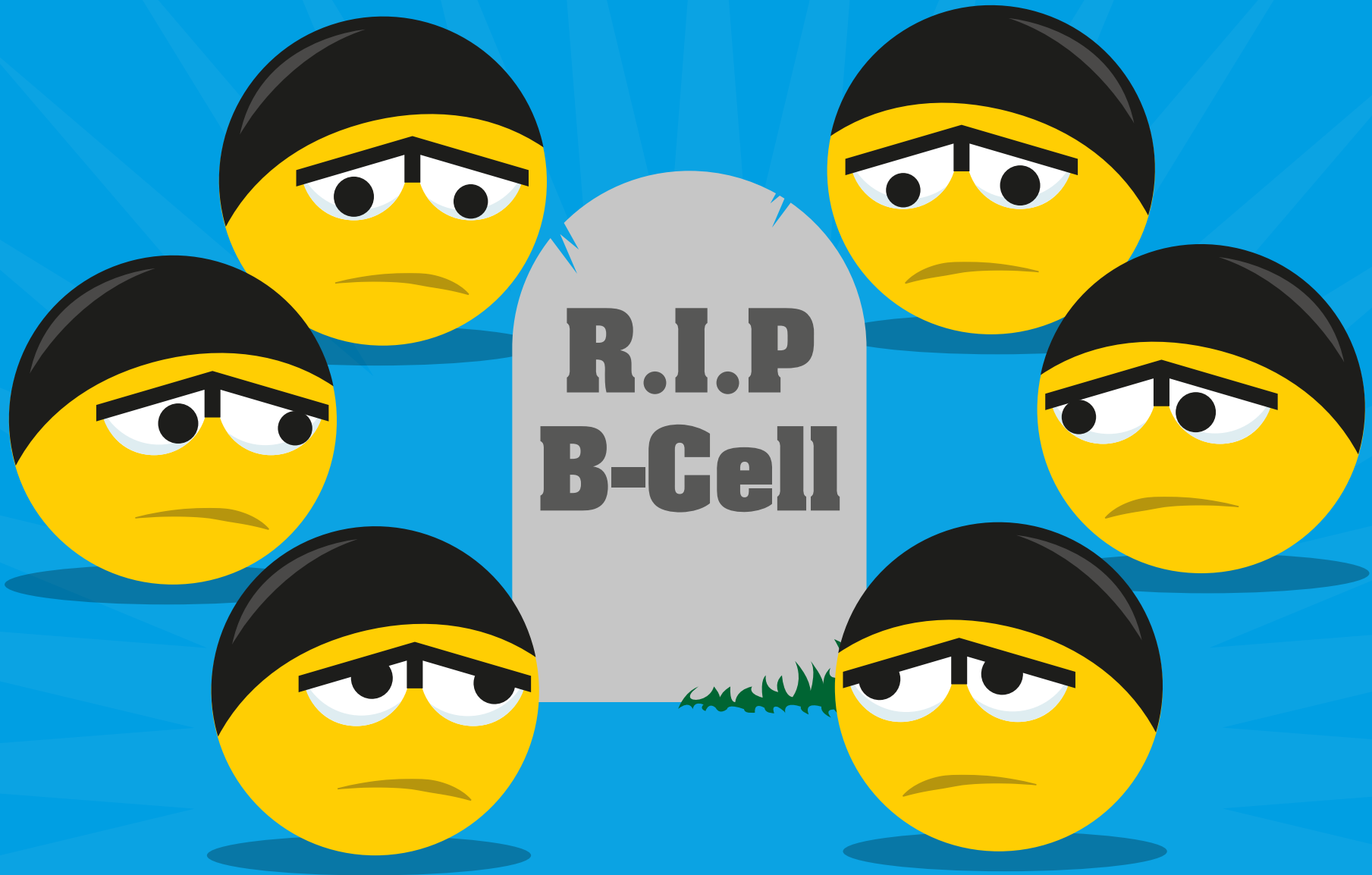
Initially some B cells are activated, they proliferate and make antibodies **(also called "immunoglobulins")** against the infection but these cells are short-lived and the antibodies **could be better at binding to the antigen.**



Whilst this initial response is happening, specialised areas form called '**germinal centres**', where B-cells can obtain the necessary weapons they need to further fight the infection.

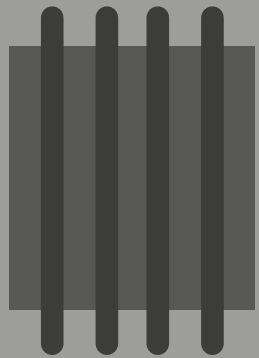


The cells that are unable to obtain the correct weapons to fight the infection **fail and die...**

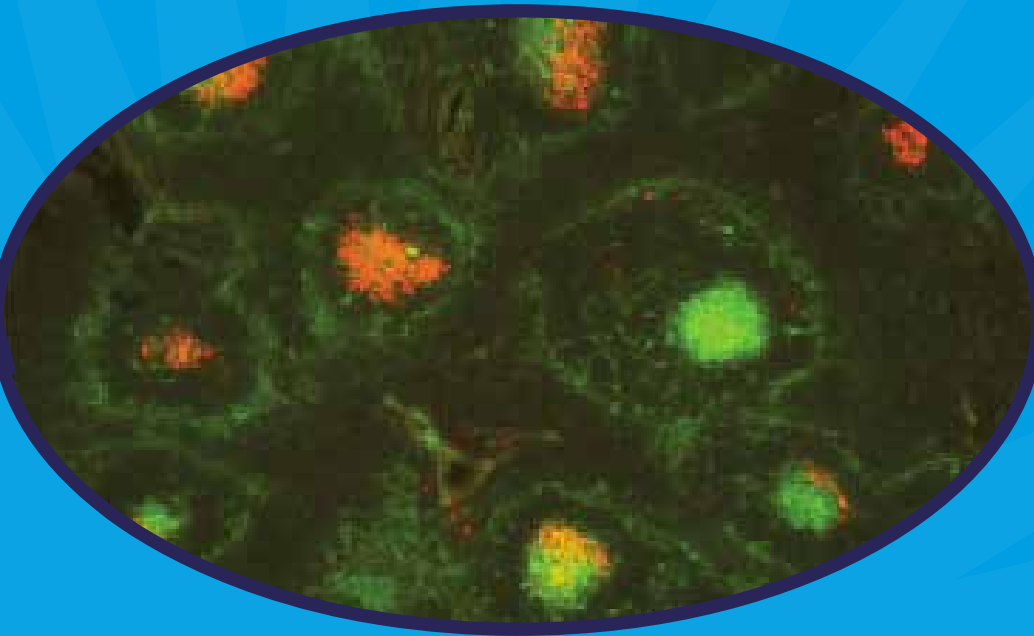
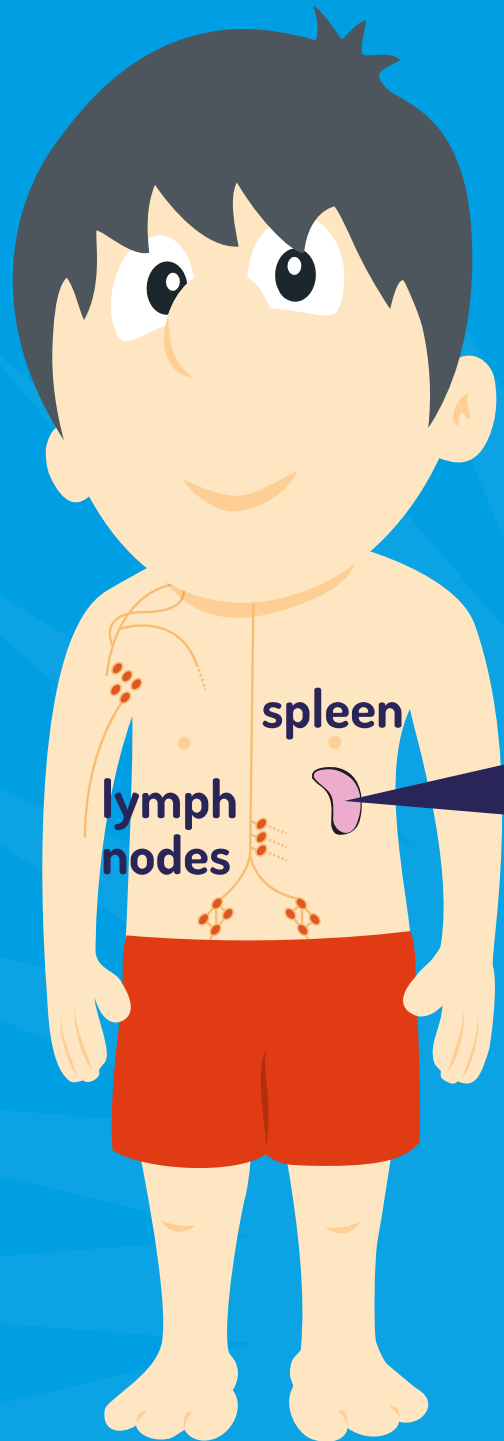


...the B cells that do obtain the correct weapons by "**class switching**" are selected to improve the antibody response and are sent to fight the infection.

ARMOURY



Germinal centres are found in the spleen and lymph nodes.



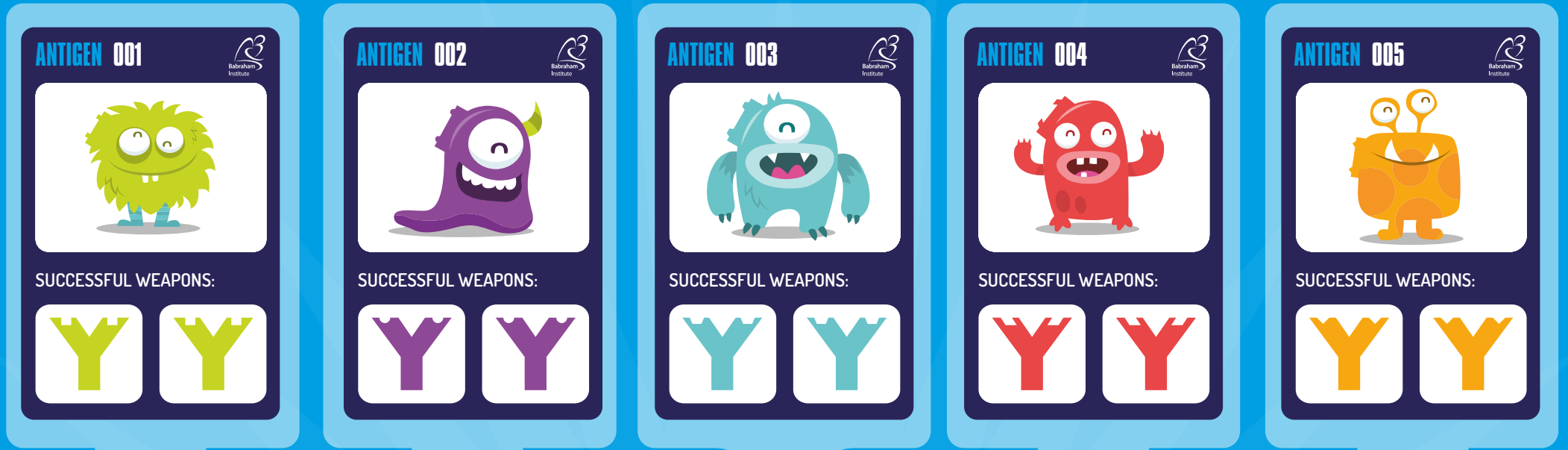
Cross-section of a mouse spleen showing B cells expressing **IgG1** antibody and **germinal centre B-Cell** staining after inducing an immune response.

One outcome is the formation of **specialised** B-cells called **plasma cells** which produce large amounts of antibodies...



...which **bind** strongly to the **antigen**.





**'Memory B-cells'** can remember encounters with infection in case the body needs to fight it again.

## **Why are the germinal centres so important?**

A strong germinal centre response is critical for a successful response to infections and vaccinations (which are designed to simulate a weak infection).

## **What happens when an antibody response goes wrong?**

Sometimes it can go wrong, for example the cancer called myeloma occurs when the plasma cells become abnormal, multiplying uncontrollably and releasing only one type of antibody.

**We are investigating** how programmes of gene regulation control antibody production.

# Martin Turner Laboratory

Content Designed by Dr Sarah Bell

Helena Ahlfors

Kirsty Bates

Sarah Bell

Krish Chakraborty

Manual Diaz-Munoz

Alison Galloway

Elisa Monzon-Casanova

Rinako Nakagawa

Rebecca Newman

Alexander Saveliev

Michael Screen

Ram Venigalla

Katharina Vogel

Martin Turner

Research in the Turner Lab focuses on understanding the fundamental mechanisms that control immune cell development and function throughout the life-course.

[www.babraham.ac.uk/our-research/lymphocyte/martin-turner](http://www.babraham.ac.uk/our-research/lymphocyte/martin-turner)