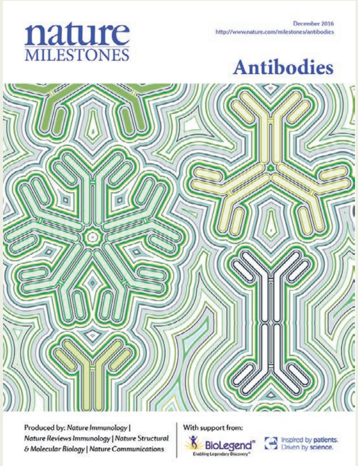

Nature Milestones are special supplements that aim to highlight outstanding technological developments and scientific discoveries that have helped to define a particular field. *Nature Milestones in Antibodies* takes a historical look back at the key scientific, technical and clinical developments that have furthered understanding of the biology and therapeutic applications of antibodies. Each short Milestone article, written by a Nature Research editor, covers one scientific breakthrough, highlighting the main papers that contributed to these advances and discussing both their value at the time and their lasting influence.

The Milestone topics and papers were selected with the help of 11 expert advisers, but the ultimate decisions on what to include were made by the editors. *Nature Milestones in Antibodies* is not intended to be a comprehensive overview of this field, and despite our and our advisers' best efforts, omissions of important literature are inevitable. Nevertheless, we hope these Milestone articles will give readers a taste of the main scientific advances, both fundamental and applied, that have been made in the antibody field.

The characteristic Y-shape of an antibody molecule is arguably one of the most iconic structures in all of science. With their ability to bind targets with defined and high specificity, antibodies have had an enormous impact as a basic research tool and are increasingly proving themselves to have remarkable efficacy in the clinic. It is therefore unsurprising that the antibody market in 2015 was estimated at US $75 billion, and this figure is set to increase substantially over the coming years.

The *Nature Milestones in Antibodies* supplement includes a Timeline listing each breakthrough according to the year in which the first relevant primary paper was published and a Collection featuring six key historic antibody-related papers that were published in *Nature*. The first paper in the Collection is by Astrid Fagraeus and presents definitive evidence that plasma cells are the antibody-secreting cell type. The following paper by Gustav Nossal and Joshua Lederberg shows that each individual plasma cell produces antibodies that recognize a single specific target (or antigen); this work is doubly remarkable because it probably represents one of the first examples of single-cell analysis. Next, the paper by Max Cooper *et al.* was the first to identify a tissue responsible for the production of B cells—the antecedents to plasma cells and antibody production.

From an application standpoint, the 1975 paper by Georges Köhler and César Milstein is arguably the most important in the history of antibodies, as it described the generation of monoclonal antibodies of a predefined specificity. This technical development gave birth to an array of antibody-based research tools and therapeutics that have been invaluable both for basic research and in the clinic. How antibodies can bind an almost limitless variety of targets was for many decades one of the great unanswered questions of biology; in their seminal 1980 paper, Susumu Tonegawa and colleagues presented a major advance in addressing this enigma by describing gene recombination in B cells. Finally, the paper by Greg Winter and colleagues describes the first full 'humanization' of an antibody—a fundamental step in enabling the clinical use of antibodies. In addition, the Collection also has a Historical Commentary from *Nature Immunology* celebrating the seminal contributions of Frank MacFarlane Burnet to the antibody field and includes a reprint of the original article describing his 'Clonal Selection' model.

Finally, we extend our sincere thanks to the academic advisers and acknowledge support from BioLegend and UCB. As always, Springer Nature takes complete responsibility for the editorial content.

Zoltan Fehervari, Senior Editor, Nature Immunology;
Yvonne Bordon, Senior Editor, Nature Reviews Immunology;
Cosma Dellisanti, Associate Editor, Nature Structural & Molecular Biology;
Nicholas Bernard, Associate Editor, Nature Communications;
Jamie D. K. Wilson, Chief Editor, Nature Immunology

SPRINGER NATURE