British molecular biologist and immunologist, b. Argentina. He shared the 1984 Nobel Prize in physiology or medicine for helping to develop antibodies that can be commercially produced for drugs and diagnostic tests. In 1975, Milstein and the German immunochemist Georges Köhler developed a technique for cloning monoclonal antibodies (MABs) that combat diseases by targeting their sites.

Milstein was born on 8 October 1927 in Bahia Blanca, Argentina. From 1939 to 1944 he was educated at the Colegio Nacional, Bahia Blanca, from which he gained his Bachiller; in 1945 he went to the University of Buenos Aires, from which he graduated in 1952. He remained at Buenos Aires University until 1963, initially to study for his doctorate (which he obtained in 1957), then as a member of the staff of the Institute of Microbiology. During a period of leave of absence, Milstein worked in the department of biochemistry at Cambridge University, from which he gained his second doctorate in 1960. He returned to Cambridge in 1963 as a member of the staff of the Medical Research Council's Laboratory of Molecular Biology and went on to become joint head (with Frederick Sanger) of its Protein and Nucleic Acid Chemistry Division 1983-95, and deputy director of the laboratory 1988-95.

Milstein and his colleagues were among the first to determine the complete sequence of the short, low-molecular-mass part of the immunoglobulin molecule (known as the light chain). He then determined the nucleotide sequence of a large portion of the messenger RNA for the light chain and found that there is only one type of messenger RNA for both domains within that chain. The separate domains within the heavy (high-molecular-mass) and light chains are called constant and variable, and Milstein deduced that although the genes for the constant and variable domains may be separate in the germ line, these genes must have come together in the antibody-producing cells. This finding led Milstein to develop his technique for preparing chemically pure monoclonal antibodies. Working with German biochemist Georges Köhler in 1975, Milstein succeeded in fusing myeloma cells (which are easily cultured but produce only their own predetermined immunoglobulin) with spleen cells (which cannot be cultured but can produce immunoglobulin against any antigen with which an animal has been injected) to produce hybrid cells that can be cultured and that can produce antibodies against a wide range of antigens. Moreover, by selecting clones Milstein and Köhler obtained cell lines that secreted only one chemically homogenous antibody. This was a revolutionary piece of research, because the permanent cultures derived from one clone can be propagated indefinitely and can therefore provide an unlimited supply of antibodies.

[https://search.credoreference.com/content/topic/milstein_c%C3%A9sar_1927]
supply of a specific immunoglobulin. The technique was later extended to human cells and can also be used to prepare purified antibodies against impure antigens.
APA

Chicago

Harvard

MLA