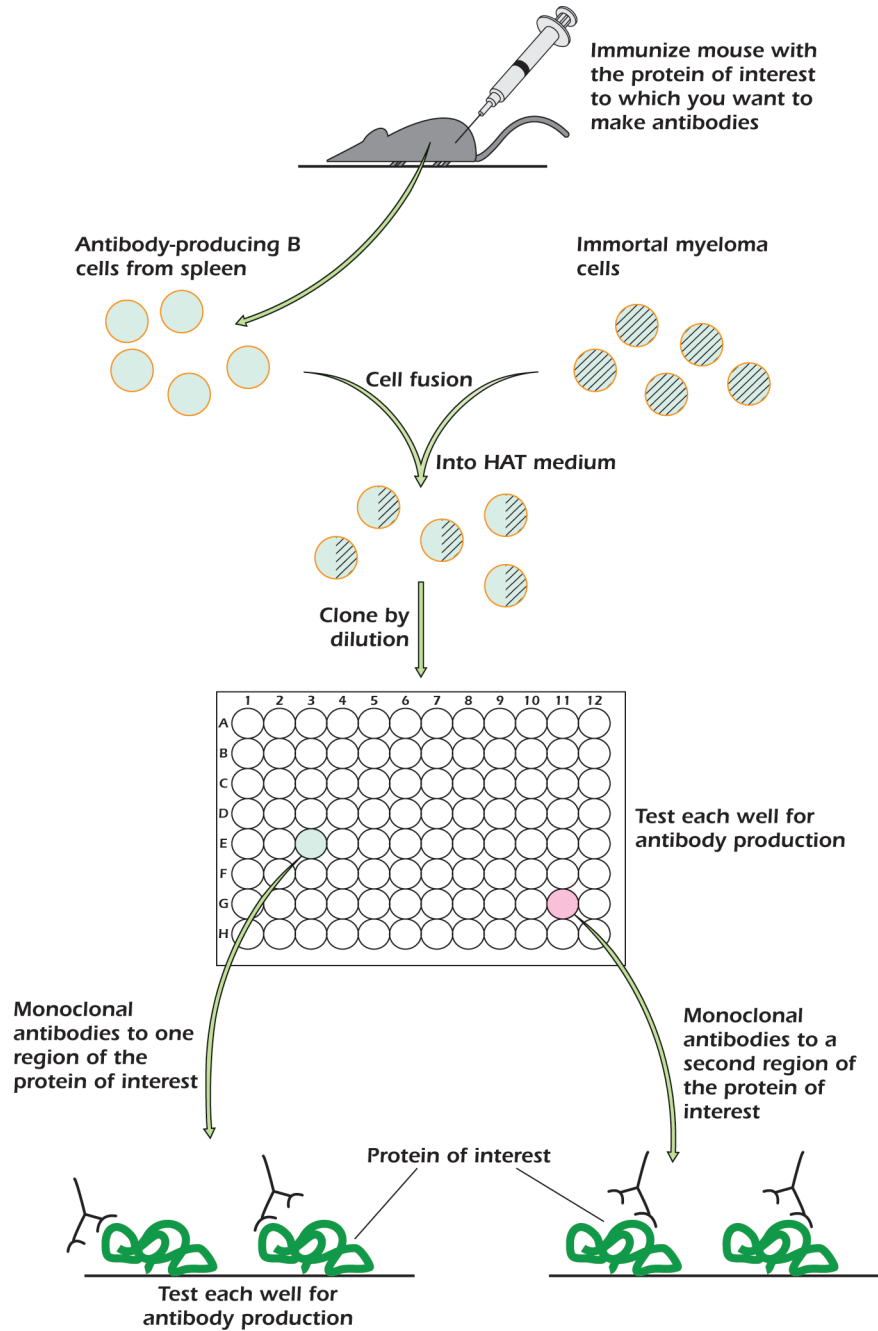


Chapter 19

Web Text Box 2

Making monoclonal antibodies



B cells from the spleen produce antibodies but have limited potential to proliferate in the culture dish. Myeloma cells (myeloma = type of cancer of the bone marrow) on the other hand grow rapidly in culture. However, they lack the enzyme HGPRT which is required for nucleic acid synthesis. Normally, they overcome this by synthesizing nucleic acids by another route. However, this alternative pathway is blocked in HAT medium (hypoxanthine, aminopterin, thymidine). So when B cells and myeloma cells are fused in HAT medium the unfused myeloma cells cannot grow because they cannot synthesize nucleic acids and the unfused B cells cannot grow because of their limited life span. Only the fused 'hybridoma' cells survive since they get HGPRT from the B cell partner and growth potential from the myeloma partner. Hybridomas are diluted so that each well of a 96 well culture dish contains a single cell. These are grown and the culture fluid tested for the production of antibodies. Since each antibody derives from a single B cell they are referred to as 'monoclonal.' Hybridomas can be grown on an industrial scale, producing unlimited quantities of monoclonal antibodies.