f. Origins of drugs in high-throughput screening

A number of drugs and drug candidates were discovered by high-throughput screening. Wigle et al. (32) describe antibiotics that were found by high-throughput screening. White et al. (33) describe drugs for treating inflammatory diseases that were discovered by high-throughput screening. Von Hoff et al. (34) and others (35) describe a drug used for treating cancer that was identified by high-throughput screening.

g. Origins of therapeutic antibodies

Antibodies designed with the aid of animal models are used for treating various cancers and immune diseases. For example, antibody drugs include trastuzumab (Herceptin®) (36) which binds to epidermal growth factor, and which is used to treat breast cancer. Antibody drugs also include bevacizumab (Avastin®) (37) which binds to vascular endothelial growth factor receptor (VEGF), and is used to treat a variety of cancers. Moreover, an antibody drug used to treat various immune diseases is natalizumab (Tysabri®) (38). This antibody binds to a protein called integrin, which occurs on the surface of white blood cells. Natalizumab is used to treat two immune diseases, namely, multiple sclerosis and Crohn's disease.

Developing antibody drugs includes the step of refining the polypeptide sequence of the antibody into a drug suitable for administering to humans (39,40,41). This refinement step is called humanization (42). Humanization refers to the process of using genetic engineering to convert any protein of animal origin, to a protein that can be injected into people, where the injected protein fails to elicit an immune reaction against itself.

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