Antibody-drug conjugates for cancer therapy

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Conventional chemotherapeutic drugs do not selectively localize to tumors. And as their systemic drug distribution may result in damage to healthy tissue and organs, drug dose escalation to therapeutically active levels may be impossible. Because antibodies bind specifically to cells expressing their cognate antigen, they represent ideal ‘vehicles’ for applications that require delivery of a drug (e.g., a very toxic drug) specifically to the site of disease. Using various linker strategies, antibodies can be conjugated to a variety of cytotoxic drugs or ‘payloads’. Once taken up into cognate antigen-expressing tumor cells, these drugs are released (through mechanisms that depend on which type of linker is used) from the antibody-drug conjugates. These drugs can then kill tumor cells through their established cytotoxic mechanisms. Alternatively, antibodies can be fused directly to cytokines; these antibody-drug conjugates can act extracellularly by recruiting cytokine immune cells to the tumor site, thereby indirectly killing tumor cells. Some antibody-drug conjugates have been approved for clinical use in a variety of solid and hematological tumors, and many more are in clinical trials. In general, antibody-drug conjugates may provide a way to repurpose tumor-specific antibodies, which on their own did not have therapeutic activity, or chemotherapeutic drugs, which when injected systemically, are too toxic for healthy tissues.

Seattle Genetics is a biotechnology company focused on developing and commercializing innovative antibody-based therapies for the treatment of cancer. Seattle Genetics is leading the field in developing antibody-drug conjugates (ADCs), a technology designed to harness the targeting ability of antibodies to deliver cell-killing agents directly to cancer cells. The company’s lead product, ADCETRIS® (brentuximab vedotin) is an ADC that, in collaboration with Seattle Genetics has been approved for clinical use in a variety of solid and hematological cancers. Seattle Genetics has collaborations for its ADC technology with several leading biotechnology and pharmaceutical companies. Find more information at www.seattlegenetics.com.

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