

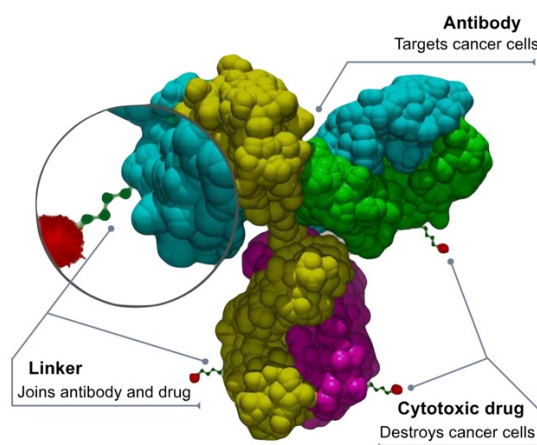
## Antibody-Drug-Conjugates

Antibody-Drug-Conjugates (ADC's) are also called the «new biological missiles» against cancer and other diseases. Total market in 2021 was estimated to be US\$ 5.81 Bio. with a CAGR of 16.4 % reaching over US\$ 20 Bio. by 2030.

As of 2022, 14 ADC's have been approved worldwide, mainly for the treatment of various cancers. The very first US FDA approved ADC is Kadcyła® developed by Genentec (INN-trastuzumab emtansine). The dosage is in vials with 160 mg of product. ADC's are a new form of therapy that will become more important.

As the name says, an ADC is composed of a large biological molecule (a monoclonal antibody) conjugated (linked) with a potent small molecule, the so-called “payload” or “warhead”. The coupling of the two molecules is done by a linker, also a small molecule. Payloads are highly toxic small molecules and need to be produced and handled in high containment systems, in general with OEB's below 0.1 microgram/m<sup>3</sup>. Only a few providers that offer Highly Potent APIs are also equipped with systems of such a high containment level.

Moreover, the Payloads are highly complex small molecules which require the necessary chemical know-how. There are 6 main classes such as **Auristatins**, **Maytansinoids**, **Tubulysins**, **Calicheamicins**, **Duocarmycins**, **Exatecans**, **Pyrrrololobenzodiazepins** (interesting as benzodiazepines have been used as tranquilizers for decades), and the number is growing. Our partner's know-how is based on the chemistry of Camptothecins of which Exatecans are derivatives. We can offer an entire platform of ...tecan based payload molecules, and through this know-how, we are able to develop and produce also other molecules for companies involved in oncology therapies.



The picture above shows the relationship between the size of the antibody and the very small payload, in the picture above described as Cytotoxic Drug. The antibody can dock to specific receptors of tumor cells, where the payload can develop its therapeutic effect, i.e. kill the tumor cells.

As for more information and an online presentation of our capabilities!

Source: Review Article: Antibody Drug Conjugate: the “biological missile” for targeted cancer therapy; Zhiwen Fu, Shijun Li, Sifei Han, Chen Shi, Yu Zhang, Signal Transduction and Targeted Therapy, Springer Nature, 22 March 2022