

## Cell Therapies – Cell Expansion

During Adoptive Cell Therapy (ACT), T cells are isolated from a patient's blood or tumor tissue, expanded and activated *ex vivo*, and then re-infused back into the patient to target and eliminate cancer cells. T cells can be engineered to express chimeric antigen receptors (CARs) or T cell receptors (TCRs) that recognize tumor-specific antigens, or they can be expanded to enrich for tumor-infiltrating lymphocytes (TILs) that have natural tumor-specific reactivity. The enlarged TIL cells are screened against patient's tumor cells to select the best cells that can kill tumor cells.

Presence of B cells infiltrated with T cells are associated with better TIL expansion and activation. B cells are also used in Adoptive Cell Therapy as B cell 'biofactories'. B cells are engineered to produce gene-encoded therapeutic proteins continuously inside a person's body. These B cells are taken from a patient and engineered *ex vivo* in the lab such that, once differentiated into antibody-producing plasma cells, they produce therapeutic proteins instead and are re-injected back into the patient.

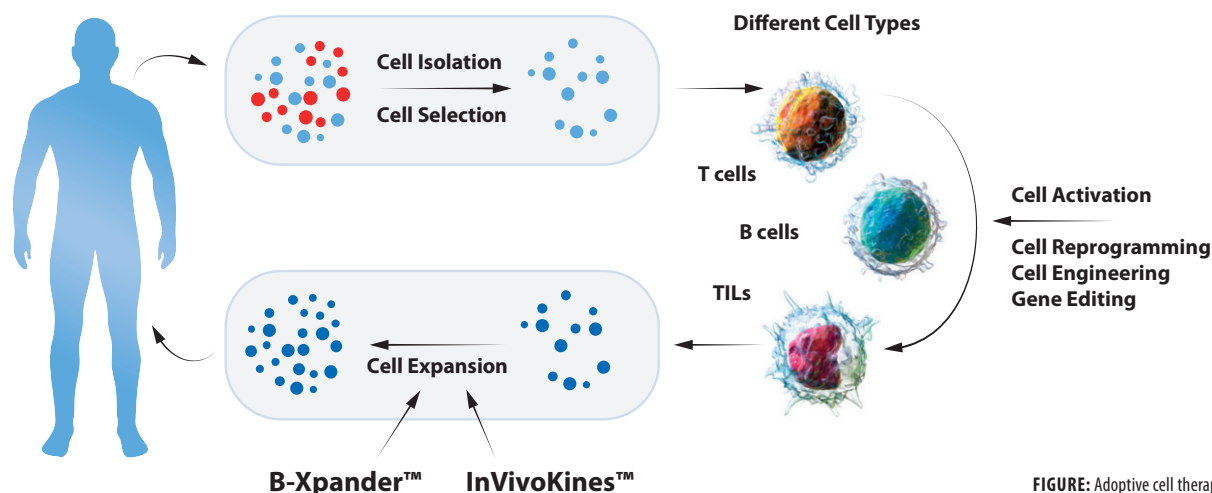


FIGURE: Adoptive cell therapy workflow.

### B Cell Expansion – B-Xpander™

B-Xpander™ is a potent enhanced multimeric human CD40L cytokine, for B cell activation, B cell expansion (proliferation) and cell therapy applications. In-house production using a proprietary protocol and a characterized and certified CHO cell line allows the supply of the most active multimeric human CD40L proteins in GMP-like format.

#### **B-Xpander™ CD40L (human) (rec.) (Animal Free)**

Animal component-free production in certified CHO cells for *ex vivo* B cell expansion in cell therapy.

AG-40B-0010AF

#### **Other Research Grade Products:**

#### **CD40L (human) (multimeric) (rec.)**

Standard serum/medium production in CHO cells for preclinical B cell expansion.

AG-40B-0010

#### **CD40L (human) (multimeric) (rec.) (Certified Serum Grade)**

Certified serum/medium production in CHO cells for traceability for preclinical B cell expansion.

AG-40B-0010CSG

## T & B Cell Expansion – InVivoKines™

The different cell therapy approaches need T and B cell culture systems that are compatible. The used protocols support T and B cell expansion, differentiation and activation by exposing them at different intervals to various combinations of cytokines, including interleukin (IL)-2, IL-4, IL-6, IL-7, IL-10, IL-12, IL-15, IL-21, type I interferon, BAFF, APRIL, as well as CD40L.

## InVivoKines™ – Unique Cytokines for Clinical Research

InVivoKines™ are a new generation of recombinant proteins with **prolonged half-life and activity for immunotherapeutic, preclinical and translational *in vivo* and *in vitro* research**, developed in-house by AdipoGen Life Sciences. InVivoKines™ are Fc-based fusion proteins using the Knobs-into-Holes (KIH) technology.

<b>IL-2 (human) (monomeric):Fc (LALA-PG)-KIH (human) (rec.)</b>	AG-40B-0263
<b>IL-2 Superkine (monomeric):Fc-KIH (human) (rec.)</b>	AG-40B-0222
<b>IL-2 Superkine H9T (monomeric):Fc-KIH (human) (rec.)</b>	AG-40B-0223
<b>IL-2 (human) (Switch-2) (monomeric):Fc-KIH (human) (rec.)</b>	AG-40B-0234
IL-2 can stimulate both effector immune cells and regulatory T (Treg) cells. IL-2 (wild-type) InVivoKines™ have a similar activity profile like Aldesleukin but with an increased half-life.	
<b>IL-4 (human) (monomeric):Fc (LALA-PG)-KIH (human) (rec.)</b>	AG-40B-0261
IL-4 prolongs the survival of T and B lymphocytes and is proposed to rejuvenate the tumor-infiltrating exhausted T cells for enhanced cancer immunotherapy.	
<b>IL-7 (human) (monomeric):Fc (LALA-PG)-KIH (human) (rec.)</b>	AG-40B-0247
IL-7 is a T cell growth factor and is required for survival and proliferation of immature thymocytes, naïve T cells, memory T cells.	
<b>IL-12 (mouse):Fc (LALA-PG)-KIH (human) (rec.)</b>	AG-40B-0255
IL-12 acts as a bridge between innate and adaptive immunity and plays a crucial role in promoting the differentiation of T helper (Th)-1 cells and effector CD8 <sup>+</sup> T cells. IL-12 enhances the effector function of activated T cells and natural killer (NK) cells.	
<b>IL-15 (mouse):IL-15Ra (Sushi) (mouse):Fc (LALA-PG)-KIH (human) (rec.)</b>	AG-40B-0257
IL-15 stimulates the proliferation of T cells and the proliferation and maintenance of natural killer (NK) cells. Our IL-15 InVivoKine™ fused to the IL-15Ra (Sushi domain) is a more active version of IL-15.	
<b>IL-21 (human) (monomeric):Fc (LALA-PG)-KIH (human) (rec.)</b>	AG-40B-0258
IL-21 is important for the maturation and proliferation of T and B cells.	

See [www.adipogen.com](http://www.adipogen.com) for a complete list of cytokines for preclinical research.