

# Bringing Advanced Cellular Immunotherapies to Children in Kentucky with High-Risk Leukemia and Cancer

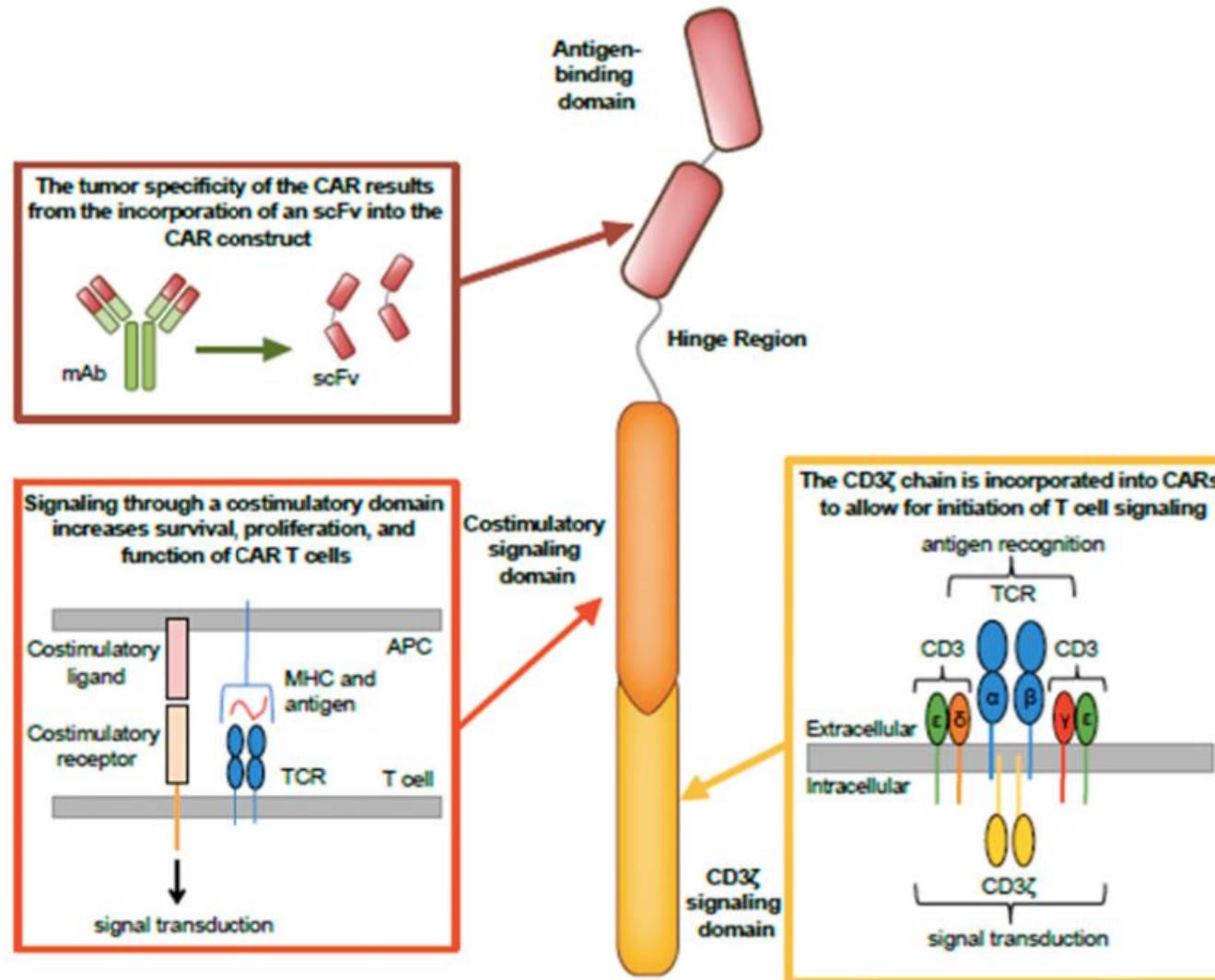
*Pediatric Cancer Research Trust Fund Award  
University of Louisville School of Medicine*

# CAR-T Cell Therapy

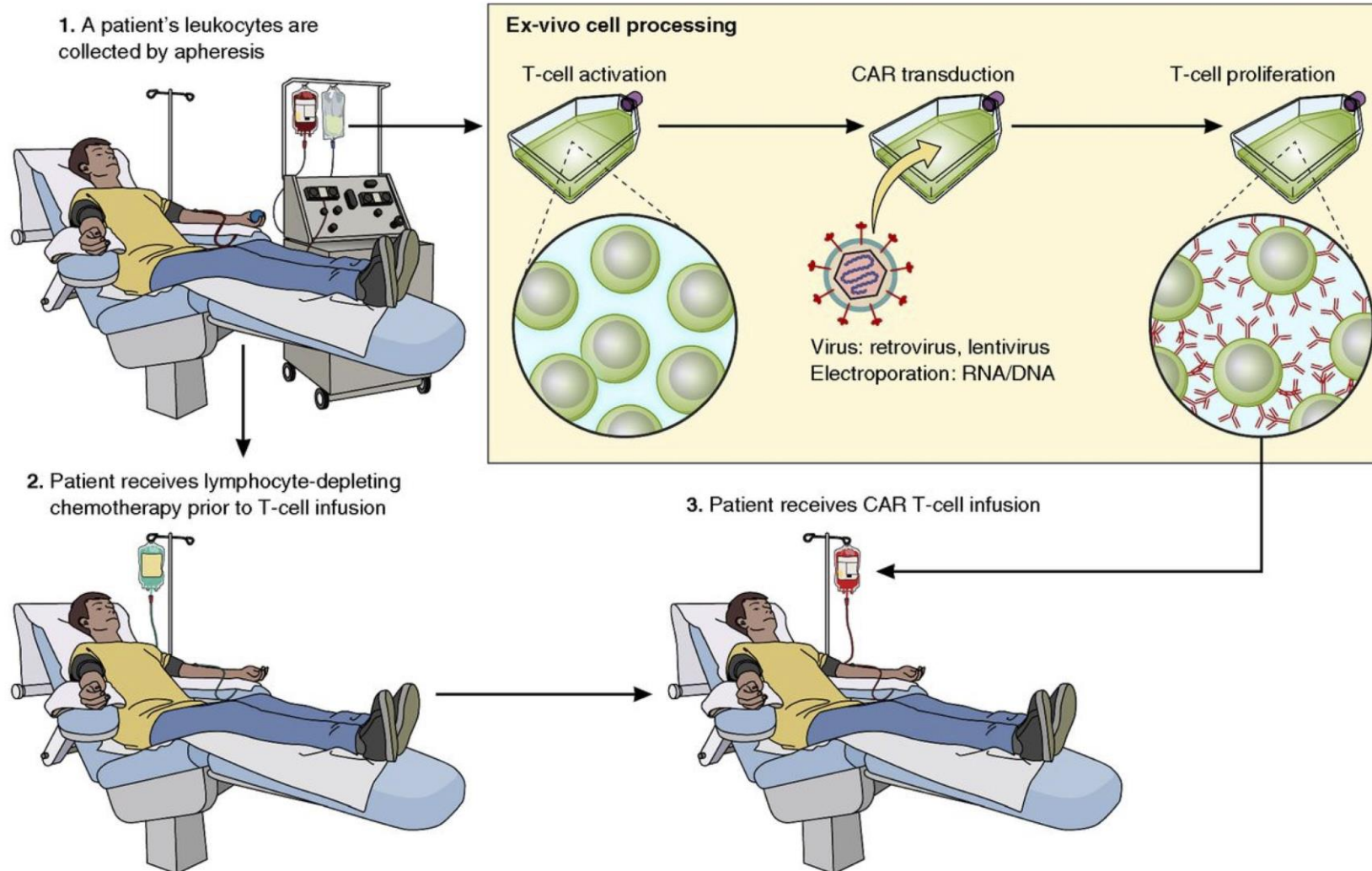
- CAR-T cell therapy is a newly developed and very promising immunotherapy that has been used successfully to treat high-risk acute B-cell leukemia (B-ALL)
- CAR, or Chimeric Antigen Receptor, is a synthetic protein expressed on T cells that enables these cells to find and kill leukemia cells
- With the success of CAR-T therapy in B-ALL, the race is now on to design new CAR-T therapies that can treat other forms of leukemia and cancers



# Expression of Chimeric Antigen Receptor (CAR) on T cells redirects the T cells to find and kill leukemia cells



# CAR-T therapy is a sophisticated process that involves T-cell collection from the patient, manipulation of the cells in the laboratory, and reinfusion of the cells back into the patient.



# Pediatric CAR-T Therapy Projects at University of Louisville

Target	Disease	Collaborators	Stage	Goals
CD19	B-Cell ALL, Lymphoma	Novartis	Clinical, FDA Approved	Patient Care
CD33/CD123	AML	UofL Adult BMT, iCell	Pre-Clinical, IND Application	Compound CAR
CD19	B-Cell ALL, Lymphoma	UofL Adult BMT, iCell	Pre-Clinical, IND Application	CAR with Immune Modulator
GD2	Neuroblastoma, Osteosarcoma, Malignant Glioma	UofL Adult BMT, iCell	Pre-Clinical	CAR with Intrinsic Checkpoint Blockade
GD2	Neuroblastoma, Osteosarcoma, Malignant Glioma	UofL Adult BMT, iCell	Pre-Clinical	CAR with Extrinsic MDSC Suppression

# Summary

- Recent studies have shown that CAR-T cell immunotherapy is a highly successful treatment of childhood leukemia
- Further improvement of the efficacy of the therapy will come with the development of next-generation CAR-T therapies that incorporate novel elements into their design
- We aim at pushing the envelope in CAR-T therapy development and bring next-generation CAR-T therapies quickly to children with high-risk malignancies in Kentucky

