

Car-T Therapy

An Emerging Treatment for MS



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Gregory F. Wu, MD, PhD, FAAN

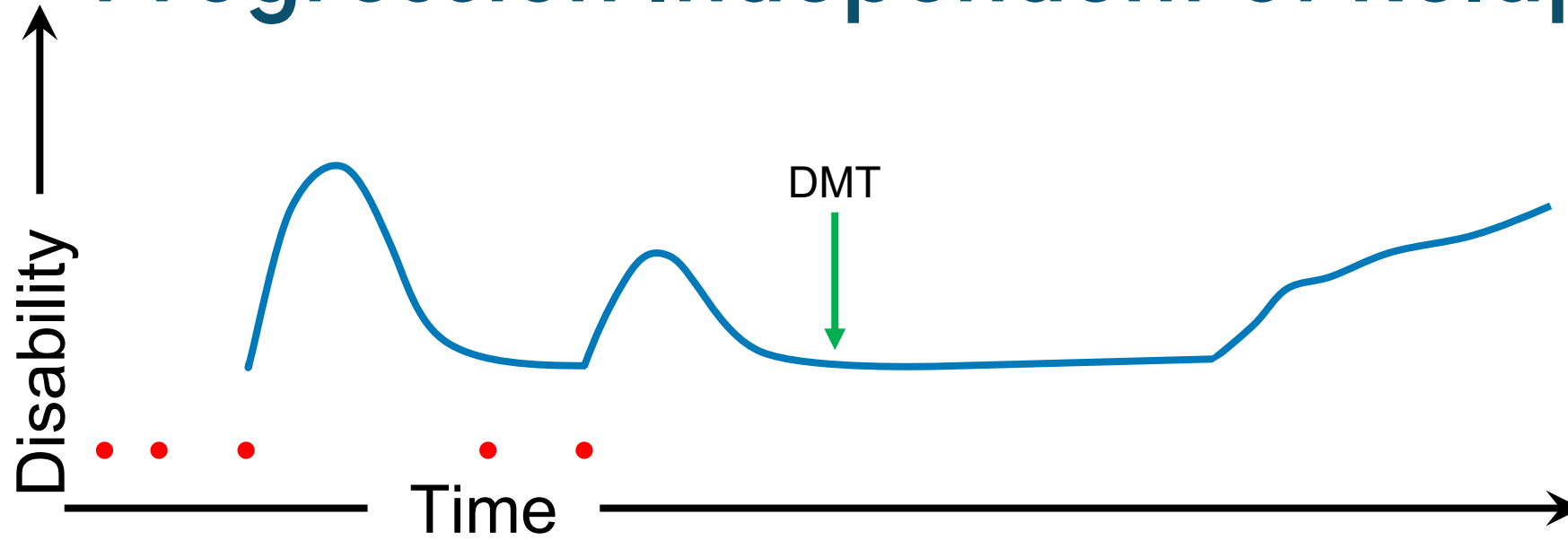
John L. Trotter MS Center
Professor of Neurology
Professor of Pathology & Immunology
Washington University in St. Louis

Overview

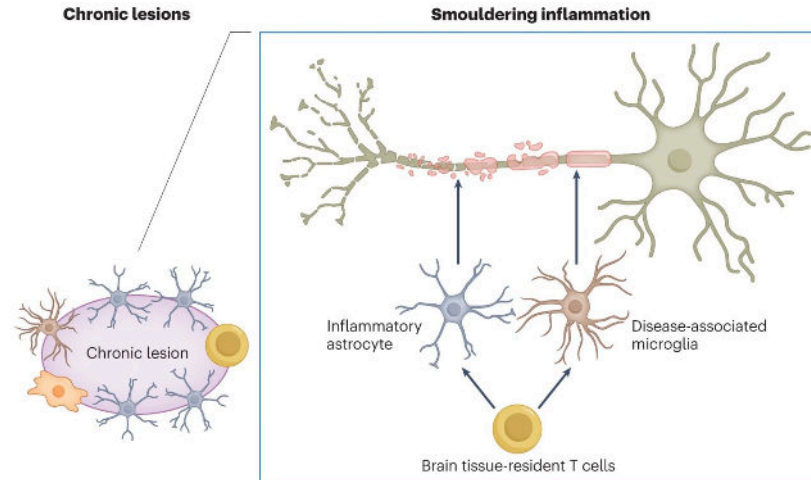


- Problem
 - Disease progression
 - Compartmental inflammation
 - Immune specificity
- Cellular therapy/CAR T cells
- Variety of CAR T cells in MS to date
- Trials to date
- Advantages/disadvantages

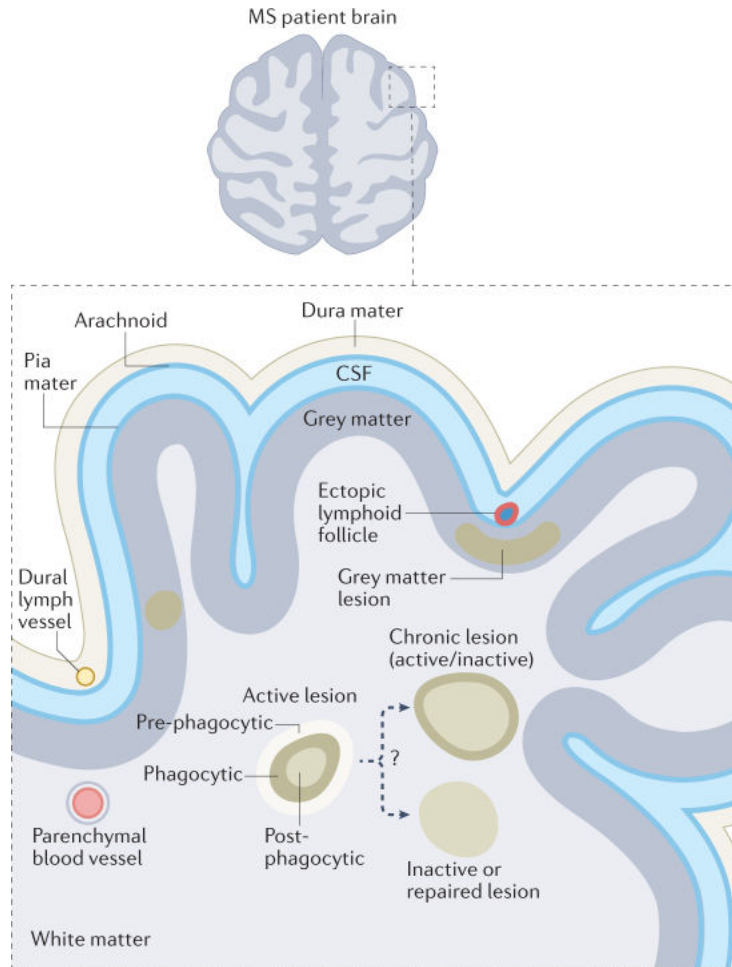
Progression Independent of Relapse



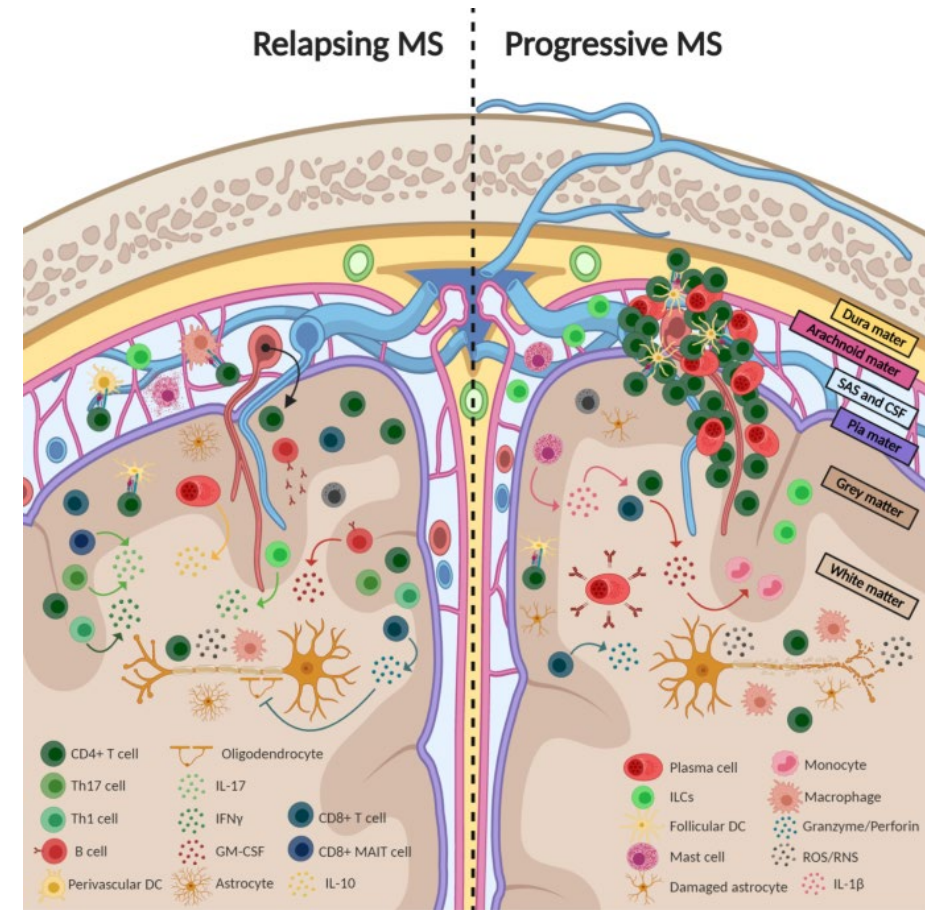
- MRI activity
- Clinical activity



Compartmental Inflammation in MS



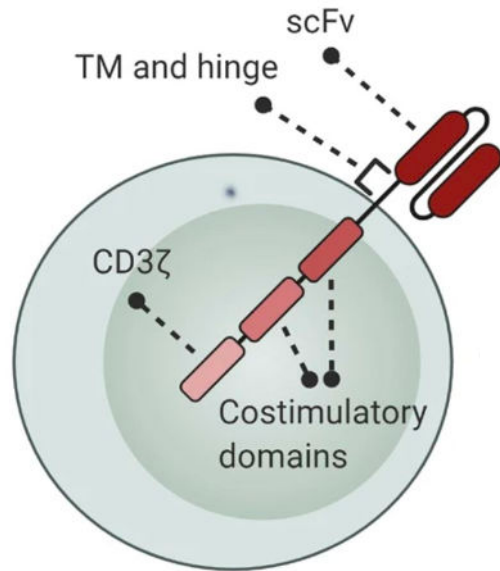
Attfield et al, Nat Rev Imm 22: 734–750 (2022)



Mansilla et al, Cell Mol Imm 18: 1353–1374 (2021)

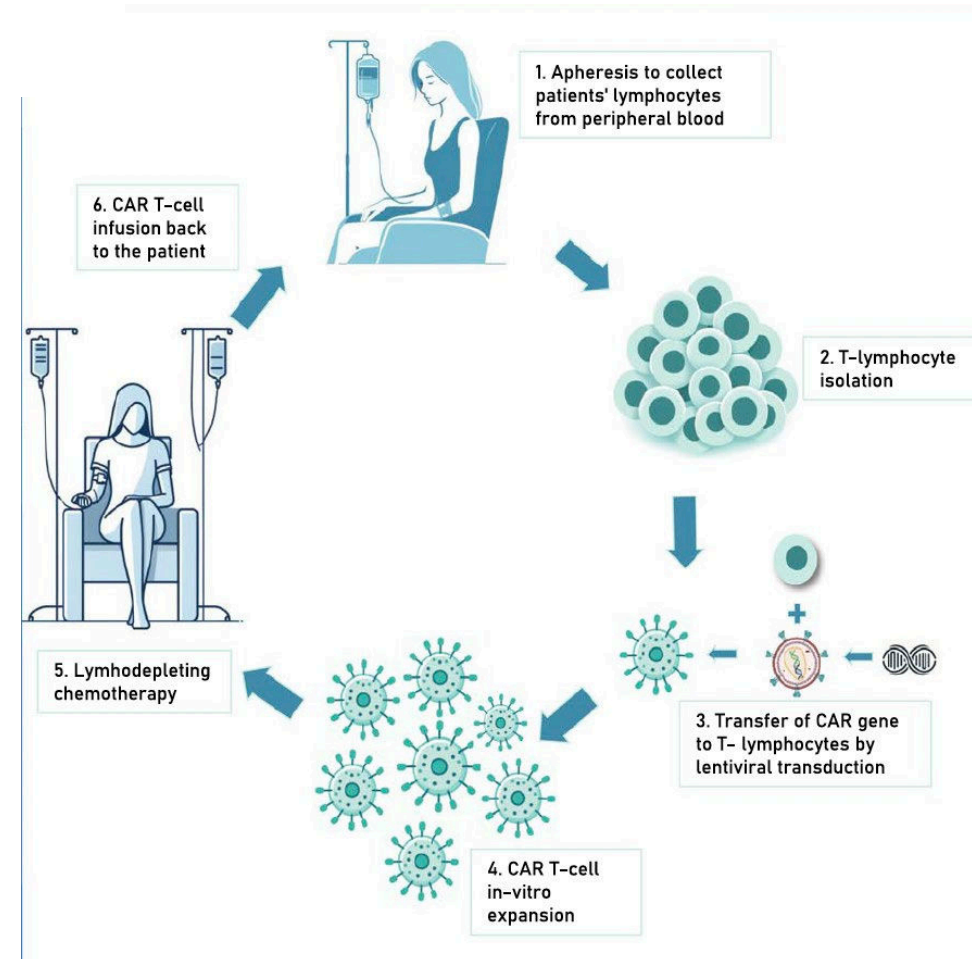
Chimeric Antigen Receptor (CAR) T Cell Therapies

Traditional CAR T cells



- Specificity
- Potent killing

Poorebrahim et al Oncogene 40: 421-35 (2021)



Konitsioti et al, Journal of Neurology (2024) 271:6526–6542

Examples of Ongoing Trials



NCT06384976

Study of KYV-101, an Autologous Fully Human Anti-CD19 CAR T-cell Therapy, in Subjects with Refractory Primary and Secondary Progressive MS (KYSA-7), phase II, open-label, randomized, multicenter study

NCT06220201

A Study to Evaluate the Safety, Tolerability, Efficacy, and Drug Levels of CC-97540 in Participants with Relapsing or Progressive Forms of MS, phase I, multicenter, single-arm study

NCT06138132

A Study of Anti-CD19 CAR T-cell Therapy in Subjects with Non-relapsing and Progressive Forms of MS, a phase I, open- Label, single Center Study

NCT06451159A

Study of KYV-101, a CD19 CAR T Cell Therapy, in Participants with Treatment Refractory Progressive Multiple Sclerosis, phase I, open-label, Single Center Study

Case Reports

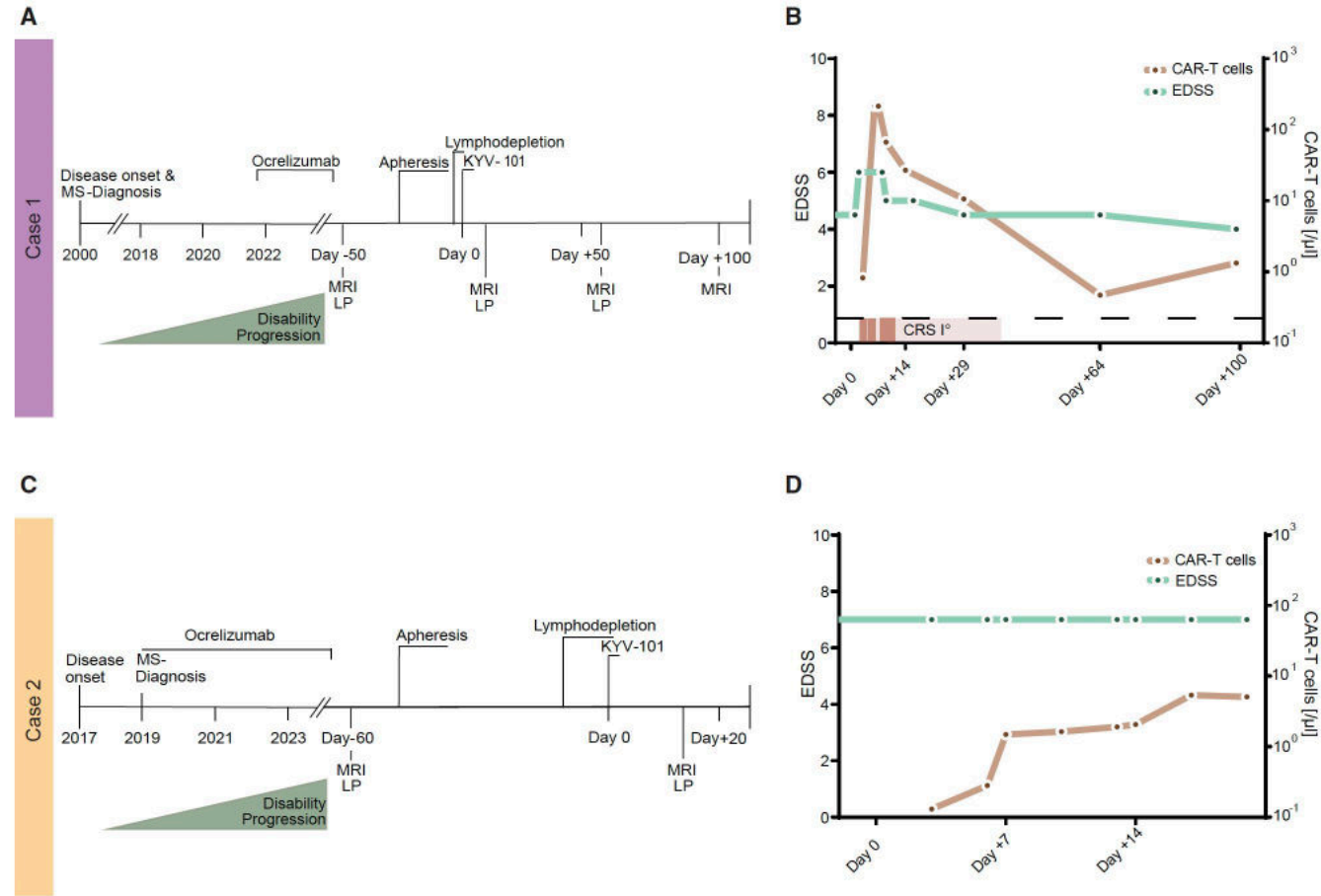


Figure 1. Therapy overview and safety profile

CAR T Cell Considerations

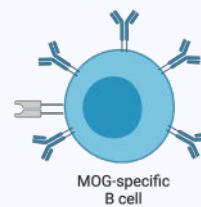
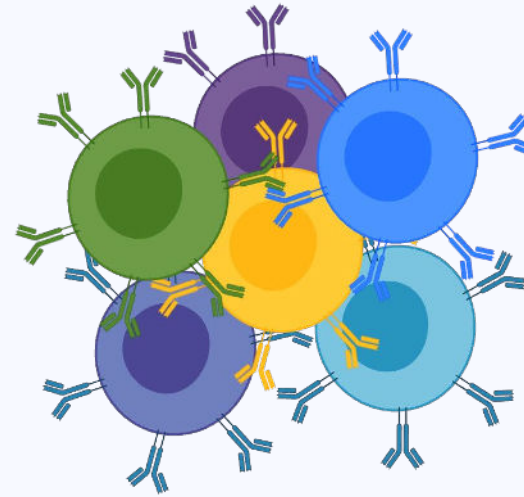
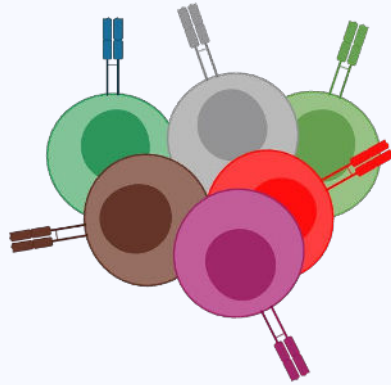
POSSIBLE PROS

- Tissue penetrance
- Durability
- Flexibility
- Personalization
- Continual innovation

POSSIBLE CONS

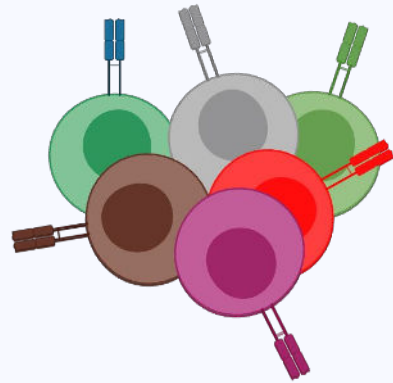
- Access
- Unclear efficacy
- Side-effects
- ICANS, CRS
- Neoplasm

Selective CAR T Cell Therapies for MS & Related Diseases



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