CAR-macrophage induced monostable tumour kinentics

A

Tumour persistance or inhibition is independent of tumour burden

Tumour burden
— Large tumour burden
— Small Tumour burden

Tumour inhibition

Tumour cell concentration

Days post treatment

CAR-macrophage induced bistable tumour kinentics

B

Tumour persistance

High tumour burden leads to tumour persistence and low tumour burden leads to tumour inhibition

Tumour inhibition

Tumour cell concentration

Days post treatment

Saturated phagocytosing effeciency

C

Maximum value of CAR macrophage cell phagocytosing

$$\frac{\kappa T_0}{\gamma}$$

$$\frac{\kappa M T_0}{1 + \gamma M + \eta T_0}$$

Phagocytosing efficiency of CAR-macrophage increases but converge with increase of CAR-macrophage count M, for a given tumour cell T_0 .

Phagocytosing efficiency of CAR-macrophage

CAR-macrophage concentration

D

Phagocytosing tumour cells

Tumour cell, T(t)

CAR-macrophage, M(t)

Tumour cells replicate

Natural death

E

Step 1: to select models to fit FACS-based phagocytosis assay data of tumour against CAR-macrophage.
Step 2: to investigate how CAR-macrophage concentration and tumour burden determine tumour concentration.
Step 3: to check whether CAR-macrophage dose and dosing regimens suggested by ongoing clinical trial can control efficiently tumour growth.