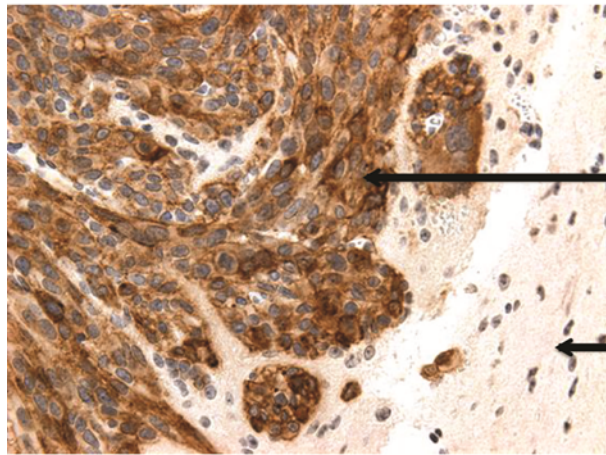


Retroviral Replicating Vector (RRV) Gene Therapy Platform

RRV platform selectively infects cancer cells and persists

RRVs selectively infect cancer



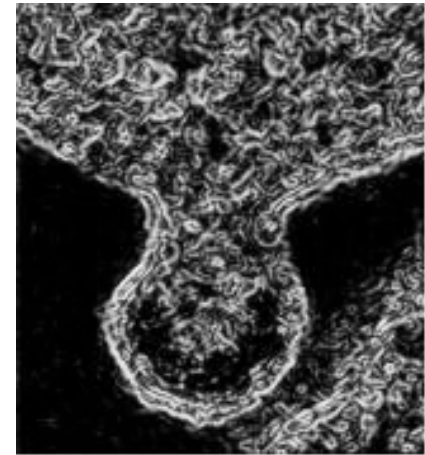
Brain tumor
(infected with RRV
stained brown)

Normal brain cells
(uninfected)

RRV selective to cancer cells

- RRVs infect malignant tumors mainly due to known immune deficiency in cancer
- Yet RRVs are not known human pathogens and have limited virulence genes to infect healthy cells in vivo

Creates a factory for RRV production



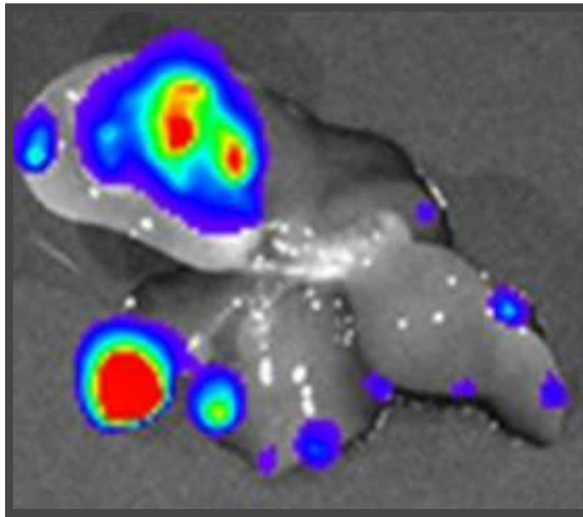
RRV budding from infected cell

- RRVs integrate in cancer cells
- Stealthily spread through tumor by budding rather than lysis

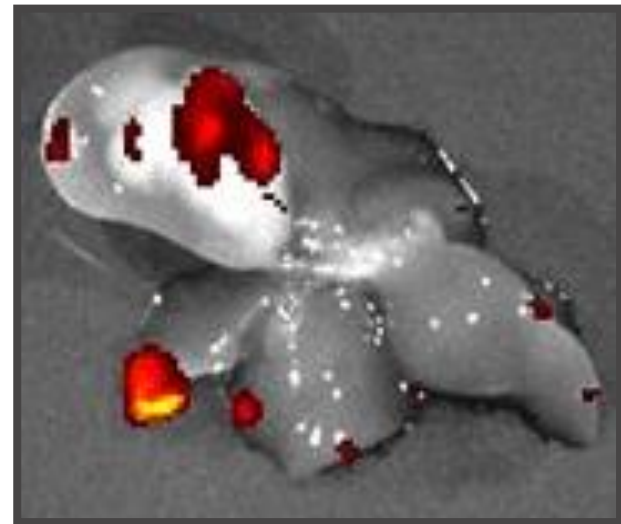
Electron micrograph used with permission from: Retroviruses. JM Coffin, SH Hughes, and HE Varmus. Cold Spring Harbor (NY): Cold Spring Harbor Laboratory Press; 1997. Page 30. Copyright © 1997, Cold Spring Harbor Laboratory Press.

Selective infection of colorectal cancer metastases to liver after intravenous RRV

Tumor Luciferase

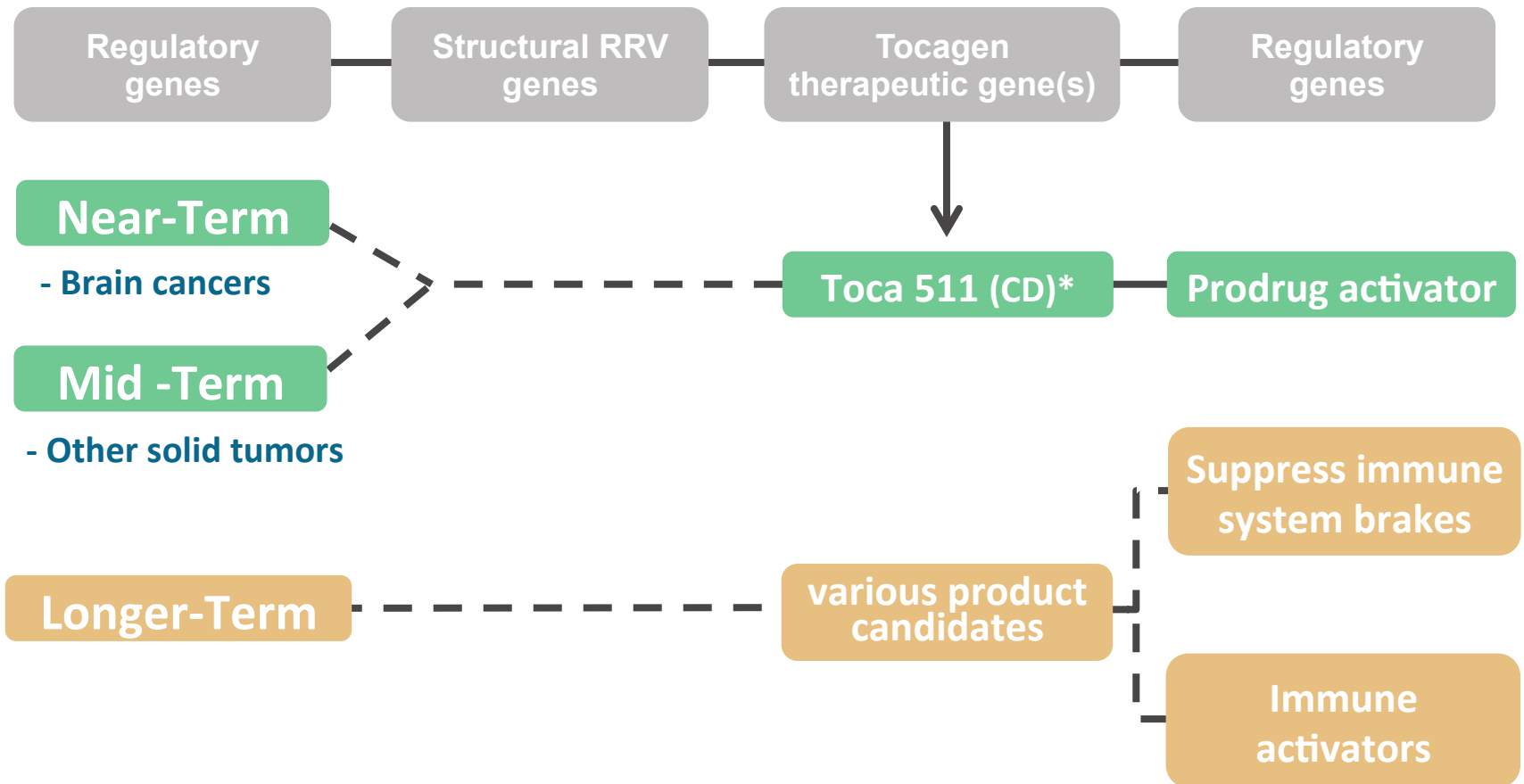


RRV GFP



*Images of same liver in colorectal cancer metastases model after IV delivery**

Versatile RRV platform drives pipeline



*CD = Cytosine Deaminase