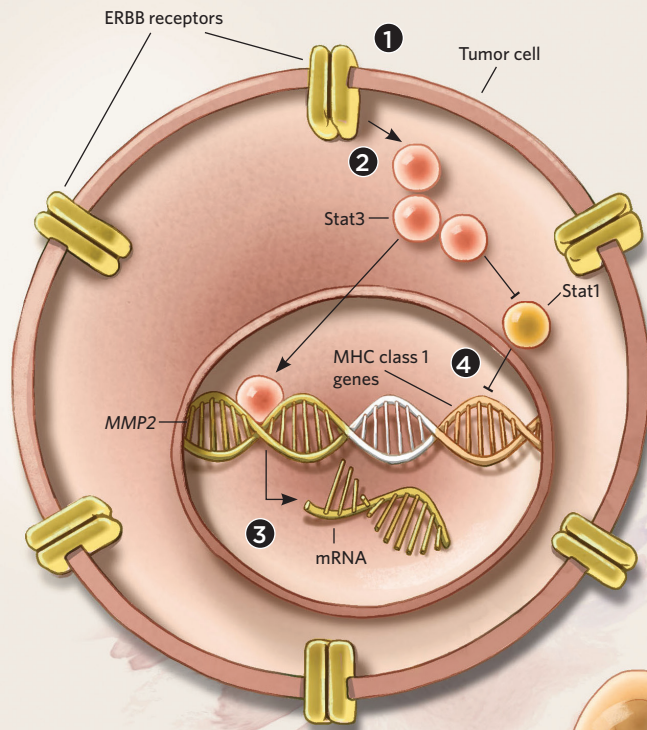


THE DEVIL IS IN THE DETAILS

In one of the most extensive studies of devil facial tumor disease (DFT1) to date, an international team of researchers has uncovered a mechanism that drives the cancer's metastasis and helps it to evade the Tasmanian devils' immune system.



- 1 Cancer cells that form DFT1 tumors overproduce transmembrane enzymes known as ERBB receptors.
- 2 When stimulated by specific proteins—likely EGF and NRG1, which are also overproduced in DFT1 cells—ERBB receptors induce production of a signaling protein and transcription factor called Stat3 and drive its activation.
- 3 In the nucleus, Stat3 drives the production of genes such as MMP2 that are known to trigger metastasis in humans.
- 4 Stat3 also binds to and inhibits another transcription factor, Stat1, which normally drives the expression of genes necessary for the generation of MHC class I molecules.

- 5 MHC class I molecules normally interact with receptors on cytotoxic T cells to discriminate self from foreign cells. By downregulating the production of MHC proteins, DFT1 cells are able to evade detection by the animals' immune system.
- 6 Under normal circumstances, cells lacking MHC markers would be detected by natural killer cells (NK), but for reasons that are unclear, devil NK cells don't react to DFT1.

