Epidermal Growth Factor (EGFR) is a signaling protein on the surface of the cell. Its normal function is to bind signals from the body to promote appropriate proliferation and growth. These molecules include epidermal growth factor (EGF), transforming growth factor alpha (TGF-α), betacellulin (BTC) and epiregulin (EPR). In cancer cells, growth and division become uncontrolled. There are some medications used for cancer to stop growth and proliferation that bind EGFR.

Two examples of EGFR inhibitors are cetuximab (Erbitux®) and panitumumab (Vectibix®).

**Cetuximab (Erbitux®)** is a human/mouse (chimeric) monoclonal antibody. It is used in combination with chemotherapy or as a single agent. It is approved by Health Canada and funded by provincial drug formularies.

**Panitumumab (Vectibix®)** is a fully human monoclonal antibody. It is used as initial therapy in combination with chemotherapy. It can be used as a single-drug therapy when previous therapy has failed. It is approved by Health Canada and funded by provincial formularies.

Image courtesy of Future Medicine. Link: [https://www.futuremedicine.com/doi/10.2217/ebo.11.305](https://www.futuremedicine.com/doi/10.2217/ebo.11.305)
These medications are prescribed by oncologists for stage IV cancer, in situations where the patient does not have KRAS or NRAS mutations in their cancer cells, which would render those therapies less effective or ineffective. It is important for your oncologist to know if any mutations have taken place in your cells in order to be better able to tailor therapy to your cancer needs. You can ask your oncologist for a copy of your detailed pathology report so as to be able to have a more meaningful discussion with your oncologist about his recommendations for treatment and any options you may have.

**BRAF MUTATIONS**

✓ BRAF mutations are not inherited, and are usually acquired after birth in the process of a cell becoming a cancer cell

✓ BRAF mutations can cause resistance to anti-EGFR therapies

✓ A BRAF mutation is a change in a BRAF gene. That change in the gene can lead to an alteration in a protein that regulates cell growth that could allow the melanoma to grow more aggressive

The BEACON CRC trial found that a combination therapy of EGFR inhibitor with a BRAF inhibitor improved outcomes with a BRAFV600E mutation

➢ MEK inhibitors such as binimetinib are being studied for patients with a RAS mutation in combination with a BRAF inhibitor and an EGFR inhibitor.