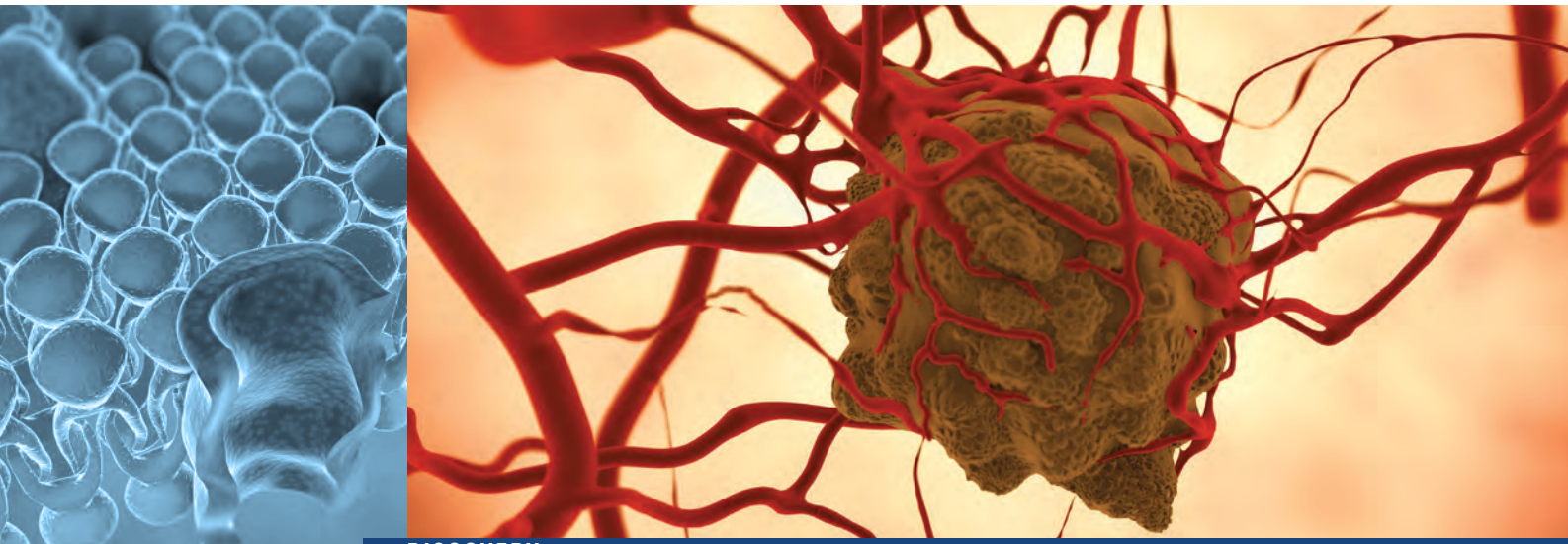
charles river



DISCOVERY

Ion Channel Selectivity Profiling:
Oncology

Ion Channel Families:

- Calcium, voltage-gated (Cav1.2/β_2/$\alpha_2\delta_1$ and Cav3.2)
- Potassium, calcium-activated (BK (KCa1.1/β_1) and IK (KCa3.1))
- Potassium, voltage-gated (Kv1.3, Kv1.5 and hERG1 (Kv11.1))
- Sodium, voltage-gated (Nav1.5 and Nav1.7)
- Transient receptor potential (TRPC6, TRPM8, TRPV1 and TRPV6)

The Charles River ion channel portfolio includes over 120 targets which have been organized into Channel Panels® based on current scientific findings, proving a useful tool in guiding early screening and selectivity profiling. Our Cancer Channel Panel® includes ion channels which have been linked to cancer cell proliferation.

Selectivity Profiling

Identification of a compound's target specificity and potential for off-target effects is a critical step in the drug discovery process. This often includes assessments against specific target class families, critical safety targets or by therapeutic area. In addition to therapeutic area-specific Channel Panels®, we offer screening on a number of electrophysiology platforms. When required, our scientists can design customized panels to meet a client's needs. As pioneers in the field of ion channels, we are able to provide expert consultation to facilitate interpretation of results.

Ion Channels and Cancer

Several ion channels have been shown to be upregulated in cancer cells and may be integral to the mechanism of cancer cell proliferation and tumor growth. These channels have been proposed as cancer markers, and channel blockers are in development as tumor growth inhibitors. Our Cancer Channel Panel® includes many of the ion channels that have been linked to cancer cell proliferation.

Ion channels linked to cell proliferation include voltage-gated potassium channels (Kv1.3, Kv1.5, and hERG1), voltage-gated sodium channels (Nav1.5 and Nav1.7), and calcium-activated potassium channels (BK and IK) which are upregulated in various forms of cancer. Additionally, Ca^{2+} influx through Ca-permeable channels elevates intracellular Ca^{2+} concentration and serves to trigger cell proliferation. The panel includes both voltage-gated Ca^{2+} channels (Cav1.2 and Cav3.2) as well as transient receptor potential channels (TRPC6, TRPM8, TRPV1 and TRPV6), which are highly expressed in cancer cells and provide a significant Ca^{2+} influx.

EVERY STEP OF THE WAY