Acid-base transport in epithelial cancers

Novel druggable targets?

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A deadly triangle in solid tumors

Microenvironment

Metabolism

Ion transport
Proof of concept: The Na\(^+\),HCO\(_3\)^\(-\) transporter NBCn1

Highly upregulated in patient breast cancer tissue

Knockout reduces tumor growth in mice

![Image showing upregulation of NBCn1 in breast cancer tissue and reduced tumor growth in knockout mice.](CPID#1623 ER\(^+\) PR\(^-\) Her2\(^-\) NBCn1)

![Graph showing mean tumor volume over days post injection.](Graph with Ctrl and NBCn1 lines, showing significant reduction in tumor growth in NBCn1 group, indicated by ***).
Rationale

Ion transport proteins are:

✓ Essential for cancer cell metabolism and microenvironment
✓ Eminent drug targets!

Goal

Novel intelligent strategies for synthetic lethality of cancer cells by co-targeting ion transporters and metabolism
Simulating the tumor microenvironment: 3D spheroids

- Cancers are not well-buffered cell monolayers
- Need for high throughput and mechanism limits *in vivo* model usefulness

Expanding tumor

Blood vessel

MCF-7 cell 3D spheroid