

Supplementary Table 1

α CAIX antibody	Affinity (K_D , nM)	% CA inhibition	Internalization
G119	1.49	25%	+++
G10	1.62	15%	+
G37	1.89	40%	none
G36	3.22	10%	++
G39	3.43	50%	none

The kinetic constants of all anti-CAIX antibodies were obtained by global analysis using a 1:1 langmuir binding model and the T100 evaluation software. Percentage of carbonic anhydrase inhibition by CAIX antibodies was estimated from an electrometric assay. Internalization measured by both flow cytometry and ImageStream. + denotes degree of internalization as measured by regular flow cytometry.