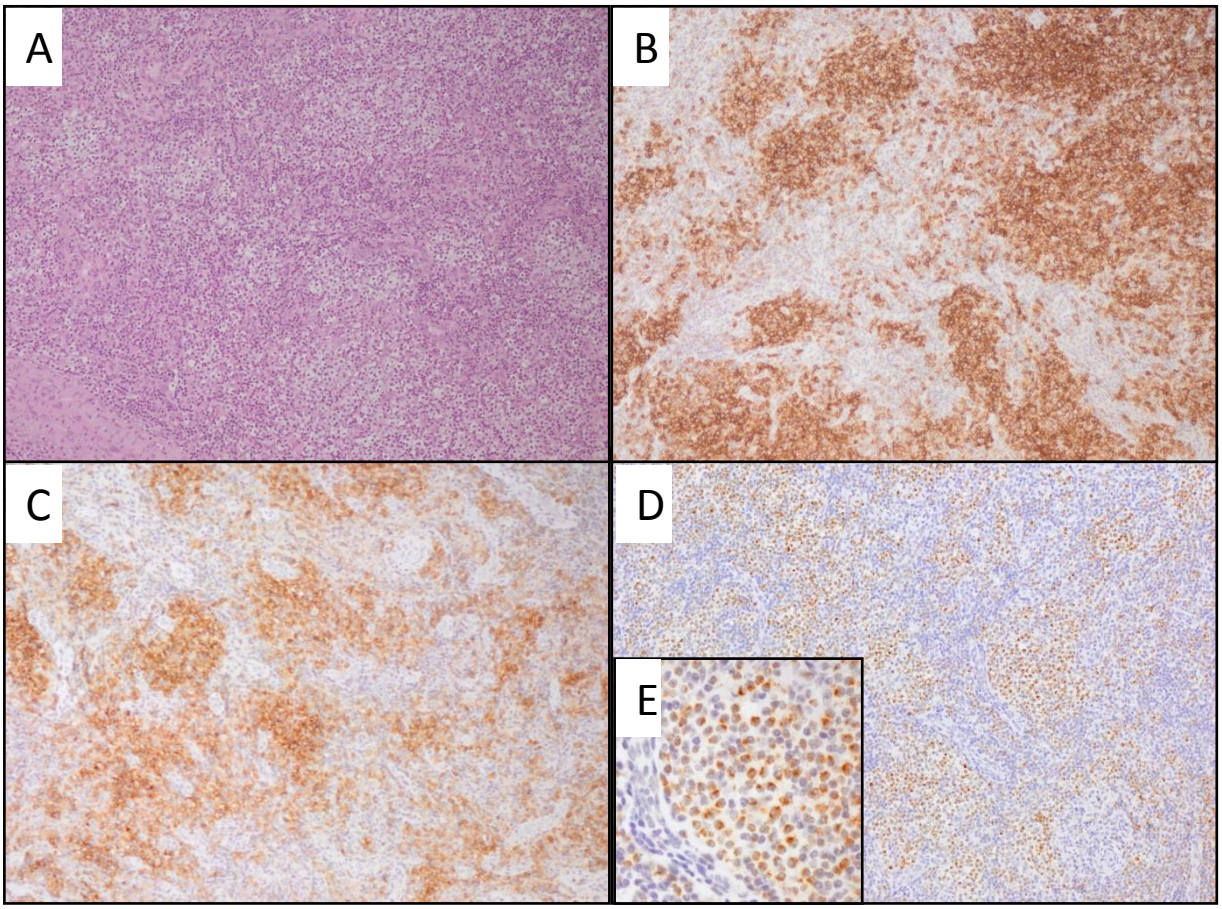


Figure S1: anti IDH2R172K antibody stains zones enriched in ICOS and PD1 positive cells in IDH2R172K mutated AITL (patient 5). A) HE stained section of IDH2R172K mutated AITL (X10). B) anti ICOS staining (X10), showing clusters of ICOS positive AITL tumor cells. C-D) An identical pattern is shown with an anti PD1 antibody (C) (X10) and an anti IDH2R172K antibody (D) (X10), suggesting that the anti IDH2R172K antibody stains zone enriched in tumor cells. The staining is granular cytoplasmic (E) (X40), according to the mitochondrial location of IDH2.

	Phenotype of tumor cells					Tumor cells	IDH2R172K positive cells	ICOS+ R172K- cells	VAF IDH2
	CD10	Bcl6	CXCL 13	ICOS	PD1				
Patient1	+	+/-	+	+	+	25%	25%	8%	5.6%
Patient 2	+/-	+/-	+	+	+	20%	20%	10%	4.9%
Patient 3	+	+	+	+	+/-	25%	25%	6%	10.4%
Patient 4	+	+/-	+	+	+	45%	45%	2%	20.5%
Patient 5	-	+	+	+	+	50%	15-50%	10%	23.4 %
Patient 6	-	+	+	+	+	5%	5%	6%	NA
Patient 7	+	NA	+	+	+	5%	5%	14%	NA
Patient 8	+	NA	+	+	+	30-50 %	30-50%	4%	17 %
Patient 9	+	-	+	+	+	20-30 %	30%	10%	11.8%

Supplemental Table 1: Description of immunohistochemical data and IDH2R172 variant allele frequency. Tumor cell percentage was estimated based on morphology and TFH markers. ICOS+ R172K- cells represent cells that are stained positive for ICOS and negative for IDH2R172K. Variant allele frequencies of *IDH2* mutations are described in the last column.

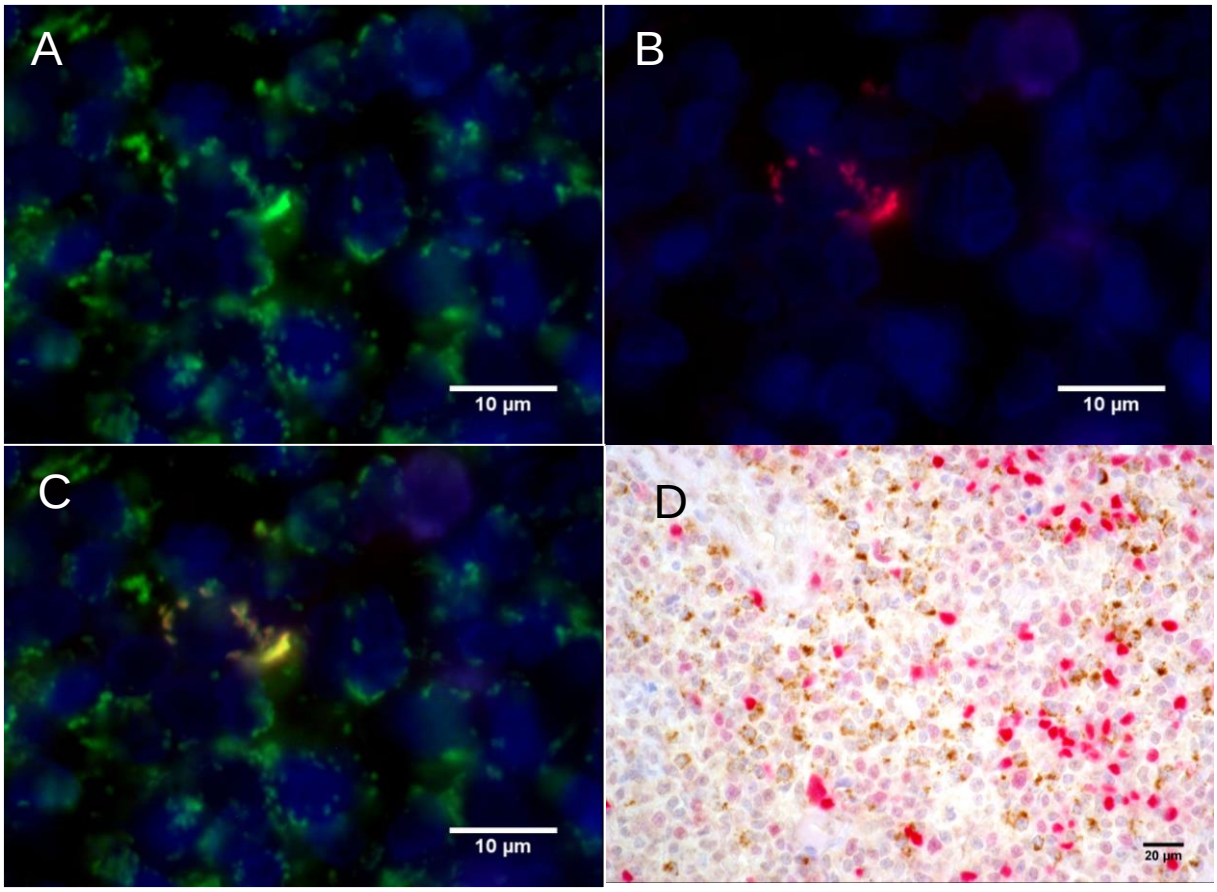
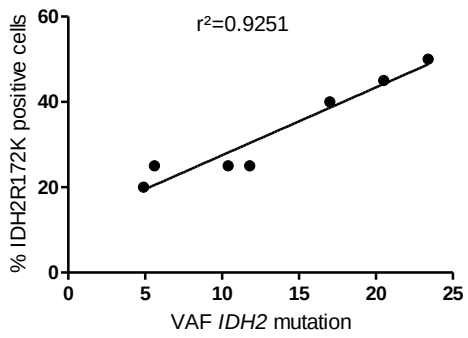


Figure S2: IDH2R172K colocalizes with CoxIV, confirming is mitochondrial localization. Immunofluorescence for A) COXIV (green), DAPI (blue), B) IDH2R172K (red), DAPI (blue), C) overlap COXIV (green) and IDH2R172K (red) and DAPI (blue) D) chromogenic double staining for PaxV (red) and IDH2R172K (brown).



Supplemental figure 3: Correlation between variant allele frequencies of *IDH2* mutations in IDH2R172K mutated AITL as measured by DNA sequencing and the frequency of IDH2R172K mutated cells estimated by immunohistochemistry.

Appendix

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