

The Prognostic Significance of Androgen Receptor Expression in Gliomas

^{1*} Chi Zhang, M.D., Ph.D.; ¹Nan Zhao, M.B.B.S., M.S.; ¹Rubayat Khan, Ph.D.; ¹Ming-yang Hung, M.D.; ²Chi Zhang, Ph.D.; ¹Shuo Wang, Ph.D.; ³Tony J. C. Wang, M.D.; ¹Chi Lin, M.D., Ph.D.

Affiliations:

¹Department of Radiation Oncology, Fred & Pamela Buffett Cancer Center, University of Nebraska Medical Center, Omaha, NE

²School of Biological Sciences, University of Nebraska - Lincoln, Lincoln, NE

³Department of Radiation Oncology, Columbia University Irving Medical Center, New York, New York; Herbert Irving Comprehensive Cancer Center, New York, NY

***: corresponding author**

Chi Zhang, M.D., Ph.D.

Department of Radiation Oncology,

Fred & Pamela Buffett Cancer Center,

University of Nebraska Medical Center,

Omaha, NE 68198-7521

Email: chi.zhang@unmc.edu

Phone: 402-552-3844

Supplemental Figures

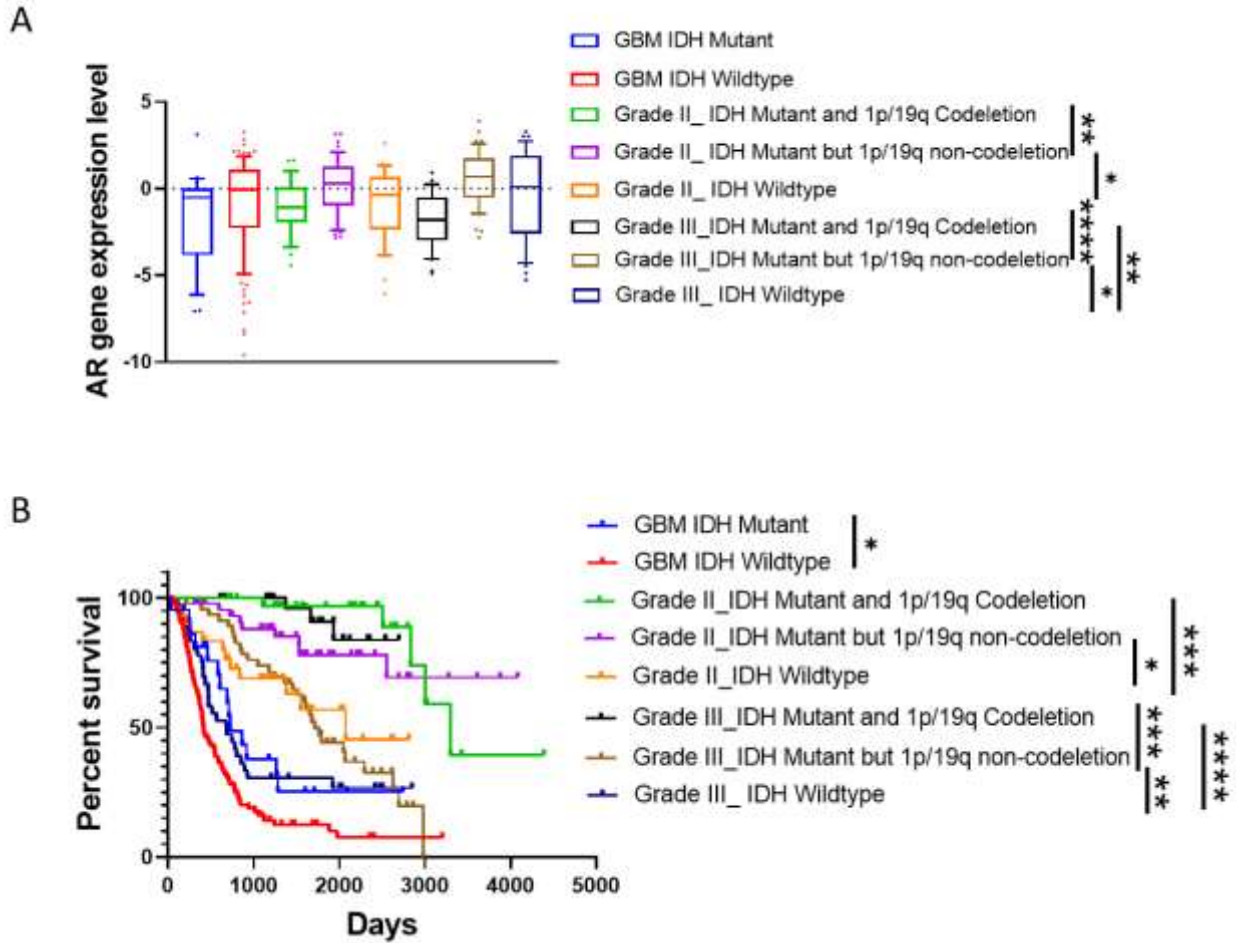


Figure 1S. AR gene expression levels in different subtypes of LGG and GBM patients and their overall survival comparisons in the CGGA database. (A) AR gene expression levels among grade 2 and 3 glioma patients with wildtype IDH1, grade 2 and 3 glioma patients with mutant IDH with or without 1p/19q codeletion, GBM patients with wildtype IDH1, and GBM patients with mutant IDH1. (B) Overall survivals among grade 2 and 3 glioma patients with wildtype IDH1, grade 2 and 3 glioma patients with mutant IDH with or without 1p/19q codeletion, GBM patients with wildtype IDH1, and GBM patients with mutant IDH1. *: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$; ****: $p < 0.0001$.

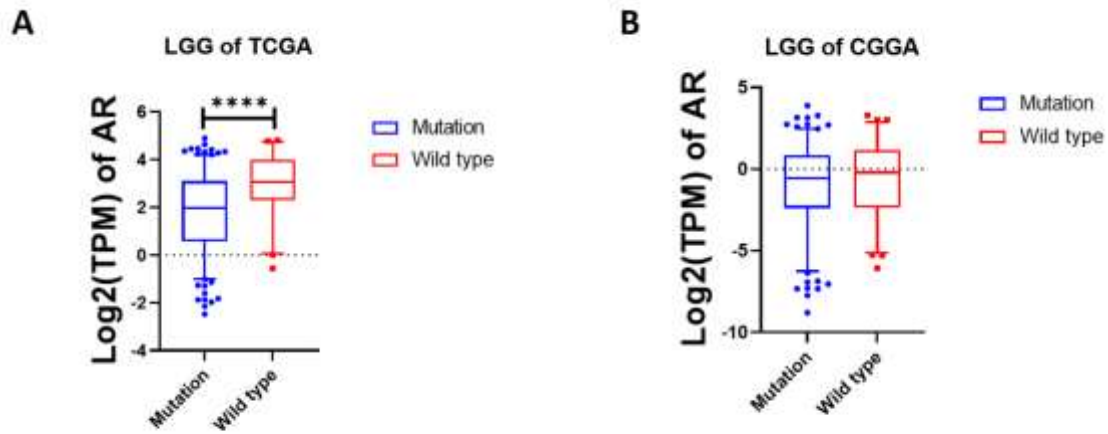


Figure 2S. AR gene expression levels in LGG patients with wildtype and mutant IDH. (A) AR gene expression levels between LGG patients with wildtype and mutant IDH in TCGA database ($p < 0.001$) (B) AR gene expression levels between LGG patients with wildtype and mutant IDH in CGGA database ($p > 0.05$)

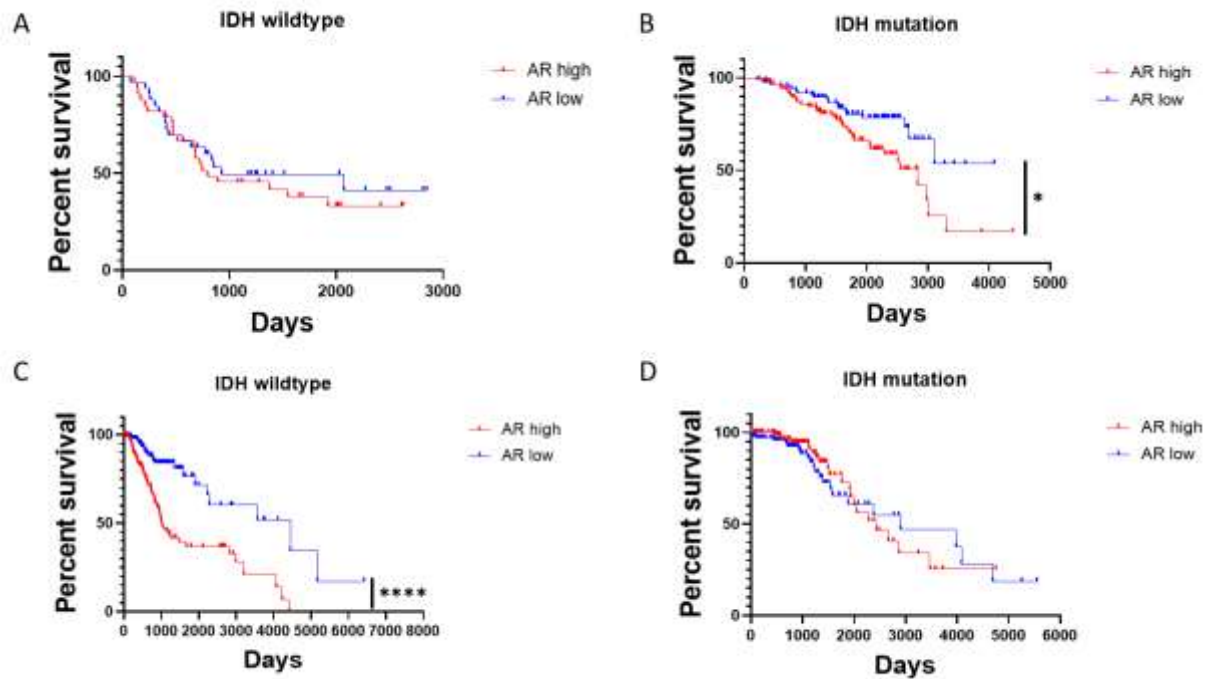


Figure 3S. Overall survival of the LGG patients based on IDH status in TCGA or CGGA databases. (A) Comparison of OS between LGG patients with wildtype IDH with higher versus lower AR expression at mRNA level in CGGA database ($p > 0.05$). (B) Comparison of OS between LGG patients with mutant IDH with higher versus lower AR expression at mRNA level in CGGA database ($p < 0.05$). (C) Comparison of OS between LGG patients with wildtype IDH with higher versus lower AR expression at mRNA level in TCGA database ($p = 0.0028$). (D) Comparison of OS between LGG patients with mutant IDH with higher versus lower AR expression at mRNA level in TCGA database ($p = 0.30$).

Supplemental Tables

Table S1. AR expression level for normal brain and different types of gliomas in CGGA database

Type	n	Median (range) of Log ₂ (TPM)
Normal brain	20	-0.97 (-2.34, 1.50)
GBM ^a (grade IV)	248	-0.48 (-6.43, 3.11)
GBM with mutant IDH	24	-0.53 (-7.07, 3.11)
GBM with wildtype IDH	109	-0.07 (-9.61, 3.24)
LGG ^b	282	-1.01 (-8.79, 4.41)
Oligodendroglioma (grade II)	44	-1.40 (-7.32, 1.63)
Astrocytoma (grade II)	85	-0.25 (-6.06, 3.15)
Anaplastic astrocytoma (grade III)	82	0.48 (-5.28, 3.89)
Recurrent oligodendroglioma (grade II)	14	-1.21 (-2.98, 1.42)
Recurrent anaplastic astrocytoma (grade III)	69	-0.56 (-5.94, 4.41)
LGG ^c with mutant IDH and 1p/19q codeletion	65	-1.44 (-4.90, 1.63)
LGG ^c with mutant IDH with 1p/19q non-codeletion	97	0.41 (-2.84, 3.89)

a: all GBM cases including unknown IDH status; b: newly diagnosed lower grade glioma (all grade II and III combined); c: newly diagnosed lower grade glioma (grade II and III combined, with IDH and 1p/19q status reported).

Table S2. AR expression level for normal brain and different types of gliomas in TCGA database

Type	n	Median (range) of Log ₂ (TPM)
Normal brain	2642	-1.23 (-5.60, 3.95)
GBM (grade IV)	156	2.48 (-2.37, 5.15)
Anaplastic astrocytoma (grade III)	128	2.78 (-1.87, 4.98)
LGG ^a	381	1.56 (-2.59, 4.91)
Oligodendroglioma (grade II)	39	

a: newly diagnosed lower grade glioma (grade II and III combined).