

# Supplementary Materials:

Table S1 Primers used for qPCR

Gene name	primers sequence (5'-3')
<i>hif-1<math>\alpha</math></i>	AGGCATCTGTGGATAGTGG
	TAACGGGTGAGCTGTGGT
<i>hif-2<math>\alpha</math></i>	TACTGCCCAGAGGAGCTGTT
	CTGACTGCTCACTGCCTGAC
<i>hif-3<math>\alpha</math></i>	CTATCGCTTCCTGGTCAAGC
	CACCCCACTGAGGATGAAGT
<i>hif-1<math>\beta</math></i>	CCCTTGACTTCGATGACGAT
	TGGTTCTCTCTGGCAAACCT
<i>hif-2<math>\beta</math></i>	AAAAGAGGGAGAAGCACA
	ACCGTCAACCCATTCATA
<i>hif-3<math>\beta</math></i>	CCCTCACAGTATGGACAG
	GGCGAAGACCCTCTAATC
<i>18S</i>	TCAACACGGGGAACCTCAC
	GACAAATCGCTCCACCAAC

Table S2 Expression levels of function genes in HIF pathways in livers of hybrid sturgeon 24 h after hypoxia challenge

Transcript ID	log <sub>2</sub> FoldChange	P-value	Pattern	Description
c249319_g1	1.47	1.97E-02	increased	<i>hif-1<math>\alpha</math></i>
c251157_g2	0.26	4.97E-02	increased	<i>hif-2<math>\alpha</math></i>
c243941_g2	-0.38	3.95E-02	decreased	<i>hif-3<math>\alpha</math></i>
c251232_g1	0.28	1.97E-02	increased	<i>hif-1<math>\beta</math></i>
c245117_g1	0.55	4.84E-02	increased	<i>hif-2<math>\beta</math></i>
c249981_g1	0.53	1.17E-02	increased	<i>hif-3<math>\beta</math></i>
c252027_g1	1.61	2.81E-02	increased	<i>glut1</i>
c223598_g1	2.43	1.82E-08	increased	<i>gys</i>
c235875_g2	1.52	2.02E-04	increased	<i>ldha</i>
c248514_g2	2.32	6.59E-10	increased	<i>gatm</i>
c226845_g1	1.44	1.35E-04	increased	<i>angptl3</i>
c246477_g1	0.45	1.70E-02	increased	<i>vegfr</i>
c243908_g1	-0.53	1.16E-02	decreased	<i>vhl</i>
c248156_g3	1.17	6.56E-03	increased	<i>phd2</i>

*glut1*: glucose transporter protein type 1; *gys*: glycogen synthase 1; *ldha*: lactate dehydrogenase A; *gatm*: glycine amidinotransferase; *angptl3*: angiopoietin-related protein 3; *vegfr*: vascular endothelial growth factor; *vhl*: von hippel–lindau; *phd2*: prolyl hydroxylase domain-containing protein 2;