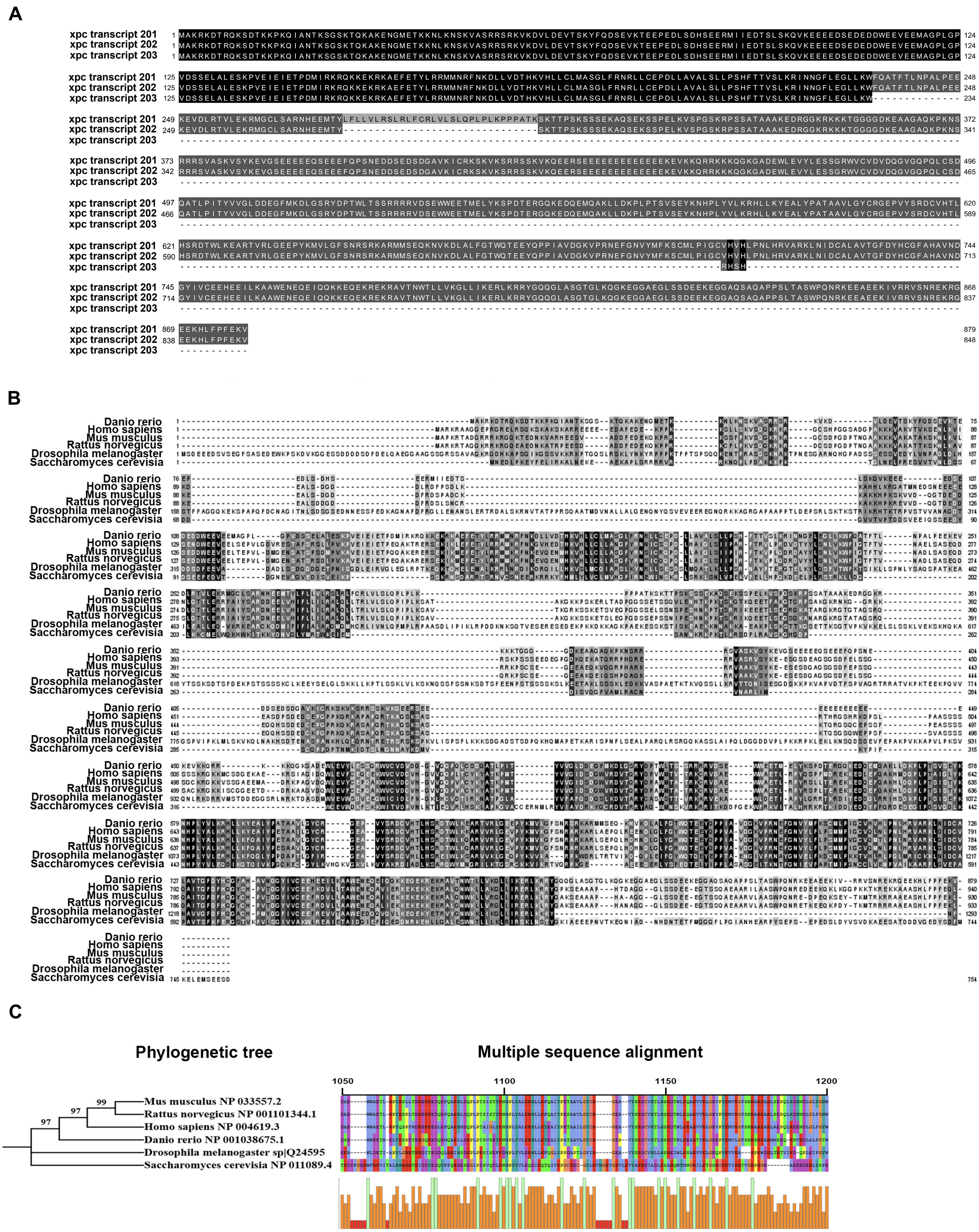

Figure S1. (A) Alignment of mRNA sequences of three xpc transcripts: 201,202 and 203. (B) Amino acid sequence alignment of Xpc proteins between zebrafish (Danio rerio NP 001038675.1) and its orthologs in human (Homo sapiens NP 004619.3), mouse (Mus musculus NP 033557.2), rat (Rattus norvegicus NP 001101344.1), fruit fly (Drosophila melanogaster sp/Q24595) and yeast (Saccharomyces cerevisia NP 011089.4). (C) Phylogenic analysis of Xpc paralogues in 6 model organisms.
Left panel: Maximum-likelihood phylogenetic tree (1000 replicates; ≥70 bootstrap shown as unique branch); Right panel： Multiple sequence alignment in the region of the minimal sensor domain involved in DNA damage recognition.

Supplement Figure 1

Figure S2. Transcriptome analysis reveals that p53 signaling pathway is the top upregulated pathway in both UV treated WT and UV treated *xpc*$^{-/-}$ embryos compared to corresponding untreated controls. (A,B) Volcano plots showing the DEGs of WT_CK verse WT_UV and *xpc*$^{-/-}$_CK verse *xpc*$^{-/-}$_UV. (C) Venn diagram showing the distribution of DEGs among two comparisons: WT_CK verse WT_UV, *xpc*$^{-/-}$_CK verse *xpc*$^{-/-}$_UV. (D,E) KEGG pathway analysis of DEGs in the comparisons of WT_CK verse WT_UV and *xpc*$^{-/-}$_CK verse *xpc*$^{-/-}$_UV.

Supplement Figure 2

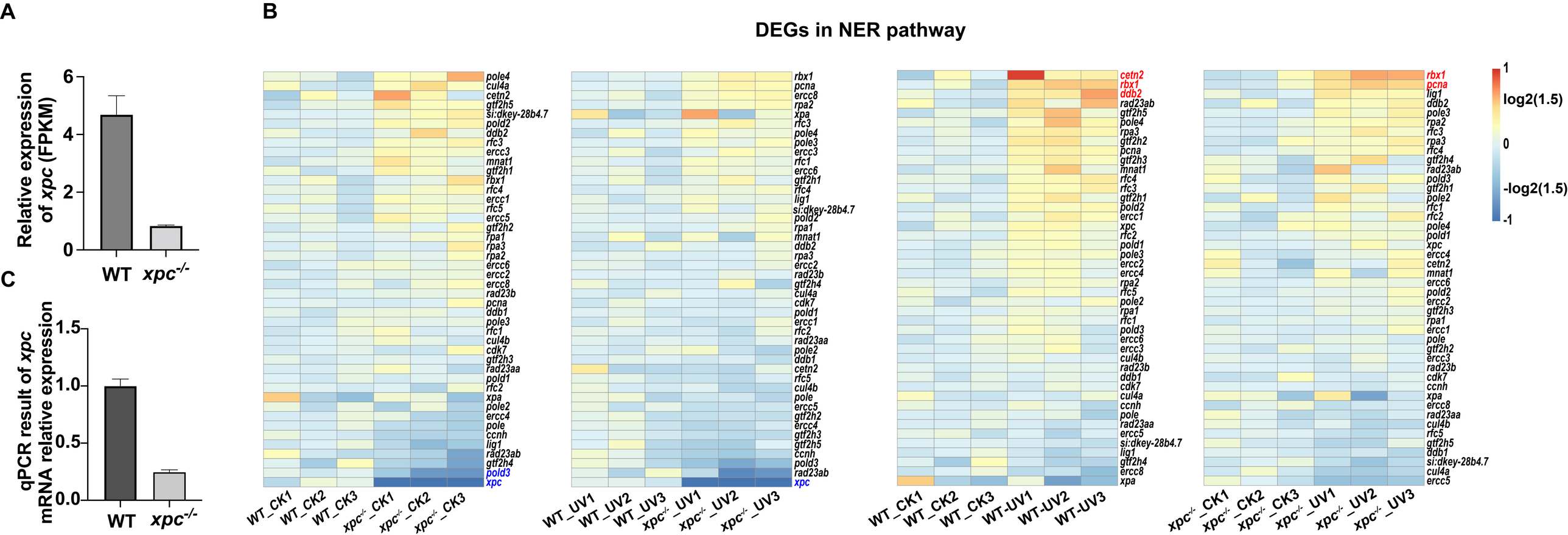

Figure S3. The influence of UV irradiation and *xpc* knockout on the expression of genes involved in NER pathway. (A) Relative expression level of *xpc* in untreated WT and untreated *xpc*$^{-/-}$ mutant embryos. (B) Heatmaps showing the expression changes of 44 NER pathway genes in four comparisons: between WT_CK and *xpc*$^{-/-}$_CK, between WT_UV and *xpc*$^{-/-}$_UV, between WT_CK and WT_ UV, between *xpc*$^{-/-}$_ CK vs. *xpc*$^{-/-}$_UV. Gene names in blue: (log2 ≤ –0.58, P < 0.05); Gene names in red: (log2 ≥ 0.58, P < 0.05).(C) Validation of *xpc* expressionin by qRT-PCR.

Supplement Figure 3

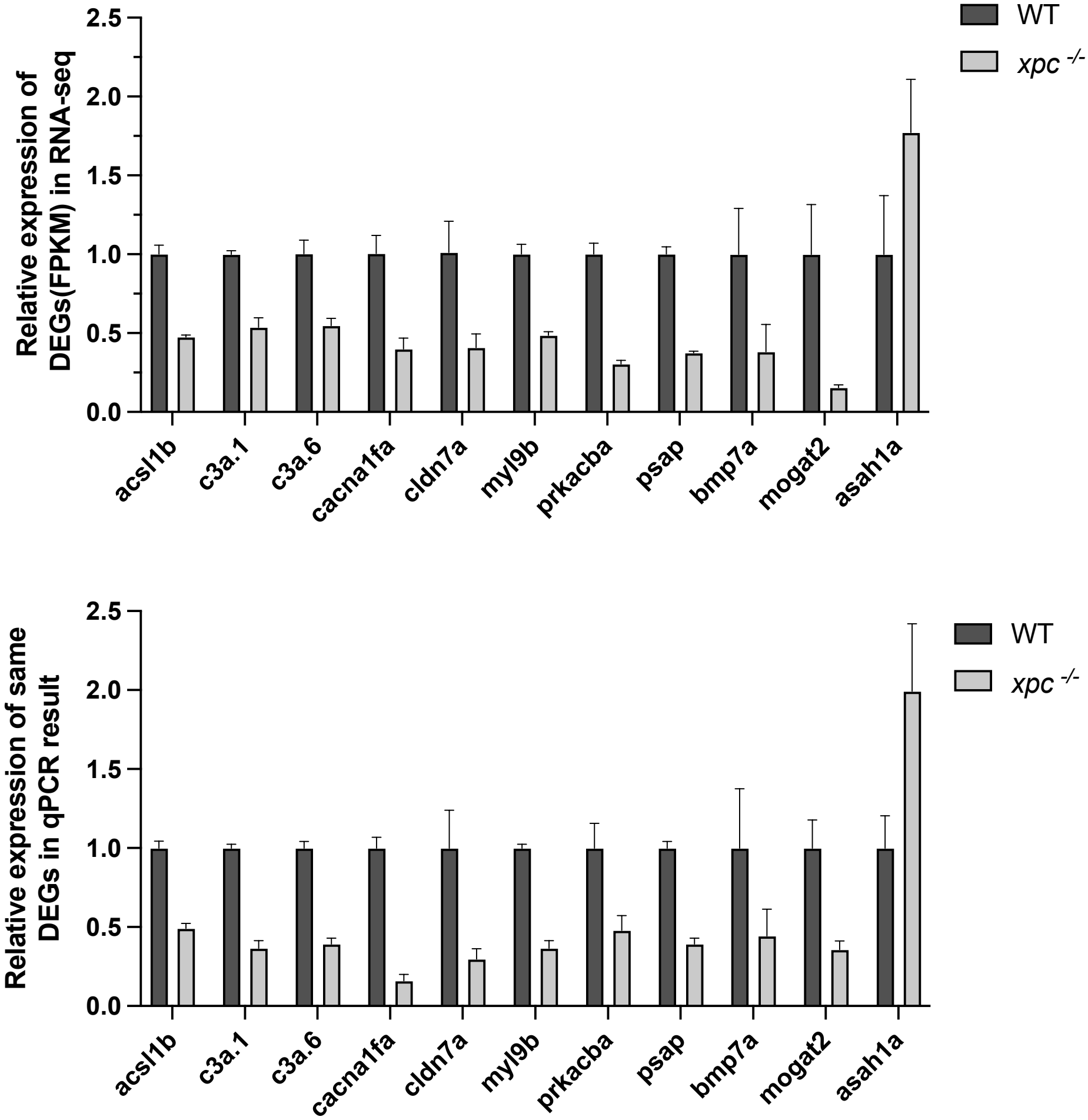

Figure S4. Validation of DEGs in RNA-seq between WT and *xpc*$^{-/-}$ mutant embryos by qRT-PCR. To evaluate the quality of RNA-seq data, 11 genes were randomly selected from the DEGs between WT and *xpc*$^{-/-}$ mutant embryos. The relative expression of 11 DEGs (FPKM) from RNA-seq was presented in A. The results of qRT-PCR for the 11 genes were present.

Supplement Figure 4

Supplement Table S1. List of the 379 DEGs in WT vs. *xpc*$^{-/-}$ of RNAseq.
(Genes in red have been reported to be differentially expressed in cancer tissues)

Down regulated DEGs				Up regulated DEGs	
GeneSymbol	GeneSymbol	GeneSymbol	GeneSymbol	GeneSymbol	GeneSymbol
a1cf	si:ch73-196l6.5	myl9b	znf1090	fancl	si:ch211-161h7.8
ppm1f	dnah9l	tmem30c	si:dkey-228a15.1	pycr3	znf1065
hnf1a	dennd10	myh11a	col18a1b	pon1	tmem138
hsc70	fhod3a	cacna1fa	BX005461.1	thy1	znf1066
cideb	si:dkey-172m14.2	si:ch211-288d18.1	si:dkey-22h13.3	gngt1	si:dkey-90l23.1
c3a.1	trpc6b	adal	BX322618.1	anxa4	znf1137
lin7a	si:ch211-195h23.3	ctss2.2	si:dkey-61p9.11	st8sia5	fthl31
psap	tsen15	pdlim3b	CR391963.1	s100s	BX649490.2
abcc2	zgc:162608	iqch	CU062633.1	pm20d1.1	ftr92
gad2	zgc:114181	rdh1	opn1mw1	efcab11	si:dkey-54j5.2
slc27a4	hce2l2	bmp7a	CR753876.1	tmem244	AL928650.3
rsph14	pcgf5a	mapre3a	si:dkey-4c15.16	amd1	im:7152348
msrb2	si:dkey-253d23.2	fbp1b	CR848844.1	OTUD7A	si:dkey-33c14.7
mogat2	znf1085	zgc:153921	BX548024.2	tapbpl	si:dkey-188h10.3
plg	si:ch211-23l10.3	zgc:92040	si:dkey-146c18.5	acyp1	CT573392.1
ap5m1	zgc:174698	cyp2p9	znf998	chst6	si:ch1073-190k2.1
etnppl	si:dkey-258f14.3	golt1ba	spef2	opa3	si:dkeyp-86c4.1
med28	si:dkey-247i3.1	noxred1	si:dkey-14o6.4	prss12	si:dkey-237m9.1
ddit4	zgc:195170	stxbp6l	CABZ01044277.1	GRB14	CU280645.1
c4b	CR385050.1	ldlra	znf1156	mos	CU633479.1
havcr1	tmem260	kidins220a	si:dkey-238i5.3	tnfrsf1b	zgc:153293
gpx3	zgc:174310	thnsl2	znf1040	ifi35	znf1070
c3a.6	zgc:171686	fkbp1ab	CABZ01034698.1	dok2	CT737123.1
trmu	zgc:173726	zgc:173443	znf1087	gcga	znf1109
tagln	si:ch73-27e22.3	CABZ01090041.1	znf1122	phlda1	BX088718.2
slc47a1	si:dkey-184p18.2	drll.2	zgc:174275	spink2.1	ARHGAP44
dnajb5	CR626907.1	si:dkeyp-92c9.2	si:dkey-16p6.1	cib1	CR450832.1
lpcat2	drl	lcp2b	BX321870.2	e2f1	si:dkeyp-44b5.5
adhfe1	si:dkeyp-75b4.10	cldn7a	si:ch211-256e16.11	pyroxd1	znf1053
gde1	prss59.1	s100a10a	znf1097	napga	znf1102
steap4	slc47a4	lgals2b	CABZ01117503.1	si:ch211-59h6.1	wu:fc30c06
enpep	si:ch211-149l1.2	zgc:153921	si:dkey-16b10.1	cdh7b	BX649453.1
serping1	cyp2x6	chmp5a	zgc:113363	cyb561a3b	si:dkey-35h6.1
slc39a1	si:dkey-253d23.4	lrp2bp	si:dkey-201g16.1	sgsm1a	rhbdl3
oct-2	tas2r200.1	TMEM120A	si:ch211-215p11.3	cthl	si:ch1073-365p7.2
iqgap2	si:dkey-71b5.7	vmo1b	si:dkey-16p6.1	mcm6l	si:ch211-285c6.6
pomt1	AL953841.1	si:ch211-244b2.4	znf1016	gbgt1l3	zgc:174357
EVA1A	BX511268.1	acanb	dydc2	asah1a	znf1091
ccka	irgq1	si:ch211-283g2.1	znf1133	mtmr7a	CT737127.1
itgb1a	znf977	tnni1b	FO704822.1	ggact.2	znf1121
vwa5a	si:ch1073-164k15.3	plekhh1	AL645691.1	fzd8b	CR769778.1
loxhd1b	vwa3a	tent5ab	si:dkey-26i24.1	zgc:101562	BX572103.1
smim1	mmd2a	zgc:136870	FP074874.1	ca15b	BX088712.5
ccser1	znf1064	CU657980.1	si:ch211-106f21.1	C18H3orf33	AL928650.4
ikbip	hbae1.3	itih3a	pcdh1g22	zmp:0000000634	si:dkey-29p23.1
nrip2	znf1000	si:ch211-256m1.8	dnaaf2	ftr14	si:ch73-27e22.8
gfra3	znf1089	si:ch211-212k18.7	il17ra1b	myl2b	si:ch211-133h13.1
STRADB	CR626886.1	si:ch211-201h21.5	znf993	ism2b	
cobll1a	si:dkeyp-73b11.8	si:ch211-274f20.2	si:dkey-56m15.5	mustn1a	
dio2	si:dkey-16p6.1	si:dkey-19a16.2	si:dkey-246j6.3	prss60.2	
pnpla3	si:zfos-364h11.2	BX323861.3	CT978957.2	cdh10a	
MCOLN3	znf1020	si:ch211-212k5.1	pcyt1bb	si:ch73-213k20.5	
gata6	si:dkey-20i20.9	si:ch211-223a21.6	CR381540.3	ttc29	
fancm	AL935153.1	BX927193.2	BX950868.2	si:ch73-14h1.2	
il6r	cenpv	znf1116	grem1b	zgc:154006	
adgrg1	vtg7	CABZ01021599.1	leap2	coq7	
tmem17	znf1151	LO018029.2	si:ch211-238e22.8	CABZ01083448.1	
prkacba	si:ch211-234c11.2	znf974	znf1131	ggact.3	
myhb	si:ch211-139g16.8	mmp13a	zgc:112146	mhc1uba	
acsl1b	proca	BX324142.1	BX324216.2	si:ch211-81n22.1	
nxnl2	si:dkey-56m15.6	znf1026	zgc:174944	si:ch211-11p18.6	
faima	CR749748.1	si:dkey-40n15.1	si:dkey-23a13.2	gpr137bb	
klhl42	ms4a17a.9	si:dkey-5i16.5	znf1108	rnf165a	
agpat9l	si:dkey-106c17.2	ms4a17a.17	INSYN2A	si:ch211-226h8.4	
sult1st6	si:dkey-82i20.2	si:ch211-255f4.11	si:ch211-234c11.2	si:ch211-22k7.9	
		CR318673.1	znf1030	AL935044.1	
			zgc:173720	CABZ01077218.1	
			BX324003.2	zgc:173705	

Supplement Table S2. List of primers used for qRT-PCR validation

Primer Names	Sequence (5'-3')
actb1-qPCR-F	GAGCAGGAGATGGGAACC
actb1-qPCR-R	CAACGGAAACGCTCATTGC
xpc-qPCR-F	GCGGCGAATGATGAATCGCTTT
xpc-qPCR-R	ATGACAAGGCCACAGCCAACAG
acsl1b-qPCR-R	TCCTTCTCCGTTAGCAGCGTA
c3a.1-qPCR-F	GGCTGGGCAGTCAGCATTAT
c3a.1-qPCR-R	CTTCCTTCTACAGCCAGCTCAA
c3a.6-qPCR-F	ACATGCGTTTGTGGTGTTTGG
c3a.6-qPCR-R	AGTATGGTCTGCTTGGTCAGC
cacna1fa-qPCR-F	AGAGAAGGCAGTGTGTCGC
cacna1fa-qPCR-R	TTCATCATCTTTTTCTTGGCCACC
cldn7a-qPCR-F	AGCAACCCGAGCTTTGATGA
cldn7a-qPCR-R	TTATGGGCAAACCACGAGCA
myl9b-qPCR-F	ACCAGTCGCAGATCCAGGAG
myl9b-qPCR-R	GCGAAGGCATTTCTGATGACG
*pr*kacba-qPCR-F	TGCTGGACCTCATCTACAGGG
prkacba-qPCR-R	TGGTGCCAGGTATTCTGGTGT
psap-qPCR-F	CATTTCGCAGCAGGTGGTTTC
psap-qPCR-R	CAGAGGCTCGTACTGCTCAATC
bmp7a-qPCR-F	GCTTTGCGAATACAGTGGA
bmp7a-qPCR-R	GAGAAAGGTCAAATCTGAACTCTC
mogat2-qPCR-F	CCATTAGGCTGATAAAGACGG
mogat2-qPCR-R	CCACGAGAATACCATGAGGA
asah1a-qPCR-F	CACTGTAAATCTTGATTTGCCC
asah1a-qPCR-R	ACCATTTCGATCAACTCTGTG