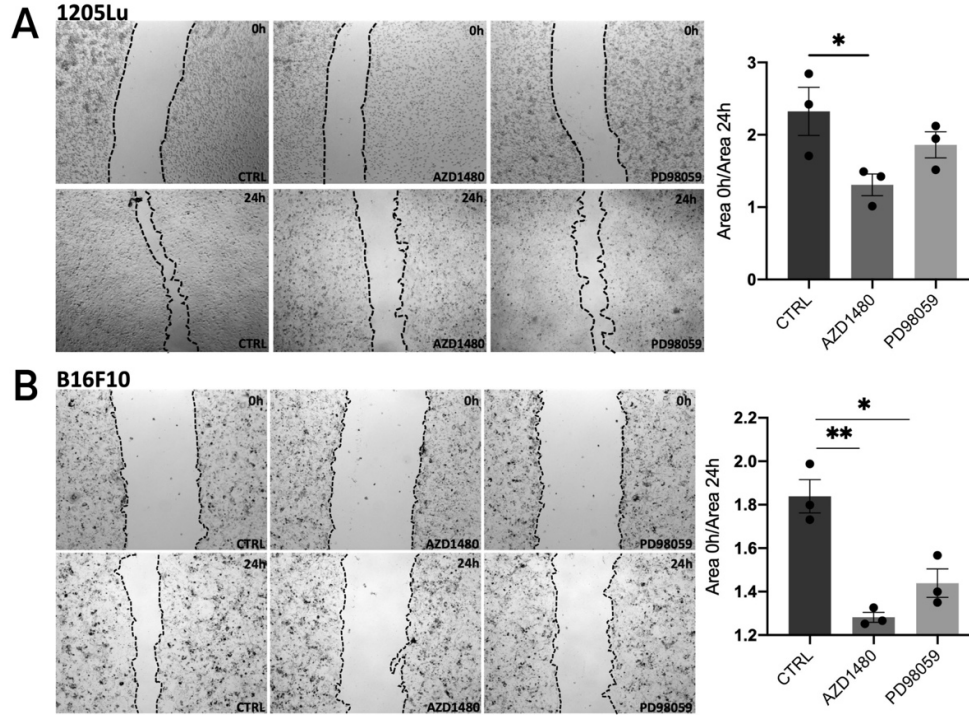


# Supplementary materials

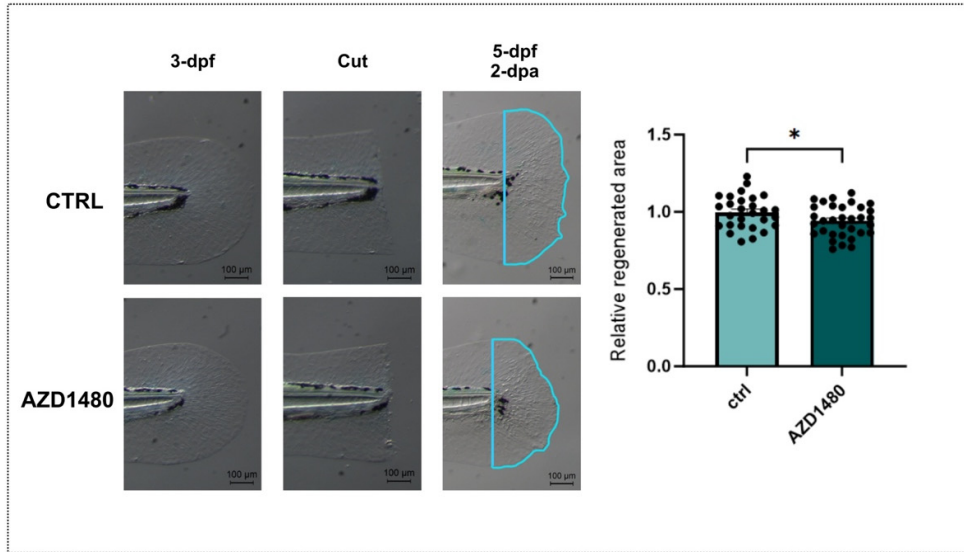
## Supplementary images



**Figure S1. STAT3 inhibition hampers scratch reoccupation in melanoma cell cultures. A** Representative pictures and relative quantification of 1205Lu cells treated with vehicle, 5  $\mu$ M AZD1480 or 12.5  $\mu$ M PD98059 for 24 hours. **B** Representative pictures and relative quantification of B16F10 cells treated with vehicle, 5  $\mu$ M AZD1480 or 12.5  $\mu$ M PD98059 for 24 hours. Mean  $\pm$  SEM. \*  $p < 0.05$ , \*\* $p < 0.01$ .

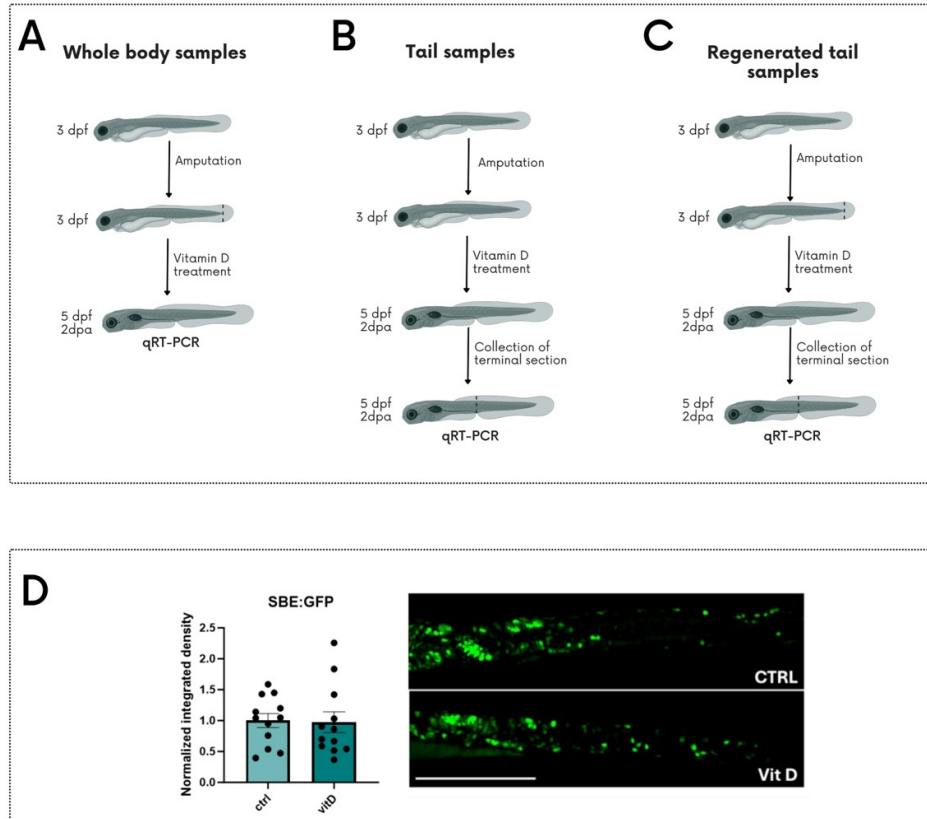
Danio	GNGGRTNSDASLIVTEELHLITFETEVYHQGLKIDLETHSLPVVVISNICQMPNAWASIL	479
Xenopus	GNGGRANCDASLIVTEELHLITFETEVYHQGLKIDLETHSLPVVVISNICQMPNAWASIL	478
Homo	GNGGRANCDASLIVTEELHLITFETEVYHQGLKIDLETHSLPVVVISNICQMPNAWASIL	478
Mus	GNGGRANCDASLIVTEELHLITFETEVYHQGLKIDLETHSLPVVVISNICQMPNAWASIL	478
	*****:*.*****	
Danio	WYNMLTNNPKNVNFFTKPPVGTWDQVAEVLWQFSSTTKRGLTIEQLTTLAEKLLGPCVN	539
Xenopus	WYNMLTNNPKNVNFFTKPPVGTWDQVAEVLWQFSSTTKRGLSIEQLTTLAEKLLGPCVN	538
Homo	WYNMLTNNPKNVNFFTKPPVGTWDQVAEVLWQFSSTTKRGLSIEQLTTLAEKLLGPCVN	538
Mus	WYNMLTNNPKNVNFFTKPPVGTWDQVAEVLWQFSSTTKRGLSIEQLTTLAEKLLGPCVN	538
	*****:*****:*****:*****:*****	
Danio	YSGCQITWAKFCKENMAGKGFVWVLDNIIDLKVKYILALWNEGYIMGFISKERERAIL	599
Xenopus	YSGCQITWAKFCKENMAGKGFVWVLDNIIDLKVKYILALWNEGYIMGFISKERERAIL	598
Homo	YSGCQITWAKFCKENMAGKGFVWVLDNIIDLKVKYILALWNEGYIMGFISKERERAIL	598
Mus	YSGCQITWAKFCKENMAGKGFVWVLDNIIDLKVKYILALWNEGYIMGFISKERERAIL	598
	*****:*****:*****:*****:*****	
Danio	SPKPPGTFLRFSESSKEGGITFTWVEKDINGKTQIQSVEPYTKQQLNMSFAEIIIMGYK	659
Xenopus	STKPPGTFLRFSESSKEGGITFTWVEKDISGKTQIQSVEPYTKQQLNMSFAEIIIMGYK	658
Homo	STKPPGTFLRFSESSKEGGVFTWVEKDISGKTQIQSVEPYTKQQLNMSFAEIIIMGYK	658
Mus	STKPPGTFLRFSESSKEGGVFTWVEKDISGKTQIQSVEPYTKQQLNMSFAEIIIMGYK	658
	* *****:*****:*****:*****:*****	
Danio	IMDATNILVSPLVLYLPDIKKEAFGKYCRPETHPDTEFPDTCVTPQPYLTKTKFICVTPT	719
Xenopus	IMDATNILVSPLVLYLPDIKKEAFGKYCRPESQEHQPTDPG-STAPYLTKTKFICVTPT	717
Homo	IMDATNILVSPLVLYLPDIKKEAFGKYCRPESQEHPE-ADPG-SAAPYLTKTKFICVTPT	716
Mus	IMDATNILVSPLVLYLPDIKKEAFGKYCRPESQEHPE-ADPG-SAAPYLTKTKFICVTPT	716
	*****:*****:*****:*****:*****	
Danio	PSVFMDFPDSSELLGNGFPGTNSGNTSDLFPMSPRTLDSLMLHNEA-----AEANPGPLESL	774
Xenopus	TCS-----STLDLPMSPRTLDSLMLQFP--GEGADSSAGNQFETL	754
Homo	TCS-----NTIDLPMSPRTLDSLMLQFGNNGEGAEPSAGGQFESL	755
Mus	TCS-----NTIDLPMSPRTLDSLMLQFGNNGEGAEPSAGGQFESL	755
	. : *****: : . : **	
Danio	TLDMELSSDHASPMREGFAASTVSDMDTCRNA	806
Xenopus	TFDMELTSECASSPM-----	769
Homo	TFDMELTSECATSPM-----	770
Mus	TFDMDLTSECATSPM-----	770
	*:***:***: **	

**Figure S2. Alignment of *Danio rerio*, *Xenopus laevis*, *Mus musculus* and *Homo sapiens* STAT3 amino acid sequences.** The Y708, S729 and S751 phosphorylation sites are respectively highlighted in blue, orange and green. S729 belongs to a zebrafish-specific domain, whereas zebrafish S751 corresponds to S727 in frog, mouse and human.

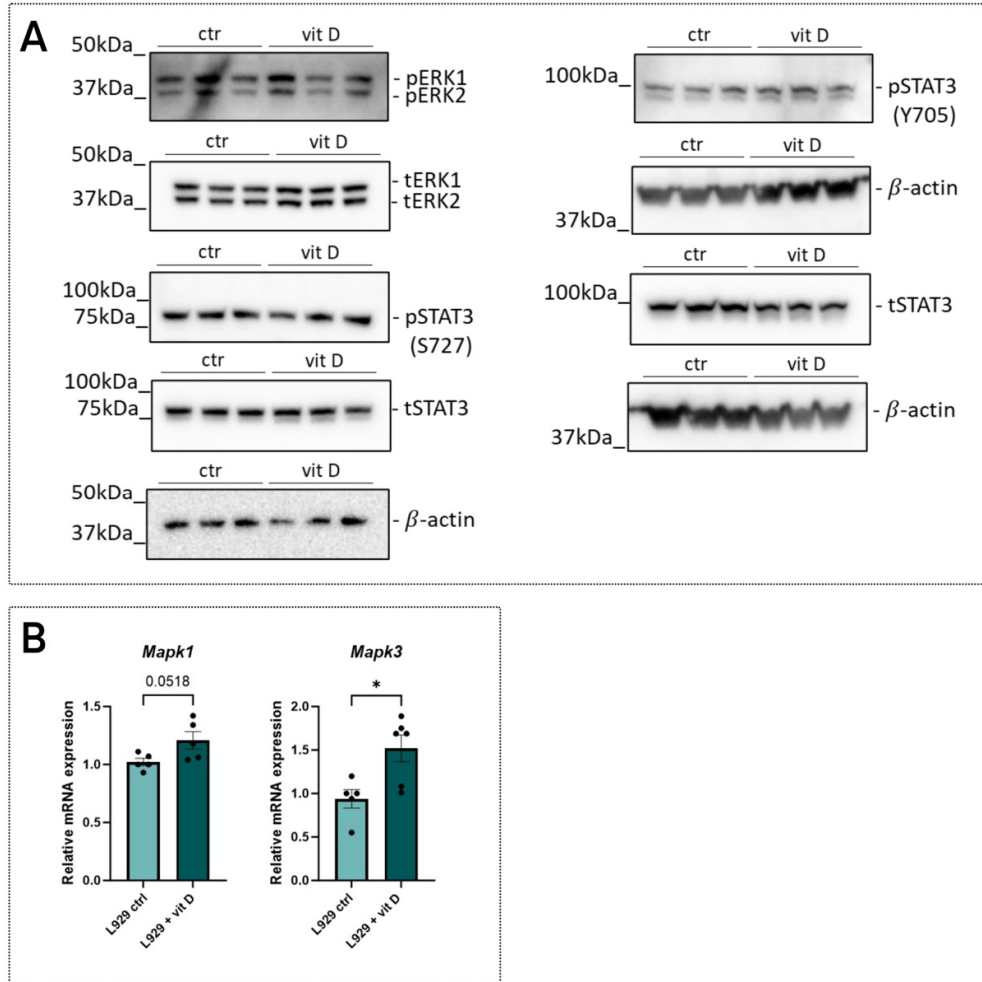


**Figure S3.** Representative pictures and quantification of regenerated area of wild type zebrafish tail fins cut at 3-dpf and treated for 2 days either with vehicle or 0.1  $\mu$ M AZD1480. Mean  $\pm$  SEM. \*  $p < 0.05$ .





**Figure S5. Schematic representation of samples collected for vitamin D effects on zebrafish larvae.** **A Whole body samples:** we cut 3-dpf zebrafish larvae tail fins and we treated them for 2 days with 0.5 nM vitamin D, at the end of the treatment larvae were homogenized to extract RNA. **B Tail samples:** we treated 3-dpf larvae with 0.5 nM vitamin D for 2 days and at the end of the treatment we cut the tail (from the anus to the distal part of tail fin) of each treated larva; we pooled 20 tails for each condition. **C Regenerated tail samples:** we cut 3-dpf zebrafish larvae tail fins and we treated them for 2 days with 0.5 nM vitamin D, at the end of the treatment we cut the tail (from the anus to the distal part of tail fin) of each treated larva; we pooled 20 tails for each condition. **D.** Fluorescence quantification of *Tg(7xStat3-Hsv.UI23:EGFP)<sup>ia28</sup>* intestines of 5-dpf treated with vitamin D for 48h and relative control. Scale bar: 200 μm. Mean ± SEM.



**Figure S6. Western blot images. A** Western blot analysis of ERK 1/2, pERK1/2, STAT3, pSTAT3 (Y705 and S727) protein in L929 cells treated either with vehicle or 200 nM vitamin D for 24 hours. n=3 biological replicates. **B** Expression level of *Mapk1* and *Mapk3* in L929 cells treated either with vehicle or 200 nM vitamin D for 24 hours. Mean  $\pm$  SEM. \*  $p < 0.05$ .

## Supplementary tables

**Table 1. Primers for RT-qPCR**

Gene	Forward	Reverse
<i>z-actb</i>	TGGGTATGGAATCTTGCGGT	GTGGGGCAATGATCTTGATCT
<i>z-stat3</i>	TGCCACCAACATCCTAGTGT	GCTTGTTTGCACCTTTTACTGA
<i>z-socs3a</i>	GGAAGACAAGAGCCGAGACT	GCGATACACACCAAACCCTG
<i>z-vegfa</i>	AAAAGAGTGCGTGCAAGACC	TTTCGTGTCTCTGTCTGGGAC
<i>z-cebpb</i>	CCAAAAGTAACGGGCGACAC	ATCTTCCCTTACCTGACGGC
<i>z-ucmaa</i>	GTTTTCGTGCCAGCATCTG	GTGTTCTGCTCTGTTCTCT
<i>z-cyp26b1</i>	GCTGTCAACCAGAACATTCCC	GGTCTGATTGGAGTCGAGGC
<i>z-sp7</i>	AACCCAAGCCCGTCCCGACA	CCGTACACCTCCCGCAGCC
<i>z-mpx</i>	AGGTGTTGCTGAGCCTTTTG	ACCACAACCTATCGCCATCT
<i>z-il4</i>	GCAGGAATGGCTTTGAAGGG	TCCTTCATTGTGCATTCCCC
<i>z-il21</i>	AGTGCAAATCATGTGAAGCGT	GACTCTTCAGGTCTCTACGCT
<i>z-cyp24a1</i>	GCCTGTTGAGCTCCACAAAA	CTGCAGGTTCTTGTCGATGT
<i>z-vdrb</i>	AGACTCAAGCGTTGCCTAGA	GCCTCCTCATCCTTCTTCT
<i>z-vdra</i>	GGACCAGACTTCAAATACTGCA	TCAGCTTCTTCAGACCAACCT
<i>z-rarga</i>	ATTCCGCCAGAGAGCTATGA	TAGGCCCAGGTCTAGCTGAA
<i>z-mt-nd2</i>	GCAGTAGAAGCCACCACAAA	GCTAGACCGATTTTGAGAGCC

<i>m-Actb</i>	CTAAGGCCAACCGTGAAAAG	ACCAGAGGGCATAACAGGGACA
<i>m-Stat3</i>	TGTTGGAGCAGCATCTTCAG	GAGGTTCTCCACCACCTTCA
<i>m-Socs3a</i>	ATTCGCTTCGGGACTAGC	AACTTGCTGTGGGTGACCAT
<i>m-Mapk1</i>	CGCTACACCAACCTCTCGTA	AGGTCTGGTGCTCAAAGGA
<i>m-Mapk3</i>	ATAGGCATCCGAGACATCCT	ATGTGGTCATTGCTCAGCTG

**Table 2. Primers for genotyping PCR**

Locus	Forward	Reverse
<i>stat3 ex14</i>	GGCCTCTCTGATAGTGACCG	AGTTGTGCTTAGACGCGATC
<i>stat3 ex23</i>	GCGATTTGTTCCCAATGTCG (FW WT) GCGATTTGTTCCCAATGgca (FW AA)	CGTCATGACTCACCGAGAGG
<i>stat3 ex22</i>	TCATGGACTTCCCGACAGT (FW WT) TCATGGACTTtCCCGACgcg (FW AA)	CCCCCTCATGGACAAAAGAAC

**Table 3. Sequences of gRNA used to generate *stat3* KI lines**

Locus	Forward
<i>stat3 ex23</i>	AUGAGAGAGUCGAGCGUGCG
<i>stat3 ex22</i>	AGUGAGCUGCUUGGGAA