Supplementary Materials for

MITF regulates IDH1, NNT, and a transcriptional program protecting melanoma from reactive oxygen species

Authors

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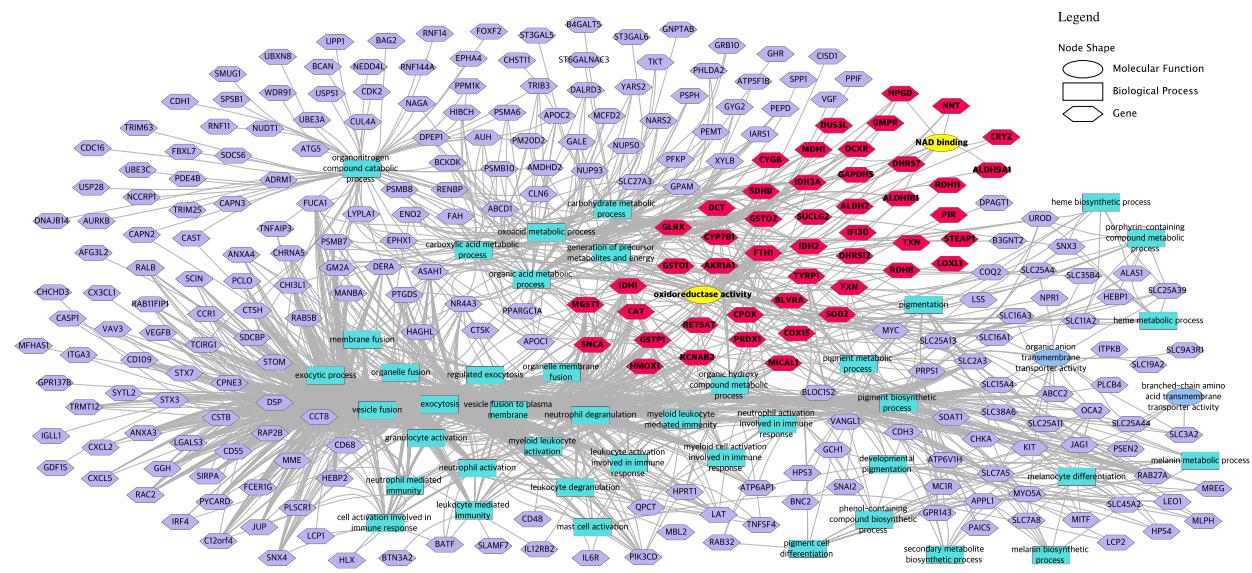
Other Supplementary Material for this manuscript includes the following:
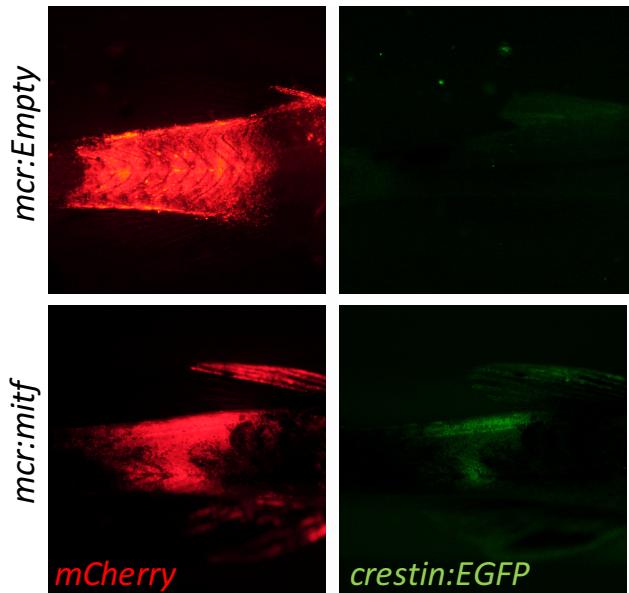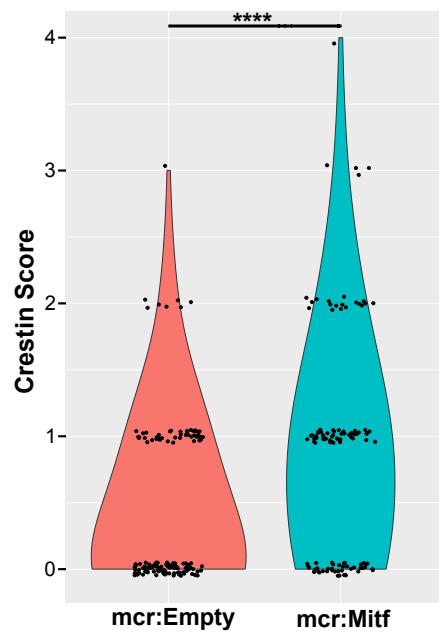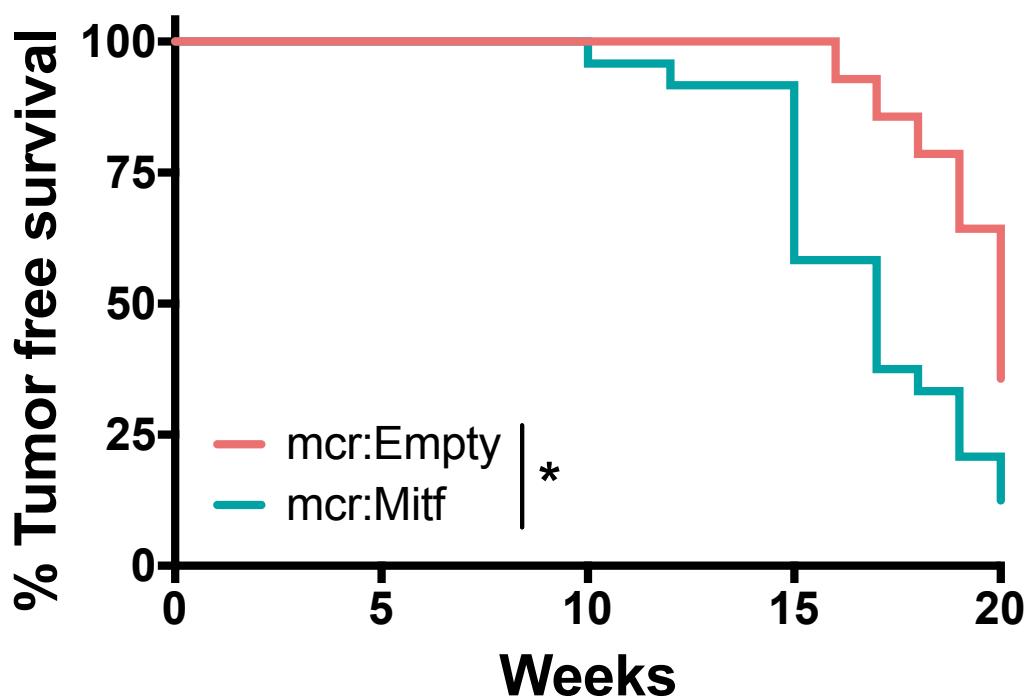
Table S1. Supplementary Table 1. Gene sets enriched in genes downregulated after MITF KD in MALME-3M cells by DAVID. Yellow highlight indicates gene sets associated with ROS that were used to define MITF-driven redox program score in Table S3.
Table S2. Supplementary Table 2. Gene sets enriched in genes downregulated after MITF KD in MALME-3M cells by DAVID after redundant gene set removal by REVIGO.
Table S3. Supplementary Table 3. Genes and gene sets to define the MITF-driven redox program score based on the genes annotated to redox processes whose expression in MALME-3M cells changes significantly after *MITF* knockdown.
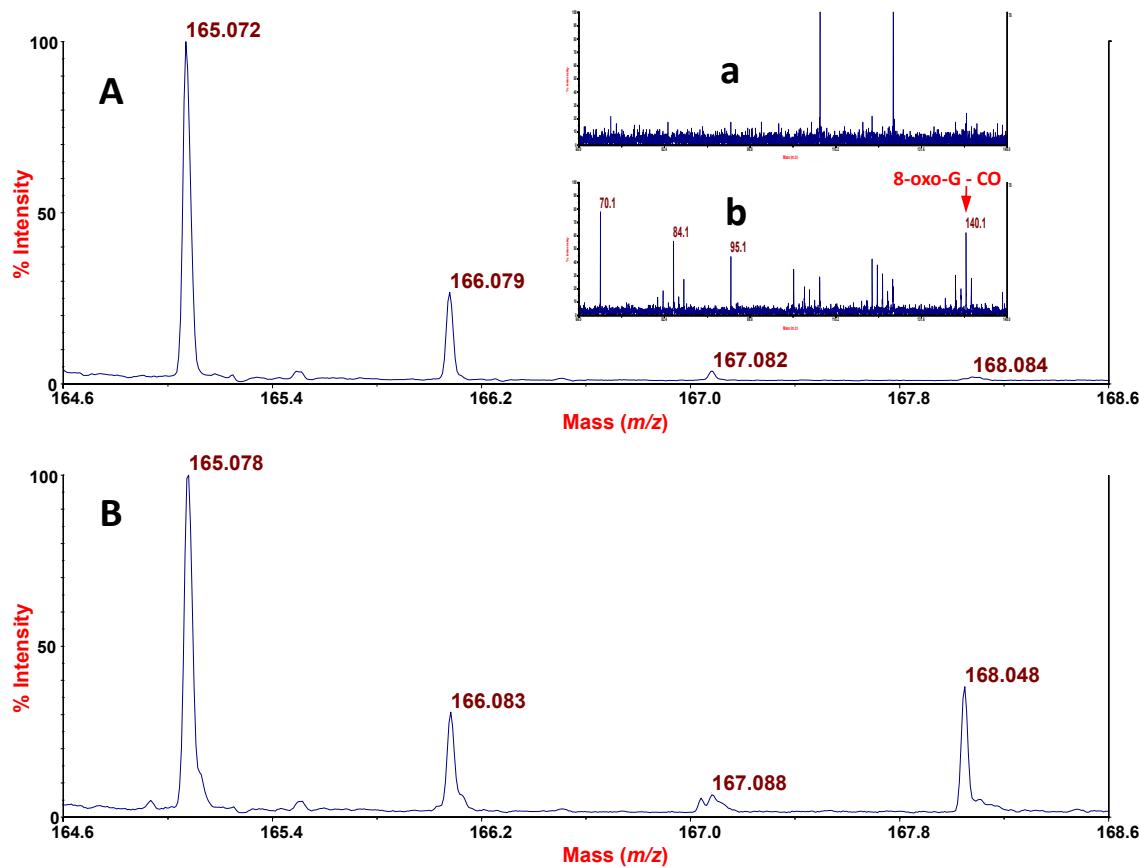
Fig. S1. **MITF regulates genes involved in oxidative-reductive processes in melanoma**. The oxidoreductase activity gene set is enriched in high MITF melanoma cell lines in short-term melanoma cultures. GSEA results were visualized by Cytoscape. Abbreviations: MITF: Microphthalmia-associated transcription factor

A

mcr:Empty

mcr:mitf

mCherry · crestin:EGFP

B

****

Crestin Score

mcr:Empty · mcr:Mitf

C

% Tumor free survival

mcr:Empty
mcr:Mitf
*

Weeks
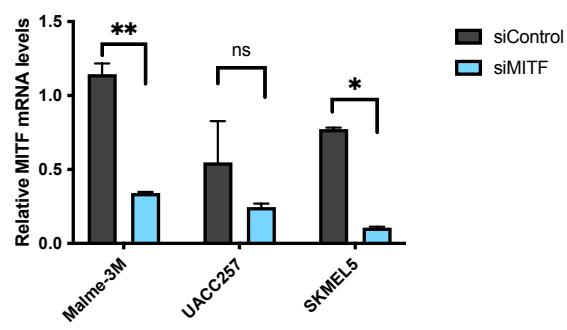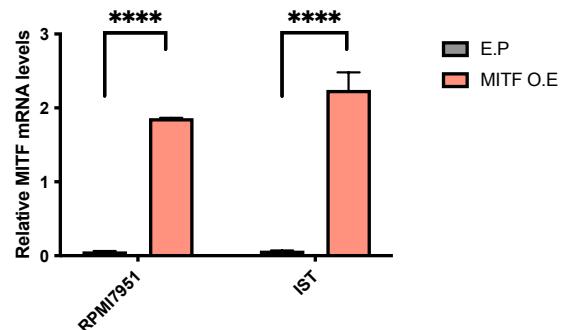
Fig. S2. **Features of zebrafish melanoma model.** Fluorescent images (**A**) and quantitation (**B**) show rescued melanocytes (*mitf:mCherry+* cells) and neural crest reactivation in early melanoma patches (*crestin:EGFP+* cells) in 6-week-old *MITF* overexpressing (*mcr:MITF*) fish compared with control

(*mcr:Empty*) fish (scored on a 0-5 scale, with 5 representing a tumor). (**C**) Kaplan-Meier curve depicting the percent of *mcr:MITF* fish with tumor-free survival compared to control *mcr:Empty* fish. The mcr:Empty vectors was used as the negative control. Abbreviations: MITF: Microphthalmia-associated transcription factor

Fig. S3. **MALDI-TOF mass spectra**. (**A**) CCA matrix; (**B**) DNA from Mitf1, showing a peak for 8-oxo-G at m/z 168.048; a corresponding TOF/TOF spectrum of m/z 168 gave a peak at m/z 140.1 from loss of CO (insets a and b correspond to A and B, respectively). Abbreviations: 8- oxo-G: 8-Dihydro- 8. oxoguanine

***Fig. S4.* Relative MITF mRNA levels after MITF silencing or overexpression. (A)** Comparison of MITF mRNA levels following MITF gene knockdown compared to MITF control. **(B)** Comparison of MITF mRNA levels after MITF gene overexpression compared to MITF control. Non-targeting siRNA (siControl) and an empty plasmid (E.P.) were used as negative controls. All mRNA levels were normalized to RPL11. Values represent the mean ± SEM. *$*p < 0.05$ $**p < 0.01$, $****p < 0.0001$.* Abbreviations: MITF: Microphthalmia-associated transcription factor, E.P.: empty plasmid, O.E.: overexpression