

1 **Electron tomographic analysis reveals ultrastructural features of mitochondrial**
2 **cristae architecture which reflect energetic state and aging**

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11 **Supplementary information**

12 **Figure S1. Serial-section electron tomography of a single mitochondrion**

13 (A) 2D micrographs and (B) 3D tomographic slices of serial sections covering an
14 entire volume of a mitochondrion. (C) The joint serial-section tomograms as viewed
15 from the z-axis. Of note, material losses during tissue sectioning left gaps between
16 jointed tomograms.

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18 **Figure S2. Western-blot analysis of R_{WT} and R_{MIL}**

19 Western-blot analysis of total protein expression of R_{WT} and R_{MIL} at week 1, 4, 7.

20

21 **Figure S3. Global disintegration of mitochondrial cristae in aged WT *Drosophila***

22 (A) Immunofluorescent staining of mitochondria at week 4, 7, 10 and 12 showing
23 larger mitochondria as flies aged. (B) Thin-section EM micrographs of WT IFM at
24 week 10 and 12 showing mitochondrial cristae swelling, vacuolation and
25 disintegration. Scale bar 20 μm (A), 0.5 μm (B).

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27 **Figure S4. Mitochondrial protein content in aged WT *Drosophila***

28 (A) Immuno-EM analysis of ATP synthase, (B) PDHA1 and (C) SOD2 at week 4 and
29 12. (D) Western-blot analysis of total protein expression at week 4, 7, 10. Scale bar
30 0.5 μm .

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32 **Movie S1.** Serial-section electron tomography and segmentation of IFM
33 mitochondrion showing integrated cristae network in 3D

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35 **Movie S2.** Serial-section electron tomography and segmentation of IFM
36 mitochondrion showing bidirectional matrix confluency in 3D

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38 **Movie S3.** Serial-section electron tomography and segmentation of a mitochondrion
39 with swirling membranes showing an onion-like core in 3D

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Fig S1

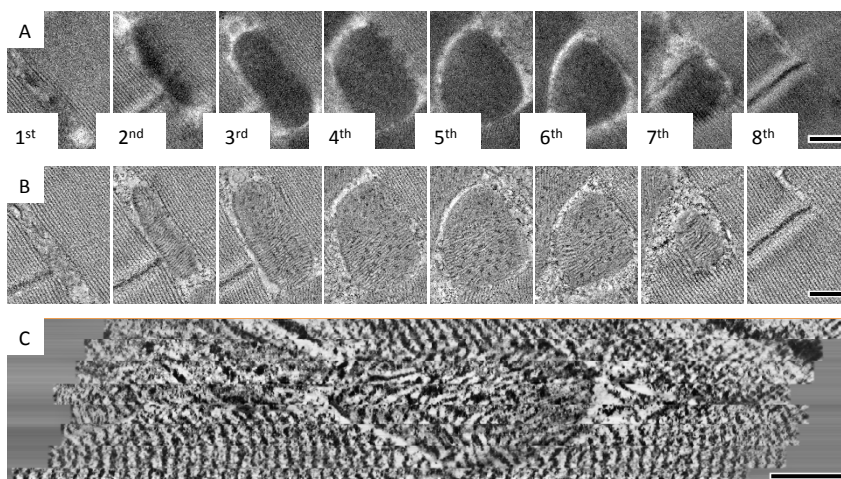


Fig S2

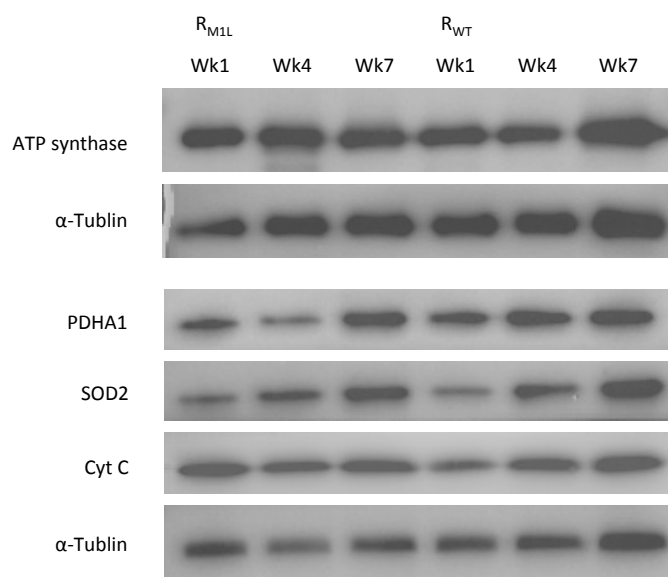


Fig S3

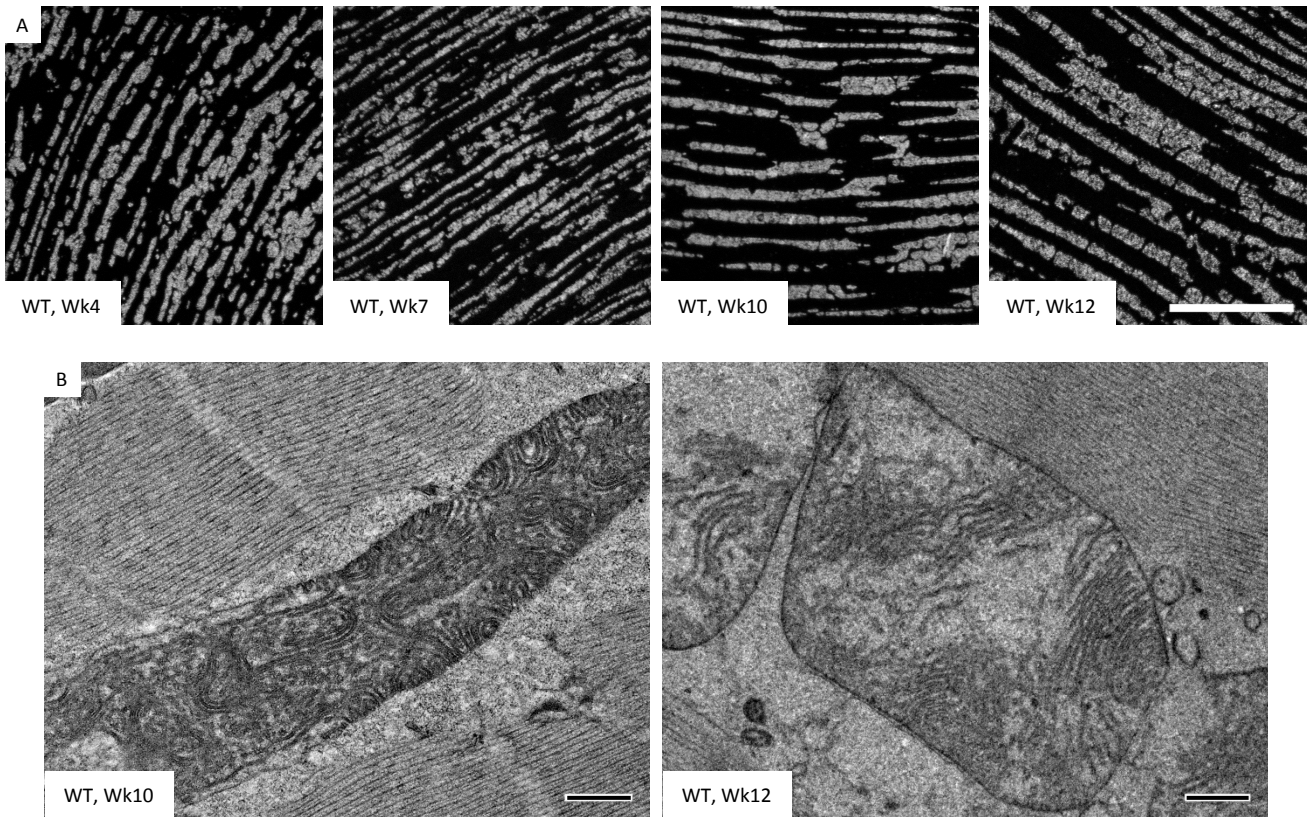


Fig S4

