Dias-Santagata et al. Oxidative stress mediates tau-induced neurodegeneration in Drosophila

SUPPLEMENTAL DATA

Figure Legends

Supplemental Figure S1. Brain vacuolization is present both in the cortex and in the neuropil of tau\textsuperscript{R406W}-expressing flies. Frontal brain sections of 10-day-old flies were stained with H&E. High power magnification photomicrographs highlight regions of vacuolization in the cortex (A, C and E, arrowheads) and in the neuropil (B, D and F, arrows), in tau\textsuperscript{R406W}-expressing flies (A and B), and in tau\textsuperscript{R406W} transgenic animals heterozygous for either the Trxr\textsuperscript{Δ1} (C and D) or the Sod2\textsuperscript{n283} (E and F) null alleles. Partial inactivation of Trxr and Sod2 antioxidant activities enhanced tau-induced neurotoxicity. Scale bar, 10 \(\mu\)m. Genotypes: elav-GAL4/+; UAS-tau\textsuperscript{R406W}/+, elav-GAL4/Trxr\textsuperscript{Δ1}; UAS-tau\textsuperscript{R406W}/+, elav-GAL4/+; Sod2\textsuperscript{n283}/+; UAS-tau\textsuperscript{R406W}/+.

Supplemental Figure S2. Heterozygosity for Sod2\textsuperscript{n283} or for Trxr\textsuperscript{Δ1} is not associated with neurodegeneration. (A and B) Frontal brain sections of 10-day-old flies heterozygous for the Trxr\textsuperscript{Δ1} (A) or for the Sod2\textsuperscript{n283} (B) null alleles were stained with H&E. Scale bar, 20 \(\mu\)m. (C and D) Neurotoxicity in 20-day-old flies was evaluated by quantification of brain vacuolization (C) and TUNEL-positive neurons (D). Expression of
tau\textsuperscript{R406W} in the fly brain resulted in significant neurodegeneration when compared to controls, as assessed by brain vacuolization (p<0.001) (C) and by neuronal cell death (p<0.001) (D). By contrast, neurotoxicity in 20-day-old flies heterozygous for Sod2\textsuperscript{n283} or for Trxr\textsuperscript{∆1} was not significantly different from that of age-matched controls. Genotypes: elav-GAL4/+; elav-GAL4/Trxr\textsuperscript{∆1}, elav-GAL4/+; Sod2\textsuperscript{n283}/+ and elav-GAL4/+; UAS-tau\textsuperscript{R406W}+/+. 
Supplemental Figure S1 (Dias-Santagata et al.)

A - tau^{R406W}  
B - tau^{R406W}  
C - tau^{R406W} + Trx{^A1}  
D - tau^{R406W} + Sod2^{n283}
Supplemental Figure S2 (Dias-Santagata et al.)

A

Trxr\textsuperscript{A1}

B

Sod2\textsuperscript{n283}

C

\begin{center}
\begin{tabular}{c c c c}
& control & Trxr\textsuperscript{A1} & Sod2\textsuperscript{n283} & tau\textsuperscript{R406W} \\
No. of vacuoles & & & & \\
\hline
0 & 5 & 5 & 20 & \\
5 & 10 & 15 & 20 & \\
10 & 15 & 20 & 25 & \\
\end{tabular}
\end{center}

D

\begin{center}
\begin{tabular}{c c c c}
& control & Trxr\textsuperscript{A1} & Sod2\textsuperscript{n283} & tau\textsuperscript{R406W} \\
No. of TUNEL\textsuperscript{+} cells & & & & \\
\hline
0 & 5 & 5 & 15 & \\
5 & 10 & 15 & 20 & \\
10 & 15 & 20 & 25 & \\
\end{tabular}
\end{center}