Supplementary Information Jawhar et al.

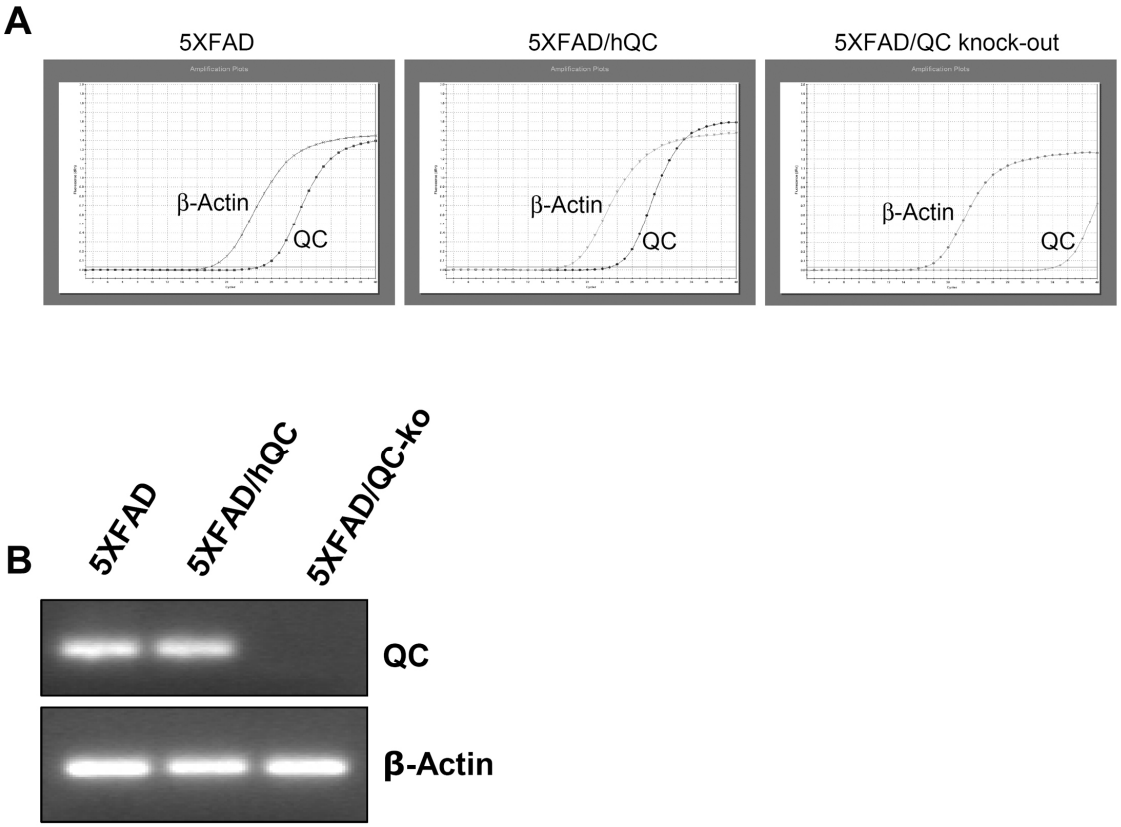
Real time-PCR

For real-time RT-PCR analysis six-month-old female mice were used (5XFAD, 5XFAD/hQC, 5XFAD/QC-ko). Mice were killed by CO_2 asphyxiation, brain hemispheres were carefully dissected, snap frozen in liquid nitrogen and stored at –80 °C until further analysis. Deep frozen brain hemispheres were homogenized in 1 ml of Trizol reagent (Invitrogen) per 100 mg tissue using a glass-teflon homogenizer (10 strokes, 800 rpm). RNA extraction was performed according to the protocol of the manufacturer. DNAse treatment and Reverse transcription of RNA of the purified RNA samples was carried out using QuantiTect Reverse Transcription Kit (Qiagen, Hilden, Germany) according to the protocol of the supplier. RT-PCR was performed using a Stratagene MX3000P Real-Time Cycler. The SYBR-green based DyNAmo Flash SYBR Green qPCR Kit (Finnzymes) containing ROX as an internal reference dye was used for amplification. Primer sets detecting murine QC (mQC) and β-Actin were purchased from Qiagen (QuantiTect Primer Assays: murine QC: Mm_Qpct_3_SG (Amplicon length: 117 bp); murine β-Actin: Actb_1_SG (Amplicon length: 149 bp, Qiagen, Hilden, Germany). The resulting PCR products from the RT-PCR were in addition run on a 2.5% agarose gel.

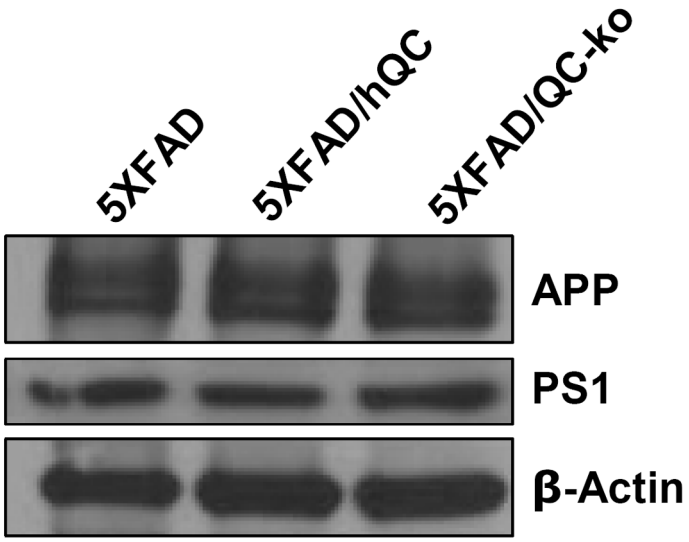
Western Blot

20µg of the brain lysates per lane was loaded on 4-12% sodium dodecylsulfate polyacrylamide gels (Vario-Gel, Anamed, Germany) and run at 150 V for 1 hour. Proteins were transferred to a nitrocellulose membrane for 2 hours at 25 V using wet transfer. After transfer, membrane was blocked in 10% non-fat dry milk in TBS containing 0.05% Tween (TBS-T) for 1 hour. The membrane was then incubated overnight using mouse monoclonal antibody W0-2 (1:5000, Millipore) to detect APP, polyconal antiserum 3109 against PS1 (1:1000, generous gift from Prof. Jochen Walter, Bonn), polyclonal antiserum 5407 against isoQC (1:1000, Probiodrug) and mouse monoclonal antibody detecting β-Actin (β-Actin, 1:5000, Sigma). The bound antibodies were detected by secondary HRP-conjugated antibodies (DAKO) followed by enhanced chemiluminescence.

Supplementary Figure 1: Absence of mQC in the 5XFAD/QC-ko mice. (**A**) RT PCR was used to compare the expression level of murine QC in 5XFAD, 5XFAD/hQC and 5XFAD/QC-ko. No mQC expression could be detected in 5XFAD/QC-ko mice. The very late rise in fluorescence is due to the formation of a primer dimer in the absence of the target sequence. This has been verified by melting curve analysis (not shown), as well as by agarose gel electrophoresis (**B**). RT PCR for the β-Actin was used as a control for the amount and integrity of the cDNA in the samples.



Supplementary Figure 2: QC overexpression and QC knockout did not affect amyloid precursor protein (APP) or presenilin 1 (PS1) levels in 5XFAD mice. Western blot using W0-2 detecting APP and antiserum 3109 detecting PS1 revealed no difference in the expression levels of both proteins among 5XFAD, 5XFAD/hQC and 5XFAD/QC-ko mice. β-actin was used as a loading control.



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Supplementary Figure 3: Unchanged expression levels of isoQC in WT and QC–ko mice. Western blot analysis of isoQC in different brain regions in WT and QC–ko mice. Recombinant murine isoQC (m-isoQC) was used as a positive control.