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**Supplementary Data**

**Ancient dormant virus remnant ERVW-1 drives ferroptosis via degradation of GPX4 and SLC3A2 in schizophrenia**

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**Fig. S1** The level of ERVW-1 in GSE53987.



**Fig. S2** The transfection efficiency of ERVW-1 in SH-SY5Y cells. **A** The mRNA levels of ERVW-1 in ERVW-1 overexpressing SH-SY5Y cells using quantitative polymerase chain reaction (qPCR). **B** Western blot detection of ERVW-1 protein levels in ERVW-1 overexpressing SH-SY5Y cells. \**P* < 0.05; \*\**P* < 0.01; \*\*\**P* <0.001. All experiments were repeated three times. Statistical analysis: one-way ANOVA.



**Fig. S3** ERVW-1 didn’t affect the expression of SLC7A11. **A** The mRNA levels of SLC7A11 in ERVW-1 overexpressing SH-SY5Y cells using quantitative polymerase chain reaction (qPCR). **B** Western blot detection of SLC7A11 protein levels in ERVW-1 overexpressing SH-SY5Y cells. NS*P* > 0.05. All experiments were repeated three times. Statistical analysis: one-way ANOVA.



**Fig. S4** Fer-1 had no significant effect on the expression of GPX4 and SLC3A2 proteins. (**A, B, C**) Fer-1 had no significant effect on the expression of GPX4 and SLC3A2 proteins. \**P* < 0.05; \*\**P* < 0.01; NS*P* > 0.05. All experiments were repeated three times. Statistical analysis: one-way ANOVA.



**Fig. S5** Detection of related-gene expression after co-transfection of pCMV-SLC3A2 and pc3.1-ERVW-1. **A** ERVW-1 mRNA levels of pCMV-SLC3A2 co-transfected with pc3.1-ERVW-1 or control vector in SH-SY5Y cells. **B** ERVW-1 protein levels of pCMV-SLC3A2 co-transfected with pc3.1-ERVW-1 or control vector in SH-SY5Y cells. **C** SLC3A2 mRNA levels of pCMV-SLC3A2 co-transfected with pc3.1-ERVW-1 or control vector in SH-SY5Y cells. **D** SLC3A2 protein levels of pCMV-SLC3A2 co-transfected with pc3.1-ERVW-1 or control vector in SH-SY5Y cells. \**P* < 0.05; \*\**P* < 0.01; \*\*\**P* <0.001; NS*P* > 0.05. All experiments were repeated three times. Statistical analysis: one-way ANOVA.

Supplementary Table S1. Primer sequence for real-time PCR and cloning used in this study

|  |  |  |
| --- | --- | --- |
| Primer name | Primer sequences | Enzyme |
| Primers for real-time PCR: |  |  |
| *ERVW-1* sense:  | 5'-CCAATGCATCAGGTGGGTAAC-3' |  |
| *ERVW-1* antisense: | 5'-GAGGTACCACAGACAAAAAATATTCCT-3' |  |
| *GPX4* sense:  | 5'-TGGACAAGTACCGGGGCTT-3' |  |
| *GPX4* antisense: | 5'-ACTGGTTACACGGGAAGGC-3' |  |
| *SLC3A2* sense:  | 5'-TGAATGAGTTAGAGCCCGAGA-3' |  |
| *SLC3A2* antisense: | 5'-GTCTTCCGCCACCTTGATCTT-3' |  |
| *SLC7A11* sense:  | 5'-TCTCCAAAGGAGGTTACCTGC-3' |  |
| *SLC7A11* antisense: | 5'-AGACTCCCCTCAGTAAAGTGAC-3' |  |
| Primers for cloning |  |
| *GPX4* sense:  | 5'-CGCGGATCCATGAGCCTCGGCCGC-3' | *Bam*HI |
| *GPX4* antisense: | 5'-CCGGAATTCGAAATAGTGGGGCAG-3' | *Eco*RI |
| *SLC3A2* sense:  | 5'-CGCGGATCCATGGAGCTACAGCCCTCCTGAAG-3' | *Bam*HI |
| *SLC3A2* antisense: | 5'-CCGGAATTCGGCCGCGTAGGGGAAGC-3' | *Eco*RI |
| Primers for *SLC3A2* promoter construct: |  |
| (-588/+212) *SLC3A2* sense: | 5’-CGACGCGTGCTATTTTCTGAACAGACGGCTA-3’ | *Mlu*I |
| (-388/+212) *SLC3A2* sense: | 5’-CGACGCGTATCCGCCAGTCGCCCT-3’ | *Mlu*I |
| (-188/+212) *SLC3A2* sense: | 5’-CGACGCGTGCCGCAGAGGCCCAC-3’ | *Mlu*I |
| (+12/+212) *SLC3A2* sense: | 5’-CGACGCGTTGGTTTTCTCACCCAGTGCATG-3’ | *Mlu*I |
| Antisense: | 5’-CCGCTCGAGCGCGGAATCGACACGACG-3’ | *Xho*I |
| Primers for GPX4 promoter construct: |  |
| (-700/+100) GPX4 sense: | 5’-GGGTACCAAAAAAACTGTGTCTCGGA-3’ | KpnI |
| (-500/+100) GPX4 sense: | 5’-GGGTACCTGTTGTCCCAGCTACTCGG-3’ | KpnI |
| (-300/+100) GPX4 sense: | 5’-GGGTACTTAAGTAGTATTCTCAGGTTG-3’ | KpnI |
| (-100/+100) GPX4 sense: | 5’-GGGTACCTGACGTCGGCGCGAGCGCTCA-3’ | KpnI |
| Antisense: | 5’-CCTCGAGCCACAGAGCAGCGCCGGCTTC-3’ | XhoI |