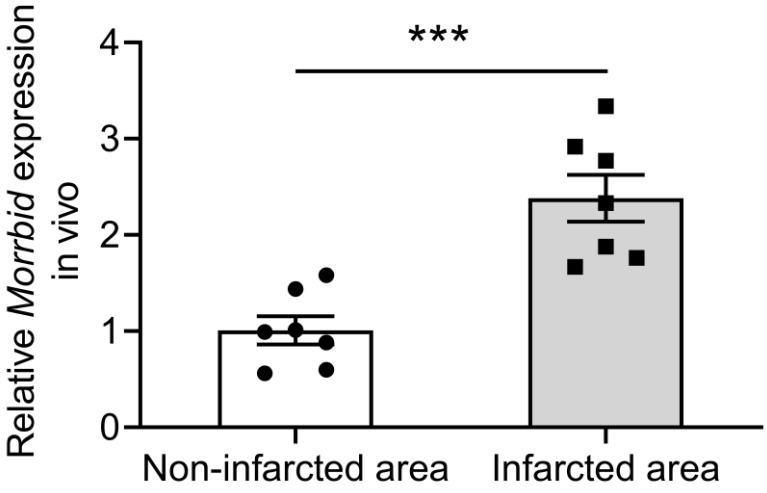
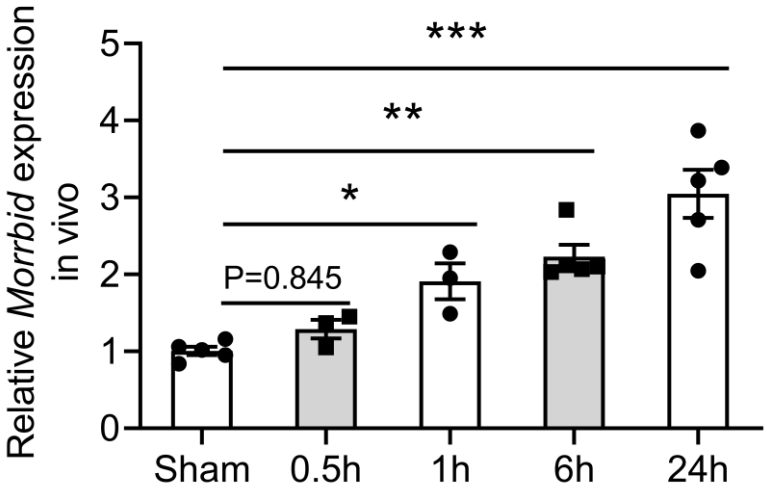
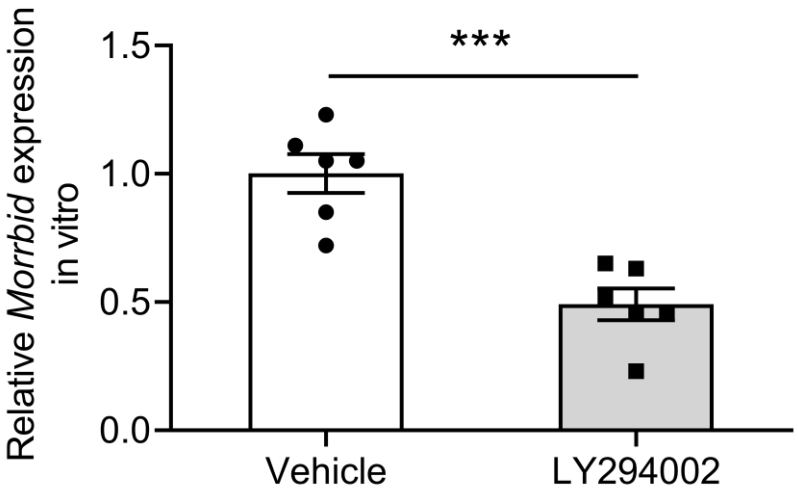
Supplementary Data



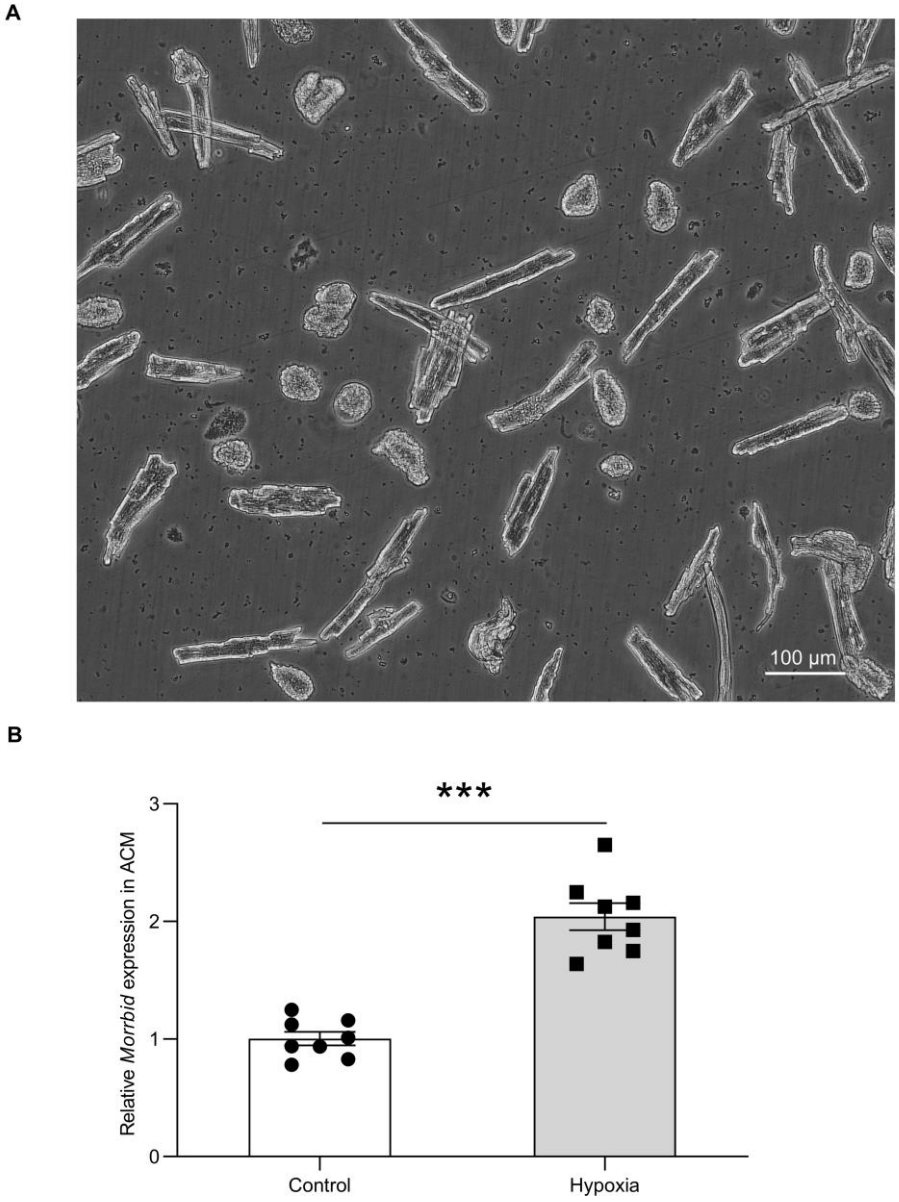
Supplementary Figure 1. The expression of Morrbid in non-infarcted area or infarcted area in mouse hearts at 24h after AMI (*P*<0.001; Non-infarcted area, n=7; Infarcted area, n=7). *** *P*<0.001.



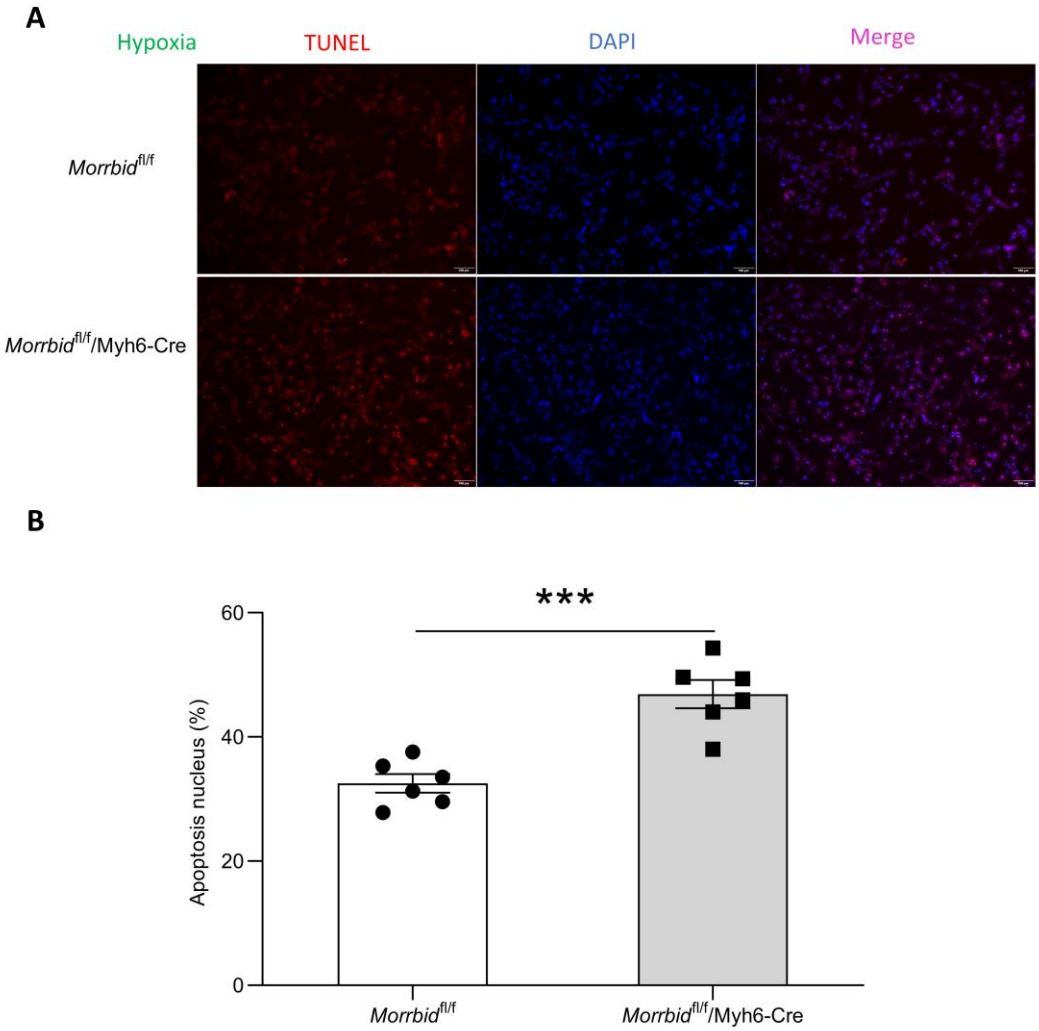
Supplementary Figure 2. The expression of Morrbid in sham-operated mouse hearts, and in mouse hearts at 0.5h, 1h, 6h and 24h after acute myocardial infarction (AMI) ($P_{0.5h}$=0.845; P_{1h}=0.039; P_{6h}=0.0012; P_{24h}<0.001; Sham, n=5; 0.5h, n=3; 1h, n=3, 6h, n=5; AMI, n=5). * P<0.05; ** P<0.01; *** P<0.001.



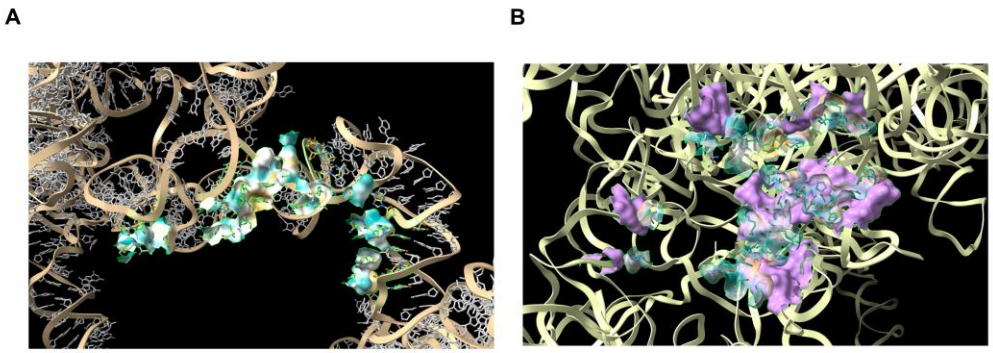
Supplementary Figure 3. The PI3-kinase inhibitor LY294002 inhibits the expression of Morrbid (P<0.001; Vehicle, n=6; LY294002, n=6) in cultured mouse cardiomyocytes. Note: *** P<0.001 by unpaired 2-tailed Student's t tests.



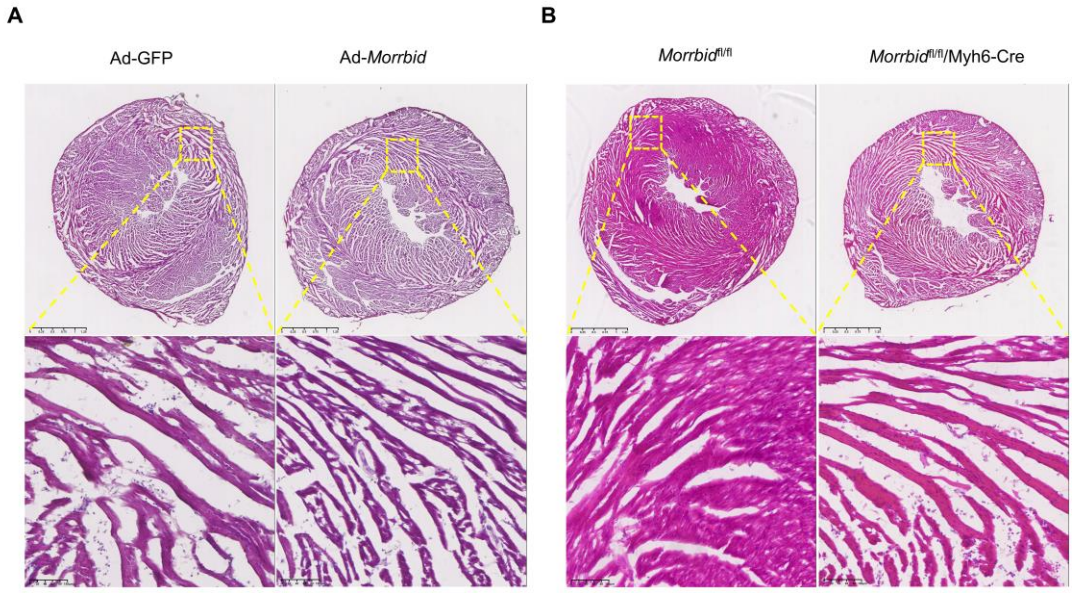
Supplementary Figure 4. (A) Representative photomicrographs from mouse adult cardiomyocytes (ACM). **(B)** The expression of Morrbid in mouse adult cardiomyocytes without hypoxia (Control group) and in mouse adult cardiomyocytes at 24h after hypoxia (P<0.001; Control, n=8; hypoxia, n=8). Note: *** P<0.001 by unpaired 2-tailed Student's t tests.



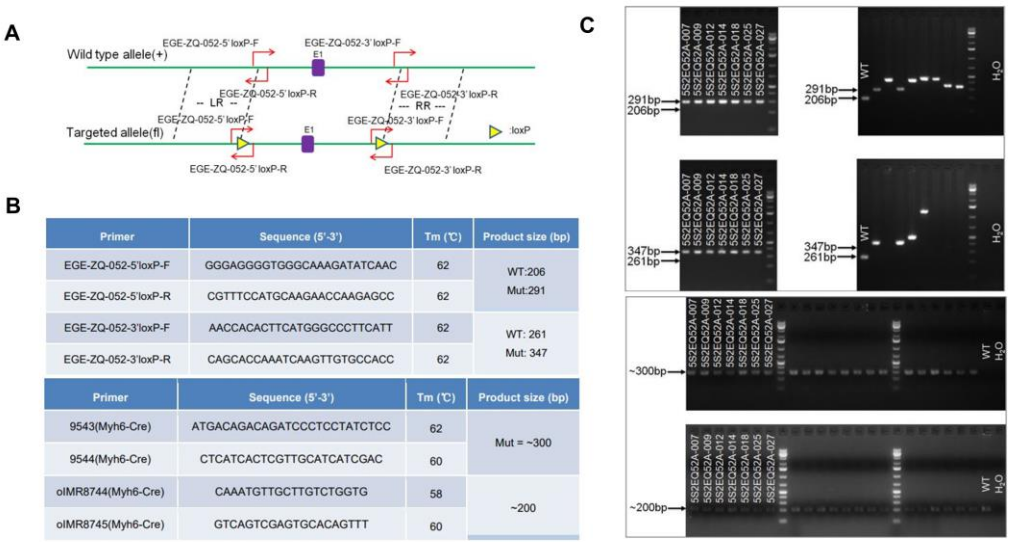
Supplementary Figure 5. Apoptosis is enhanced in adult cardiomyocytes from Morrbid knockout mice. Adult cardiomyocytes were isolated from Morrbid knockout mice (Morrbid$^{fl/fl}$/Myh6-Cre mice) and the control wild-type mice (Morrbid$^{fl/fl}$ mice). Cell apoptosis was induced by hypoxia for 24h in a serum free and low-glucose medium. Cell apoptosis (red color) was determined by TUNEL staining. **(A)** Representative TUNEL-stained photomicrographs of adult cardiomyocytes from Morrbid$^{fl/fl}$/Myh6-Cre mice or Morrbid$^{fl/fl}$ mice. **(B)** Quantitative analysis of the apoptotic nucleus (red color) in adult cardiomyocytes from Morrbid$^{fl/fl}$/Myh6-Cre mice or Morrbid$^{fl/fl}$ mice (P<0.001; Morrbid$^{fl/fl}$, n=6; Morrbid$^{fl/fl}$/Myh6-Cre, n=6). Note: *** P<0.001 by unpaired 2-tailed Student's t tests.



Supplementary Figure 6. (A) The detailed potential binding sites of human Morrbid with human serpine1. **(B)** The detailed potential binding sites of mouse Morrbid with mouse serpine1.



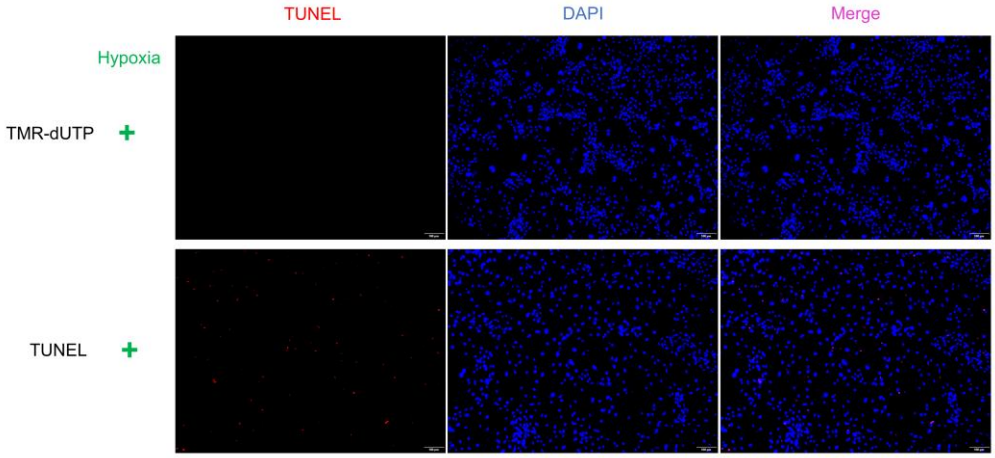
Supplementary Figure 7. Representative HE-stained photomicrographs of cardiac cells in heart sections from *Morrbid*$^{fl/fl}$/Myh6-Cre mice, *Morrbid*$^{fl/fl}$ mice and from wild type mice treated with Ad-GFP or Ad-*Morrbid* at 24 hours after AMI.



Primer	Sequence (5'-3')	Tm (℃)	Product size (bp)
EGE-ZQ-052-5'loxP-F	GGGAGGGGTGGGCAAAGATATCAAC	62	WT:206 Mut:291
EGE-ZQ-052-5'loxP-R	CGTTTCCATGCAAGAACCAAGAGCC	62	
EGE-ZQ-052-3'loxP-F	AACCACACTTCATGGGCCCTTCATT	62	WT: 261 Mut: 347
EGE-ZQ-052-3'loxP-R	CAGCACCAAATCAAGTTGTGCCACC	62	

Primer	Sequence (5'-3')	Tm (℃)	Product size (bp)
9543(Myh6-Cre)	ATGACAGACAGATCCCTCCTATCTCC	62	Mut = ~300
9544(Myh6-Cre)	CTCATCACTCGTTGCATCATCGAC	60	
oIMR8744(Myh6-Cre)	CAAATGTTGCTTGTCTGGTG	58	~200
oIMR8745(Myh6-Cre)	GTCAGTCGAGTGCACAGTTT	60	

Supplementary Figure 8. (A) The targeting construct consisting of 1.3 kb arms of homologous genomic sequence immediately upstream (5') of exon 1 and Intron 1 flanked by two loxP sites. **(B)** Design of primers for *Morrbid*$^{fl/fl}$ wild type Morrbid and Myh6-Cre. **(C)** PCR for verification of the Morrbid knockout.



Supplementary Figure 9. Representative TUNEL-stained photomicrographs from cardiomyocytes treated with TMR-dUTP as negative control staining or normal TUNEL staining. Cultured cardiomyocyte apoptosis was induced by hypoxia for 24h in a serum free and low-glucose medium.

Supplementary Table 1. Primers used in this study

Primer name	Orientation	Primer sequences	Tm (℃)	Size of the amplicon in bp	GenBank Accession numbers
Mouse 18s	Forward	5’-GTTCTTAGTTGGTGGAGCGATTT-3’	59.3	167	BK000964
	Reverse	5’-AGGGCATCACAGACCTGTTATTG-3’	60.6		
Human 18s	Forward	5’-CGGCTACCACATCCAAGGAA-3’	59.8	187	AL353644
	Reverse	5’-GCTGGAATTACCGCGGCT-3’	60.5		
Mouse Serpine1	Forward	5’-TTCAGCCCTTGCTTGCCTC-3’	60.6	116	AC147986
	Reverse	5’-ACACTTTTACTCCGAAGTCGGT-3’	59.6		
Human Serpine1	Forward	5’-GCACCACAGACGCGATCTT-3’	60.7	112	AC004876
	Reverse	5’-ACCTCTGAAAAGTCCACTTGC-3’	58.4		
Mouse *Morrbid*	Forward	5’-TCTGAGAATGAGGGGACTGG-3’	58.1	101	AL844486
	Reverse	5’-TGTGCTGTGAAGATCCCAAG-3’	57.8		
Human *Morrbid*	Forward	5’-ACTGGATGGTCGCTGCTTTT-3’	60.3	102	AC017002
	Reverse	5’-CTTCCCAGGAACTGTGCTGT-3’	59.9		
EGE-ZQ-052-5’loxP	Forward	5’-GGGAGGGGTGGGCAAAGATATCAAC-3’	65.2	Mut:291 WT:206	NC000068
	Reverse	5’-CGTTTCCATGCAAGAACCAAGAGCC-3’	65.0		
EGE-ZQ-052-3’loxP	Forward	5’-AACCACACTTCATGGGCCCTTCATT-3’	65.0	Mut:347 WT:261	NC000068
	Reverse	5’-CAGCACCAAATCAAGTTGTGCCACC-3’	65.4		
9543(Myh6-Cre)	Forward	5’-ATGACAGACAGATCCCTCCTATCTCC-3’	62.7	300	NC000080.7
	Reverse	5’-CTCATCACTCGTTGCATCATCGAC-3’	62.1		
oIMR8744(Myh6-Cre)	Forward	5’-CAAATGTTGCTTGTCTGGTG-3’	55.8	200	NC000080.7
	Reverse	5’-GTCAGTCGAGTGCACAGTTT-3’	58.4		