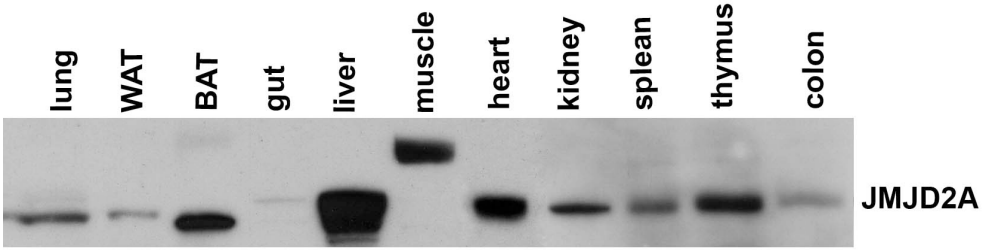
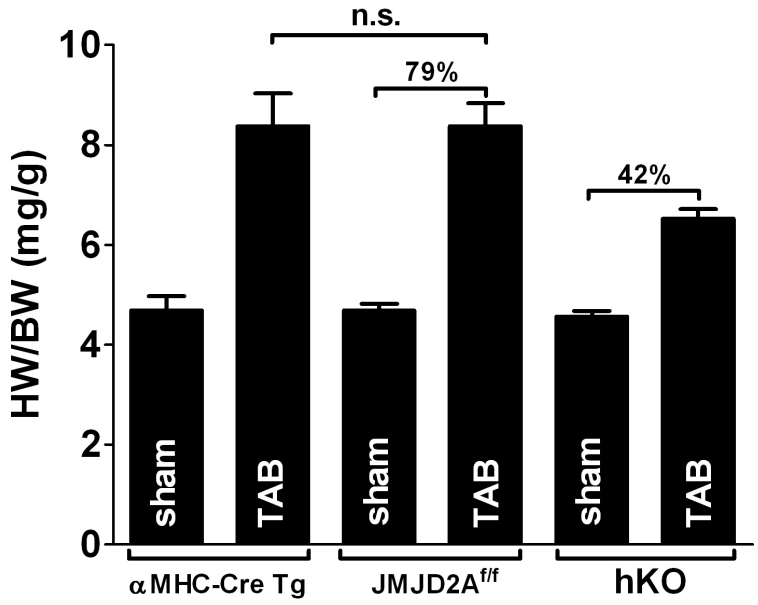
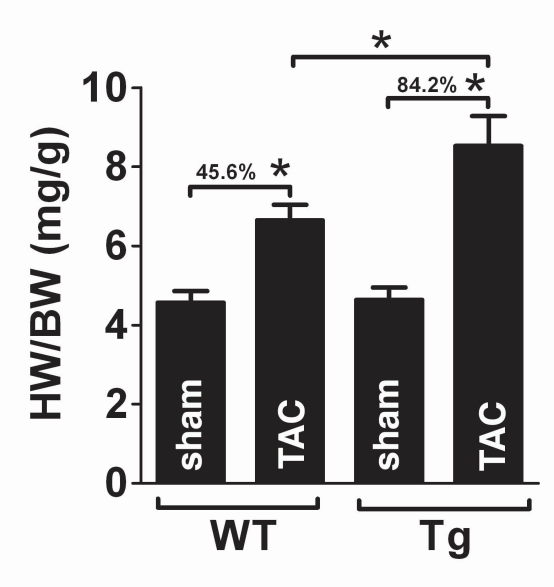


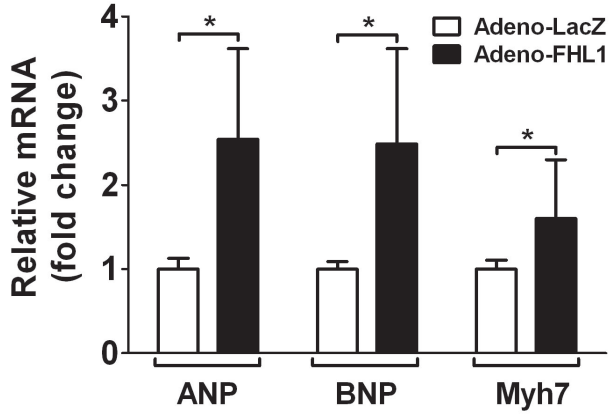

Supplemental Figure 1.
Tissue distribution of JMJD2A in mice. Various tissue homogenates from wild-type mice were subjected to Western blot analysis using anti-JMJD2A antibody. GAPDH was used as loading control. A higher molecular weight band of JMJD2A was detected in the skeletal muscle lysate. It remains to be determined whether this corresponds to the alternative variant form of JMJD2A (NM_172382) that has an extra 100 bp in the 3'-end of the coding sequence of JMDJ2A.




Supplemental Figure 2. Heart weight (HW) to body weight (BW) ratio of JMJD2A$^{+/+}$x αMHC-Cre transgenic (n=4), JMJD2A$^{fl/fl}$, and hKO (n=10-14) mice three weeks after TAC surgery.




Supplemental Figure 3.
JMJD2A promotes hypertrophy in response to pressure overload induced by TAC. Heart weight (HW)-to-body weight (BW) ratio (HW/BW) of wild type (WT) and JMJD2A-Tg line A (Tg) mouse hearts after three weeks of Sham and TAC operation. Values are means + SEM; n=5/group. *, p< 0.05.




Supplemental Figure 4.
FHL1 promotes “fetal gene” expression in neonatal cardiomyocytes. Rat neonatal ventricular cardiomyocytes were transduced with adenoviruses expressing either LacZ or FHL1. 48 hrs after transduction, cells were harvested and relative mRNA of ANP, BNP, and •MHC were quantified with real-time qRT-PCR. The transcripts were normalized to internal GAPDH and expressed relative to those of control LacZ-transduced cells. N=3+SD. *, p<0.05.

atgggactgtgttttggaggattaattaacacatttggcttgtcttaatatattcctcaaacacatagcttttgag
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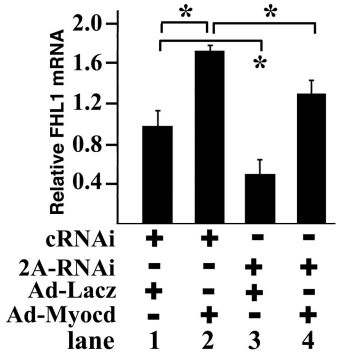
ccttggatca**cctaaaatgg**ttaagaattttctagtgggattaaggttgtgatctcaggggag***gggtgggacatct***
***gctcttgg***ttatttttgtgtgagctgcttccccttaaatgtATGTTCACAAATGAGCCAAAGCGTTATCATCTGGG
G***TTGAGGGAAGACAGGTCTGG***GTGCCGCTCCTGAACTTGGCCTCTGAGCC**ATG**GCTTCTCAAAGACACTCAG

Supplemental Figure 5.
5'-upstream sequence of the FHL1 promoter. A perfect consensus CArG box was highlighted in underline and bold. The primer pair used in the ChIP assay was highlighted in bold, underline, and italic. The translation start codon ATG in the first exon (bold, upper-case letter) was highlighted in bold.




Supplemental Figure 6
Down-regulation of JMJD2A attenuates expression of FHL1 in cardiomyocytes. Neonatal rat ventricular myocytes were transfected with non-specific control siRNA (cRNAi), or JMJD2A specific siRNAs (2A-RNAi). Twenty-four hours after transfection, cells were transduced with adenoviruses expressing •-galactosidase (ad-LacZ) or myocardin (ad-Myocd) at MOI of 50. Relative transcript levels of FHL1 were determined 48 hrs after transduction using qRT-PCR. Myocardin activated transcription of FHL1 and knockdown of JMJD2A attenuated this activation. N=3+SEM. *, $p<0.05$.

**Table 1.**

| Primers/oligos | sequence (5' to 3') |
|---|---|
| Genotyping of knockout mice | p1: GGACTAGGTAGTCATGTTGG |
| | p2: AAGCAACGGAAGCAGAAGTG |
| Genotyping of transgenic mice | p1: AGTGGTGGTGTAGGAAAGT |
| | p2: TCAATGTAGGCAATGTATCT |
| mouse ANP qPCR | p1: CAACACAGATCTGATGGATTTCA |
| | p2: CCTCATCTTCTACCGGCATC |
| mouse BNP qPCR | p1: GTCAGTCGTTTGGGCTGTAAC |
| | p2: AGACCCAGGCAGAGTCAGAA |
| mouse Myh7 qPCR | p1: CGCATCAAGGAGCTCACC |
| | p2: CTGCAGCCGCAGTAGGTT |
| mouse FHL1 qPCR | p1: GGCTTCTCAAAGACACTCAGG |
| | p2: TCGAACTTCTCCGACATGGT |
| mouse FHL2 qPCR | p1: AGAAAACCATCATGCCAGGT |
| | p2: ACAGGTGAAGCAGGTCTCGT |
| mouse GAPDH qPCR | p1: GGCACAGTCAAGGCTGAGAATG |
| | p2: ATGGTGGTGAAGACGCCAGTA |
| rat JMJD2A qPCR | p1: AGCAGGAATCGAGCCTGAG |
| | p2: CTTCCATTCTTTGGGAGGAAC |
| rat FHL1 qPCR | p1: GGCTTCTCAAAGACACTCAGG |
| | p2: GTCGAACTTCTCAGACATGGTG |
| rat ANP qPCR | p1: CACAGATCTGATGGATTTCAAGA |
| | p2: CCTCATCTTCTACCGGCATC |
| rat BNP qPCR | p1: GTCAGTCGCTTGGGCTGT |
| | p2: CAGAGCTGGGGAAAGAAGAG |
| rat Myh7 qPCR | p1: GAGGAGAGGGCGGACATT |
| | p2: ACTCTTCATTCAGGCCCTTG |
| rat GAPDH qPCR | p1: ATCACCATCTTCCAGGAGCGA |
| | p2: AGCCTTCTCCATGGTGGTGAA |
| human BNP qPCR | p1: ACTTGGAAACGTCCGGGTTA |
| | p2: GGCTCCAGGGATGTCTGCT |
| human JMJD2A qPCR | p1: AGAGTTCCGCAAGATAGCCAATA |
| | p2: GAGGGTACCATTCACATCTGCAC |
| mouse FHL1 ChIP | p1: GTGGGACATCTGCTCTTGGT |
| | p2: CCAGACCTGTCTTCCCTCAA |
| mouse GAPDH ChIP | p1: CCAATGTGTCCATCGTGGATCT |
| | p2: GTTGAAGTCGCAGGAGACAACC |
| JMJD2A cloning | p1: AAAAAATCGATGCTTCTGAGTCTGAAACTCTG |
| | p2: AAAAAGCGGCCGCCTACTCCATGATGGCCCGG |
| FHL1 promoter cloning | p1: AAAAAGGTACCATGGGACTGTGTTTTGGAGG |
| | p2: AAAAACTCGAGCCACTCTTGGCTTTAGGCAG |
| FHL1 promoter mutation | p1: TTCTCCCTTGGATCATATAAAATATTTAAGAATTTTCTAG |
| | p2: CTAGAAAATTCTTAAATATTTTATATGATCCAAGGGAGAA |
| Gel shift probes | Sense GGATCACCTAAAATGGTTAAGAA |
| | Antisense GGTTCTTAACCATTTTAGGTGAT |
| Gel shift probes-Mutant | Sense GGATCATATAAAATATTTAAGAA |
| | Antisense GGTTCTTAAATATTTTATATGAT |