### Table S1: The basic information and the related medical records of patients

| Variables                        | TAA 1 | TAA 2 | TAA 3 | TAA 4 | TAA 5 | TAA 6 | TAA 7 | TAA 8 | Control 1 | Control 2 | Control 3 | Control 4 | Control 5 | Control 6 | Control 7 | Control 8 |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Sex                              | M     | M     | M     | M     | F     | M     | F     | M     | M         | M         | M         | M         | M         | M         | M         | M         |
| Age                              | 51    | 42    | 28    | 54    | 43    | 55    | 41    | 45    | 65        | 45        | 47        | 11        | 53        | 45        | 52        | 52        |
| Diagnosis and comments           | TAA with ascending aorta and descending aortic arch | TAA with ascending aorta | TAA with ascending aorta | TAA with ascending aorta | TAA with ascending aorta and aortic arch | TAA with ascending aorta | TAA with ascending aorta | TAA with ascending aorta | Heart transplant recipient | Heart transplant recipient | Heart transplant recipient | Heart transplant recipient | Heart transplant recipient | Heart transplant recipient | Heart transplant recipient |
| Aortic diameter, mm              | 100   | 55    | 97    | 69    | 56    | 58    | 60    | 55    | NA        | NA        | NA        | NA        | NA        | NA        | NA        | NA        |
| Smoking status                   | Yes   | Yes   | No    | No    | No    | Yes   | No    | No    | No        | No        | No        | No        | No        | No        | No        | No        |
| Diabetes mellitus                | No    | No    | No    | No    | Yes   | No    | No    | No    | No        | No        | No        | No        | No        | No        | Yes       | Yes       |
| Hypertension                     | No    | No    | No    | No    | No    | No    | No    | No    | No        | No        | No        | No        | No        | No        | No        | No        |
| Arteriosclerosis                 | No    | No    | No    | No    | Yes   | No    | No    | No    | No        | No        | No        | No        | No        | No        | No        | Carotid plaque |

TAA, thoracic aortic aneurysm.
Table S2 The list of primers

| Name                | Primer sequence (5’-3’)                  |
|---------------------|------------------------------------------|
| U6-S                | CTCGCTTCGGCAGCACA                       |
| U6-A                | AACGCTTACGAAATTGCGT                     |
| Hsa-miR-3198-RT     | CTCAACTGGTGTGAGTGAGTGGCAGATTCAGTTGAGTCTCCATT |
| Hsa-miR-3198-S      | ACACTCCAGCTGGAGTGAGTGGAGGCAA            |
| Hsa-miR-4306-RT     | CTCAACTGGTGTGAGTGAGTGGCAGATTCAGTTGAGTACTGCCCT |
| Hsa-miR-4306-S      | ACACTCCAGCTGGAGTGAGGAGAAAG              |

Figure S1 GO annotation analyses including CC and MF in AA blood (A) and tissue (B) samples. GO, Gene Ontology; CC, cellular components; MF, molecular functions; AA, aortic aneurysm.