**Supplementary Table 1**. The relative quantification of 84 miRNAs in the screening cohort normalized to Global Ct Mean\*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Fold Change (comparing to Normoalbuminuria)** | | | | | |
|  |  | **Microalbuminuria** | | | **Macroalbuminuria** | | |
|  |  | **Fold Change** | **Comment\*\*** | **p value** | **Fold Change** | **Comment** | **p value** |
| 1 | **hsa-let-7d-5p** | 4.47 |  | 0.41 | 3.04 |  | 0.65 |
| 2 | **hsa-miR-1-3p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 3 | **hsa-miR-101-3p** | 2.92 |  | 0.18 | 1.8 |  | 0.27 |
| 4 | **hsa-miR-107** | 0.5 | A | 0.56 | 0.25 | A | 0.93 |
| 5 | **hsa-miR-10a-5p** | 0.66 | A | 0.7 | 1.3 | A | 0.59 |
| 6 | **hsa-miR-10b-5p** | 0.45 |  | 0.97 | 0.96 |  | 1 |
| 7 | **hsa-miR-122-5p** | 3.76 |  | 0.69 | 3.13 |  | 0.8 |
| 8 | **hsa-miR-125b-5p** | 2.18 |  | 0.7 | 1.08 |  | 0.63 |
| 9 | **hsa-miR-126-3p** | 3.06 |  | 0.48 | 2.73 |  | 0.72 |
| 10 | **hsa-miR-129-5p** | 0.31 | C | 0.22 | 0.18 | A | 0.62 |
| 11 | **hsa-miR-132-3p** | 0.52 |  | 0.52 | 1.08 |  | 0.83 |
| 12 | **hsa-miR-133a-3p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 13 | **hsa-miR-141-3p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 14 | **hsa-miR-142-3p** | 5.47 |  | 0 | 2.19 |  | 0.16 |
| 15 | **hsa-miR-143-3p** | 1.79 |  | 0.69 | 1.62 |  | 0.52 |
| 16 | **hsa-miR-145-5p** | 4.12 |  | 0.13 | 1.86 |  | 0.35 |
| 17 | **hsa-miR-146a-5p** | 5.18 |  | 0.4 | 3.21 |  | 0.8 |
| 18 | **hsa-miR-146b-5p** | 0.73 |  | 0.78 | 0.87 |  | 0.82 |
| 19 | **hsa-miR-148a-3p** | 3.9 |  | 0.93 | 4.98 |  | 0.78 |
| 20 | **hsa-miR-150-5p** | 7.36 |  | 0.56 | 7.78 |  | 0.5 |
| 21 | **hsa-miR-155-5p** | 0.31 | C | 0.22 | 0.24 | A | 0.97 |
| 22 | **hsa-miR-15b-5p** | 2.37 |  | 0.98 | 1.82 |  | 0.61 |
| 23 | **hsa-miR-16-5p** | 0.85 |  | 0.53 | 0.74 |  | 0.34 |
| 24 | **hsa-miR-17-5p** | 7.14 |  | 0.14 | 1.85 |  | 0.58 |
| 25 | **hsa-miR-18a-5p** | 3.51 |  | 0.23 | 1.4 |  | 0.62 |
| 26 | **hsa-miR-192-5p** | 1.85 |  | 0.59 | 0.59 |  | 0.39 |
| 27 | **hsa-miR-194-5p** | 2.16 |  | 0.89 | 1.04 |  | 0.82 |
| 28 | **hsa-miR-195-5p** | 1.44 |  | 0.16 | 1.27 |  | 0.33 |
| 29 | **hsa-miR-196a-5p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 30 | **hsa-miR-199a-5p** | 1.19 |  | 0.38 | 0.2 |  | 0.62 |
| 31 | **hsa-miR-199b-5p** | 0.59 |  | 0.75 | 1.2 |  | 0.9 |
| 32 | **hsa-miR-19a-3p** | 1.6 |  | 0.54 | 0.78 |  | 0.64 |
| 33 | **hsa-miR-19b-3p** | 2.57 |  | 0.7 | 0.78 |  | 0.64 |
| 34 | **hsa-miR-200a-3p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 35 | **hsa-miR-200b-3p** | 0.35 | A | 0.27 | 0.12 | C | 0.53 |
| 36 | **hsa-miR-203a-3p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 37 | **hsa-miR-204-5p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 38 | **hsa-miR-208a-3p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 39 | **hsa-miR-20a-5p** | 4.57 |  | 0.22 | 3.03 |  | 0.64 |
| 40 | **hsa-miR-211-5p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 41 | **hsa-miR-215-5p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 42 | **hsa-miR-21-5p** | 6.82 |  | 0.83 | 7.67 |  | 0.68 |
| 43 | **hsa-miR-216a-5p** | 0.31 | C | 0.22 | 0.18 | A | 0.62 |
| 44 | **hsa-miR-217** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 45 | **hsa-miR-223-3p** | 0.57 |  | 0.42 | 0.84 |  | 0.78 |
| 46 | **hsa-miR-23a-3p** | 0.72 |  | 0.2 | 0.89 |  | 0.9 |
| 47 | **hsa-miR-25-3p** | 4.08 |  | 0.86 | 3.83 |  | 0.83 |
| 48 | **hsa-miR-26a-5p** | 6.63 |  | 0.29 | 4.77 |  | 0.65 |
| 49 | **hsa-miR-26b-5p** | 2.57 |  | 0.72 | 0.95 |  | 0.95 |
| 50 | **hsa-miR-27a-3p** | 2.45 |  | 0.75 | 2.57 |  | 0.81 |
| 51 | **hsa-miR-27b-3p** | 3.41 |  | 0.99 | 3.67 |  | 0.95 |
| 52 | **hsa-miR-29a-3p** | 3.66 |  | 0.86 | 4.41 |  | 0.88 |
| 53 | **hsa-miR-29b-3p** | 3.14 |  | 0.14 | 1.24 |  | 0.56 |
| 54 | **hsa-miR-29c-3p** | 4.51 |  | 0.83 | 5.97 |  | 0.83 |
| 55 | **hsa-miR-302b-3p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 56 | **hsa-miR-30a-5p** | 2.98 |  | 0.9 | 2.53 |  | 0.88 |
| 57 | **hsa-miR-31-5p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 58 | **hsa-miR-324-3p** | 1.1 |  | 0.52 | 2.13 |  | 0.64 |
| 59 | **hsa-miR-324-5p** | 0.88 |  | 0.91 | 1.58 |  | 0.69 |
| 60 | **hsa-miR-325** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 61 | **hsa-miR-32-5p** | 0.31 | C | 0.22 | 0.19 | A | 0.67 |
| 62 | **hsa-miR-328-3p** | 0.67 |  | 0.4 | 1.28 |  | 0.46 |
| 63 | **hsa-miR-335-5p** | 1.47 |  | 0.74 | 1.39 |  | 0.33 |
| 64 | **hsa-miR-338-5p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 65 | **hsa-miR-34a-5p** | 7.18 |  | 0.02 | 1.69 |  | 0.35 |
| 66 | **hsa-miR-372-3p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 67 | **hsa-miR-375** | 2.24 |  | 0.64 | 2.51 |  | 0.5 |
| 68 | **hsa-miR-377-3p** | 0.45 | A | 0.42 | 0.12 | C | 0.53 |
| 69 | **hsa-miR-378a-3p** | 3.84 |  | 0.19 | 1.66 |  | 0.52 |
| 70 | **hsa-miR-382-5p** | 1 |  | 0.51 | 0.76 |  | 0.47 |
| 71 | **hsa-miR-449a** | 0.37 | A | 0.3 | 0.12 | C | 0.53 |
| 72 | **hsa-miR-449b-5p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 73 | **hsa-miR-451a** | 2.02 |  | 0.19 | 1.43 |  | 0.44 |
| 74 | **hsa-miR-491-5p** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 75 | **hsa-miR-5011-5p** | 0.21 |  | 0.18 | 2.55 |  | 0.28 |
| 76 | **hsa-miR-503-5p** | 0.49 | A | 0.41 | 0.12 | C | 0.53 |
| 77 | **hsa-miR-5692a** | 0.31 | C | 0.22 | 0.12 | C | 0.53 |
| 78 | **hsa-miR-590-5p** | 0.53 | A | 0.67 | 0.23 | A | 0.88 |
| 79 | **hsa-miR-661** | 0.08 |  | 0.43 | 0.28 |  | 0.68 |
| 80 | **hsa-miR-663a** | 0.84 |  | 0.71 | 3.64 |  | 0.21 |
| 81 | **hsa-miR-744-5p** | 2.73 |  | 0.56 | 0.58 |  | 0.36 |
| 82 | **hsa-miR-7-5p** | 1.77 |  | 0.96 | 0.72 |  | 0.63 |
| 83 | **hsa-miR-874-3p** | 1.42 |  | 0.59 | 7.62 |  | 0.04 |
| 84 | **hsa-miR-92a-3p** | 8.61 |  | 0.21 | 8.76 |  | 0.15 |

*\* Data analysis was done on the Qiagen GeneGlobe Data Analysis Center software (*[*https://geneglobe.qiagen.com/analyze/*](https://geneglobe.qiagen.com/analyze/)*).*

*\*\* Poor quality was defined by the software as B onwards*

**Supplementary Table 2.** The additional criteria used for selection of miRNAs for validation

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | DIANA miRPath: no. genes in KEGG pathways | | | | | | | | | miR  Tar  Base | previous studies |
|  |  | RAS | TGFB | JAK/STAT | VEGF | mTOR | Wnt | MAPK | PI13K | TNF |  |  |
| 1 | **miR-142-3p** | 11 | 6 | 8 | 8 | 9 | 6 | 14 | 20 | 13 |  |  |
| 2 | **miR-34a-5p** | 59 | 23 | 30 | 23 | 24 | 35 | 79 | 93 | 30 |  |  |
| 3 | **miR-874-3p** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | Yao 2018 |
| 4 | **miR-145-5p** | 15 | 4 | 6 | 8 | 5 | 12 | 22 | 35 | 12 |  |  |
| 5 | **miR-29b-3p** | 19 | 7 | 15 | 6 | 10 | 16 | 20 | 51 | 13 |  | Chien'16 |
| 6 | **miR-17-5p** | 36 | 23 | 26 | 13 | 23 | 30 | 47 | 68 | 25 |  |  |
| 7 | **miR-92a-3p** | 22 | 17 | 10 | 8 | 8 | 30 | 43 | 47 | 13 |  |  |
| 8 | **miR-101-3p** | 21 | 11 | 7 | 8 | 4 | 16 | 27 | 29 | 11 |  |  |
| 9 | **miR-378a-3p** | 17 | 9 | 11 | 5 | 7 | 12 | 19 | 27 | 5 |  |  |
| 10 | **miR-20a-5p** | 23 | 20 | 17 | 9 | 16 | 26 | 44 | 52 | 15 |  |  |
| 11 | **miR-18a-5p** | 9 | 7 | 5 | 0 | 4 | 10 | 17 | 11 | 6 |  |  |
| 12 | **miR-26a-5p** | 29 | 19 | 15 | 8 | 8 | 24 | 28 | 45 | 13 |  |  |
| 13 | **miR-744-5p** | 10 | 4 | 5 | 2 | 11 | 10 | 20 | 20 | 3 |  |  |
| 14 | **miR-661** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | Wang'16 |
| 15 | **miR-126-3p** | 12 | 1 | 6 | 7 | 7 | 4 | 8 | 16 | 8 |  | Kafaji'16 |
| 16 | **hsa-miR-21-5p** | 26 | 12 | 17 | 6 | 8 | 14 | 33 | 41 | 15 | DKD | Chien'16 |
| 17 | **miR-29a-3p** | 18 | 7 | 10 | 5 | 12 | 17 | 24 | 53 | 15 | DKD | Chien'16 |

References:

1. Yao T, Zha D, Gao P, Shui H, Wu X. MiR‐874 alleviates renal injury and inflammatory response in diabetic nephropathy through targeting toll‐like receptor‐4

2. Chien H-Y, Chen C-Y, Chiu Y-H, Lin Y-C, Li W-C. Differential microRNA profiles predict diabetic nephropathy progression in Taiwan. International Journal of Medical Sciences. 2016;13(6):457-465.

3. Wang C, Wan S, Yang T, Niu D, Zhang A, Yang C, et al. Increased serum microRNAs are closely associated with the presence of microvascular complications in type 2 diabetes mellitus.Sci Rep 2016;6:20032

4. Al-Kafaji G, Al-Mahroos G, Al-Muhtaresh HA, Skrypnyk C, Sabri MA, Ramadan AR. Decreased expression of circulating microRNA-126 in patients with type 2 diabetic nephropathy: A potential blood-based biomarker. EXPERIMENTAL AND THERAPEUTIC MEDICINE 12: 815-822, 2016

5. Vlachos, Ioannis S., Konstantinos Zagganas, Maria D. Paraskevopoulou, Georgios Georgakilas, Dimitra Karagkouni, Thanasis Vergoulis, Theodore Dalamagas, and Artemis G. Hatzigeorgiou. "DIANA-miRPath v3. 0: deciphering microRNA function with experimental support." Nucleic acids research (2015): gkv403.

6. Chou CH, Shrestha S, Yang CD, Chang NW, Lin YL, Liao KW, et al. MiRTarBase update 2018: A resource for experimentally validated microRNA-target inteRACtions. Nucleic Acids Res. 2018;46(D1):D296–302.