Table SI: RF model analysis result including 2 combinations of nine miRNAs.

| Biomarker | 1       | 2       | 3       | 4       | Training set AUC | Validation set AUC |
|-----------|---------|---------|---------|---------|------------------|--------------------|
| 1         | miR-223 | miR-1246|         |         | 0.983            | 0.984              |
| 2         | miR-223 | miR-206 |         |         | 0.991            | 0.979              |
| 3         | miR-223 | miR-24  |         |         | 0.994            | 0.985              |
| 4         | miR-223 | miR-373 |         |         | 0.975            | 0.967              |
| 5         | miR-223 | miR-21  |         |         | 0.986            | 0.962              |
| 6         | miR-223 | miR-6875|         |         | 0.989            | 0.971              |
| 7         | miR-223 | miR-202 |         |         | 0.968            | 0.959              |
| 8         | miR-223 | miR-219B|         |         | 0.976            | 0.959              |
| 9         | miR-1246| miR-206 |         |         | 0.979            | 0.988              |
| 10        | miR-1246| miR-24  |         |         | 0.984            | 0.987              |
| 11        | miR-1246| miR-373 |         |         | 0.968            | 0.983              |
| 12        | miR-1246| miR-21  |         |         | 0.973            | 0.976              |
| 13        | miR-1246| miR-6875|         |         | 0.991            | 0.984              |
| 14        | miR-1246| miR-202 |         |         | 0.959            | 0.966              |
| 15        | miR-1246| miR-219B|         |         | 0.963            | 0.964              |
| 16        | miR-206 | miR-24  |         |         | 0.976            | 0.973              |
| 17        | miR-206 | miR-373 |         |         | 0.964            | 0.981              |
| 18        | miR-206 | miR-21  |         |         | 0.979            | 0.973              |
| 19        | miR-206 | miR-6875|         |         | 0.966            | 0.969              |
| 20        | miR-206 | miR-202 |         |         | 0.956            | 0.971              |
| 21        | miR-206 | miR-219B|         |         | 0.942            | 0.933              |
| 22        | miR-24  | miR-373 |         |         | 0.982            | 0.977              |
| 23        | miR-24  | miR-21  |         |         | 0.985            | 0.988              |
| 24        | miR-24  | miR-6875|         |         | 0.989            | 0.987              |
| 25        | miR-24  | miR-202 |         |         | 0.973            | 0.969              |
| 26        | miR-24  | miR-219B|         |         | 0.963            | 0.96               |
| 27        | miR-373 | miR-21  |         |         | 0.96             | 0.973              |
| 28        | miR-373 | miR-6875|         |         | 0.957            | 0.964              |
| 29        | miR-373 | miR-202 |         |         | 0.934            | 0.956              |
| 30        | miR-373 | miR-219B|         |         | 0.94             | 0.95               |
| 31        | miR-21  | miR-6875|         |         | 0.97             | 0.969              |
| 32        | miR-21  | miR-202 |         |         | 0.956            | 0.944              |
| 33        | miR-21  | miR-219B|         |         | 0.927            | 0.933              |
| 34        | miR-6875| miR-202 |         |         | 0.972            | 0.938              |
| 35        | miR-6875| miR-219B|         |         | 0.915            | 0.94               |
| 36        | miR-202 | miR-219B|         |         | 0.938            | 0.914              |
Table SII. RF model analysis result including 3 combinations of nine miRNAs.

| Biomarker | 1       | 2       | 3       | 4       | Training set AUC | Validation set AUC |
|-----------|---------|---------|---------|---------|------------------|-------------------|
| 1         | miR-223 | miR-1246| miR-206 | 0.991   | 0.992            |
| 2         | miR-223 | miR-1246| miR-24  | 0.997   | 0.99             |
| 3         | miR-223 | miR-1246| miR-373 | 0.986   | 0.986            |
| 4         | miR-223 | miR-1246| miR-21  | 0.987   | 0.985            |
| 5         | miR-223 | miR-1246| miR-6875| 0.994   | 0.986            |
| 6         | miR-223 | miR-1246| miR-202 | 0.981   | 0.983            |
| 7         | miR-223 | miR-1246| miR-219B| 0.99    | 0.982            |
| 8         | miR-223 | miR-206 | miR-24  | 0.998   | 0.992            |
| 9         | miR-223 | miR-206 | miR-373 | 0.99    | 0.985            |
| 10        | miR-223 | miR-206 | miR-21  | 0.993   | 0.979            |
| 11        | miR-223 | miR-206 | miR-6875| 0.993   | 0.983            |
| 12        | miR-223 | miR-206 | miR-202 | 0.988   | 0.982            |
| 13        | miR-223 | miR-206 | miR-219B| 0.988   | 0.974            |
| 14        | miR-223 | miR-24  | miR-373 | 0.995   | 0.986            |
| 15        | miR-223 | miR-24  | miR-21  | 0.998   | 0.989            |
| 16        | miR-223 | miR-24  | miR-6875| 0.998   | 0.99             |
| 17        | miR-223 | miR-24  | miR-202 | 0.991   | 0.981            |
| 18        | miR-223 | miR-24  | miR-219B| 0.997   | 0.982            |
| 19        | miR-223 | miR-373 | miR-21  | 0.99    | 0.974            |
| 20        | miR-223 | miR-373 | miR-6875| 0.988   | 0.977            |
| 21        | miR-223 | miR-373 | miR-202 | 0.976   | 0.966            |
| 22        | miR-223 | miR-373 | miR-219B| 0.981   | 0.971            |
| 23        | miR-223 | miR-21  | miR-6875| 0.99    | 0.977            |
| 24        | miR-223 | miR-21  | miR-202 | 0.98    | 0.968            |
| 25        | miR-223 | miR-21  | miR-219B| 0.986   | 0.958            |
| 26        | miR-223 | miR-6875| miR-202 | 0.989   | 0.97             |
| 27        | miR-223 | miR-6875| miR-219B| 0.984   | 0.965            |
| 28        | miR-223 | miR-202 | miR-219B| 0.976   | 0.957            |
| 29        | miR-1246| miR-206 | miR-24  | 0.991   | 0.994            |
| 30        | miR-1246| miR-206 | miR-373 | 0.985   | 0.991            |
| 31        | miR-1246| miR-206 | miR-21  | 0.988   | 0.988            |
| 32        | miR-1246| miR-206 | miR-6875| 0.992   | 0.993            |
| 33        | miR-1246| miR-206 | miR-202 | 0.978   | 0.987            |
| 34        | miR-1246| miR-206 | miR-219B| 0.987   | 0.984            |
| 35        | miR-1246| miR-24  | miR-373 | 0.99    | 0.989            |
| 36        | miR-1246| miR-24  | miR-21  | 0.989   | 0.993            |
| 37        | miR-1246| miR-24  | miR-6875| 0.997   | 0.992            |
| 38        | miR-1246| miR-24  | miR-202 | 0.987   | 0.987            |
| 39        | miR-1246| miR-24  | miR-219B| 0.989   | 0.988            |
| 40        | miR-1246| miR-373 | miR-21  | 0.977   | 0.984            |
| 41        | miR-1246| miR-373 | miR-6875| 0.988   | 0.989            |
| 42        | miR-1246| miR-373 | miR-202 | 0.973   | 0.983            |
| 43        | miR-1246| miR-373 | miR-219B| 0.976   | 0.981            |
| 44        | miR-1246| miR-21  | miR-6875| 0.989   | 0.989            |
| 45        | miR-1246| miR-21  | miR-202 | 0.974   | 0.979            |
| 46        | miR-1246| miR-21  | miR-219B| 0.97    | 0.978            |
| 47        | miR-1246| miR-6875| miR-202 | 0.988   | 0.984            |
| 48        | miR-1246| miR-6875| miR-219B| 0.989   | 0.987            |
| 49        | miR-1246| miR-202 | miR-219B| 0.975   | 0.971            |
| 50        | miR-206 | miR-24  | miR-373 | 0.989   | 0.987            |
| 51        | miR-206 | miR-24  | miR-21  | 0.994   | 0.992            |
| 52        | miR-206 | miR-24  | miR-6875| 0.991   | 0.987            |
| 53        | miR-206 | miR-24  | miR-202 | 0.987   | 0.987            |
| 54        | miR-206 | miR-24  | miR-219B| 0.976   | 0.977            |
| 55        | miR-206 | miR-373 | miR-21  | 0.983   | 0.984            |
| 56        | miR-206 | miR-373 | miR-6875| 0.976   | 0.984            |
| 57        | miR-206 | miR-373 | miR-202 | 0.969   | 0.984            |
| 58        | miR-206 | miR-373 | miR-219B| 0.972   | 0.975            |
| 59        | miR-206 | miR-21  | miR-6875| 0.982   | 0.986            |
| Biomarker   |     |     |     | Training set AUC | Validation set AUC |
|------------|-----|-----|-----|------------------|--------------------|
| 60         | miR-206 | miR-21 | miR-202 | 0.979 | 0.975 |
| 61         | miR-206 | miR-21 | miR-219B | 0.973 | 0.966 |
| 62         | miR-206 | miR-6875 | miR-202 | 0.983 | 0.979 |
| 63         | miR-206 | miR-6875 | miR-219B | 0.968 | 0.967 |
| 64         | miR-206 | miR-202 | miR-219B | 0.966 | 0.959 |
| 65         | miR-24 | miR-373 | miR-21 | 0.988 | 0.992 |
| 66         | miR-24 | miR-373 | miR-6875 | 0.991 | 0.983 |
| 67         | miR-24 | miR-373 | miR-202 | 0.981 | 0.979 |
| 68         | miR-24 | miR-373 | miR-219B | 0.985 | 0.977 |
| 69         | miR-24 | miR-21 | miR-6875 | 0.992 | 0.991 |
| 70         | miR-24 | miR-21 | miR-202 | 0.987 | 0.985 |
| 71         | miR-24 | miR-21 | miR-219B | 0.986 | 0.982 |
| 72         | miR-24 | miR-6875 | miR-202 | 0.992 | 0.984 |
| 73         | miR-24 | miR-6875 | miR-219B | 0.986 | 0.983 |
| 74         | miR-24 | miR-202 | miR-219B | 0.985 | 0.969 |
| 75         | miR-373 | miR-21 | miR-6875 | 0.975 | 0.983 |
| 76         | miR-373 | miR-21 | miR-202 | 0.967 | 0.966 |
| 77         | miR-373 | miR-21 | miR-219B | 0.965 | 0.972 |
| 78         | miR-373 | miR-6875 | miR-202 | 0.966 | 0.967 |
| 79         | miR-373 | miR-6875 | miR-219B | 0.962 | 0.972 |
| 80         | miR-373 | miR-202 | miR-219B | 0.951 | 0.954 |
| 81         | miR-21 | miR-6875 | miR-202 | 0.98 | 0.969 |
| 82         | miR-21 | miR-6875 | miR-219B | 0.964 | 0.965 |
| 83         | miR-21 | miR-202 | miR-219B | 0.965 | 0.952 |
| 84         | miR-6875 | miR-202 | miR-219B | 0.973 | 0.952 |
Table SIII. RF model analysis result including 4 combinations of nine miRNAs.

| Biomarker 1 | 2       | 3       | 4       | Training set AUC | Validation set AUC |
|-------------|---------|---------|---------|------------------|--------------------|
| miR-223     | miR-1246| miR-206 | miR-24  | 0.997            | 0.994              |
| miR-223     | miR-1246| miR-206 | miR-373 | 0.991            | 0.993              |
| miR-223     | miR-1246| miR-206 | miR-21  | 0.993            | 0.992              |
| miR-223     | miR-1246| miR-206 | miR-6875| 0.995            | 0.991              |
| miR-223     | miR-1246| miR-206 | miR-202 | 0.989            | 0.99               |
| miR-223     | miR-1246| miR-206 | miR-219B| 0.991            | 0.989              |
| miR-223     | miR-1246| miR-24  | miR-373 | 0.997            | 0.99               |
| miR-223     | miR-1246| miR-24  | miR-21  | 0.997            | 0.989              |
| miR-223     | miR-1246| miR-24  | miR-6875| 0.999            | 0.991              |
| miR-223     | miR-1246| miR-24  | miR-202 | 0.996            | 0.989              |
| miR-223     | miR-1246| miR-24  | miR-219B| 0.998            | 0.988              |
| miR-223     | miR-1246| miR-21  | miR-373 | 0.986            | 0.985              |
| miR-223     | miR-1246| miR-373 | miR-21  | 0.984            | 0.986              |
| miR-223     | miR-1246| miR-373 | miR-219B| 0.991            | 0.986              |
| miR-223     | miR-1246| miR-21  | miR-6875| 0.993            | 0.986              |
| miR-223     | miR-1246| miR-21  | miR-202 | 0.991            | 0.984              |
| miR-223     | miR-1246| miR-21  | miR-219B| 0.991            | 0.984              |
| miR-223     | miR-1246| miR-6875| miR-219B| 0.994            | 0.986              |
| miR-223     | miR-1246| miR-6875| miR-219B| 0.997            | 0.983              |
| miR-223     | miR-206 | miR-21  | miR-373 | 0.998            | 0.99               |
| miR-223     | miR-206 | miR-24  | miR-21  | 0.999            | 0.993              |
| miR-223     | miR-206 | miR-24  | miR-6875| 0.998            | 0.993              |
| miR-223     | miR-206 | miR-24  | miR-219B| 0.998            | 0.992              |
| miR-223     | miR-206 | miR-21  | miR-219B| 0.991            | 0.986              |
| miR-223     | miR-206 | miR-6875| miR-219B| 0.994            | 0.986              |
| miR-223     | miR-206 | miR-6875| miR-219B| 0.997            | 0.983              |
| miR-223     | miR-206 | miR-219B| miR-219B| 0.992            | 0.976              |
| miR-223     | miR-206 | miR-21  | miR-6875| 0.994            | 0.983              |
| miR-223     | miR-206 | miR-6875| miR-219B| 0.991            | 0.979              |
| miR-223     | miR-206 | miR-219B| miR-219B| 0.988            | 0.98               |
| miR-223     | miR-24  | miR-219B| miR-21  | 0.997            | 0.988              |
| miR-223     | miR-24  | miR-373 | miR-219B| 0.996            | 0.99               |
| miR-223     | miR-24  | miR-219B| miR-6875| 0.993            | 0.988              |
| miR-223     | miR-24  | miR-219B| miR-202 | 0.995            | 0.979              |
| miR-223     | miR-219B| miR-6875| miR-219B| 0.994            | 0.978              |
| miR-223     | miR-21  | miR-6875| miR-219B| 0.983            | 0.972              |
| miR-223     | miR-21  | miR-219B| miR-373 | 0.988            | 0.975              |
| miR-223     | miR-21  | miR-219B| miR-6875| 0.987            | 0.974              |
| miR-223     | miR-21  | miR-219B| miR-219B| 0.988            | 0.974              |
| miR-223     | miR-21  | miR-219B| miR-219B| 0.978            | 0.967              |
| miR-223     | miR-21  | miR-219B| miR-219B| 0.988            | 0.975              |
| miR-223     | miR-21  | miR-219B| miR-219B| 0.991            | 0.972              |
| miR-223     | miR-21  | miR-219B| miR-219B| 0.983            | 0.967              |
| miR-223     | miR-21  | miR-219B| miR-219B| 0.989            | 0.966              |
| miR-1246    | miR-206 | miR-24  | miR-373 | 0.993            | 0.992              |
| miR-1246    | miR-206 | miR-24  | miR-21  | 0.995            | 0.996              |
| miR-1246    | miR-206 | miR-24  | miR-6875| 0.997            | 0.996              |
| Biomarker 1 | 2     | 3     | 4     | Training set AUC | Validation set AUC |
|------------|-------|-------|-------|------------------|--------------------|
| 60         | miR-1246 | miR-206 | miR-24 | miR-202          | 0.991              |
| 61         | miR-1246 | miR-206 | miR-24 | miR-219B         | 0.993              |
| 62         | miR-1246 | miR-206 | miR-373 | miR-21      | 0.987              |
| 63         | miR-1246 | miR-206 | miR-373 | miR-6875        | 0.99                |
| 64         | miR-1246 | miR-206 | miR-373 | miR-202        | 0.982              |
| 65         | miR-1246 | miR-206 | miR-373 | miR-219B        | 0.987              |
| 66         | miR-1246 | miR-206 | miR-21  | miR-6875        | 0.992              |
| 67         | miR-1246 | miR-206 | miR-21  | miR-202        | 0.988              |
| 68         | miR-1246 | miR-206 | miR-21  | miR-219B        | 0.987              |
| 69         | miR-1246 | miR-206 | miR-6875 | miR-202      | 0.99                |
| 70         | miR-1246 | miR-206 | miR-6875 | miR-219B      | 0.992              |
| 71         | miR-1246 | miR-206 | miR-202 | miR-219B        | 0.983              |
| 72         | miR-1246 | miR-24  | miR-373 | miR-21      | 0.992              |
| 73         | miR-1246 | miR-24  | miR-373 | miR-6875        | 0.996              |
| 74         | miR-1246 | miR-24  | miR-373 | miR-202        | 0.991              |
| 75         | miR-1246 | miR-24  | miR-373 | miR-219B        | 0.992              |
| 76         | miR-1246 | miR-24  | miR-21  | miR-6875        | 0.997              |
| 77         | miR-1246 | miR-24  | miR-21  | miR-202        | 0.991              |
| 78         | miR-1246 | miR-24  | miR-21  | miR-219B        | 0.99              |
| 79         | miR-1246 | miR-24  | miR-6875 | miR-202      | 0.996              |
| 80         | miR-1246 | miR-24  | miR-6875 | miR-219B      | 0.997              |
| 81         | miR-1246 | miR-24  | miR-202 | miR-219B        | 0.991              |
| 82         | miR-1246 | miR-373 | miR-21  | miR-6875        | 0.987              |
| 83         | miR-1246 | miR-373 | miR-21  | miR-202        | 0.979              |
| 84         | miR-1246 | miR-373 | miR-21  | miR-219B        | 0.979              |
| 85         | miR-1246 | miR-373 | miR-6875 | miR-202      | 0.987              |
| 86         | miR-1246 | miR-373 | miR-6875 | miR-219B      | 0.988              |
| 87         | miR-1246 | miR-373 | miR-202 | miR-219B        | 0.977              |
| 88         | miR-1246 | miR-21  | miR-6875 | miR-202      | 0.988              |
| 89         | miR-1246 | miR-21  | miR-6875 | miR-219B      | 0.987              |
| 90         | miR-1246 | miR-21  | miR-202 | miR-219B        | 0.978              |
| 91         | miR-1246 | miR-21  | miR-202 | miR-219B        | 0.989              |
| 92         | miR-206  | miR-24  | miR-373 | miR-21      | 0.992              |
| 93         | miR-206  | miR-24  | miR-373 | miR-6875        | 0.994              |
| 94         | miR-206  | miR-24  | miR-373 | miR-202        | 0.988              |
| 95         | miR-206  | miR-24  | miR-373 | miR-219B        | 0.99              |
| 96         | miR-206  | miR-24  | miR-21  | miR-6875        | 0.993              |
| 97         | miR-206  | miR-24  | miR-21  | miR-202        | 0.992              |
| 98         | miR-206  | miR-24  | miR-21  | miR-219B        | 0.993              |
| 99         | miR-206  | miR-24  | miR-6875 | miR-202      | 0.994              |
| 100        | miR-206  | miR-24  | miR-6875 | miR-219B      | 0.989              |
| 101        | miR-206  | miR-24  | miR-202 | miR-219B        | 0.987              |
| 102        | miR-206  | miR-24  | miR-373 | miR-21      | 0.983              |
| 103        | miR-206  | miR-24  | miR-373 | miR-219B        | 0.98             |
| 104        | miR-206  | miR-23  | miR-21  | miR-6875        | 0.982              |
| 105        | miR-206  | miR-23  | miR-21  | miR-6875        | 0.977              |
| 106        | miR-206  | miR-23  | miR-6875 | miR-202      | 0.977              |
| 107        | miR-206  | miR-23  | miR-6875 | miR-219B      | 0.972              |
| 108        | miR-206  | miR-21  | miR-6875 | miR-202      | 0.983              |
| 109        | miR-206  | miR-21  | miR-6875 | miR-219B      | 0.981              |
| 110        | miR-206  | miR-21  | miR-202 | miR-219B        | 0.979              |
| 111        | miR-206  | miR-6875 | miR-202 | miR-219B        | 0.982              |
| 112        | miR-24   | miR-373 | miR-21  | miR-6875        | 0.991              |
| 113        | miR-24   | miR-373 | miR-21  | miR-202        | 0.988              |
| 114        | miR-24   | miR-373 | miR-21  | miR-219B        | 0.989              |
| 115        | miR-24   | miR-373 | miR-6875 | miR-202      | 0.991              |
| 116        | miR-24   | miR-373 | miR-6875 | miR-219B      | 0.991              |
| 117        | miR-24   | miR-373 | miR-202 | miR-219B        | 0.986              |
| 118        | miR-24   | miR-21  | miR-6875 | miR-202      | 0.993              |
| Biomarker | 1     | 2     | 3     | 4     | Training set AUC | Validation set AUC |
|----------|-------|-------|-------|-------|------------------|-------------------|
| 119      | miR-24| miR-21| miR-6875| miR-219B | 0.993            | 0.989             |
| 120      | miR-24| miR-21| miR-202| miR-219B | 0.99             | 0.981             |
| 121      | miR-24| miR-6875| miR-202| miR-219B | 0.991            | 0.981             |
| 122      | miR-373| miR-21| miR-6875| miR-202 | 0.974            | 0.977             |
| 123      | miR-373| miR-21| miR-6875| miR-219B | 0.977            | 0.98              |
| 124      | miR-373| miR-21| miR-202| miR-219B | 0.971            | 0.968             |
| 125      | miR-373| miR-6875| miR-202| miR-219B | 0.968            | 0.964             |
| 126      | miR-21| miR-6875| miR-202| miR-219B | 0.978            | 0.966             |