

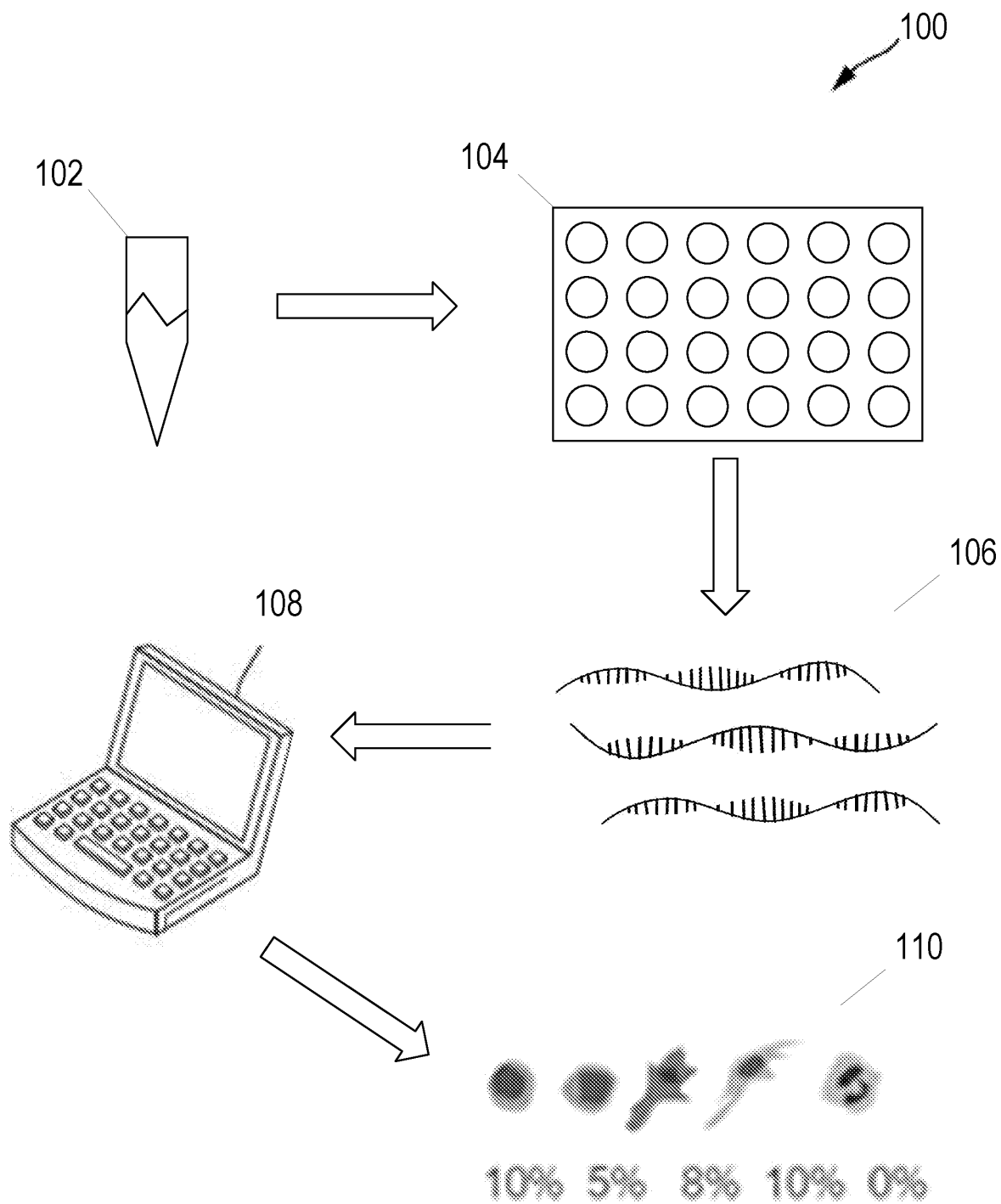


FIG. 1A

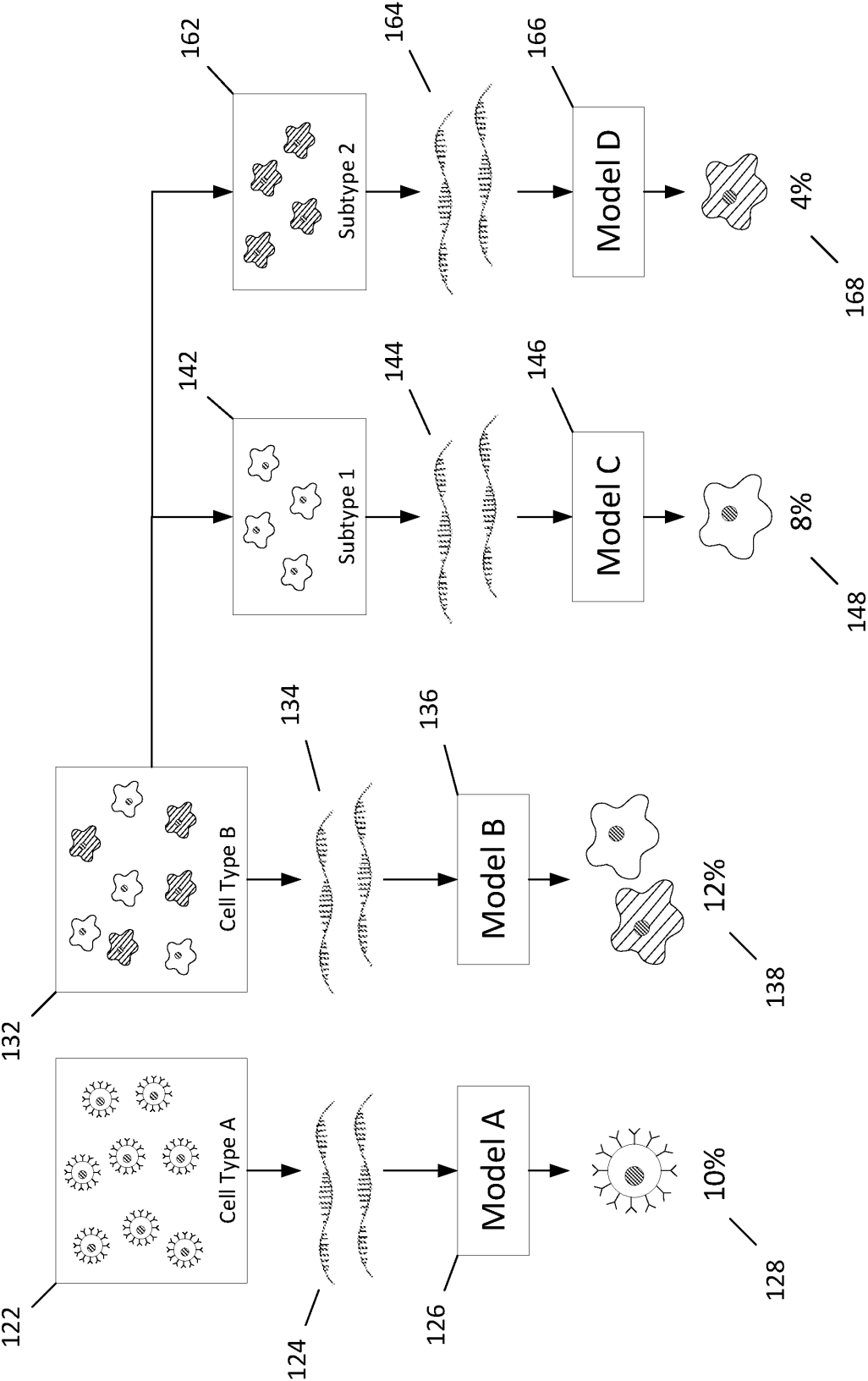


FIG. 1B

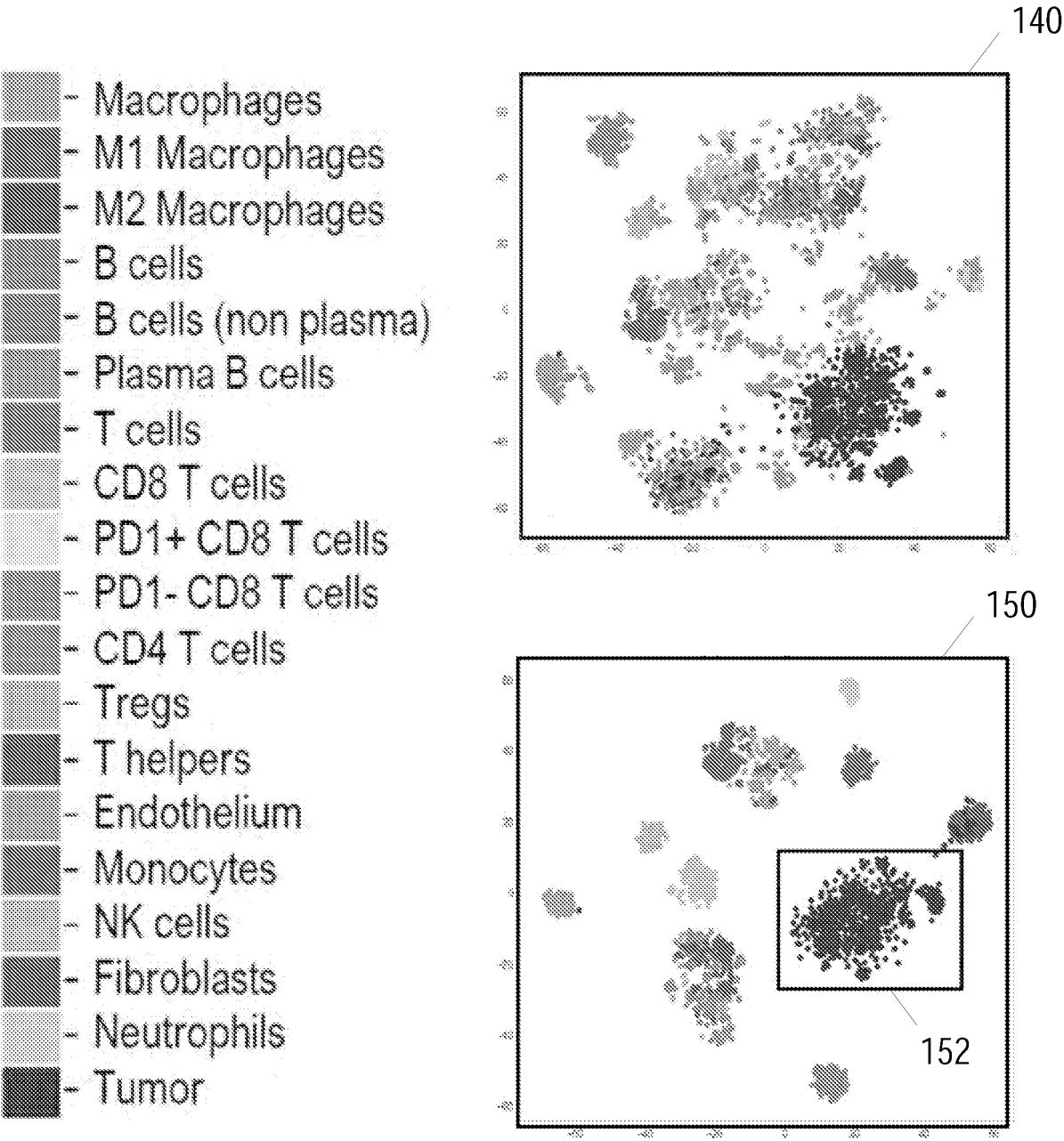


FIG. 1C

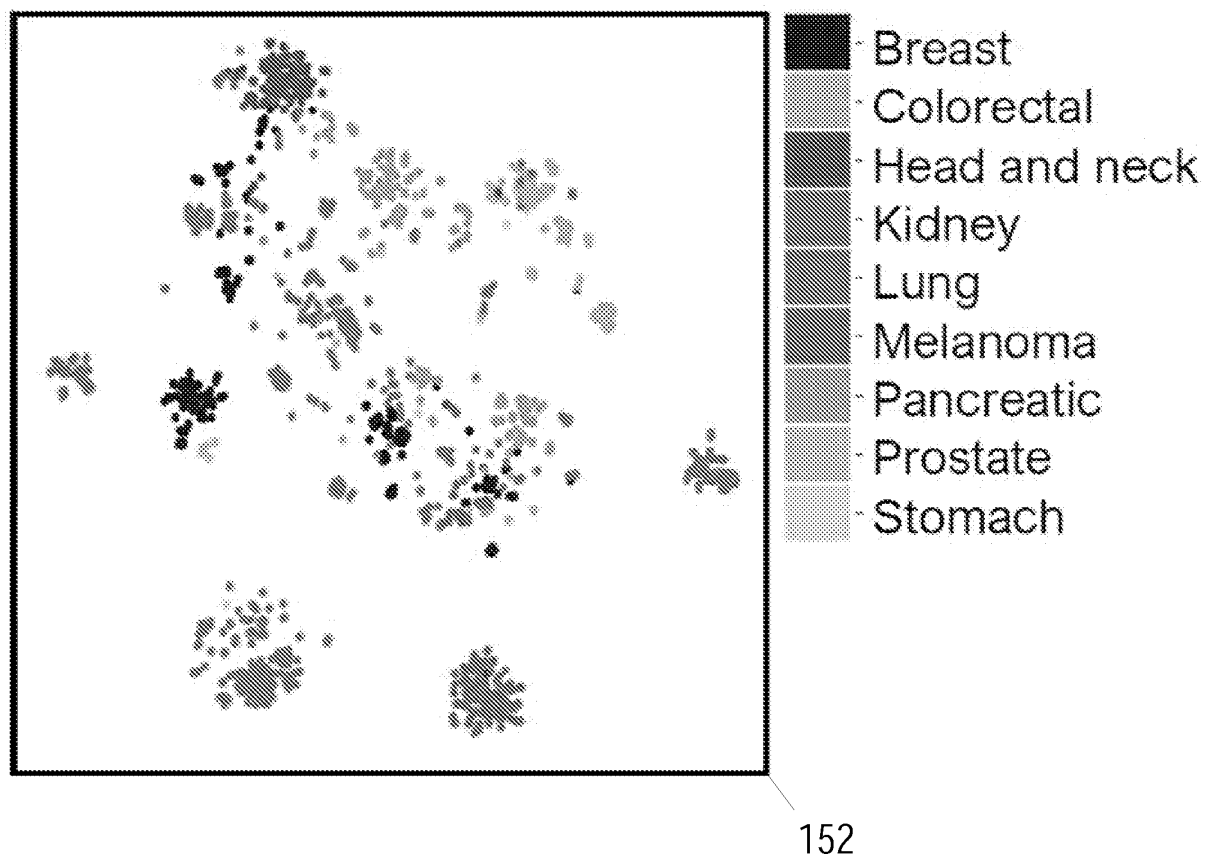


FIG. 1D

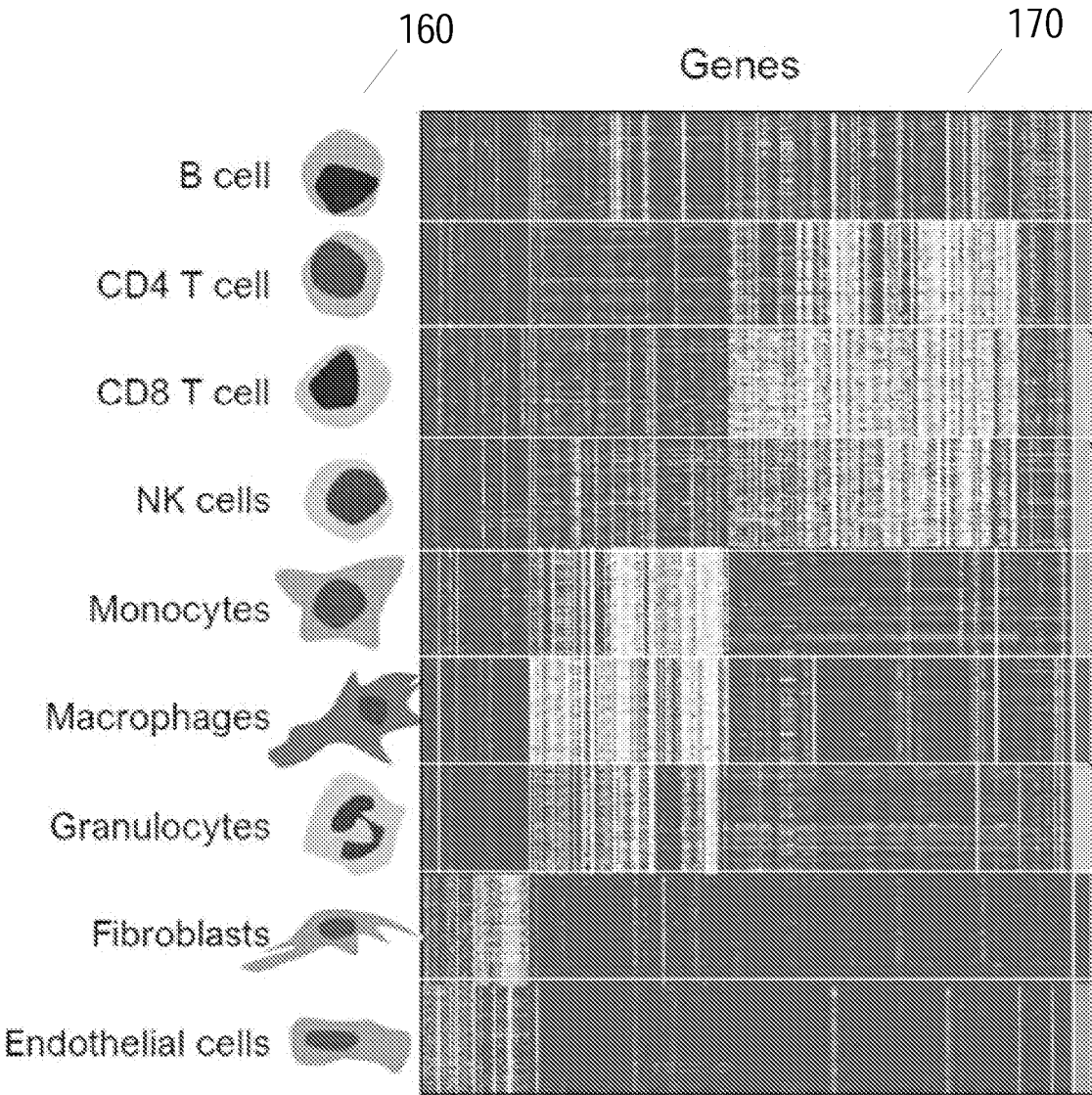


FIG. 1E



FIG. 1F

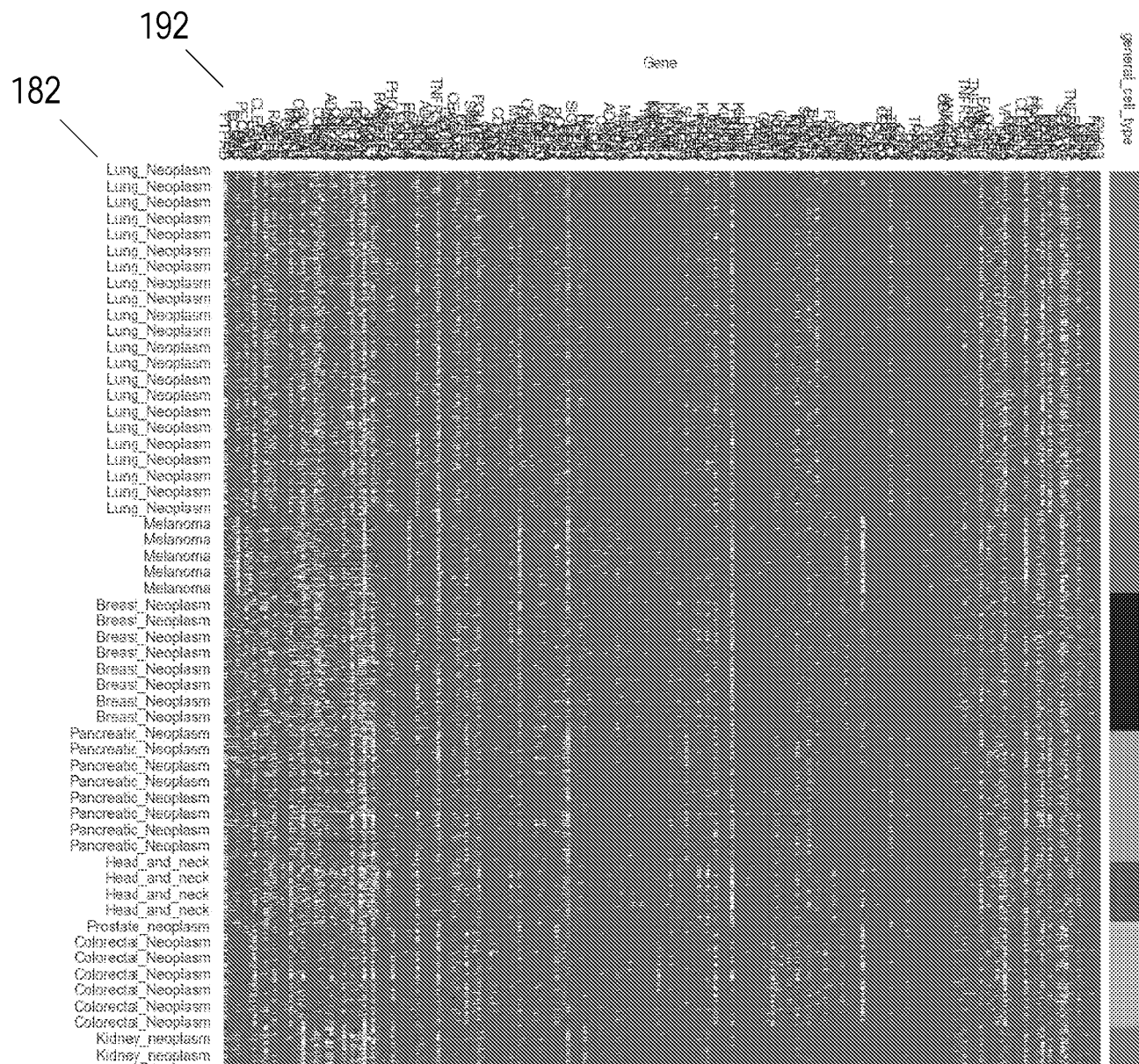


FIG. 1G

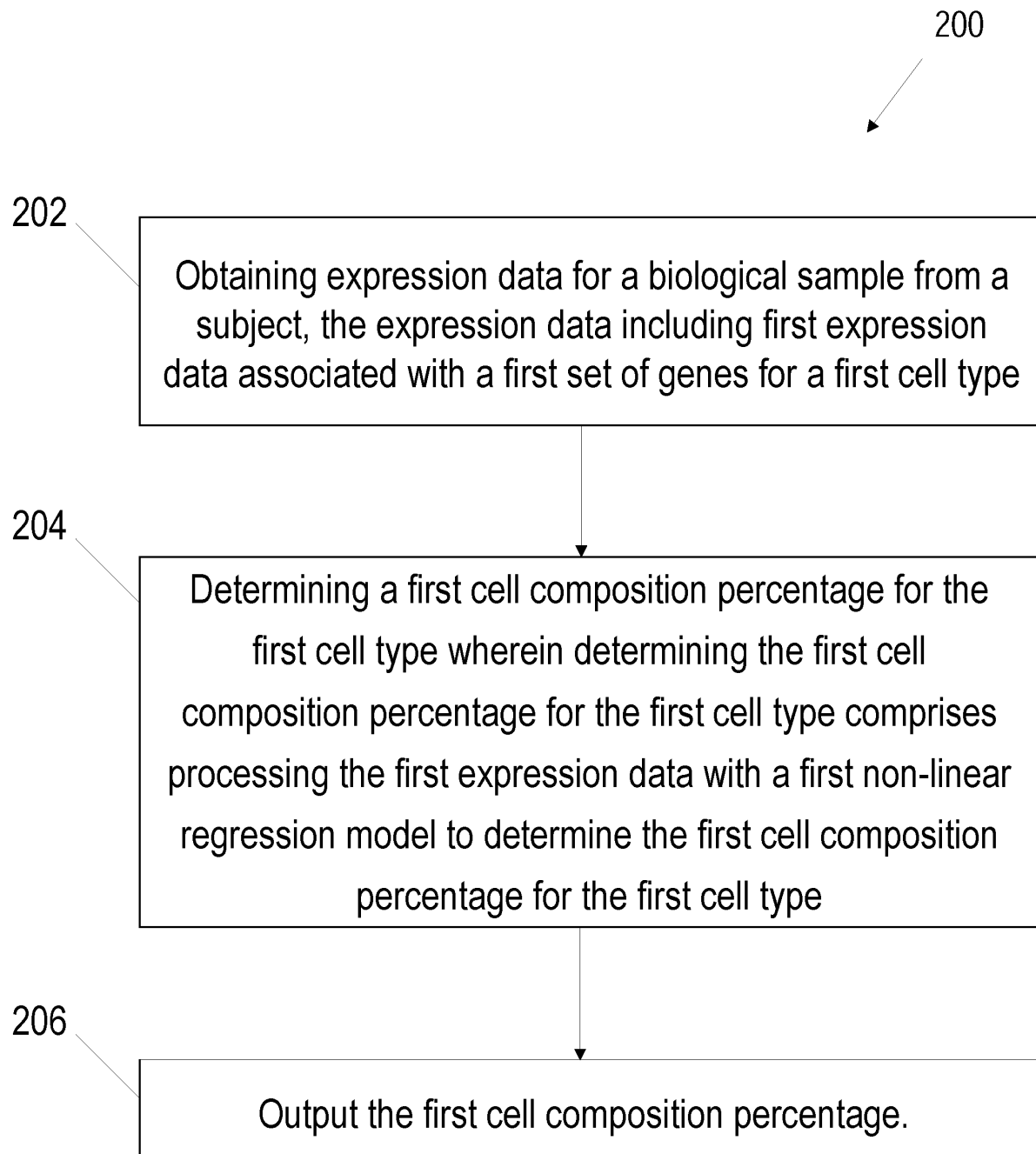


FIG. 2A

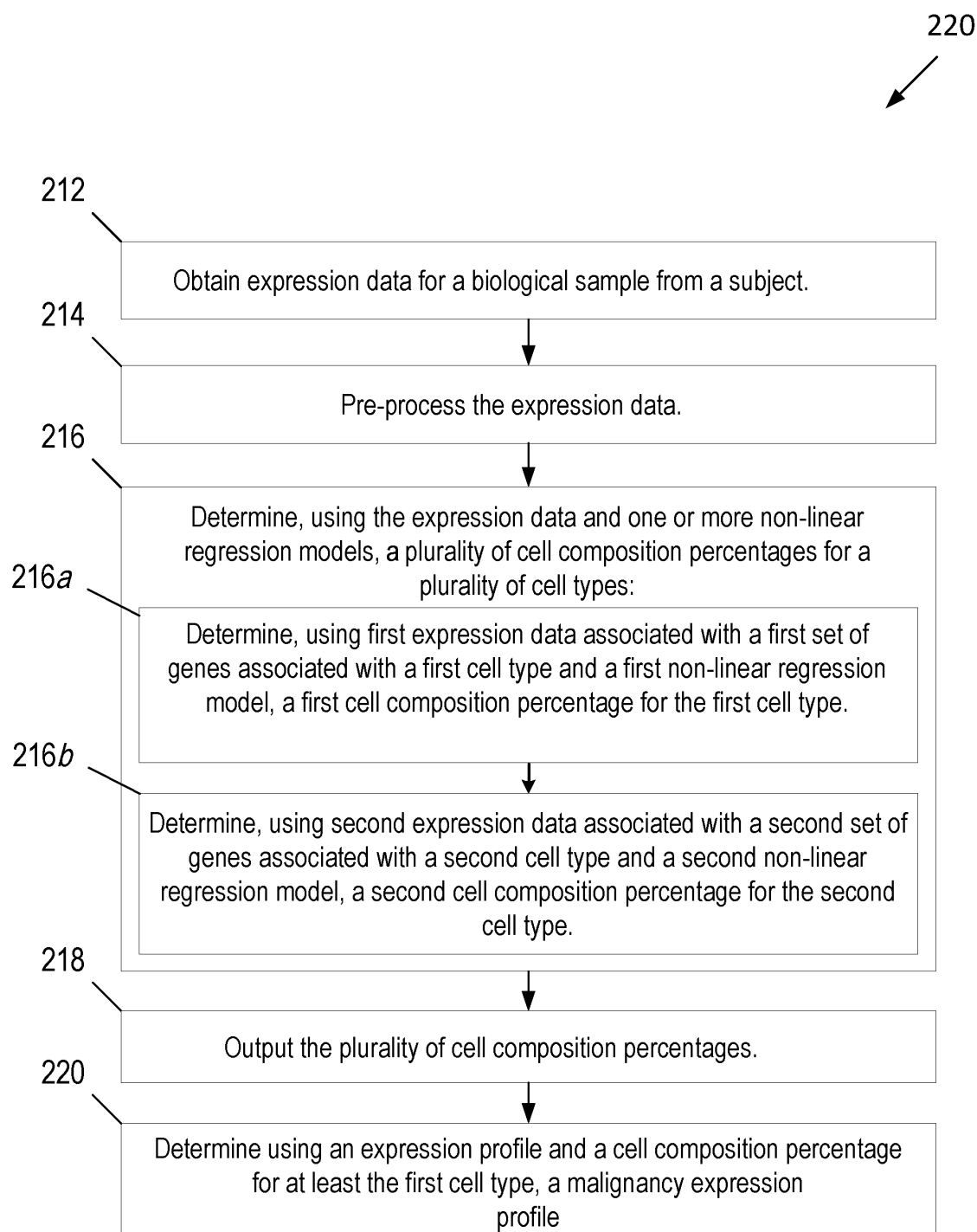


FIG. 2B

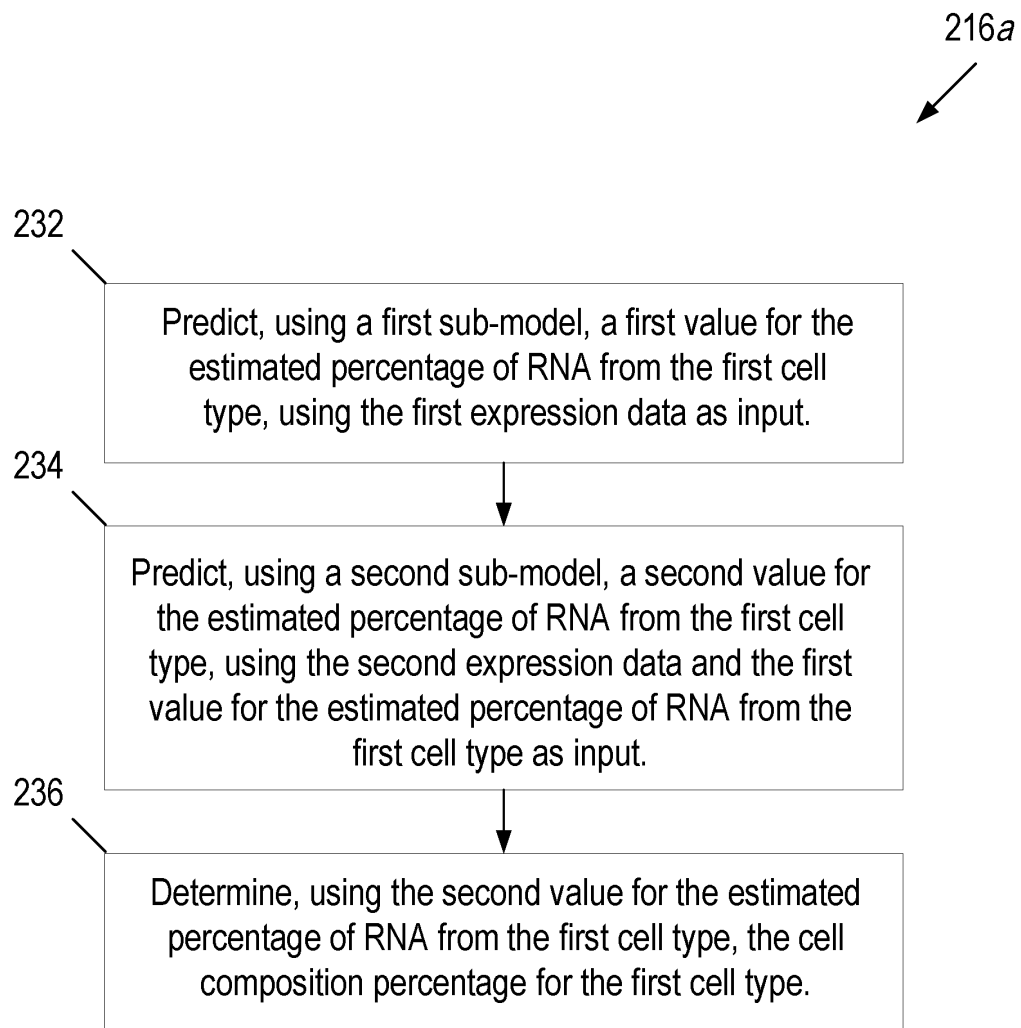


FIG. 2C

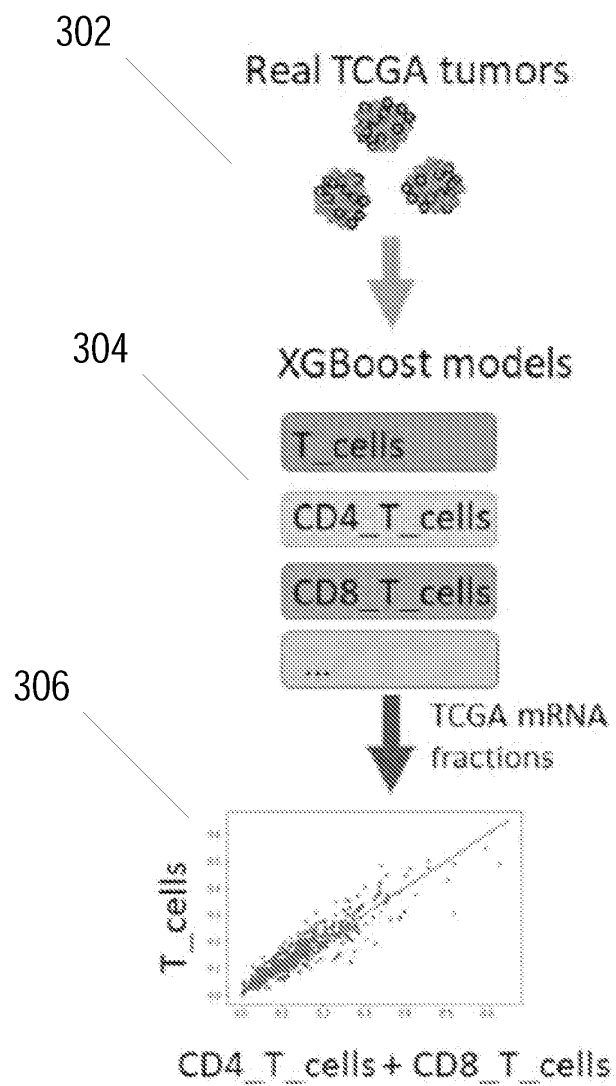


FIG. 3A

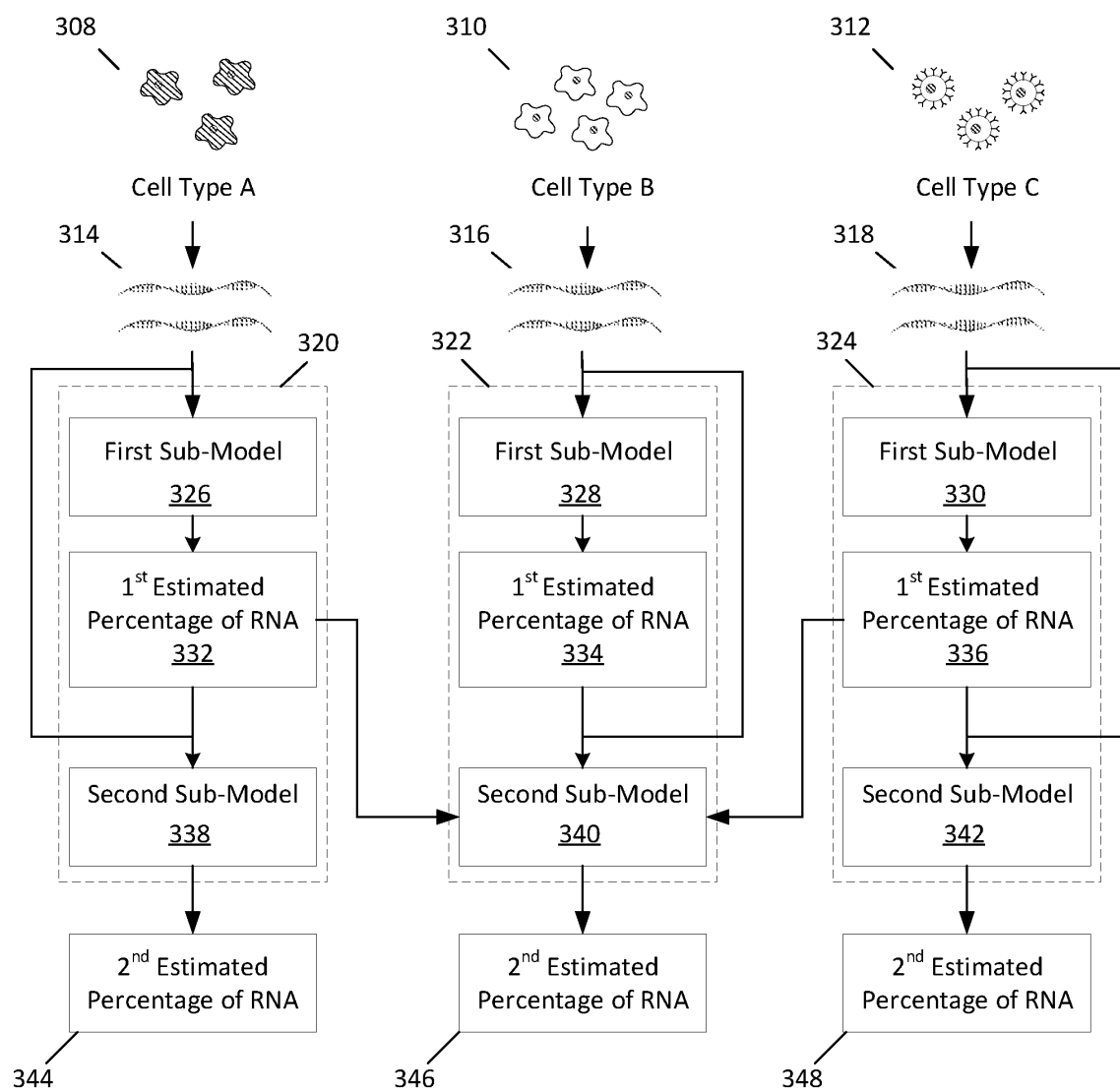


FIG. 3B

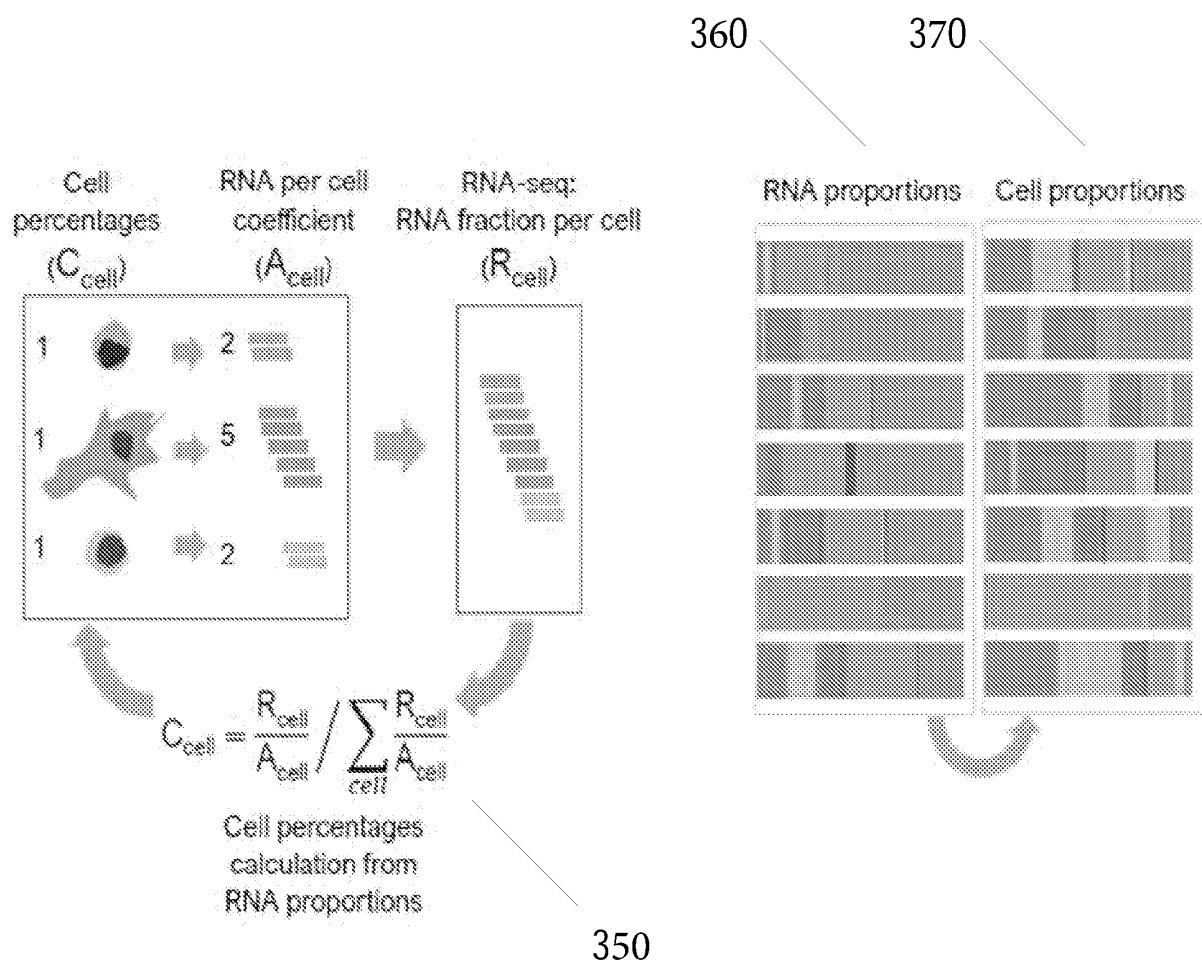
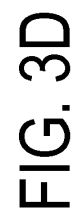


FIG. 3C



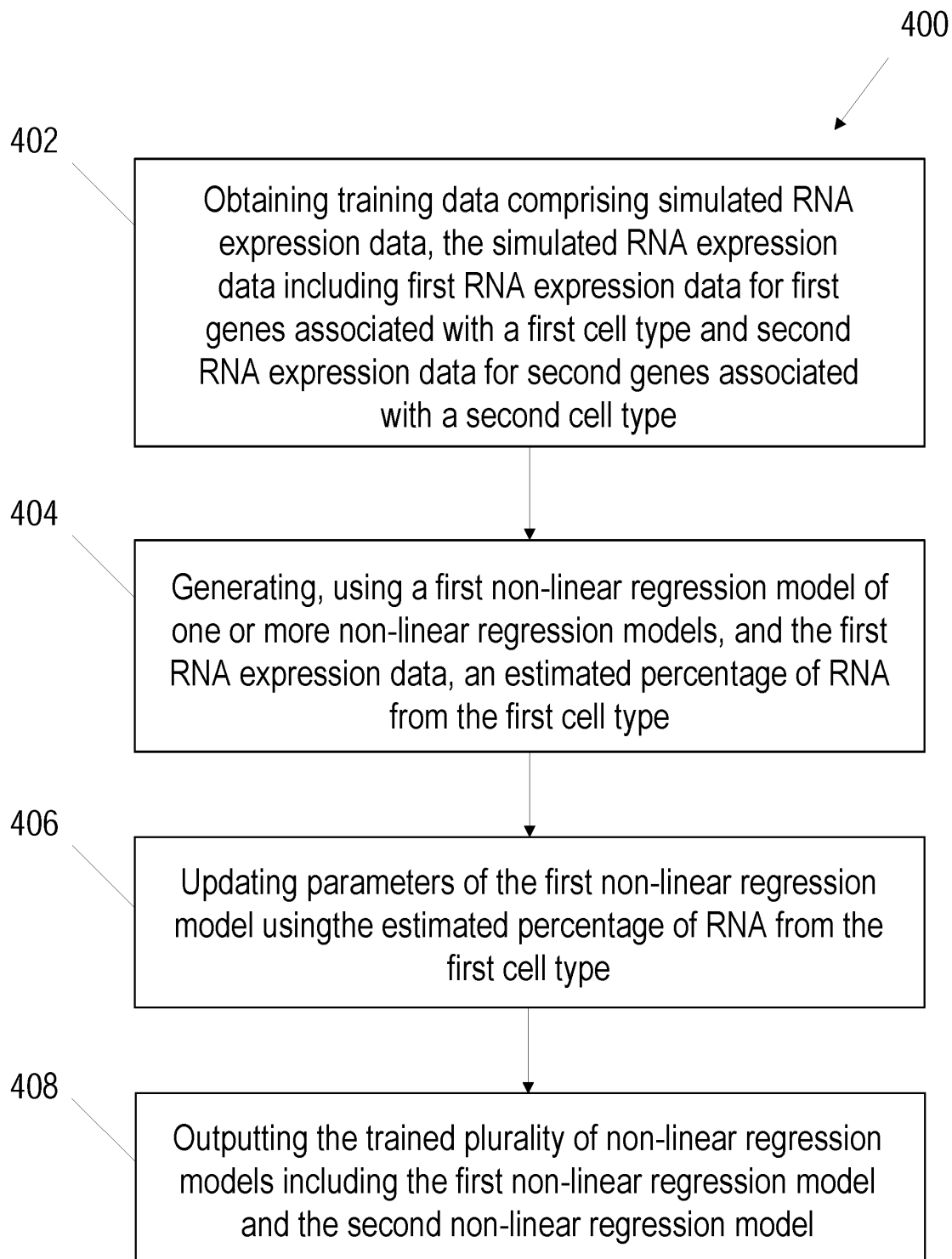


FIG. 4

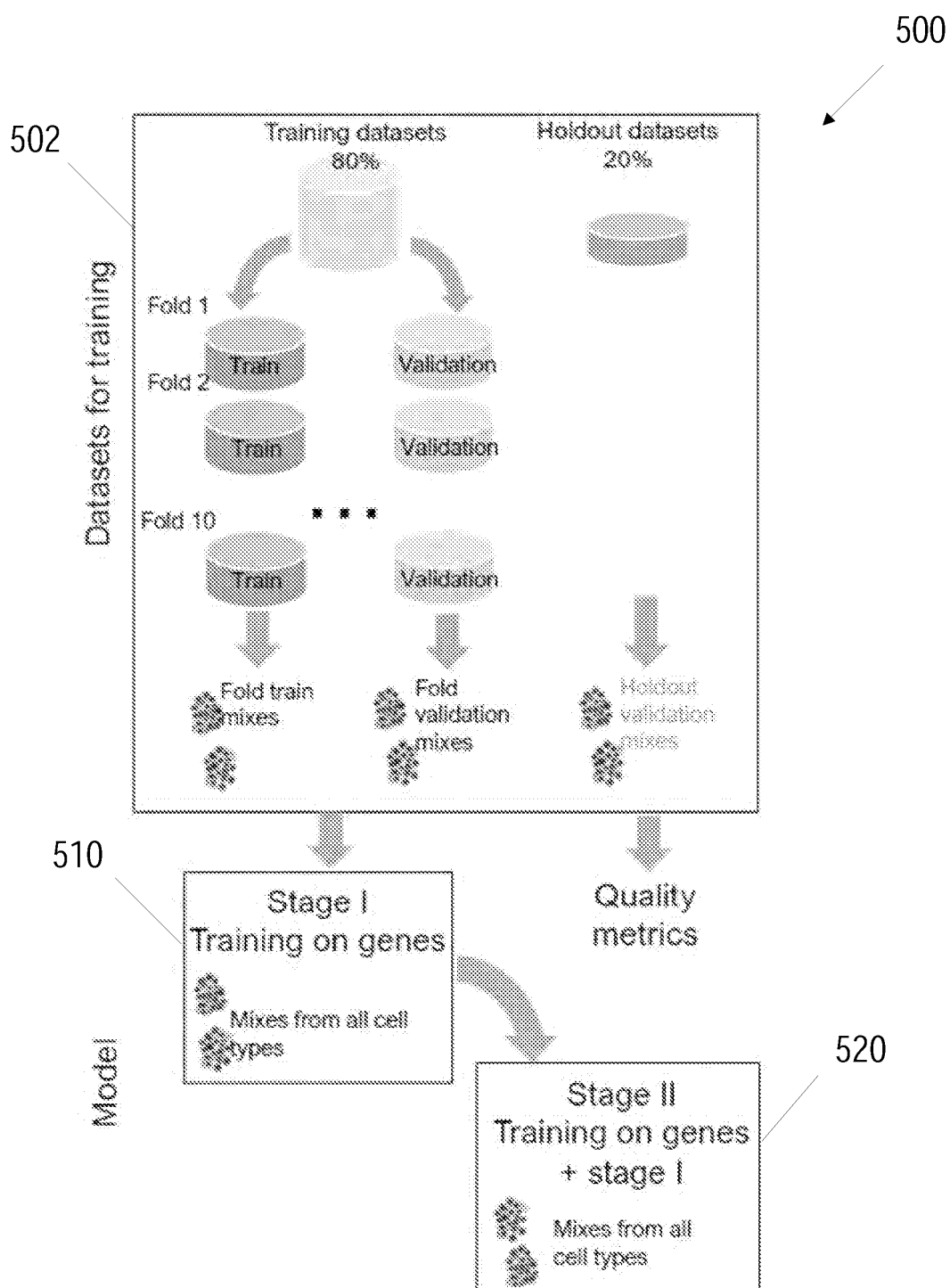


FIG. 5A

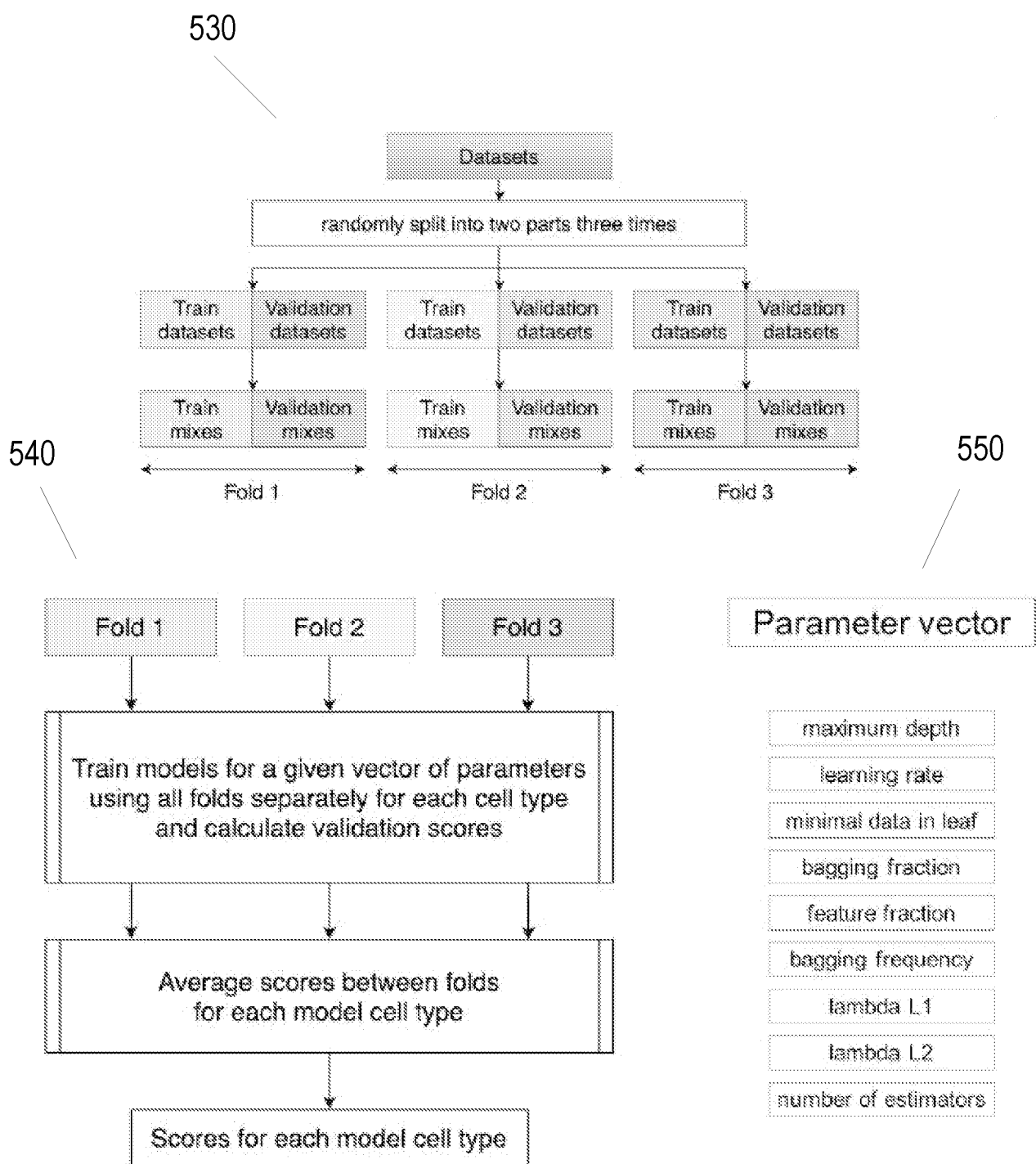


FIG. 5B

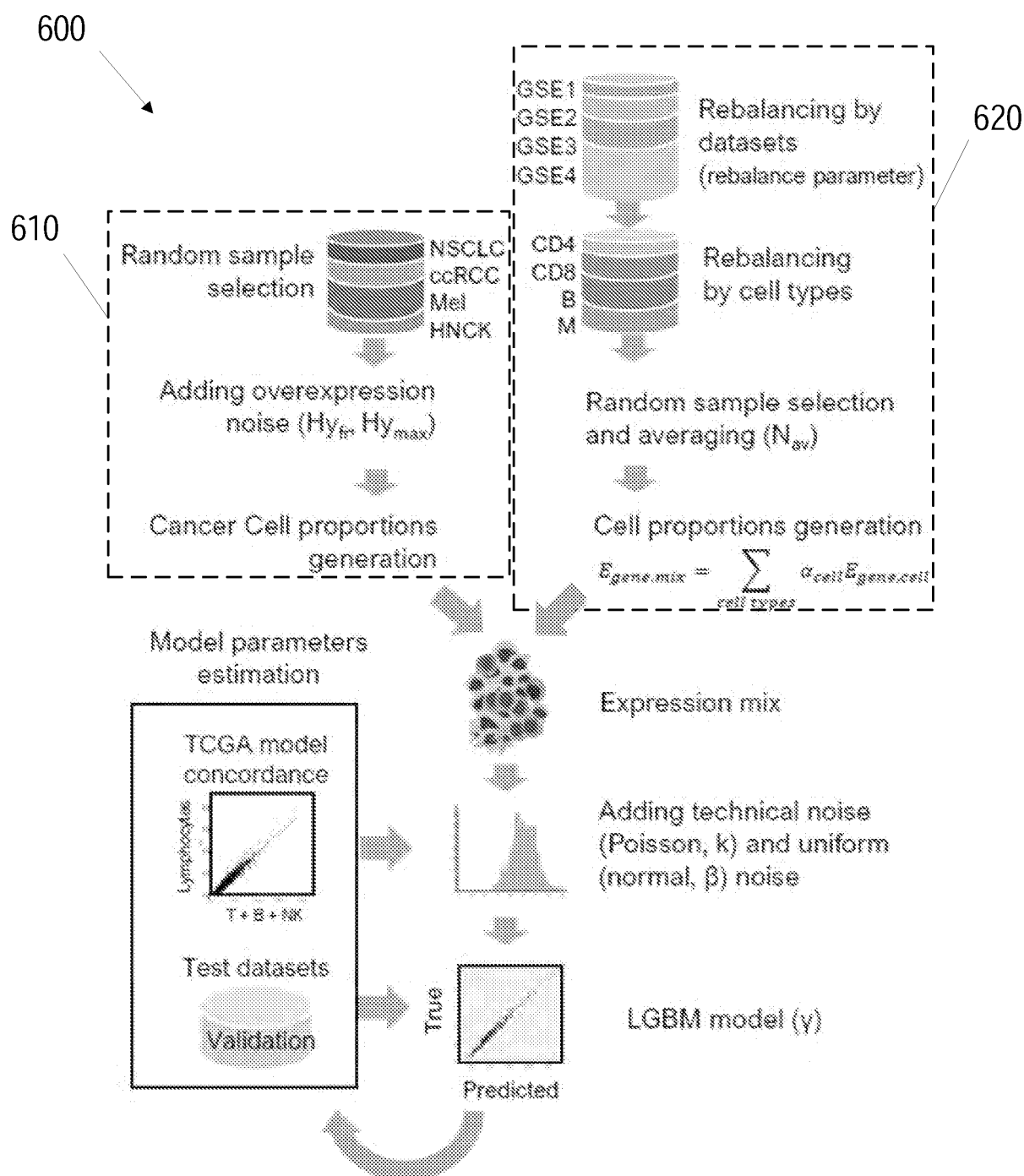


FIG. 6A

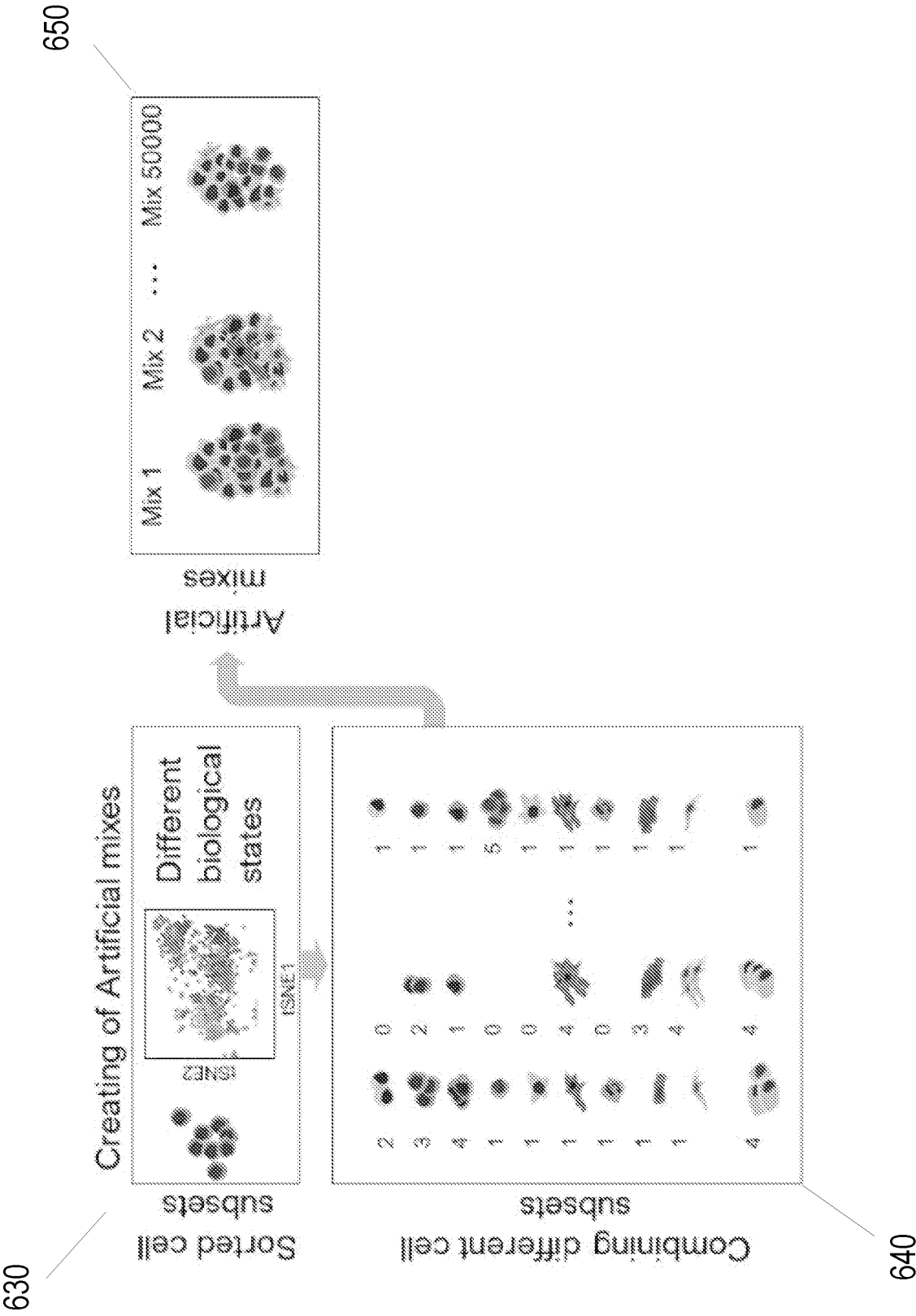


FIG. 6B

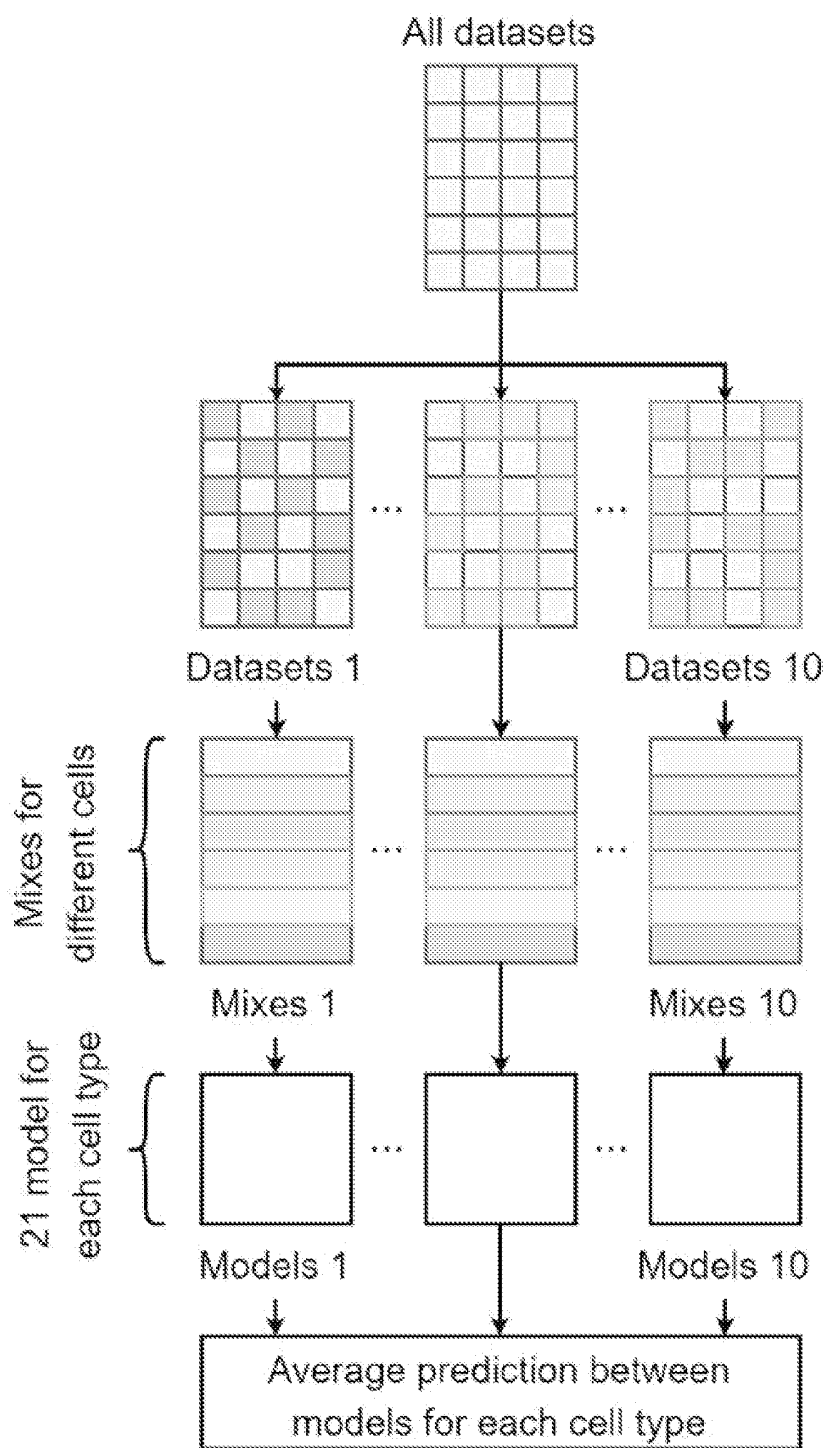


FIG. 6C

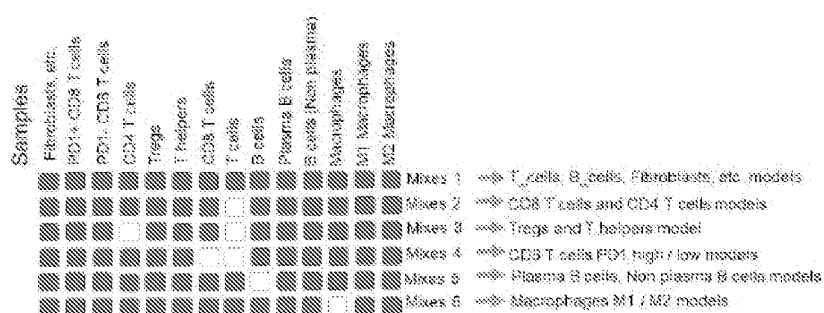


FIG. 6D

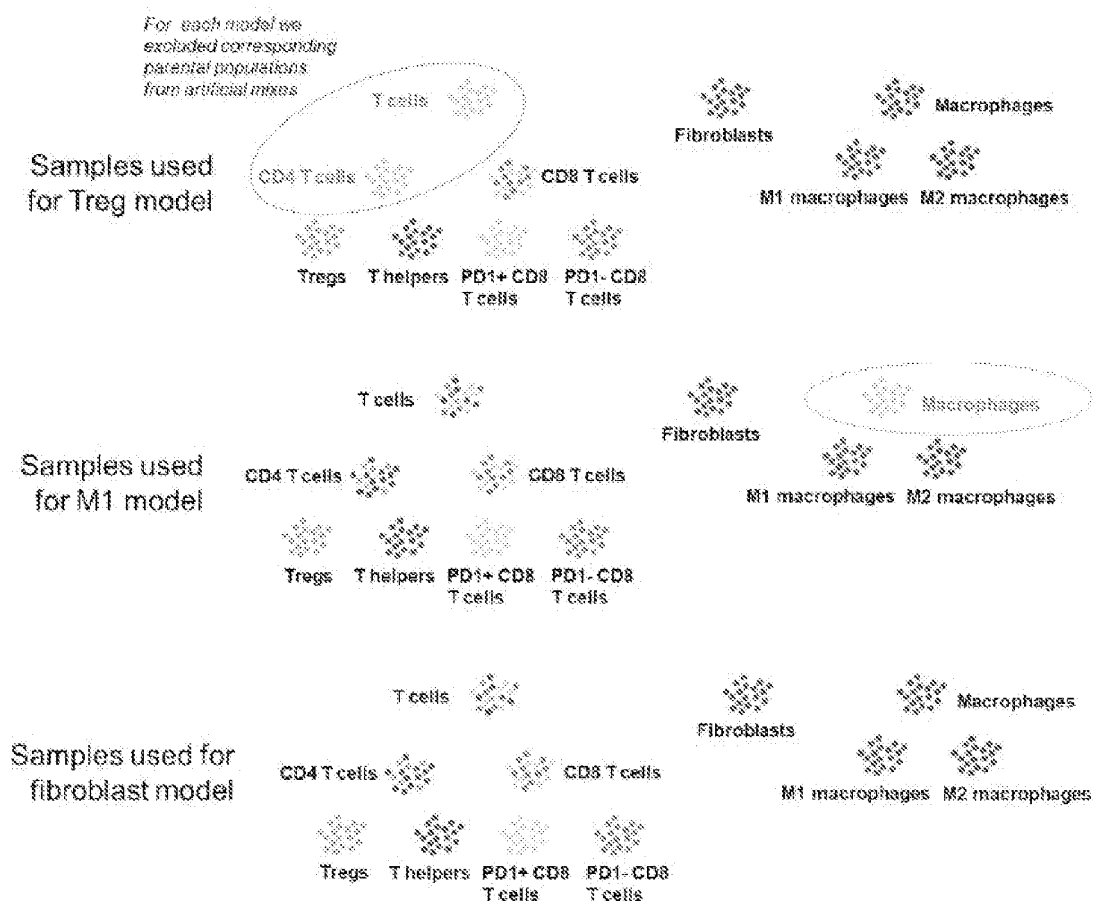


FIG. 6E

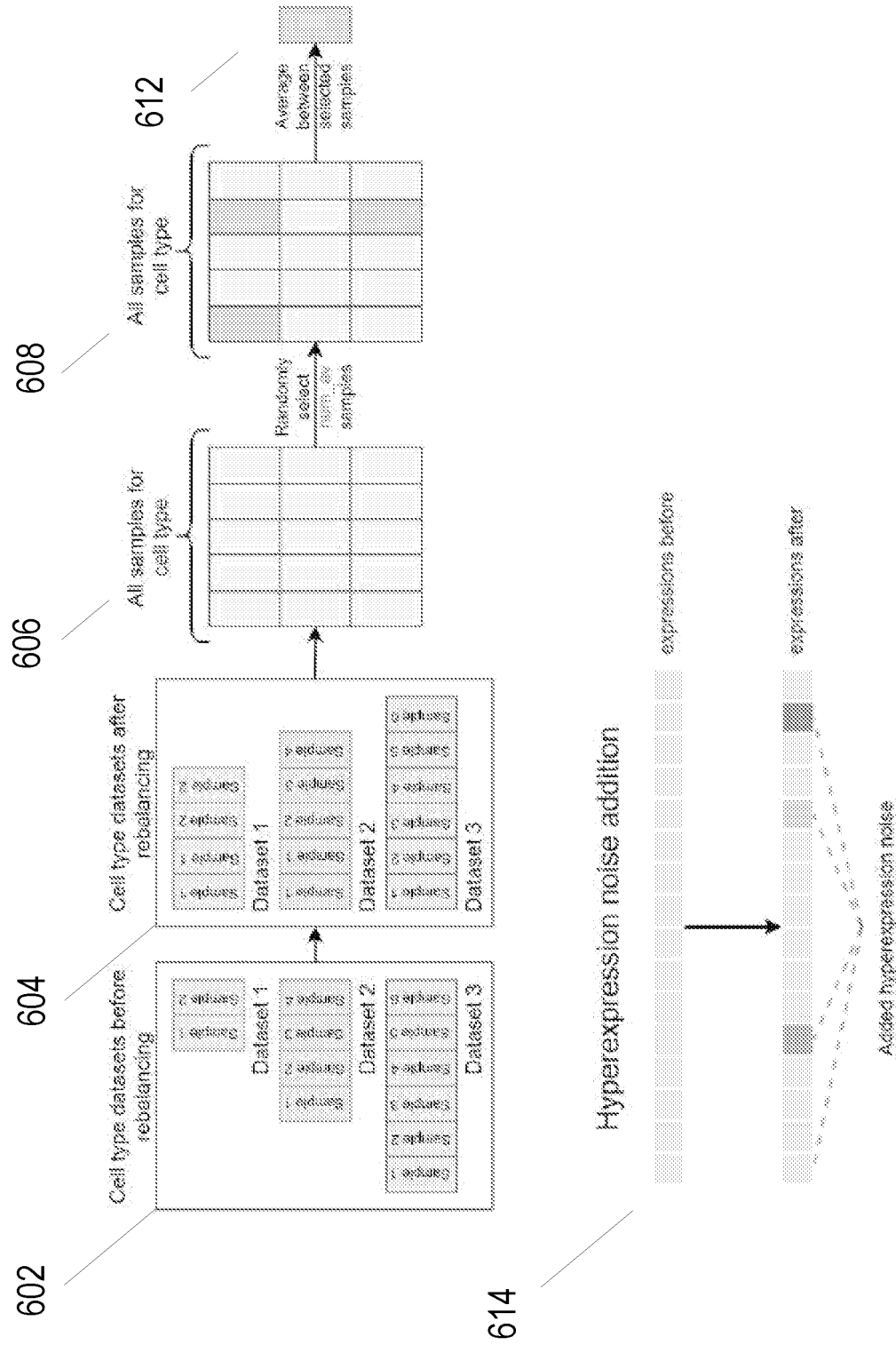


FIG. 6F

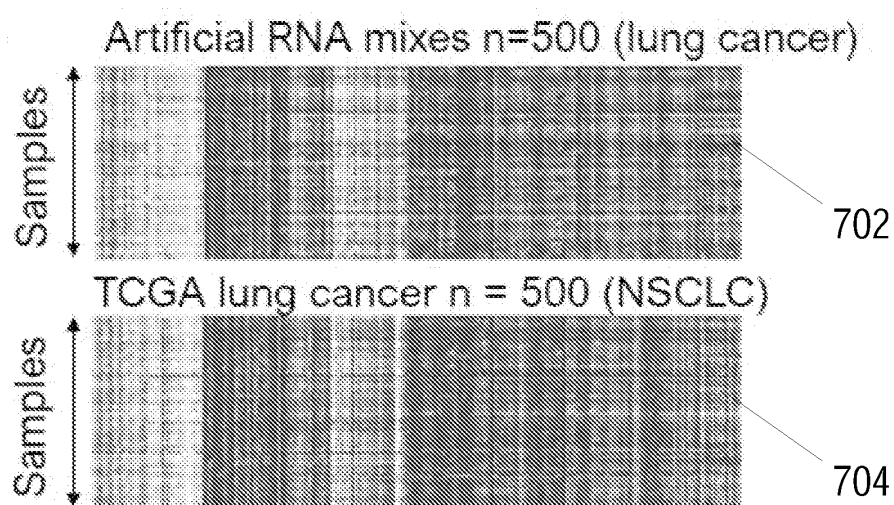


FIG. 7A

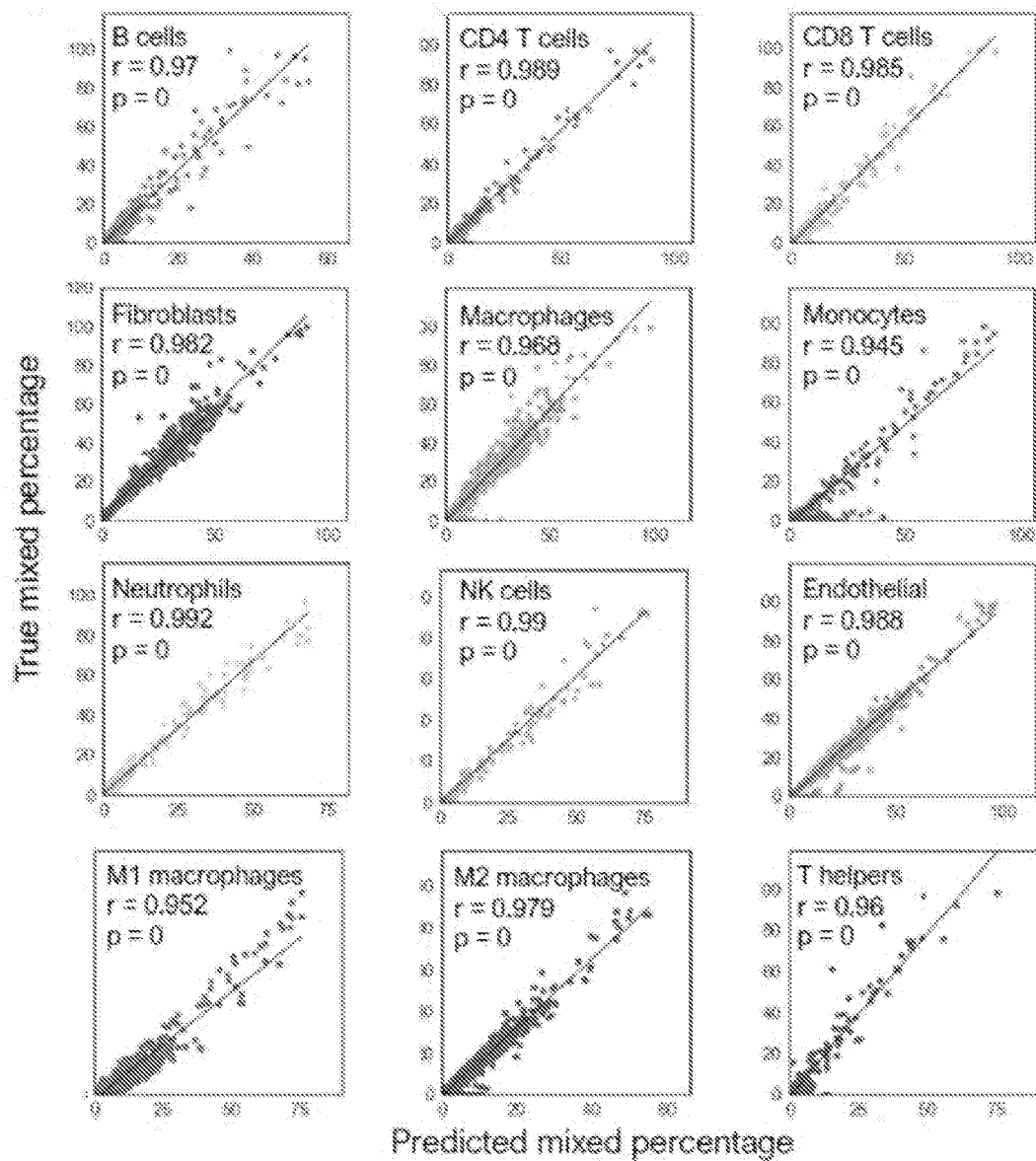


FIG. 7B

|                   |           |                   |                   |           |                   |                  |                  |      |           |      |           |           |             |
|-------------------|-----------|-------------------|-------------------|-----------|-------------------|------------------|------------------|------|-----------|------|-----------|-----------|-------------|
| B cells           | 0.97      | 0.83              | 0.97              | 0.94      | 0.93              | 0.94             | 0.76             | 0.87 | 0.82      | 0.95 | 0.97      | 0.98      | 0.97        |
| T cells           | 0.99      | 0.56              | 0.89              | 0.95      | 0.94              | 0.95             | 0.75             | 0.91 | 0.71      | 0.94 | 0.9       | 0.88      | 0.95        |
| CD4 T cells       | 0.99      | 0.62              | 0.77              | 0.95      | 0.93              |                  |                  | 0.86 | 0.67      | 0.78 | 0.82      | 0.8       |             |
| Tregs             | 0.91      |                   |                   | 0.9       | 0.89              |                  |                  | 0.76 |           |      |           |           |             |
| T helpers         | 0.95      |                   |                   | 0.84      | 0.8               |                  |                  |      |           |      |           |           |             |
| CD8 T cells       | 0.99      | 0.56              | 0.9               | 0.95      | 0.95              |                  |                  | 0.72 | 0.74      | 0.8  | 0.94      | 0.94      | 0.97        |
| NK cells          | 0.99      |                   | 0.95              | 0.97      | 0.97              | 0.97             | 0.82             | 0.86 | 0.83      | 0.95 | 0.93      | 0.93      | 0.98        |
| Neutrophils       | 0.99      |                   | 0.95              | 0.9       | 0.9               | 0.97             | 0.87             | 0.91 | 0.88      | 0.96 | 0.97      |           | 0.96        |
| Monocytes         | 0.95      |                   | 0.87              | 0.93      | 0.93              | 0.92             | 0.7              | 0.65 | 0.74      | 0.61 | 0.69      |           | 0.12        |
| Macrophages       | 0.97      | 0.77              | 0.94              | 0.87      | 0.86              | 0.91             | 0.66             | 0.94 | 0.7       |      |           | 0.81      |             |
| M1 Macrophages    | 0.96      |                   | 0.97              | 0.82      | 0.8               | 0.95             | 0.73             | 0.74 | 0.79      |      |           |           |             |
| M2 Macrophages    | 0.98      |                   | 0.68              | 0.97      | 0.97              | 0.59             | 0.47             | 0.89 | 0.58      |      |           |           |             |
| Endothelial cells | 0.99      | 0.86              |                   |           |                   |                  |                  | 0.91 |           |      |           | 0.96      | 0.99        |
| Fibroblasts       | 0.98      | 0.9               |                   |           |                   |                  |                  | 0.94 |           |      |           | 0.93      | 0.97        |
|                   | Kassandra | CIBERSORTX (HNSC) | CIBERSORTX (LM22) | Quantiseq | Quantiseq (Tumor) | Fardeep-absolute | Fardeep-relative | Xcel | CIBERSORT | ABIS | EPIC BRef | EPIC TRef | MCP-counter |

FIG. 7C

+ Cancer cell overexpression noise

|                   |           |                   |                   |           |                   |                  |                  |      |           |      |           |           |             |
|-------------------|-----------|-------------------|-------------------|-----------|-------------------|------------------|------------------|------|-----------|------|-----------|-----------|-------------|
| B cells           | 0.96      | 0.15              | 0.91              | 0.81      | 0.8               | 0.53             | 0.61             | 0.85 | 0.86      | 0.95 | 0.94      | 0.94      | 0.88        |
| T cells           | 0.99      | 0.48              | 0.78              | 0.67      | 0.67              | 0.96             | 0.77             | 0.91 | 0.71      | 0.93 | 0.68      | 0.66      | 0.69        |
| CD4 T cells       | 0.99      | 0.63              | 0.74              | 0.69      | 0.69              | 0.88             | 0.78             | 0.9  | 0.74      | 0.81 | 0.7       | 0.75      |             |
| Tregs             | 0.92      |                   |                   | 0.77      | 0.75              | 0.73             | 0.71             | 0.79 |           |      |           |           |             |
| T helpers         | 0.96      |                   |                   | 0.51      | 0.5               |                  |                  |      |           |      |           |           |             |
| CD8 T cells       | 0.99      | 0.53              | 0.89              | 0.89      | 0.89              | 0.81             | 0.55             | 0.72 | 0.73      | 0.85 | 0.89      | 0.82      | 0.8         |
| NK cells          | 0.99      |                   | 0.85              | 0.82      | 0.74              | 0.97             | 0.87             | 0.92 | 0.88      | 0.96 | 0.91      | 0.93      | 0.52        |
| Neutrophils       | 0.99      |                   | 0.95              | 0.77      | 0.77              | 0.97             | 0.84             | 0.89 | 0.87      | 0.94 | 0.87      |           | 0.74        |
| Monocytes         | 0.96      |                   | 0.83              | 0.67      | 0.68              | 0.94             | 0.72             | 0.63 | 0.75      | 0.62 | 0.57      |           | 0.065       |
| Macrophages       | 0.97      | 0.67              | 0.81              | 0.75      | 0.75              | 0.91             | 0.65             | 0.93 | 0.73      |      |           | 0.83      |             |
| M1 Macrophages    | 0.96      |                   | 0.95              | 0.77      | 0.75              | 0.94             | 0.79             | 0.73 | 0.84      |      |           |           |             |
| M2 Macrophages    | 0.99      |                   | 0.67              | 0.82      | 0.8               | 0.62             | 0.53             | 0.85 | 0.52      |      |           |           |             |
| Endothelial cells | 0.99      | 0.64              |                   |           |                   |                  |                  | 0.92 |           |      |           | 0.92      | 0.86        |
| Fibroblasts       | 0.98      | 0.7               |                   |           |                   |                  |                  | 0.94 |           |      |           | 0.92      | 0.96        |
|                   | Kassandra | CIBERSORTX (HNSC) | CIBERSORTX (LM22) | Quantiseq | Quantiseq (Tumor) | Fardeep-absolute | Fardeep-relative | Xcel | CIBERSORT | ABIS | EPIC BRef | EPIC Tref | MCP-counter |

FIG. 7D

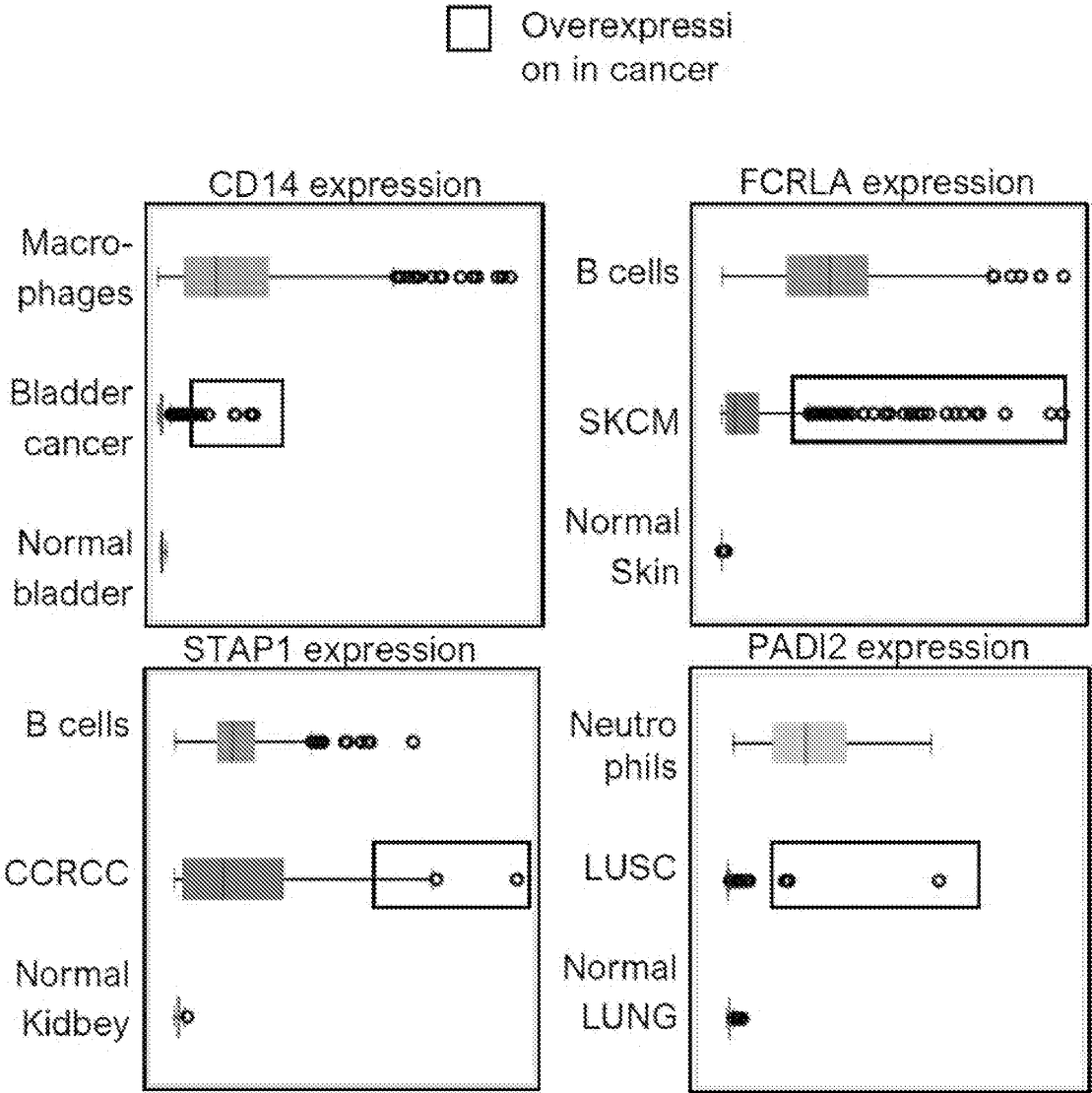


FIG. 7E

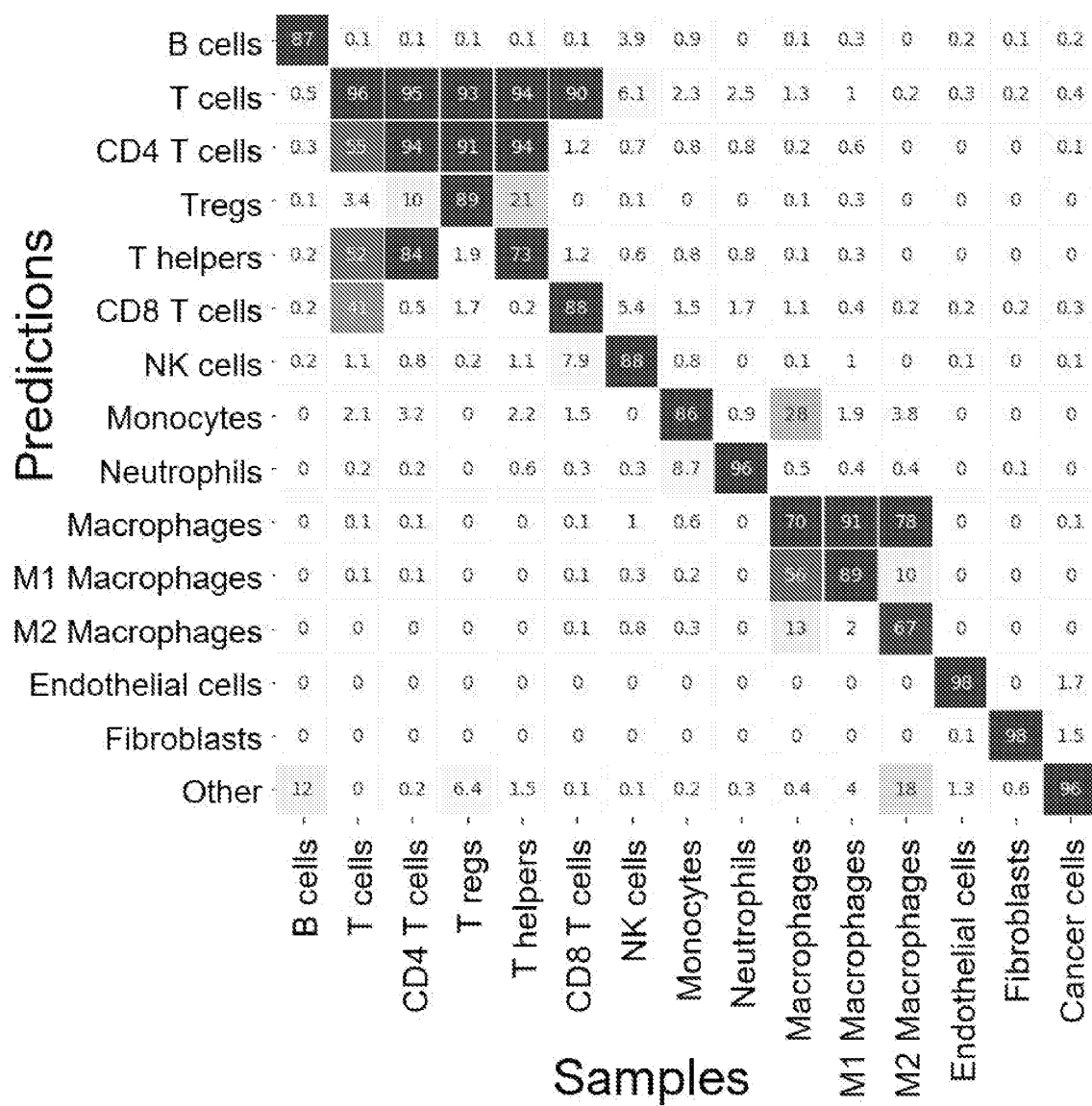


FIG. 7F

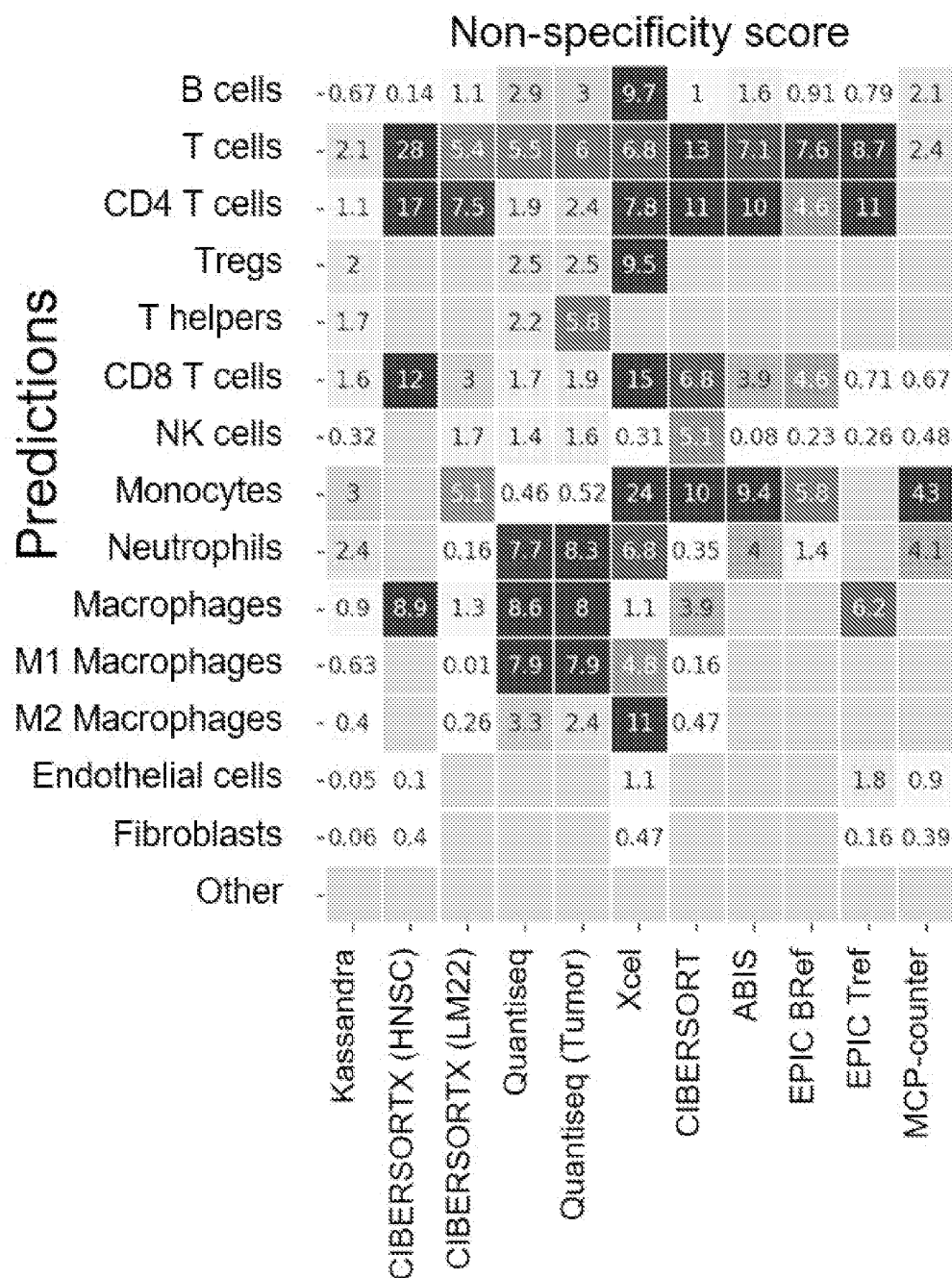


FIG. 7G

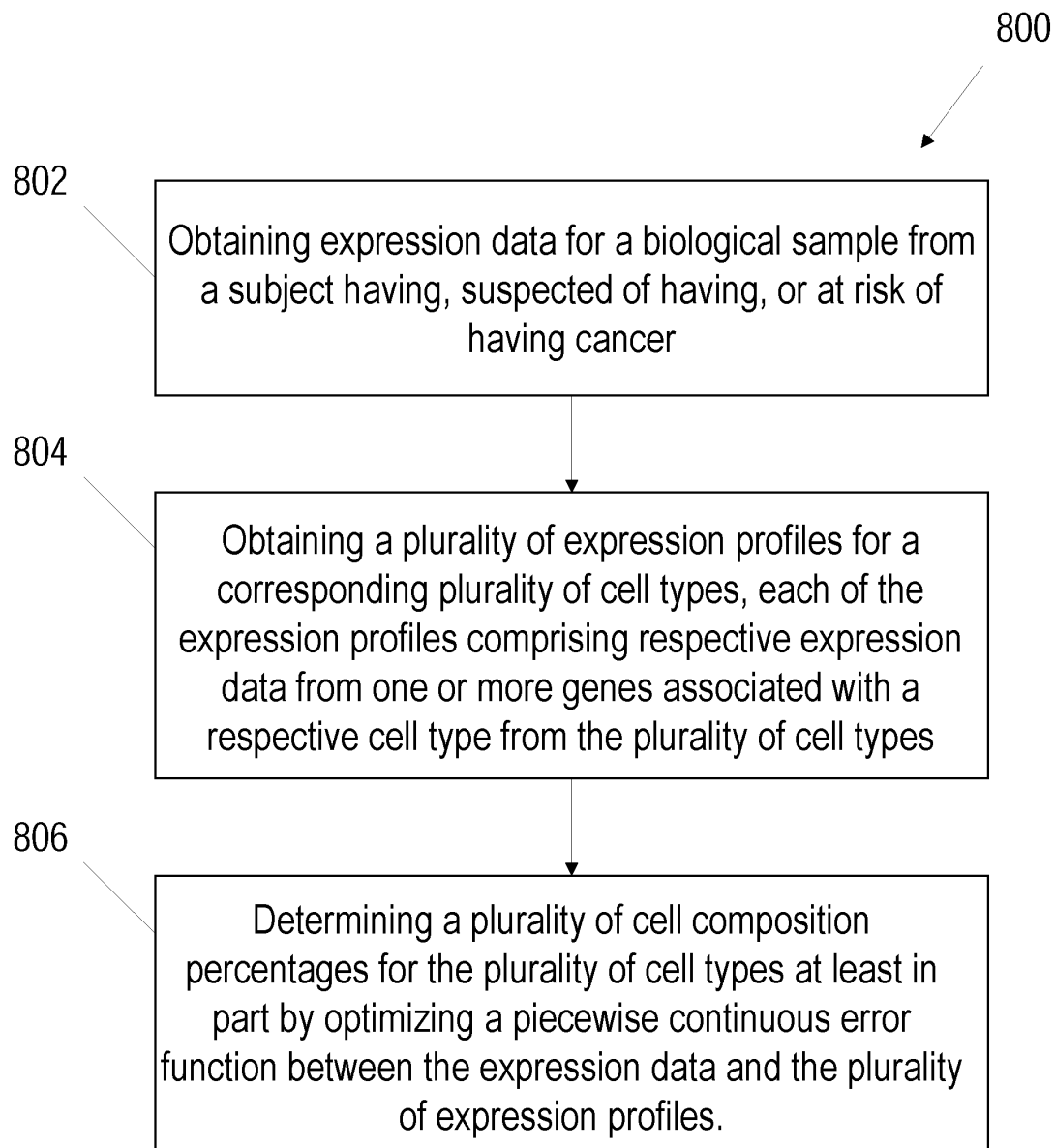
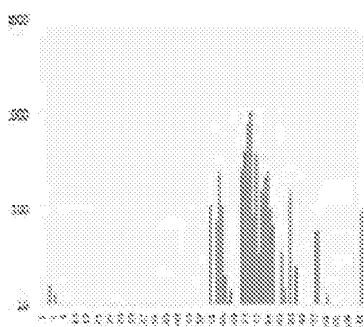


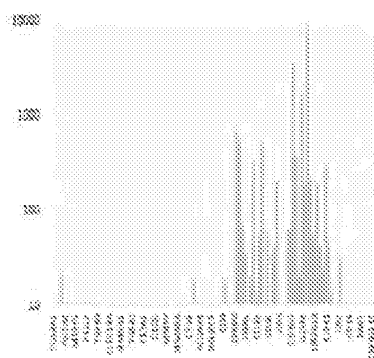
FIG. 8

Known profiles:

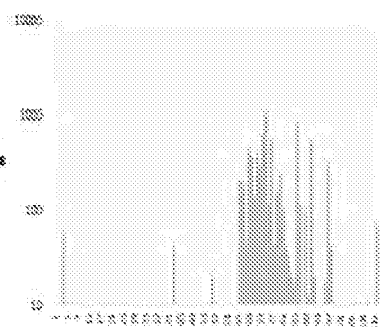
CD4 T cells:



NK cells:



CD8 T cells:



# Error function

$a, b, k$  coefficients

$g$  gene expression

$\alpha, p$  profile expression

Expectation:

$$\alpha \cdot p \sim g$$

Exclusions:

$$\alpha \cdot p \gg g$$

$$\alpha \cdot p \ll g$$

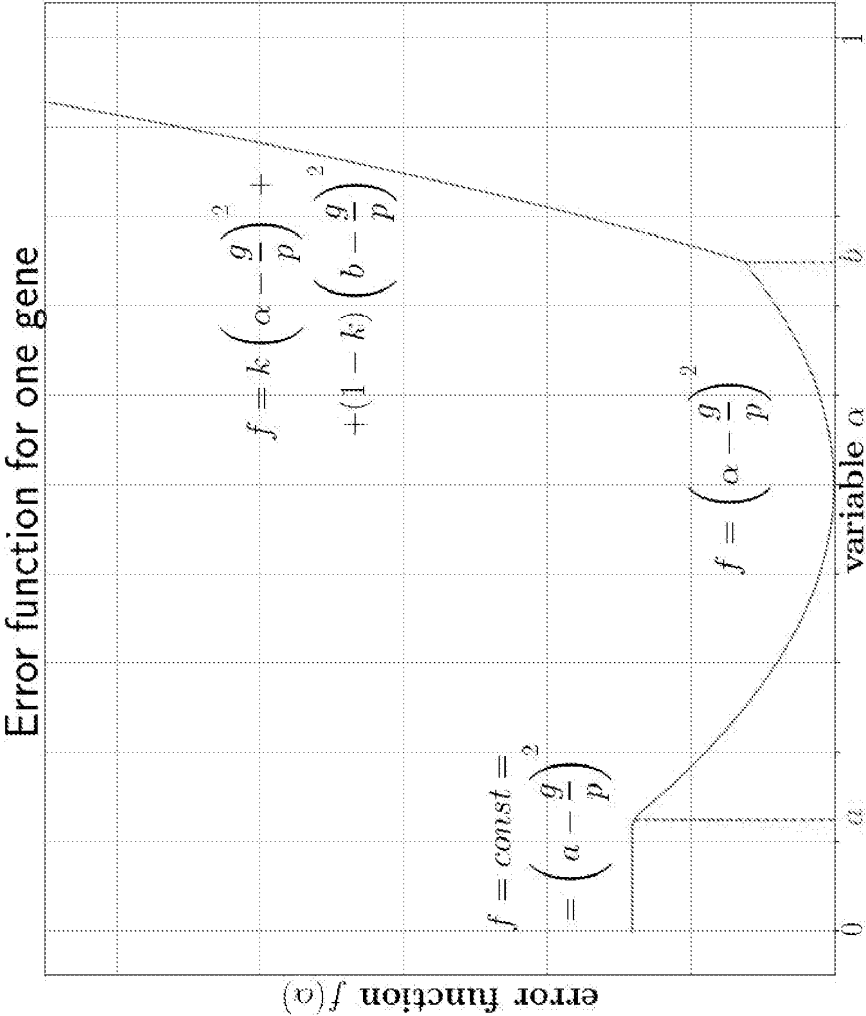


FIG. 9B

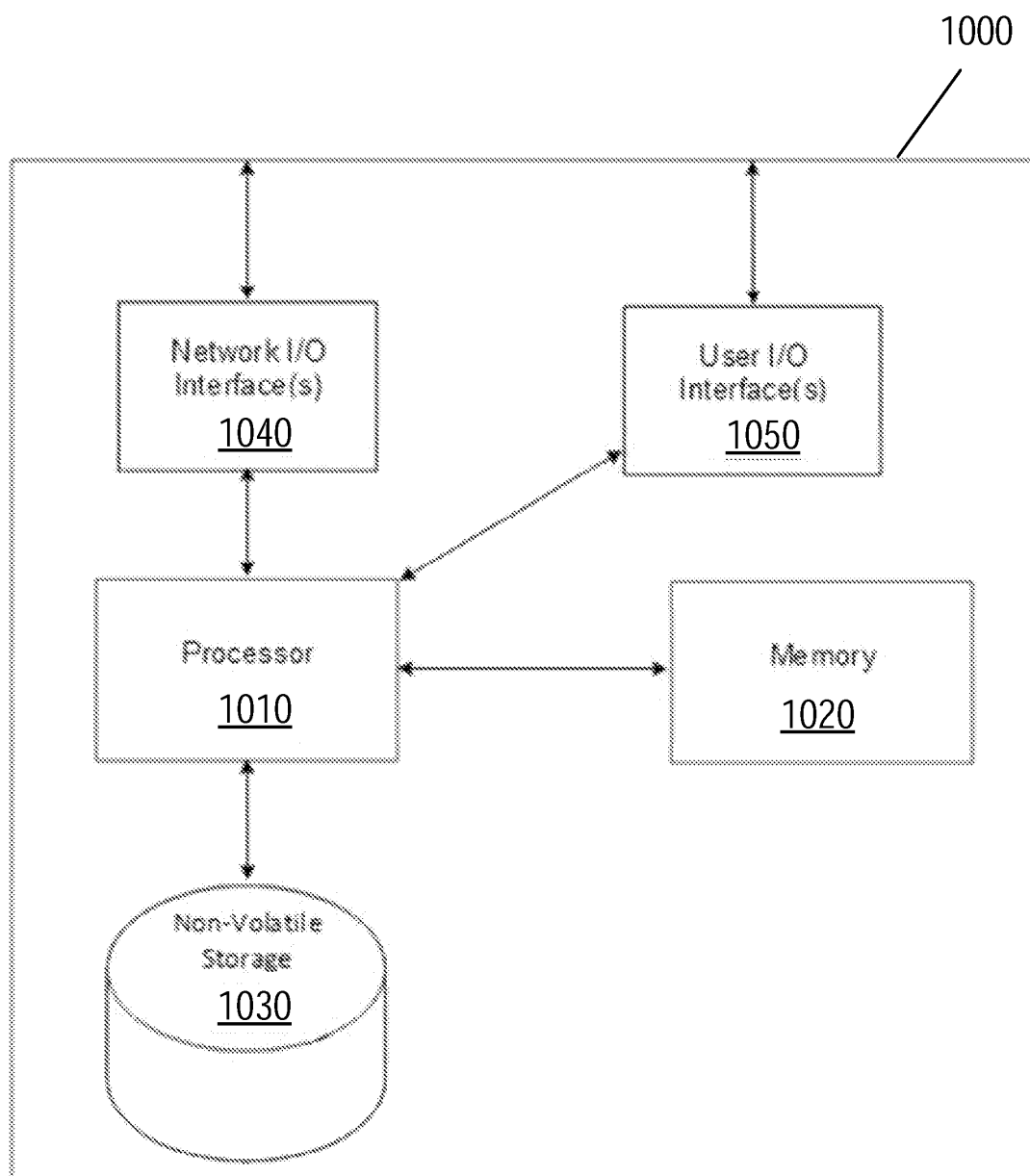


FIG. 10

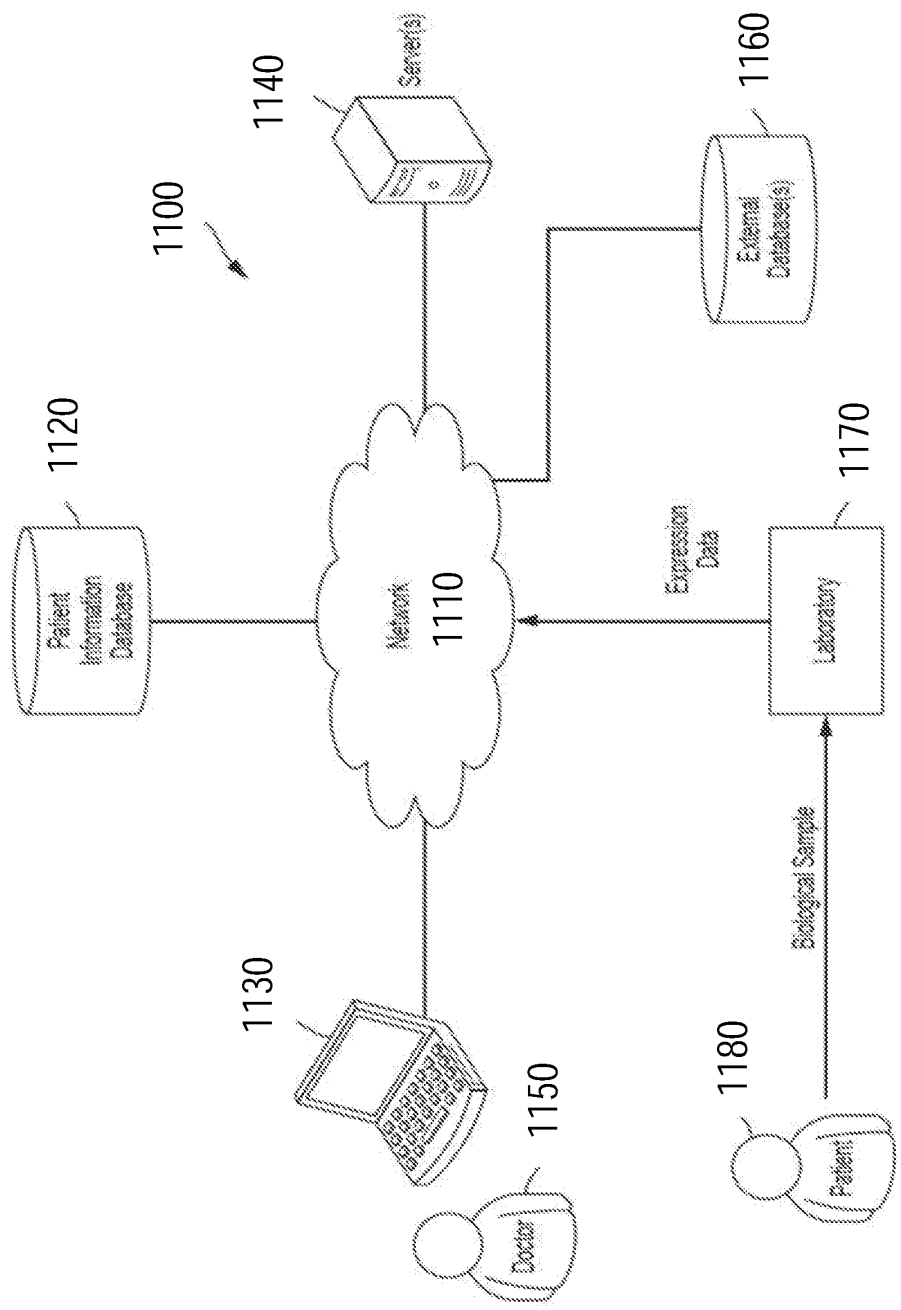


FIG. 11

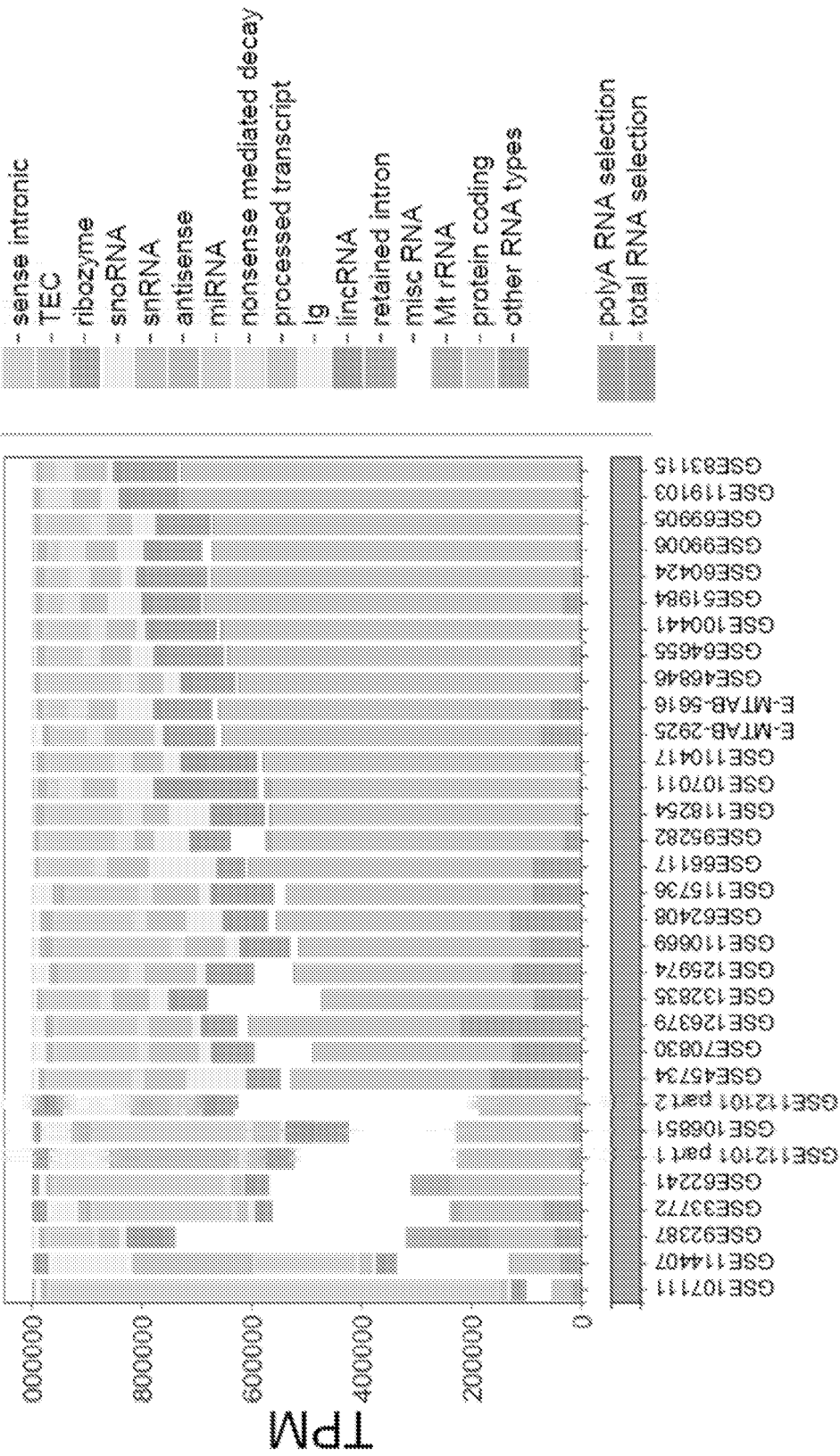


FIG. 12A

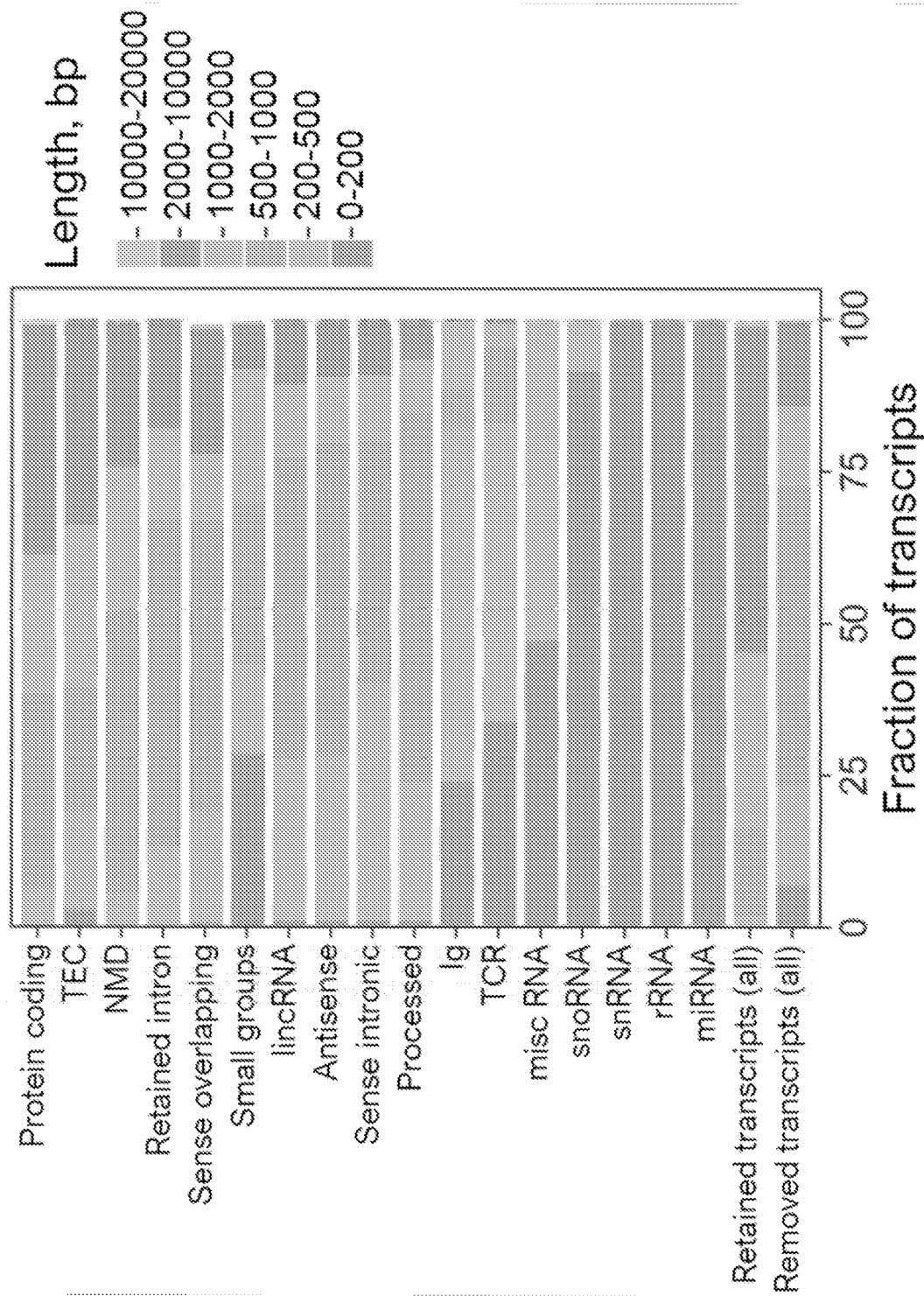


FIG. 12B

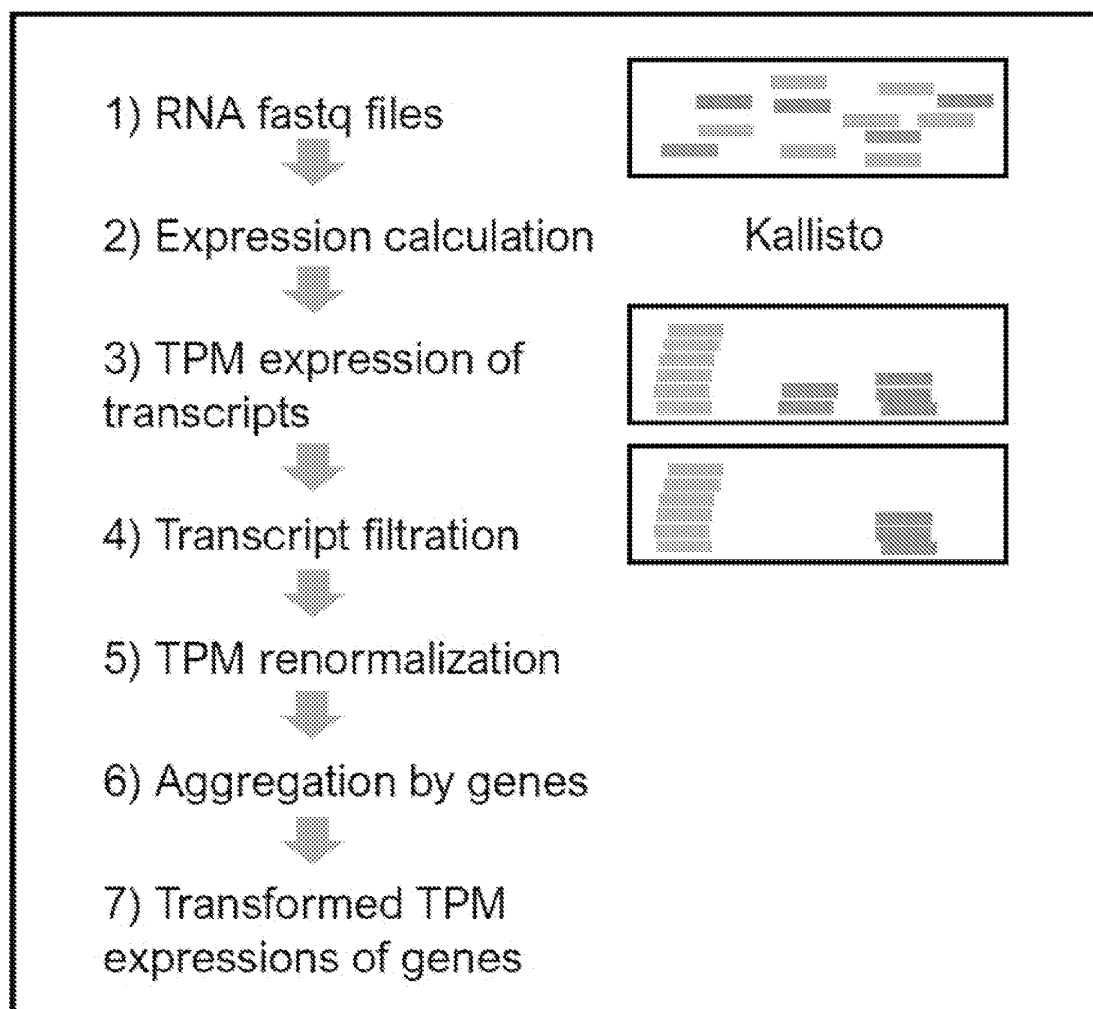


FIG. 12C

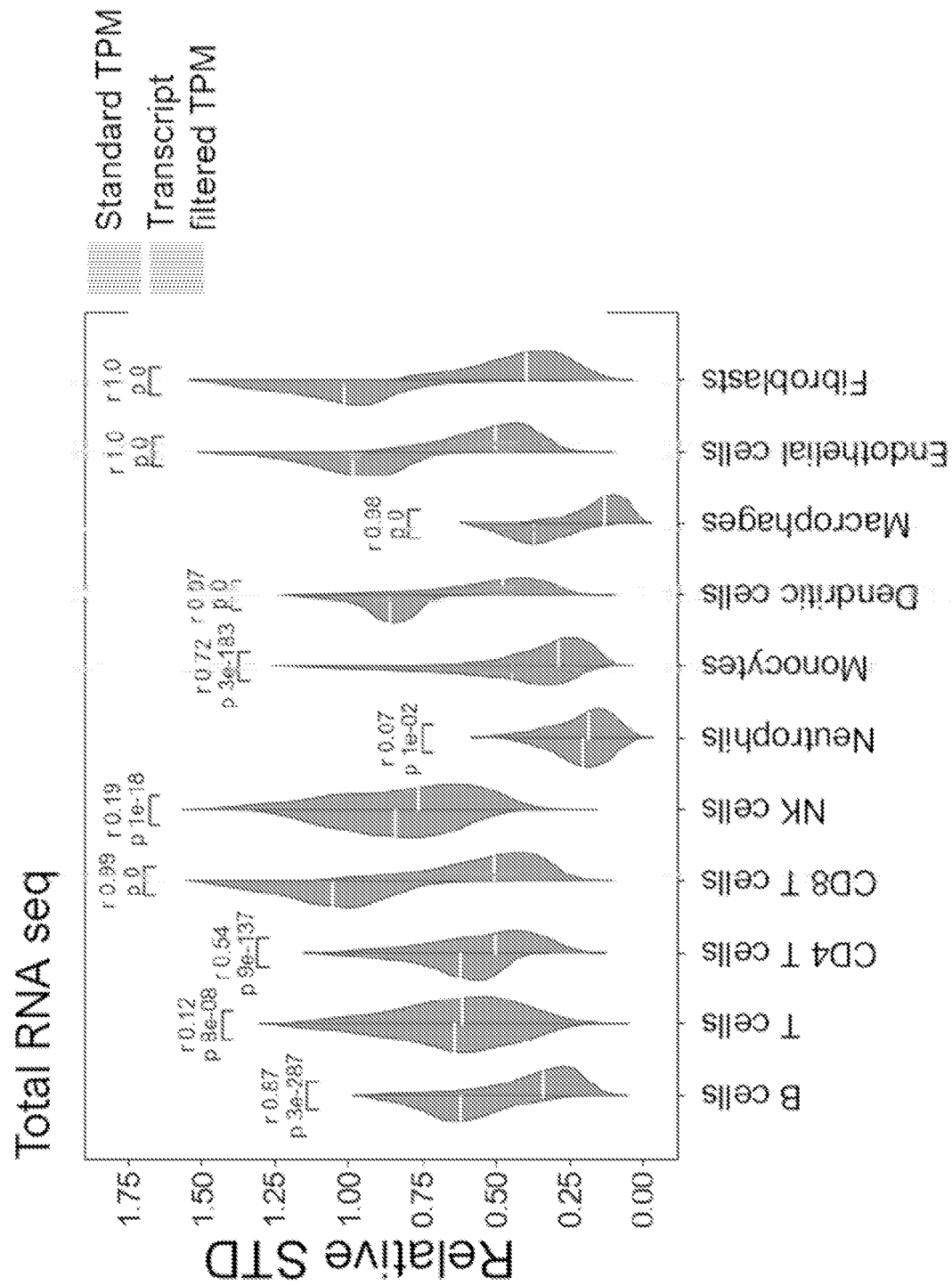


FIG. 12D

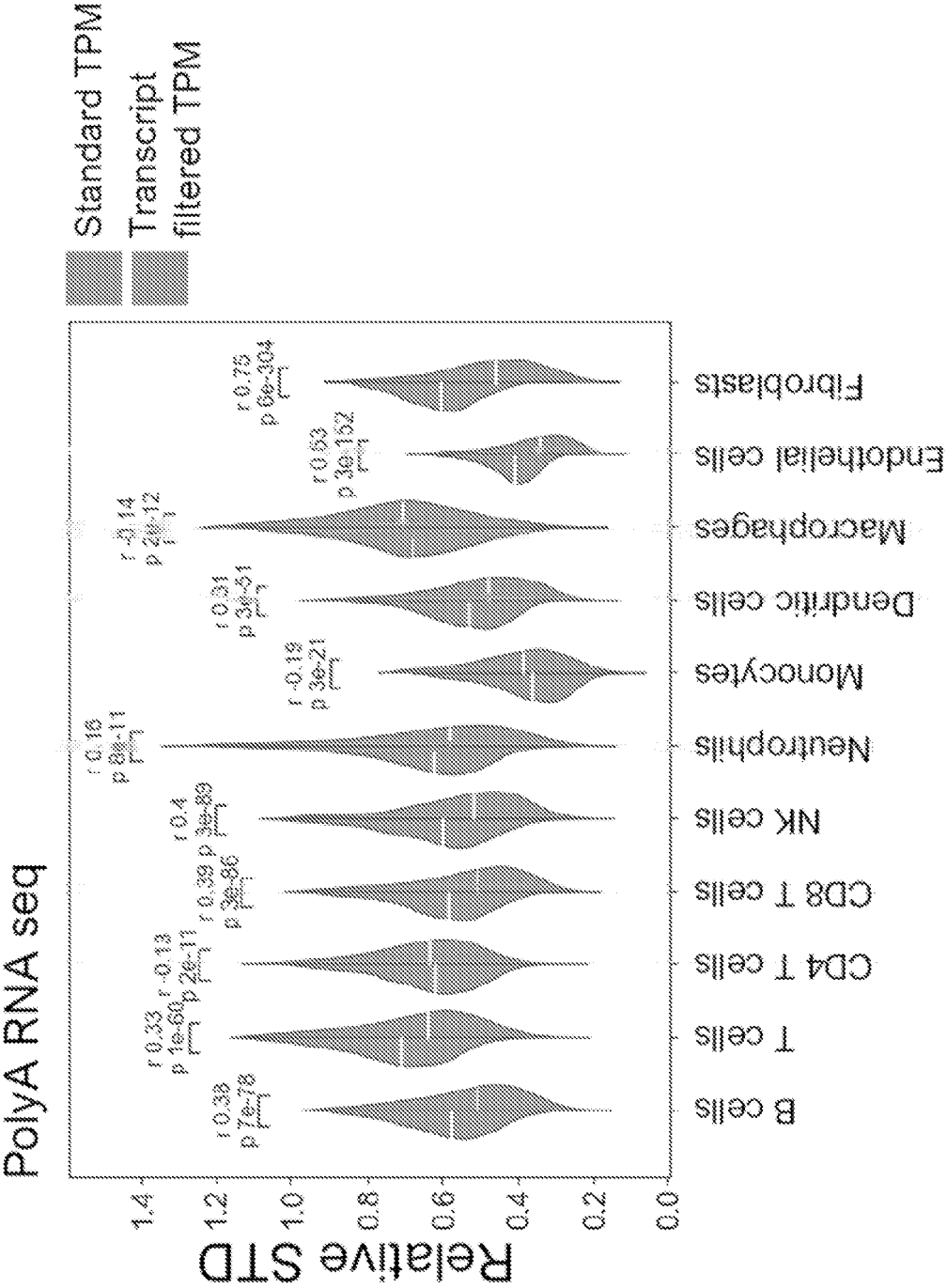


FIG. 12E

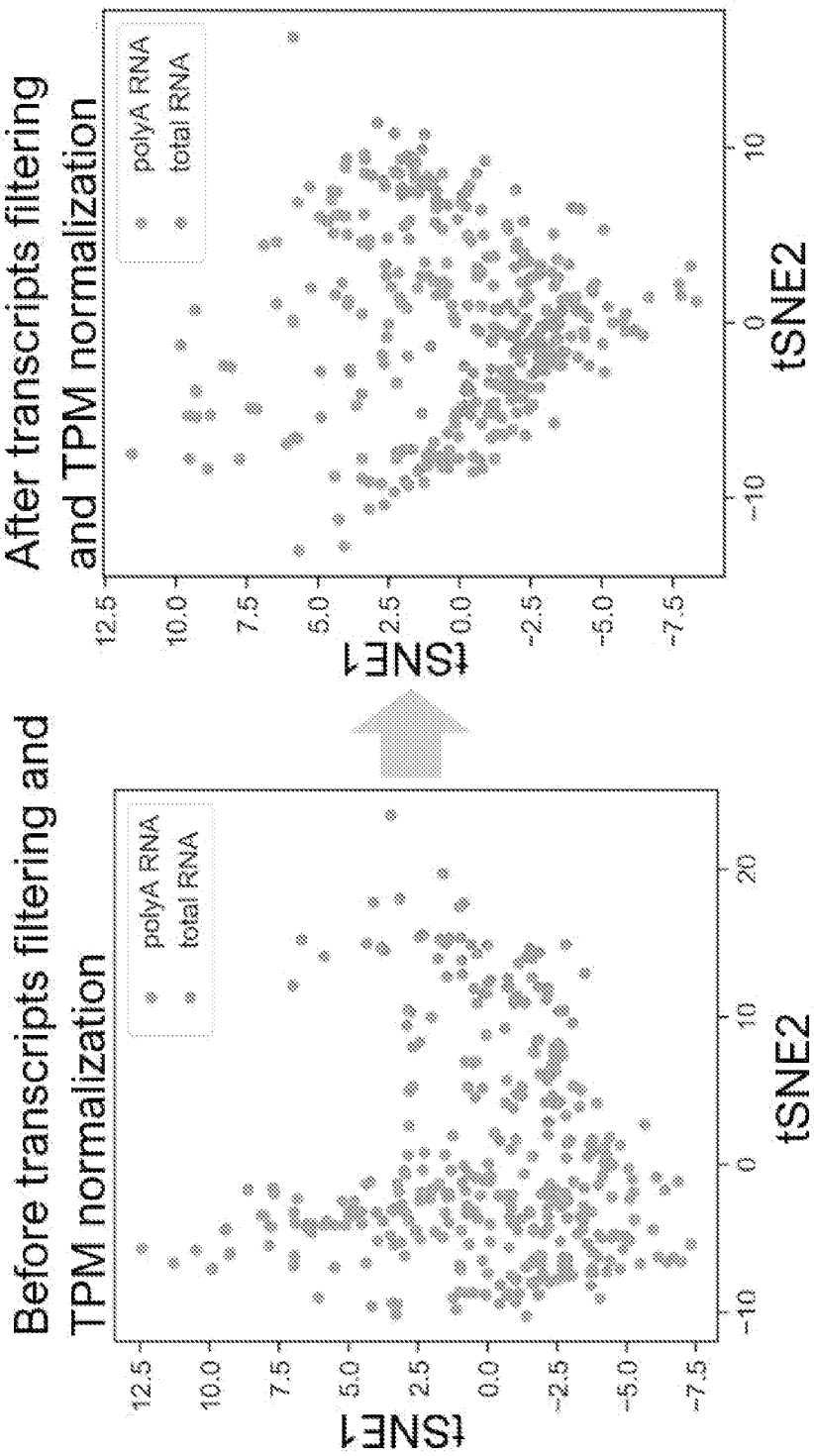


FIG. 12F

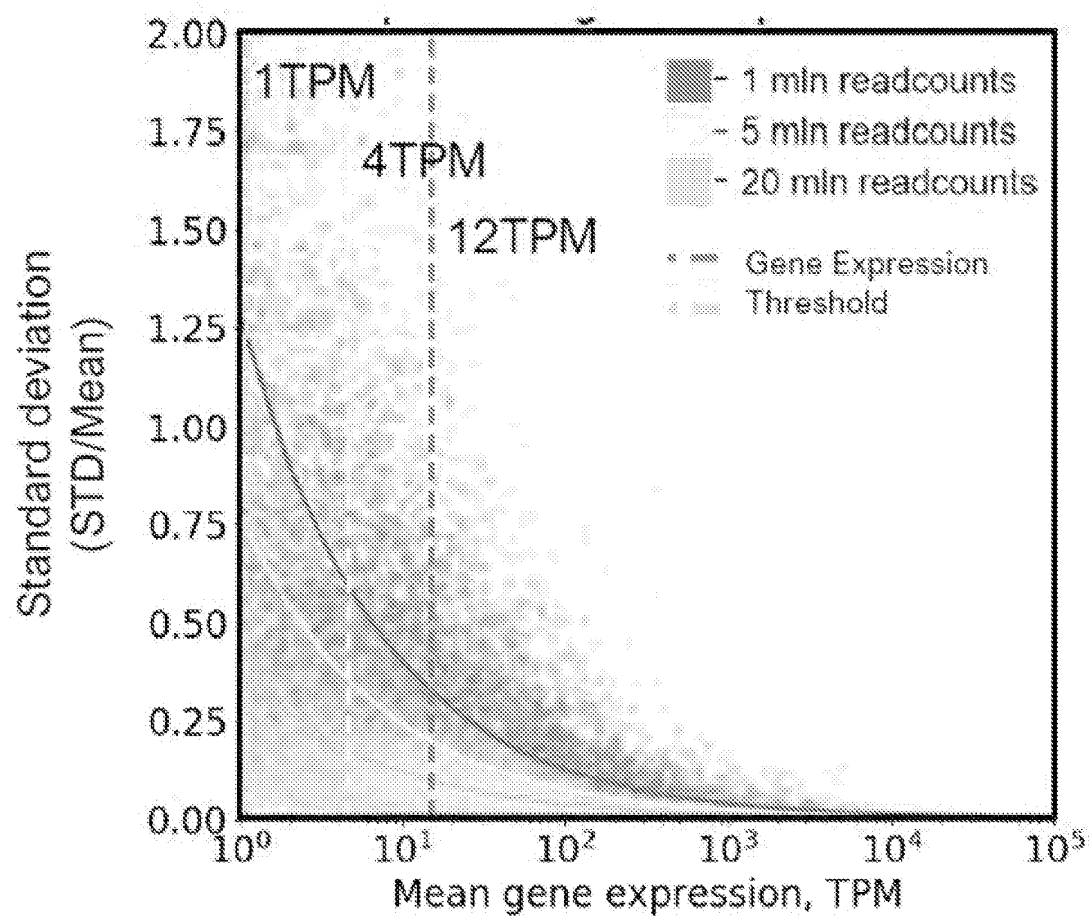


FIG. 12G

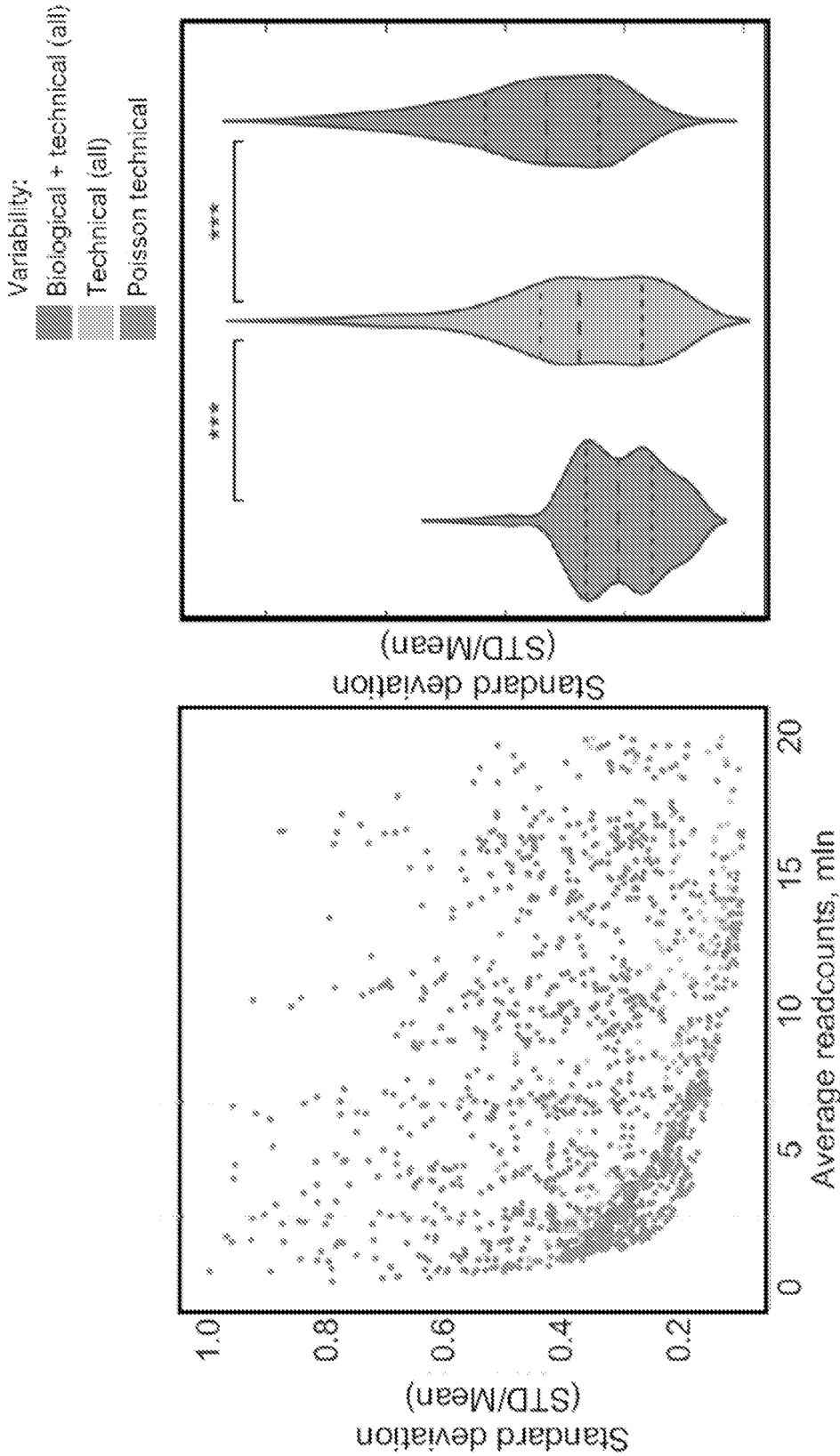


FIG. 12H

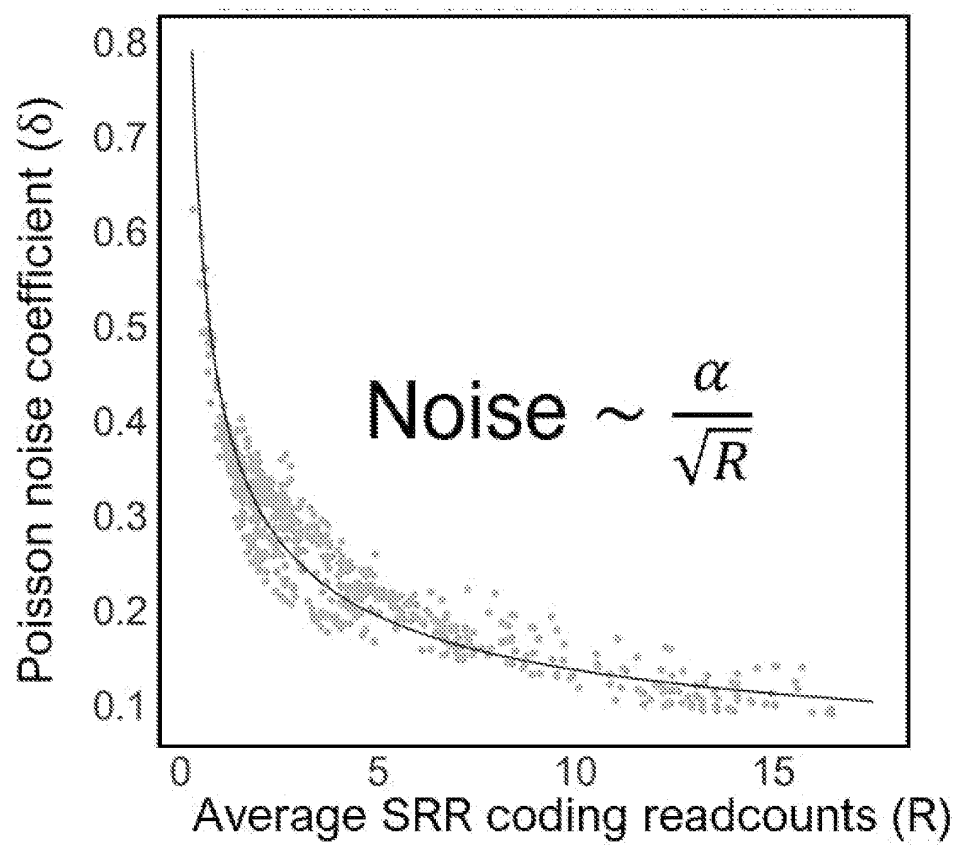


FIG. 12I

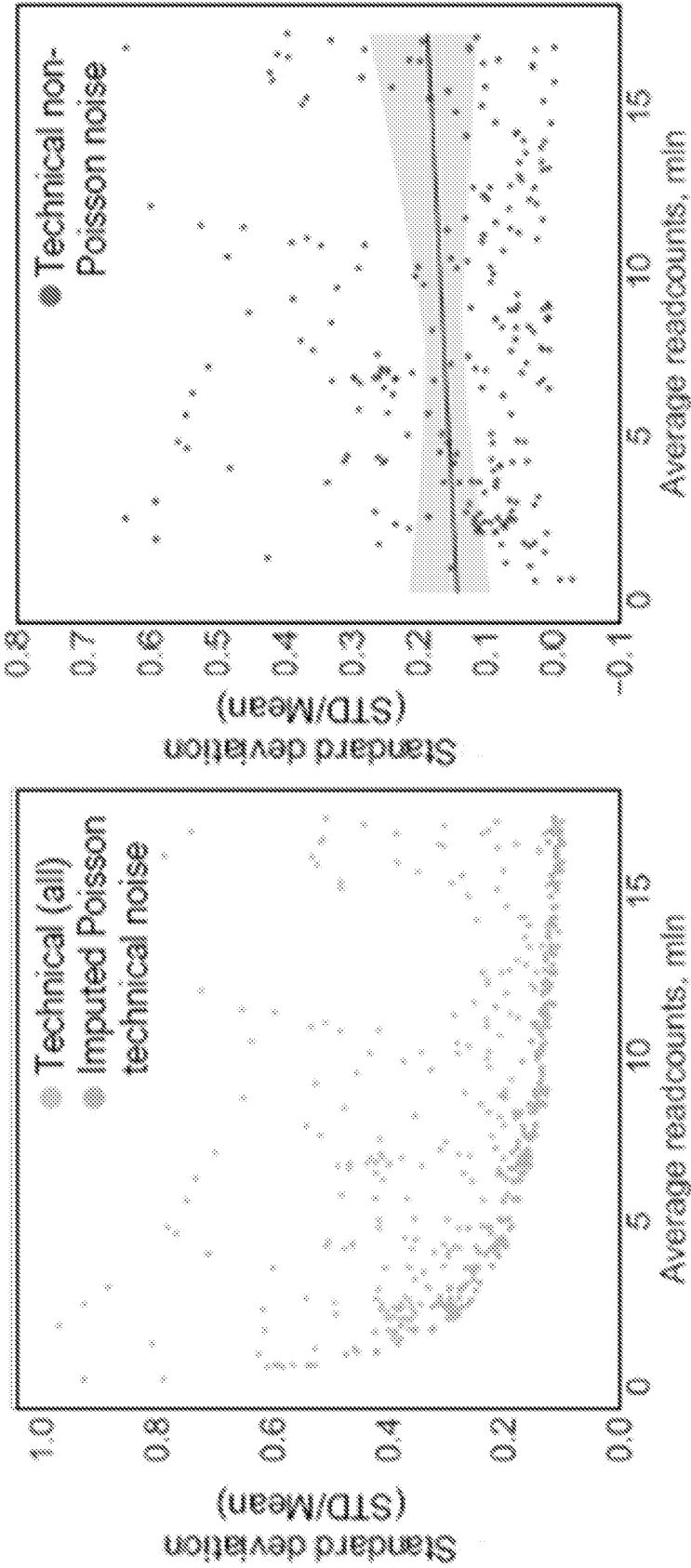


FIG. 12J

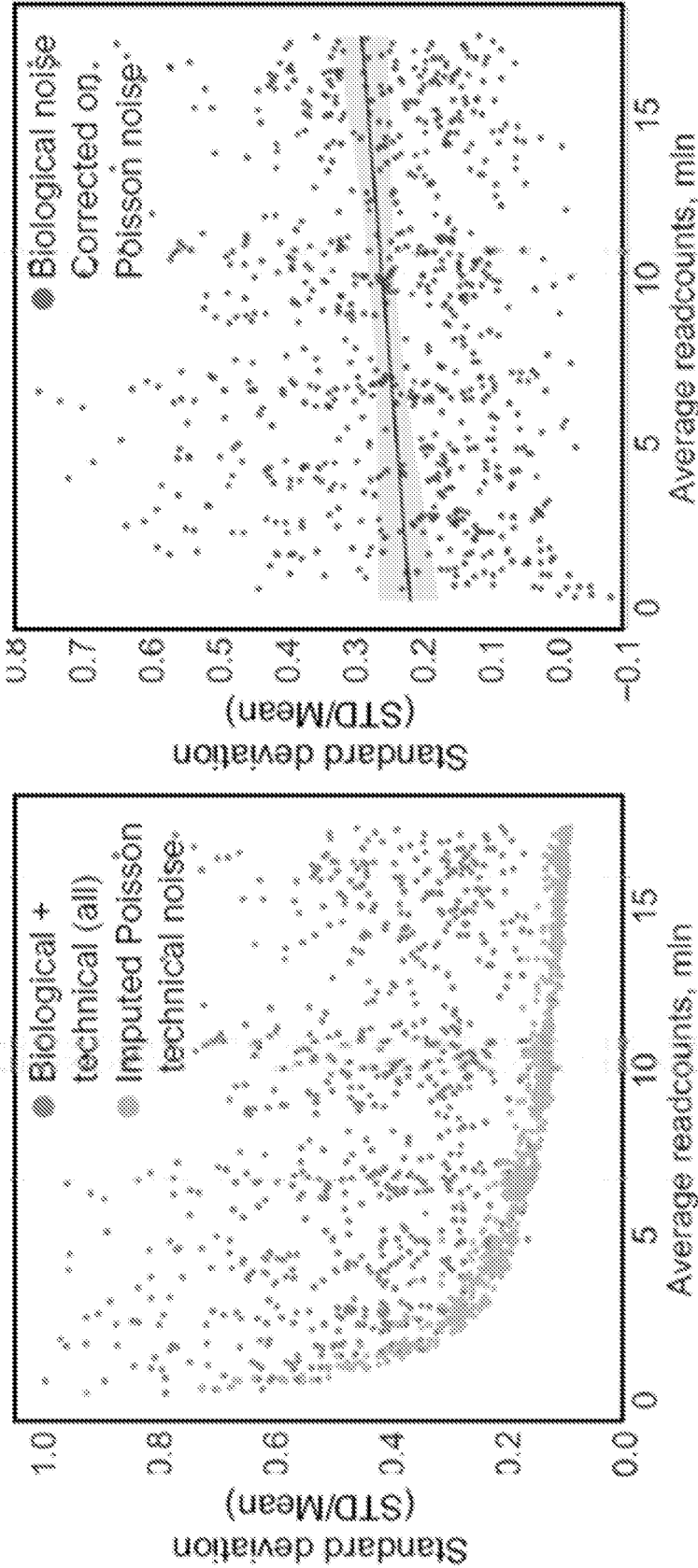


FIG. 12K

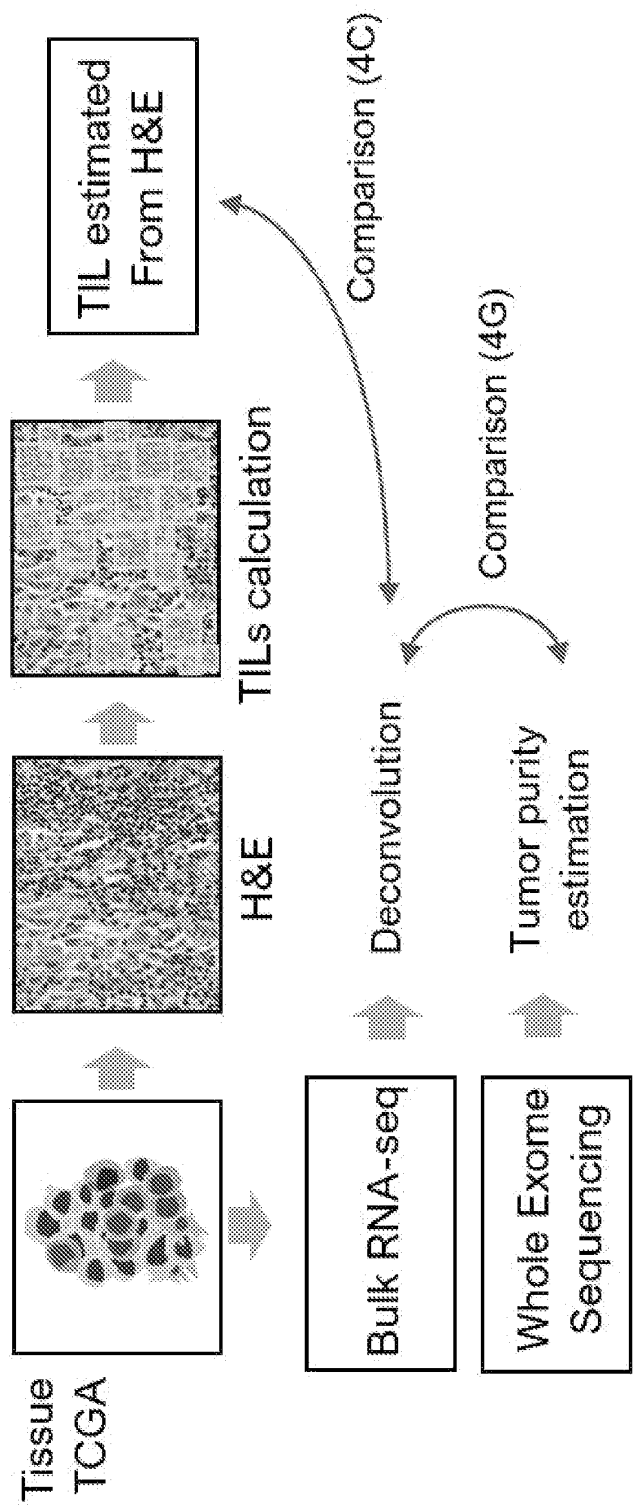


FIG. 13A

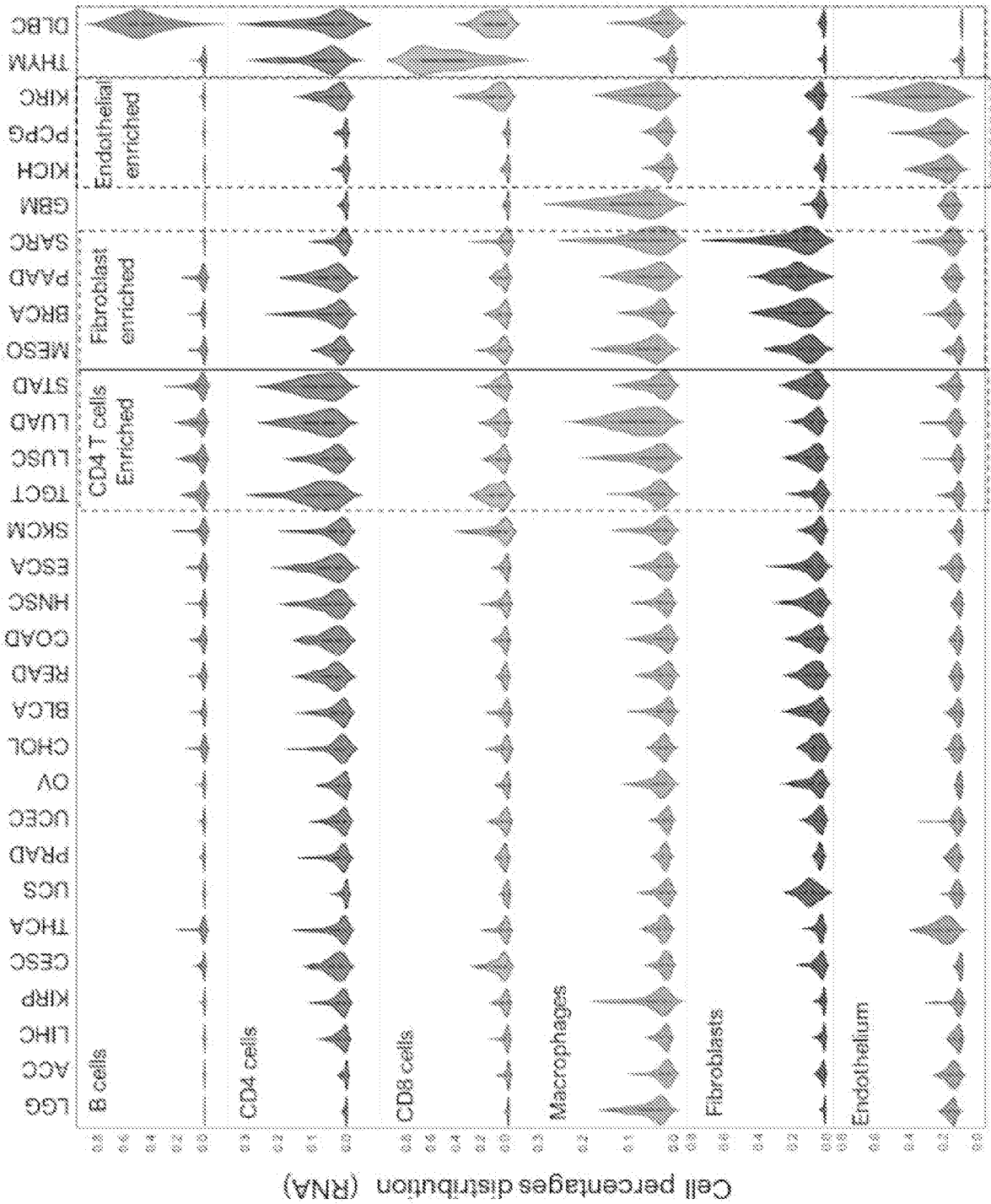


FIG. 13B

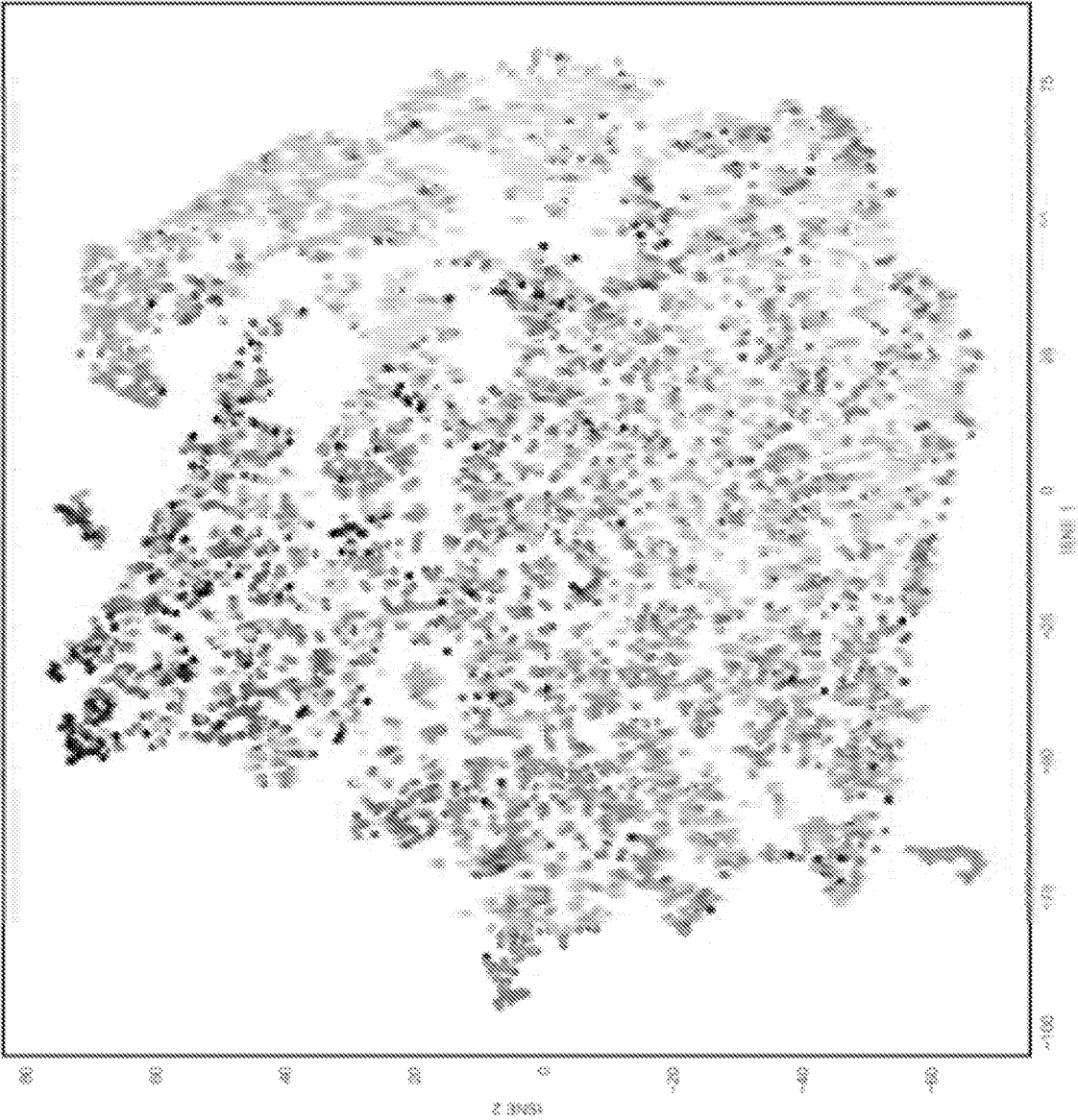


FIG. 13C

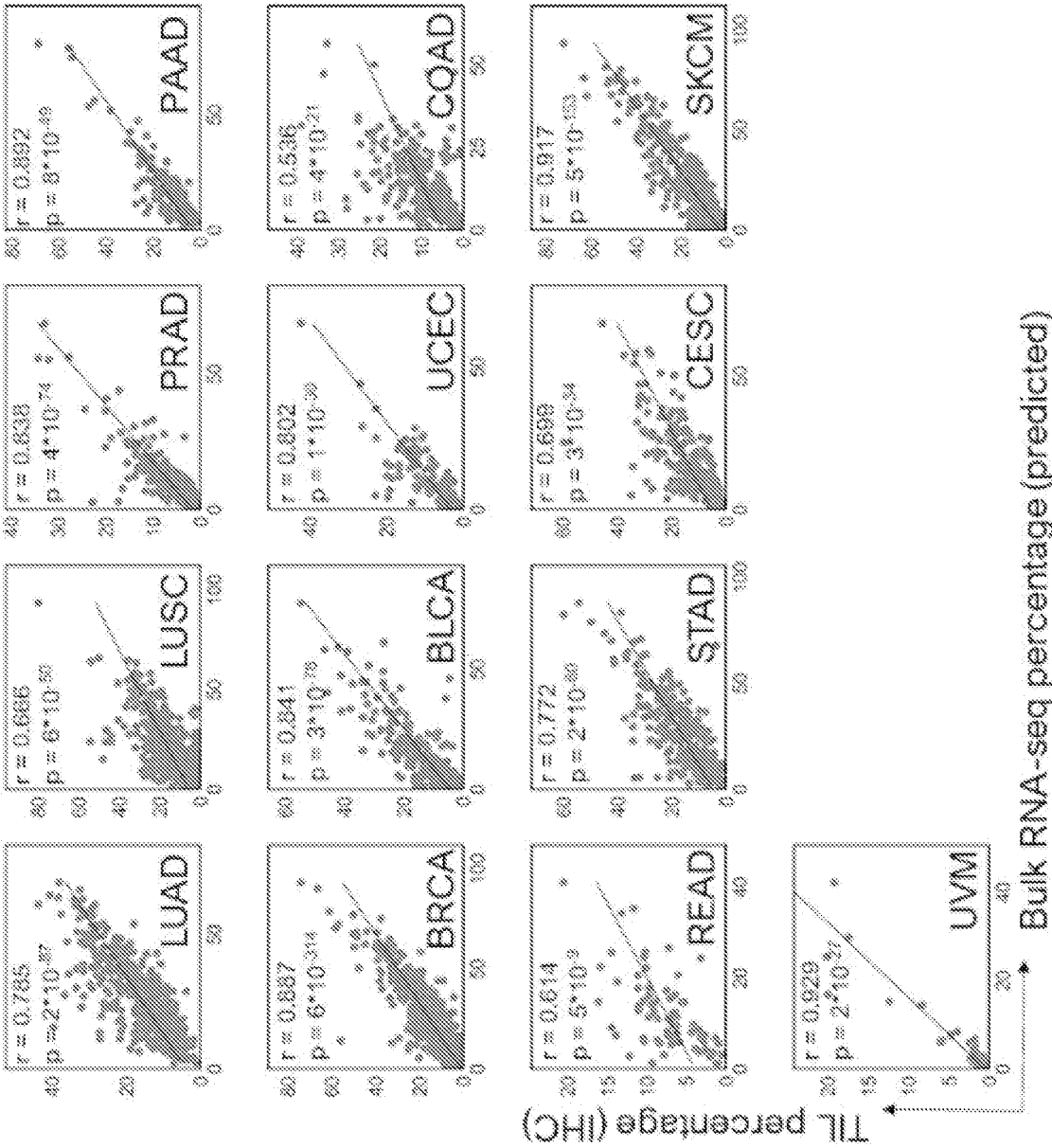


FIG. 13D

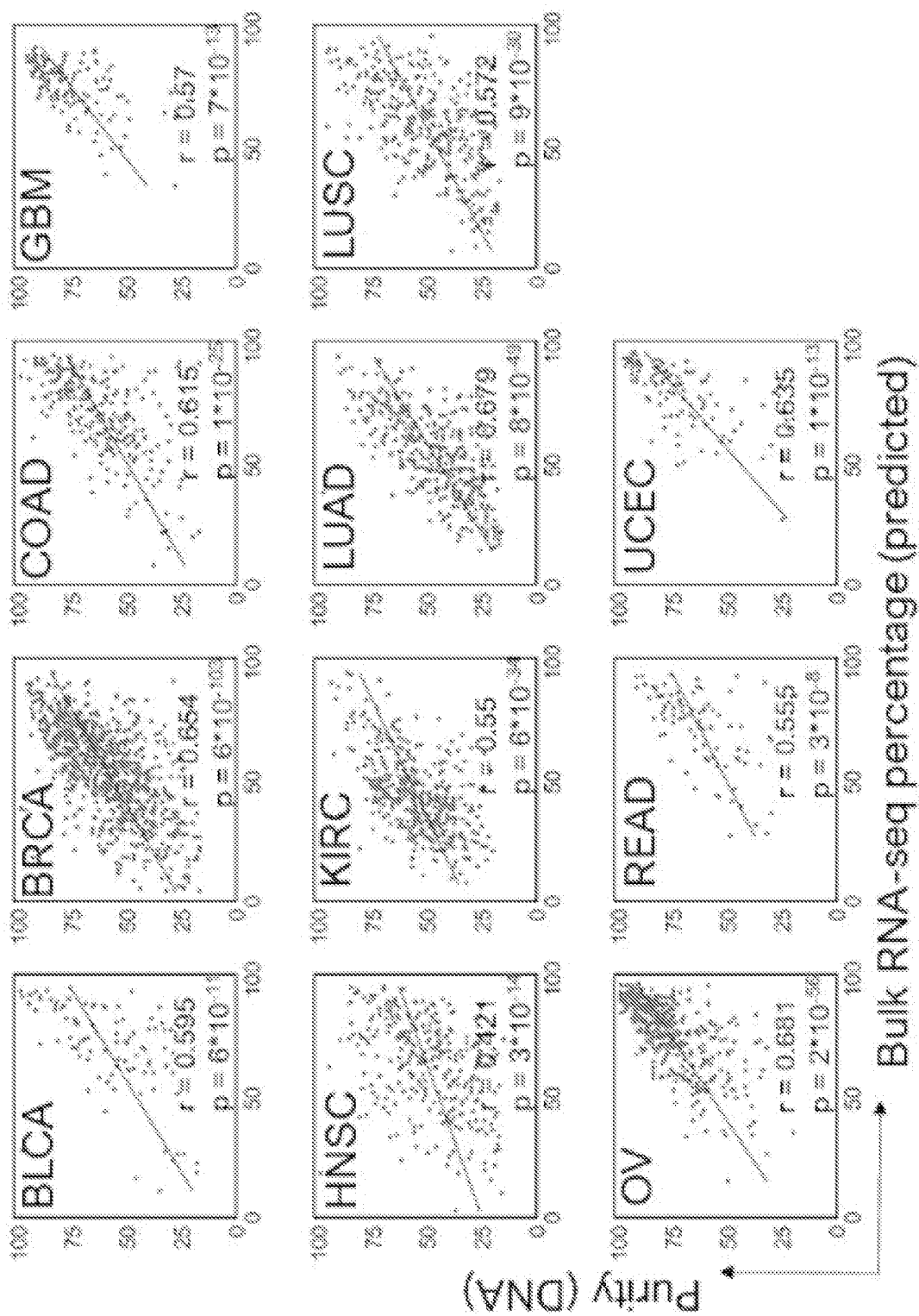


FIG. 13E

|      |      |       |       |      |      |      |
|------|------|-------|-------|------|------|------|
| ACC  | 0.91 | 0.58  | 0.42  | 0.59 | 0.87 | 0.46 |
| BLCA | 0.71 | 0.48  | 0.33  | 0.44 | 0.72 | 0.56 |
| BRCA | 0.77 | 0.45  | 0.13  | 0.65 | 0.76 | 0.65 |
| CESC | 0.66 | 0.32  | 0.11  | 0.55 | 0.68 | 0.53 |
| COAD | 0.75 | 0.71  | 0.57  | 0.57 | 0.76 | 0.8  |
| GBM  | 0.67 | 0.58  | 0.46  | 0.47 | 0.65 | 0.29 |
| HNSC | 0.65 | 0.45  | 0.38  | 0.53 | 0.66 | 0.52 |
| KICH | 0.83 | 0.8   | 0.53  | 0.73 | 0.87 | 0.7  |
| KIRC | 0.59 | 0.22  | 0.38  | 0.52 | 0.63 | 0.52 |
| KIRP | 0.78 | 0.59  | 0.16  | 0.66 | 0.76 | 0.62 |
| LGG  | 0.77 | 0.28  | 0.45  | 0.63 | 0.75 | 0.3  |
| LIHC | 0.69 | 0.013 | 0.21  | 0.47 | 0.63 | 0.44 |
| LUAD | 0.82 | 0.58  | 0.34  | 0.65 | 0.8  | 0.48 |
| LUSC | 0.78 | 0.6   | 0.5   | 0.65 | 0.75 | 0.63 |
| OV   | 0.63 | 0.44  | 0.4   | 0.49 | 0.69 | 0.39 |
| PRAD | 0.58 | 0.32  | 0.26  | 0.42 | 0.51 | 0.32 |
| READ | 0.76 | 0.65  | 0.62  | 0.55 | 0.67 | 0.62 |
| SKCM | 0.92 | 0.75  | 0.33  | 0.65 | 0.85 | 0.65 |
| THCA | 0.84 | 0.39  | 0.099 | 0.72 | 0.86 | 0.63 |
| UCEC | 0.71 | 0.37  | 0.23  | 0.54 | 0.69 | 0.29 |
| UCS  | 0.57 | 0.35  | 0.31  | 0.55 | 0.63 | 0.26 |

Kassandra  
EPIC TRef  
CIBERSORTX (HNSC)  
CIBERSORTX (LM22)  
Fardeep-absolute  
Quantiseq (Tumor)

FIG. 13F

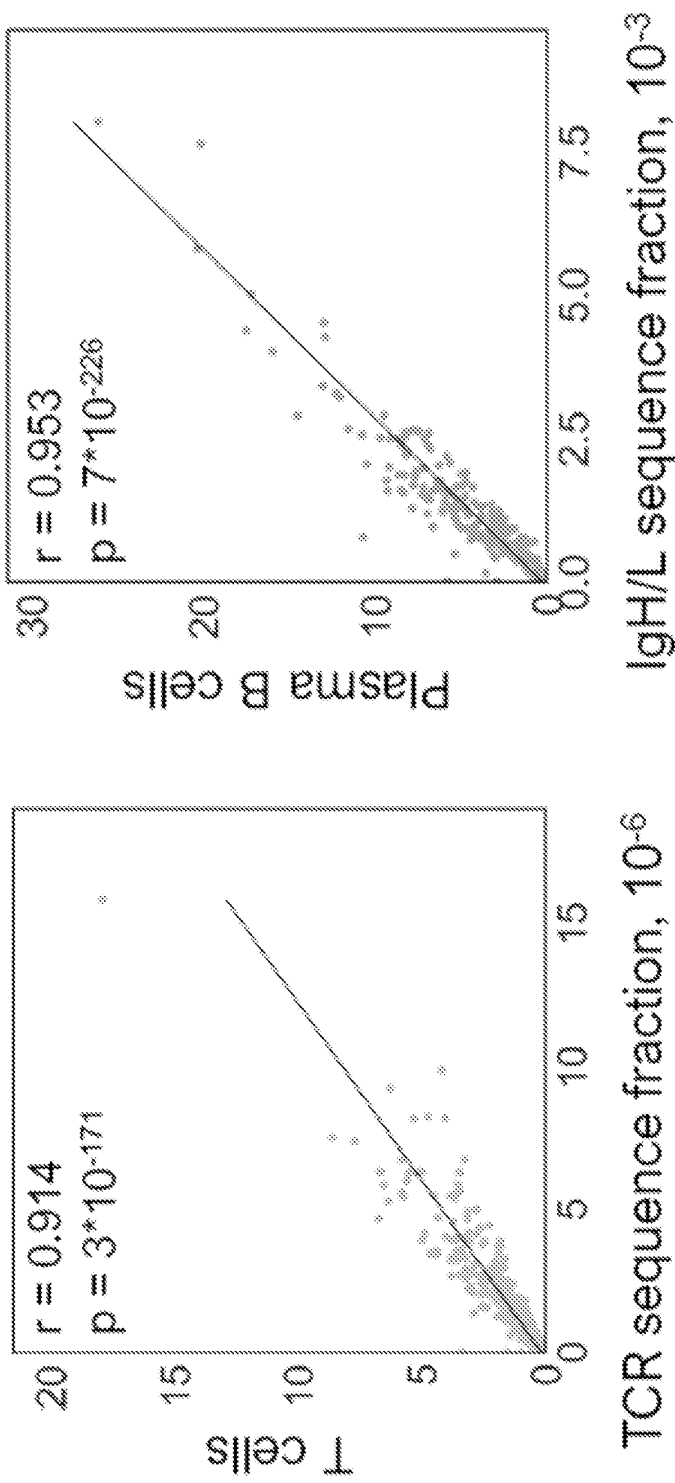


FIG. 13G

FIG. 13H

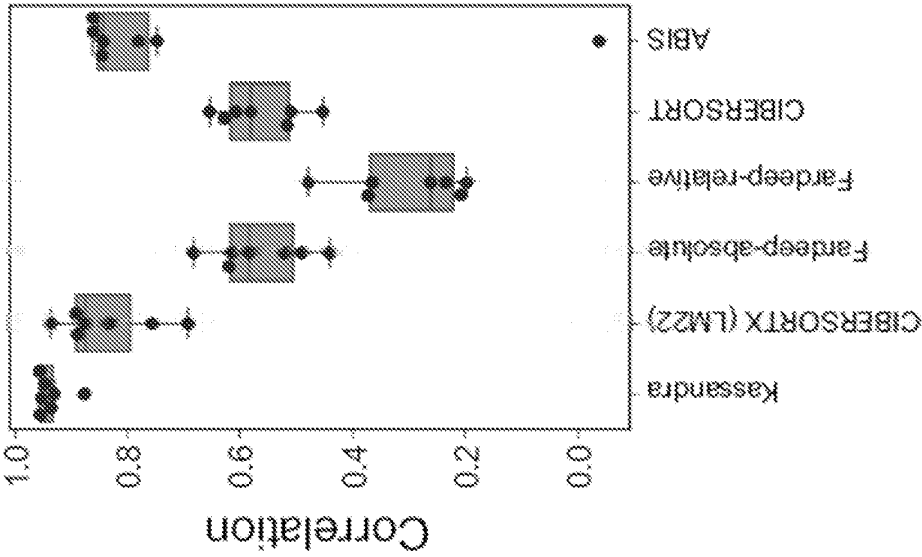


FIG. 13J

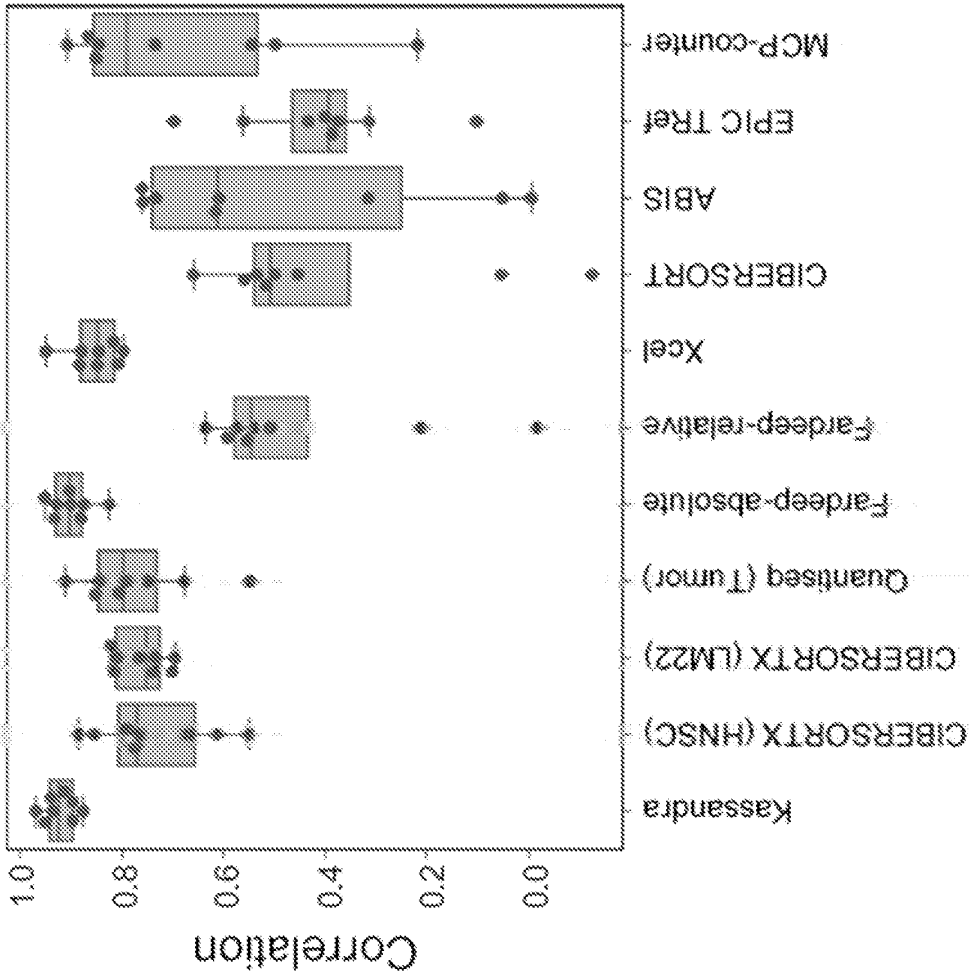


FIG. 13I

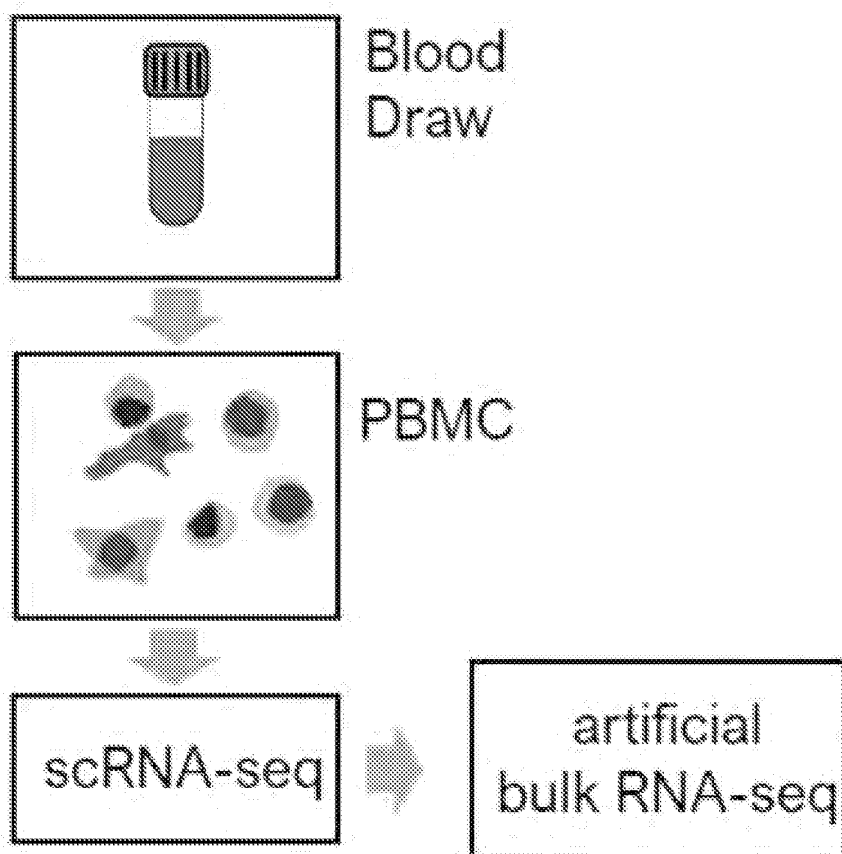


FIG. 14A

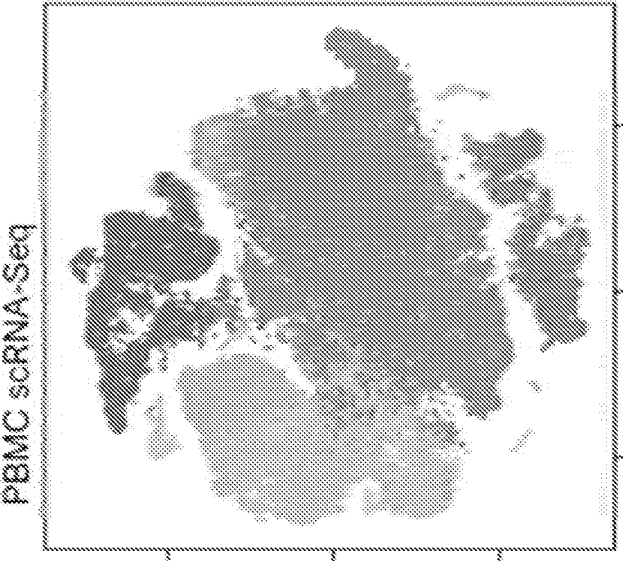


FIG. 14B

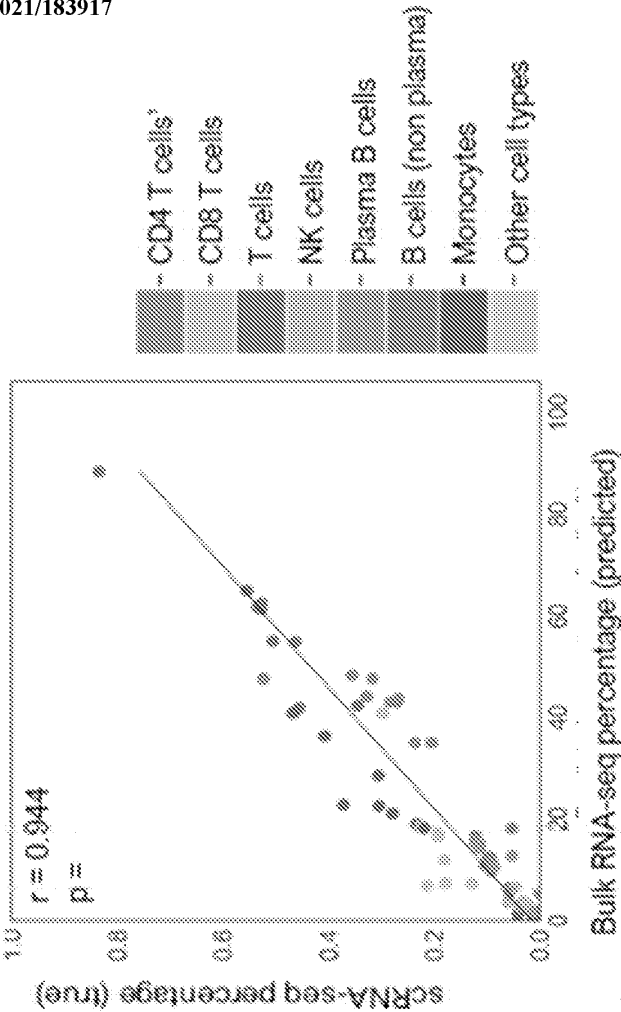


FIG. 14C

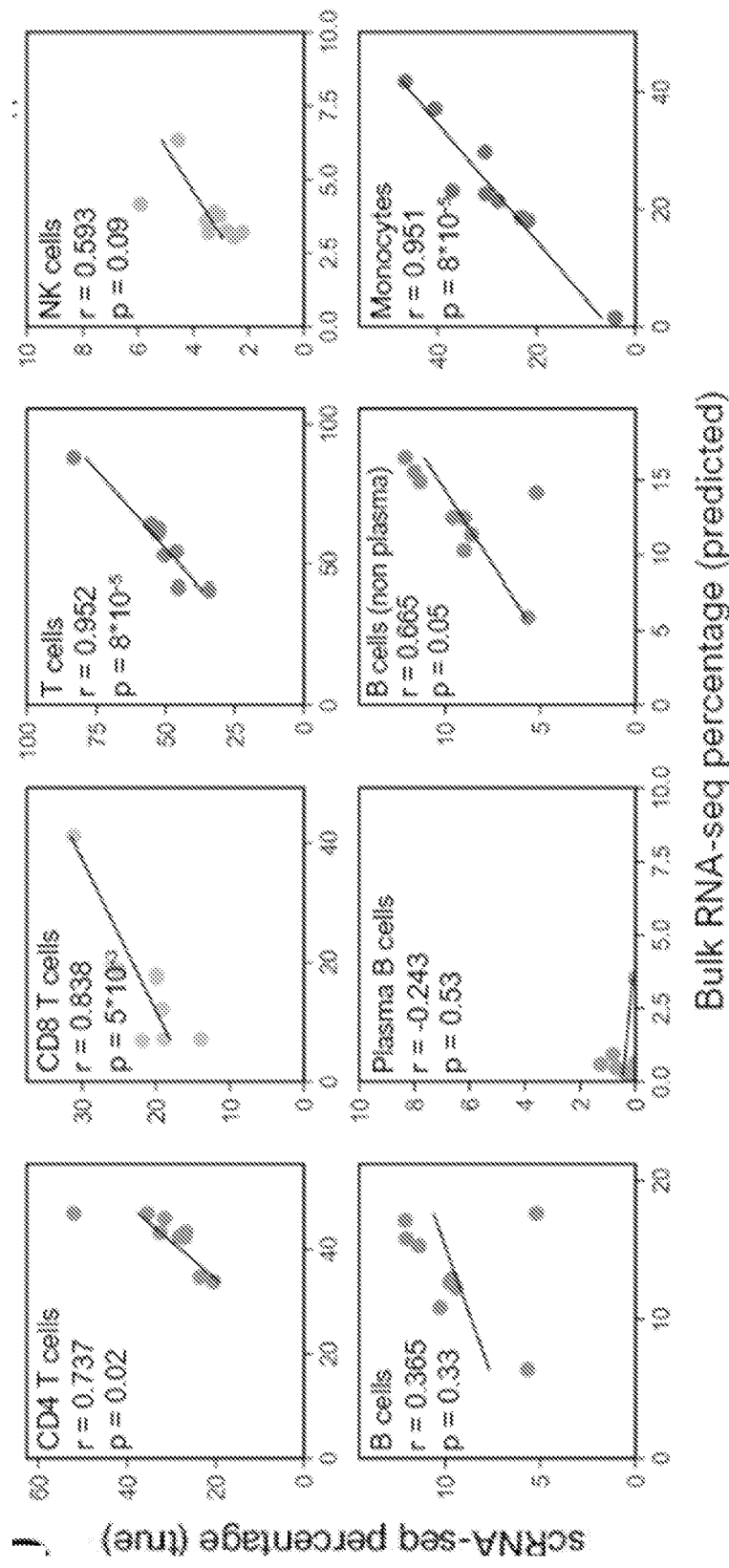


FIG. 14D

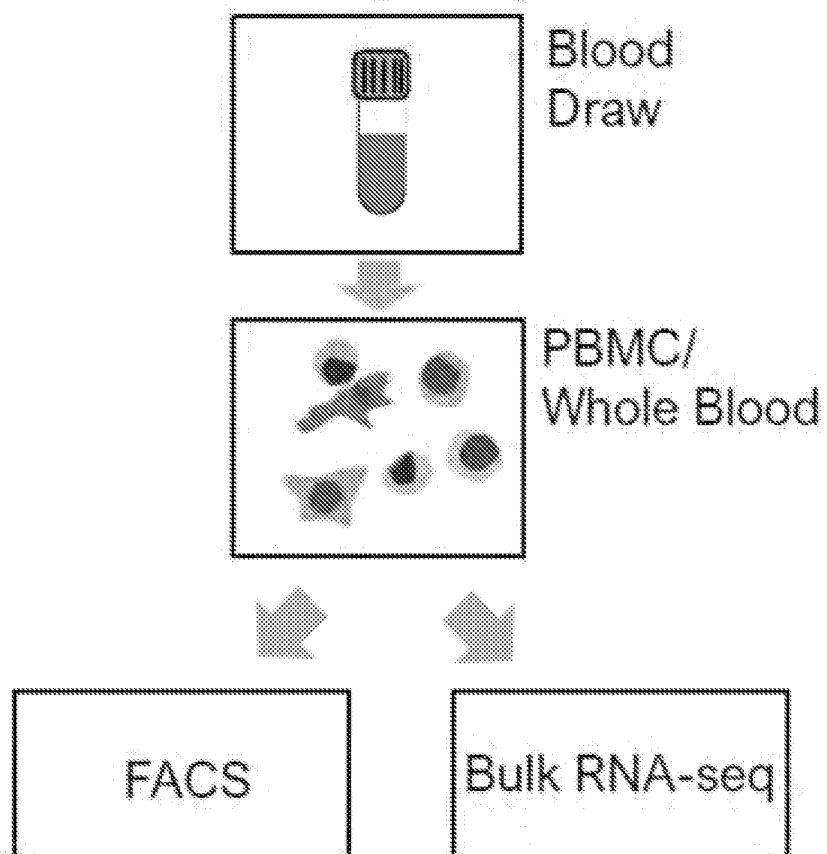


FIG. 14E

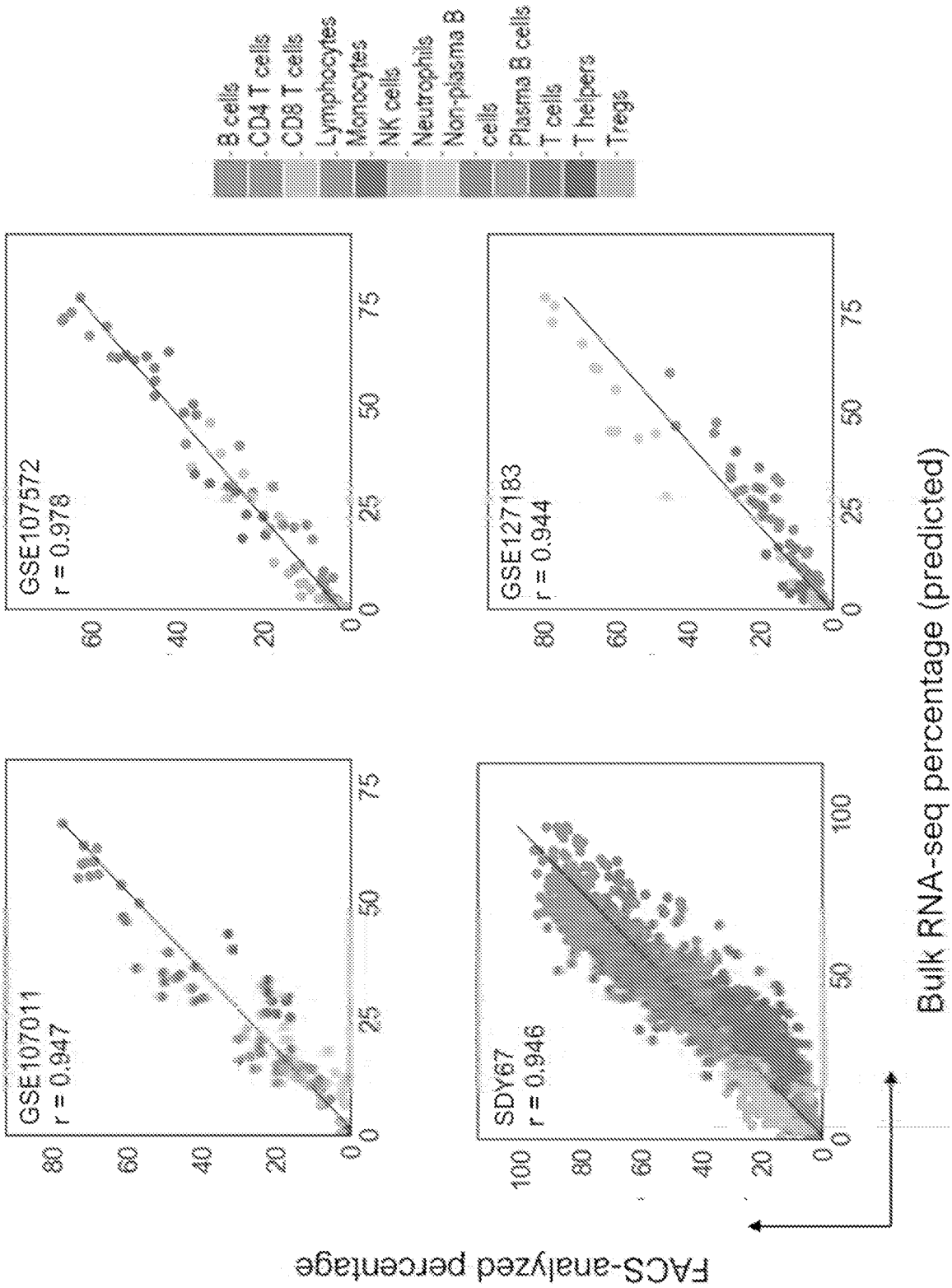


FIG. 14F

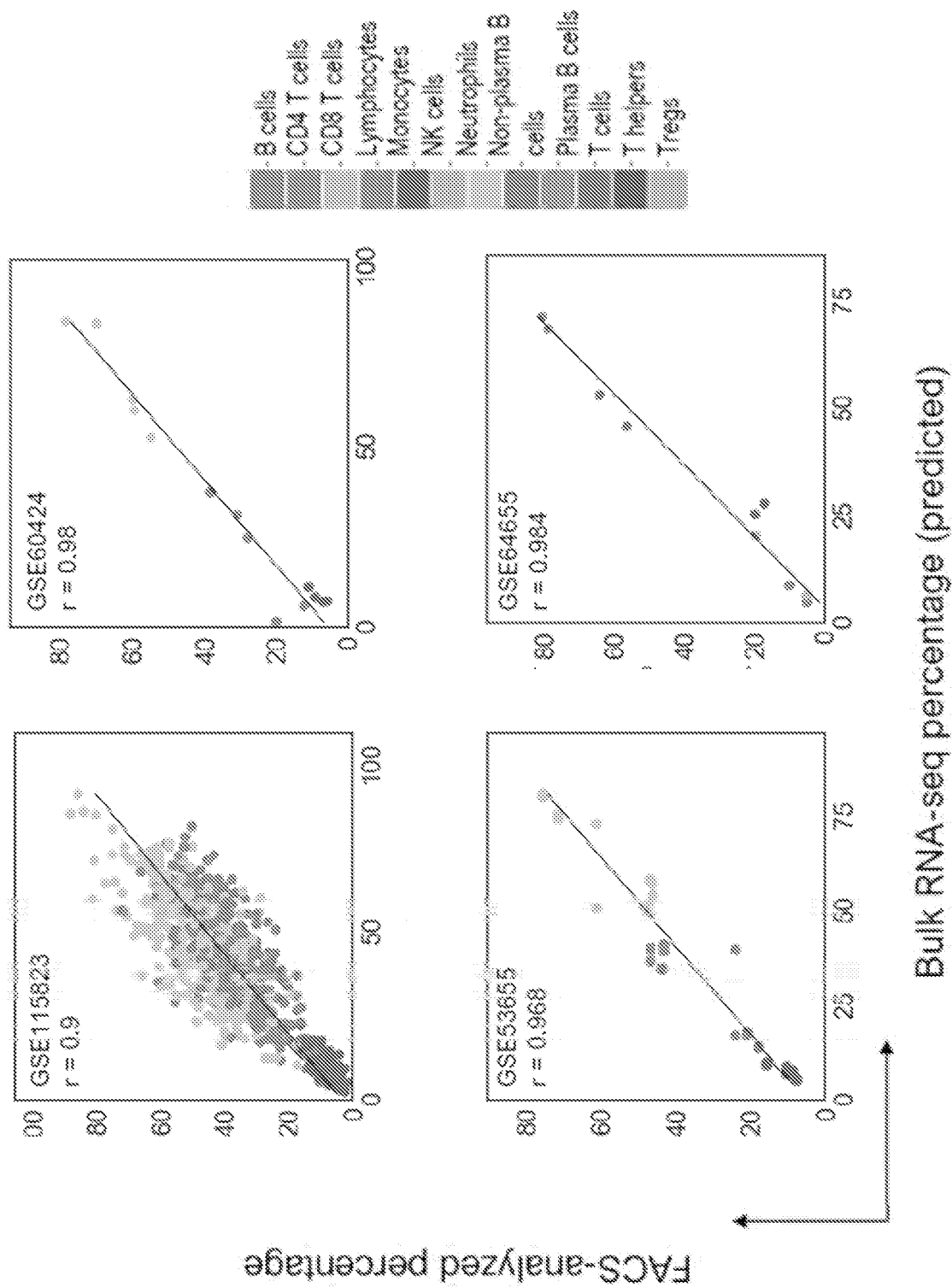


FIG. 14G

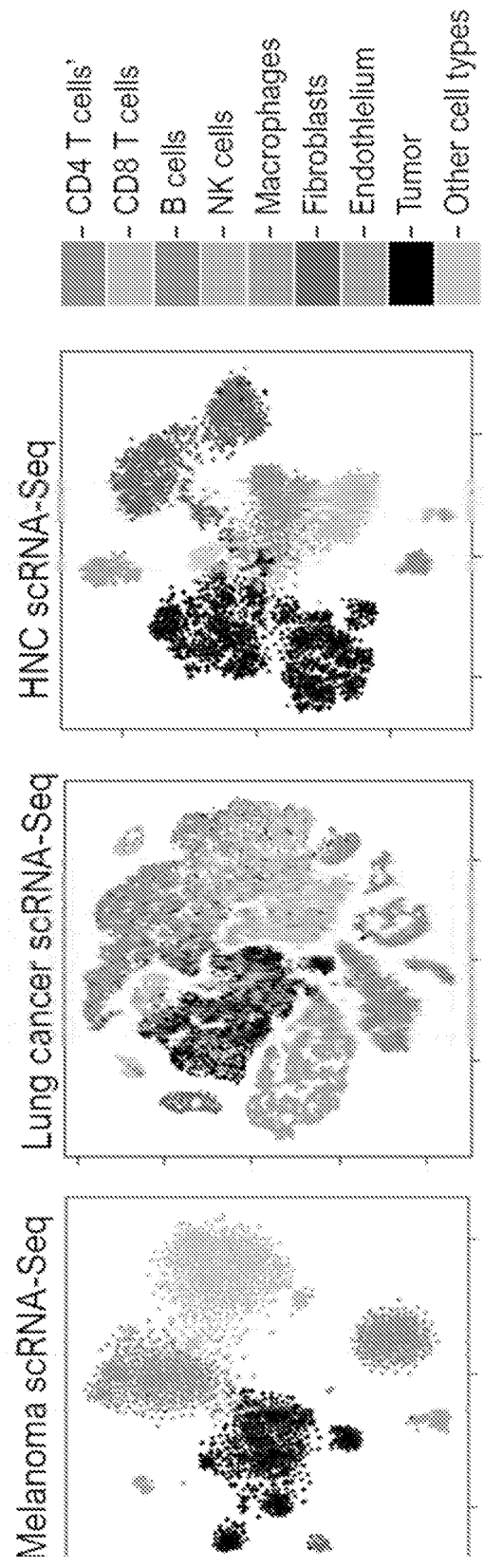


FIG. 15A

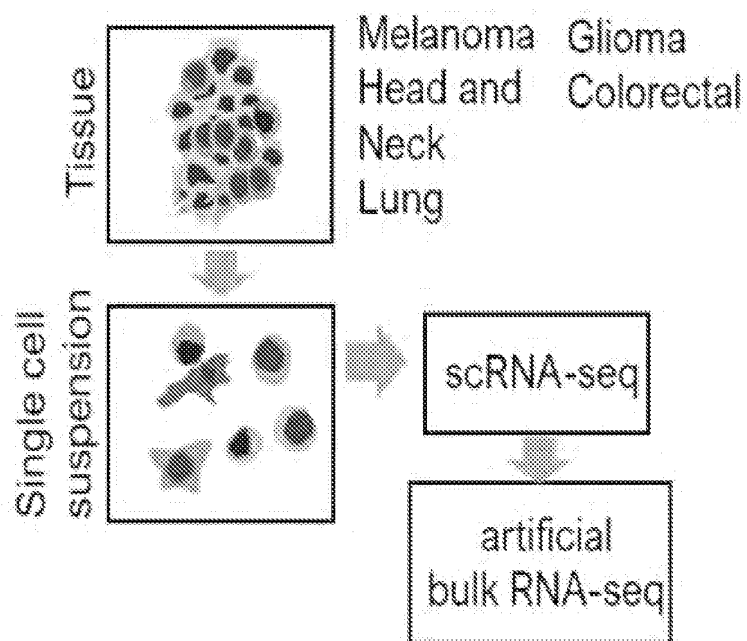


FIG. 15B

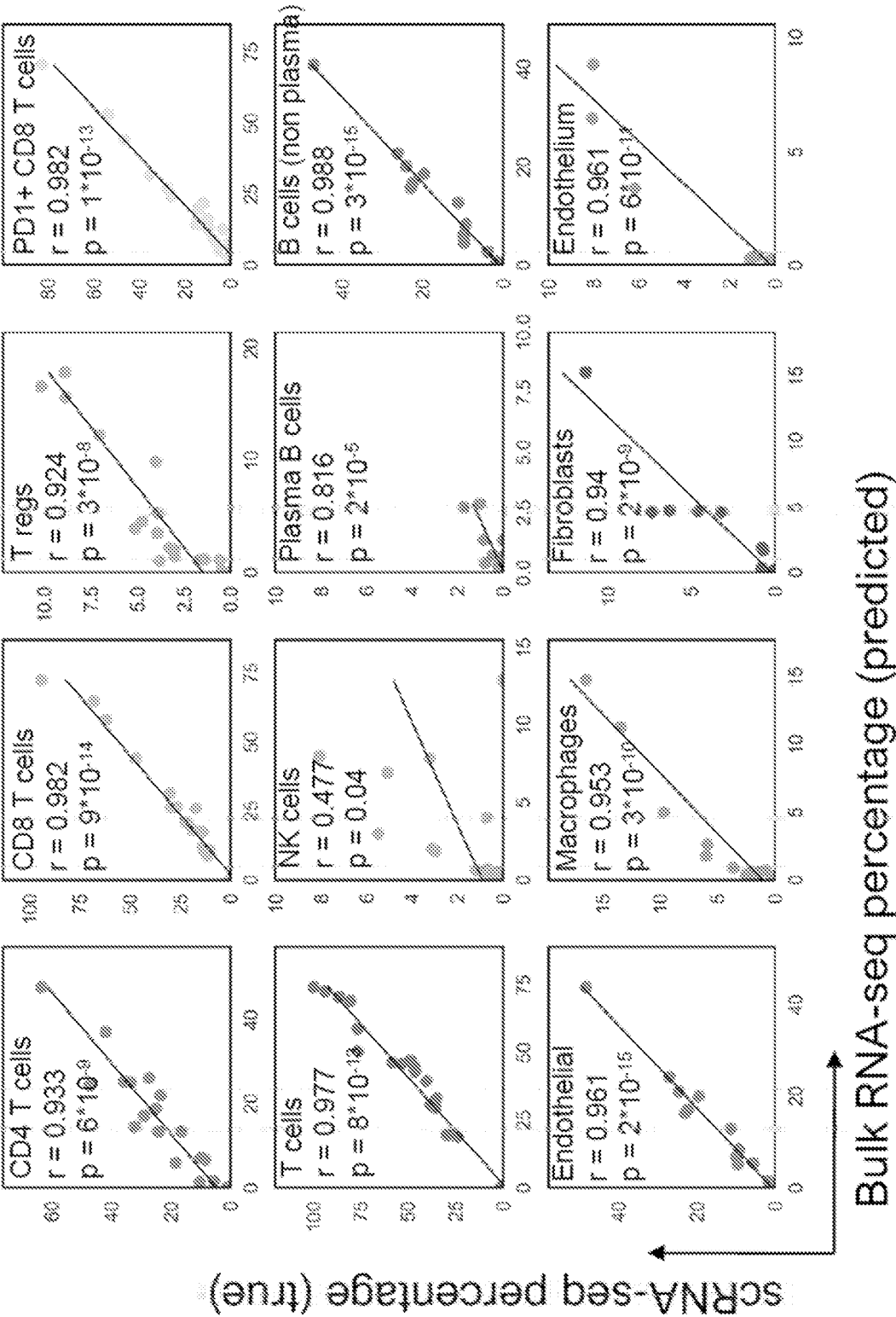


FIG. 15 C

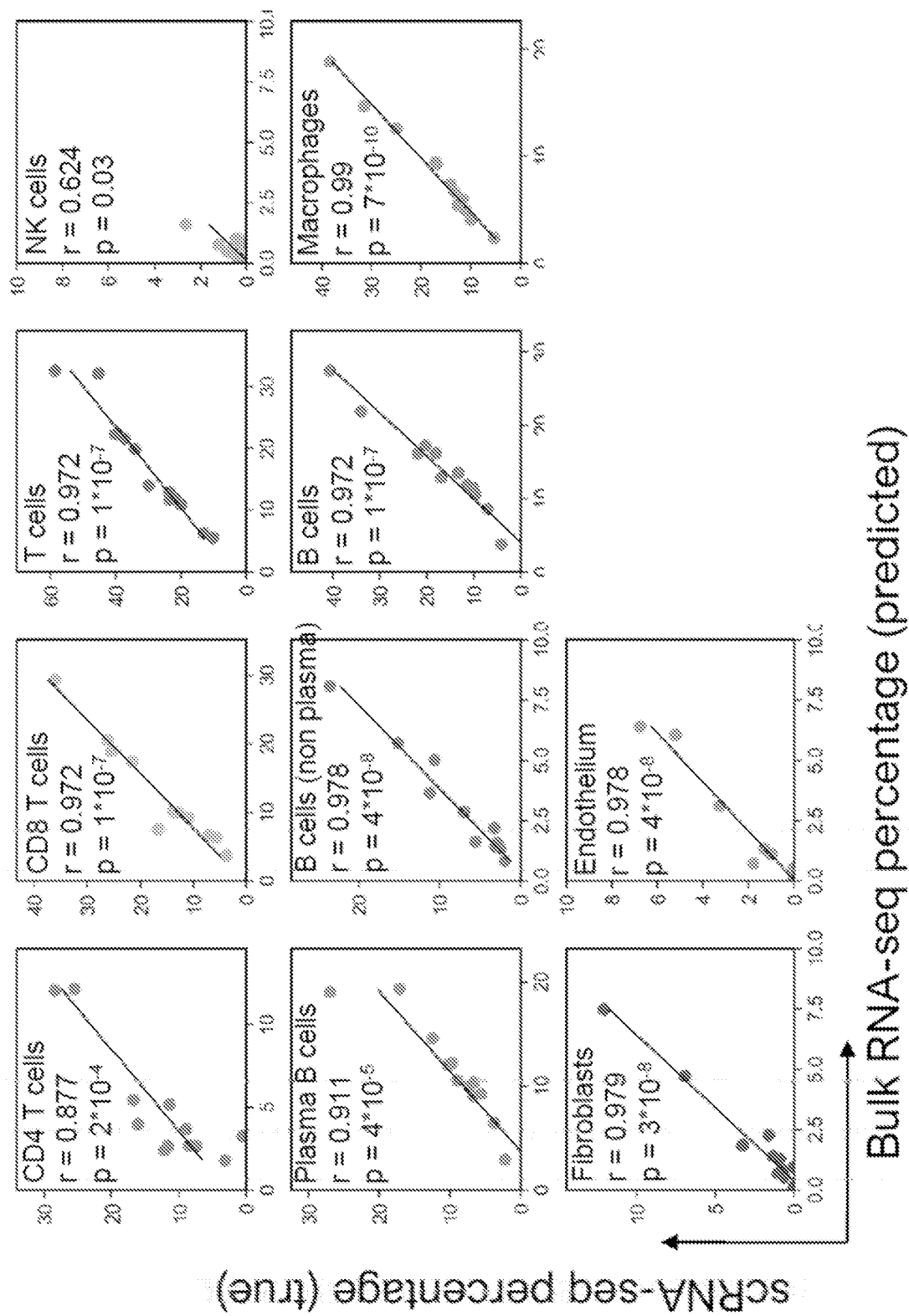


FIG. 15 D

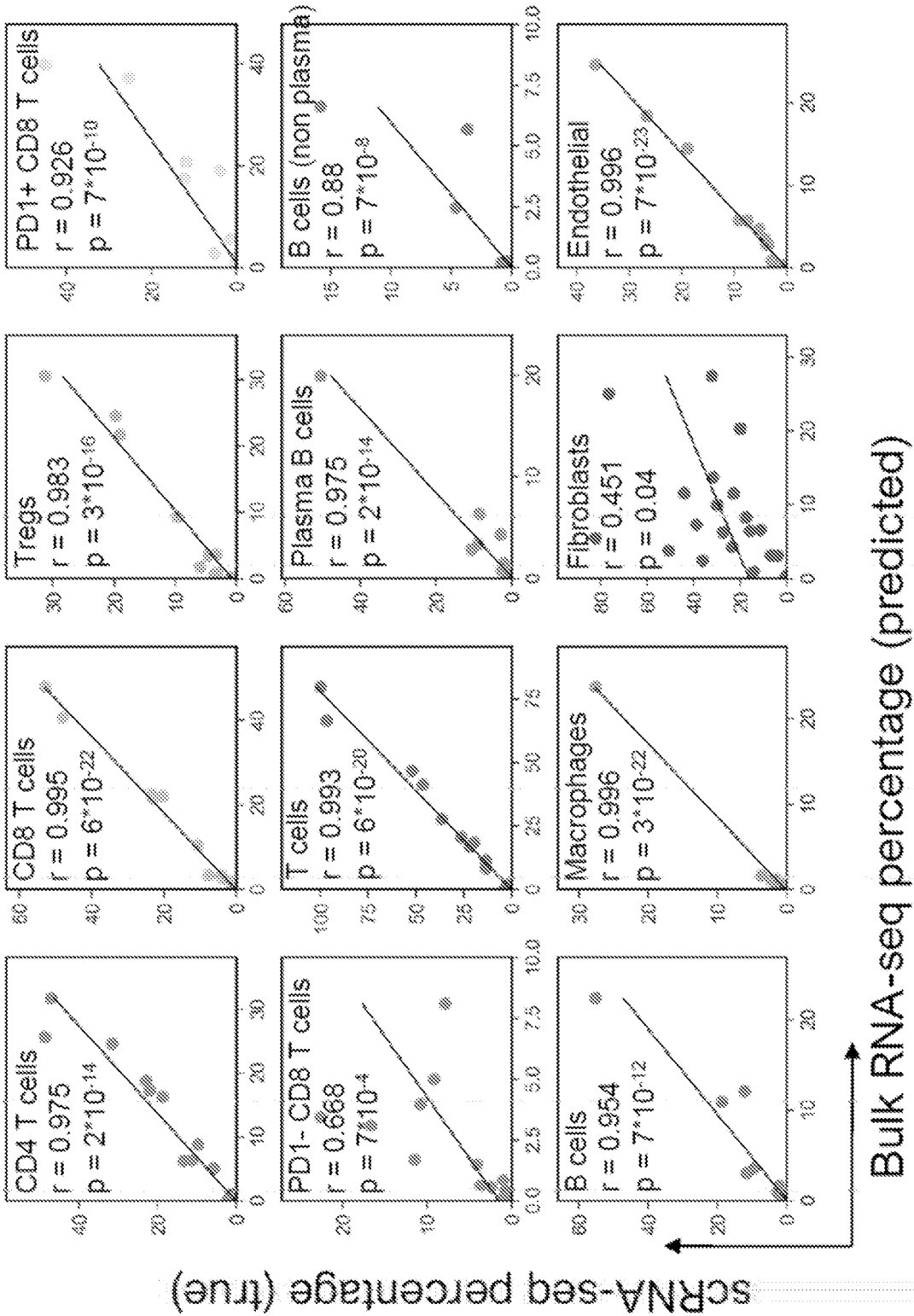


FIG. 15E

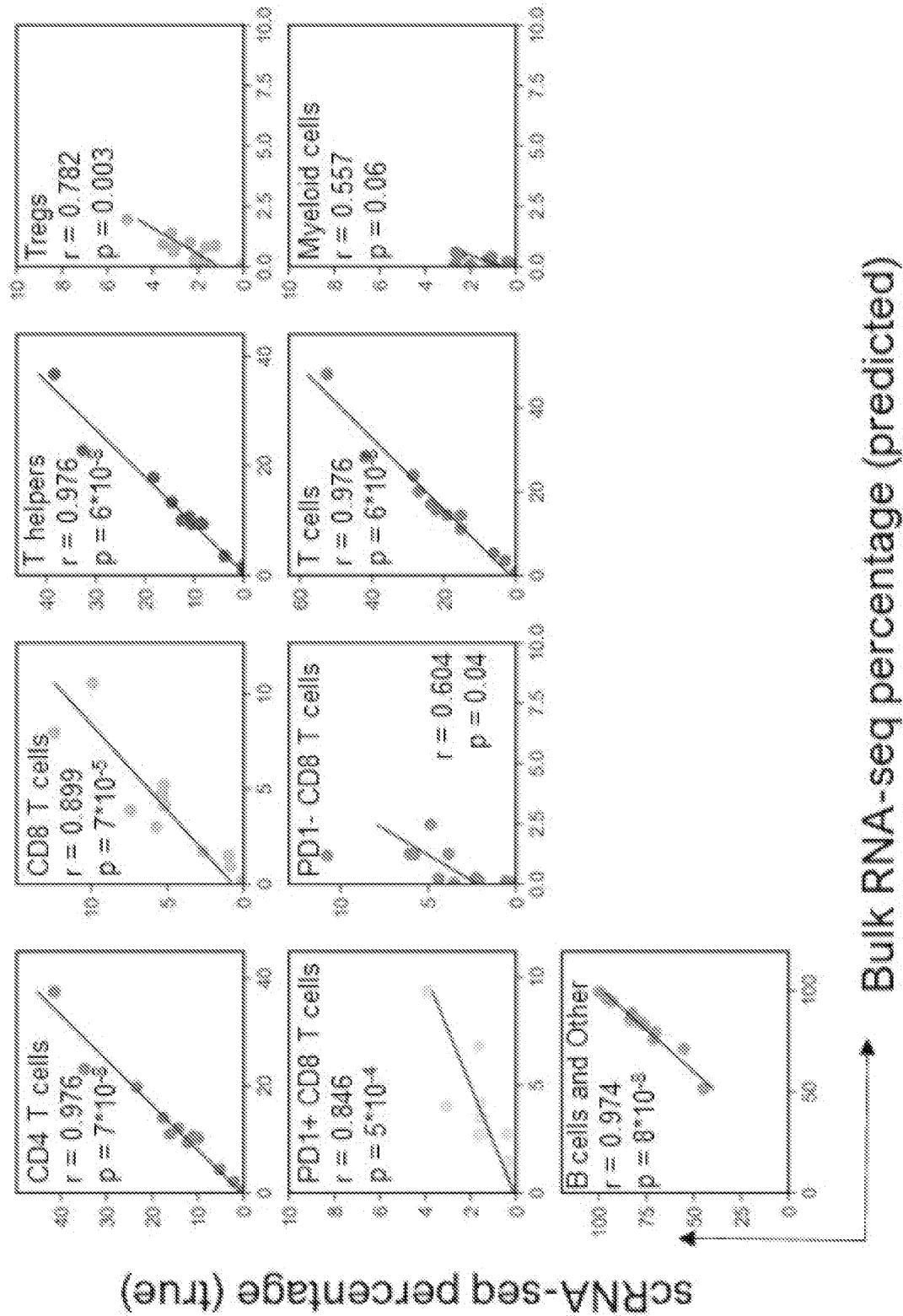


FIG. 15F

|                      |           |                   |                   |           |                   |                  |                  |      |           |      |           |           |             |
|----------------------|-----------|-------------------|-------------------|-----------|-------------------|------------------|------------------|------|-----------|------|-----------|-----------|-------------|
| B_cells              | 0.76      | 0.7               | 0.52              | 0.77      | 0.81              | 0.45             | 0.81             | 0.52 | 0.6       | 0.48 | 0.72      | 0.72      | 0.82        |
| CD4_T_cells          | 0.67      | 0.63              | 0.11              | 0.39      | 0.47              | 0.44             | 0.32             |      | 0.39      | 0.39 | 0.39      | 0.46      | 0.68        |
| CD8_T_cells          | 0.95      | 0.81              | 0.81              | 0.67      | 0.69              | 0.91             | 0.81             | 0.91 | 0.65      | 0.73 | 0.9       | 0.9       | 0.79        |
| CD8_T_cells_PD1_high | 0.95      |                   |                   |           |                   |                  |                  |      |           |      |           |           |             |
| CD8_T_cells_PD1_low  | 0.65      |                   |                   |           |                   |                  |                  |      |           |      |           |           |             |
| Endothelium          | 0.98      |                   |                   |           | 0.94              | 0.83             |                  | 0.96 |           |      |           |           | 0.98        |
| Fibroblasts          | 0.75      |                   |                   |           | 0.81              | 0.91             |                  | 0.91 |           |      |           |           | 0.39        |
| Macrophages          | 0.92      |                   | 0.37              |           | 0.96              | 0.96             | 0.43             |      | 0.8       | 0.35 | 0.66      | 0.78      | 0.55        |
| Monocytes            | 0.95      | 0.89              | 0.94              | 0.69      |                   |                  | 0.89             | 0.65 | 0.66      | 0.93 | 0.7       | 0.68      | 0.96        |
| NK_cells             | 0.47      | 0.075             | 0.46              | 0.61      | 0.62              |                  | 0.65             | 0.31 | 0.19      | 0.21 | 0.34      | 0.45      | 0.55        |
| T_cells              | 0.93      | 0.73              | 0.57              | 0.6       | 0.64              | 0.69             | 0.66             | 0.93 | 0.73      | 0.65 | 0.72      | 0.74      | 0.8         |
| Tregs                | 0.95      |                   |                   |           |                   |                  |                  |      | 0.73      | 0.63 | 0.48      | 0.48      | 0.82        |
| Lymphocytes          | 0.97      | 0.9               | 0.65              | 0.93      | 0.94              |                  | 0.93             |      | 0.93      | 0.67 | 0.9       | 0.89      | 0.92        |
| Plasma_B_cells       | 0.93      | 0.53              | 0.39              |           |                   |                  | 0.93             |      | 0.3       | 0.27 |           |           |             |
| Dendritic_cells      |           | 0.66              | 0.63              |           |                   | 0.63             | 0.68             |      | 0.4       | 0.16 | 0.23      | 0.62      | 0.2         |
| Mast_cells           |           |                   | 0.91              |           |                   | 0.97             | 0.93             |      |           |      |           |           |             |
|                      | Kassandra | CIBERSORTX (HNSC) | CIBERSORTX (LM22) | Quantiseq | Quantiseq (Tumor) | Fardeep-absolute | Fardeep-relative | Xcel | CIBERSORT | ABIS | EPIC BRef | EPIC TRef | MCP-counter |

FIG. 15G

|                      |           |      |           |           |           |                   |                   |                  |                  |           |                   |
|----------------------|-----------|------|-----------|-----------|-----------|-------------------|-------------------|------------------|------------------|-----------|-------------------|
| B_cells              | 2.8       | 7.3  | 9.1       | 6.6       | 5.9       | 11                | 9.5               | 11               | 11               | 7.2       | 6.8               |
| CD4_T_cells          | 1.9       | 4.3  | 5.9       |           |           |                   | 3.7               | 4.6              | 7.3              |           |                   |
| CD8_T_cells          | 2.5       | 3.2  | 4.3       |           |           |                   | 5.8               | 6.2              | 4.1              |           |                   |
| CD8_T_cells_PD1_high | 8.8       | 14   | 22        | 8.9       | 8.3       | 30                | 26                | 30               | 22               | 14        | 14                |
| CD8_T_cells_PD1_low  | 6.4       | 8.2  | 14        | 7.8       | 11        | 14                | 12                | 14               | 15               | 13        | 14                |
| Endothelium          | 1.7       |      |           |           |           |                   |                   | 4.1              | 2.8              | 12        | 11                |
| Fibroblasts          | 2.6       | 8.9  | 9.8       | 6.1       | 7         | 15                | 14                | 16               | 9.7              | 8         | 7.7               |
| Macrophages          | 3.1       |      |           |           |           |                   |                   |                  |                  |           |                   |
| Monocytes            | 3.1       |      |           |           |           |                   |                   |                  |                  |           |                   |
| NK_cells             | 0.99      | 4.2  | 6.8       | 3.6       | 3.2       |                   | 1.1               | 1                | 7.7              | 6.7       | 1.7               |
| T_cells              | 9.7       | 15   | 32        | 9         | 9.7       |                   | 37                | 39               | 30               | 16        | 17                |
| Tregs                | 3.6       |      | 8.6       |           | 6.3       | 7.1               | 7.1               | 7.4              | 8.9              | 12        | 7.8               |
| Lymphocytes          | 0.82      |      |           |           | 1.3       | 2.6               |                   |                  |                  |           |                   |
| Plasma_B_cells       | 6.8       |      |           |           | 7.3       | 9.1               |                   |                  |                  |           |                   |
| Dendritic_cells      |           |      |           |           |           |                   |                   |                  |                  |           |                   |
| Mast_cells           |           |      |           |           |           |                   |                   |                  |                  |           |                   |
|                      | Kassandra | ABIS | CIBERSORT | EPIC BRef | EPIC TRef | CIBERSORTX (HNSC) | CIBERSORTX (LM22) | Fardeep-absolute | Fardeep-relative | Quantiseq | Quantiseq (Tumor) |

FIG. 15H

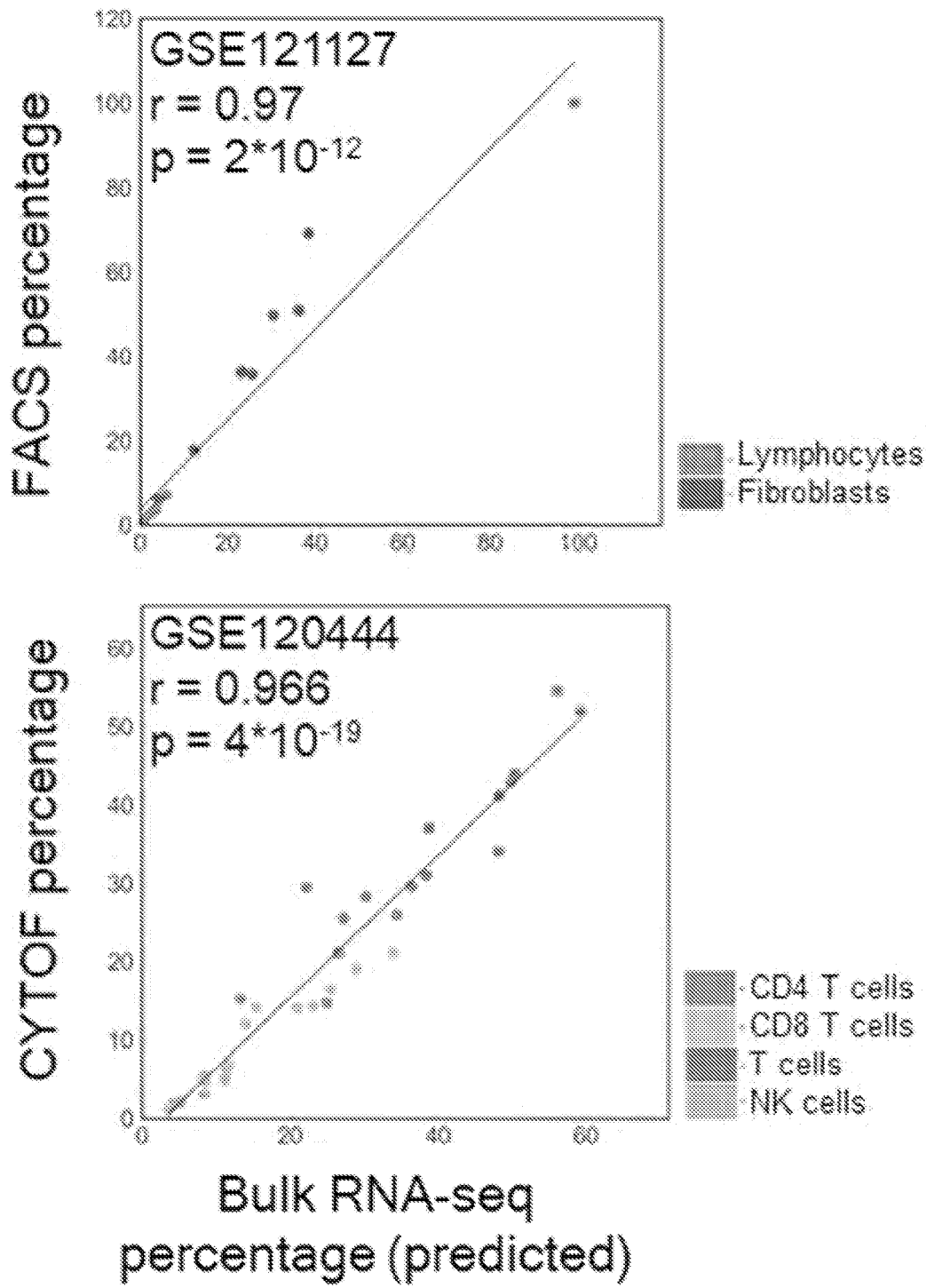


FIG. 15I