

Supplementary Table 3. Morphological descriptors used in LASSO models.

| Model using 15FOVs_6-18h     |               | Model using 40FOVs_6-18h     |               | Model using 60FOVs_6-18h     |               | Model using 60FOVs_6-90h     |               |
|------------------------------|---------------|------------------------------|---------------|------------------------------|---------------|------------------------------|---------------|
| Parameter                    | Coefficient   | Parameter                    | Coefficient   | Parameter                    | Coefficient   | Parameter                    | Coefficient   |
| 18h_mean_perimeter           | 1.781         | 18h_mean_energy              | 1.191         | 18h_mean_area                | <b>0.753</b>  | 36h_mean_intensity_total     | 0.226         |
| 6h_mean_area                 | 1.391         | 18h_mean_intensity_sd        | 0.865         | <b>6h_sd_correlation*</b>    | <b>0.582</b>  | 18h_sd_correlation           | 0.075         |
| 18h_mean_intensity_sd        | 1.104         | 18h_sd_perimeter             | 0.845         | <b>18h_sd_energy**</b>       | <b>0.559</b>  | <b>6h_sd_correlation*</b>    | <b>0.069</b>  |
| 18h_mean_energy              | 1.092         | 18h_mean_area                | 0.668         | 18h_mean_energy              | 0.436         | 12h_sd_correlation           | 0.057         |
| 6h_mean_length               | 0.904         | <b>6h_sd_correlation*</b>    | <b>0.629</b>  | 18h_sd_width                 | 0.391         | 36h_mean_width               | 0.046         |
| <b>6h_sd_correlation*</b>    | <b>0.662</b>  | 6h_mean_area                 | 0.447         | 18h_mean_intensity_sd        | 0.345         | 48h_mean_intensity_total     | 0.041         |
| 18h_sd_perimeter             | 0.587         | <b>18h_sd_energy**</b>       | <b>0.364</b>  | 12h_mean_area                | 0.261         | 24h_mean_width               | 0.040         |
| 6h_mean_width                | 0.537         | 6h_sd_energy                 | 0.325         | 6h_mean_area                 | 0.156         | <b>18h_sd_energy**</b>       | <b>0.039</b>  |
| 18h_mean_area                | 0.522         | 12h_mean_width               | 0.319         | 6h_mean_compactness          | 0.136         | 30h_mean_width               | 0.036         |
| 6h_sd_intensity_total        | 0.485         | 12h_sd_perimeter             | 0.295         | 6h_mean_length               | 0.127         | 78h_sd_intensity_mean        | 0.028         |
| 12h_mean_length_width_ratio  | -0.539        | 18h_mean_homogeneity         | -0.437        | 18h_mean_homogeneity         | -0.220        | <b>6h_mean_correlation**</b> | <b>-0.083</b> |
| 6h_mean_energy               | -0.565        | 6h_mean_perimeter            | -0.448        | 6h_sd_perimeter              | <b>-0.231</b> | 54h_sd_length_width_ratio    | -0.097        |
| <b>18h_mean_compactness*</b> | <b>-0.642</b> | <b>6h_mean_correlation**</b> | <b>-0.479</b> | 18h_mean_intensity_total     | -0.269        | 42h_mean_length_width_ratio  | -0.109        |
| 18h_sd_length                | -0.673        | 6h_mean_length_width_ratio   | -0.493        | 12h_mean_correlation         | -0.287        | 90h_mean_area                | -0.110        |
| 12h_mean_homogeneity         | -0.683        | 18h_sd_intensity_sd          | -0.498        | 6h_mean_length_width_ratio   | -0.412        | <b>18h_sd_length*</b>        | <b>-0.112</b> |
| 12h_mean_perimeter           | -0.784        | 12h_mean_perimeter           | -0.519        | 12h_sd_length                | -0.431        | 48h_mean_length_width_ratio  | -0.132        |
| 18h_mean_length_width_ratio  | -0.865        | 12h_mean_length_width_ratio  | -0.577        | <b>6h_mean_correlation**</b> | <b>-0.484</b> | <b>18h_sd_compactness*</b>   | <b>-0.242</b> |
| 6h_mean_perimeter            | -1.135        | <b>18h_sd_compactness*</b>   | <b>-0.688</b> | 18h_mean_length_width_ratio  | <b>-0.511</b> | 24h_sd_compactness           | -0.265        |
| 6h_mean_intensity_total      | -1.594        | 18h_mean_length_width_ratio  | -0.825        | <b>18h_sd_compactness*</b>   | <b>-0.614</b> | 60h_mean_length_width_ratio  | -0.276        |
| <b>18h_mean_length*</b>      | <b>-1.757</b> | <b>18h_sd_length*</b>        | <b>-0.917</b> | <b>18h_sd_length*</b>        | <b>-0.701</b> | 24h_sd_length                | -0.440        |

\*Blue: Commonly used effective descriptor shared in models using small to large data-size.

\*\*Red: Commonly used effective descriptor shared in models using larger data-size.