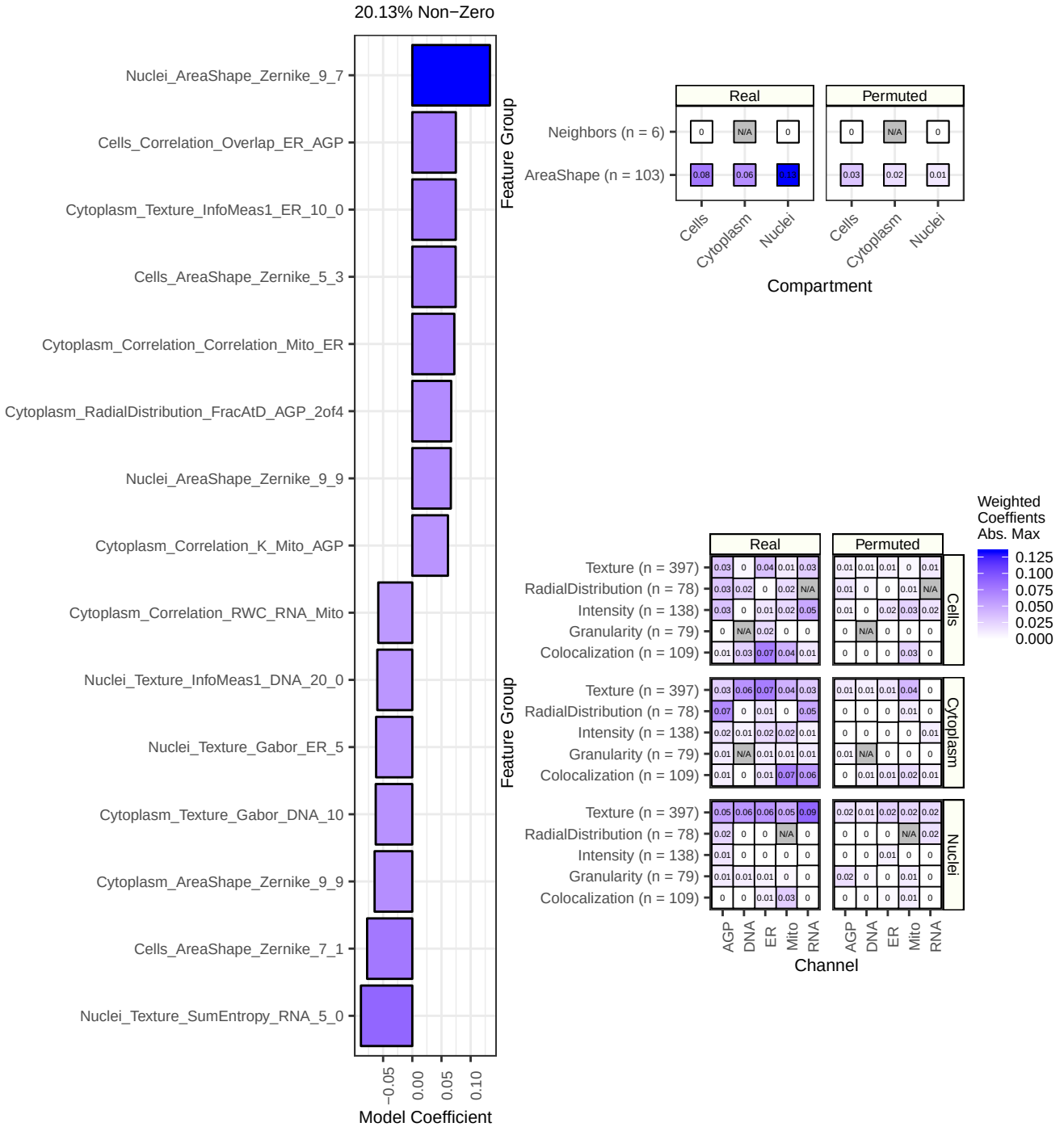
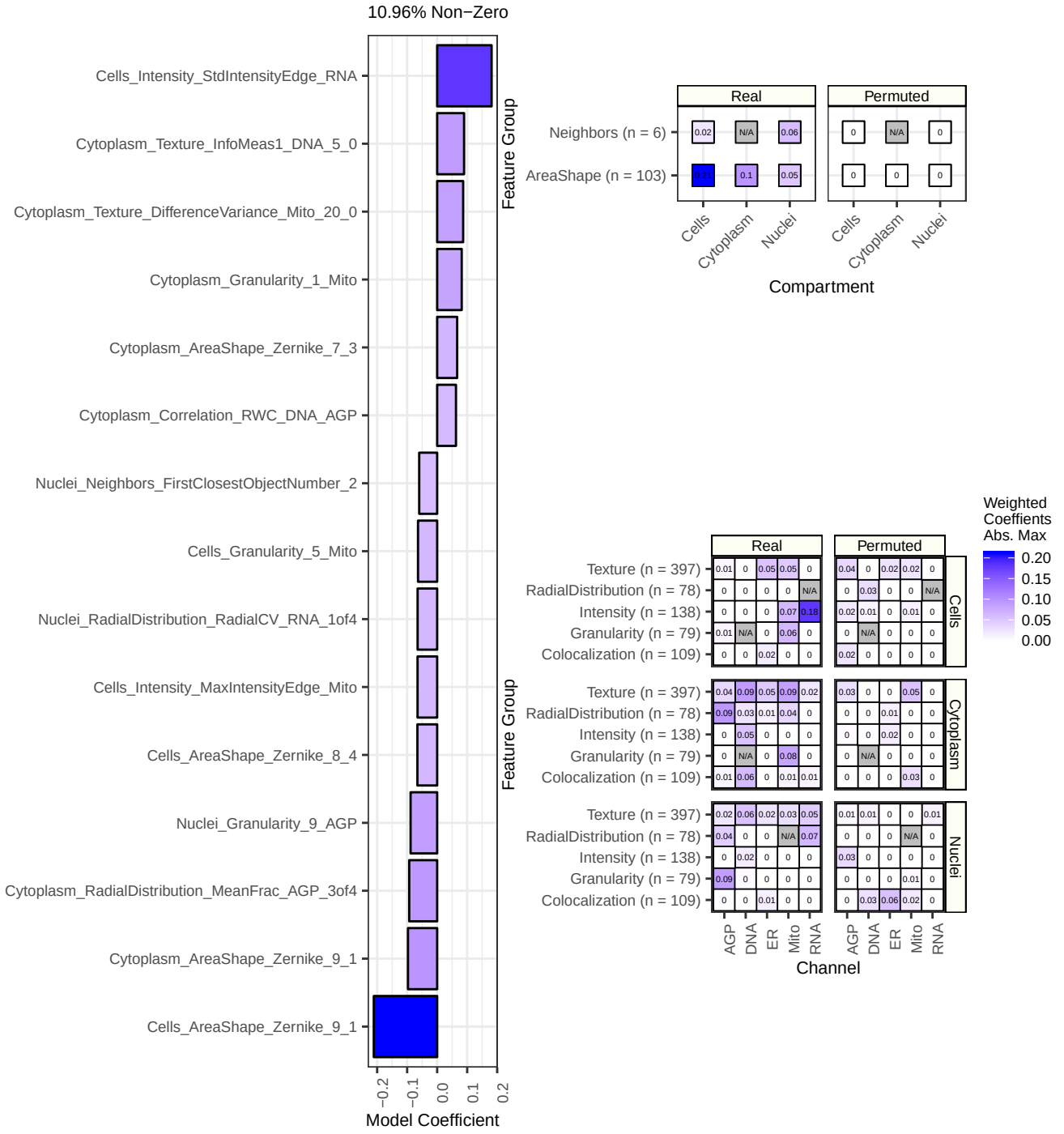
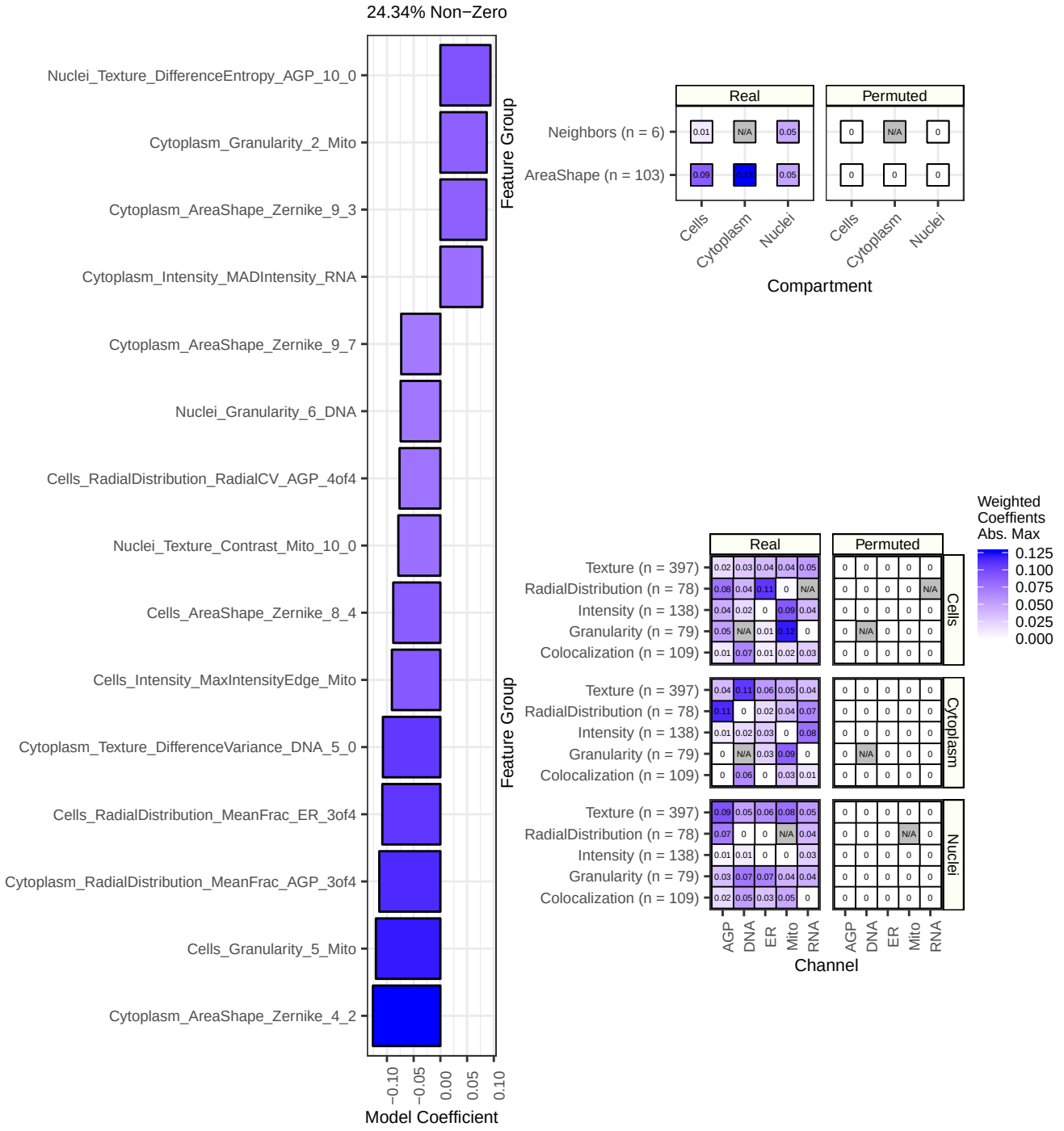
ALL − % High gH2AX Spots



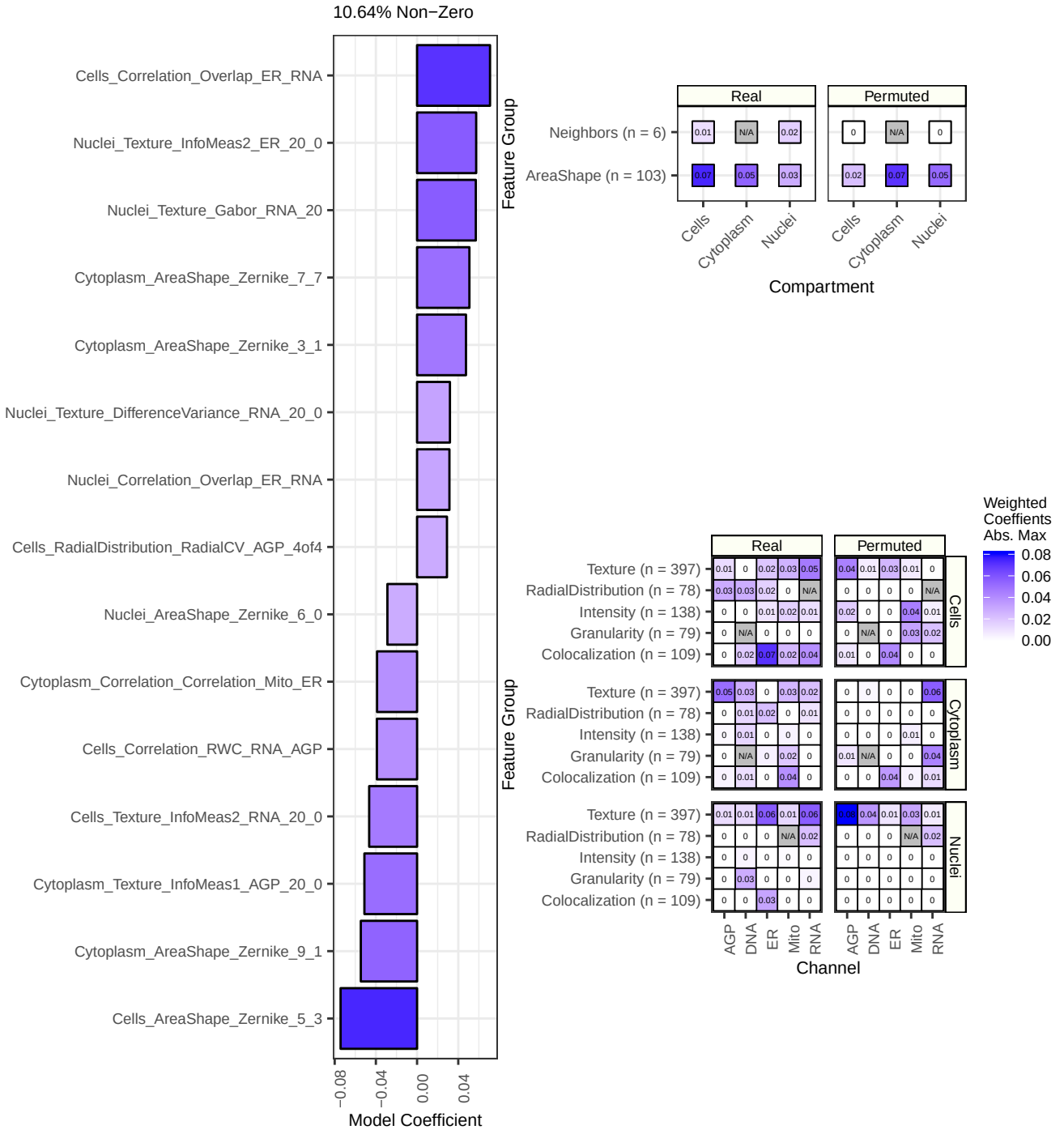
ALL − Polynuclear



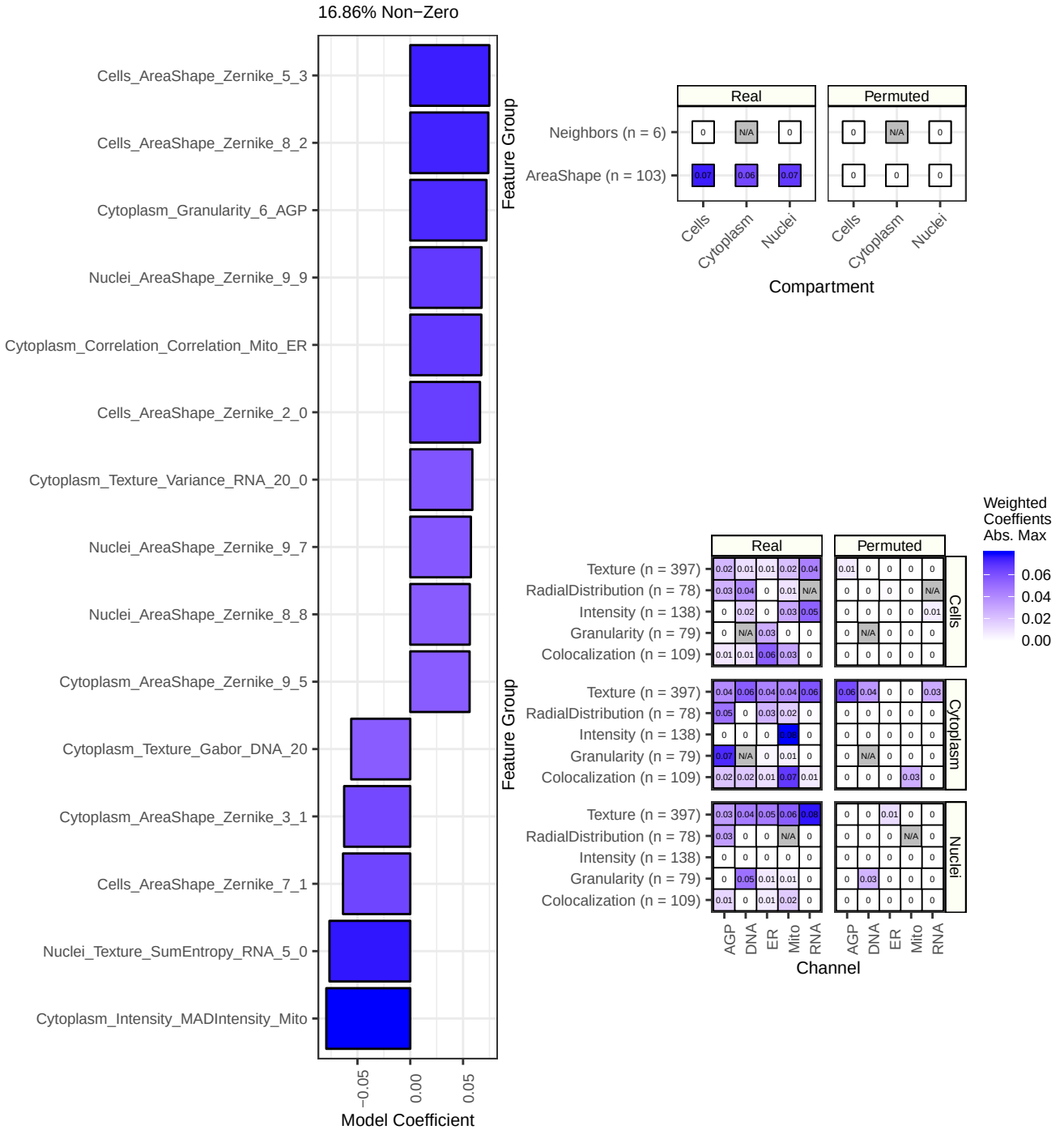
ALL − Polyploid



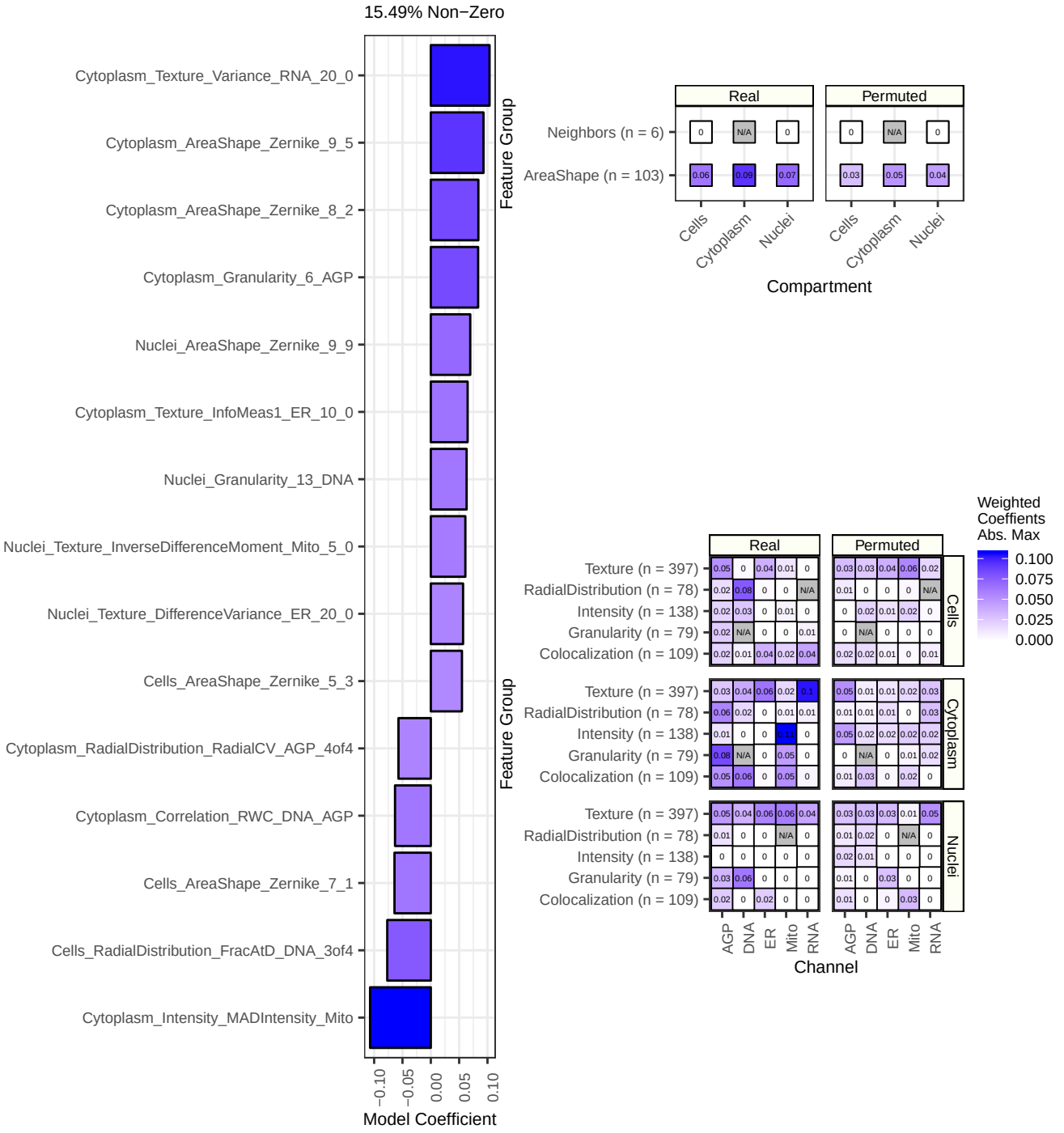
ALL − # cells


10.64% Non−Zero
Cells_Correlation_Overlap_ER_RNA
Nuclei_Texture_InfoMeas2_ER_20_0
Nuclei_Texture_Gabor_RNA_20
Cytoplasm_AreaShape_Zernike_7_7
Cytoplasm_AreaShape_Zernike_3_1
Nuclei_Texture_DifferenceVariance_RNA_20_0
Nuclei_Correlation_Overlap_ER_RNA
Cells_RadialDistribution_RadialCV_AGP_4of4
Nuclei_AreaShape_Zernike_6_0
Cytoplasm_Correlation_Correlation_Mito_ER
Cells_Correlation_RWC_RNA_AGP
Cells_Texture_InfoMeas2_RNA_20_0
Cytoplasm_Texture_InfoMeas1_AGP_20_0
Cytoplasm_AreaShape_Zernike_9_1
Cells_AreaShape_Zernike_5_3
−0.08
−0.04
0.00
0.04
Model Coefficient
Feature Group
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel
Weighted Coeffients Abs. Max
0.08
0.06
0.04
0.02
0.00

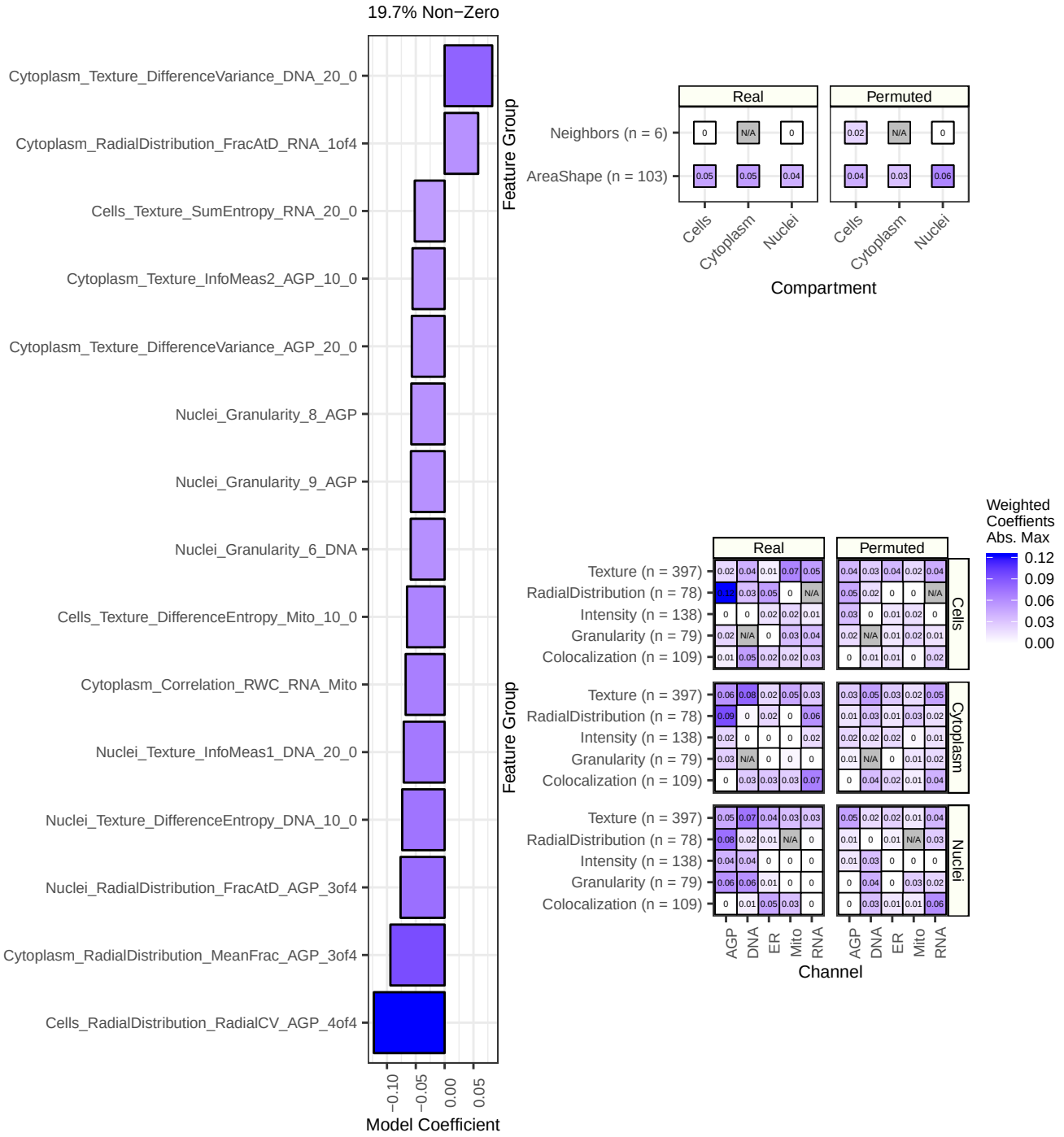
ALL − # of gH2AX Spots



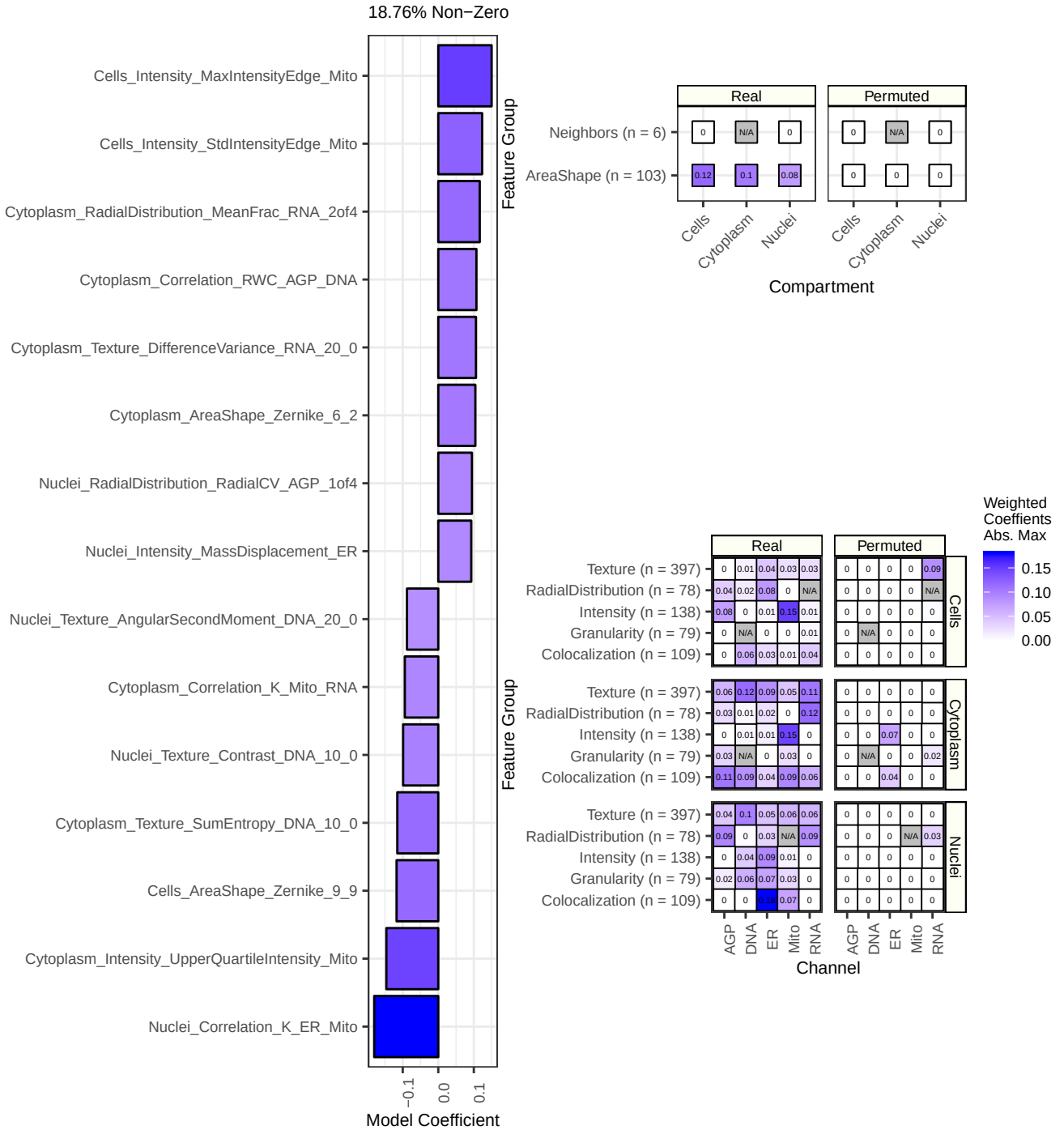
ALL − # of gH2AX Spots per Area of Nucleus



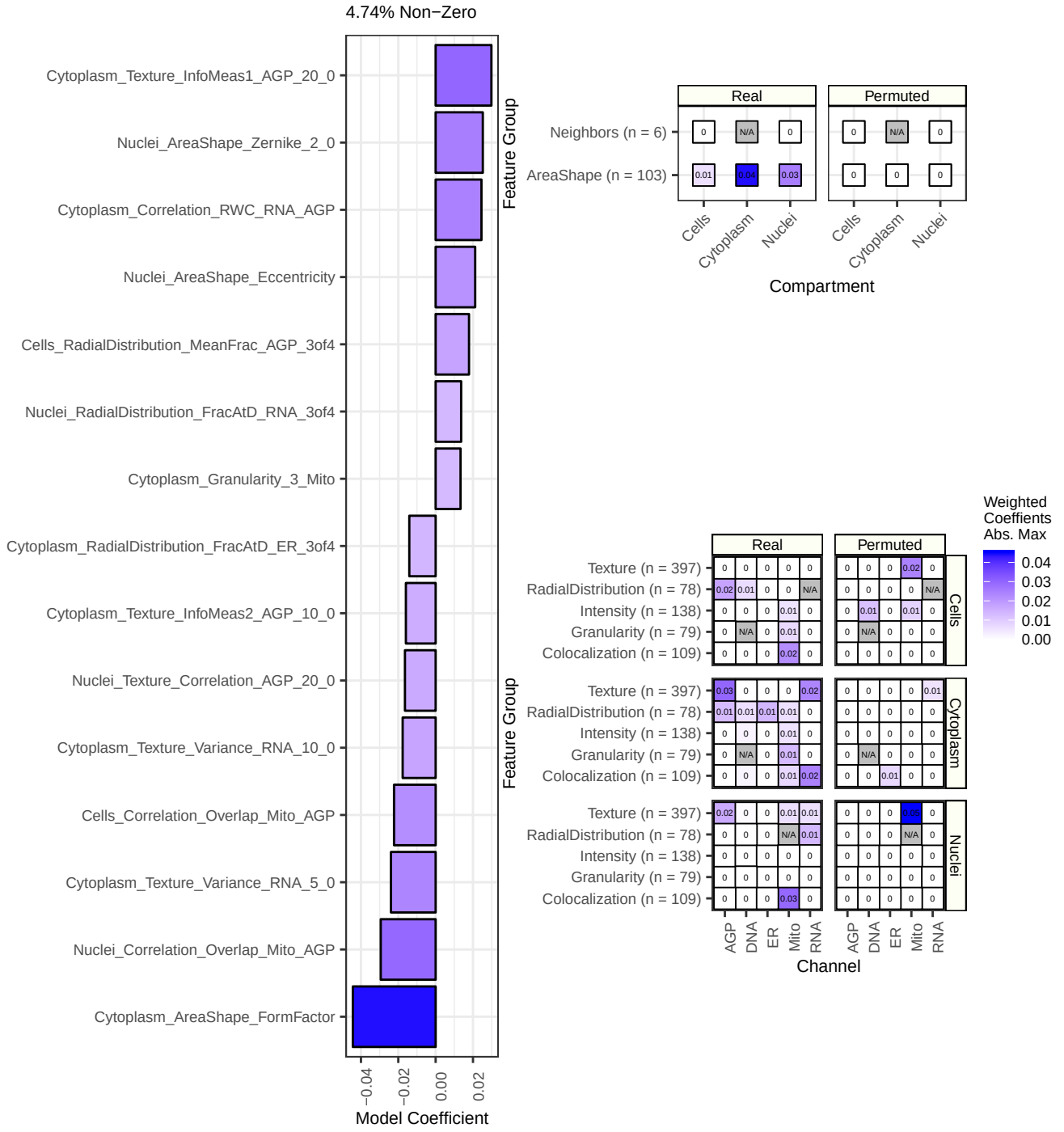
ALL − Nucleus Area



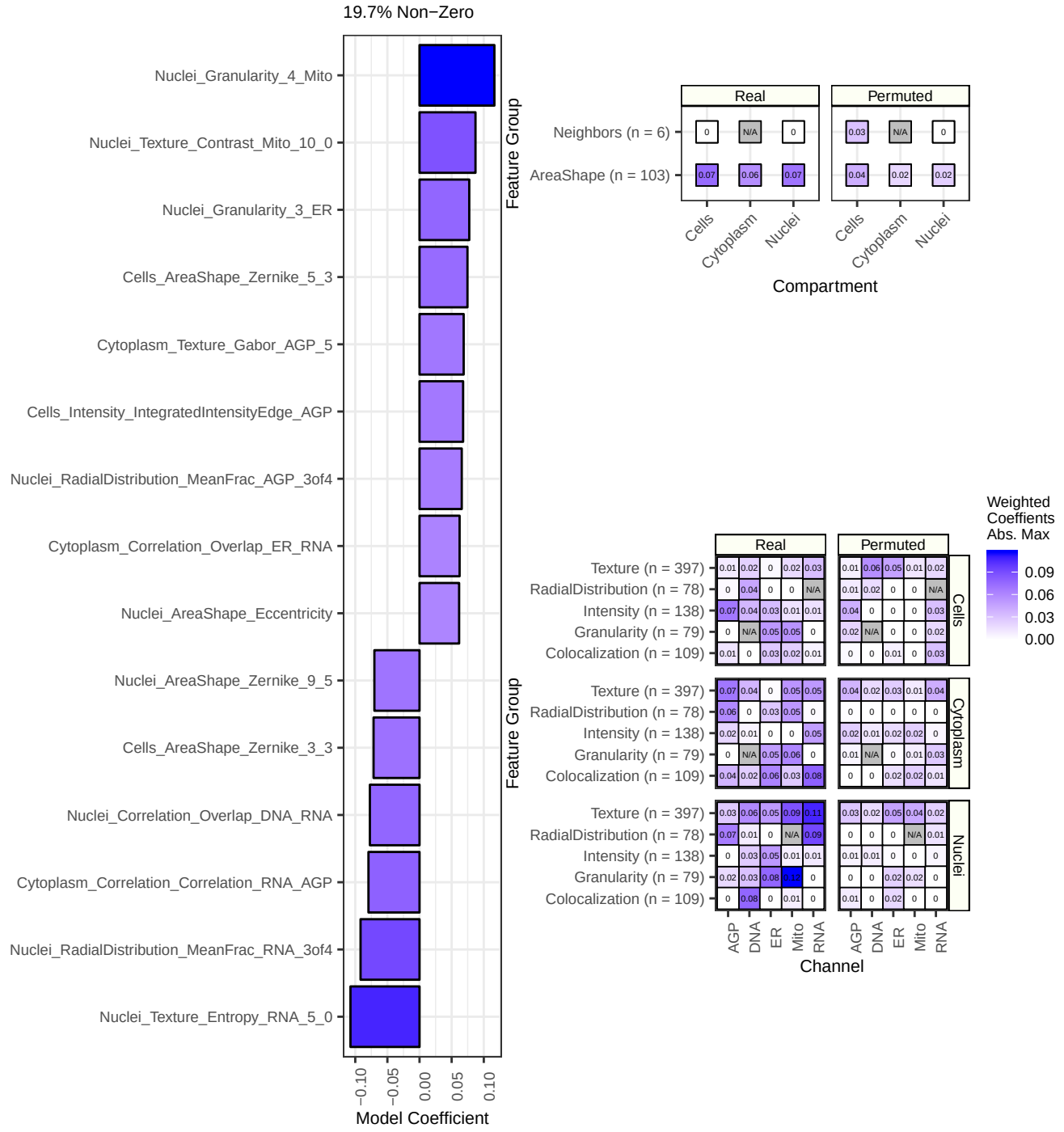
ALL − Nucleus Roundness



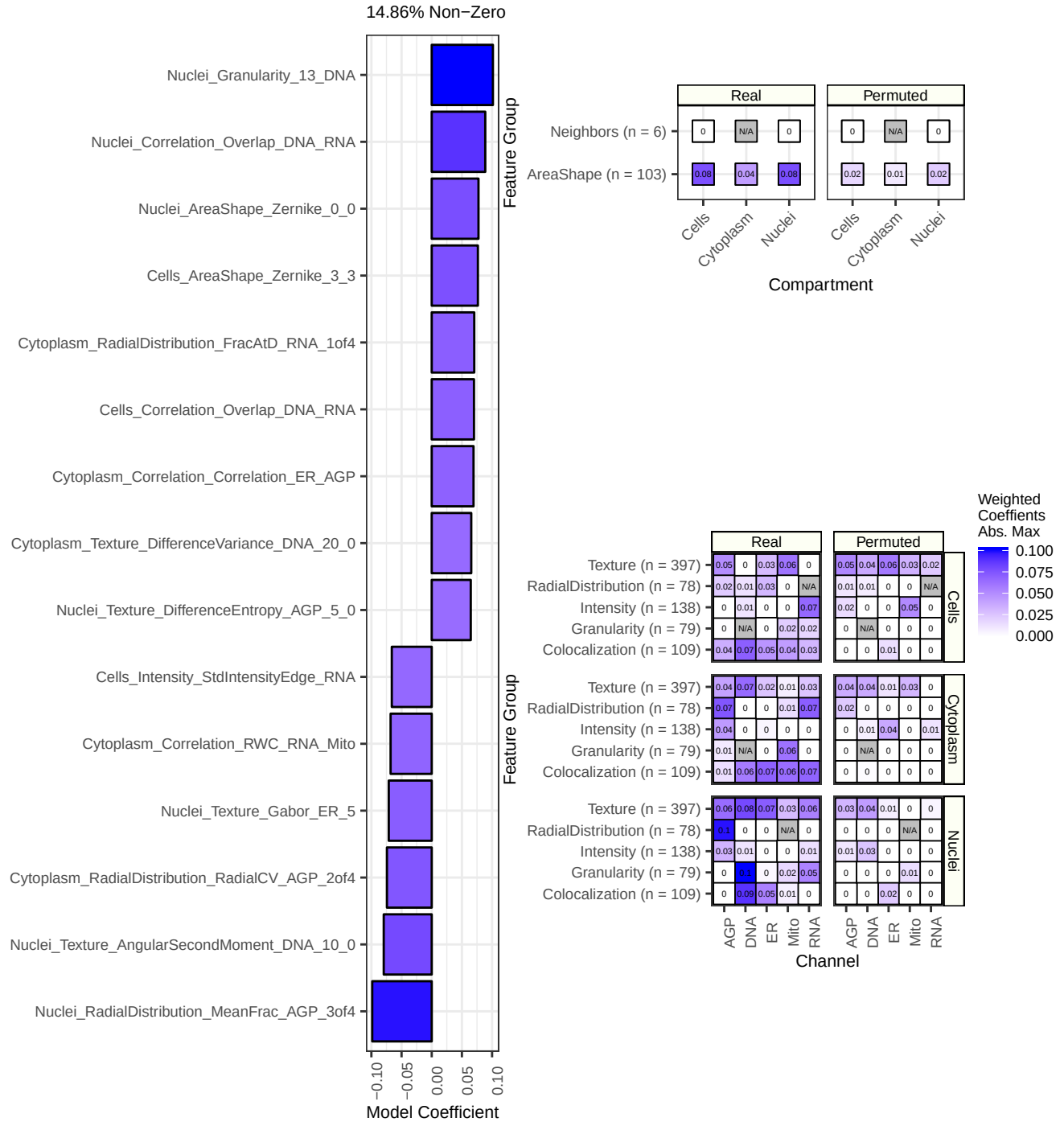
CC − % early M


4.74% Non−Zero
Cytoplasm_Texture_InfoMeas1_AGP_20_0
Nuclei_AreaShape_Zernike_2_0
Cytoplasm_Correlation_RWC_RNA_AGP
Nuclei_AreaShape_Eccentricity
Cells_RadialDistribution_MeanFrac_AGP_3of4
Nuclei_RadialDistribution_FracAtD_RNA_3of4
Cytoplasm_Granularity_3_Mito
Cytoplasm_RadialDistribution_FracAtD_ER_3of4
Cytoplasm_Texture_InfoMeas2_AGP_10_0
Nuclei_Texture_Correlation_AGP_20_0
Cytoplasm_Texture_Variance_RNA_10_0
Cells_Correlation_Overlap_Mito_AGP
Cytoplasm_Texture_Variance_RNA_5_0
Nuclei_Correlation_Overlap_Mito_AGP
Cytoplasm_AreaShape_FormFactor
Feature Group
−0.04
−0.02
0.00
0.02
Model Coefficient
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel
Weighted Coeffients Abs. Max
0.04
0.03
0.02
0.01
0.00

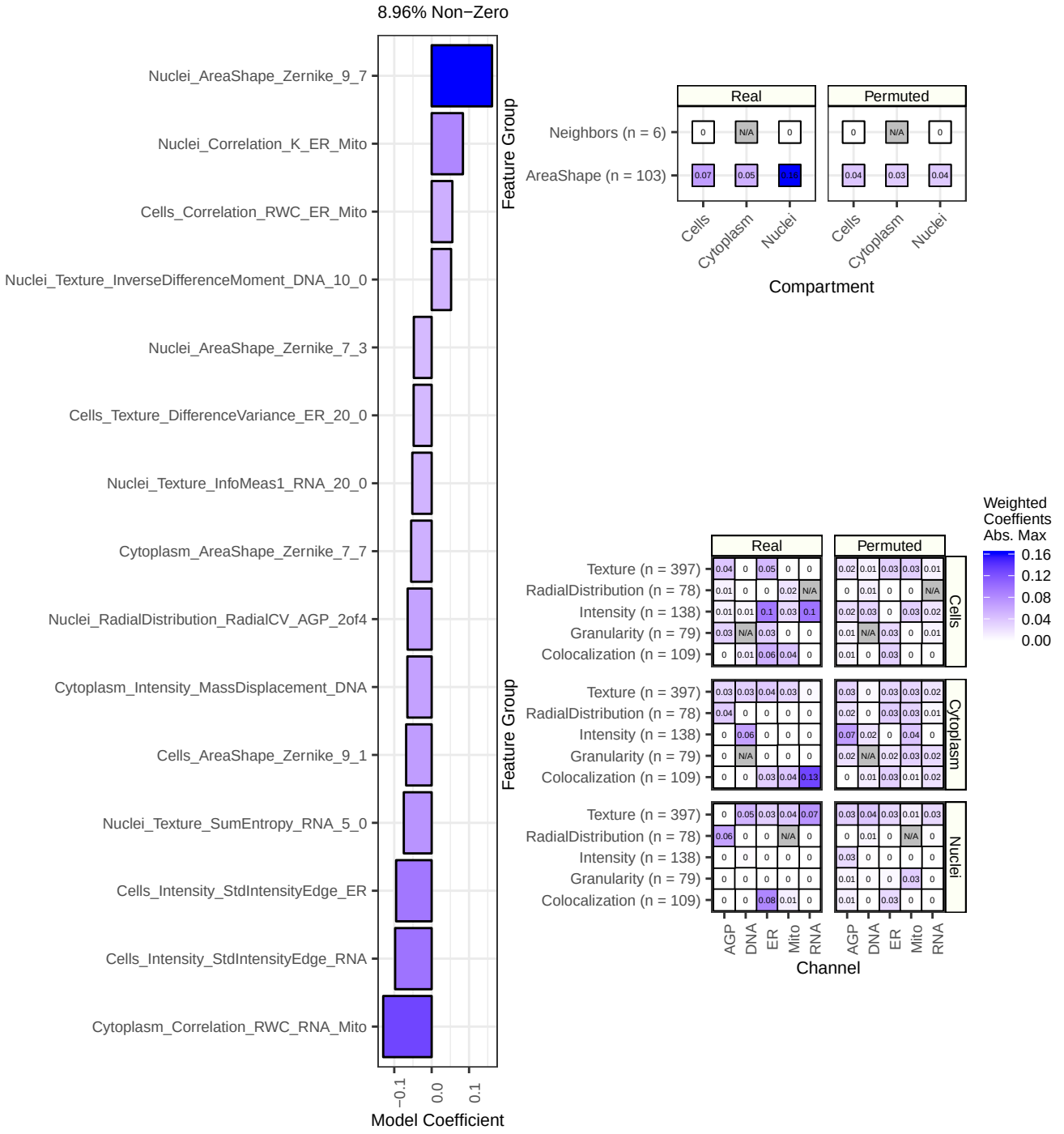
CC − % G1


19.7% Non−Zero
Nuclei_Granularity_4_Mito
Nuclei_Texture_Contrast_Mito_10_0
Nuclei_Granularity_3_ER
Cells_AreaShape_Zernike_5_3
Cytoplasm_Texture_Gabor_AGP_5
Cells_Intensity_IntegratedIntensityEdge_AGP
Nuclei_RadialDistribution_MeanFrac_AGP_3of4
Cytoplasm_Correlation_Overlap_ER_RNA
Nuclei_AreaShape_Eccentricity
Nuclei_AreaShape_Zernike_9_5
Cells_AreaShape_Zernike_3_3
Nuclei_Correlation_Overlap_DNA_RNA
Cytoplasm_Correlation_Correlation_RNA_AGP
Nuclei_RadialDistribution_MeanFrac_RNA_3of4
Nuclei_Texture_Entropy_RNA_5_0
−0.10
−0.05
0.00
0.05
0.10
Model Coefficient
Feature Group
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
0
N/A
0
0.03
N/A
0
0.07
0.06
0.07
0.04
0.02
0.02
Cells
Cytoplasm
Nuclei
Compartment
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
Cells
Cytoplasm
Nuclei
AGP
DNA
ER
Mito
RNA
Channel
Weighted Coeffients Abs. Max
0.09
0.06
0.03
0.00

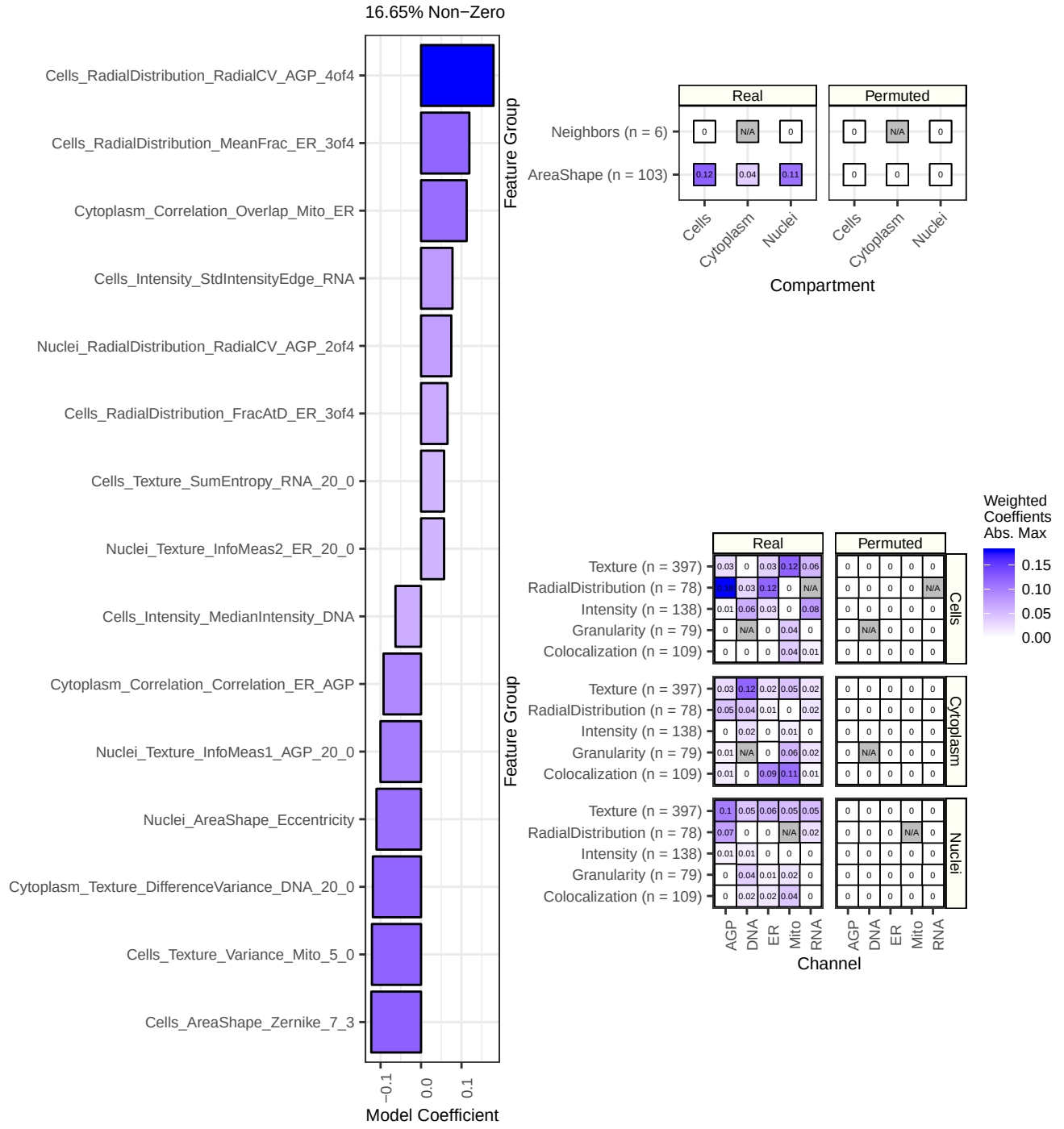
CC − % G2


14.86% Non−Zero
Nuclei_Granularity_13_DNA
Nuclei_Correlation_Overlap_DNA_RNA
Nuclei_AreaShape_Zernike_0_0
Cells_AreaShape_Zernike_3_3
Cytoplasm_RadialDistribution_FracAtD_RNA_1of4
Cells_Correlation_Overlap_DNA_RNA
Cytoplasm_Correlation_Correlation_ER_AGP
Cytoplasm_Texture_DifferenceVariance_DNA_20_0
Nuclei_Texture_DifferenceEntropy_AGP_5_0
Cells_Intensity_StdIntensityEdge_RNA
Cytoplasm_Correlation_RWC_RNA_Mito
Nuclei_Texture_Gabor_ER_5
Cytoplasm_RadialDistribution_RadialCV_AGP_2of4
Nuclei_Texture_AngularSecondMoment_DNA_10_0
Nuclei_RadialDistribution_MeanFrac_AGP_3of4
Feature Group
−0.10
−0.05
0.00
0.05
0.10
Model Coefficient
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel
Weighted Coeffients Abs. Max
0.100
0.075
0.050
0.025
0.000

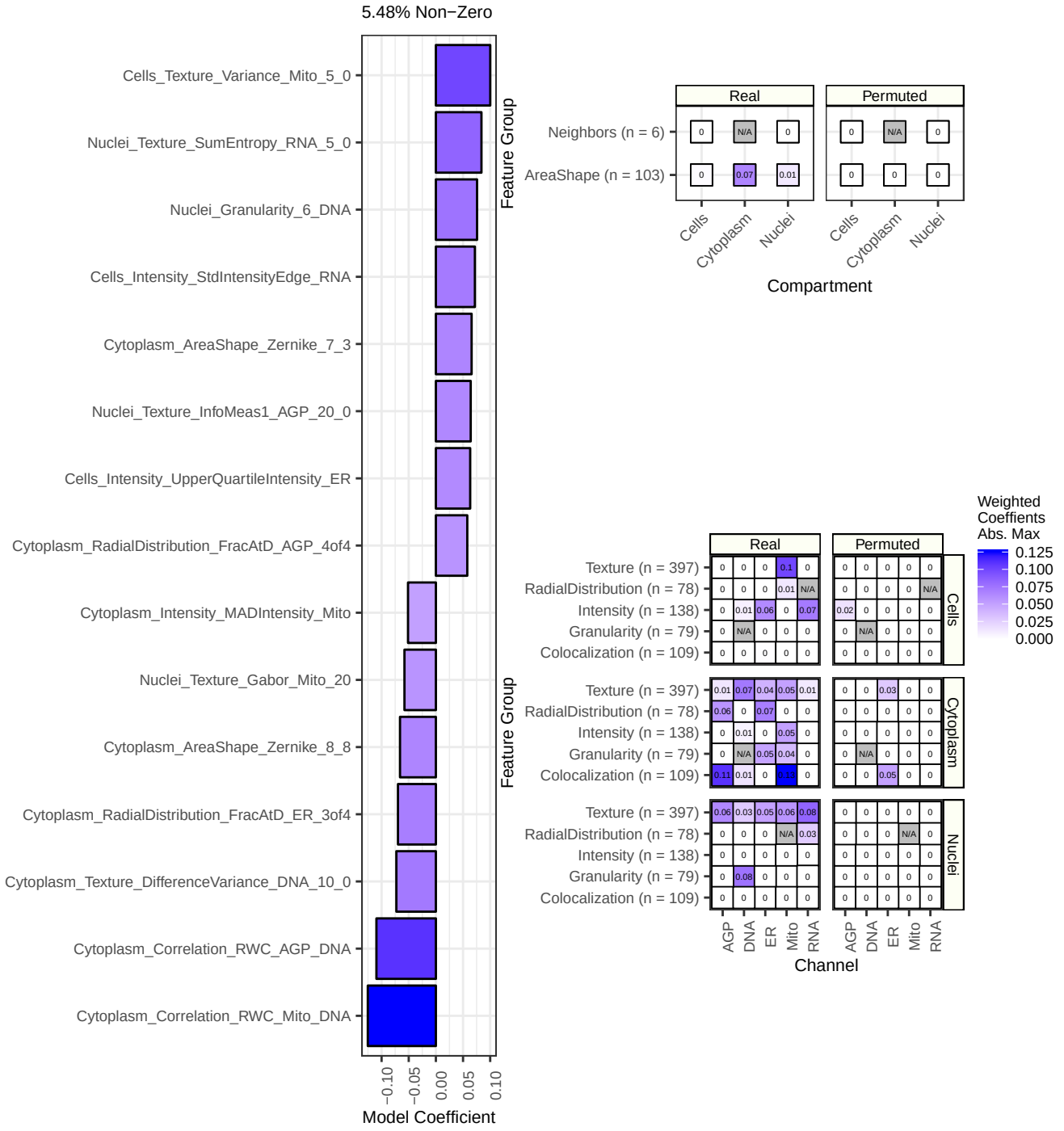
CC − % High gH2AX spots



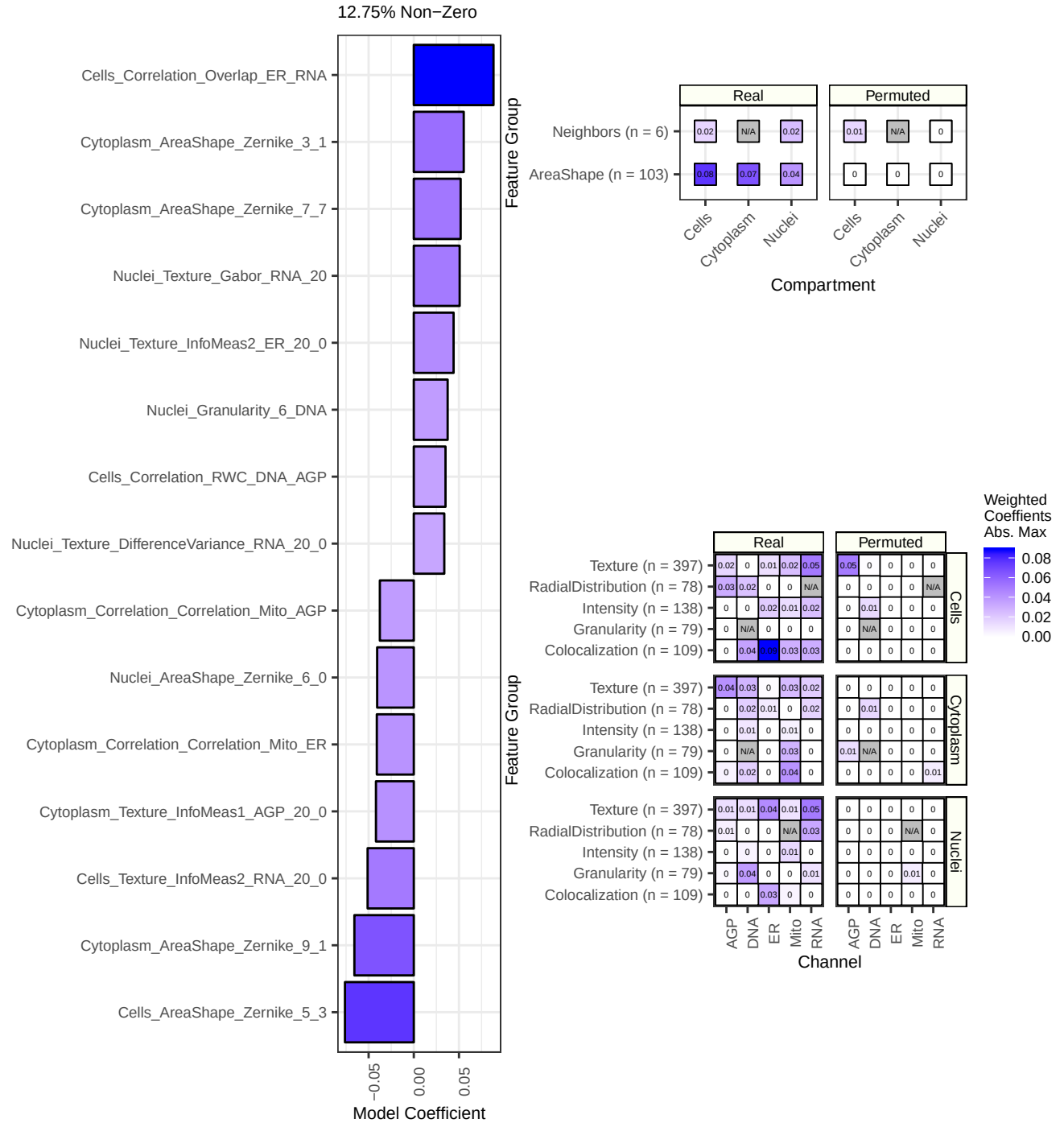
CC − % Late M


16.65% Non−Zero
Cells_RadialDistribution_RadialCV_AGP_4of4
Cells_RadialDistribution_MeanFrac_ER_3of4
Cytoplasm_Correlation_Overlap_Mito_ER
Cells_Intensity_StdIntensityEdge_RNA
Nuclei_RadialDistribution_RadialCV_AGP_2of4
Cells_RadialDistribution_FracAtD_ER_3of4
Cells_Texture_SumEntropy_RNA_20_0
Nuclei_Texture_InfoMeas2_ER_20_0
Cells_Intensity_MedianIntensity_DNA
Cytoplasm_Correlation_Correlation_ER_AGP
Nuclei_Texture_InfoMeas1_AGP_20_0
Nuclei_AreaShape_Eccentricity
Cytoplasm_Texture_DifferenceVariance_DNA_20_0
Cells_Texture_Variance_Mito_5_0
Cells_AreaShape_Zernike_7_3
−0.1
0.0
0.1
Model Coefficient
Feature Group
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel
Weighted Coeffients Abs. Max
0.15
0.10
0.05
0.00

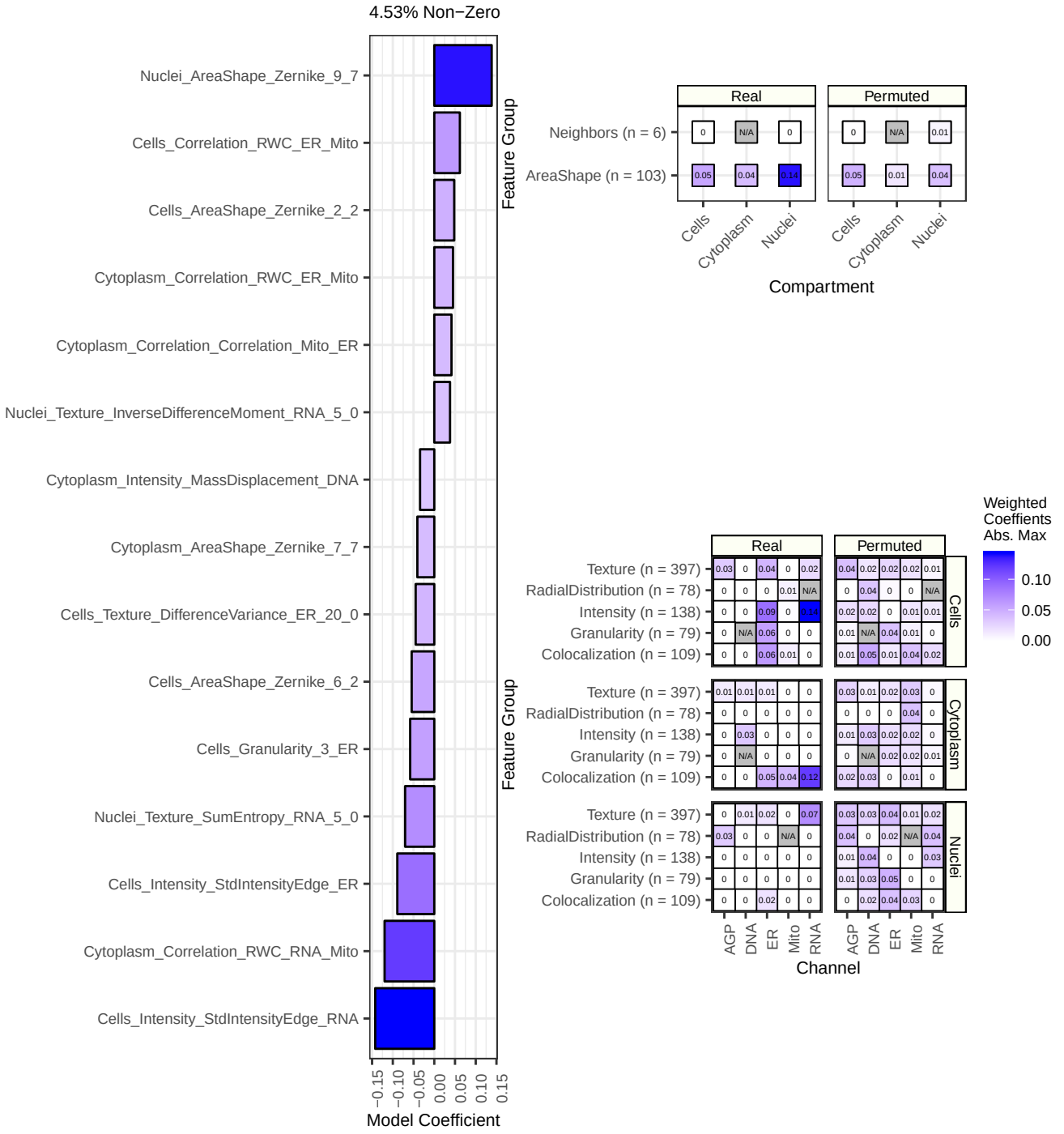
CC − % M


5.48% Non−Zero
Cells_Texture_Variance_Mito_5_0
Nuclei_Texture_SumEntropy_RNA_5_0
Nuclei_Granularity_6_DNA
Cells_Intensity_StdIntensityEdge_RNA
Cytoplasm_AreaShape_Zernike_7_3
Nuclei_Texture_InfoMeas1_AGP_20_0
Cells_Intensity_UpperQuartileIntensity_ER
Cytoplasm_RadialDistribution_FracAtD_AGP_4of4
Cytoplasm_Intensity_MADIntensity_Mito
Nuclei_Texture_Gabor_Mito_20
Cytoplasm_AreaShape_Zernike_8_8
Cytoplasm_RadialDistribution_FracAtD_ER_3of4
Cytoplasm_Texture_DifferenceVariance_DNA_10_0
Cytoplasm_Correlation_RWC_AGP_DNA
Cytoplasm_Correlation_RWC_Mito_DNA
Feature Group
−0.10
−0.05
0.00
0.05
0.10
Model Coefficient
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel
Weighted Coeffients Abs. Max
0.125
0.100
0.075
0.050
0.025
0.000

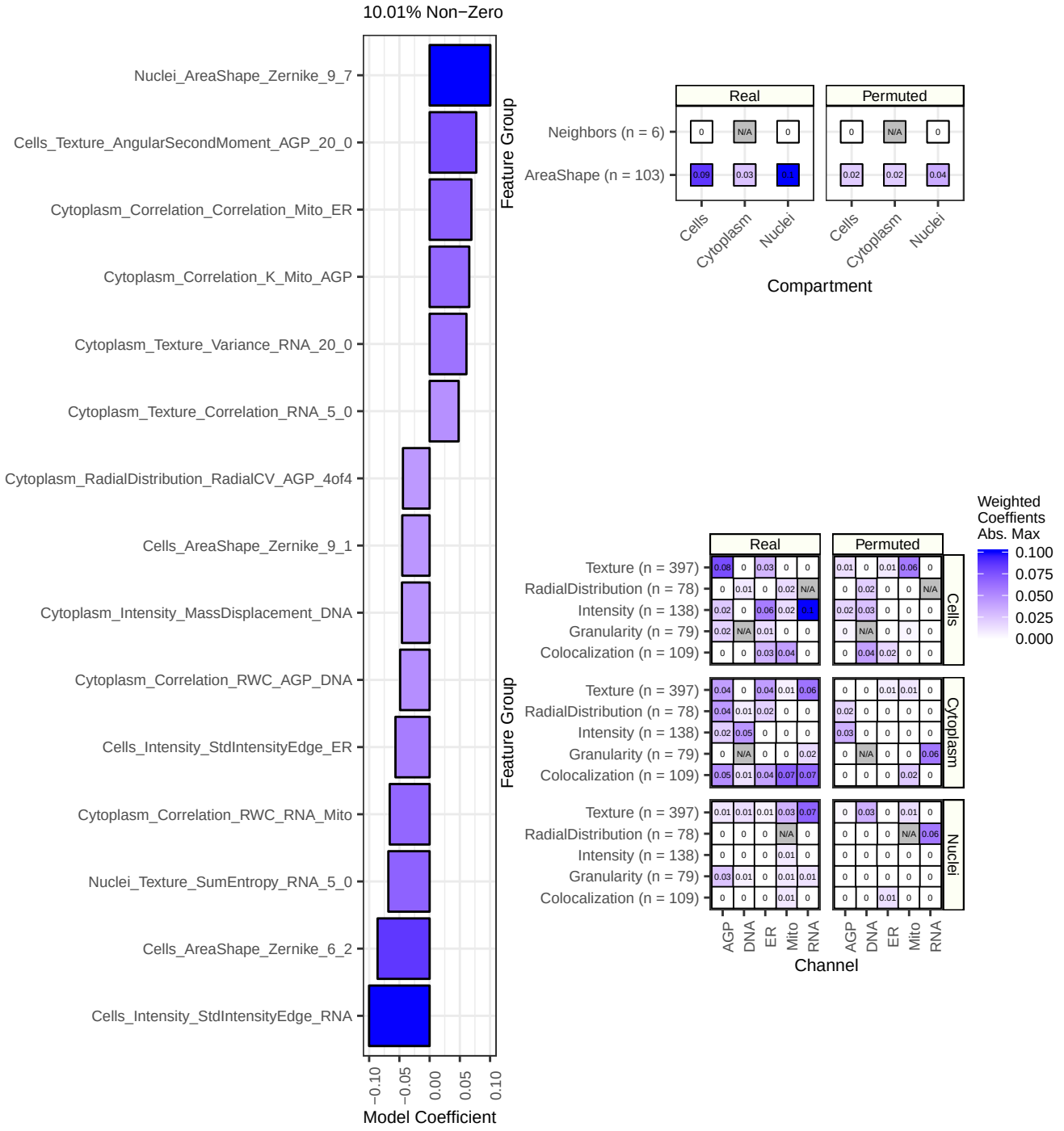
CC − # cells


12.75% Non−Zero
Cells_Correlation_Overlap_ER_RNA
Cytoplasm_AreaShape_Zernike_3_1
Cytoplasm_AreaShape_Zernike_7_7
Nuclei_Texture_Gabor_RNA_20
Nuclei_Texture_InfoMeas2_ER_20_0
Nuclei_Granularity_6_DNA
Cells_Correlation_RWC_DNA_AGP
Nuclei_Texture_DifferenceVariance_RNA_20_0
Cytoplasm_Correlation_Correlation_Mito_AGP
Nuclei_AreaShape_Zernike_6_0
Cytoplasm_Correlation_Correlation_Mito_ER
Cytoplasm_Texture_InfoMeas1_AGP_20_0
Cells_Texture_InfoMeas2_RNA_20_0
Cytoplasm_AreaShape_Zernike_9_1
Cells_AreaShape_Zernike_5_3
−0.05
0.00
0.05
Model Coefficient
Feature Group
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Weighted Coeffients Abs. Max
0.08
0.06
0.04
0.02
0.00
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel

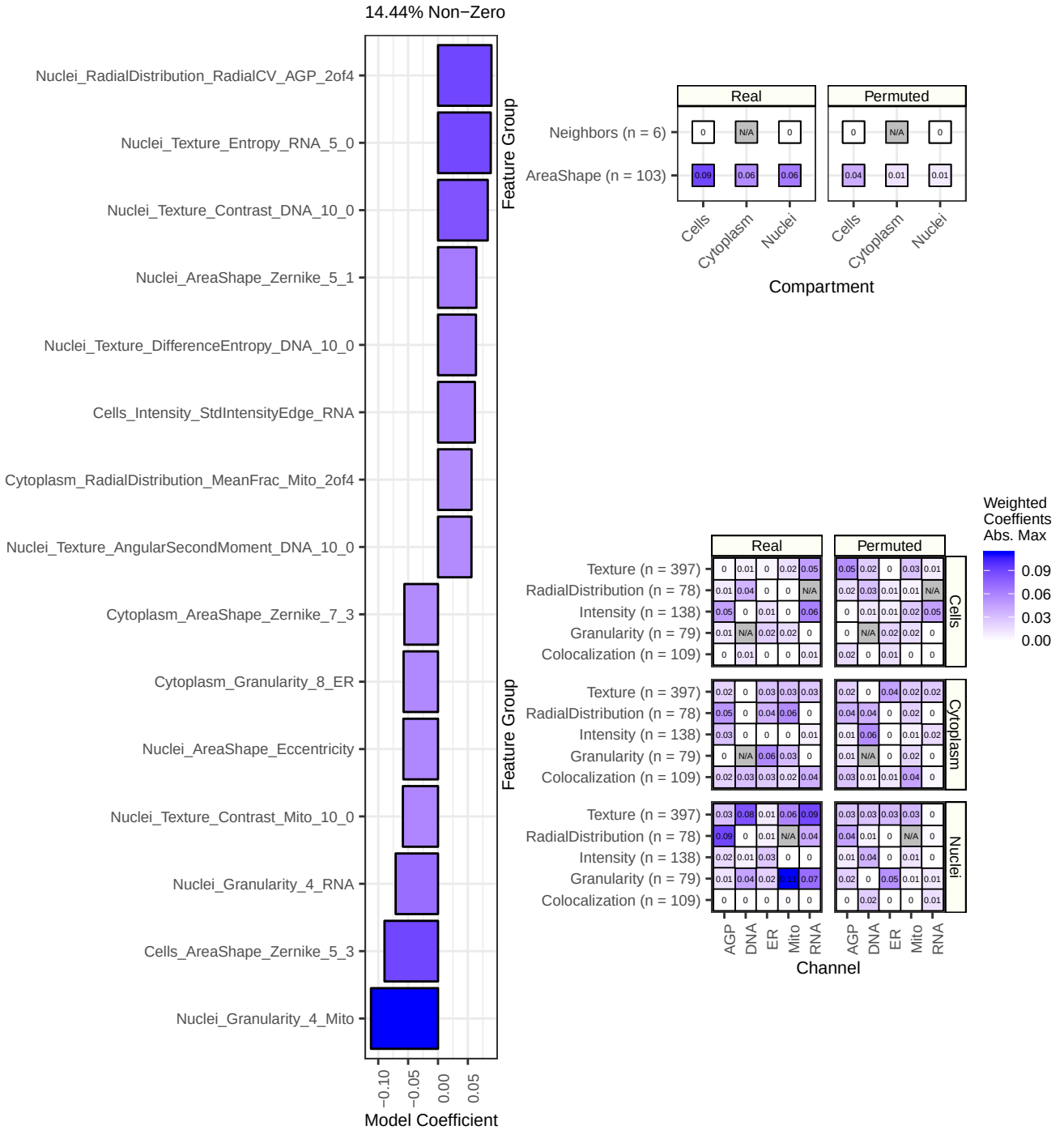
CC − # of gH2AX Spots



CC − # of gH2AX Spots per Area of Nucleus

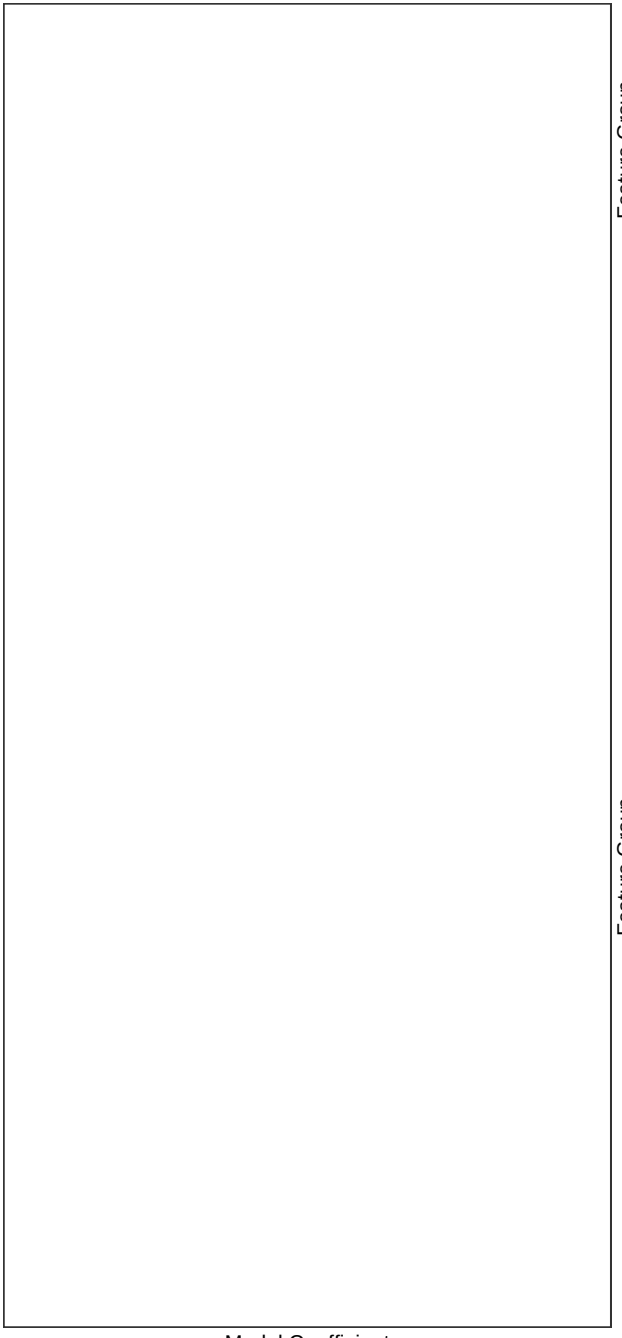


CC − % S

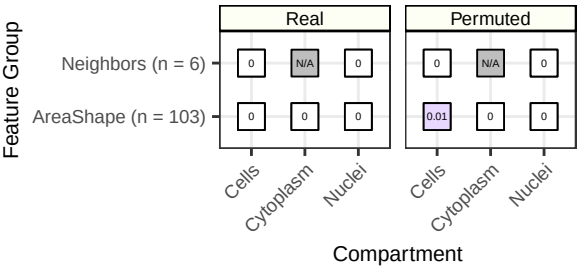

14.44% Non−Zero
Nuclei_RadialDistribution_RadialCV_AGP_2of4
Nuclei_Texture_Entropy_RNA_5_0
Nuclei_Texture_Contrast_DNA_10_0
Nuclei_AreaShape_Zernike_5_1
Nuclei_Texture_DifferenceEntropy_DNA_10_0
Cells_Intensity_StdIntensityEdge_RNA
Cytoplasm_RadialDistribution_MeanFrac_Mito_2of4
Nuclei_Texture_AngularSecondMoment_DNA_10_0
Cytoplasm_AreaShape_Zernike_7_3
Cytoplasm_Granularity_8_ER
Nuclei_AreaShape_Eccentricity
Nuclei_Texture_Contrast_Mito_10_0
Nuclei_Granularity_4_RNA
Cells_AreaShape_Zernike_5_3
Nuclei_Granularity_4_Mito
Feature Group
−0.10
−0.05
0.00
0.05
Model Coefficient
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel
Weighted Coeffients Abs. Max
0.09
0.06
0.03
0.00

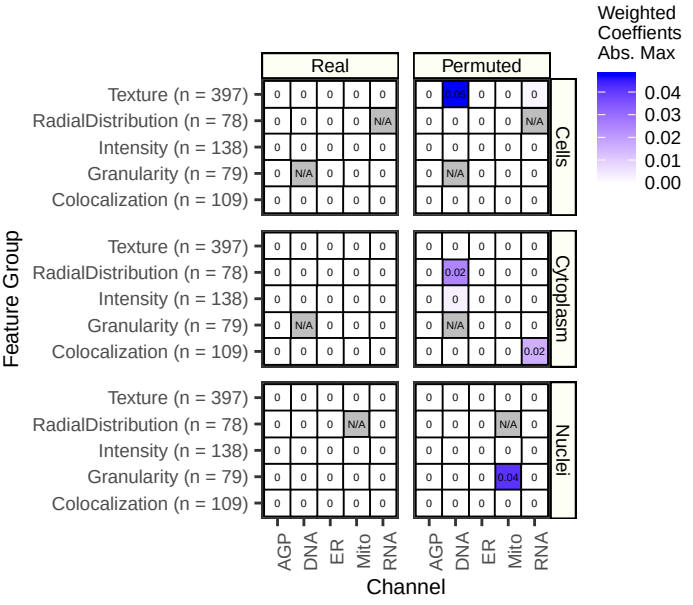
early M − % High gH2AX Spots

0% Non−Zero

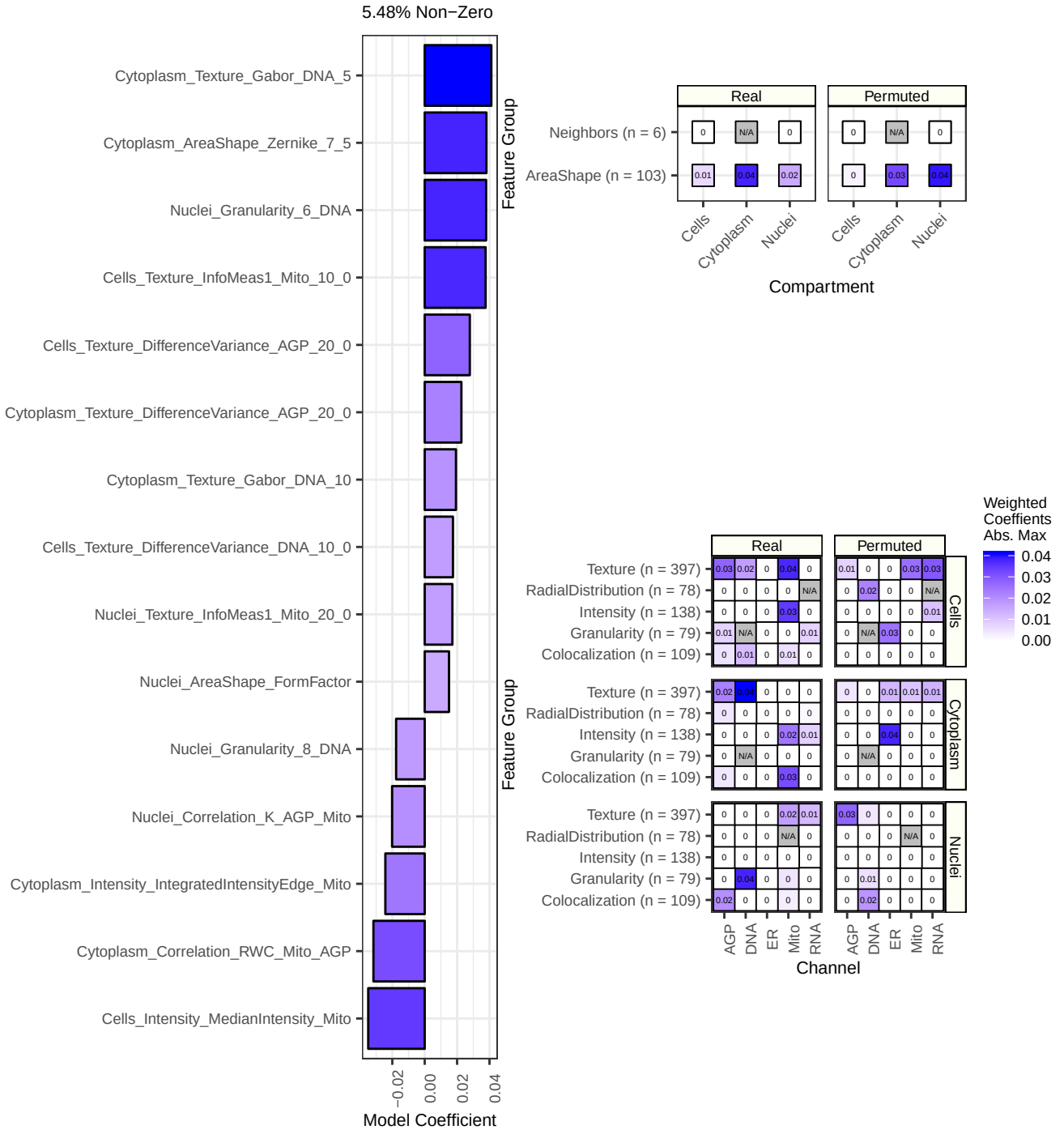


Model Coefficient

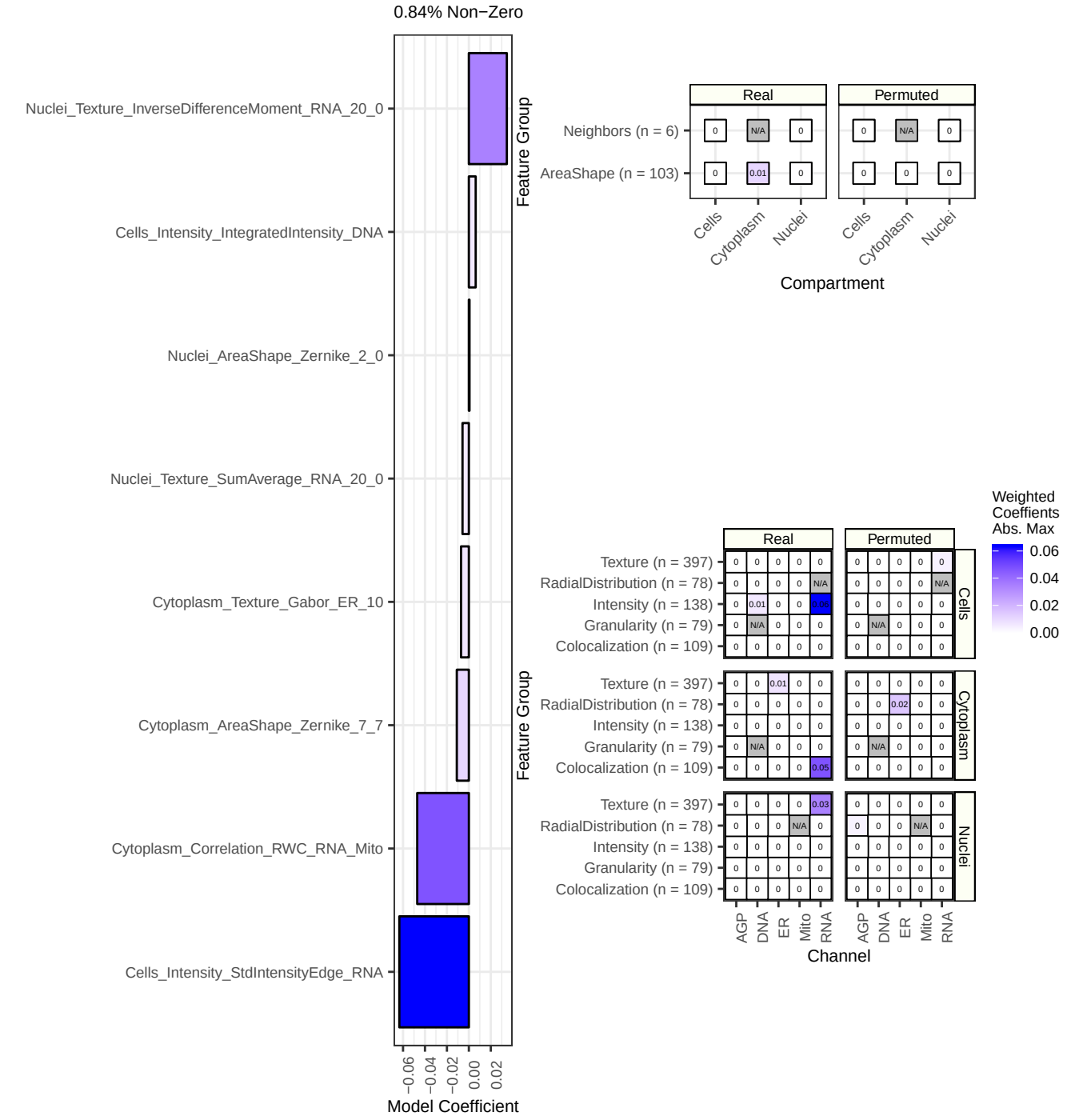




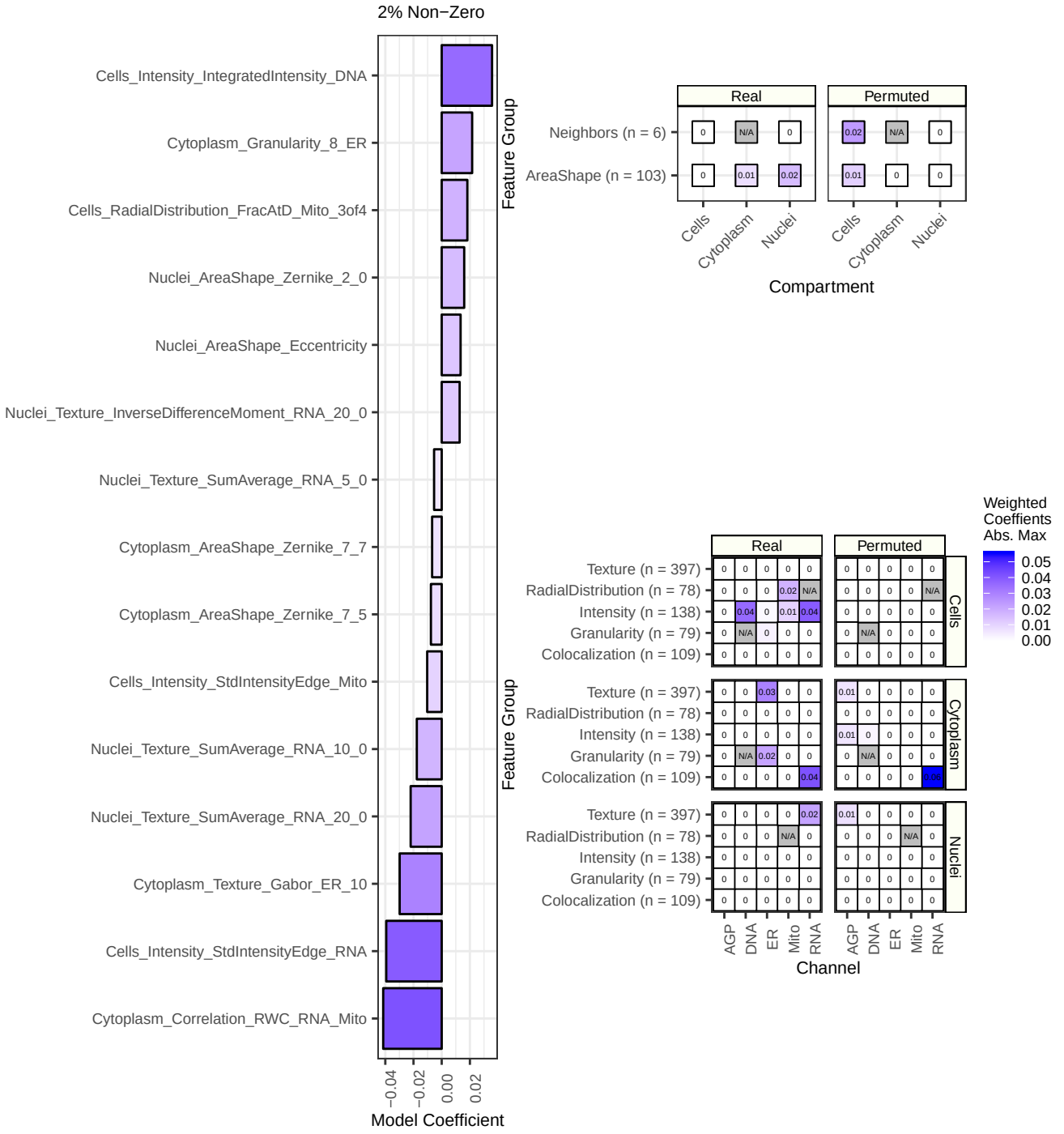
early M − # cells



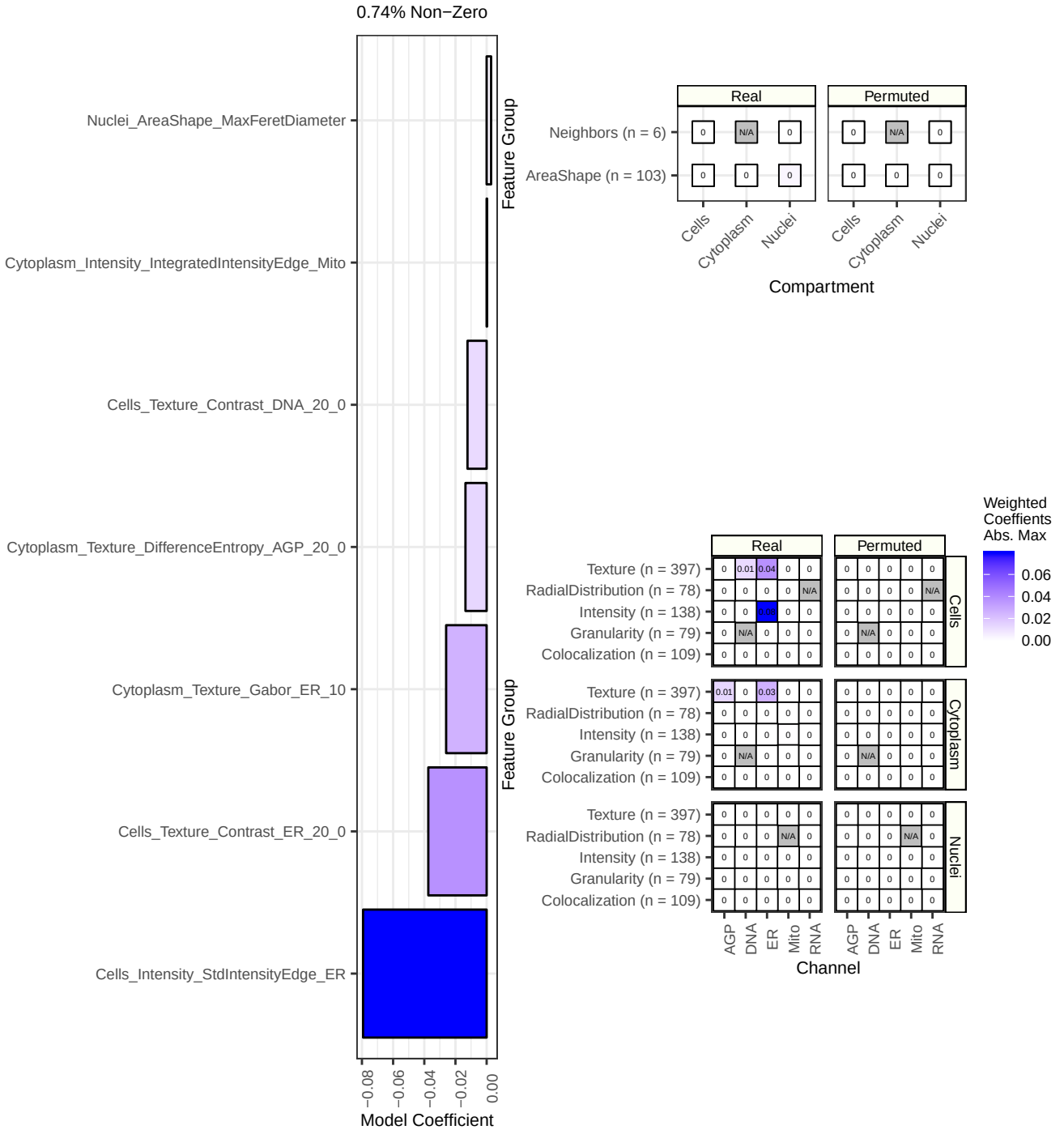
early M − # of gH2AX Spots



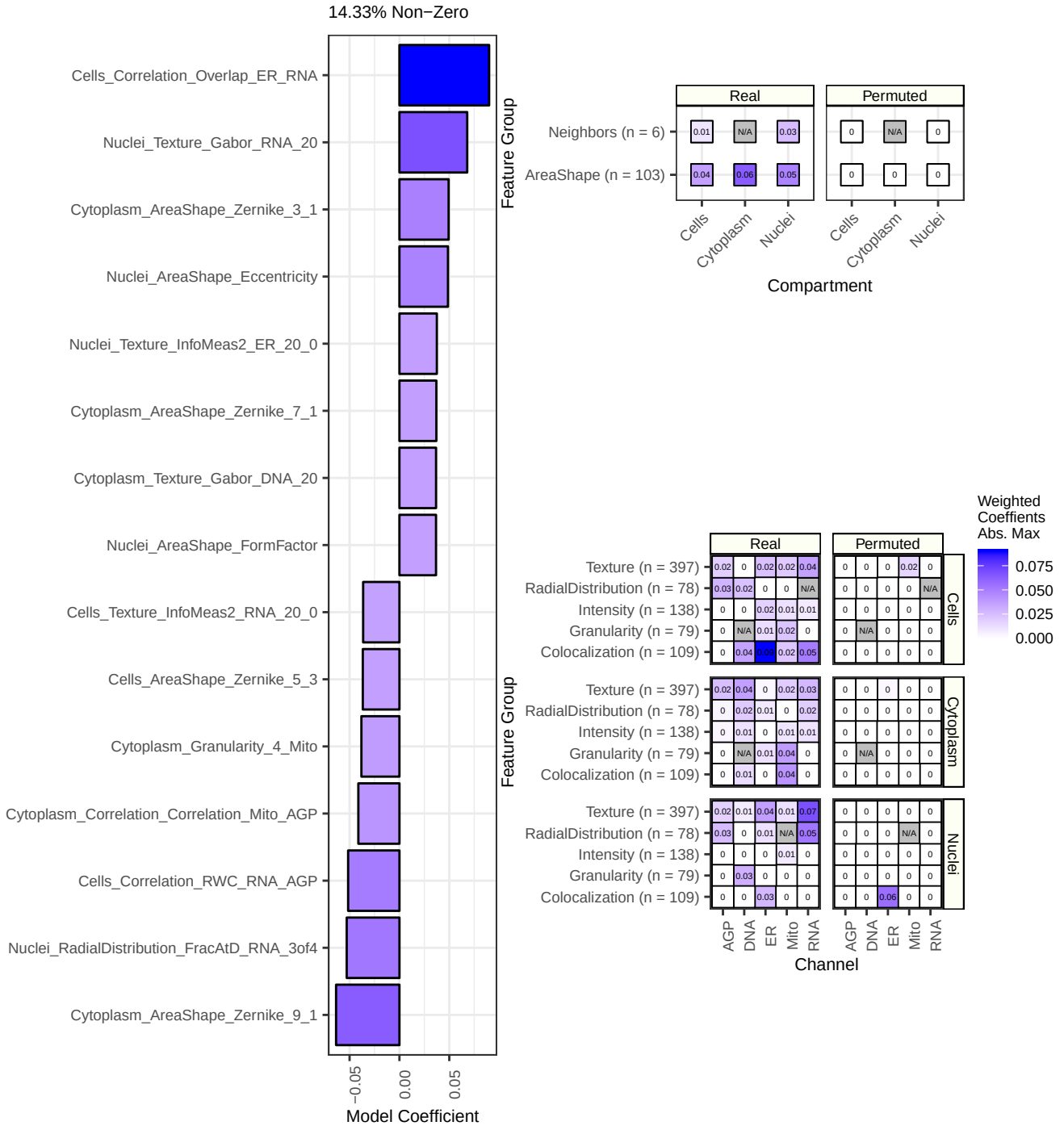
early M − # of gH2AX Spots per Area of Nucleus



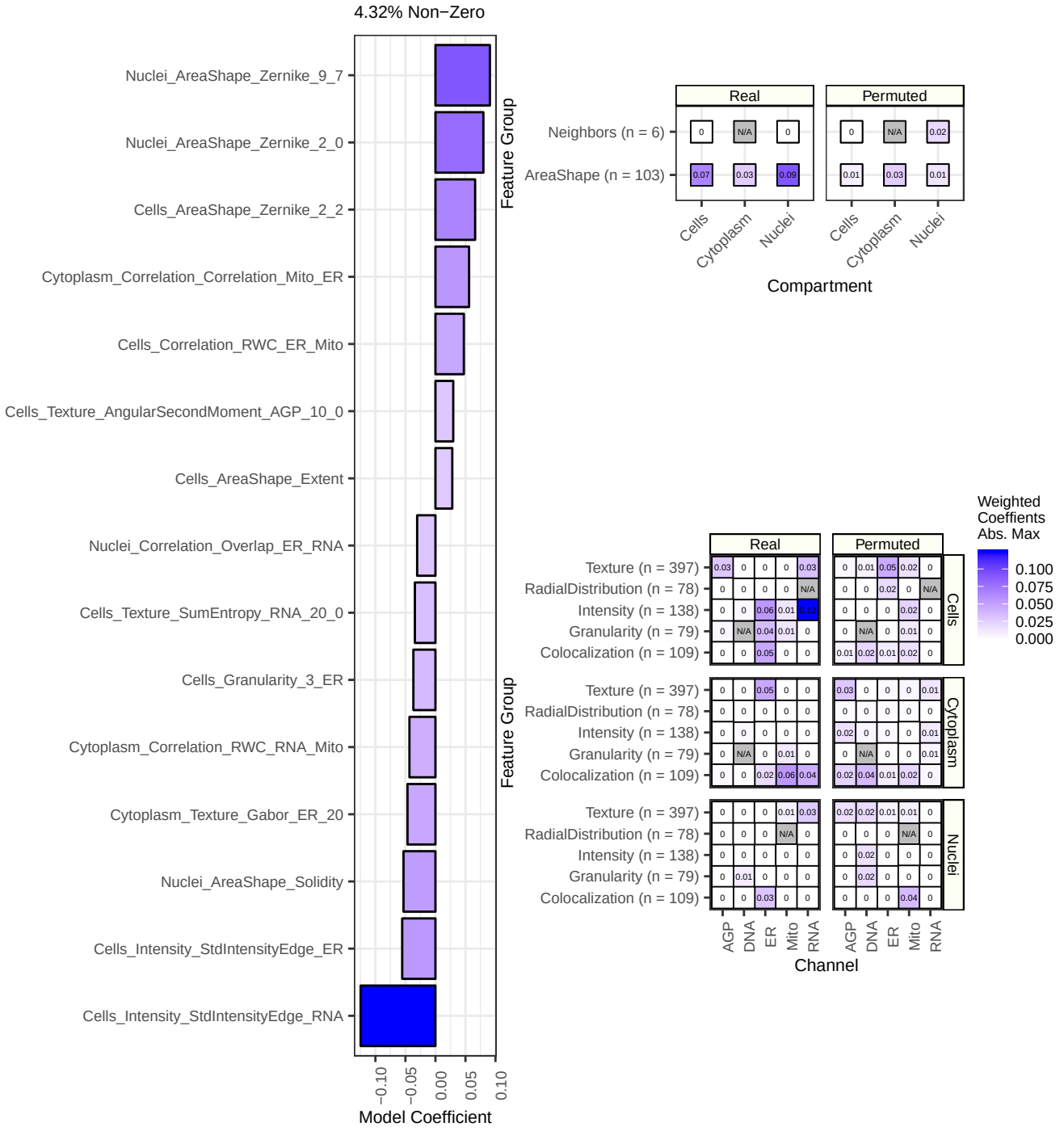
G1 − % High gH2AX Spots



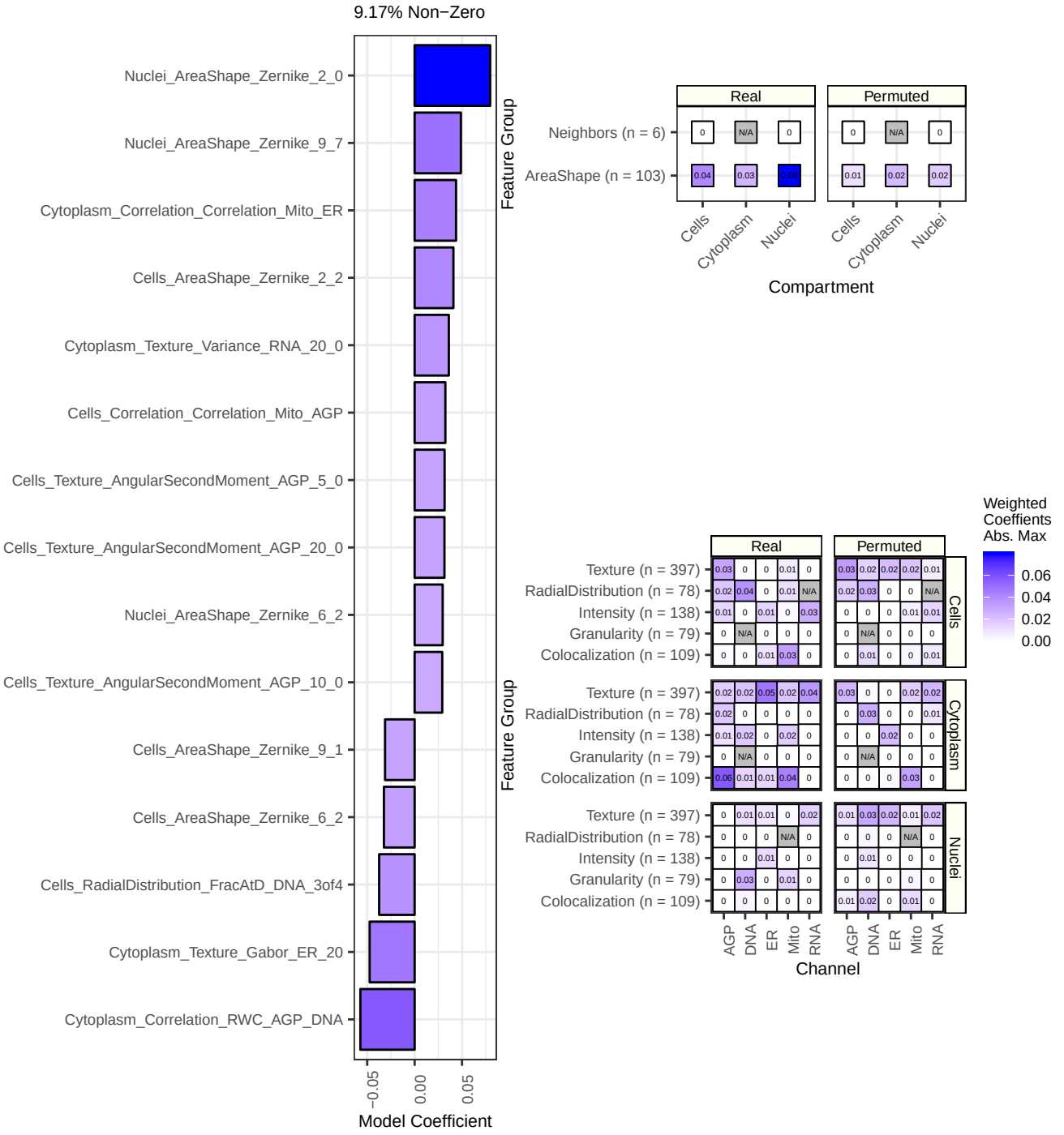
G1 − # cells


14.33% Non−Zero
Cells_Correlation_Overlap_ER_RNA
Nuclei_Texture_Gabor_RNA_20
Cytoplasm_AreaShape_Zernike_3_1
Nuclei_AreaShape_Eccentricity
Nuclei_Texture_InfoMeas2_ER_20_0
Cytoplasm_AreaShape_Zernike_7_1
Cytoplasm_Texture_Gabor_DNA_20
Nuclei_AreaShape_FormFactor
Cells_Texture_InfoMeas2_RNA_20_0
Cells_AreaShape_Zernike_5_3
Cytoplasm_Granularity_4_Mito
Cytoplasm_Correlation_Correlation_Mito_AGP
Cells_Correlation_RWC_RNA_AGP
Nuclei_RadialDistribution_FracAtD_RNA_3of4
Cytoplasm_AreaShape_Zernike_9_1
Feature Group
−0.05
0.00
0.05
Model Coefficient
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel
Weighted Coeffients Abs. Max
0.075
0.050
0.025
0.000

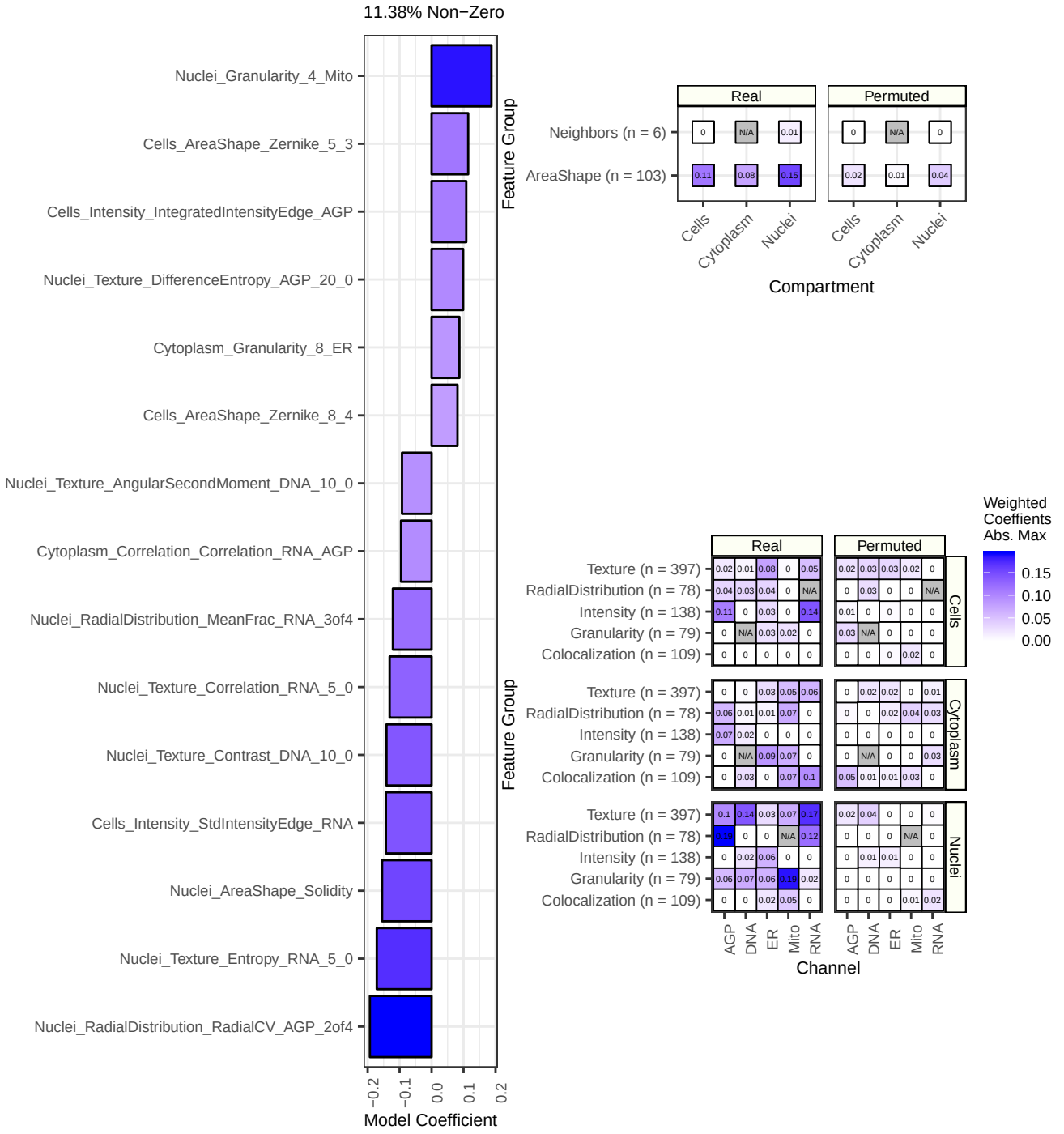
G1 − # of gH2AX Spots



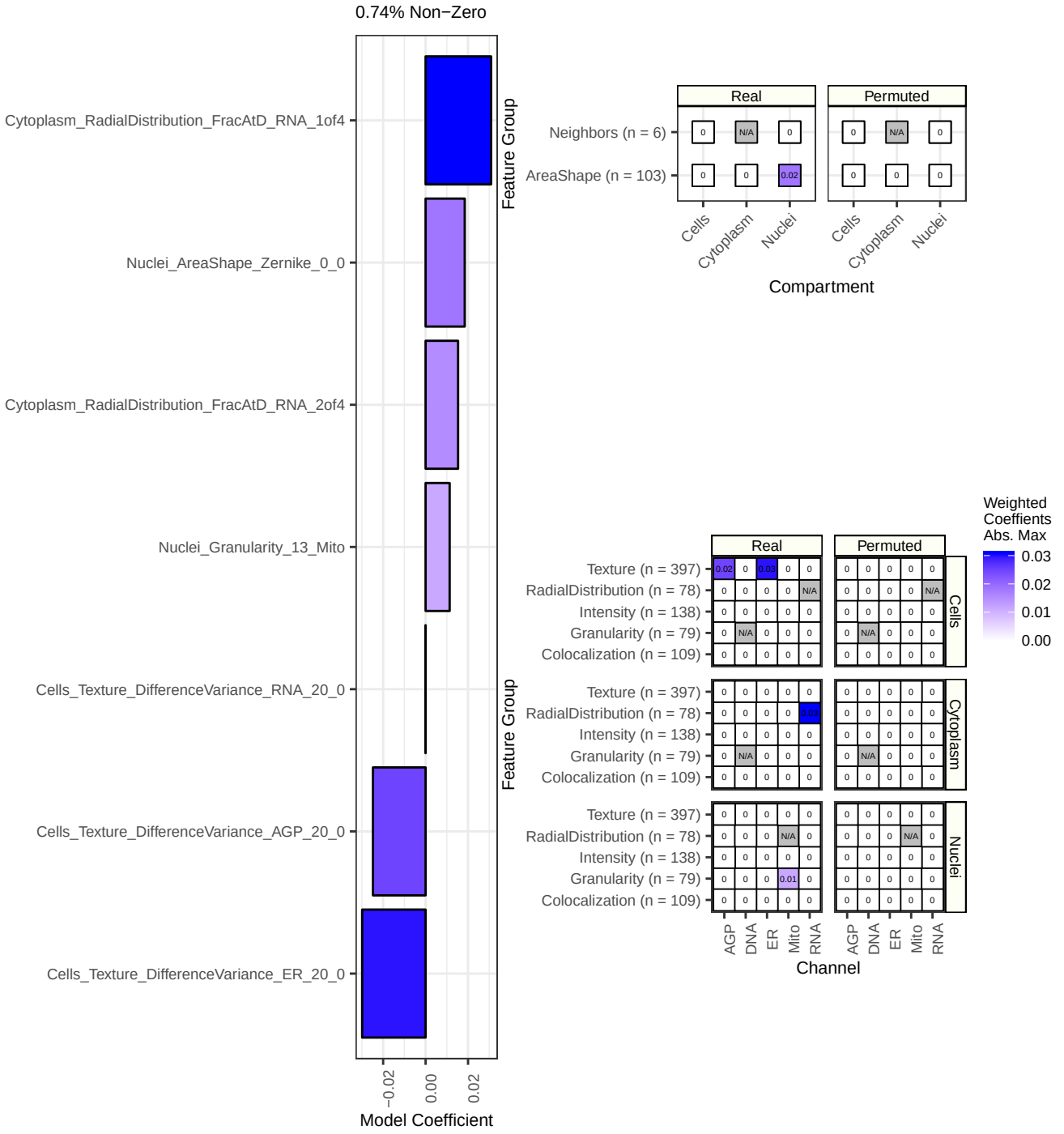
G1 − # of gH2AX Spots per Area of Nucleus



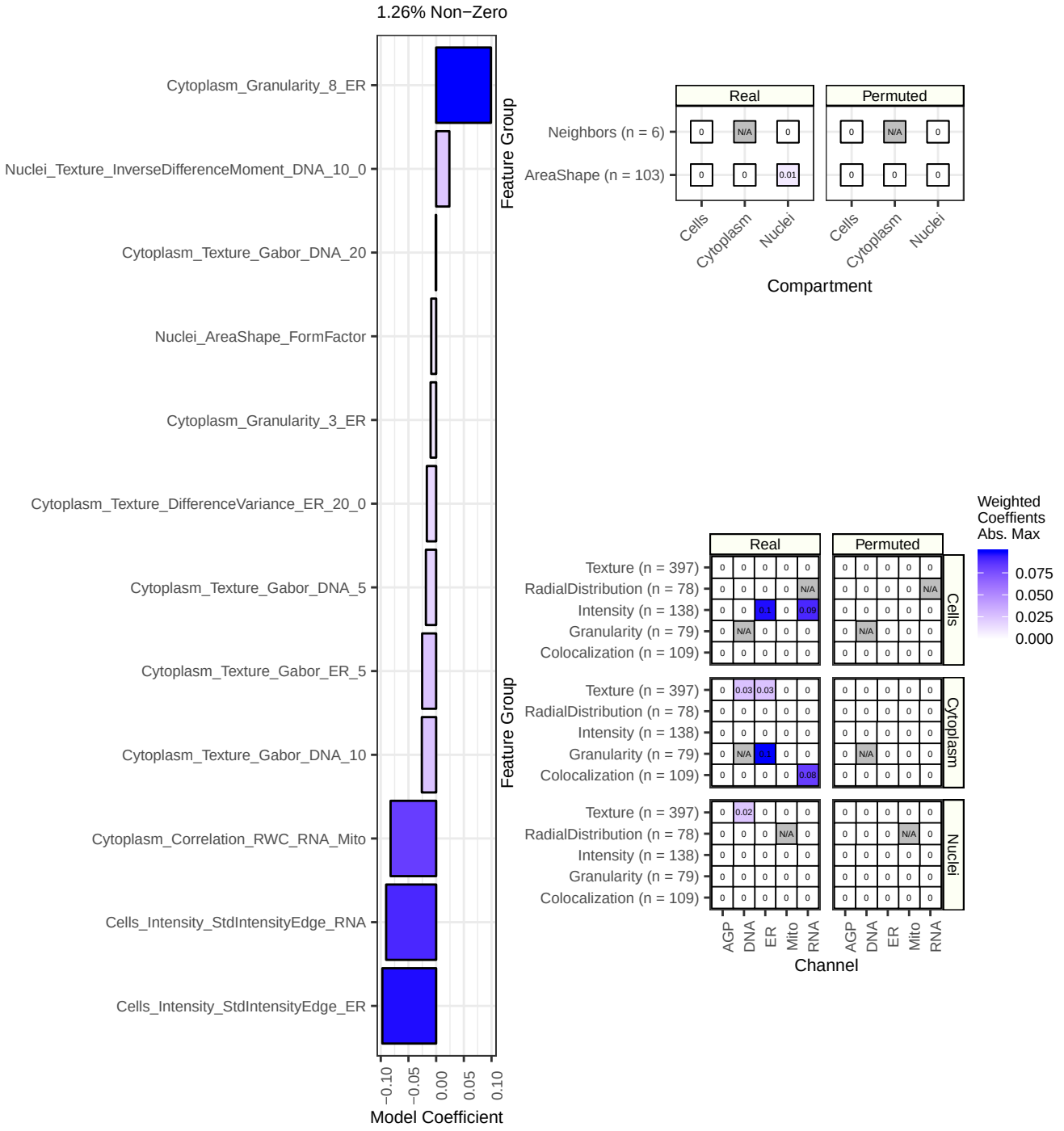
Cell Count − G1+G2



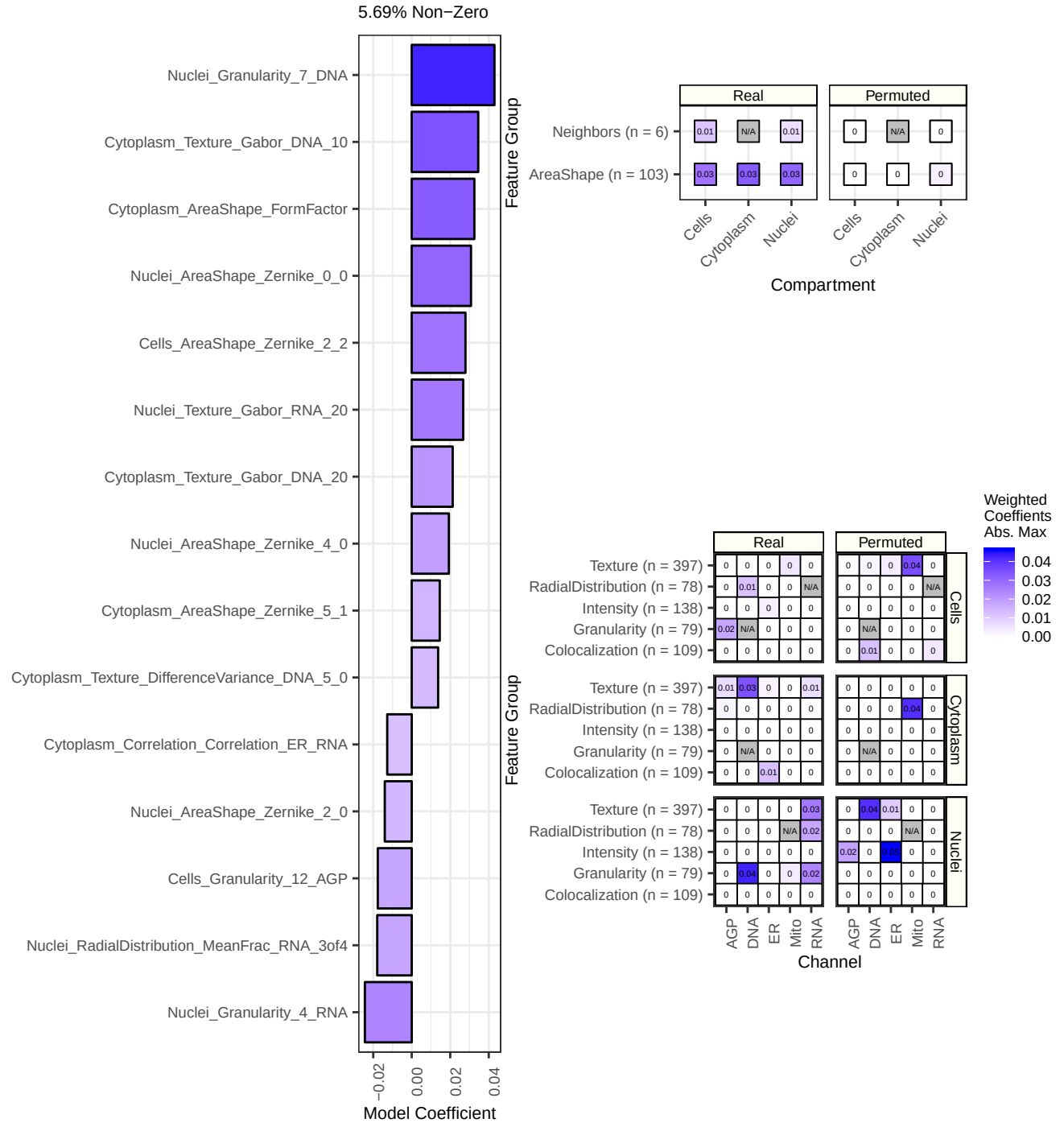
Cell Count − G2/G1



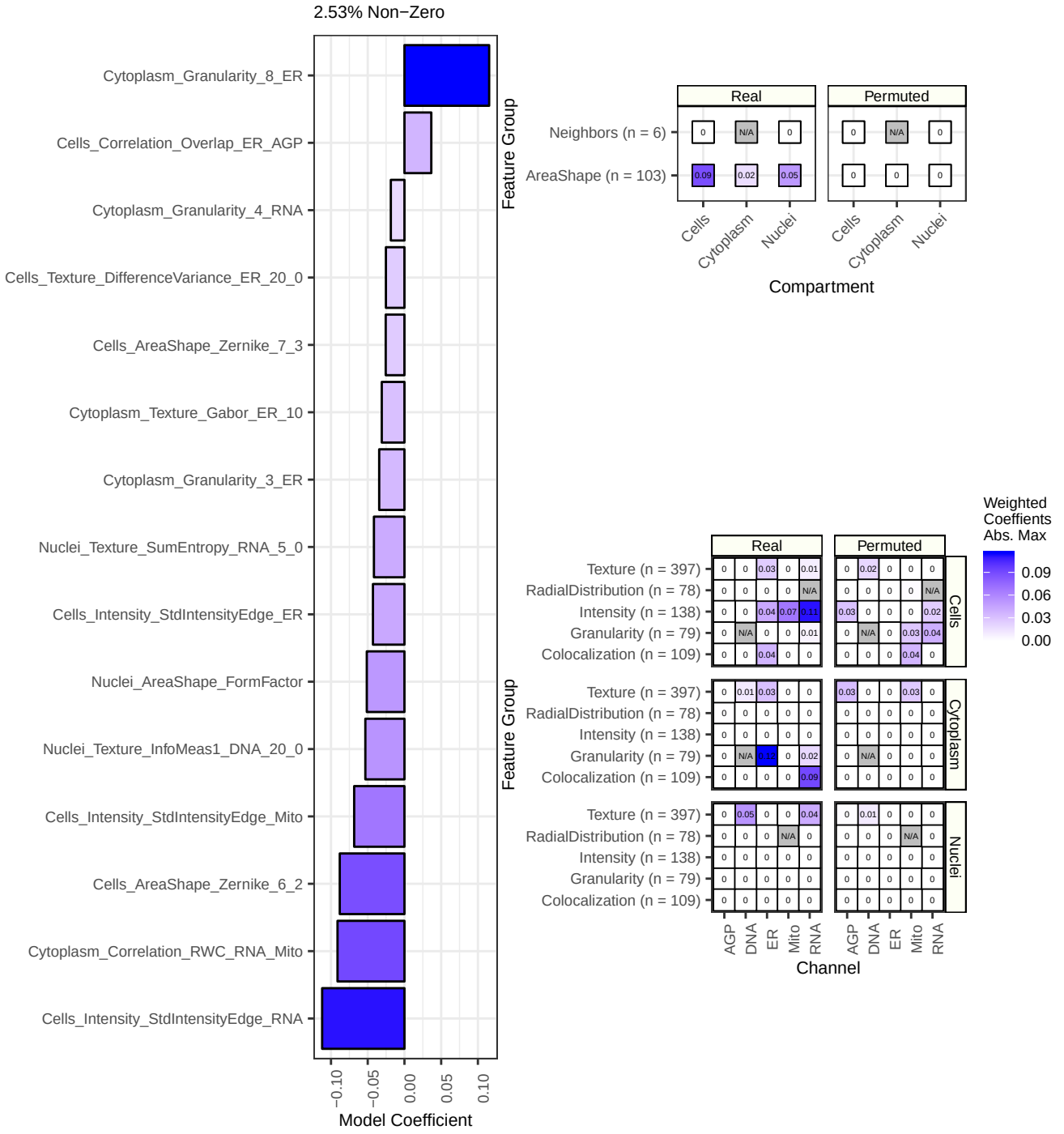
G2 − % High gH2AX Spots



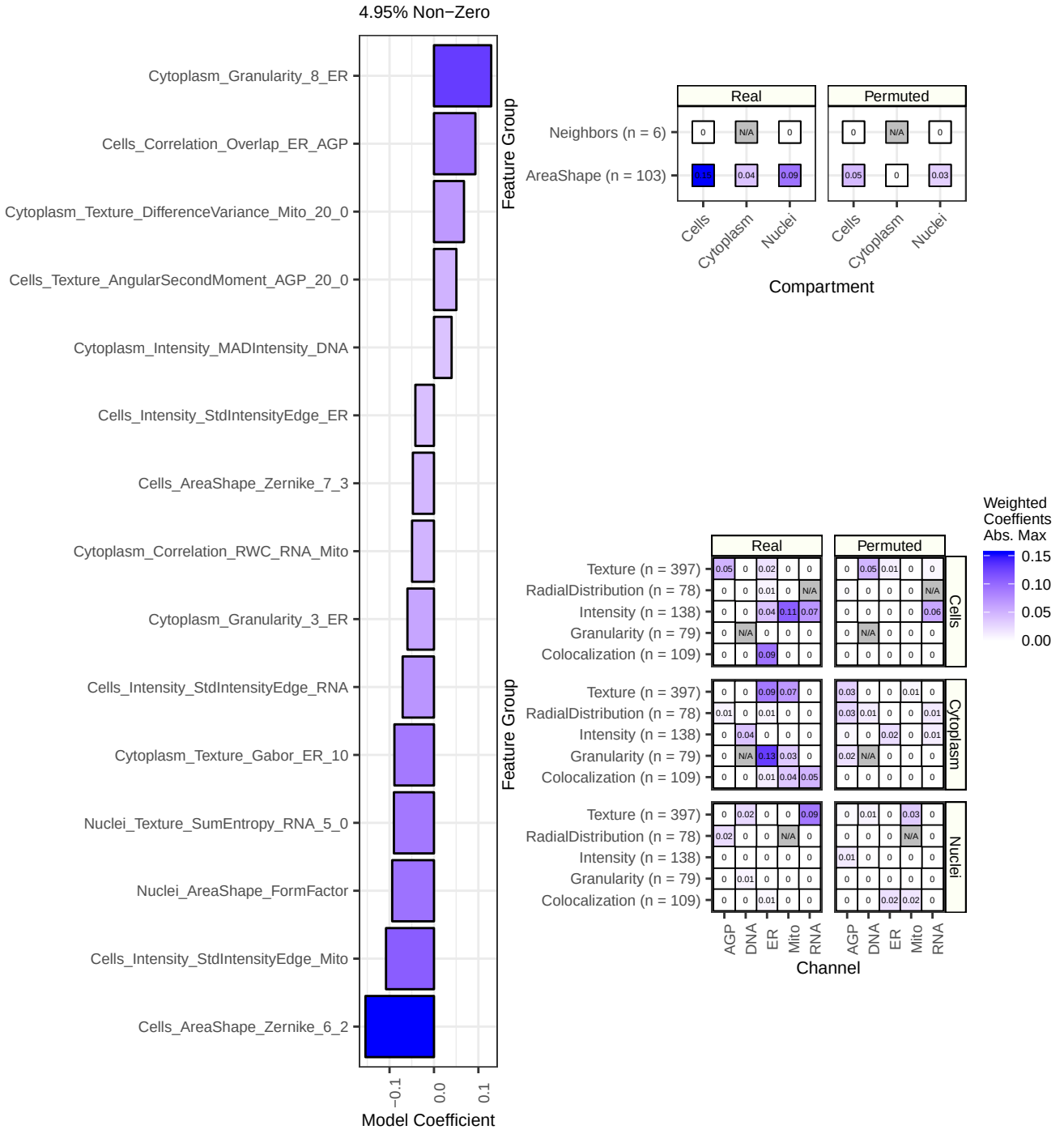
G2 − # cells


5.69% Non−Zero
Nuclei_Granularity_7_DNA
Cytoplasm_Texture_Gabor_DNA_10
Cytoplasm_AreaShape_FormFactor
Nuclei_AreaShape_Zernike_0_0
Cells_AreaShape_Zernike_2_2
Nuclei_Texture_Gabor_RNA_20
Cytoplasm_Texture_Gabor_DNA_20
Nuclei_AreaShape_Zernike_4_0
Cytoplasm_AreaShape_Zernike_5_1
Cytoplasm_Texture_DifferenceVariance_DNA_5_0
Cytoplasm_Correlation_Correlation_ER_RNA
Nuclei_AreaShape_Zernike_2_0
Cells_Granularity_12_AGP
Nuclei_RadialDistribution_MeanFrac_RNA_3of4
Nuclei_Granularity_4_RNA
Feature Group
−0.02
0.00
0.02
0.04
Model Coefficient
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel
Weighted Coeffients Abs. Max
0.04
0.03
0.02
0.01
0.00

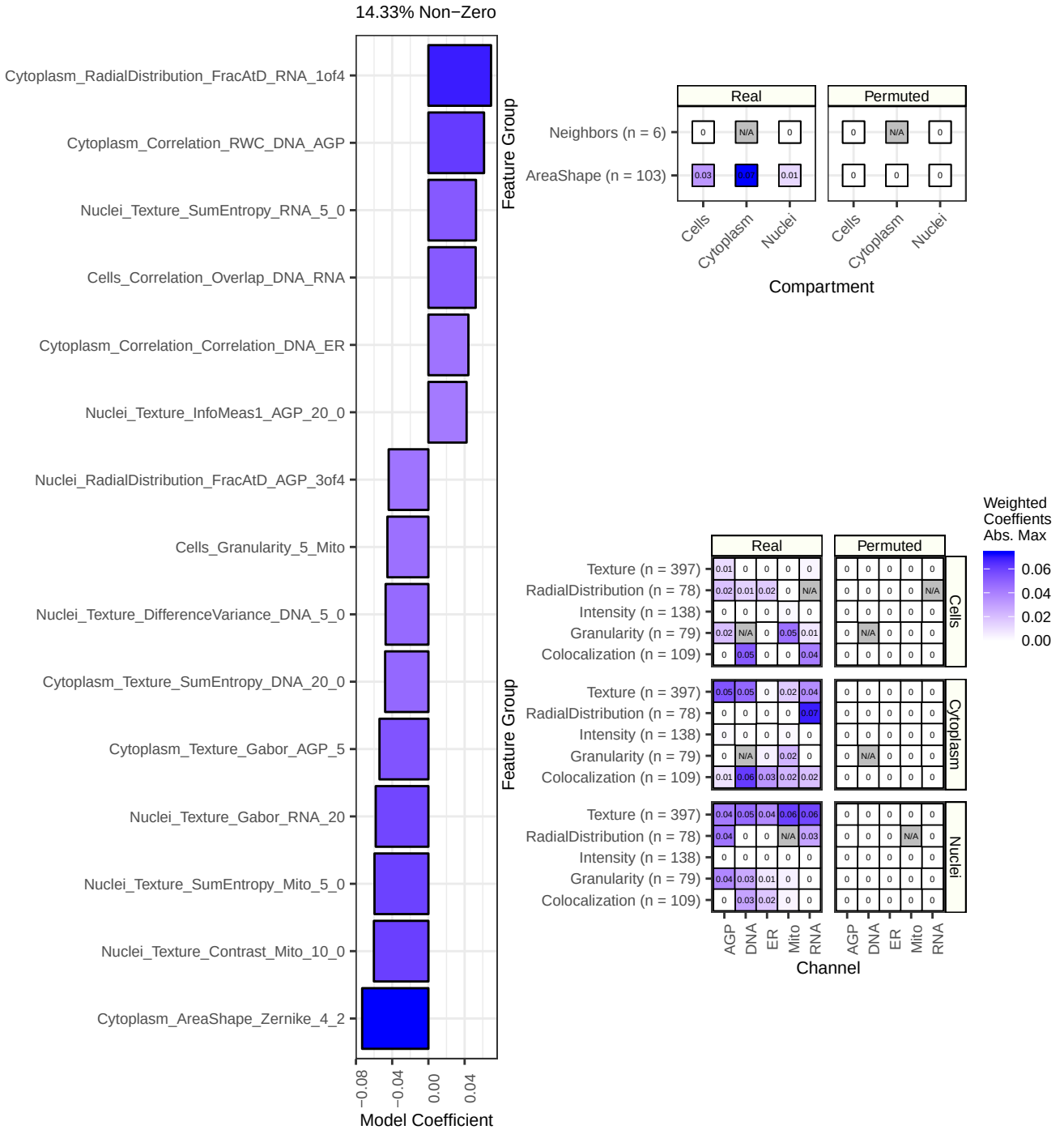
G2 − # of gH2AX Spots



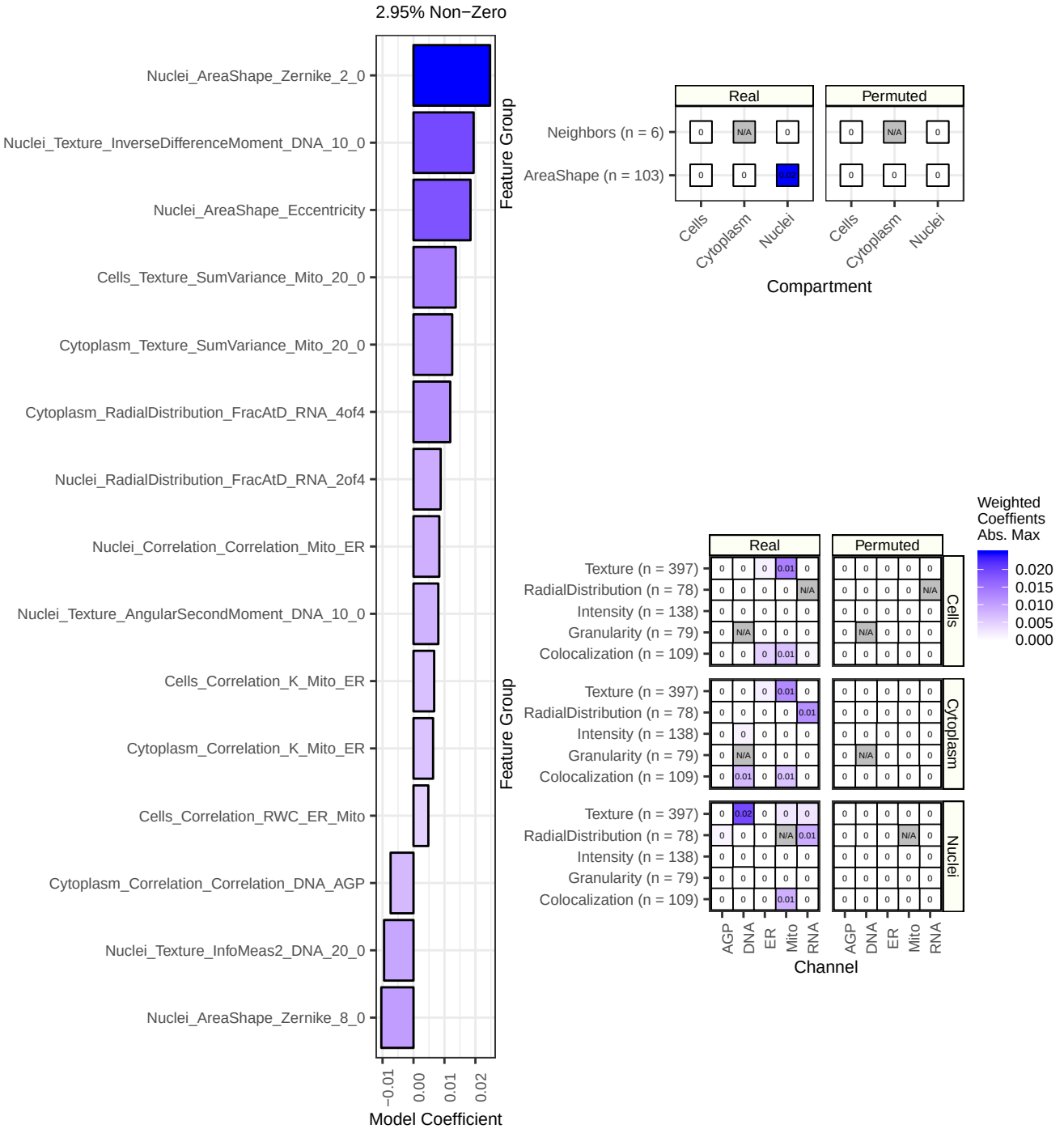
G2 − # of gH2AX Spots per Area of Nucleus



Cell Count − G2 + M

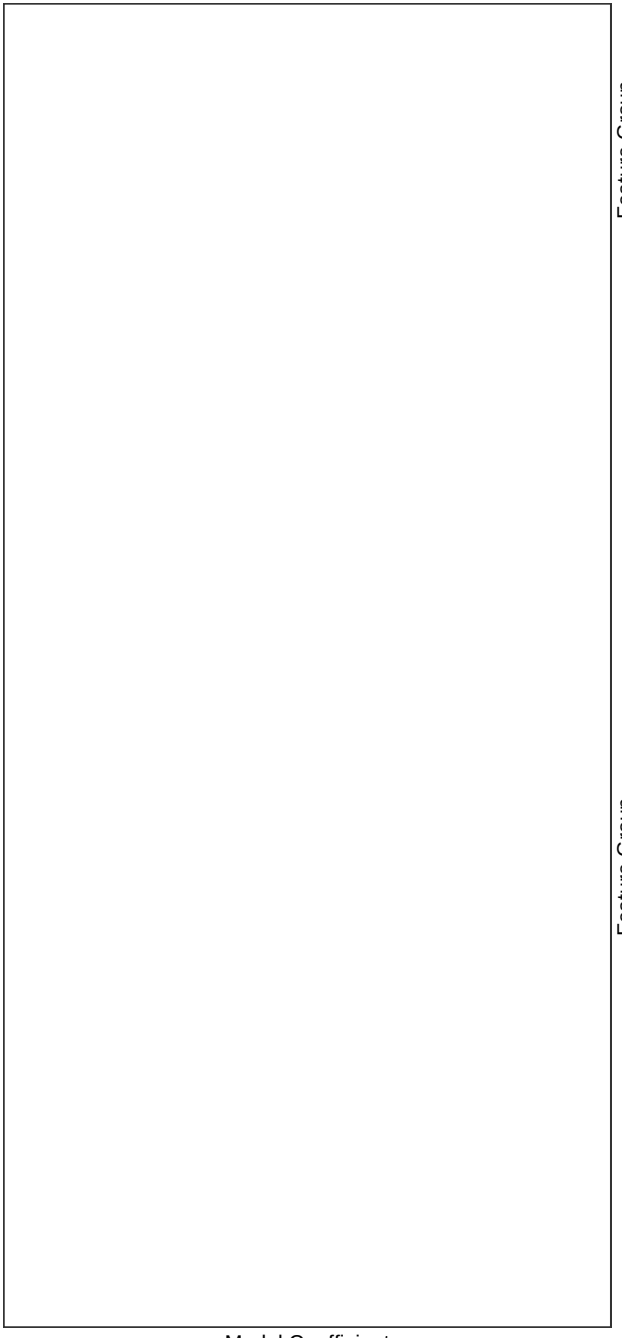


CC − Infection Efficiency

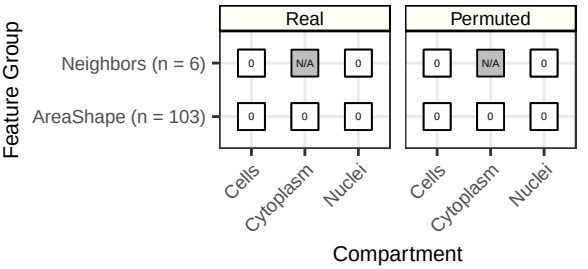


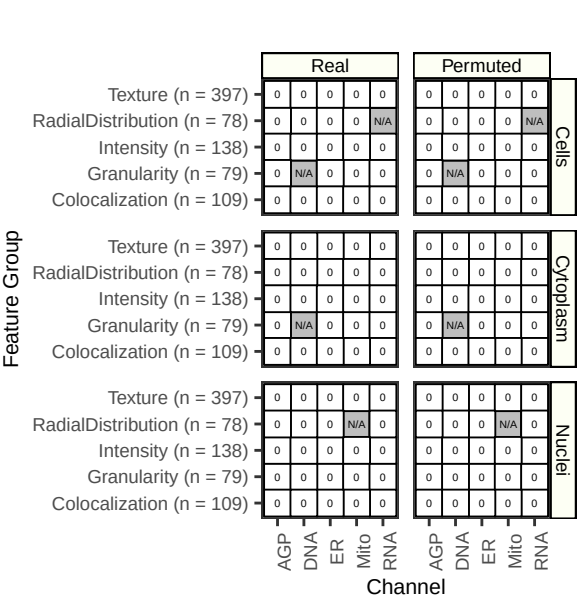
Late M − % High gH2AX Spots

0% Non−Zero



Model Coefficient

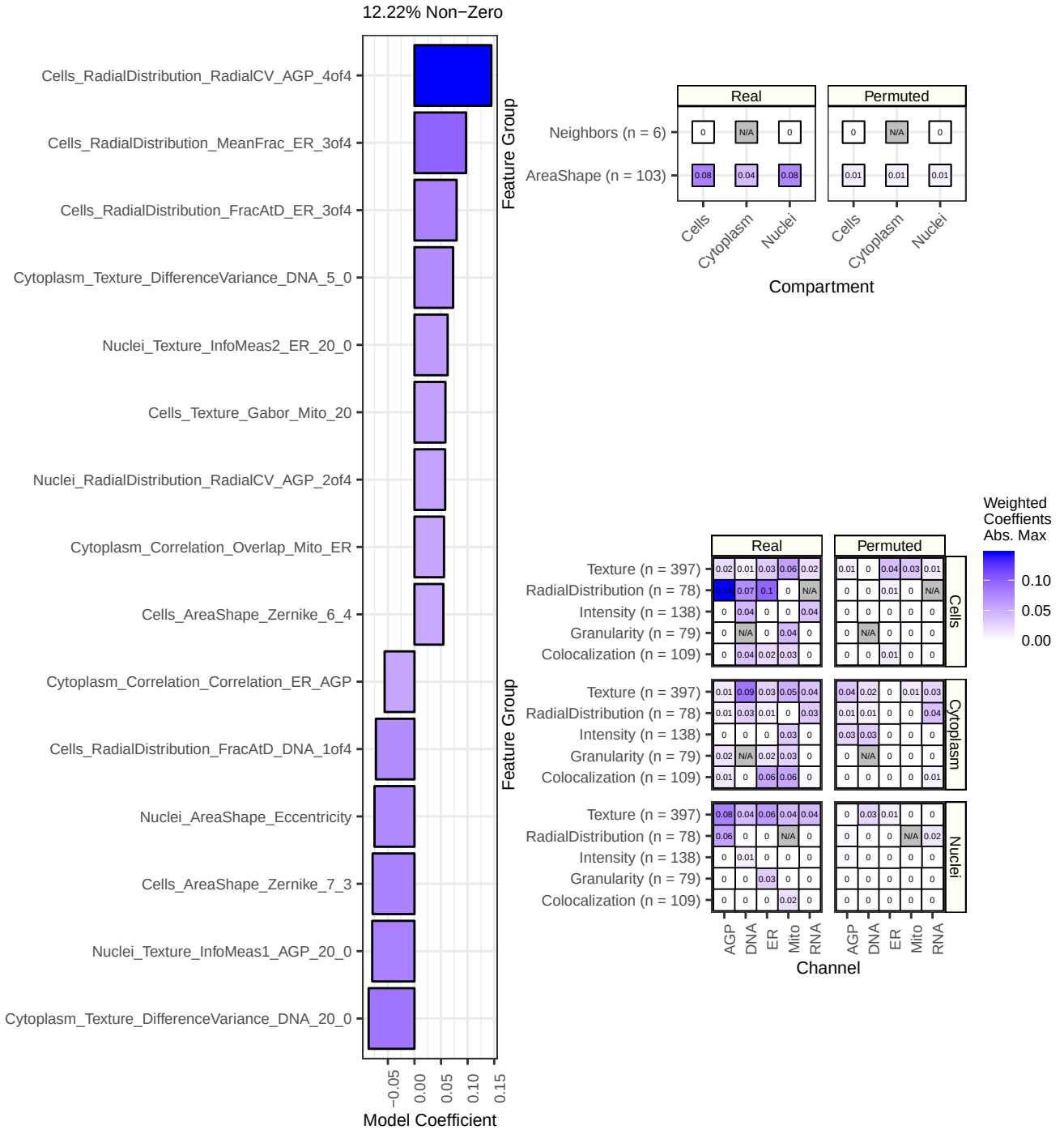




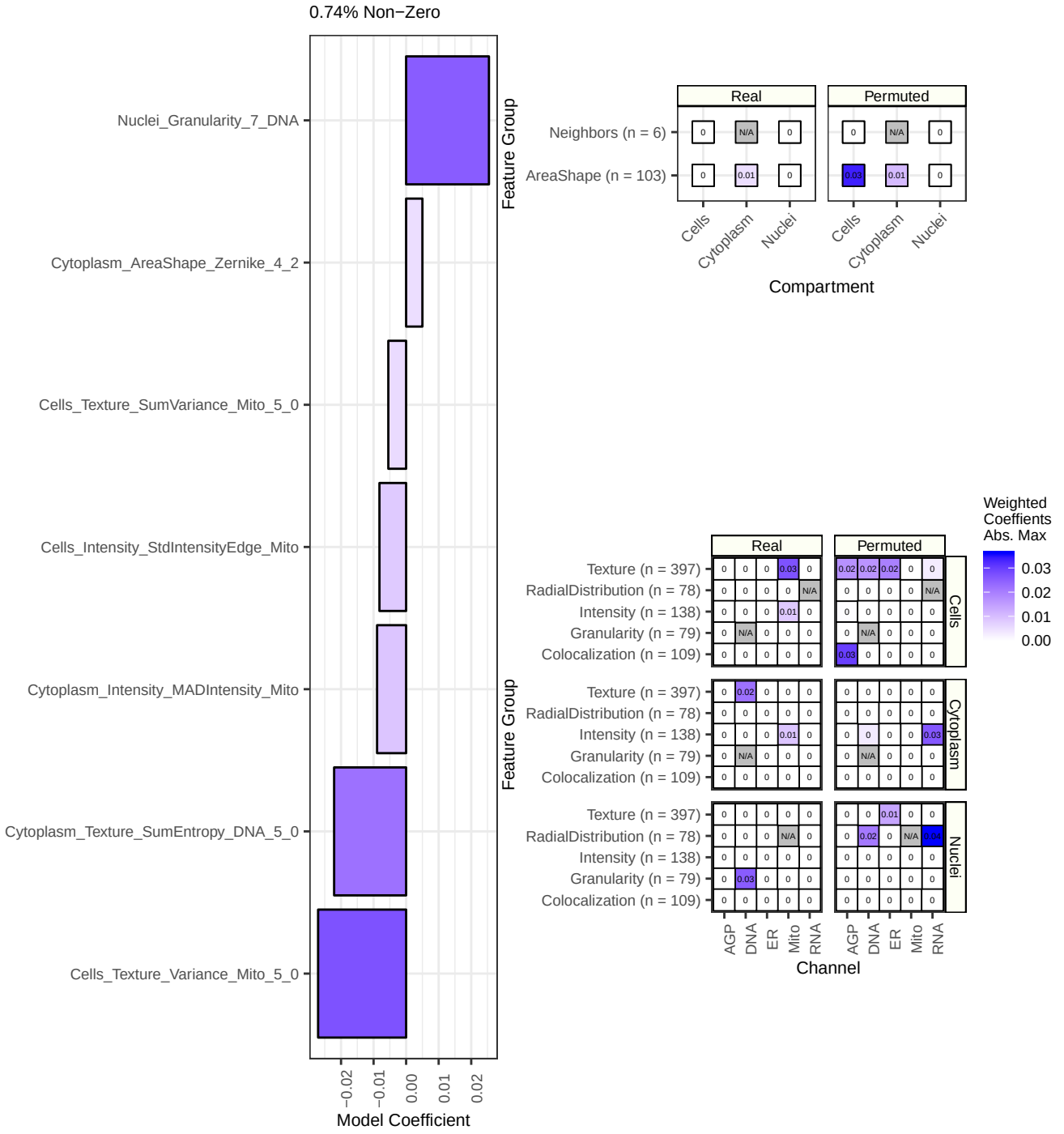
Weighted Coeffients Abs. Max

0

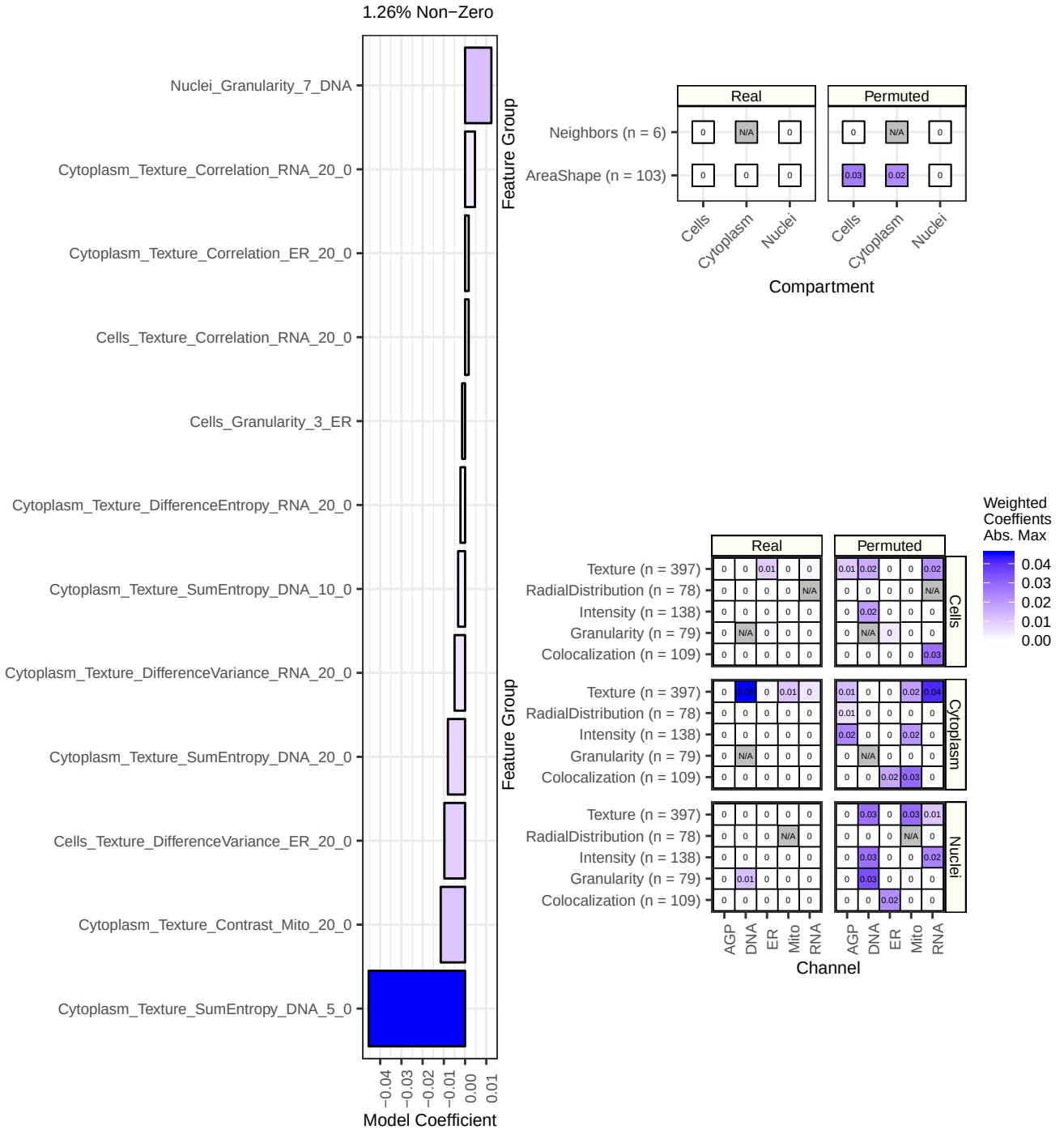
Late M − # cells


12.22% Non−Zero
Cells_RadialDistribution_RadialCV_AGP_4of4
Cells_RadialDistribution_MeanFrac_ER_3of4
Cells_RadialDistribution_FracAtD_ER_3of4
Cytoplasm_Texture_DifferenceVariance_DNA_5_0
Nuclei_Texture_InfoMeas2_ER_20_0
Cells_Texture_Gabor_Mito_20
Nuclei_RadialDistribution_RadialCV_AGP_2of4
Cytoplasm_Correlation_Overlap_Mito_ER
Cells_AreaShape_Zernike_6_4
Cytoplasm_Correlation_Correlation_ER_AGP
Cells_RadialDistribution_FracAtD_DNA_1of4
Nuclei_AreaShape_Eccentricity
Cells_AreaShape_Zernike_7_3
Nuclei_Texture_InfoMeas1_AGP_20_0
Cytoplasm_Texture_DifferenceVariance_DNA_20_0
Feature Group
−0.05
0.00
0.05
0.10
0.15
Model Coefficient
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel
Weighted Coeffients Abs. Max
0.10
0.05
0.00

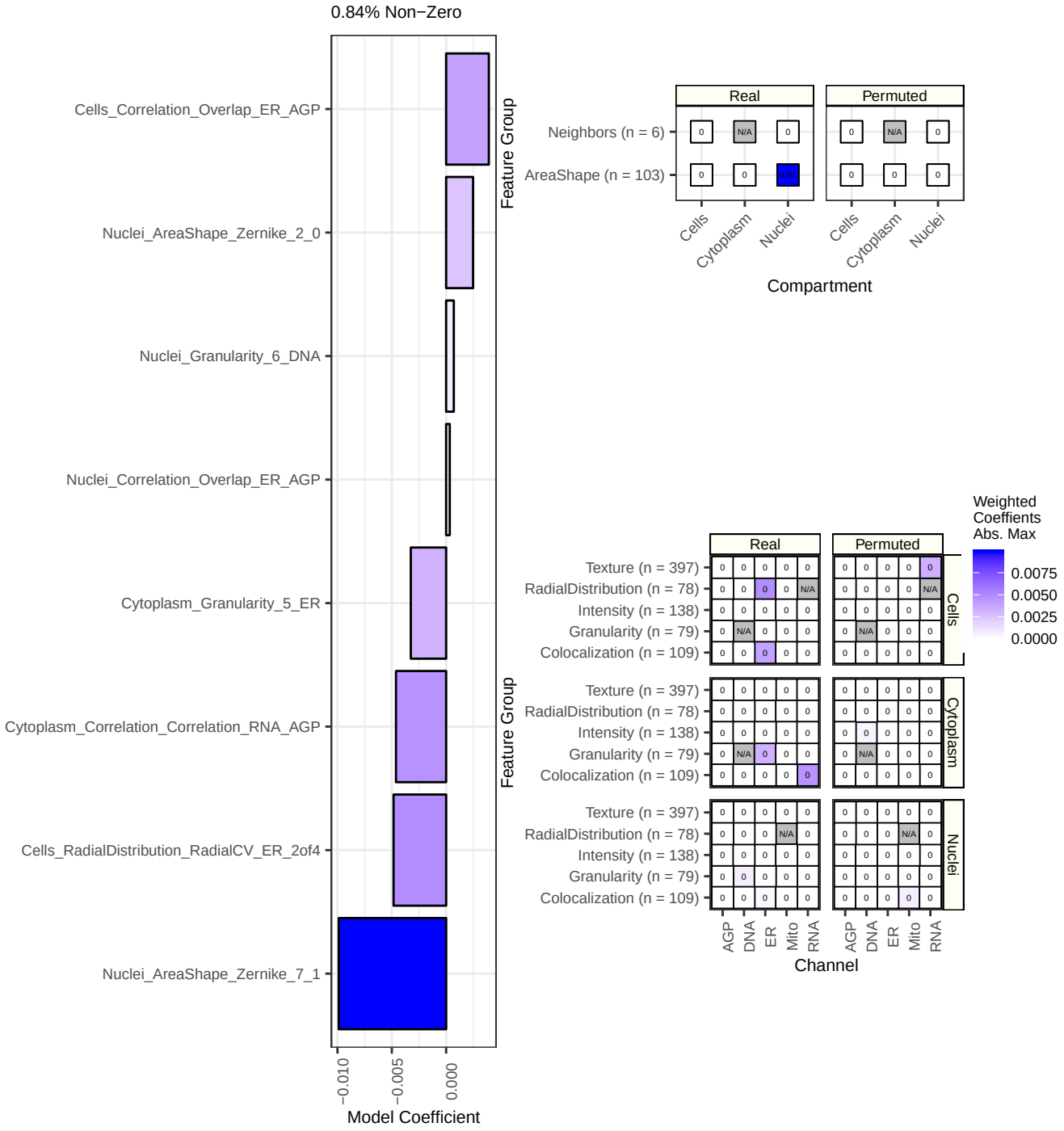
Late M − # of gH2AX Spots



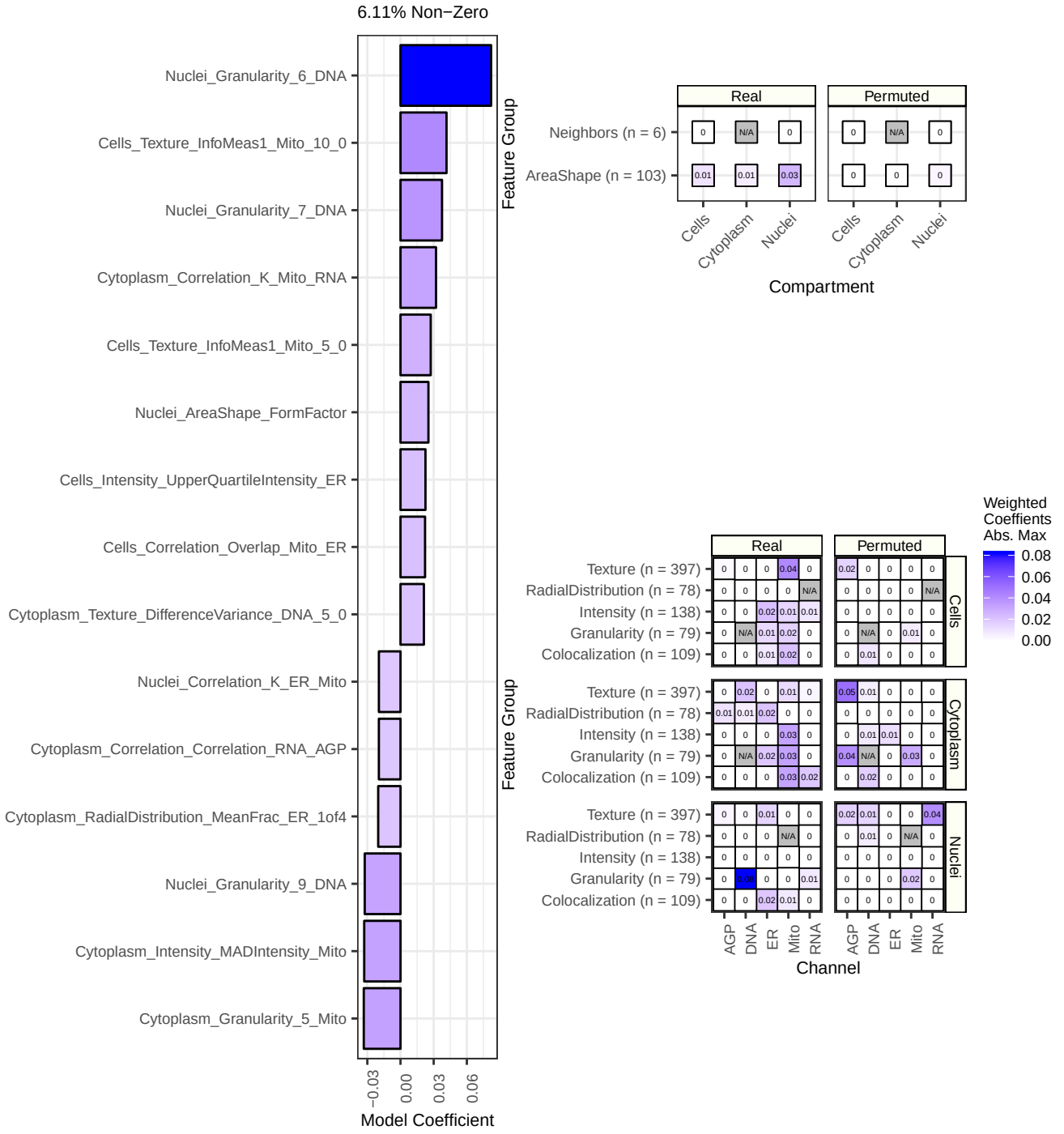
Late M − # of gH2AX Spots per Area of Nucleus



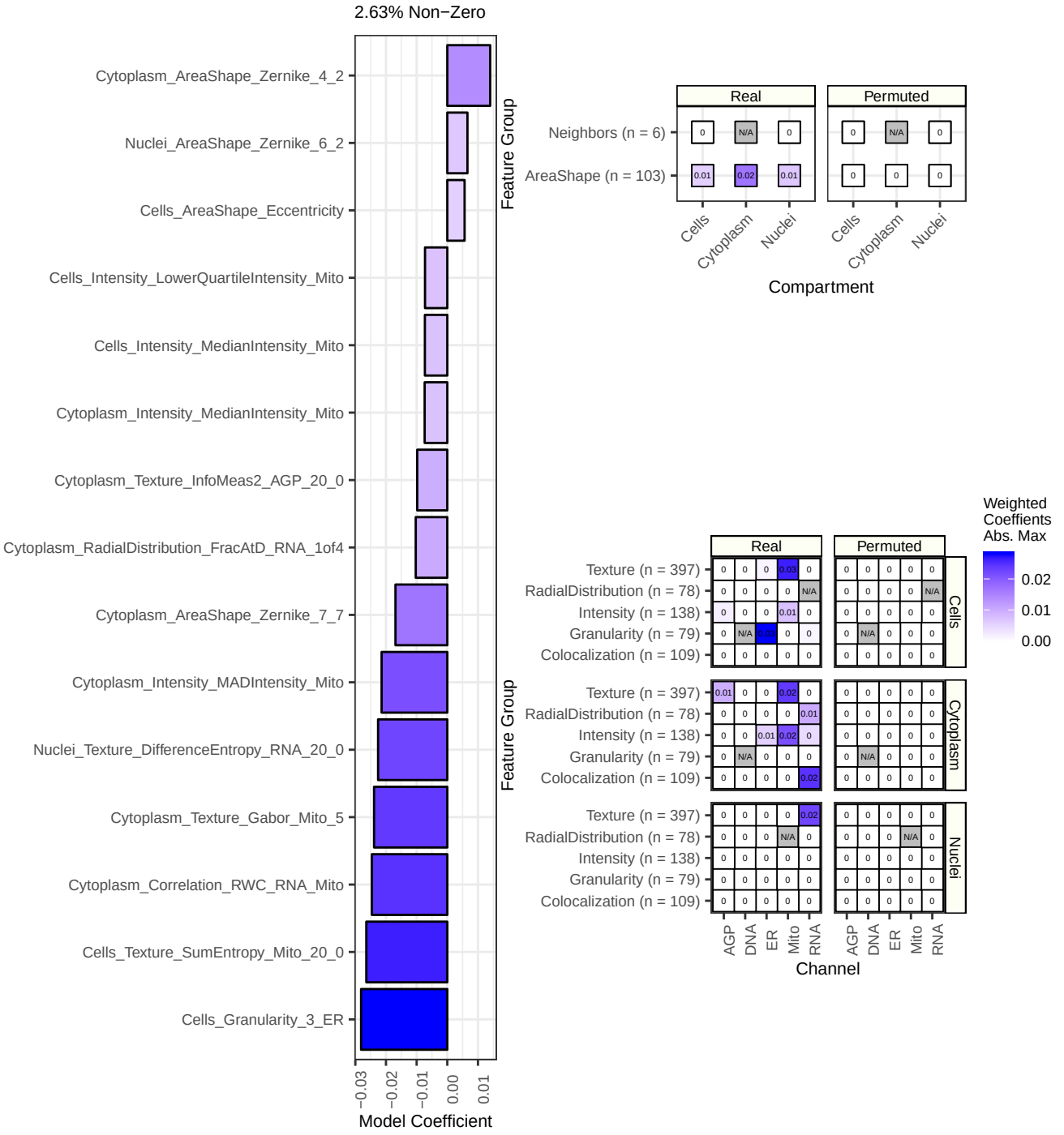
M − % High gH2AX Spots



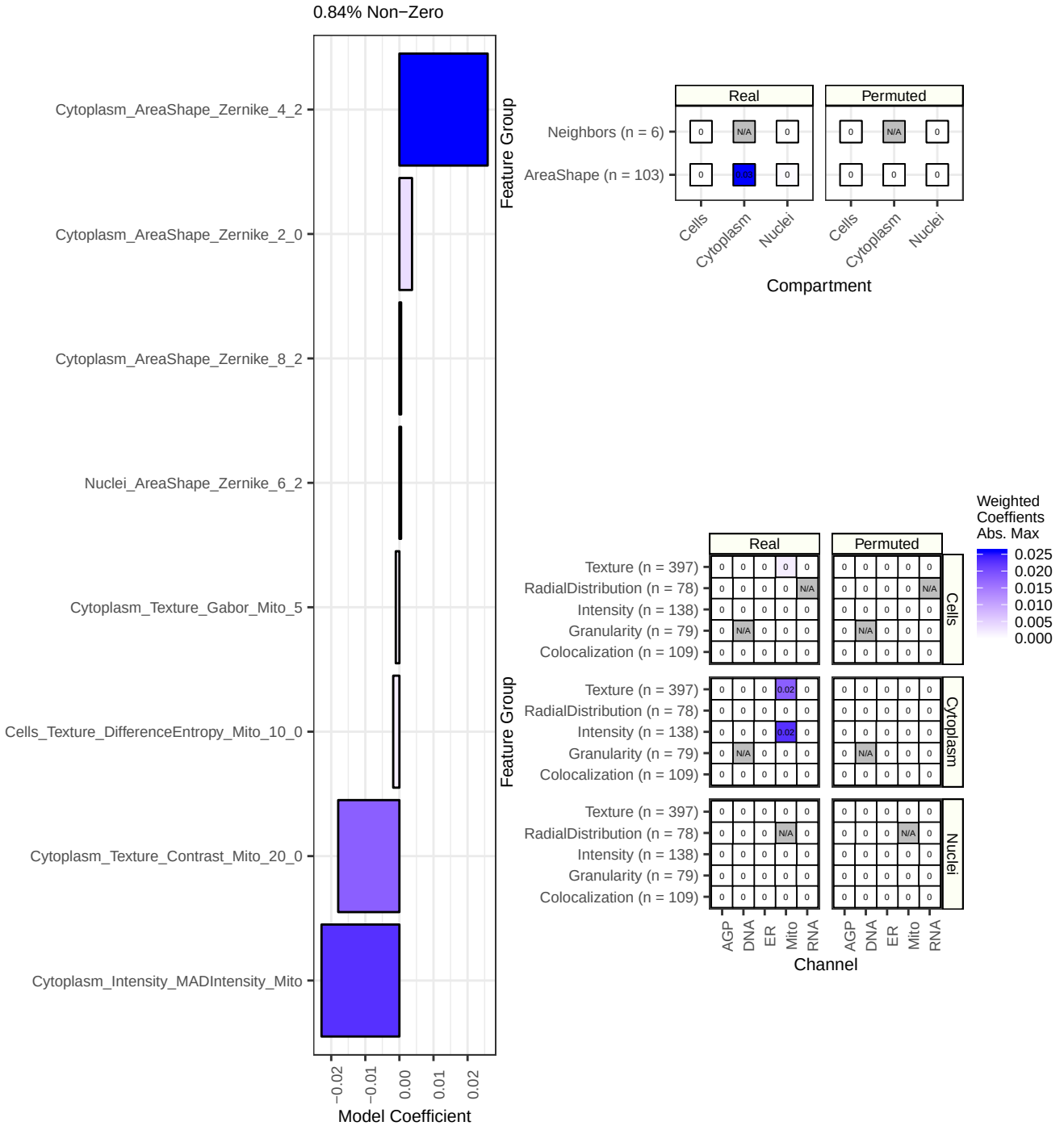
M − # cells


6.11% Non−Zero
Nuclei_Granularity_6_DNA
Cells_Texture_InfoMeas1_Mito_10_0
Nuclei_Granularity_7_DNA
Cytoplasm_Correlation_K_Mito_RNA
Cells_Texture_InfoMeas1_Mito_5_0
Nuclei_AreaShape_FormFactor
Cells_Intensity_UpperQuartileIntensity_ER
Cells_Correlation_Overlap_Mito_ER
Cytoplasm_Texture_DifferenceVariance_DNA_5_0
Nuclei_Correlation_K_ER_Mito
Cytoplasm_Correlation_Correlation_RNA_AGP
Cytoplasm_RadialDistribution_MeanFrac_ER_1of4
Nuclei_Granularity_9_DNA
Cytoplasm_Intensity_MADIntensity_Mito
Cytoplasm_Granularity_5_Mito
−0.03
0.00
0.03
0.06
Model Coefficient
Feature Group
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel
Weighted Coeffients Abs. Max
0.08
0.06
0.04
0.02
0.00

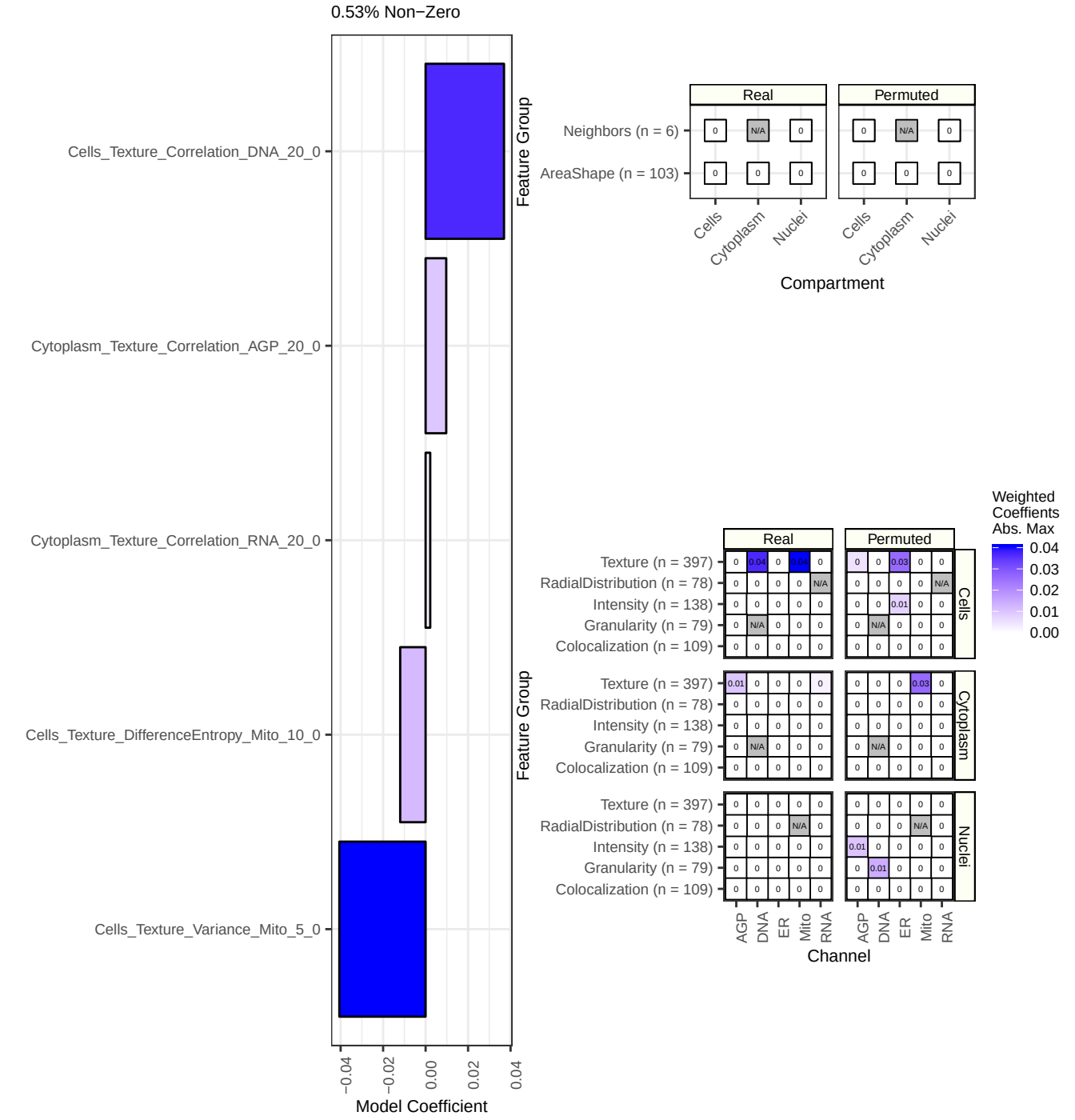
M − # of gH2AX Spots



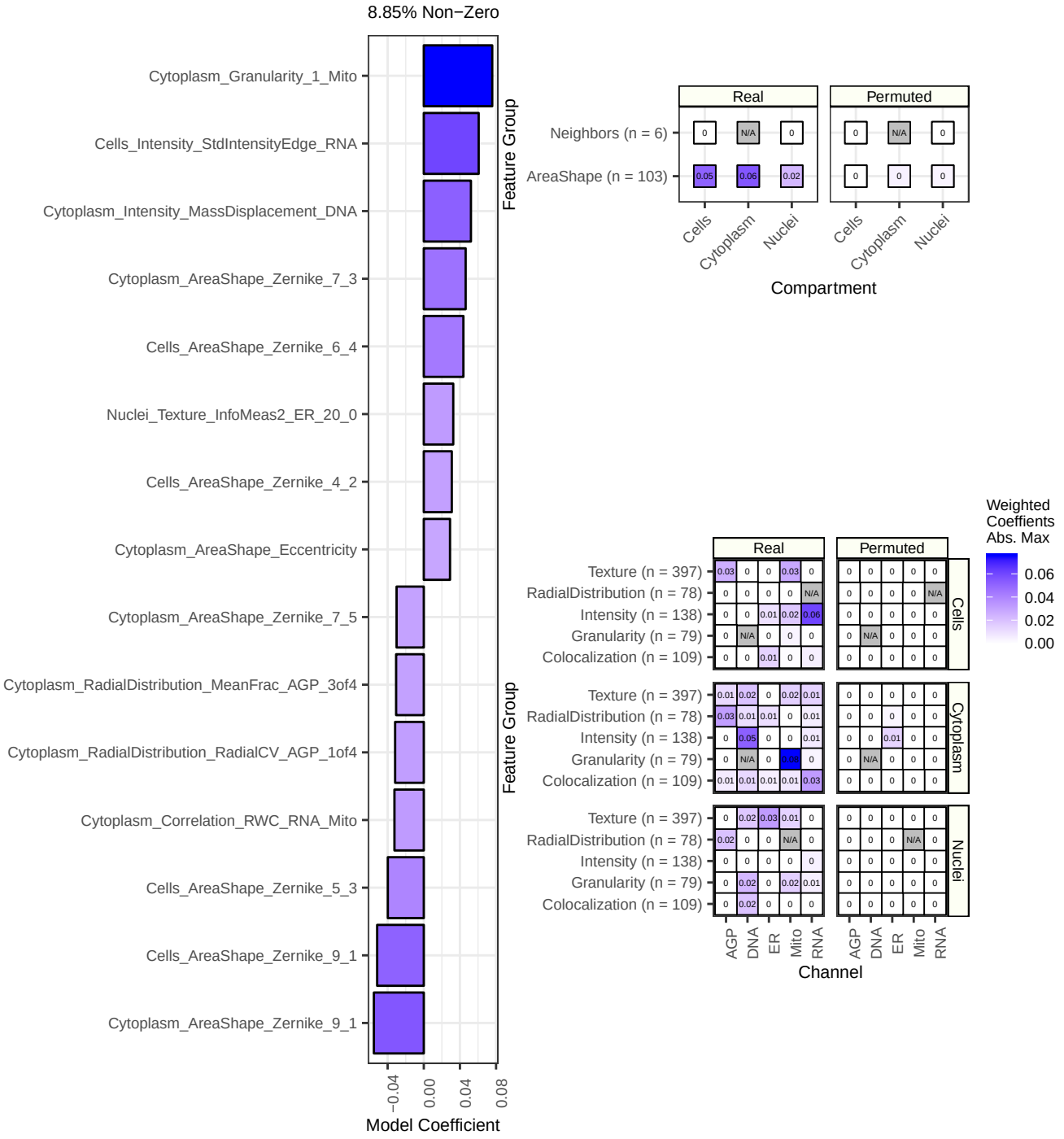
M − # of gH2AX Spots per Area of Nucleus



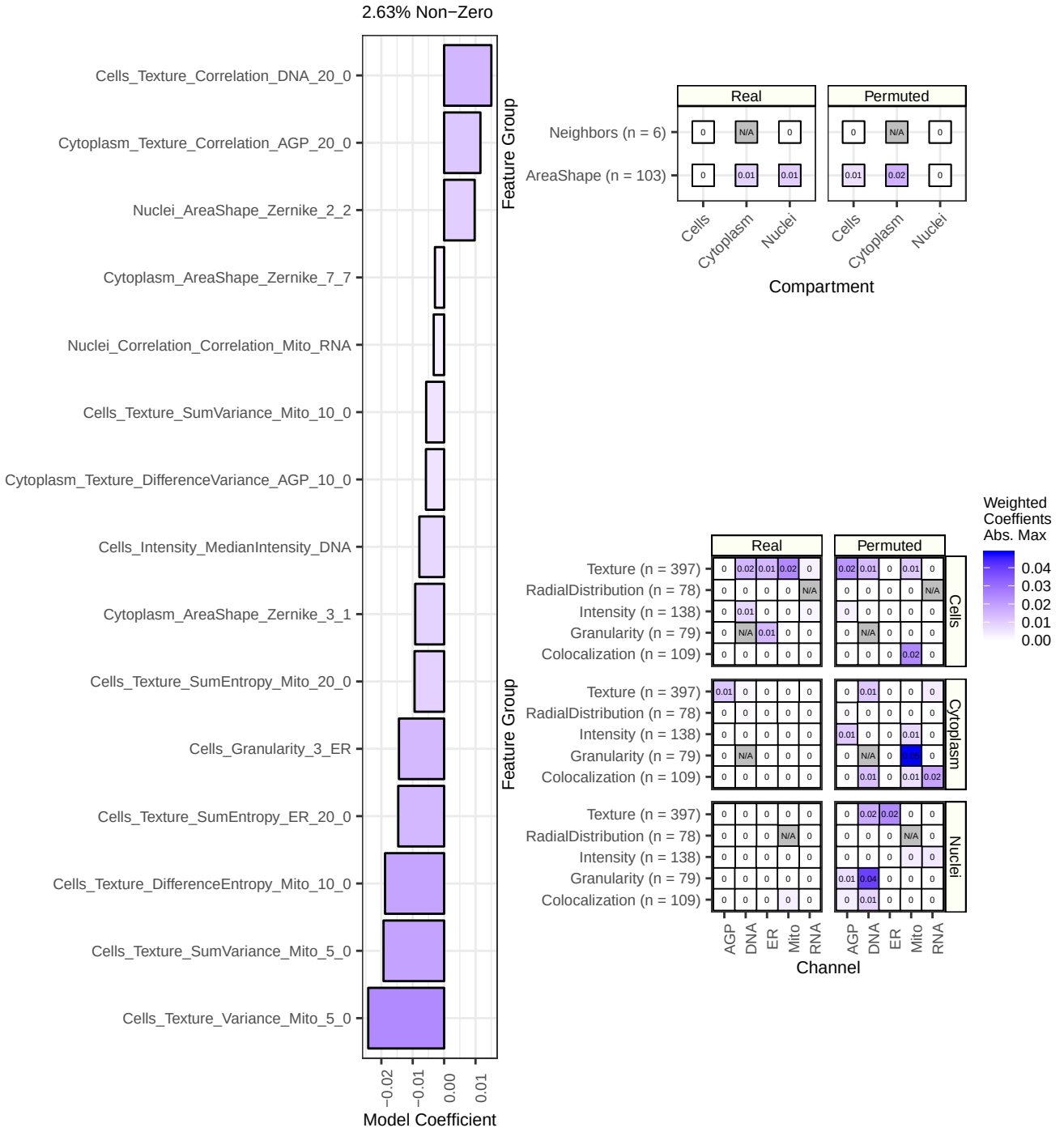
Polynuclear − % High gH2AX Spots



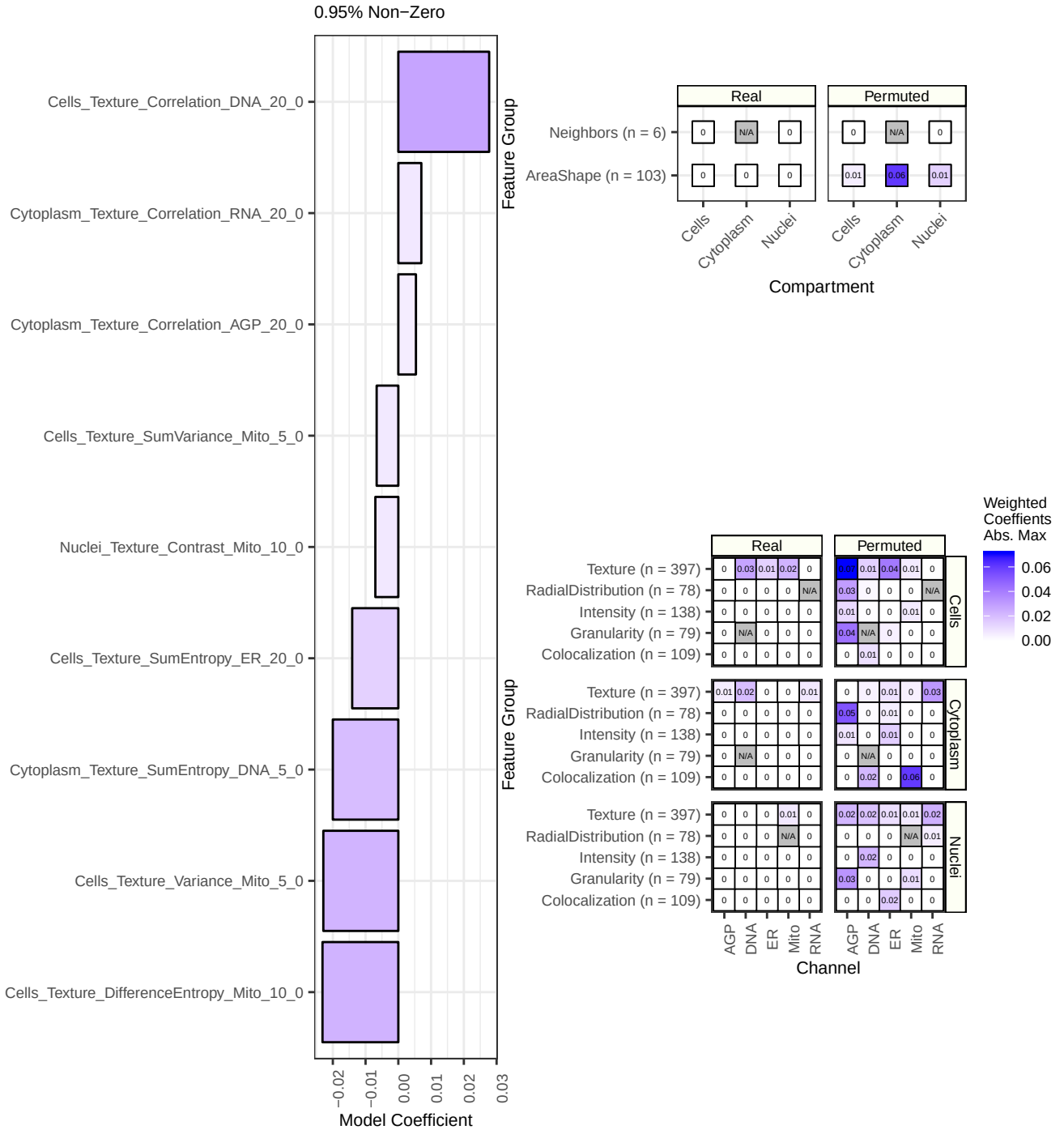
Polynuclear − # cells



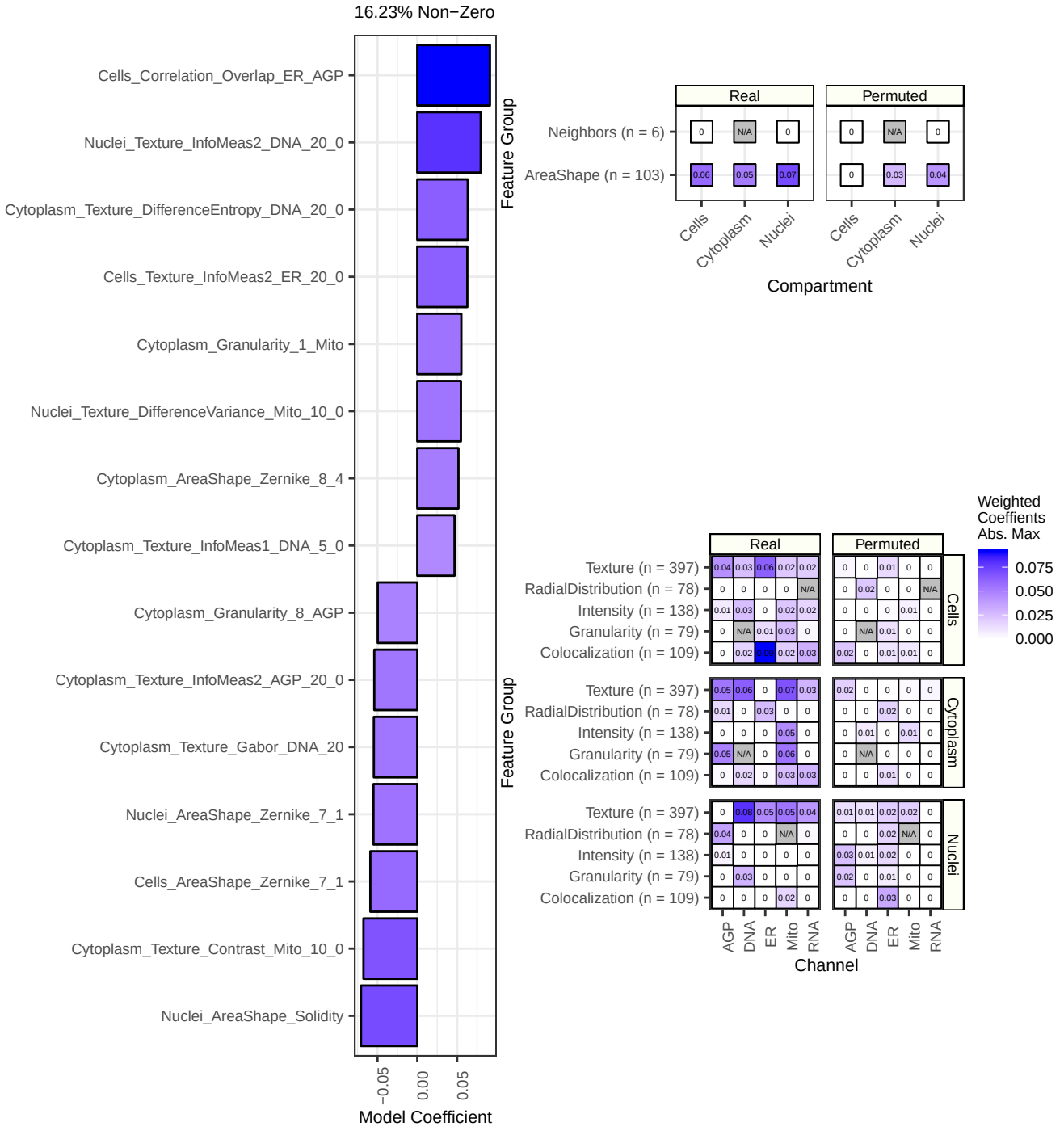
Polynuclear − # of gH2AX Spots



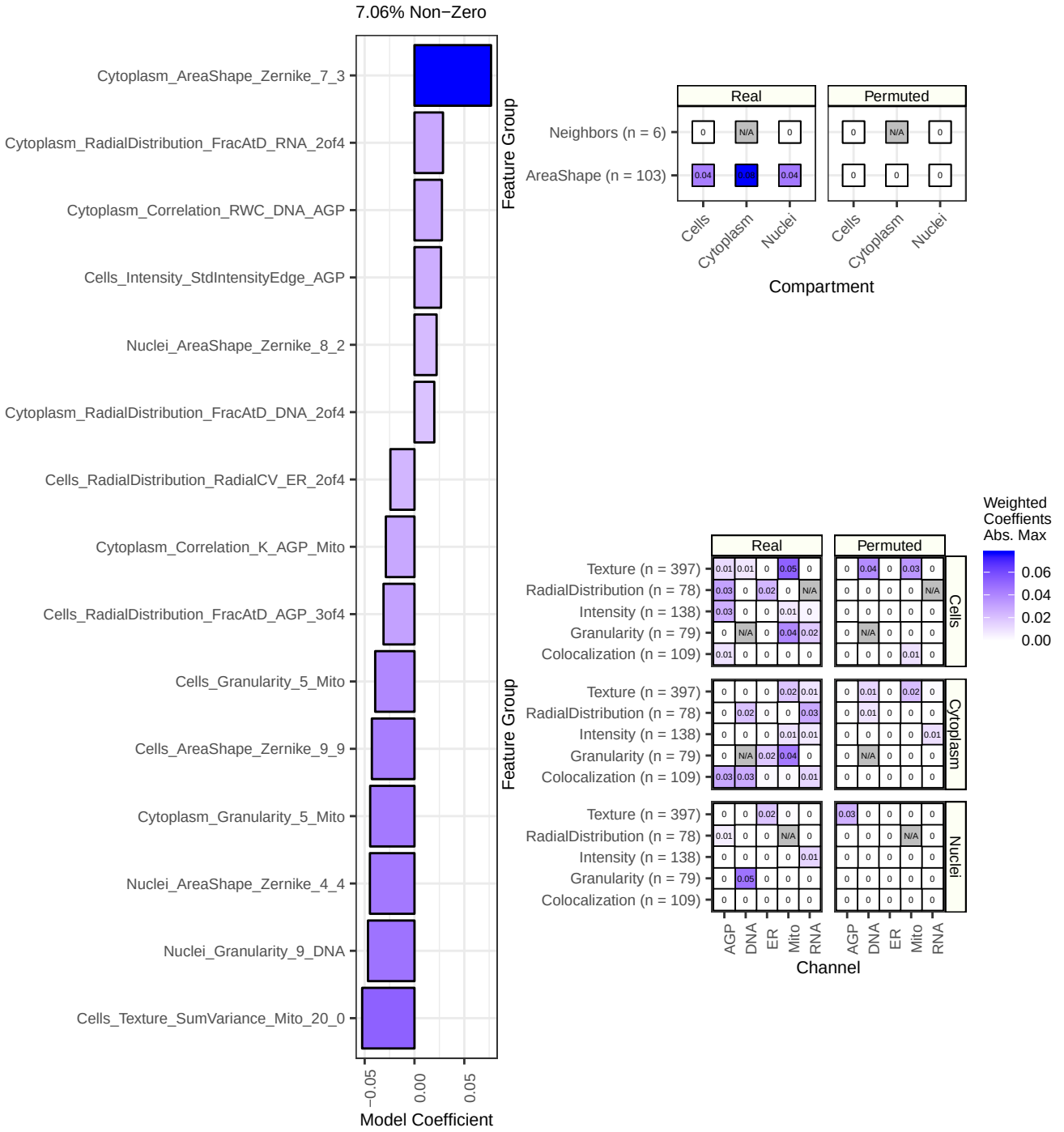
Polynuclear − # of gH2AX Spots per Area of Nucleus



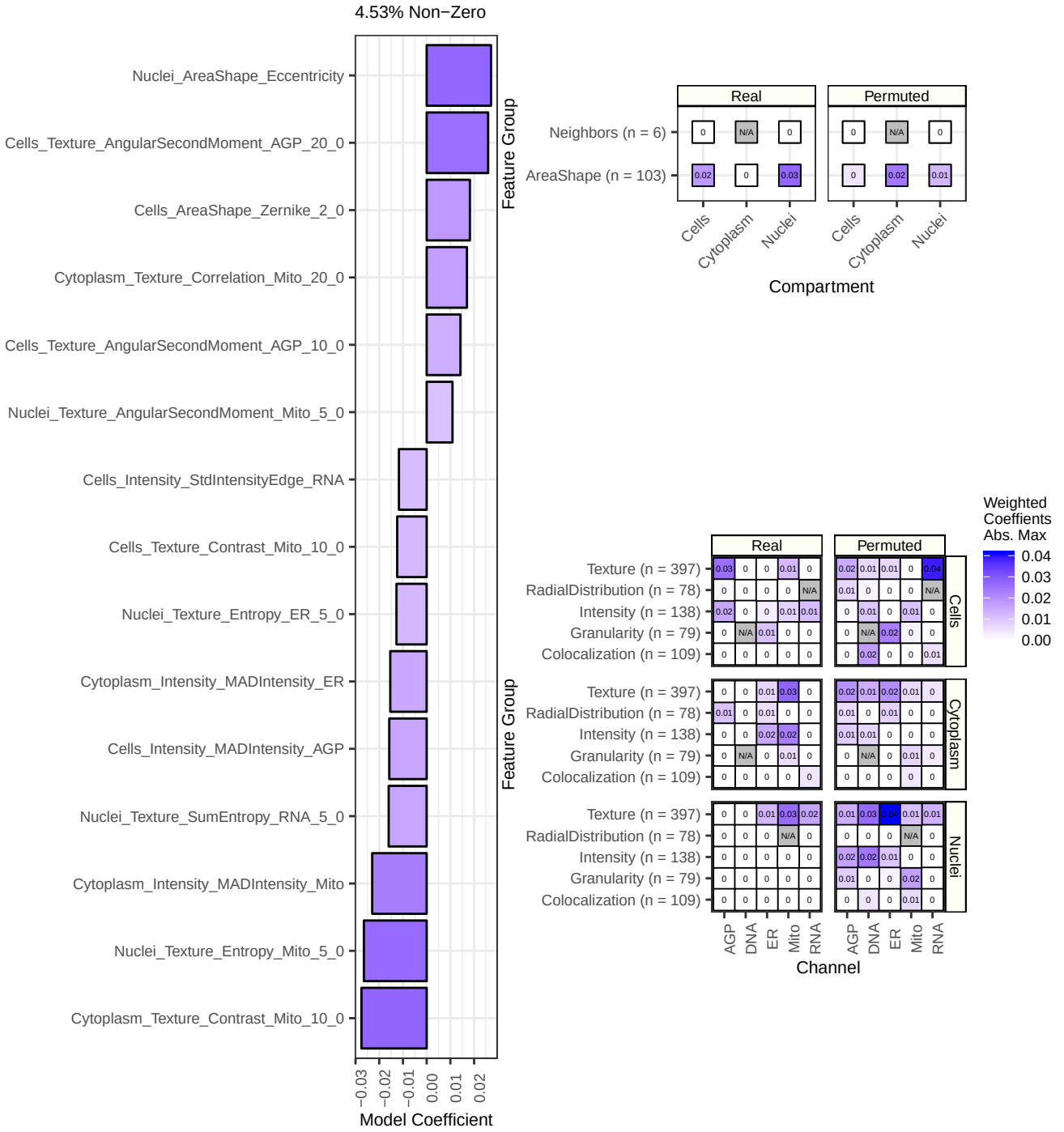
Polyploid − % High gH2AX Spots



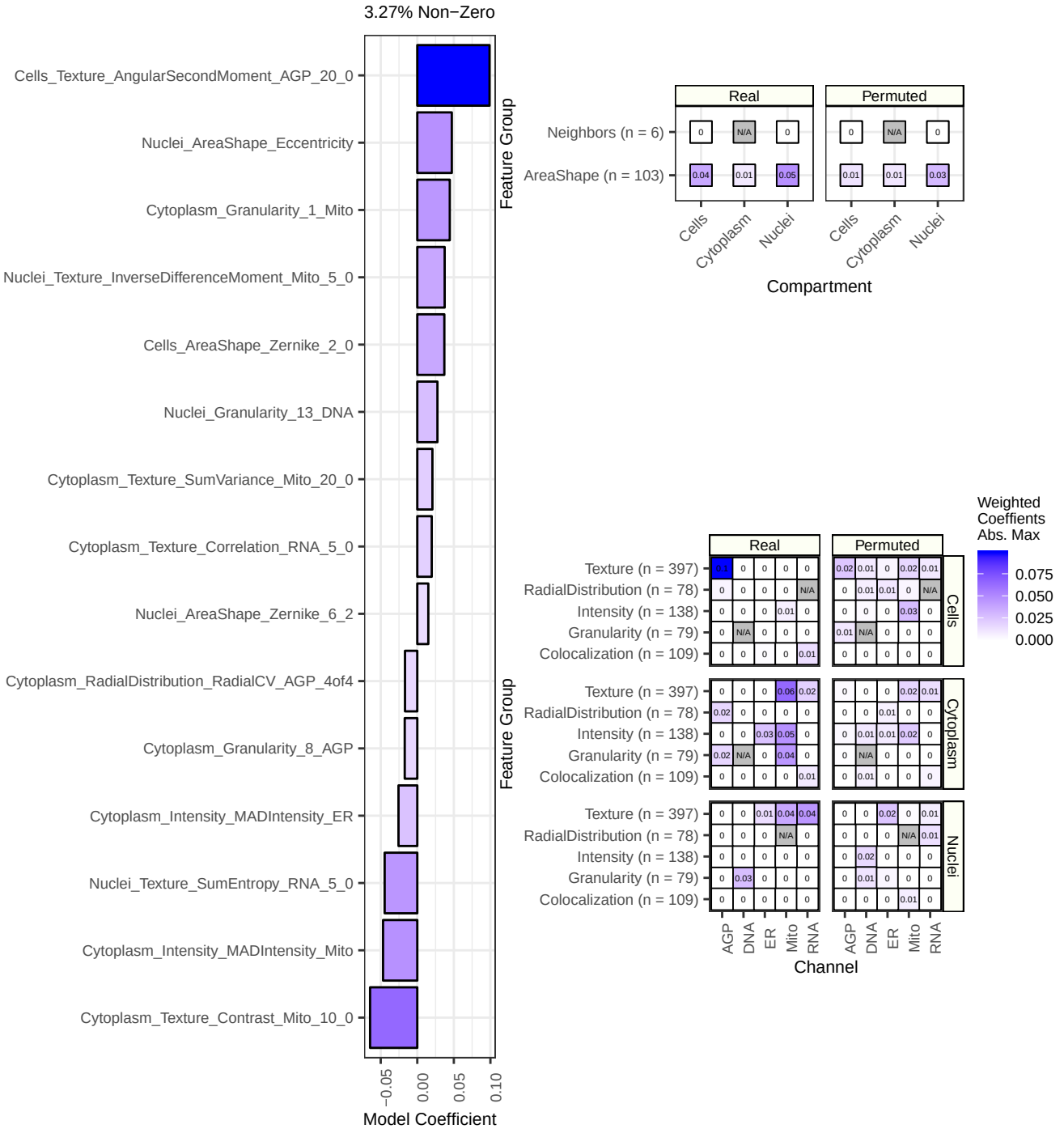
Polyploid − # cells



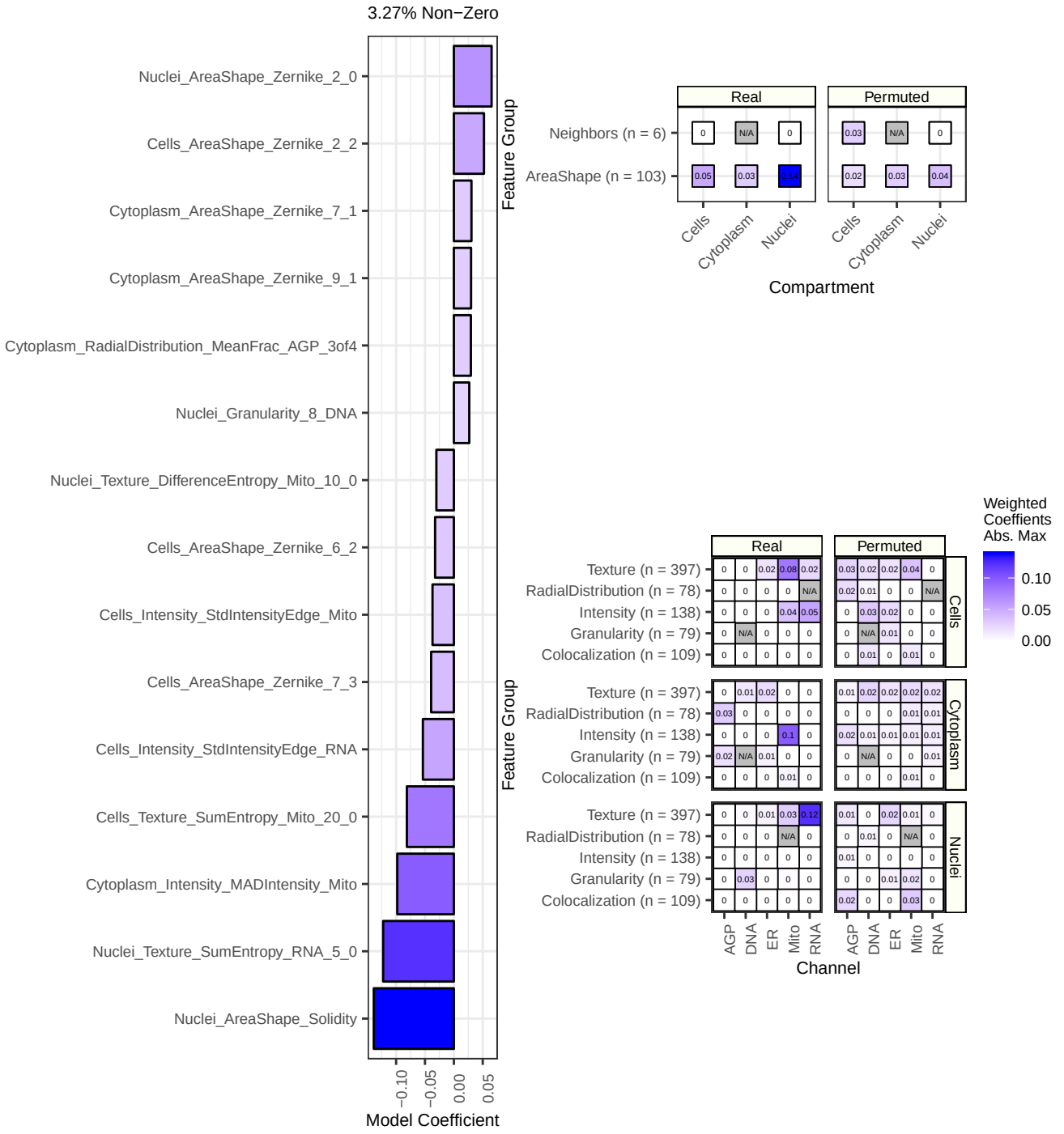
Polyploid − # of gH2AX Spots



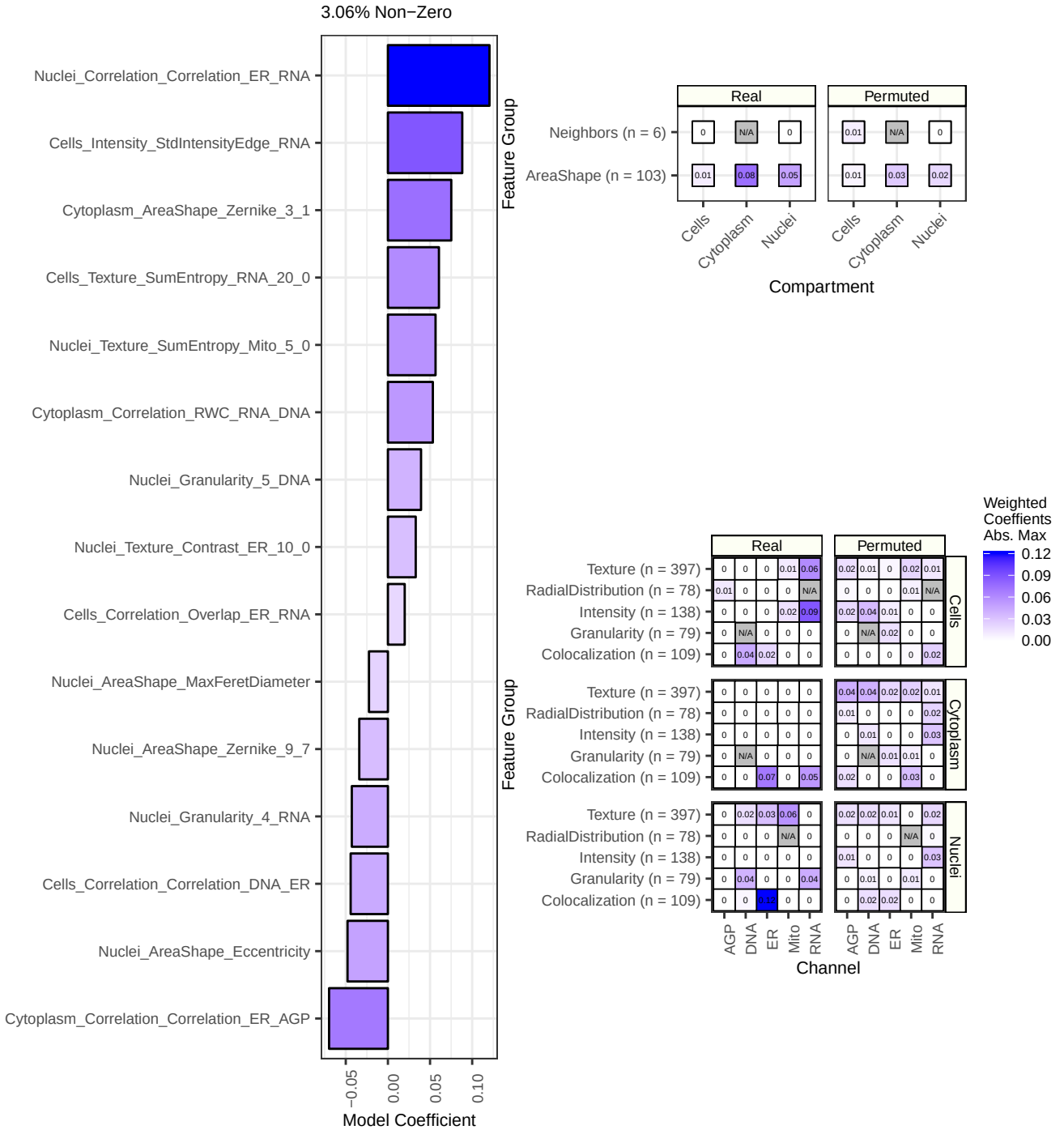
Polyploid − # of gH2AX Spots per Area of Nucleus



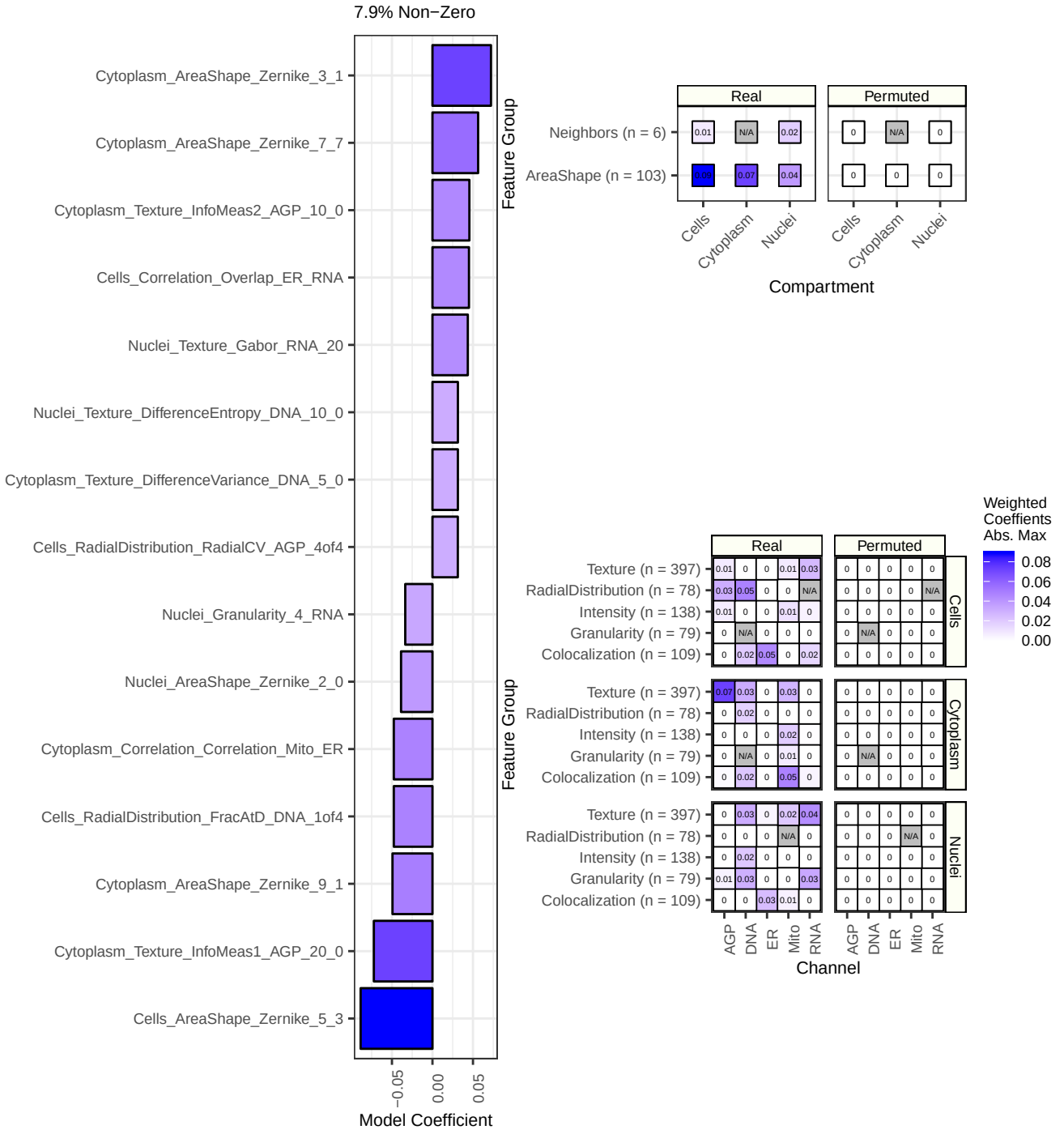
S − % High gH2AX Spots



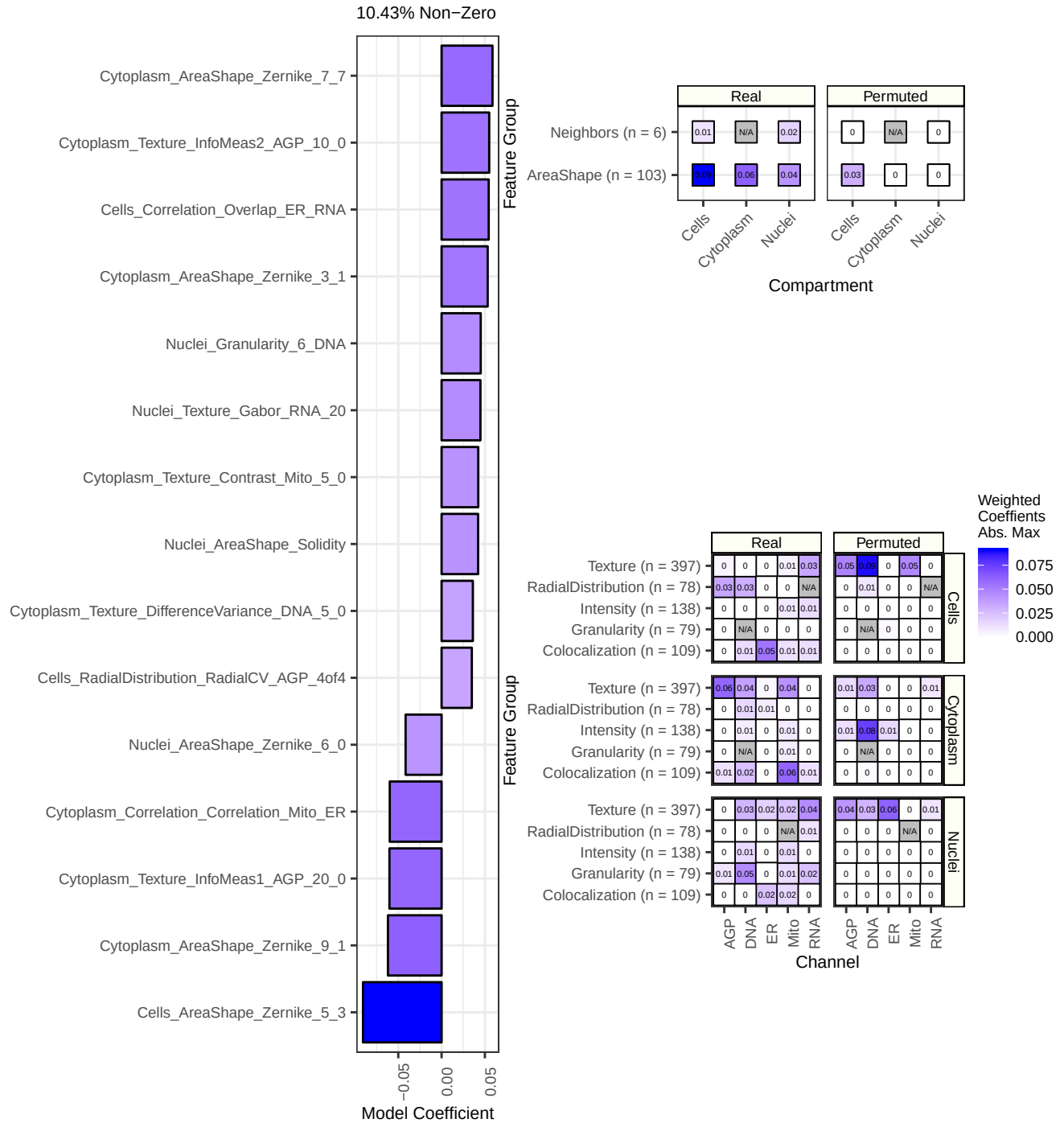
S − Intensity Nucleus EdU Mean



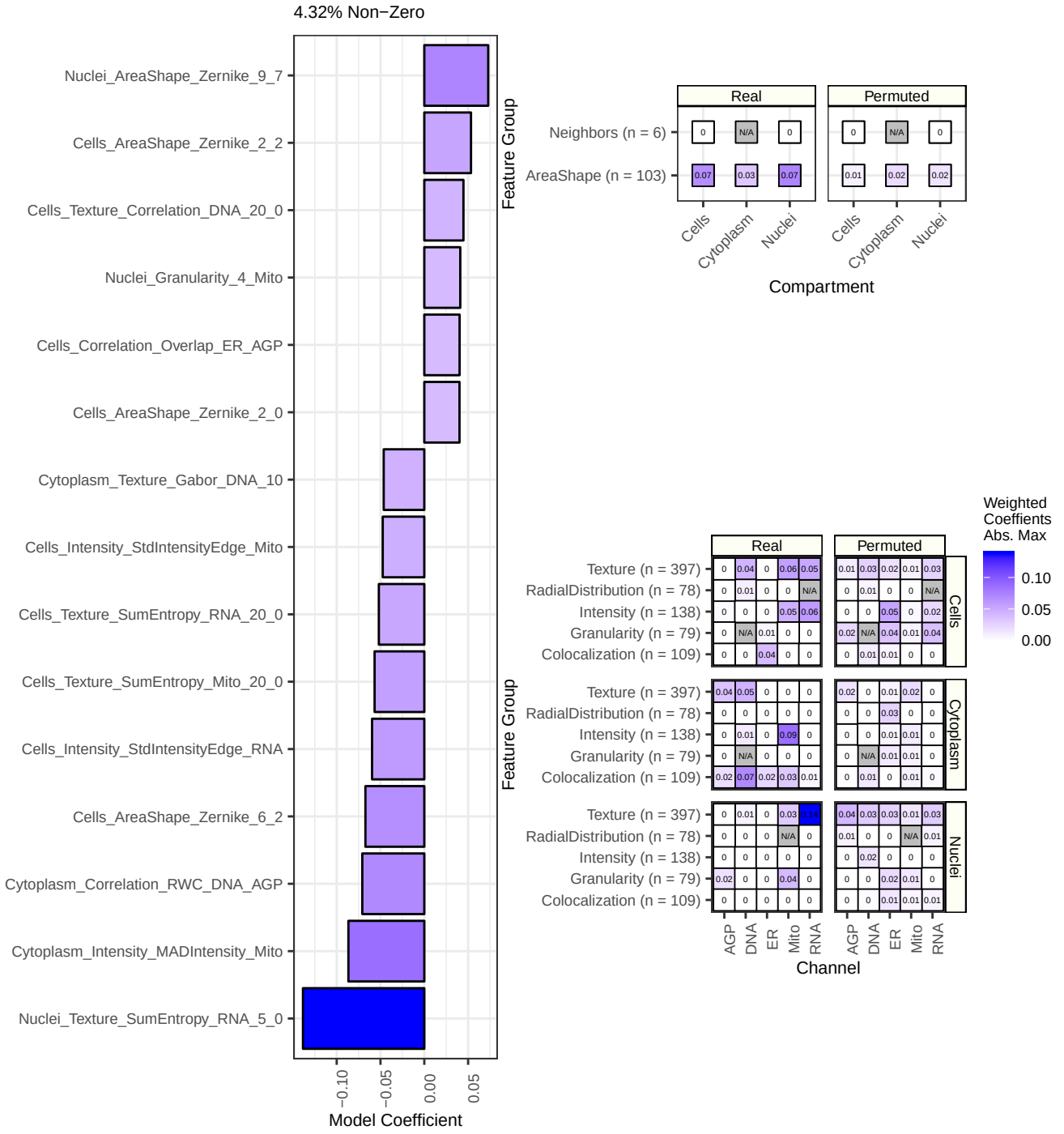
S − Intensity Nucleus EdU Sum



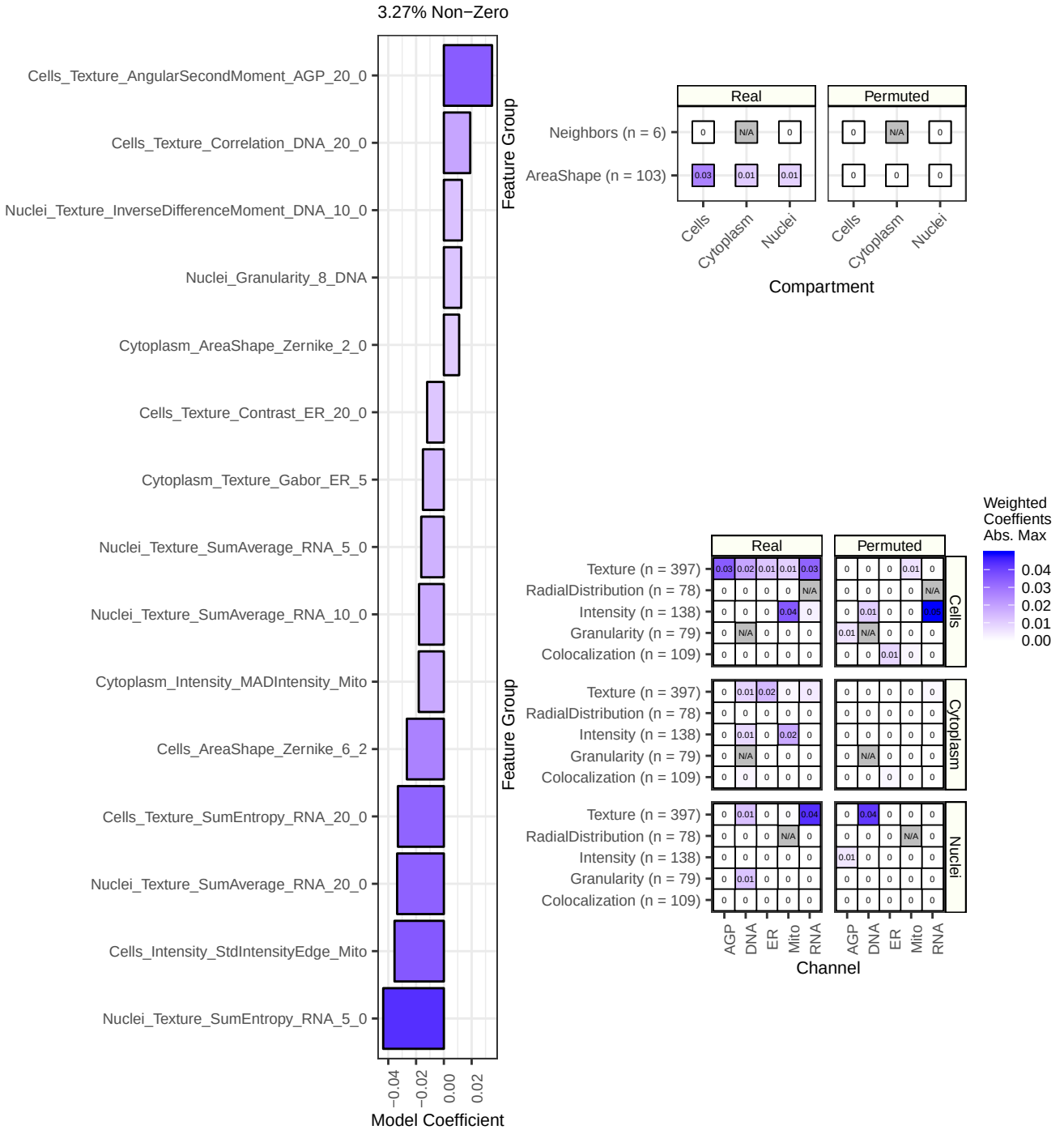
S − # cells


10.43% Non−Zero
Cytoplasm_AreaShape_Zernike_7_7
Cytoplasm_Texture_InfoMeas2_AGP_10_0
Cells_Correlation_Overlap_ER_RNA
Cytoplasm_AreaShape_Zernike_3_1
Nuclei_Granularity_6_DNA
Nuclei_Texture_Gabor_RNA_20
Cytoplasm_Texture_Contrast_Mito_5_0
Nuclei_AreaShape_Solidity
Cytoplasm_Texture_DifferenceVariance_DNA_5_0
Cells_RadialDistribution_RadialCV_AGP_4of4
Nuclei_AreaShape_Zernike_6_0
Cytoplasm_Correlation_Correlation_Mito_ER
Cytoplasm_Texture_InfoMeas1_AGP_20_0
Cytoplasm_AreaShape_Zernike_9_1
Cells_AreaShape_Zernike_5_3
Feature Group
−0.05
0.00
0.05
Model Coefficient
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Weighted Coeffients Abs. Max
0.075
0.050
0.025
0.000
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel

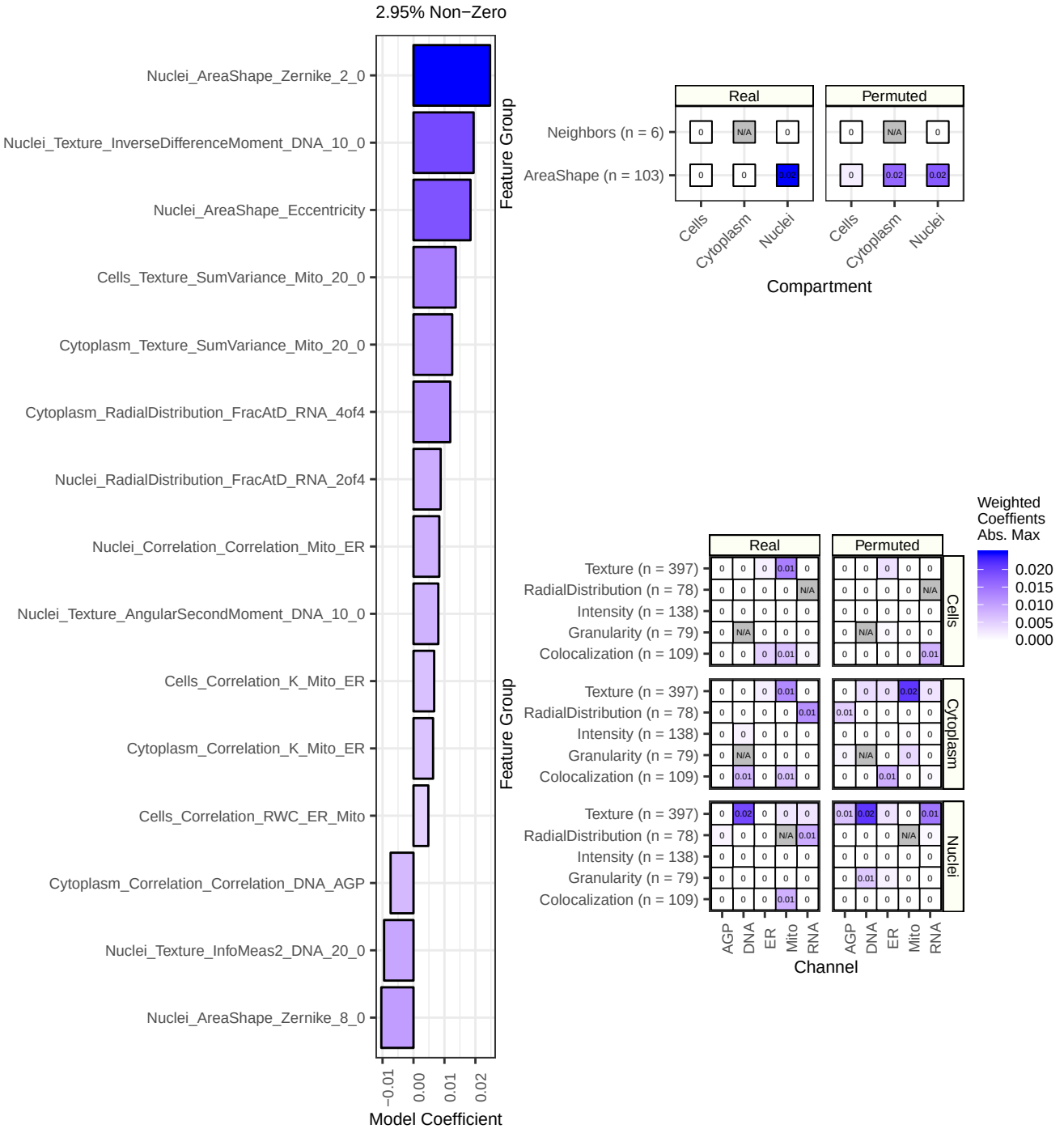
S − # of gH2AX Spots



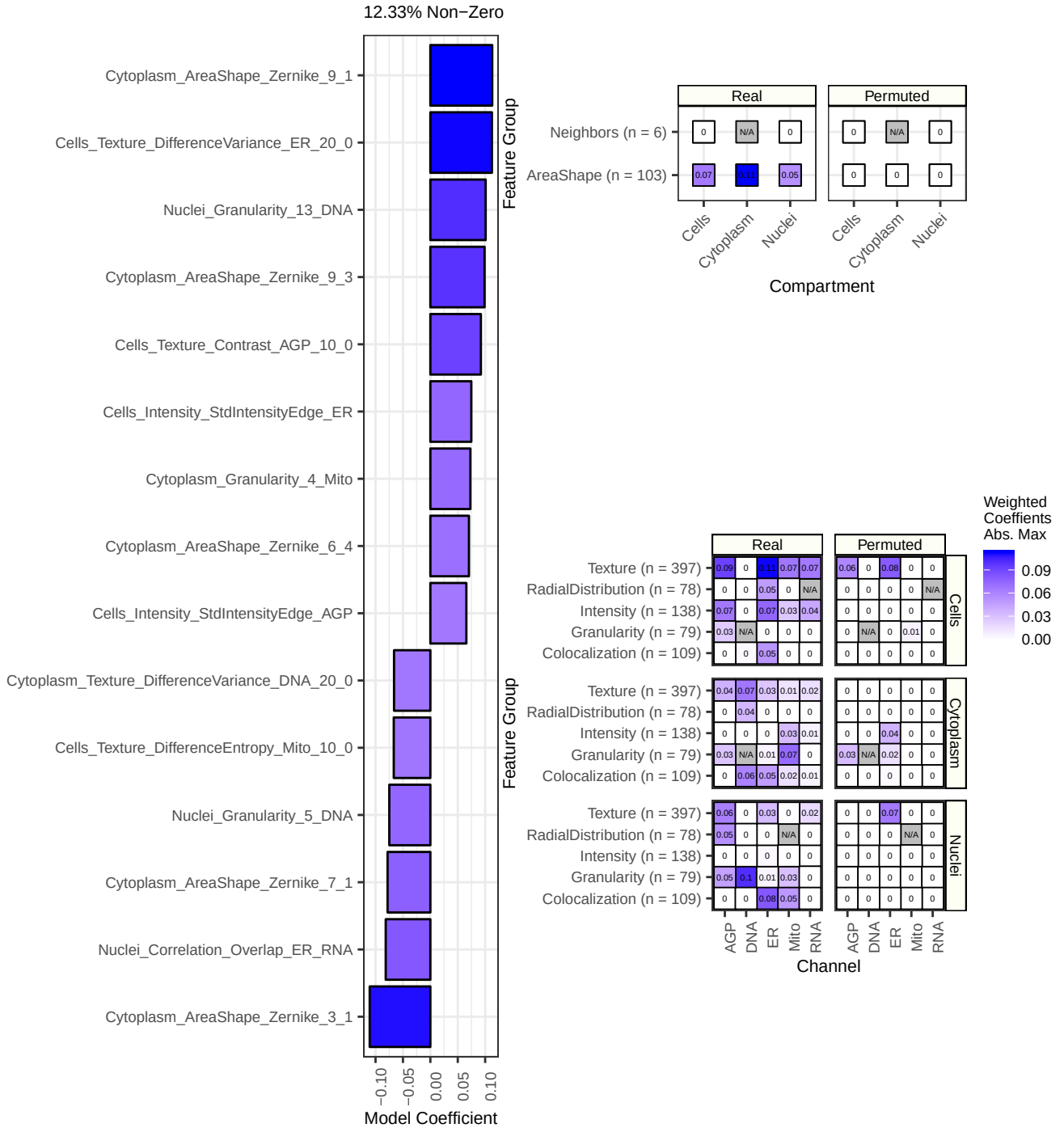
S − # of gH2AX Spots per Area of Nucleus



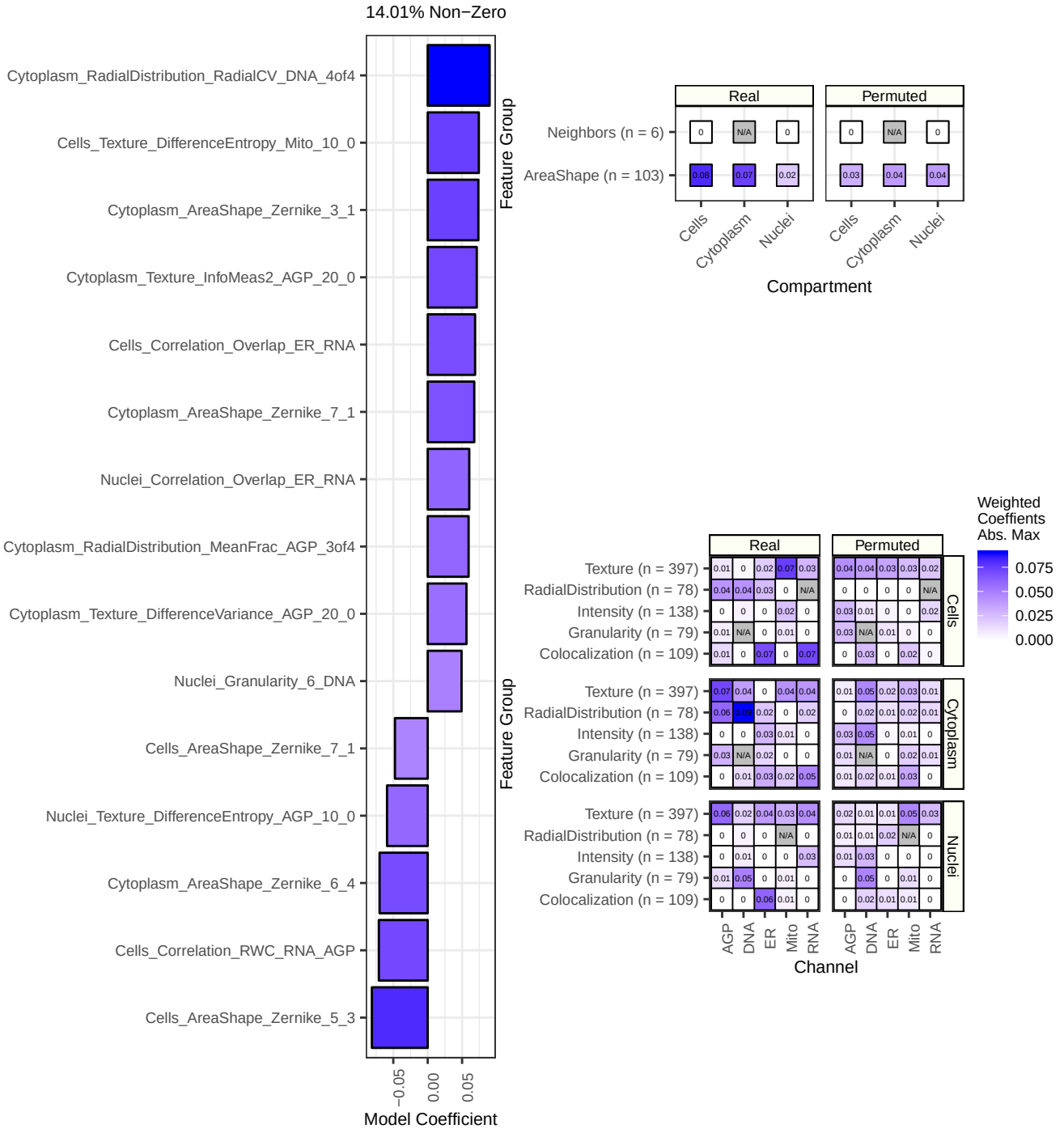
VB − Infection Efficiency



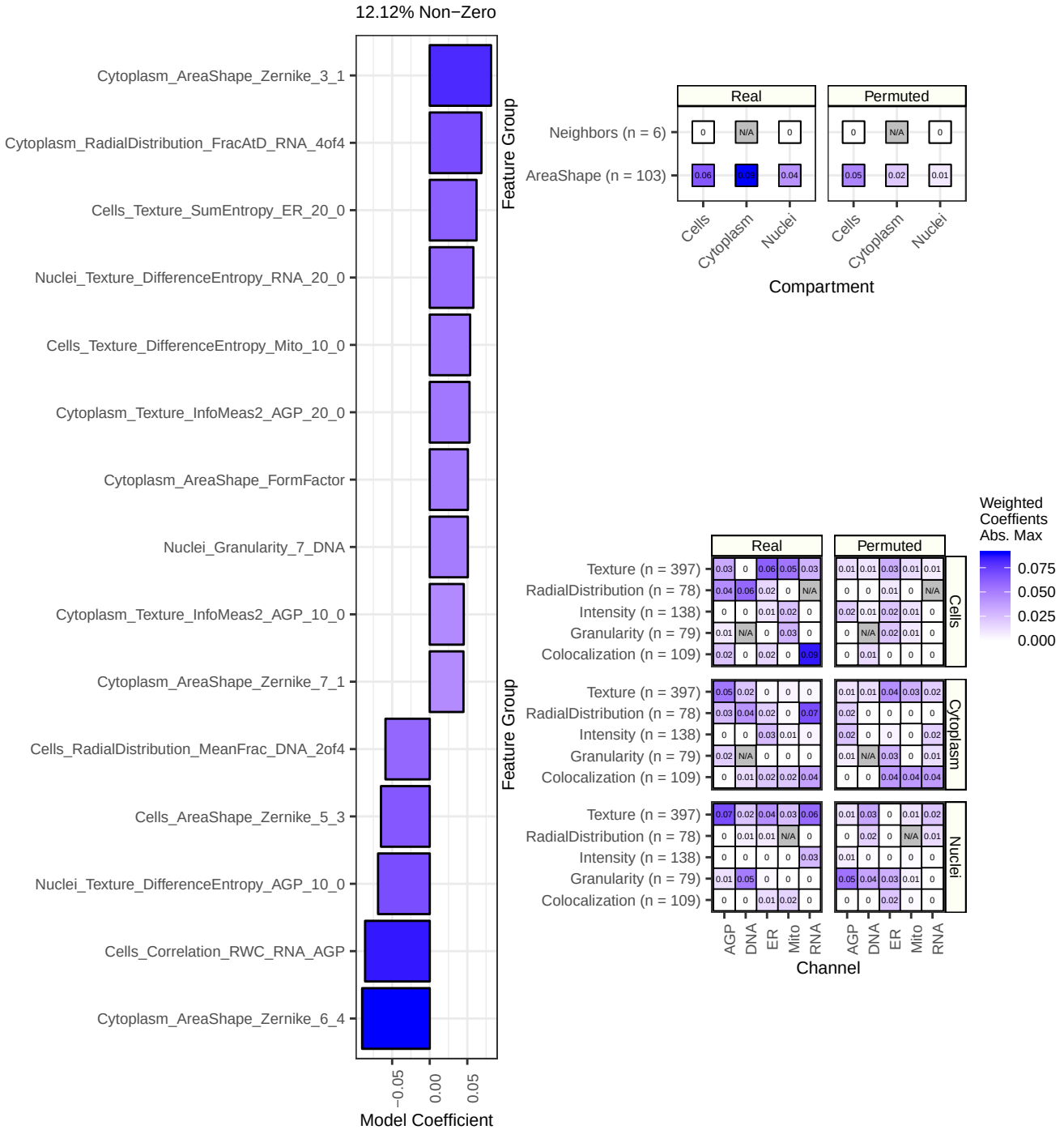
Live Cell Area



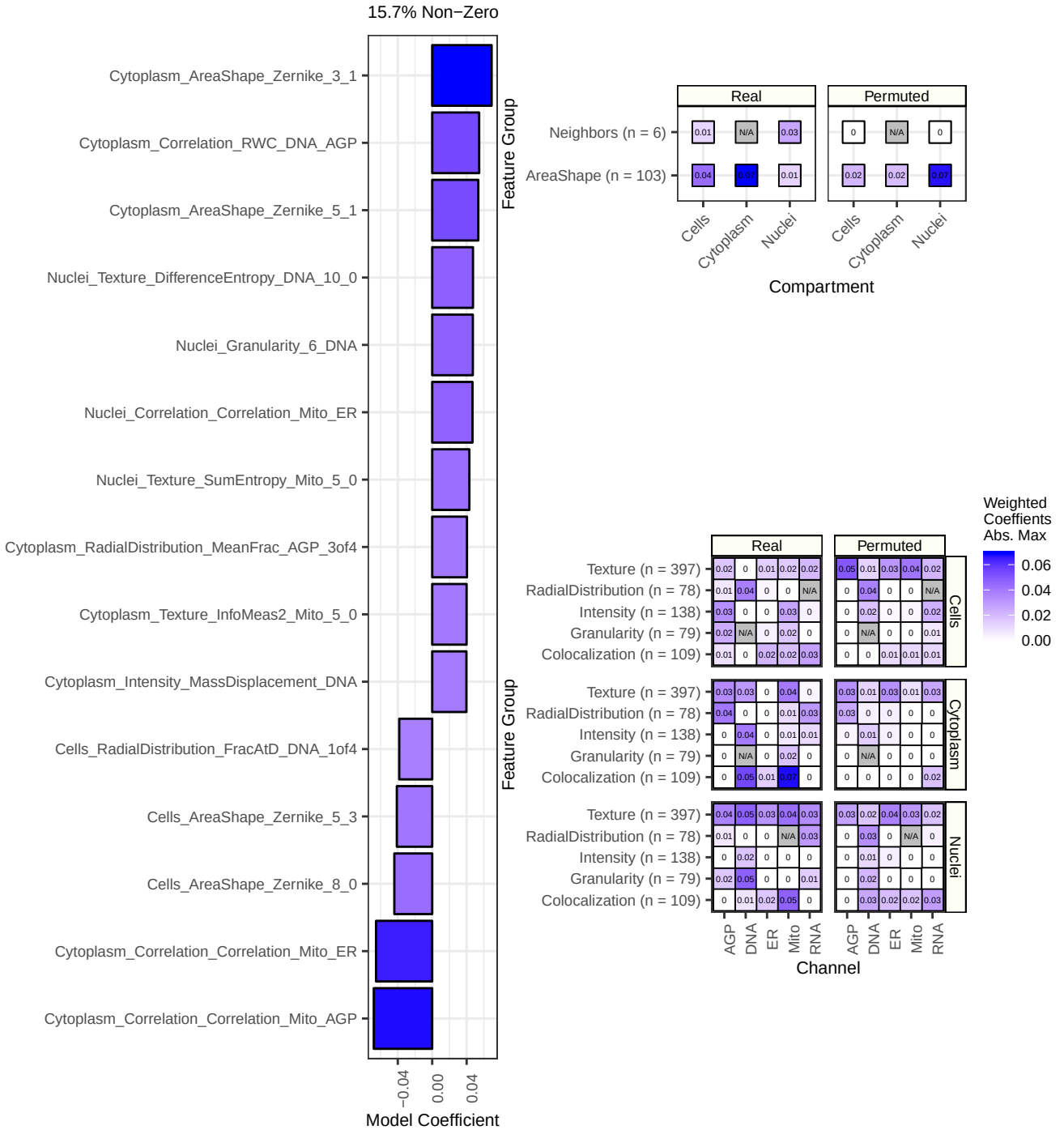
Live Cell Roundness



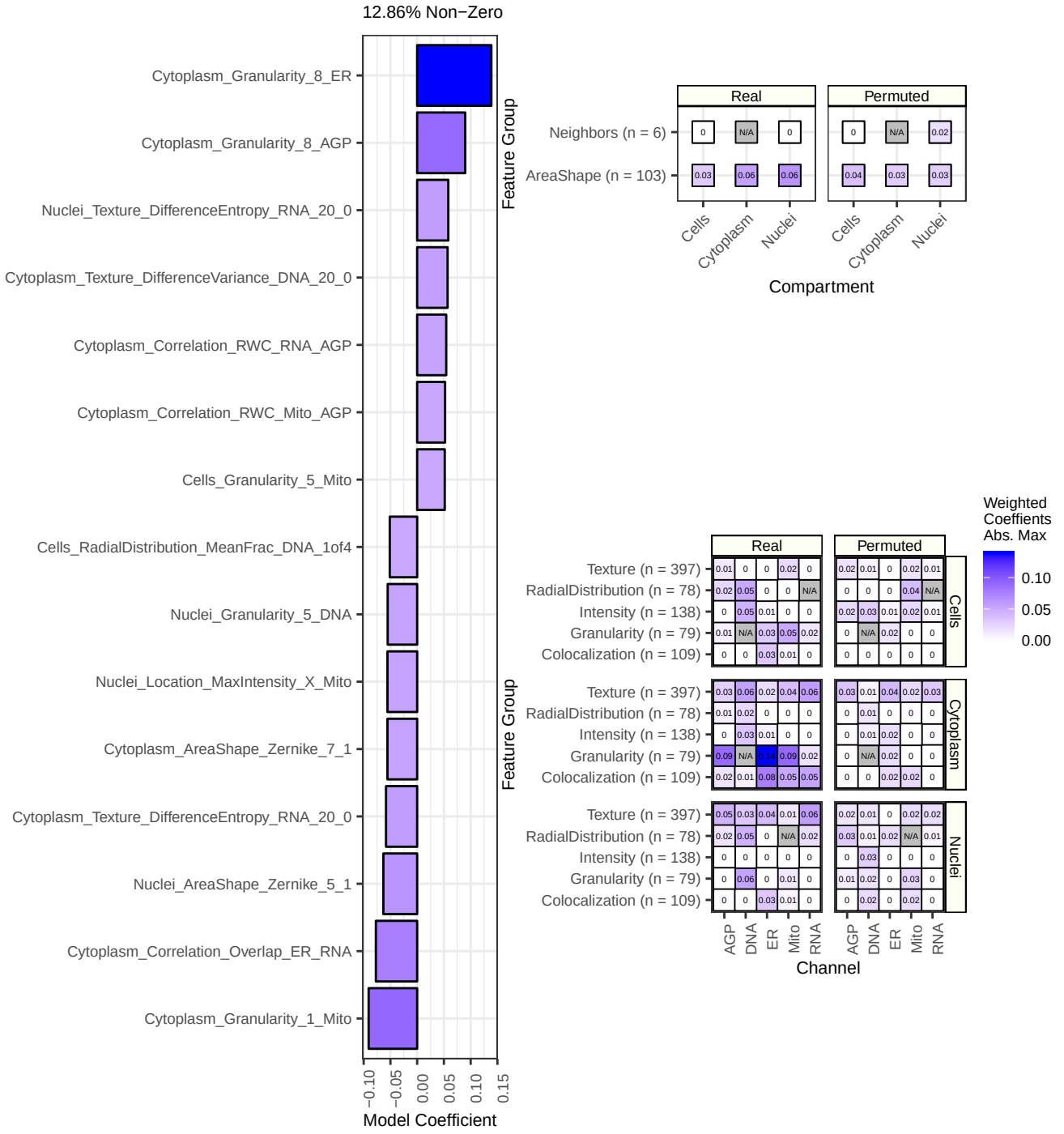
Live Width / Length



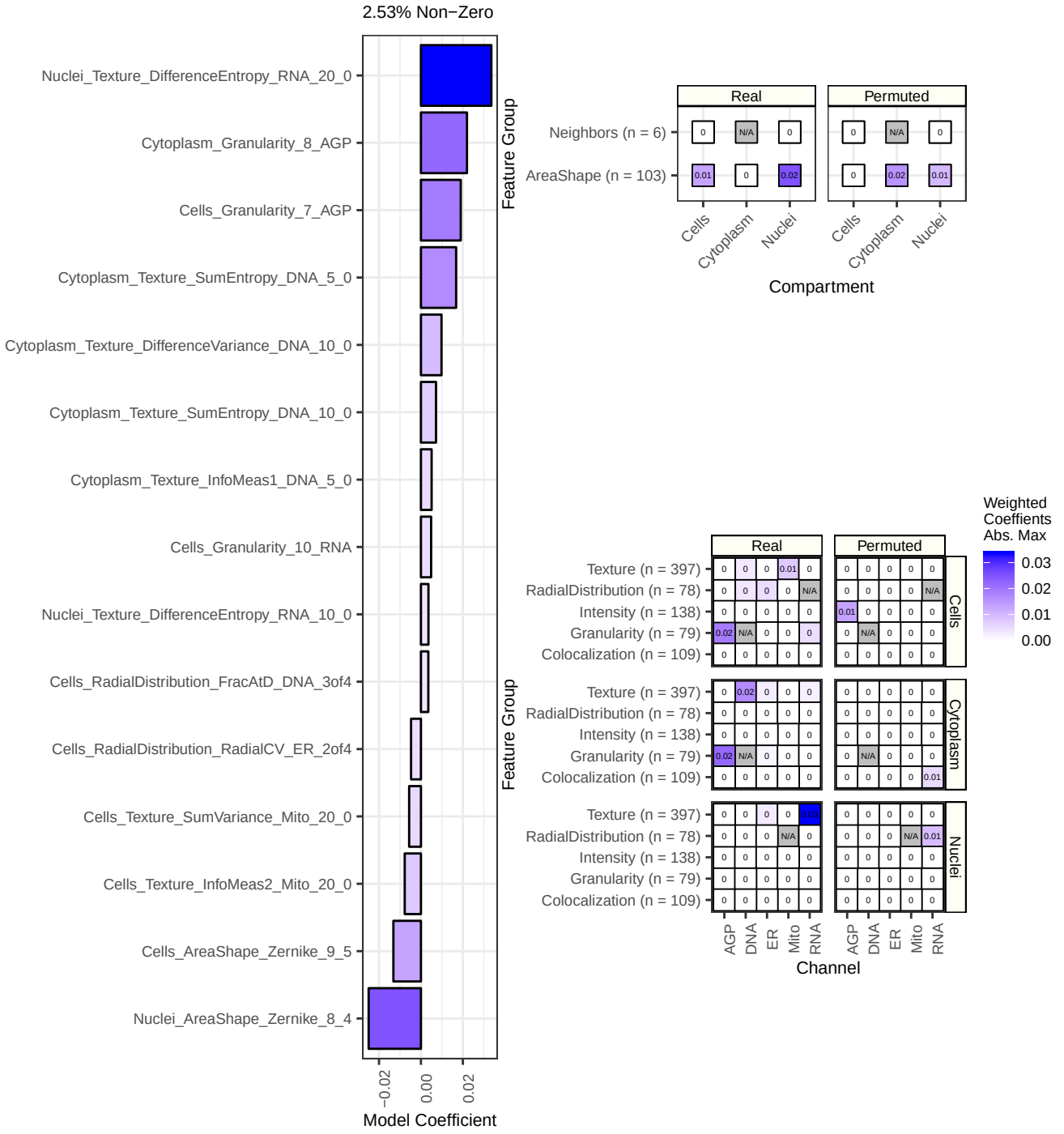
Live Cells


15.7% Non−Zero
Cytoplasm_AreaShape_Zernike_3_1
Cytoplasm_Correlation_RWC_DNA_AGP
Cytoplasm_AreaShape_Zernike_5_1
Nuclei_Texture_DifferenceEntropy_DNA_10_0
Nuclei_Granularity_6_DNA
Nuclei_Correlation_Correlation_Mito_ER
Nuclei_Texture_SumEntropy_Mito_5_0
Cytoplasm_RadialDistribution_MeanFrac_AGP_3of4
Cytoplasm_Texture_InfoMeas2_Mito_5_0
Cytoplasm_Intensity_MassDisplacement_DNA
Cells_RadialDistribution_FracAtD_DNA_1of4
Cells_AreaShape_Zernike_5_3
Cells_AreaShape_Zernike_8_0
Cytoplasm_Correlation_Correlation_Mito_ER
Cytoplasm_Correlation_Correlation_Mito_AGP
−0.04
0.00
0.04
Model Coefficient
Feature Group
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel
Weighted Coeffients Abs. Max
0.06
0.04
0.02
0.00

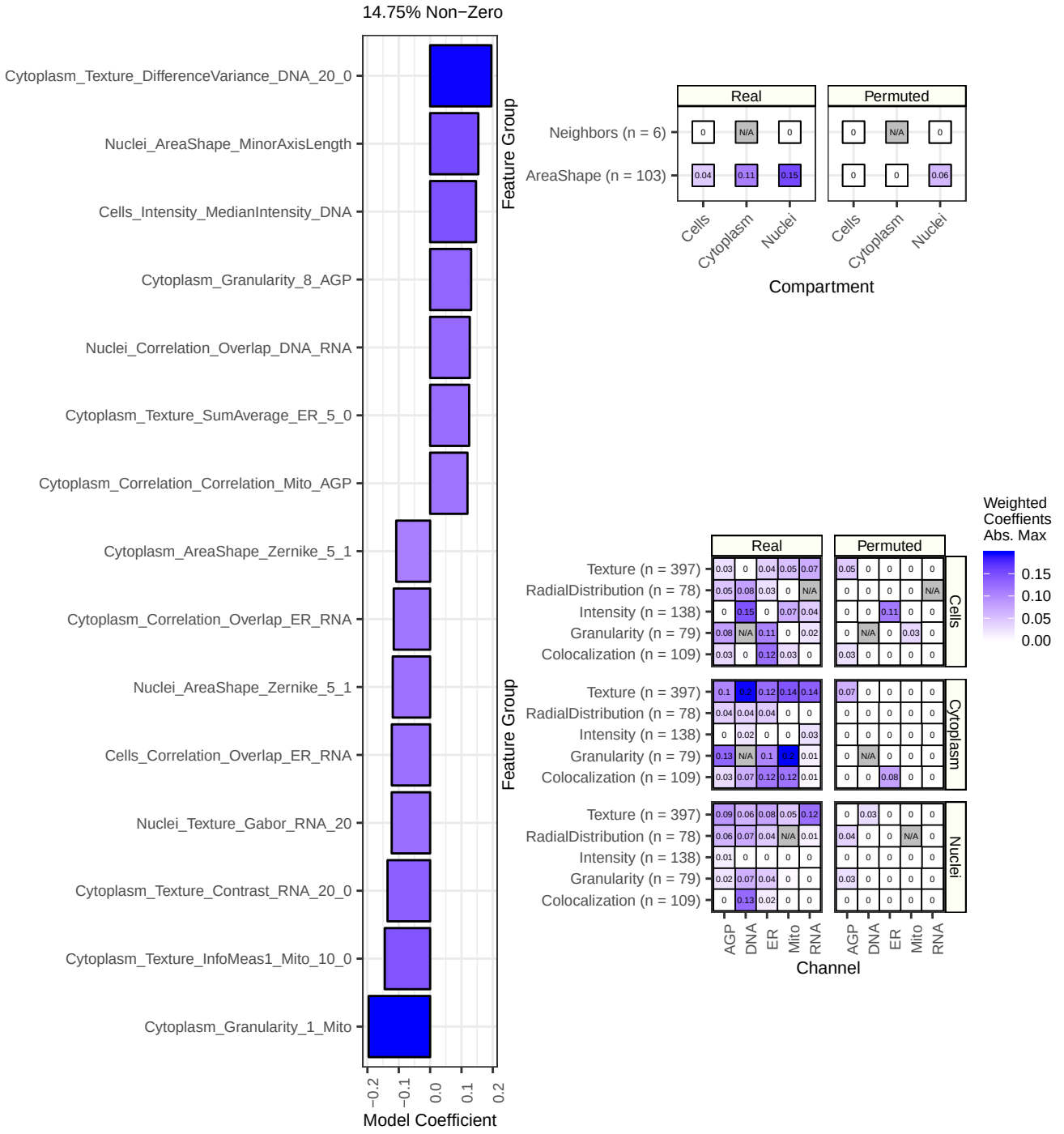
% All Apoptosis (CASP+)



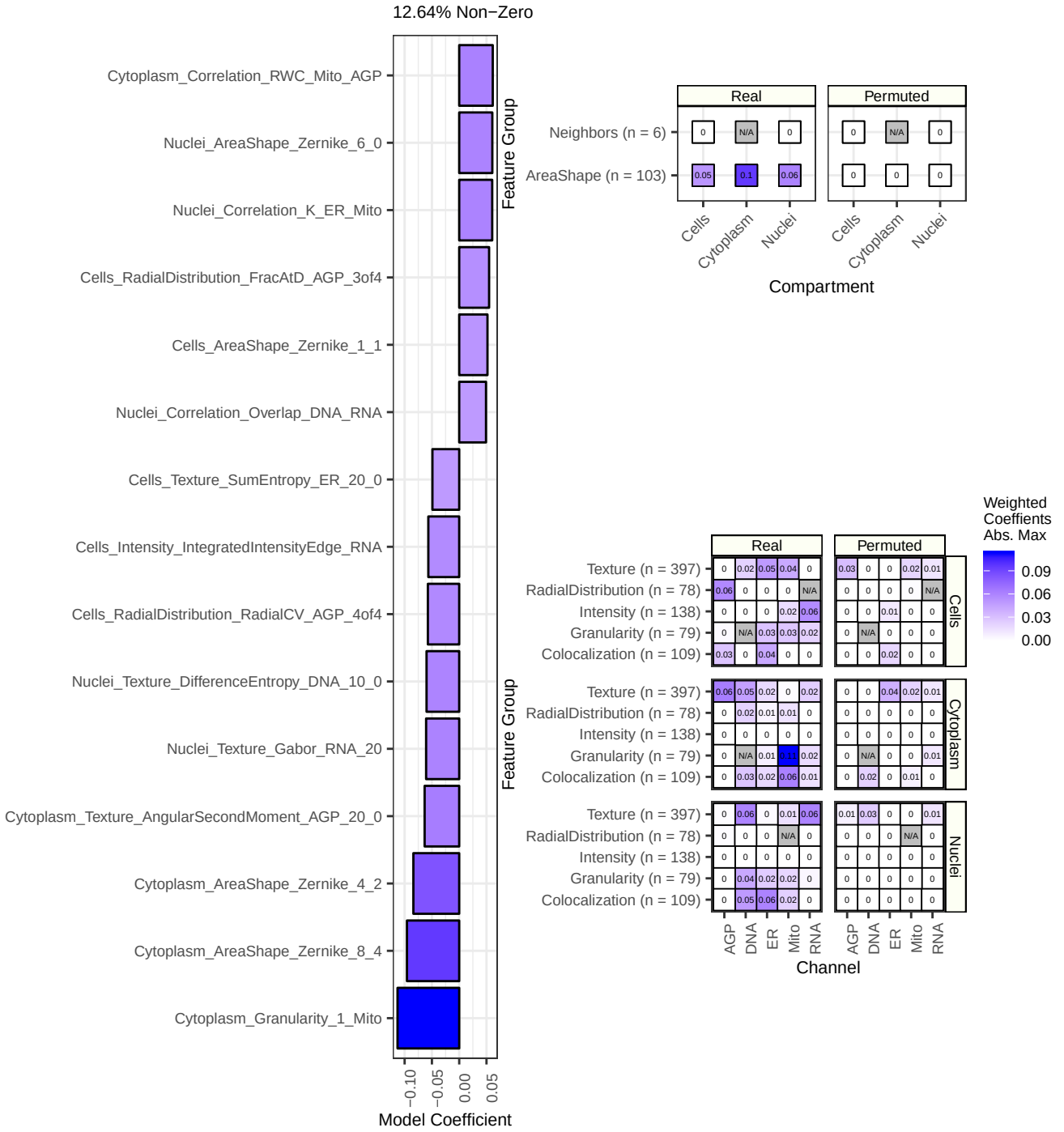
% Caspase / % Dead Only



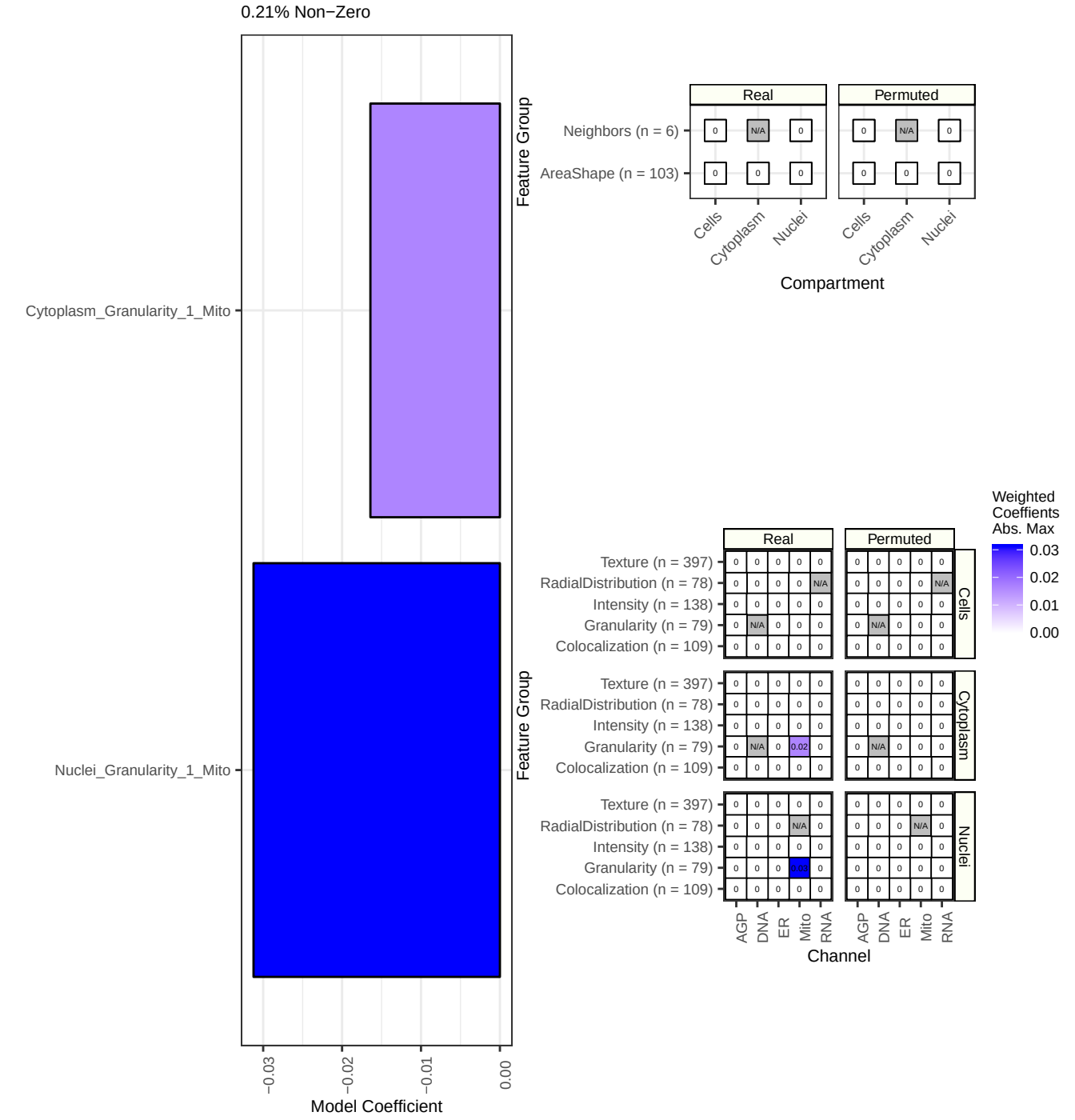
% All Dead (DRAQ7+)



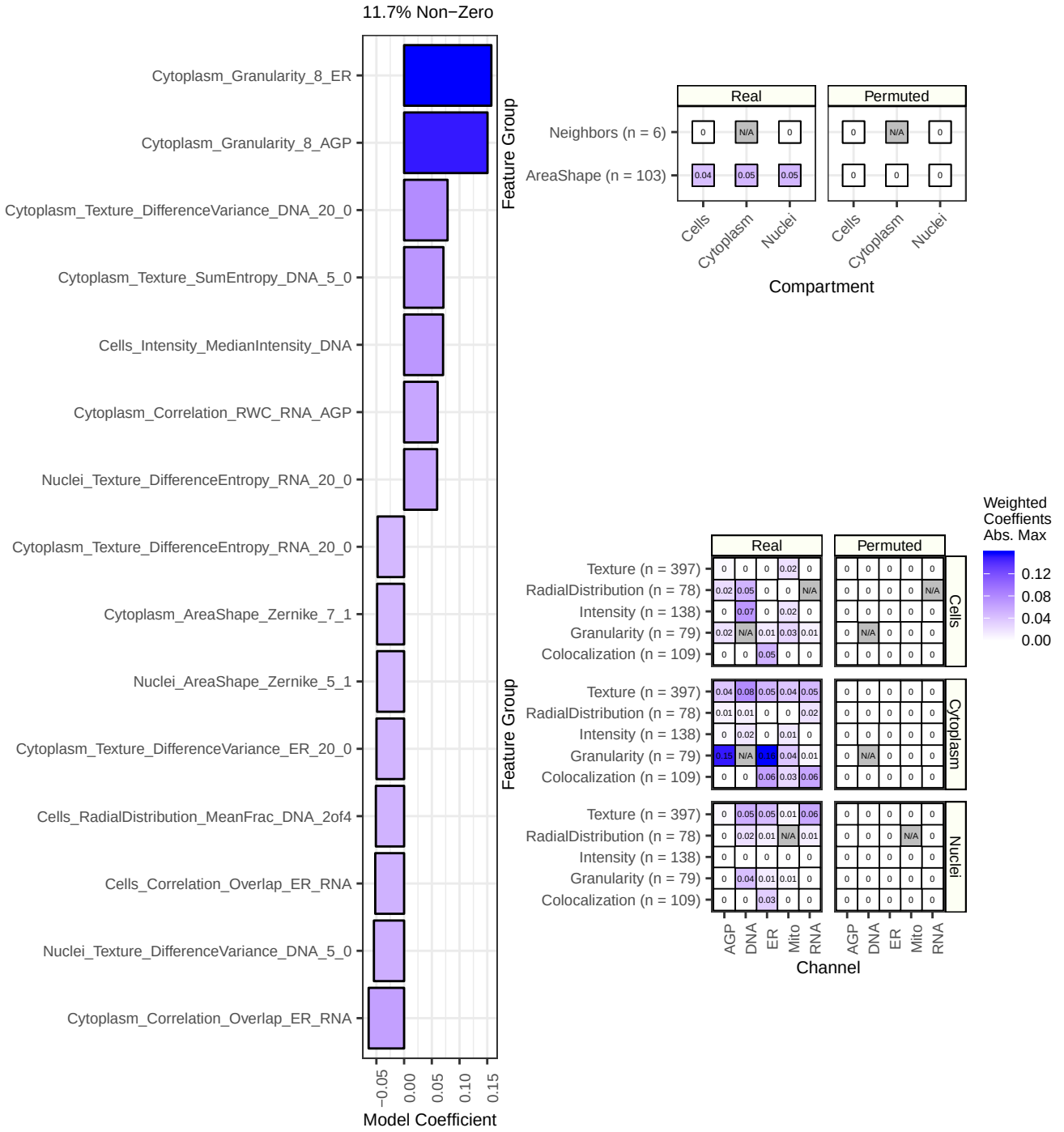
% Dead Only (CASP−; DRAQ7+)



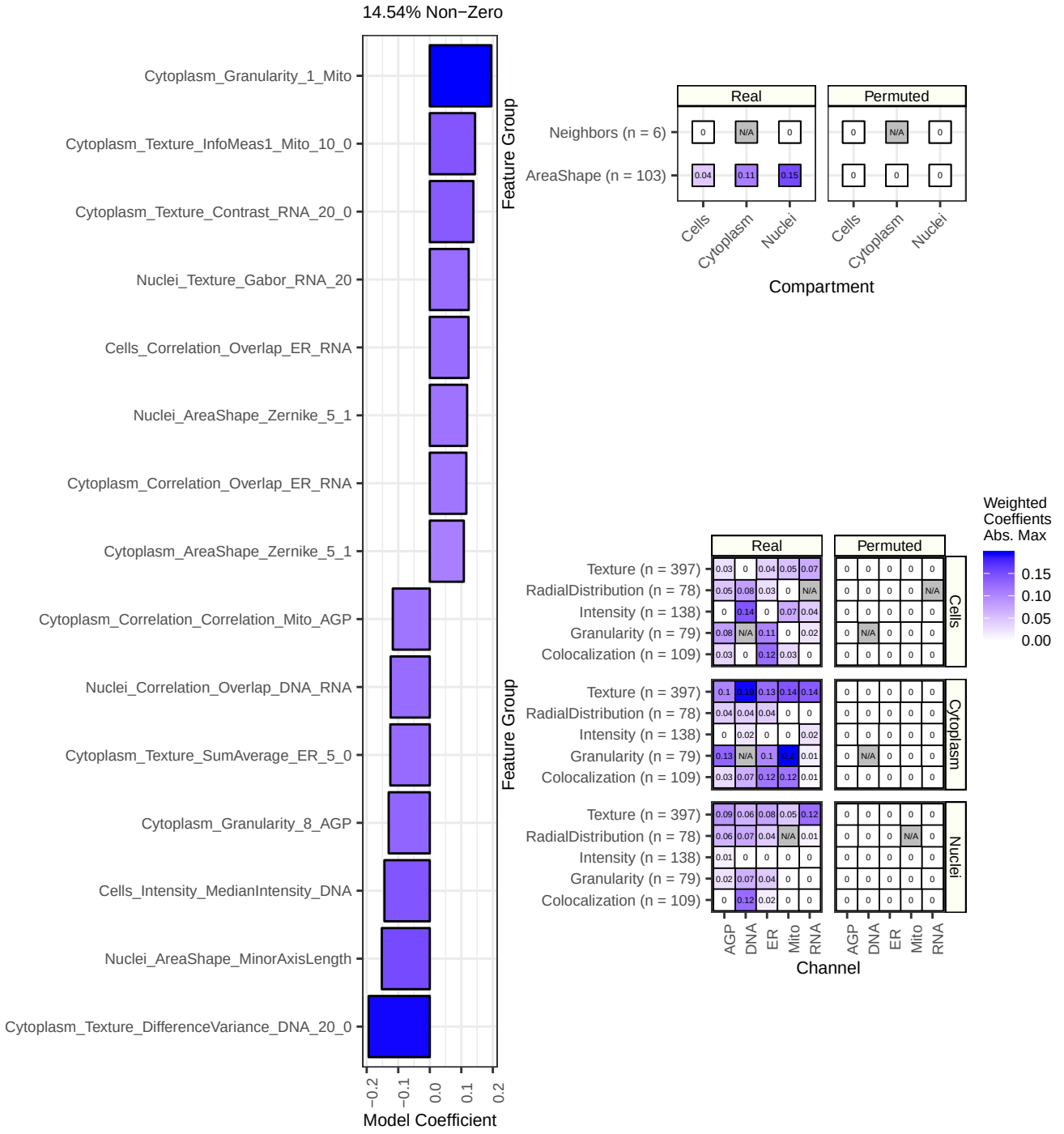
% Early Apoptosis (CASP+; DRAQ7−)



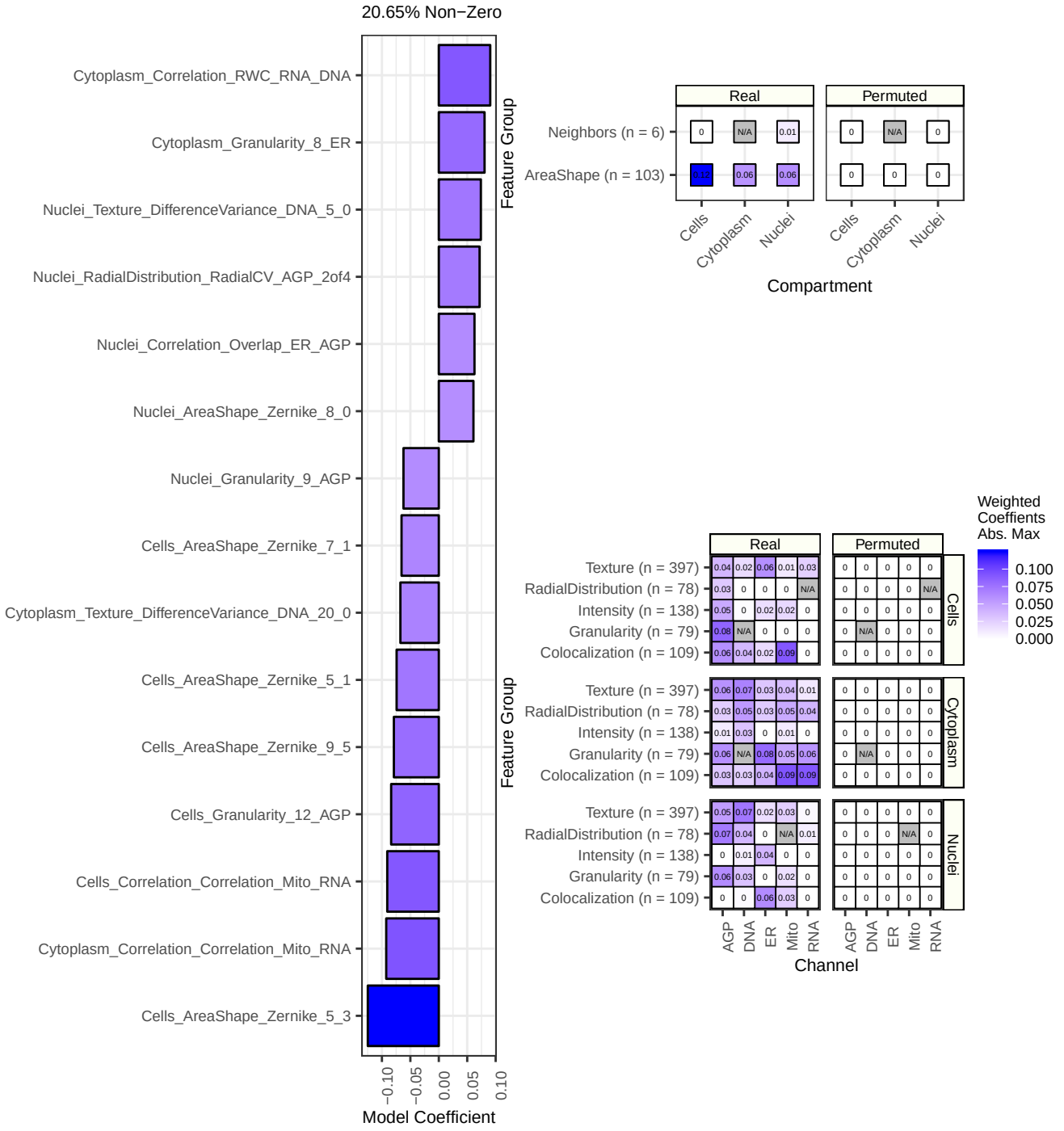
% Late Apoptosis (CASP+; DRAQ7+)



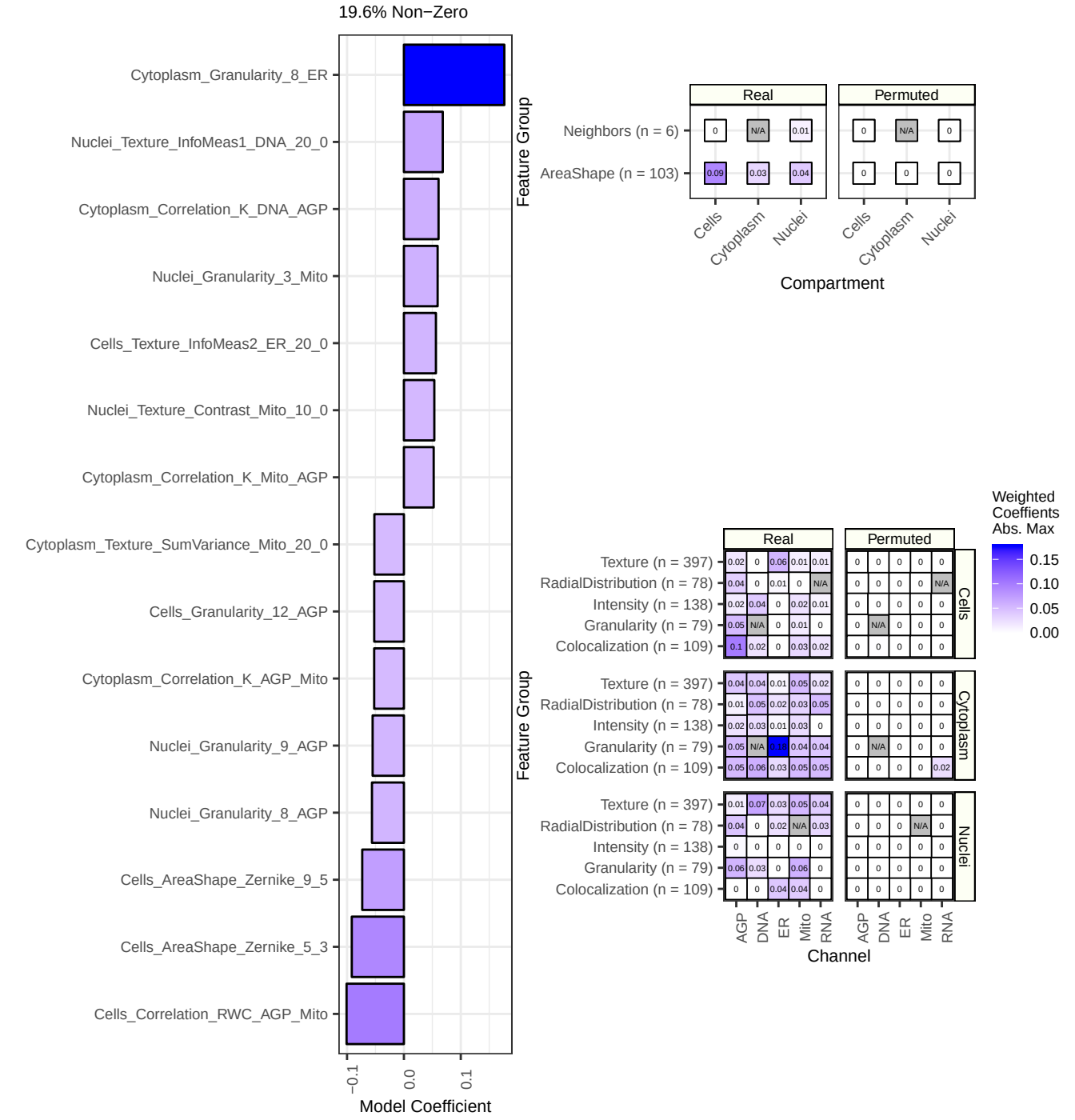
% Live (DRAQ7−; CASP−)



ROS−back


20.65% Non−Zero
Cytoplasm_Correlation_RWC_RNA_DNA
Cytoplasm_Granularity_8_ER
Nuclei_Texture_DifferenceVariance_DNA_5_0
Nuclei_RadialDistribution_RadialCV_AGP_2of4
Nuclei_Correlation_Overlap_ER_AGP
Nuclei_AreaShape_Zernike_8_0
Nuclei_Granularity_9_AGP
Cells_AreaShape_Zernike_7_1
Cytoplasm_Texture_DifferenceVariance_DNA_20_0
Cells_AreaShape_Zernike_5_1
Cells_AreaShape_Zernike_9_5
Cells_Granularity_12_AGP
Cells_Correlation_Correlation_Mito_RNA
Cytoplasm_Correlation_Correlation_Mito_RNA
Cells_AreaShape_Zernike_5_3
Feature Group
−0.10
−0.05
0.00
0.05
0.10
Model Coefficient
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel
Weighted Coeffients Abs. Max
0.100
0.075
0.050
0.025
0.000

ROS


19.6% Non−Zero
Cytoplasm_Granularity_8_ER
Nuclei_Texture_InfoMeas1_DNA_20_0
Cytoplasm_Correlation_K_DNA_AGP
Nuclei_Granularity_3_Mito
Cells_Texture_InfoMeas2_ER_20_0
Nuclei_Texture_Contrast_Mito_10_0
Cytoplasm_Correlation_K_Mito_AGP
Cytoplasm_Texture_SumVariance_Mito_20_0
Cells_Granularity_12_AGP
Cytoplasm_Correlation_K_AGP_Mito
Nuclei_Granularity_9_AGP
Nuclei_Granularity_8_AGP
Cells_AreaShape_Zernike_9_5
Cells_AreaShape_Zernike_5_3
Cells_Correlation_RWC_AGP_Mito
−0.1
0.0
0.1
Model Coefficient
Feature Group
Real
Permuted
Neighbors (n = 6)
AreaShape (n = 103)
Cells
Cytoplasm
Nuclei
Compartment
Weighted Coeffients Abs. Max
0.15
0.10
0.05
0.00
Texture (n = 397)
RadialDistribution (n = 78)
Intensity (n = 138)
Granularity (n = 79)
Colocalization (n = 109)
AGP
DNA
ER
Mito
RNA
Channel