

Supplemental online methods

Logistic Regression-Based Cumulative ROC Analysis for ADAP and ECL assays

ROC curve AUC determination is a threshold independent commonly used analysis of assay performance. While applying ROC AUC analysis to the single quantitative output provided by assays like multiplexed bridge-ELISA, LIPS, and scLIPS is straightforward, for ADAP and ECL that generate separate quantitative information for each of the 4 autoantibodies measured in a sample, additional steps are required.

First, for each ADAP and ECL assays we fitted a binomial logistic regression model using the four individual autoantibody results as predictor variables. This approach determines the individual discriminatory capacity of each antibody together with their collective relationship with disease status. Logistic regression automatically then assigns weights proportional to each antibody contribution to the overall classification performance in a multiplexed ADAP or ECL assay. The regression coefficients reflect the relative diagnostic value of each autoantibody marker within the multivariate context.

The fitted model generates predicted probability scores for each sample, representing the estimated likelihood of T1D based on the integrated autoantibody profile. These probability scores, ranging from 0 to 1, replace the arbitrary units typically used in single-assay ROC analysis with clinically interpretable values (for example, a score of 0.7 represents a 70% probability of disease presence). This transformation creates a unified diagnostic metric that synthesizes information from all four autoantibody measurements into a single scale for ROC curve construction.

This methodology provides several advantages over simple additive approaches and single-assay analysis: (1) the regression coefficients are data-driven and optimally weighted, (2) the model captures the relative importance and potential interactions between different autoantibody markers, (3) the probability scores provide clinically interpretable thresholds rather than arbitrary cutoff values.

Median ROC curve calculation and ROC areas under the curve comparisons

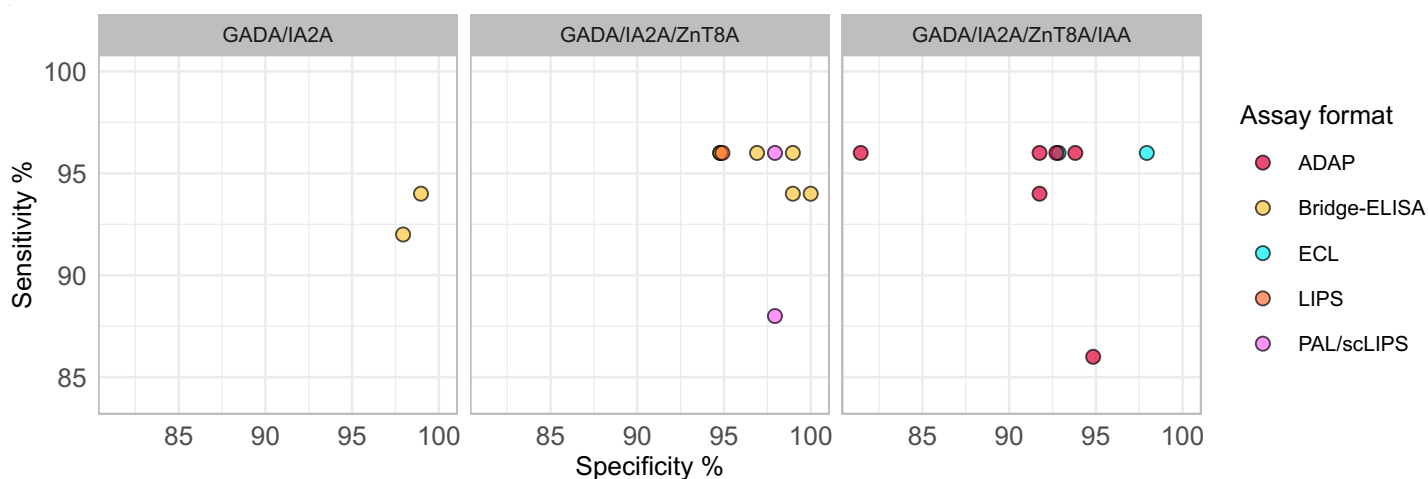
The median ROC curve was generated by calculating the median sensitivity and specificity at systematically varied cutoff points across different multiplex assays, using the `cutpointr` R package (version 1.2.1). The calculated values of sensitivity and specificity at each cutoff point represent the coordinates to generate and plot the median ROC curve. ROC corner points (sensitivity=0, specificity=1 and sensitivity=1, specificity=0) were automatically added to ensure complete ROC curve boundaries.

The analysis used the laboratory values assigned by multiplex assays measuring combinations of autoantibodies (e.g. bridge-ELISA, LIPS, PAL/scLIPS) to new-onset T1D (case) and control individual samples. For ADAP and ECL assay formats, predicted values from previously generated combined models were substituted for the original laboratory values. The control sample R587009, positive in most assays, was excluded from the analysis.

To evaluate statistical differences across ROC-AUC and pAUC95 values from multiplex assays, we calculated the bootstrap confidence intervals (95% CI, $n=1,000$ samples). Pairwise comparisons between assays were conducted using the bootstrap methodology and p-values were adjusted for multiple comparisons using the false discovery rate (FDR) method. Each assay's performance was also compared to the median AUC and median pAUC95 calculated across all assays, using confidence interval-based assessment.

Supplemental online tables and figures

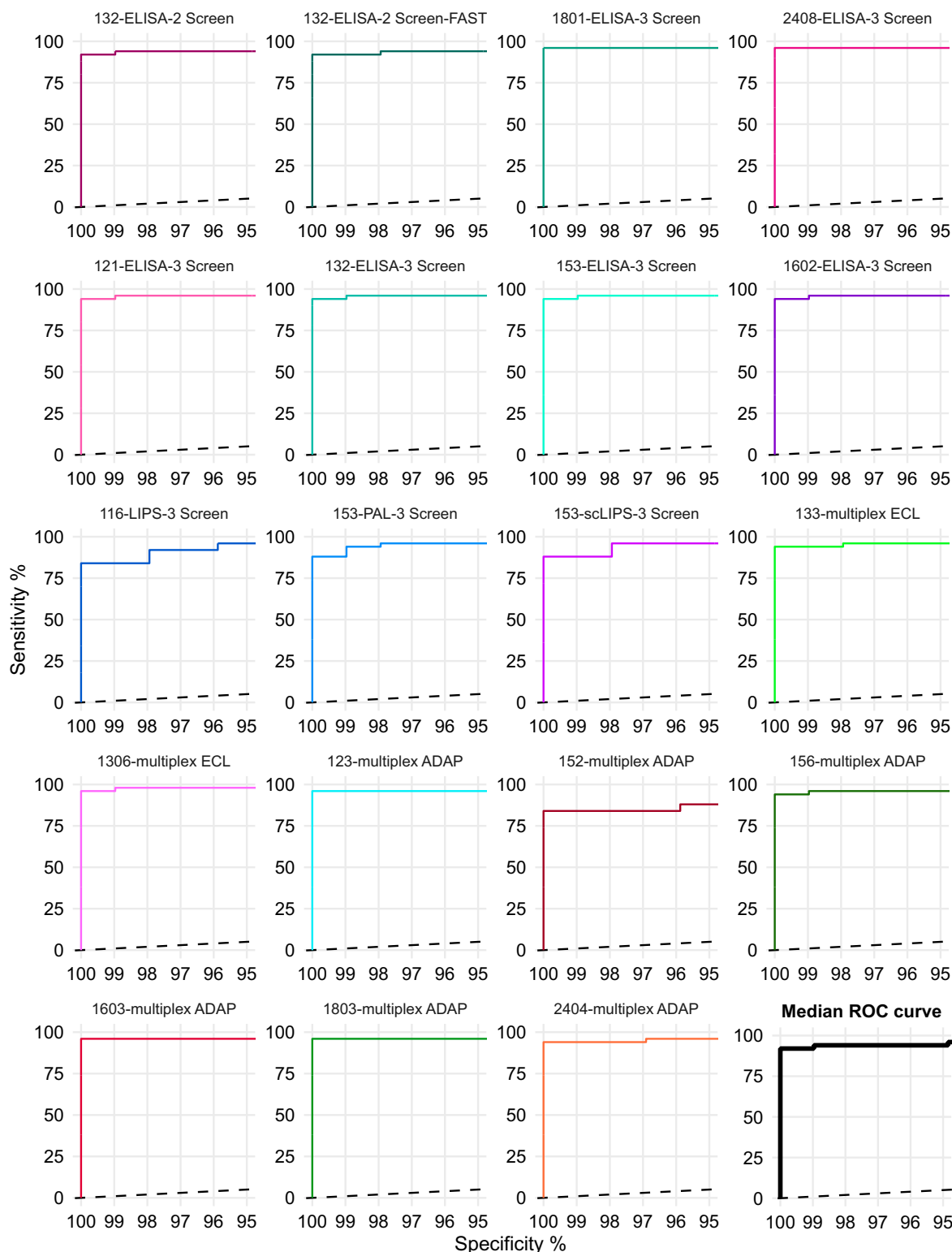
Supplemental Figure S1 – Multiplex assays



Supplemental Figure S1. Lab-assigned sensitivity and specificity of multiplex autoantibody assays submitted to IASP 2024.

Scatterplots of sensitivity and specificity for assays multiplexing the measurement of different islet autoantibody combinations (subpanels: GADA/IA2A, GADA/IA2A/ZnT8A, and GADA/IA2A/ZnT8A/IAA). Sensitivity and specificity for ADAP and ECL assays (i.e., GADA/IA2A/ZnT8A/IAA combination) were calculated by combining the positivity scores from single-antigen assays. Each point represents an assay, with colors indicating the corresponding assay format (red for ADAP, yellow for bridge-ELISA, cyan for ECL, orange for LIPS, and magenta for PAL/scLIPS). Some points overlap because certain assays achieved identical sensitivity and specificity values: bridge-ELISA assays from labs 1801 and 2408 overlap with the LIPS assay, and the ECL assay from lab 1306 overlaps with the ADAP assay from lab 156.

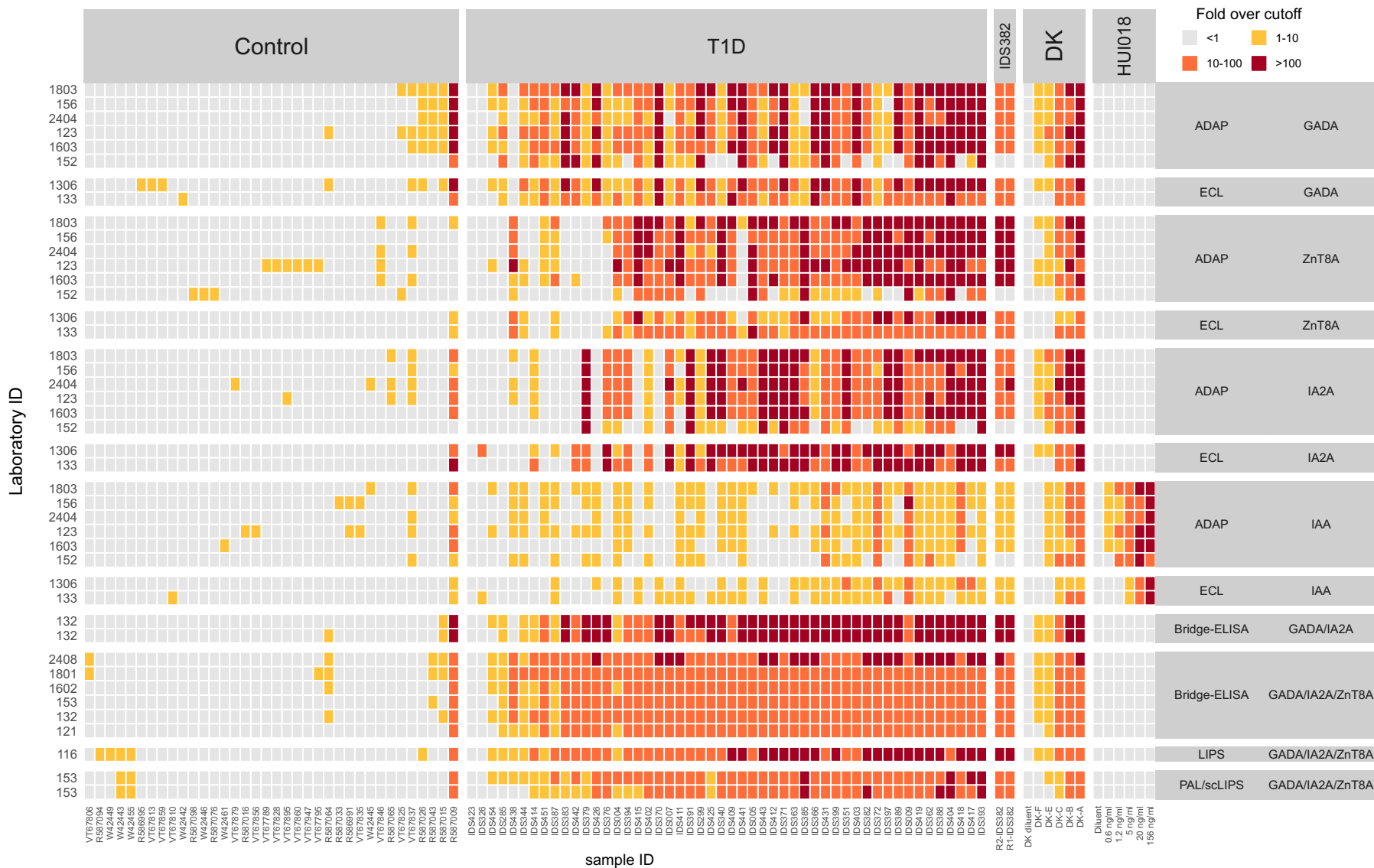
Supplemental Figure S2 – Multiplex assays



Supplemental Figure S2. Threshold independent analysis of assay performance: receiver operating characteristic (ROC) curves of multiplex assays in IASP 2024 workshop.

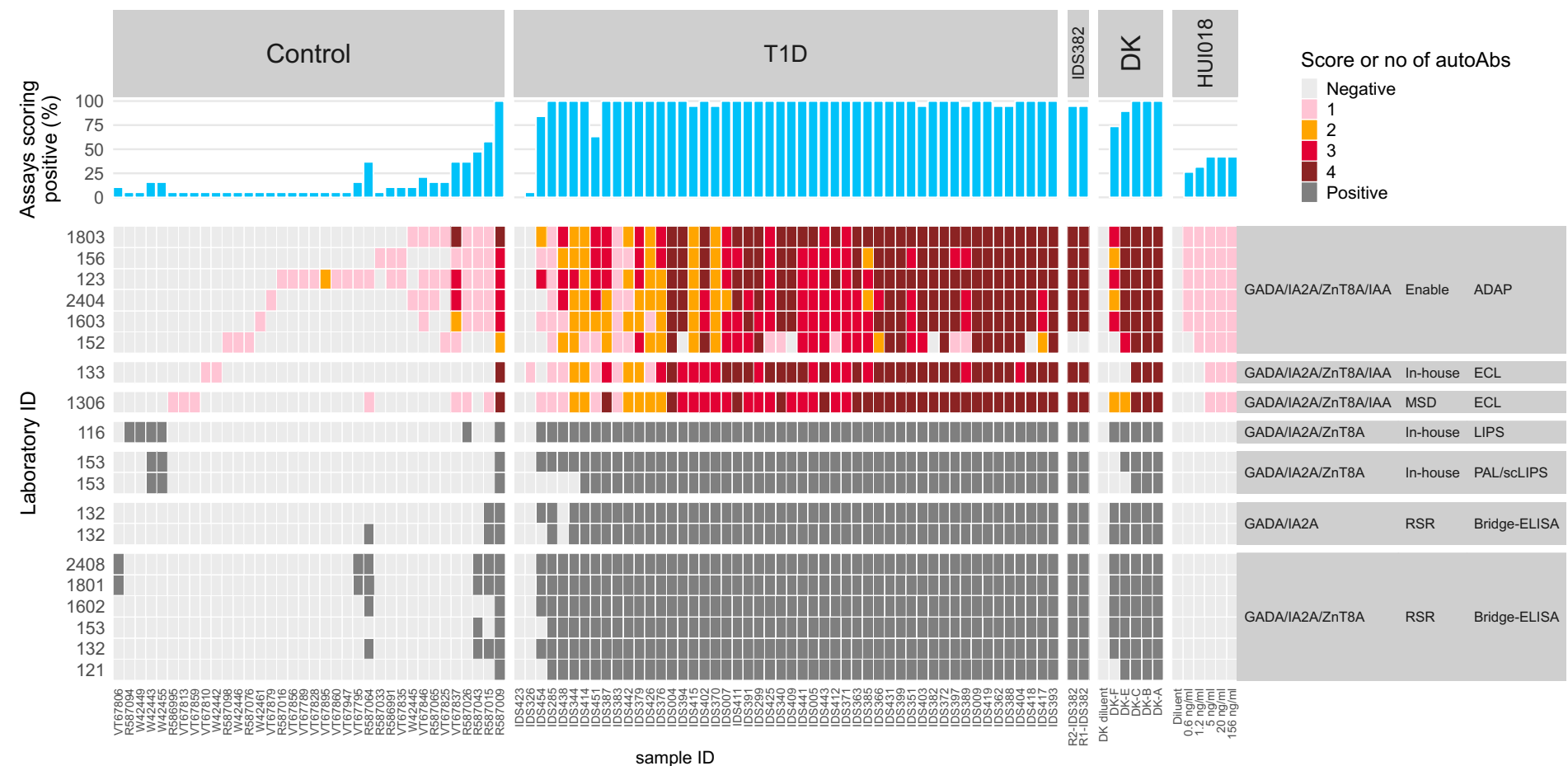
The figure contains the individual ROC curves of multiplex islet autoantibody assays (colored lines) and the median ROC curve calculated across all assays (black line). The curves plot sensitivity against specificity with a zoom on the high-specificity region (95-100%), where the partial area under the curve at 95% specificity (pAUC95) is calculated. The ROC curves of assays multiplexing the measurement of single antibodies (ADAP and ECL) were calculated using a logistic regression model based on single reactivities. The dashed diagonal line represents performance equivalent to random chance.

Supplemental Figure S3 – Multiplex assays



Supplemental Figure S3. Tilemap of fold-over-cutoff scores in multiplex assays submitted to the IASP 2024 workshop. This graph shows fold-over-cutoff values from individual autoantibodies tested using ADAP or ECL formats, and from multiplex assays not distinguishing across different reactivities (LIPS, PAL/scLIPS, bridge-ELISA). The fold-over-cutoff is calculated as the ratio of laboratory-assigned result to the laboratory-specific cutoff threshold. Samples are arranged horizontally following the same consensus order as in other tilemaps to facilitate pattern comparison and are grouped by specimen type (Controls, T1D cases, IDS382 replicates, DK standards, and HUI-018 monoclonal antibody dilutions). Control samples called negative by all assays (n=62) were removed. The vertical axis represents results from different laboratory methods, organized by analyzed autoantibodies and assay formats, and sorted by their partial AUC95. Fold-over-cutoff values <1 are shown in light gray (negative), 1-10 fold in yellow (low positive), 10-100 fold in orange (moderate positive), and >100 fold in dark red (high positive).

Supplemental Figure S4 – Multiplex assays



Supplemental Figure S4. Tilemap of positivity scores assigned by multiplex islet autoantibody assays submitted to the IASP 2024 workshop.

This graph displays the positivity scores of multiplex assays assigned by laboratories to each sample included in the IASP 2024 sample set. Control samples called negative by all assays (n=62) were removed. The upper panel shows the percentage of assays scoring positive for each sample, while the lower panel presents a detailed tilemap of individual assay results across different sample types. Samples are clustered horizontally to highlight format-specific patterns and are grouped by specimen type (controls, new-onset T1D, DK standards, IDS382 replicates, HUI-018 monoclonal antibody dilutions). The y-axis displays results from different laboratory assays, organized by assay format (ADAP, ECL, LIPS, PAL/scLIPS and bridge-ELISA), analyzed antibody combination and commercial/in-house status and sorted by their partial AUC95 values. Samples scored negative are shown with light gray tiles, while samples scored positive are indicated by dark gray tiles for assays not distinguishing across single autoantibody reactivities. For ADAP and ECL formats, the positive samples are colored by the number of detected autoantibodies (light pink for 1 autoantibody, orange for 2 autoantibodies, red for 3 autoantibodies, and dark brown for 4 autoantibodies).

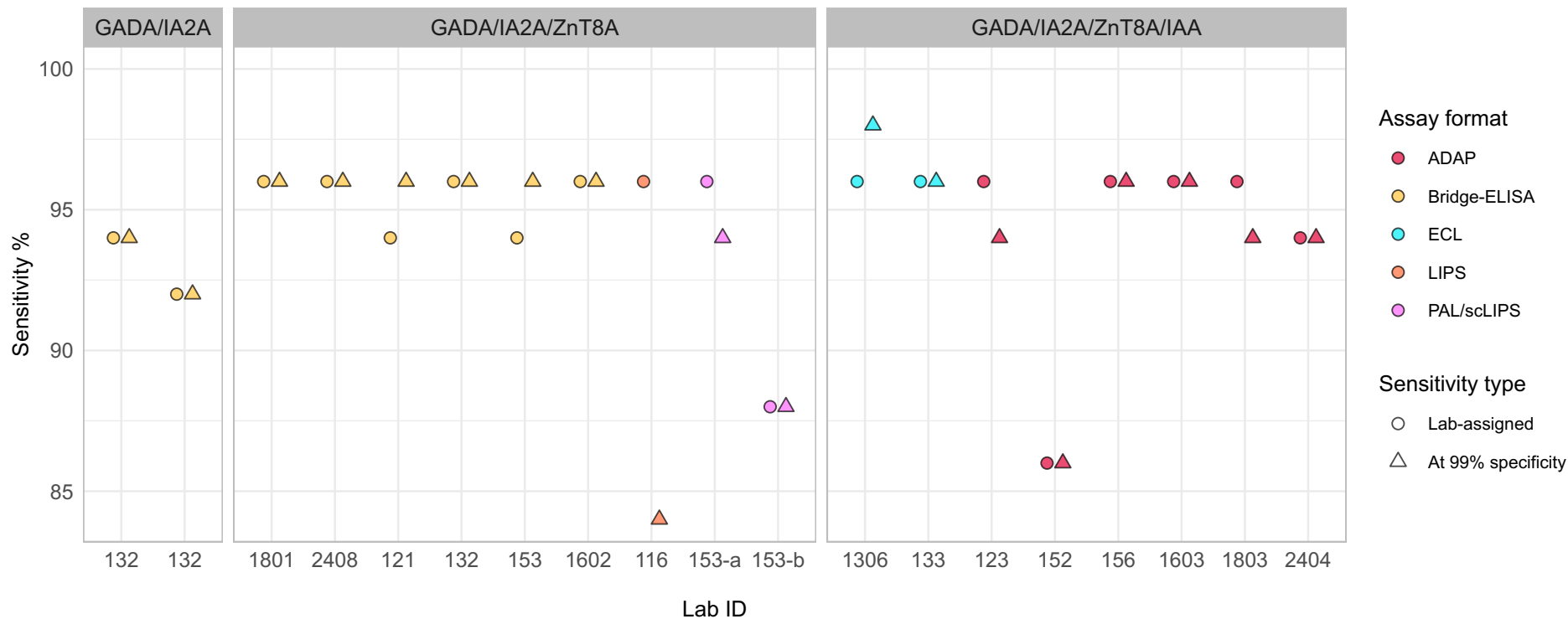
Supplemental Figure S5 – All assays



Supplemental Figure S5. Consensus scores of autoantibody positivity across different assay formats and specimen types in the IASP 2024 workshop.

The figure presents a comprehensive tilemap visualization of consensus autoantibody positivity based on lab-assigned scores. Assays with a low performance ($AUC < 0.70$) were excluded from the consensus calculation. The CLIA assay measuring IA-2A from laboratory 2406 was also excluded because of the high number of positive controls. For ADAP and ECL multiplex assays, we determined a cumulative score of each individual antibody consensus. Samples are grouped on the x-axis by specimen type (controls, new-onset T1D, DK standards, IDS382 replicates, and HUI-018 dilutions) and sorted horizontally according to a hierarchical strategy that prioritizes multiplex assay format performance (i.e. by the consensus scores within multiplex ADAP assays, followed by ECL, bridge-ELISA, LIPS, and PAL/scLIPS). Within each multiplex assay format, samples are further sorted by consensus score priority (positive in $>50\%$ assays \rightarrow positive in $\leq 50\%$ assays \rightarrow positive in one assay \rightarrow negative in all assays). Control samples with a negative consensus score across all formats and autoantibodies were excluded. Measured autoantibodies (multiplex, GADA, ZnT8A, IA2A, and IAA) are grouped on the y-axis by assay format (ADAP, ECL, bridge-ELISA, LIPS, PAL/scLIPS, RBA, and CLIA). The number of assays included in the consensus calculation are reported beside each analyte. Deep magenta tiles indicate samples positive in $>50\%$ assays, orange tiles represent samples positive in $\leq 50\%$ assays, yellow tiles represent samples positive in only one assay, and light gray tiles represent samples scored negative by all assays within each format.

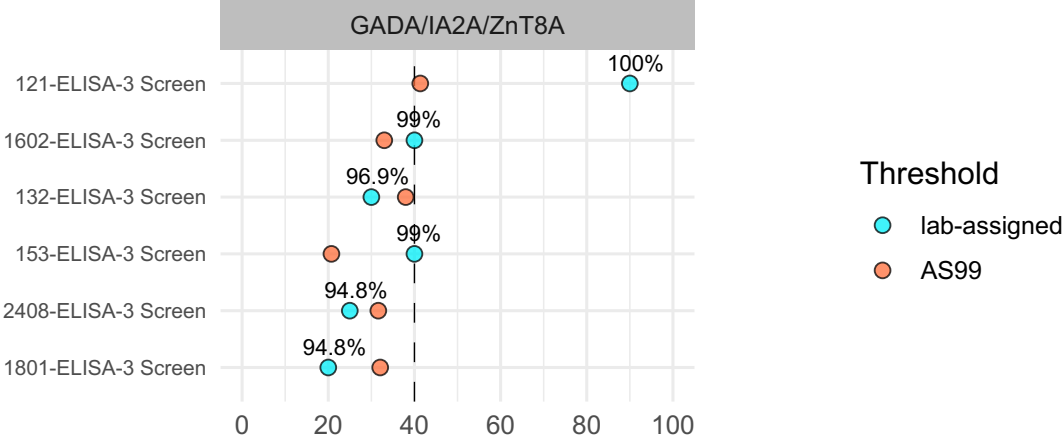
Supplemental Figure S6 – Multiplex assays



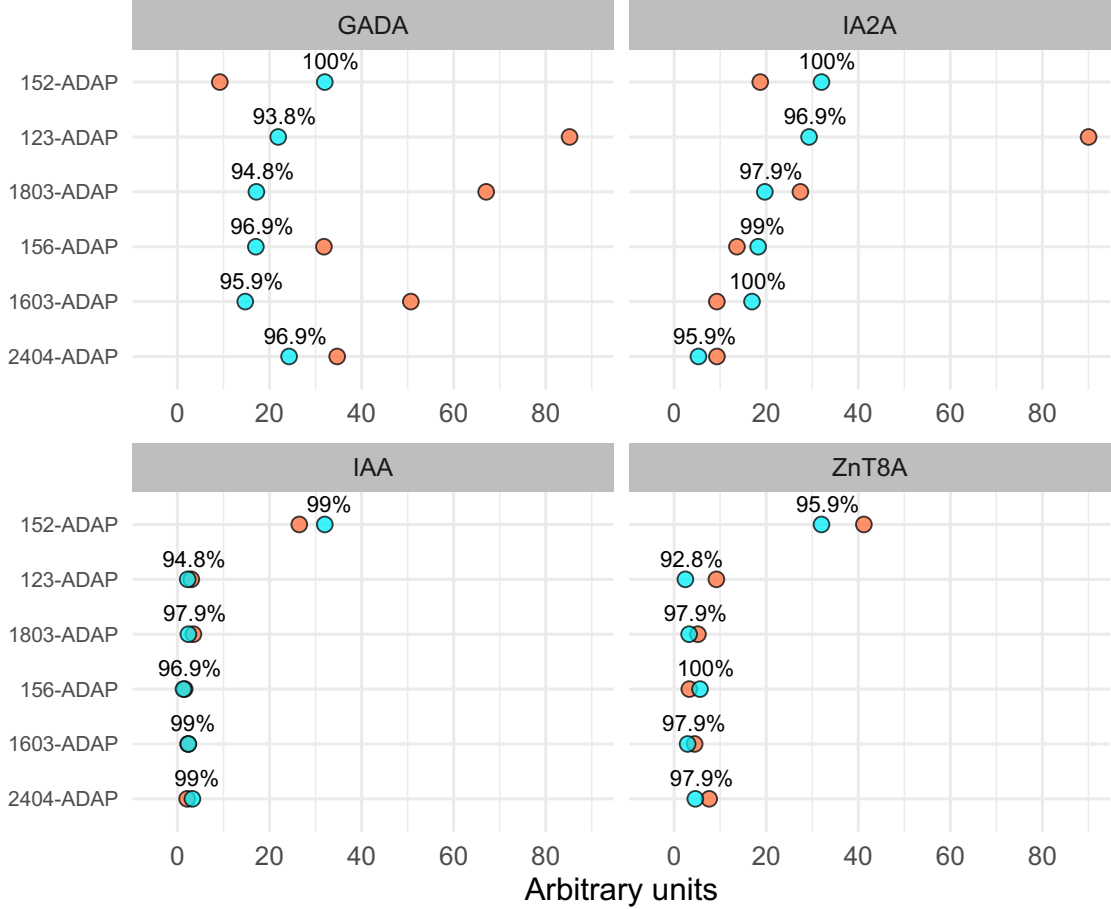
Supplemental Figure S6. Comparison between lab-assigned sensitivity and AS99 in multiplex assays submitted to the IASP 2024 workshop. Comparison of multiplex assay sensitivity values calculated using laboratory-assigned thresholds (circle markers) and sensitivity values calculated after imposing a threshold at 99% specificity (triangle markers). For ADAP and ECL assays (i.e., GADA/IA2A/ZnT8A/IAA combination) the sensitivity and AS99 were calculated by combining the positivity scores from single-antigen assays. Individual laboratory IDs are shown on the x-axis, grouped by the analyzed autoantibody combinations (subpanels: GADA/IA2A, GADA/IA2A/ZnT8A, and GADA/IA2A/ZnT8A/IAA). Each marker represents an assay, with colors indicating the corresponding assay format (red for ADAP, yellow for bridge-ELISA, cyan for ECL, orange for LIPS, and magenta for PAL/scLIPS).

Supplemental Figure S7 – Multiplex assays

A



B



Supplemental Figure S7. Comparison of lab-assigned threshold vs 99% specificity threshold for bridge-ELISA and ADAP assays submitted to IASP 2024.

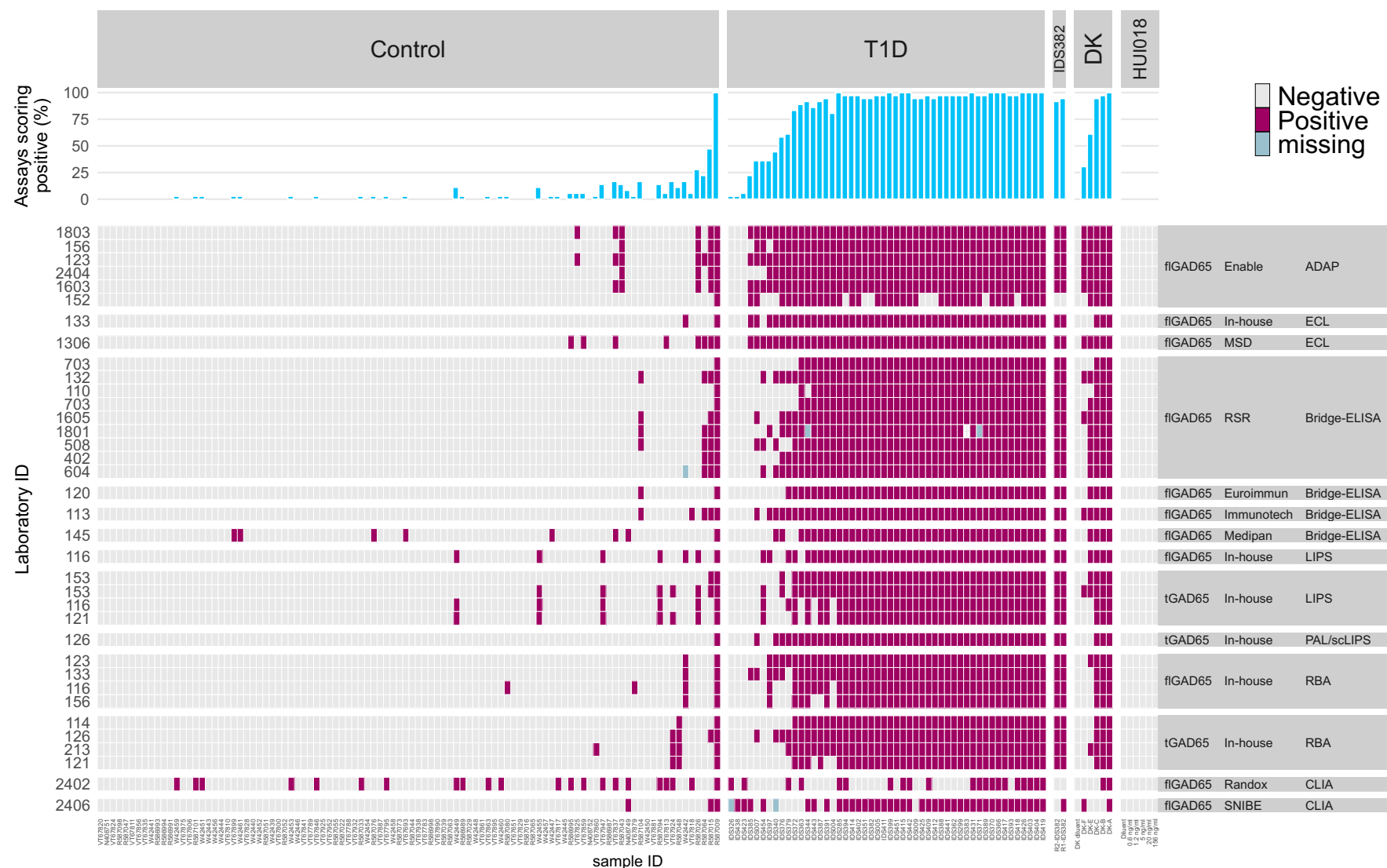
Threshold values locally assigned by laboratories (light blue dots) or calculated after imposing a 99% specificity (AS99 threshold, orange dots) are displayed for each assay (y-axis). For lab-assigned cutoffs, the corresponding specificity values are reported. Threshold values for bridge-ELISA assays measuring GADA/IA2A/ZnT8A are shown in panel A. The vertical dashed line indicates the universal cutoff value of 40 arbitrary units proposed for multiplex bridge-ELISA assays. Threshold values for individual autoantibody ADAP assays are shown in subpanels of panel B.

Supplemental Table S1 – GADA assays

Antibody	Manufacturer	Lab ID	Sensitivity (%)	Specificity (%)	AS95 (%)	AS99 (%)	AS100 (%)	ROC-AUC	pAUC95
ADAP									
fiGAD65	Enable	156	90.0	96.9	94.0	88.0	78.0	0.97	0.044
fiGAD65	Enable	1803	94.0	94.8	94.0	86.0	84.0	0.97	0.044
fiGAD65	Enable	123	94.0	93.8	94.0	82.0	80.0	0.97	0.044
fiGAD65	Enable	2404	88.0	96.9	94.0	88.0	74.0	0.97	0.043
fiGAD65	Enable	1603	94.0	95.9	94.0	82.0	74.0	0.95	0.043
fiGAD65	Enable	152	72.0	100.0	74.0	74.0	74.0	0.88	0.037
fiGAD65	Enable	Median (Range)	92.0 (72.0-94.0)	96.4 (93.8-100.0)	94.0 (74.0-94.0)	84.0 (74.0-88.0)	76.0 (74.0-84.0)	0.97 (0.88-0.97)	0.044 (0.037-0.044)
Bridge-ELISA									
fiGAD65	Euroimmun	120	82.0	99.0	94.0	82.0	80.0	0.96	0.042
fiGAD65	Immunotech	113	90.0	95.9	94.0	82.0	82.0	0.96	0.043
fiGAD65	Medipan	145	82.0	92.8	78.0	64.0	58.0	0.93	0.034
fiGAD65	RSR	703	78.0	100.0	94.0	84.0	84.0	0.95	0.043
fiGAD65	RSR	132	88.0	96.9	94.0	84.0	82.0	0.96	0.043
fiGAD65	RSR	703	78.0	100.0	94.0	82.0	82.0	0.97	0.043
fiGAD65	RSR	110	76.0	100.0	94.0	84.0	80.0	0.96	0.043
fiGAD65	RSR	1801	85.1	96.9	89.8	77.6	80.8	0.96	0.042
fiGAD65	RSR	1605	86.0	97.9	86.0	82.0	80.0	0.93	0.042
fiGAD65	RSR	508	86.0	96.9	86.0	80.0	76.0	0.93	0.041
fiGAD65	RSR	402	84.0	97.9	86.0	78.0	56.0	0.94	0.039
fiGAD65	RSR	604	88.0	97.9	92.0	58.0	12.0	0.95	0.026
fiGAD65	RSR	Median (Range)	85.1 (76.0-88.0)	97.9 (96.9-100.0)	92.0 (86.0-94.0)	82.0 (58.0-84.0)	80.0 (12.0-84.0)	0.95 (0.93-0.97)	0.042 (0.026-0.043)
CLIA									
fiGAD65	Randox	2402	42.0	78.4	20.0	6.0	4.0	0.70	0.006
fiGAD65	SNIBE	2406	81.2	97.9	90.0	62.0	22.9	0.98	0.037
ECL									
fiGAD65	In-house	133	92.0	99.0	96.0	92.0	74.0	0.97	0.045
fiGAD65	MSD	1306	94.0	92.8	94.0	94.0	78.0	0.96	0.045
LIPS									
fiGAD65	In-house	116	84.0	93.8	70.0	46.0	46.0	0.93	0.027
tGAD65	In-house	153	84.0	93.8	84.0	66.0	44.0	0.93	0.034
tGAD65	In-house	116	78.0	94.8	82.0	62.0	58.0	0.93	0.032
tGAD65	In-house	121	76.0	93.8	70.0	54.0	38.0	0.93	0.029
tGAD65	In-house	153	82.0	99.0	92.0	88.0	82.0	0.95	0.044
tGAD65	In-house	Median (Range)	80.0 (76.0-84.0)	94.3 (93.8-99.0)	83.0 (70.0-92.0)	64.0 (54.0-88.0)	51.0 (38.0-82.0)	0.93 (0.93-0.95)	0.033 (0.029-0.044)
PAL/scLIPS									
tGAD65	In-house	126	88.0	100.0	90.0	90.0	90.0	0.95	0.045
RBA									
fiGAD65	In-house	123	88.0	99.0	92.0	88.0	56.0	0.98	0.042
fiGAD65	In-house	133	90.0	99.0	94.0	90.0	42.0	0.96	0.041
fiGAD65	In-house	156	76.0	99.0	82.0	74.0	32.0	0.95	0.035
fiGAD65	In-house	116	80.0	96.9	86.0	70.0	42.0	0.94	0.035
fiGAD65	In-house	Median (Range)	84.0 (76.0-90.0)	99.0 (96.9-99.0)	89.0 (82.0-94.0)	81.0 (70.0-90.0)	42.0 (32.0-56.0)	0.96 (0.94-0.98)	0.038 (0.035-0.042)
tGAD65	In-house	114	80.0	99.0	84.0	80.0	66.0	0.96	0.039
tGAD65	In-house	213	82.0	96.9	84.0	70.0	66.0	0.96	0.038
tGAD65	In-house	121	74.0	97.9	82.0	72.0	64.0	0.91	0.037
tGAD65	In-house	126	88.0	96.9	88.0	72.0	64.0	0.96	0.039
tGAD65	In-house	Median (Range)	81.0 (74.0-88.0)	97.4 (96.9-99.0)	84.0 (82.0-88.0)	72.0 (70.0-80.0)	65.0 (64.0-66.0)	0.96 (0.91-0.96)	0.038 (0.037-0.039)

Supplemental Table S1. Performance of GADA assays in the IASP 2024 workshop.
Submitted GADA assays are grouped by format and GAD65 antigen used in the test (fiGAD65 and tGAD65 indicating the full-length or N-terminally truncated GAD65, respectively). A final number of 50 T1D and 97 control samples was used for all calculations (control sample R587009, which tested positive across all assays, was excluded from specificity and ROC calculations). The corresponding sensitivity, specificity, AS95, AS99, and AS100 are shown, with blue bars indicating the value in a range between 0% and 100%. The ROC-AUC and pAUC95 are reported as bars indicating the values in the range of 0.70-1 and 0-0.05, respectively. The median, IQR and range values of each variable are indicated below each format.

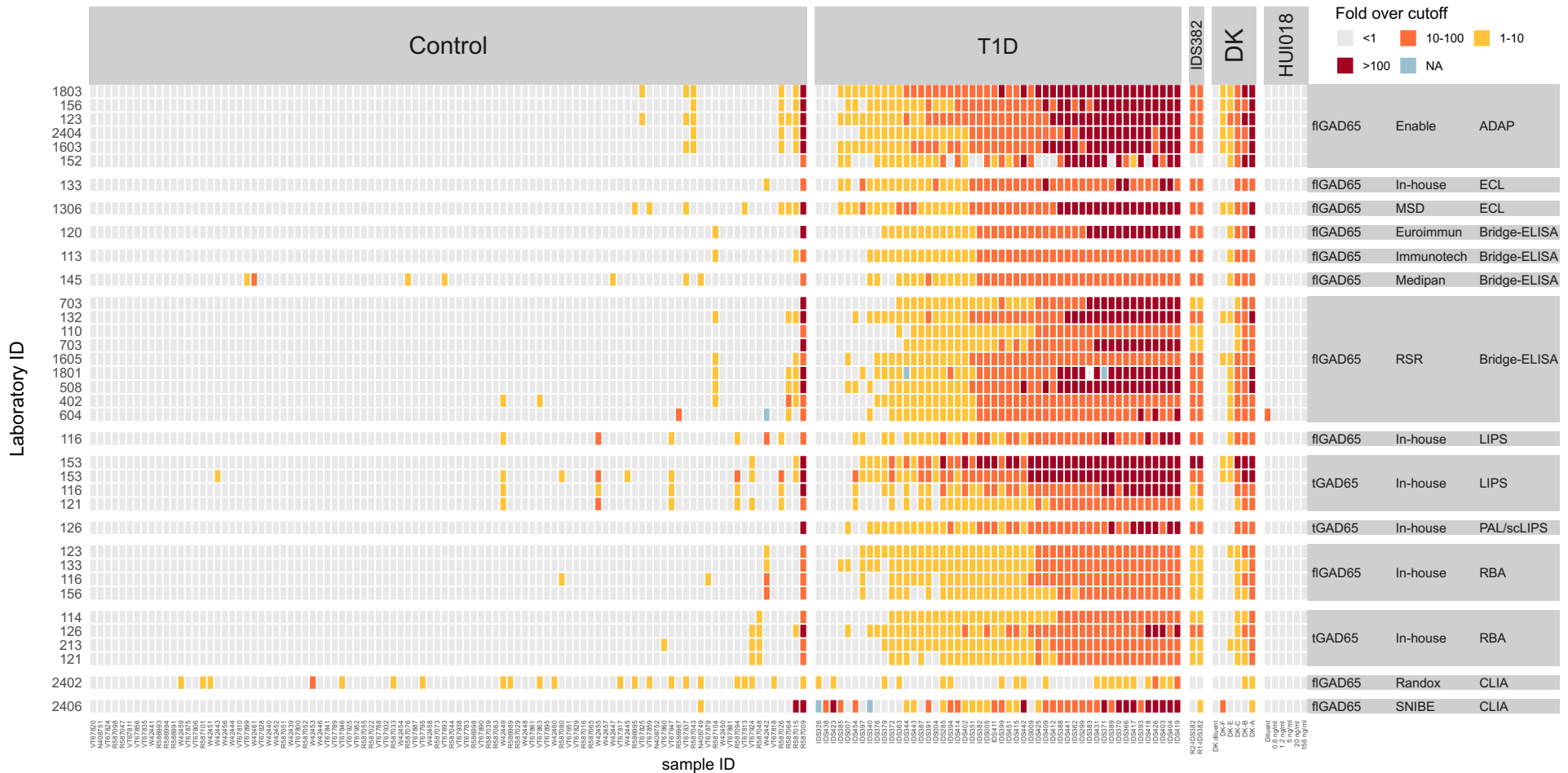
Supplemental Figure S8 – GADA assays



Supplemental Figure S8. Tilemap of lab assigned scores to different sample types in GADA assays submitted to the IASP 2024 workshop.

This graph displays the scores of GADA assays assigned by laboratories to each sample. The upper panel shows the percentage of assays scoring positive single samples, while the lower panel presents a detailed tilemap of individual assay results across different sample types. Samples are arranged horizontally according to the median fold-change calculated for each sample and grouped by specimen type (new-onset T1D, DK standards, IDS382 replicates, HUI-018 monoclonal antibody dilutions, and controls). The y-axis displays results from different laboratory assays, organized by assay formats, commercial/in-house status, and the full-length/truncated GAD65 antigen used. Positive scores are shown in deep magenta, negative scores in light gray, and missing scores in light blue.

Supplemental Figure S9 – GADA assays



Supplemental Figure S9. Tilemap of fold-over-cutoff scores in GADA assays submitted to the IASP 2024 workshop. This graph shows GADA fold-over-cutoff values, calculated as the ratio of laboratory-assigned result to the laboratory-specific cutoff threshold. Samples are arranged horizontally according to the median fold-change of each sample and are grouped by specimen type (Controls, T1D cases, IDS382 replicates, DK standards, and HUI-018 monoclonal antibody dilutions). The vertical axis represents results from different laboratory methods, organized by assay formats, commercial/in-house status, and the full-length/truncated GAD65 antigen used. Fold-over-cutoff values <1 are shown in light gray (negative), 1-10 fold in yellow (low positive), 10-100 fold in orange (moderate positive), and >100 fold in dark red (high positive).

Supplemental Table S2 – IA-2A assays

Antibody	Manufacturer	Lab ID	Sensitivity (%)	Specificity (%)	AS95 (%)	AS99 (%)	AS100 (%)	ROC-AUC	pAUC95
ADAP									
IA2A	Enable	1603	72.0 <div><div></div></div>	100.0 <div><div></div></div>	80.0 <div><div></div></div>	74.0 <div><div></div></div>	74.0 <div><div></div></div>	0.93 <div><div></div></div>	0.039 <div><div></div></div>
IA2A	Enable	156	72.0 <div><div></div></div>	99.0 <div><div></div></div>	82.0 <div><div></div></div>	74.0 <div><div></div></div>	72.0 <div><div></div></div>	0.93 <div><div></div></div>	0.038 <div><div></div></div>
IA2A	Enable	2404	76.0 <div><div></div></div>	95.9 <div><div></div></div>	80.0 <div><div></div></div>	72.0 <div><div></div></div>	68.0 <div><div></div></div>	0.93 <div><div></div></div>	0.037 <div><div></div></div>
IA2A	Enable	1803	76.0 <div><div></div></div>	97.9 <div><div></div></div>	80.0 <div><div></div></div>	74.0 <div><div></div></div>	68.0 <div><div></div></div>	0.92 <div><div></div></div>	0.037 <div><div></div></div>
IA2A	Enable	123	76.0 <div><div></div></div>	96.9 <div><div></div></div>	78.0 <div><div></div></div>	68.0 <div><div></div></div>	64.0 <div><div></div></div>	0.93 <div><div></div></div>	0.036 <div><div></div></div>
IA2A	Enable	152	56.0 <div><div></div></div>	100.0 <div><div></div></div>	72.0 <div><div></div></div>	56.0 <div><div></div></div>	56.0 <div><div></div></div>	0.93 <div><div></div></div>	0.030 <div><div></div></div>
IA2A		Median (Range)	74.0 (56.0-76.0)	98.4 (95.9-100.0)	80.0 (72.0-82.0)	73.0 (56.0-74.0)	68.0 (56.0-74.0)	0.93 (0.92-0.93)	0.037 (0.030-0.039)
Bridge-ELISA									
IA2A	Euroimmun	120	74.0 <div><div></div></div>	99.0 <div><div></div></div>	74.0 <div><div></div></div>	74.0 <div><div></div></div>	74.0 <div><div></div></div>	0.92 <div><div></div></div>	0.037 <div><div></div></div>
IA2A	Immunotech	113	74.0 <div><div></div></div>	99.0 <div><div></div></div>	74.0 <div><div></div></div>	74.0 <div><div></div></div>	74.0 <div><div></div></div>	0.87 <div><div></div></div>	0.037 <div><div></div></div>
IA2A	Medipan	145	70.0 <div><div></div></div>	90.7 <div><div></div></div>	66.0 <div><div></div></div>	58.0 <div><div></div></div>	52.0 <div><div></div></div>	0.87 <div><div></div></div>	0.031 <div><div></div></div>
IA2A	Medipan	604	68.0 <div><div></div></div>	92.8 <div><div></div></div>	24.0 <div><div></div></div>	18.0 <div><div></div></div>	6.0 <div><div></div></div>	0.78 <div><div></div></div>	0.009 <div><div></div></div>
IA2A	RSR	508	76.0 <div><div></div></div>	94.8 <div><div></div></div>	76.0 <div><div></div></div>	76.0 <div><div></div></div>	72.0 <div><div></div></div>	0.87 <div><div></div></div>	0.038 <div><div></div></div>
IA2A	RSR	1605	74.0 <div><div></div></div>	97.9 <div><div></div></div>	74.0 <div><div></div></div>	74.0 <div><div></div></div>	74.0 <div><div></div></div>	0.87 <div><div></div></div>	0.037 <div><div></div></div>
IA2A	RSR	402	75.0 <div><div></div></div>	99.0 <div><div></div></div>	72.0 <div><div></div></div>	72.0 <div><div></div></div>	70.8 <div><div></div></div>	0.89 <div><div></div></div>	0.037 <div><div></div></div>
IA2A	RSR	1801	74.0 <div><div></div></div>	99.0 <div><div></div></div>	74.0 <div><div></div></div>	74.0 <div><div></div></div>	74.0 <div><div></div></div>	0.86 <div><div></div></div>	0.037 <div><div></div></div>
IA2A	RSR	1203	74.0 <div><div></div></div>	99.0 <div><div></div></div>	74.0 <div><div></div></div>	74.0 <div><div></div></div>	72.0 <div><div></div></div>	0.90 <div><div></div></div>	0.037 <div><div></div></div>
IA2A	RSR	132	74.0 <div><div></div></div>	99.0 <div><div></div></div>	74.0 <div><div></div></div>	74.0 <div><div></div></div>	74.0 <div><div></div></div>	0.87 <div><div></div></div>	0.037 <div><div></div></div>
IA2A	RSR	110	66.0 <div><div></div></div>	99.0 <div><div></div></div>	74.0 <div><div></div></div>	72.0 <div><div></div></div>	66.0 <div><div></div></div>	0.88 <div><div></div></div>	0.035 <div><div></div></div>
IA2A	RSR	703	72.0 <div><div></div></div>	100.0 <div><div></div></div>	74.0 <div><div></div></div>	72.0 <div><div></div></div>	73.5 <div><div></div></div>	0.86 <div><div></div></div>	0.036 <div><div></div></div>
IA2A	RSR	703	66.0 <div><div></div></div>	99.0 <div><div></div></div>	66.0 <div><div></div></div>	66.0 <div><div></div></div>	71.7 <div><div></div></div>	0.78 <div><div></div></div>	0.019 <div><div></div></div>
IA2A	RSR	132	74.0 <div><div></div></div>	99.0 <div><div></div></div>	74.0 <div><div></div></div>	74.0 <div><div></div></div>	72.0 <div><div></div></div>	0.88 <div><div></div></div>	0.037 <div><div></div></div>
IA2A		Median (Range)	74.0 (66.0-76.0)	99.0 (90.7-100.0)	74.0 (24.0-76.0)	73.0 (18.0-76.0)	72.0 (6.0-74.0)	0.87 (0.78-0.90)	0.037 (0.009-0.038)
CLIA									
IA2A	Randox	2402	68.0 <div><div></div></div>	95.9 <div><div></div></div>	68.0 <div><div></div></div>	58.0 <div><div></div></div>	54.0 <div><div></div></div>	0.80 <div><div></div></div>	0.030 <div><div></div></div>
IA2A	SNIBE	2406	89.8 <div><div></div></div>	93.8 <div><div></div></div>	92.0 <div><div></div></div>	88.0 <div><div></div></div>	85.7 <div><div></div></div>	0.97 <div><div></div></div>	0.045 <div><div></div></div>
ECL									
IA2A	In-house	133	76.0 <div><div></div></div>	100.0 <div><div></div></div>	82.0 <div><div></div></div>	78.0 <div><div></div></div>	76.0 <div><div></div></div>	0.92 <div><div></div></div>	0.039 <div><div></div></div>
IA2A	MSD	1306	78.0 <div><div></div></div>	100.0 <div><div></div></div>	82.0 <div><div></div></div>	80.0 <div><div></div></div>	80.0 <div><div></div></div>	0.91 <div><div></div></div>	0.040 <div><div></div></div>
LIPS									
IA2A	In-house	116	76.0 <div><div></div></div>	97.9 <div><div></div></div>	76.0 <div><div></div></div>	74.0 <div><div></div></div>	68.0 <div><div></div></div>	0.89 <div><div></div></div>	0.037 <div><div></div></div>
IA2A	In-house	153	74.0 <div><div></div></div>	97.9 <div><div></div></div>	76.0 <div><div></div></div>	74.0 <div><div></div></div>	68.0 <div><div></div></div>	0.89 <div><div></div></div>	0.037 <div><div></div></div>
IA2A		Median (Range)	75.0 (74.0-76.0)	97.9 (97.9-97.9)	76.0 (76.0-76.0)	74.0 (74.0-74.0)	68.0 (68.0-68.0)	0.89 (0.89-0.89)	0.037 (0.037-0.037)
PAL/scLIPS									
IA2A	In-house	126	76.0 <div><div></div></div>	100.0 <div><div></div></div>	78.0 <div><div></div></div>	76.0 <div><div></div></div>	76.0 <div><div></div></div>	0.90 <div><div></div></div>	0.039 <div><div></div></div>
RBA									
IA2A	In-house	213	76.0 <div><div></div></div>	99.0 <div><div></div></div>	92.0 <div><div></div></div>	84.0 <div><div></div></div>	74.0 <div><div></div></div>	0.95 <div><div></div></div>	0.043 <div><div></div></div>
IA2A	In-house	123	76.0 <div><div></div></div>	100.0 <div><div></div></div>	84.0 <div><div></div></div>	78.0 <div><div></div></div>	76.0 <div><div></div></div>	0.93 <div><div></div></div>	0.040 <div><div></div></div>
IA2A	In-house	156	76.0 <div><div></div></div>	100.0 <div><div></div></div>	80.0 <div><div></div></div>	76.0 <div><div></div></div>	76.0 <div><div></div></div>	0.89 <div><div></div></div>	0.039 <div><div></div></div>
IA2A	In-house	133	76.0 <div><div></div></div>	100.0 <div><div></div></div>	78.0 <div><div></div></div>	76.0 <div><div></div></div>	76.0 <div><div></div></div>	0.89 <div><div></div></div>	0.039 <div><div></div></div>
IA2A	In-house	121	76.0 <div><div></div></div>	100.0 <div><div></div></div>	76.0 <div><div></div></div>	76.0 <div><div></div></div>	76.0 <div><div></div></div>	0.88 <div><div></div></div>	0.038 <div><div></div></div>
IA2A	In-house	114	74.0 <div><div></div></div>	100.0 <div><div></div></div>	78.0 <div><div></div></div>	78.0 <div><div></div></div>	78.0 <div><div></div></div>	0.89 <div><div></div></div>	0.039 <div><div></div></div>
IA2A	In-house	116	76.0 <div><div></div></div>	100.0 <div><div></div></div>	76.0 <div><div></div></div>	76.0 <div><div></div></div>	76.0 <div><div></div></div>	0.88 <div><div></div></div>	0.038 <div><div></div></div>
IA2A		Median (Range)	76.0 (74.0-76.0)	100.0 (99.0-100.0)	78.0 (76.0-92.0)	76.0 (76.0-84.0)	76.0 (74.0-78.0)	0.89 (0.88-0.95)	0.039 (0.038-0.043)

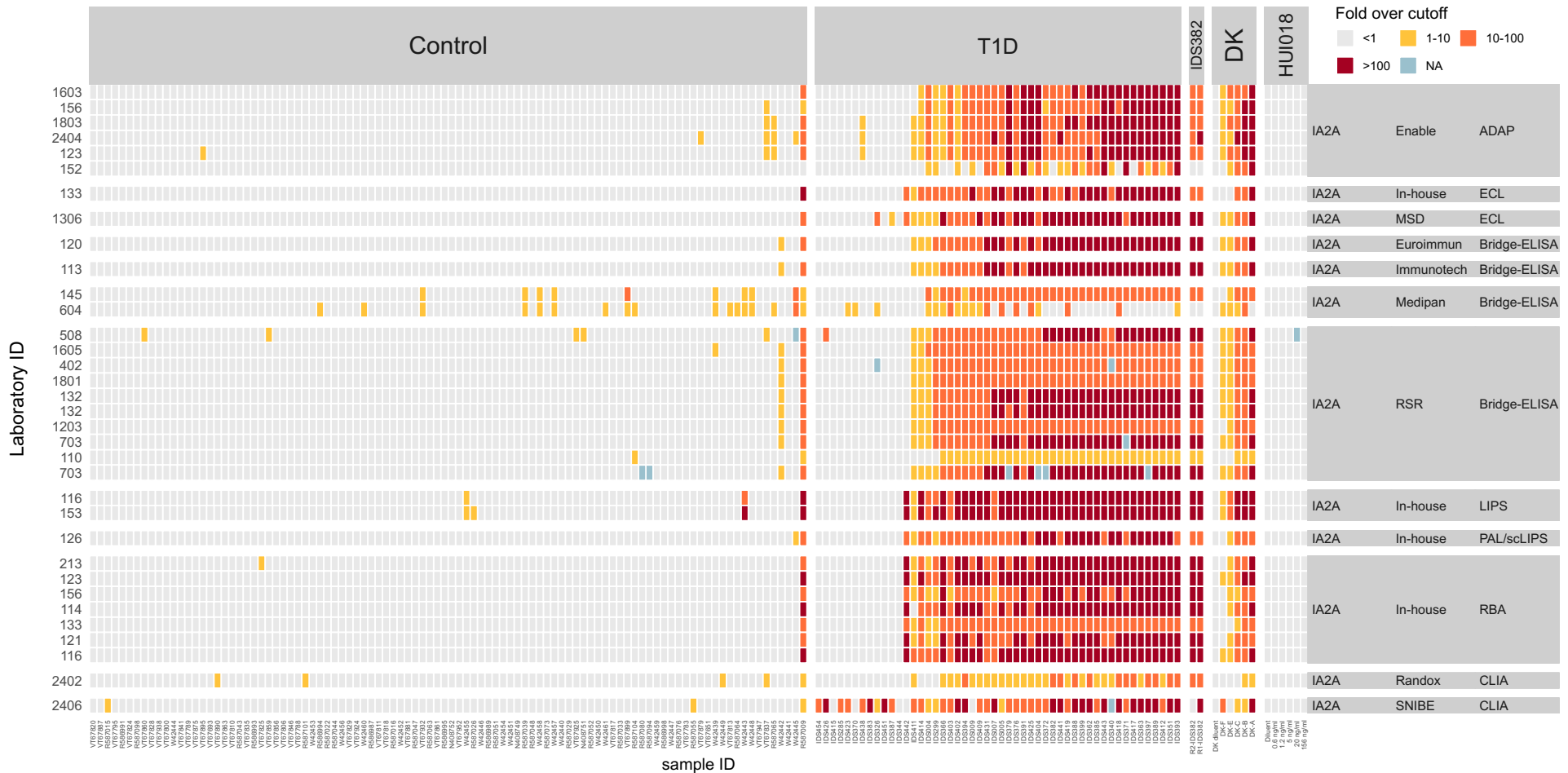
Supplemental Table S2. Performance of IA-2A assays in the IASP 2024 workshop.
Submitted IA-2A assays are grouped by format and their commercial/in-house status is reported. A final number of 50 T1D and 97 control samples was used for all calculations (control sample R587009, which tested positive across all assays, was excluded from specificity and ROC calculations). The corresponding sensitivity, specificity, AS95, AS99, and AS100 are shown, with blue bars indicating the value in a range between 0% and 100%. The ROC-AUC and pAUC95 are reported as bars indicating the values in the range of 0.75-1 and 0-0.05, respectively. The median, IQR and range values of each variable are indicated below each format.

Supplemental Figure S10 – IA-2A assays



Supplemental Figure S10. Tilemap of lab assigned scores to different sample types in IA-2A assays submitted to the IASP 2024 workshop. This graph displays the scores of IA-2A assays assigned by laboratories to each sample. The upper panel shows the percentage of assays scoring positive single samples, while the lower panel presents a detailed tilemap of individual assay results across different sample types. Samples are arranged horizontally according to the median fold-change calculated for each sample and grouped by specimen type (new-onset T1D, DK standards, IDS382 replicates, HUI-018 monoclonal antibody dilutions, and controls). The y-axis displays results from different laboratory assays, organized by assay formats and commercial/in-house status. Positive scores are shown in deep magenta, negative scores in light gray, and missing scores in lightblue.

Supplemental Figure S11 – IA-2A assays



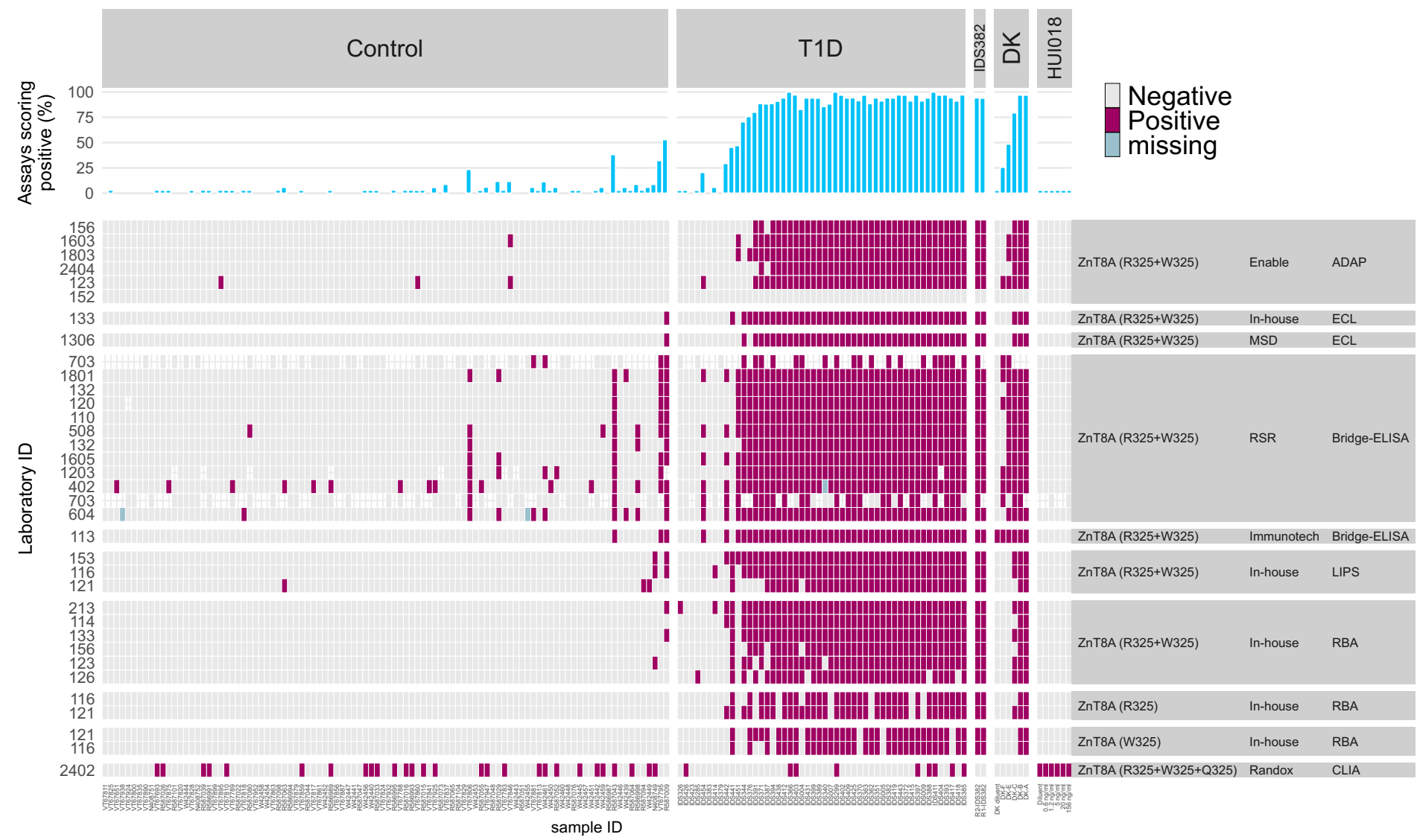
Supplemental Figure S11. Tilemap of fold-over-cutoff scores in IA-2A assays submitted to the IASP 2024 workshop. This graph shows IA-2A fold-over-cutoff values, calculated as the ratio of laboratory-assigned result to the laboratory-specific cutoff threshold. Samples are arranged horizontally according to the median fold-change calculated for each sample and are grouped by specimen type (Controls, T1D cases, IDS382 replicates, DK standards, and HUI-018 monoclonal antibody dilutions). The vertical axis represents results from different laboratory methods, organized by assay formats and commercial/in-house status, and sorted by their pAUC95. Fold-over-cutoff values <1 are shown in light gray (negative), 1-10 fold in yellow (low positive), 10-100 fold in orange (moderate positive), and >100 fold in dark red (high positive).

Supplemental Table S3 – ZnT8A assays

Antibody	Manufacturer	Lab ID	Sensitivity (%)	Specificity (%)	AS95 (%)	AS99 (%)	AS100 (%)	ROC-AUC	pAUC95
ADAP									
ZnT8A (R325+W325)	Enable	156	78.0 <div><div></div></div>	100.0 <div><div></div></div>	84.0 <div><div></div></div>	80.0 <div><div></div></div>	80.0 <div><div></div></div>	0.94 <div><div></div></div>	0.041 <div><div></div></div>
ZnT8A (R325+W325)	Enable	1603	80.0 <div><div></div></div>	97.9 <div><div></div></div>	86.0 <div><div></div></div>	78.0 <div><div></div></div>	76.0 <div><div></div></div>	0.93 <div><div></div></div>	0.041 <div><div></div></div>
ZnT8A (R325+W325)	Enable	1803	80.0 <div><div></div></div>	97.9 <div><div></div></div>	84.0 <div><div></div></div>	78.0 <div><div></div></div>	78.0 <div><div></div></div>	0.95 <div><div></div></div>	0.040 <div><div></div></div>
ZnT8A (R325+W325)	Enable	2404	76.0 <div><div></div></div>	97.9 <div><div></div></div>	82.0 <div><div></div></div>	76.0 <div><div></div></div>	76.0 <div><div></div></div>	0.95 <div><div></div></div>	0.040 <div><div></div></div>
ZnT8A (R325+W325)	Enable	123	80.0 <div><div></div></div>	92.8 <div><div></div></div>	76.0 <div><div></div></div>	72.0 <div><div></div></div>	72.0 <div><div></div></div>	0.90 <div><div></div></div>	0.037 <div><div></div></div>
ZnT8A (R325+W325)	Enable	152	52.0 <div><div></div></div>	95.9 <div><div></div></div>	56.0 <div><div></div></div>	50.0 <div><div></div></div>	42.0 <div><div></div></div>	0.86 <div><div></div></div>	0.025 <div><div></div></div>
ZnT8A (R325+W325)	Enable	Median (Range)	79.0 (52.0-80.0)	97.9 (92.8-100.0)	83.0 (56.0-86.0)	77.0 (50.0-80.0)	76.0 (42.0-80.0)	0.94 (0.86-0.95)	0.040 (0.025-0.041)
Bridge-ELISA									
ZnT8A (R325+W325)	RSR	703	86.4 <div><div></div></div>	92.9 <div><div></div></div>	86.4 <div><div></div></div>	86.4 <div><div></div></div>	86.4 <div><div></div></div>	0.93 <div><div></div></div>	0.043 <div><div></div></div>
ZnT8A (R325+W325)	RSR	1801	84.0 <div><div></div></div>	94.8 <div><div></div></div>	84.0 <div><div></div></div>	80.0 <div><div></div></div>	80.0 <div><div></div></div>	0.91 <div><div></div></div>	0.041 <div><div></div></div>
ZnT8A (R325+W325)	RSR	120	80.0 <div><div></div></div>	97.9 <div><div></div></div>	84.0 <div><div></div></div>	78.0 <div><div></div></div>	76.0 <div><div></div></div>	0.92 <div><div></div></div>	0.041 <div><div></div></div>
ZnT8A (R325+W325)	Immunotech	113	84.0 <div><div></div></div>	97.9 <div><div></div></div>	84.0 <div><div></div></div>	78.0 <div><div></div></div>	74.0 <div><div></div></div>	0.92 <div><div></div></div>	0.040 <div><div></div></div>
ZnT8A (R325+W325)	RSR	110	80.0 <div><div></div></div>	97.9 <div><div></div></div>	84.0 <div><div></div></div>	78.0 <div><div></div></div>	78.0 <div><div></div></div>	0.91 <div><div></div></div>	0.040 <div><div></div></div>
ZnT8A (R325+W325)	RSR	132	78.0 <div><div></div></div>	96.9 <div><div></div></div>	82.0 <div><div></div></div>	78.0 <div><div></div></div>	78.0 <div><div></div></div>	0.94 <div><div></div></div>	0.040 <div><div></div></div>
ZnT8A (R325+W325)	RSR	1605	84.0 <div><div></div></div>	95.9 <div><div></div></div>	84.0 <div><div></div></div>	80.0 <div><div></div></div>	70.0 <div><div></div></div>	0.91 <div><div></div></div>	0.040 <div><div></div></div>
ZnT8A (R325+W325)	RSR	508	84.0 <div><div></div></div>	93.8 <div><div></div></div>	80.0 <div><div></div></div>	80.0 <div><div></div></div>	78.0 <div><div></div></div>	0.91 <div><div></div></div>	0.040 <div><div></div></div>
ZnT8A (R325+W325)	RSR	1203	79.6 <div><div></div></div>	93.3 <div><div></div></div>	79.6 <div><div></div></div>	75.5 <div><div></div></div>	71.4 <div><div></div></div>	0.92 <div><div></div></div>	0.039 <div><div></div></div>
ZnT8A (R325+W325)	RSR	402	79.6 <div><div></div></div>	92.8 <div><div></div></div>	76.0 <div><div></div></div>	76.0 <div><div></div></div>	77.6 <div><div></div></div>	0.90 <div><div></div></div>	0.039 <div><div></div></div>
ZnT8A (R325+W325)	RSR	604	85.7 <div><div></div></div>	87.1 <div><div></div></div>	80.0 <div><div></div></div>	78.0 <div><div></div></div>	78.0 <div><div></div></div>	0.92 <div><div></div></div>	0.027 <div><div></div></div>
ZnT8A (R325+W325)	RSR	703	63.9 <div><div></div></div>	95.9 <div><div></div></div>	63.9 <div><div></div></div>	55.6 <div><div></div></div>	52.8 <div><div></div></div>	0.80 <div><div></div></div>	0.028 <div><div></div></div>
ZnT8A (R325+W325)	RSR	132	80.0 <div><div></div></div>	97.9 <div><div></div></div>	84.0 <div><div></div></div>	78.0 <div><div></div></div>	78.0 <div><div></div></div>	0.95 <div><div></div></div>	0.041 <div><div></div></div>
ZnT8A (R325+W325)	RSR	Median (Range)	80.0 (63.9-86.4)	95.3 (87.1-97.9)	83.0 (63.9-86.4)	78.0 (55.6-86.4)	78.0 (52.8-86.4)	0.92 (0.80-0.95)	0.040 (0.027-0.043)
ECL									
ZnT8A (R325+W325)	In-house	133	80.0 <div><div></div></div>	100.0 <div><div></div></div>	86.0 <div><div></div></div>	82.0 <div><div></div></div>	80.0 <div><div></div></div>	0.93 <div><div></div></div>	0.042 <div><div></div></div>
ZnT8A (R325+W325)	MSD	1306	76.0 <div><div></div></div>	100.0 <div><div></div></div>	76.0 <div><div></div></div>	76.0 <div><div></div></div>	76.0 <div><div></div></div>	0.85 <div><div></div></div>	0.038 <div><div></div></div>
LIPS									
ZnT8A (R325+W325)	In-house	153	80.0 <div><div></div></div>	100.0 <div><div></div></div>	92.0 <div><div></div></div>	86.0 <div><div></div></div>	82.0 <div><div></div></div>	0.95 <div><div></div></div>	0.043 <div><div></div></div>
ZnT8A (R325+W325)	In-house	116	82.0 <div><div></div></div>	99.0 <div><div></div></div>	88.0 <div><div></div></div>	88.0 <div><div></div></div>	76.0 <div><div></div></div>	0.93 <div><div></div></div>	0.043 <div><div></div></div>
ZnT8A (R325+W325)	In-house	121	70.0 <div><div></div></div>	96.9 <div><div></div></div>	72.0 <div><div></div></div>	58.0 <div><div></div></div>	58.0 <div><div></div></div>	0.80 <div><div></div></div>	0.032 <div><div></div></div>
ZnT8A (R325+W325)	In-house	Median (Range)	80.0 (70.0-82.0)	99.0 (96.9-100.0)	88.0 (72.0-92.0)	86.0 (58.0-88.0)	76.0 (58.0-82.0)	0.93 (0.80-0.95)	0.043 (0.032-0.043)
RBA									
ZnT8A (R325+W325)	In-house	133	80.0 <div><div></div></div>	100.0 <div><div></div></div>	90.0 <div><div></div></div>	82.0 <div><div></div></div>	82.0 <div><div></div></div>	0.94 <div><div></div></div>	0.042 <div><div></div></div>
ZnT8A (R325+W325)	In-house	123	74.0 <div><div></div></div>	99.0 <div><div></div></div>	78.0 <div><div></div></div>	74.0 <div><div></div></div>	68.0 <div><div></div></div>	0.90 <div><div></div></div>	0.037 <div><div></div></div>
ZnT8A (R325+W325)	In-house	213	86.0 <div><div></div></div>	100.0 <div><div></div></div>	94.0 <div><div></div></div>	86.0 <div><div></div></div>	86.0 <div><div></div></div>	0.96 <div><div></div></div>	0.044 <div><div></div></div>
ZnT8A (R325+W325)	In-house	114	82.0 <div><div></div></div>	100.0 <div><div></div></div>	86.0 <div><div></div></div>	84.0 <div><div></div></div>	84.0 <div><div></div></div>	0.95 <div><div></div></div>	0.043 <div><div></div></div>
ZnT8A (R325+W325)	In-house	126	72.0 <div><div></div></div>	100.0 <div><div></div></div>	80.0 <div><div></div></div>	72.0 <div><div></div></div>	72.0 <div><div></div></div>	0.87 <div><div></div></div>	0.037 <div><div></div></div>
ZnT8A (R325+W325)	In-house	156	74.0 <div><div></div></div>	100.0 <div><div></div></div>	88.0 <div><div></div></div>	82.0 <div><div></div></div>	82.0 <div><div></div></div>	0.95 <div><div></div></div>	0.042 <div><div></div></div>
ZnT8A (R325+W325)	In-house	Median (Range)	77.0 (72.0-86.0)	100.0 (99.0-100.0)	87.0 (78.0-94.0)	82.0 (72.0-86.0)	82.0 (68.0-86.0)	0.94 (0.87-0.96)	0.042 (0.037-0.044)
ZnT8A (R325)	In-house	116	64.0 <div><div></div></div>	100.0 <div><div></div></div>	78.0 <div><div></div></div>	76.0 <div><div></div></div>	74.0 <div><div></div></div>	0.89 <div><div></div></div>	0.038 <div><div></div></div>
ZnT8A (R325)	In-house	121	70.0 <div><div></div></div>	100.0 <div><div></div></div>	78.0 <div><div></div></div>	74.0 <div><div></div></div>	70.0 <div><div></div></div>	0.88 <div><div></div></div>	0.037 <div><div></div></div>
ZnT8A (R325)	In-house	Median (Range)	67.0 (64.0-70.0)	100.0 (100.0-100.0)	78.0 (78.0-78.0)	75.0 (74.0-76.0)	72.0 (70.0-74.0)	0.88 (0.88-0.89)	0.038 (0.037-0.038)
ZnT8A (W325)	In-house	121	68.0 <div><div></div></div>	100.0 <div><div></div></div>	76.0 <div><div></div></div>	72.0 <div><div></div></div>	68.0 <div><div></div></div>	0.86 <div><div></div></div>	0.036 <div><div></div></div>
ZnT8A (W325)	In-house	116	64.0 <div><div></div></div>	100.0 <div><div></div></div>	70.0 <div><div></div></div>	68.0 <div><div></div></div>	68.0 <div><div></div></div>	0.86 <div><div></div></div>	0.034 <div><div></div></div>
ZnT8A (W325)	In-house	Median (Range)	66.0 (64.0-68.0)	100.0 (100.0-100.0)	73.0 (70.0-76.0)	70.0 (68.0-72.0)	68.0 (68.0-68.0)	0.86 (0.86-0.86)	0.035 (0.034-0.036)
CLIA									
ZnT8A (R325+W325+Q325)	Randox	2402	18.0 <div><div></div></div>	71.1 <div><div></div></div>	2.0 <div><div></div></div>	0.0 <div><div></div></div>	0.0 <div><div></div></div>	0.45 <div><div></div></div>	0.000 <div><div></div></div>

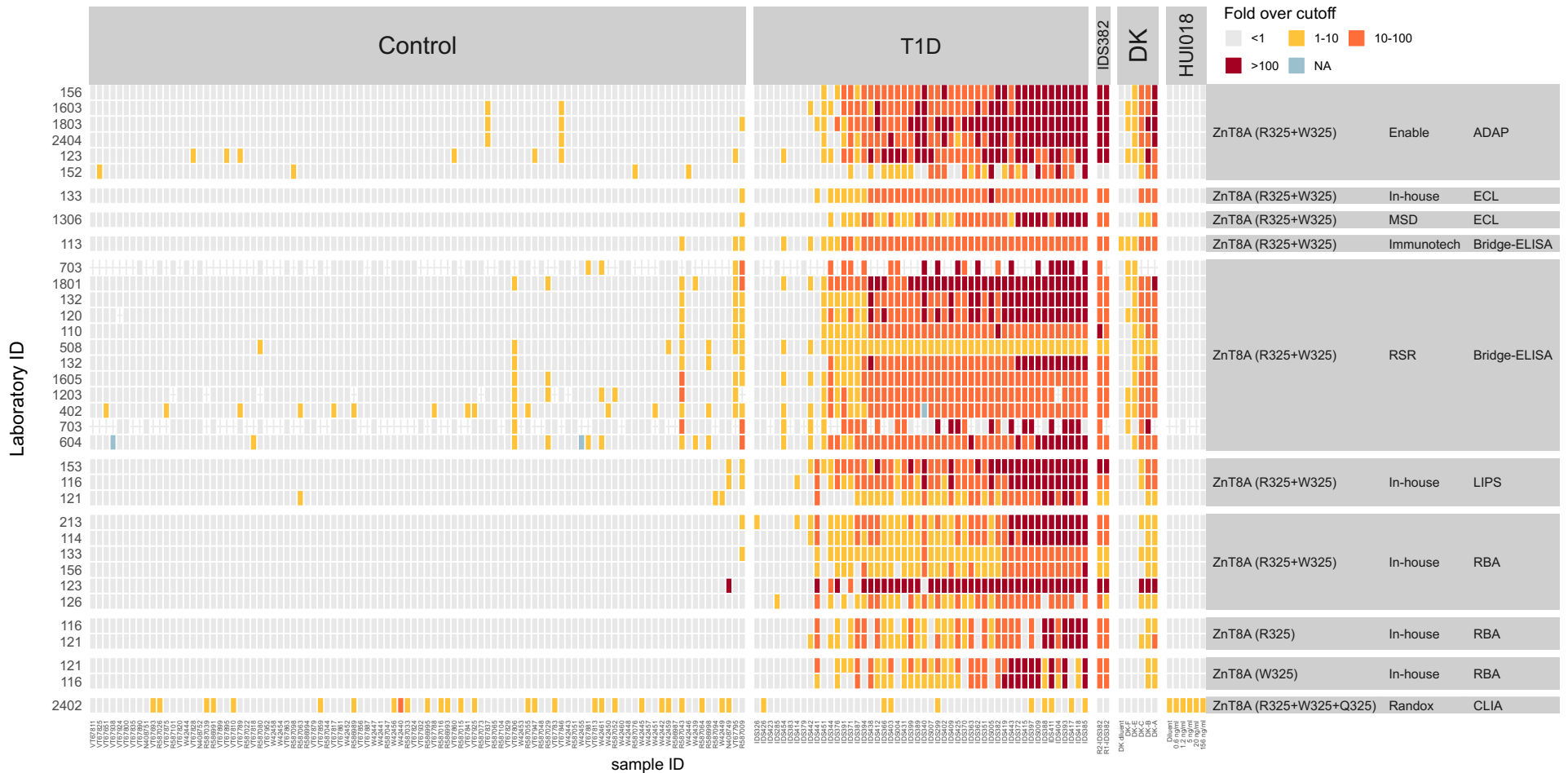
Supplemental Table S3. Performance of ZnT8A assays in the IASP 2024 workshop.
Submitted ZnT8A assays are grouped by format, their commercial/in-house status and the ZnT8 polymorphisms on the antigen used for the test. A final number of 50 T1D and 97 control samples was used for all calculations (control sample R587009, which tested positive across all assays, was excluded from specificity and ROC calculations). The corresponding sensitivity, specificity, AS95, AS99, and AS100 are shown, with blue bars indicating the value in a range between 0% and 100%. The ROC-AUC and pAUC95 are reported as bars indicating the values in the range of 0.45-1 and 0-0.05, respectively. The median, IQR and range values of each variable are indicated below each format.

Supplemental Figure S12 – ZnT8A assays



Supplemental Figure S12. Tilemap of lab assigned scores to different sample types in ZnT8A assays submitted to the IASP 2024 workshop. This graph displays the scores of ZnT8A assays assigned by laboratories to each sample. The upper panel shows the percentage of assays scoring positive single samples, while the lower panel presents a detailed tilemap of individual assay results across different sample types. Samples are arranged horizontally according to the median fold-change calculated for each sample and grouped by specimen type (new-onset T1D, DK standards, IDS382 replicates, HUI-018 monoclonal antibody dilutions, and controls). The y-axis displays results from different laboratory assays, organized by assay formats, commercial/in-house status, and the ZnT8 polymorphisms on the antigen(s) used for the test. Positive scores are shown in deep magenta, negative scores in light gray, and missing scores in light blue.

Supplemental Figure S13– ZnT8A assays



Supplemental Figure S13. Tilemap of fold-over-cutoff scores in ZnT8A assays submitted to the IASP 2024 workshop. This graph shows ZnT8A fold-over-cutoff values, calculated as the ratio of laboratory-assigned result to the laboratory-specific cutoff threshold. Samples are arranged horizontally according to the median fold-change calculated for each sample and are grouped by specimen type (Controls, T1D cases, IDS382 replicates, DK standards, and HUI-018 monoclonal antibody dilutions). The y-axis displays results from different laboratory assays, organized by assay formats, commercial/in-house status, and the ZnT8 polymorphisms on the antigen(s) used for the test, and sorted by the test pAUC95. Fold-over-cutoff values <1 are shown in light gray (negative), 1-10 fold in yellow (low positive), 10-100 fold in orange (moderate positive), and >100 fold in dark red (high positive).

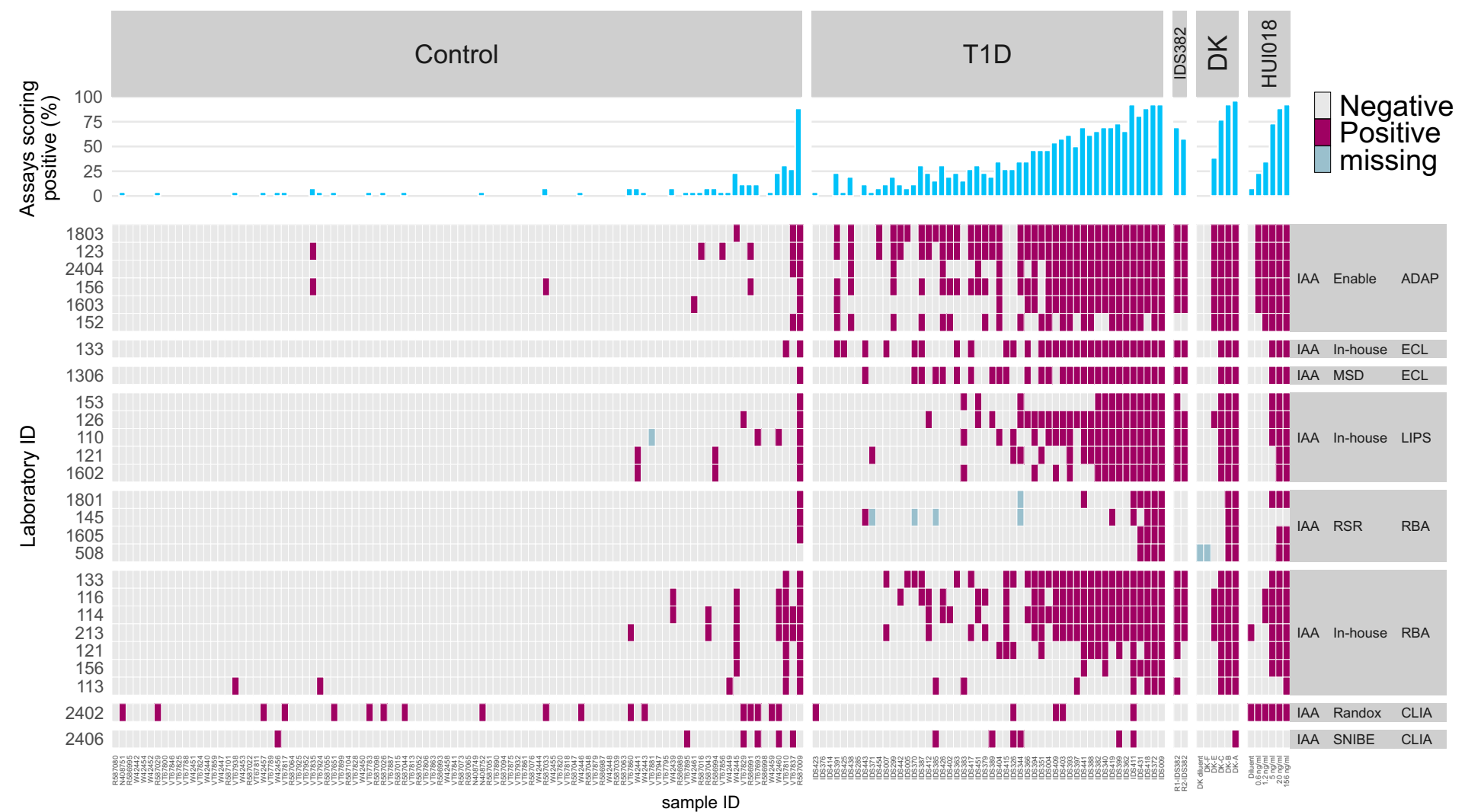
Supplemental Table S4 – IAA assays

Antibody	Manufacturer	Lab ID	Sensitivity (%)	Specificity (%)	AS95 (%)	AS99 (%)	AS100 (%)	ROC-AUC	pAUC95
ECL									
IAA	In-house	133	58.0	99.0	62.0	58.0	20.0	0.87	0.026
IAA	MSD	1306	56.0	100.0	60.0	58.0	58.0	0.82	0.029
LIPS									
IAA	In-house	153	26.0	100.0	70.0	42.0	38.0	0.92	0.026
IAA	In-house	126	48.0	99.0	56.0	36.0	8.0	0.87	0.020
IAA	In-house	110	40.0	97.9	46.0	34.0	24.0	0.83	0.019
IAA	In-house	1602	28.0	97.9	34.0	10.0	10.0	0.73	0.011
IAA	In-house	121	34.0	97.9	42.0	6.0	4.0	0.79	0.013
IAA	In-house	Median (Range)	34.0 (26.0–48.0)	97.9 (97.9–100.0)	46.0 (34.0–70.0)	34.0 (6.0–42.0)	10.0 (4.0–38.0)	0.83 (0.73–0.92)	0.019 (0.011–0.026)
RBA									
IAA	In-house	133	56.0	99.0	64.0	56.0	6.0	0.86	0.024
IAA	In-house	116	50.0	95.9	52.0	38.0	8.0	0.87	0.018
IAA	In-house	114	50.0	93.8	38.0	14.0	6.0	0.73	0.011
IAA	In-house	213	46.0	93.8	44.0	12.0	6.0	0.82	0.011
IAA	In-house	156	14.0	97.9	40.0	10.0	6.0	0.74	0.010
IAA	In-house	121	26.0	97.9	36.0	20.0	2.0	0.74	0.010
IAA	In-house	113	14.0	95.9	14.0	14.0	10.0	0.62	0.007
IAA	In-house	Median (Range)	46.0 (14.0–56.0)	95.9 (93.8–99.0)	40.0 (14.0–64.0)	14.0 (10.0–56.0)	6.0 (2.0–10.0)	0.74 (0.62–0.87)	0.011 (0.007–0.024)
IAA	RSR	1801	12.2	100.0	28.0	28.0	12.2	0.64	0.013
IAA	RSR	145	13.0	100.0	16.0	12.0	13.0	0.61	0.007
IAA	RSR	1605	8.0	100.0	8.0	8.0	8.0	0.54	0.005
IAA	RSR	508	8.0	100.0	8.0	8.0	8.0	0.54	0.005
IAA	RSR	Median (Range)	10.1 (8.0–13.0)	100.0 (100.0–100.0)	12.0 (8.0–28.0)	10.0 (8.0–28.0)	10.1 (8.0–13.0)	0.58 (0.54–0.64)	0.006 (0.005–0.013)
ADAP									
IAA	Enable	1803	76.0	97.9	80.0	60.0	58.0	0.90	0.035
IAA	Enable	123	72.0	94.8	72.0	60.0	60.0	0.91	0.033
IAA	Enable	2404	48.0	99.0	72.0	68.0	40.0	0.87	0.032
IAA	Enable	156	62.0	96.9	72.0	54.0	54.0	0.88	0.030
IAA	Enable	1603	42.0	99.0	62.0	44.0	42.0	0.84	0.025
IAA	Enable	152	44.0	99.0	50.0	46.0	28.0	0.81	0.022
IAA	Enable	Median (Range)	55.0 (42.0–76.0)	98.4 (94.8–99.0)	72.0 (50.0–80.0)	57.0 (44.0–68.0)	48.0 (28.0–60.0)	0.88 (0.81–0.91)	0.031 (0.022–0.035)
CLIA									
IAA	Randox	2402	10.0	81.4	2.0	2.0	2.0	0.52	0.001
IAA	SNIBE	2406	12.0	93.8	10.0	8.0	2.0	0.72	0.004

Supplemental Table S4. Performance of IAA assays in the IASP 2024 workshop.

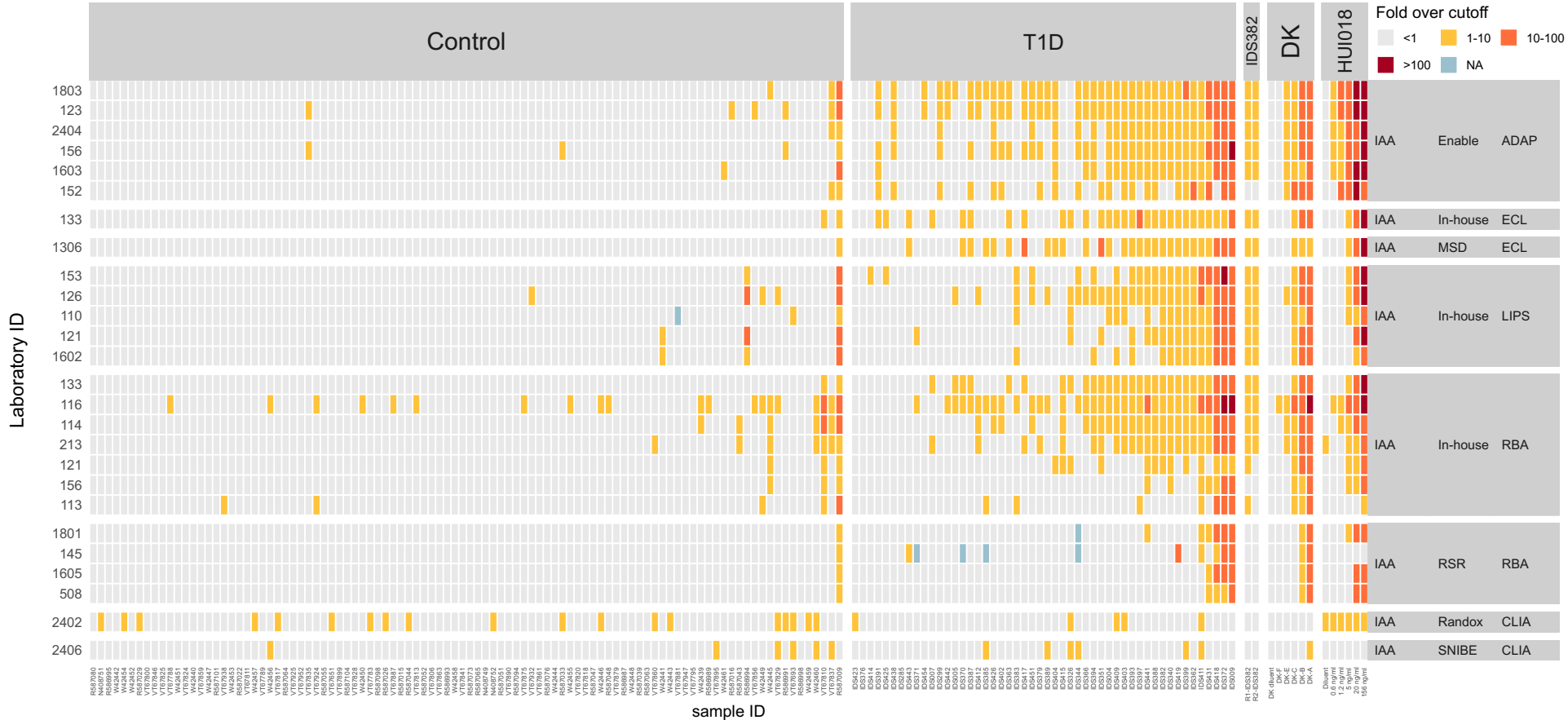
Submitted IAA assays are grouped by format and their commercial/in-house status. A final number of 50 T1D and 97 control samples was used for all calculations (control sample R587009, which tested positive across all assays, was excluded from specificity and ROC calculations). The corresponding sensitivity, specificity, AS95, AS99, and AS100 are shown, with blue bars indicating the value in a range between 0% and 100%. The ROC-AUC and pAUC95 are reported as bars indicating the values in the range of 0.50–1 and 0–0.05, respectively. The median, IQR and range values of each variable are indicated below each format.

Supplemental Figure S14 – IAA assays



Supplemental Figure S14. Tilemap of lab assigned scores to different sample types in IAA assays submitted to the IASP 2024 workshop. This graph displays the scores of IAA assays assigned by laboratories to each sample. The upper panel shows the percentage of assays scoring positive single samples, while the lower panel presents a detailed tilemap of individual assay results across different sample types. Samples are arranged horizontally according to the median fold-change calculated for each sample and grouped by specimen type (new-onset T1D, DK standards, IDS382 replicates, HUI-018 monoclonal antibody dilutions, and controls). The y-axis displays results from different laboratory assays, organized by assay formats and commercial/in-house status, and sorted by their pAUC95. Positive scores are shown in deep magenta, negative scores in light gray, and missing scores in lightblue.

Supplemental Figure S15 – IAA assays



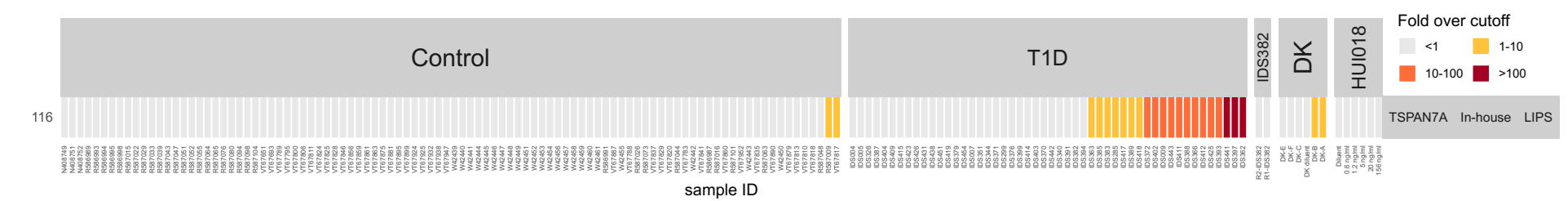
Supplemental Figure S15. Tilemap of fold-over-cutoff scores in IAA assays submitted to the IASP 2024 workshop. This graph shows IAA fold-over-cutoff values, calculated as the ratio of laboratory-assigned result to the laboratory-specific cutoff threshold. Samples are arranged horizontally according to the median fold-change calculated for each sample and are grouped by specimen type (Controls, T1D cases, IDS382 replicates, DK standards, and HUI-018 monoclonal antibody dilutions). The y-axis displays results from different laboratory assays, organized by assay formats and commercial/in-house status, and sorted by the test pAUC95. Fold-over-cutoff values <1 are shown in light gray (negative), 1-10 fold in yellow (low positive), 10-100 fold in orange (moderate positive), and >100 fold in dark red (high positive).

Supplemental Table S5 – TSPAN7A assays

Assay	Lab ID	Sensitivity (%)	Specificity (%)	AS95 (%)	AS99 (%)	AS100 (%)	ROC-AUC	pAUC95
LIPS								
In-house	116	40.0 <div><div></div></div>	99.0 <div><div></div></div>	58.0 <div><div></div></div>	40.0 <div><div></div></div>	40.0 <div><div></div></div>	0.81 <div><div></div></div>	0.023 <div><div></div></div>

Supplemental Table S5. Performance of the TSPAN7A assay in the IASP 2024 workshop.
The sensitivity, specificity, AS95, AS99, and AS100 of the only submitted TSPAN7A assay are shown, with blue bars indicating the value in a range between 0% and 100%. The ROC-AUC and pAUC95 are reported as bars indicating the values in the range of 0.50-1 and 0-0.05, respectively. Control sample R587009, which tested positive across all assays, was excluded from all the specificity and ROC calculations (a final number of 50 T1D and 97 control samples was used for the calculation).

Supplemental Figure S16 – TSPAN7A assays



Supplemental Figure S16. Tilemap of fold-over-cutoff scores in the TSPAN7A assay submitted to the IASP 2024 workshop.

This graph displays the scores assigned to each sample by the only submitted TSPAN7A assay. The upper panel shows the percentage of assays scoring positive single samples, while the lower panel presents the detailed tilemap of fold-over-cutoff values across different sample types. Samples are arranged horizontally according to their rank and grouped by specimen type (controls, new-onset T1D, DK standards, IDS382 replicates, HUI-018 monoclonal antibody dilutions, and controls). The y-axis indicates the in-house LIPS assay format used. Fold-over-cutoff values <1 are shown in light gray (negative), 1-10 fold in yellow (low positive), 10-100 fold in orange (moderate positive), and >100 fold in dark red (high positive).