Olink®

Concordance Test Report

PROJECT NAME

STATISTICAL SERVICE

REPRESENTATIVE

DATE

Psomagen Concordance Test

Generated by Olink® Concordance Test app

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Contents

Overview

An Olink® Concordance Test was performed to asses the performance between labs. The Olink® Concordance Test (batch B32104) comprised 48 samples, ran on Explore HT (Explore_HT) at both Psomagen and AS Boston. To asses the performance between the sites, Olink® Concordance Test compared CV, correlation and regression.

QC Warning

The number and percentage of samples with QC warning status was calculated and summarized in Table 1.

Table 1: The number and (percentage) of samples with a QC warning per site.

Site	Warnings
AS Boston	1 (2)
Psomagen	1 (2)

PCA

Scatter plots along the first two principal components were generated to compare global data performance (Figure 1). Figure 1 displays PCA plots of AS Boston and Psomagen data separately.
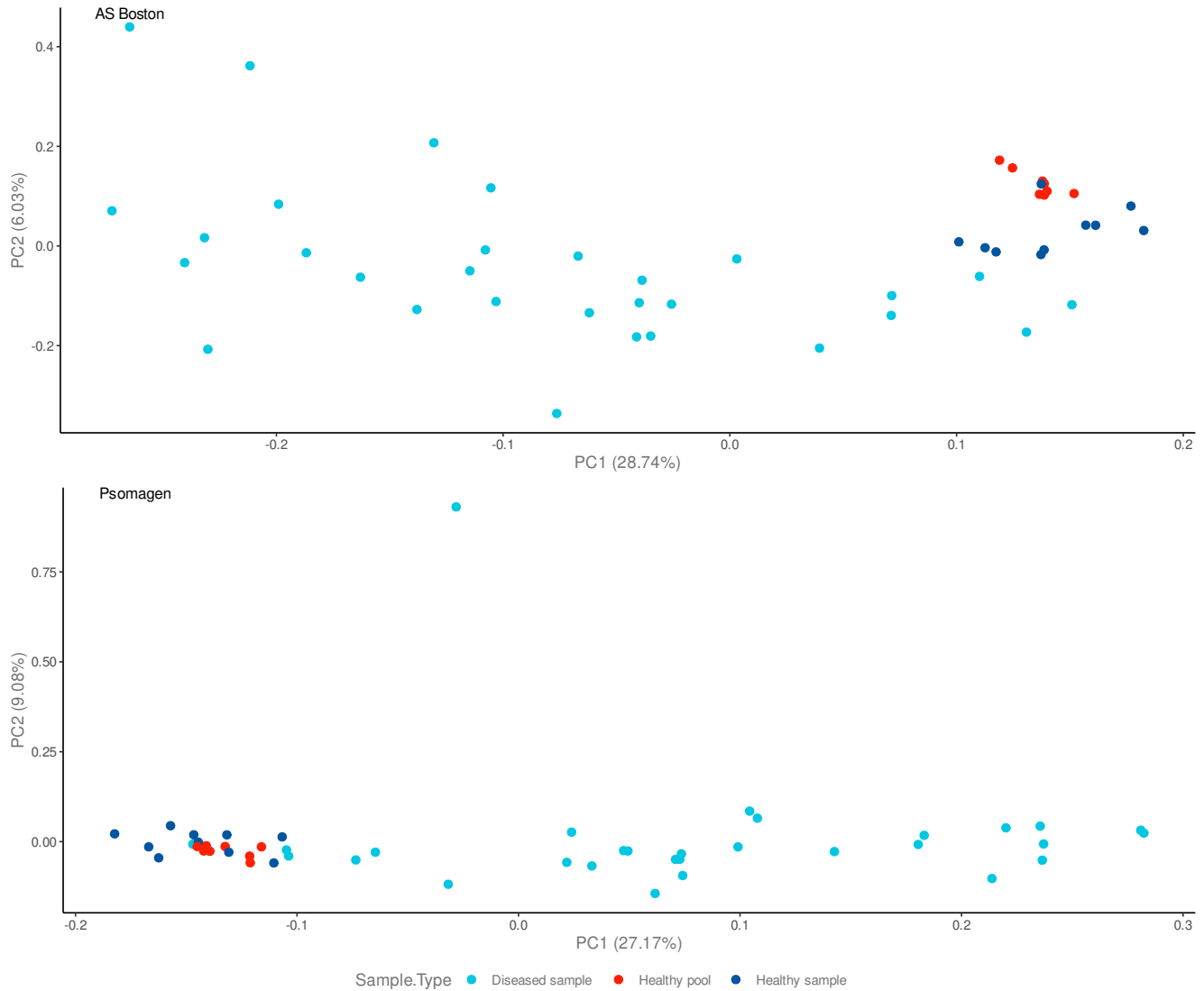

Figure 1: Separated PCA plots of data from AS Boston and Psomagen , colored by sample type. Each point represents one sample. The position of the point is based on all measured protein values. The percentages displayed show the percentage of explained variance per principal component.

Coefficient of Variation

The coefficient of variance (CV) was calculated on a per assay basis, using the control samples that were included in each run (see Table 2). Intra CV less than 15 is preferred.

Table 2: The average intra CV by site.

Block	AS Boston	Psomagen
All CV assays	8.1	10.5

Correlation

Correlation of NPX values between AS Boston and Psomagen were calculated on a per assay basis (healthy pools excluded, see Figure 2).
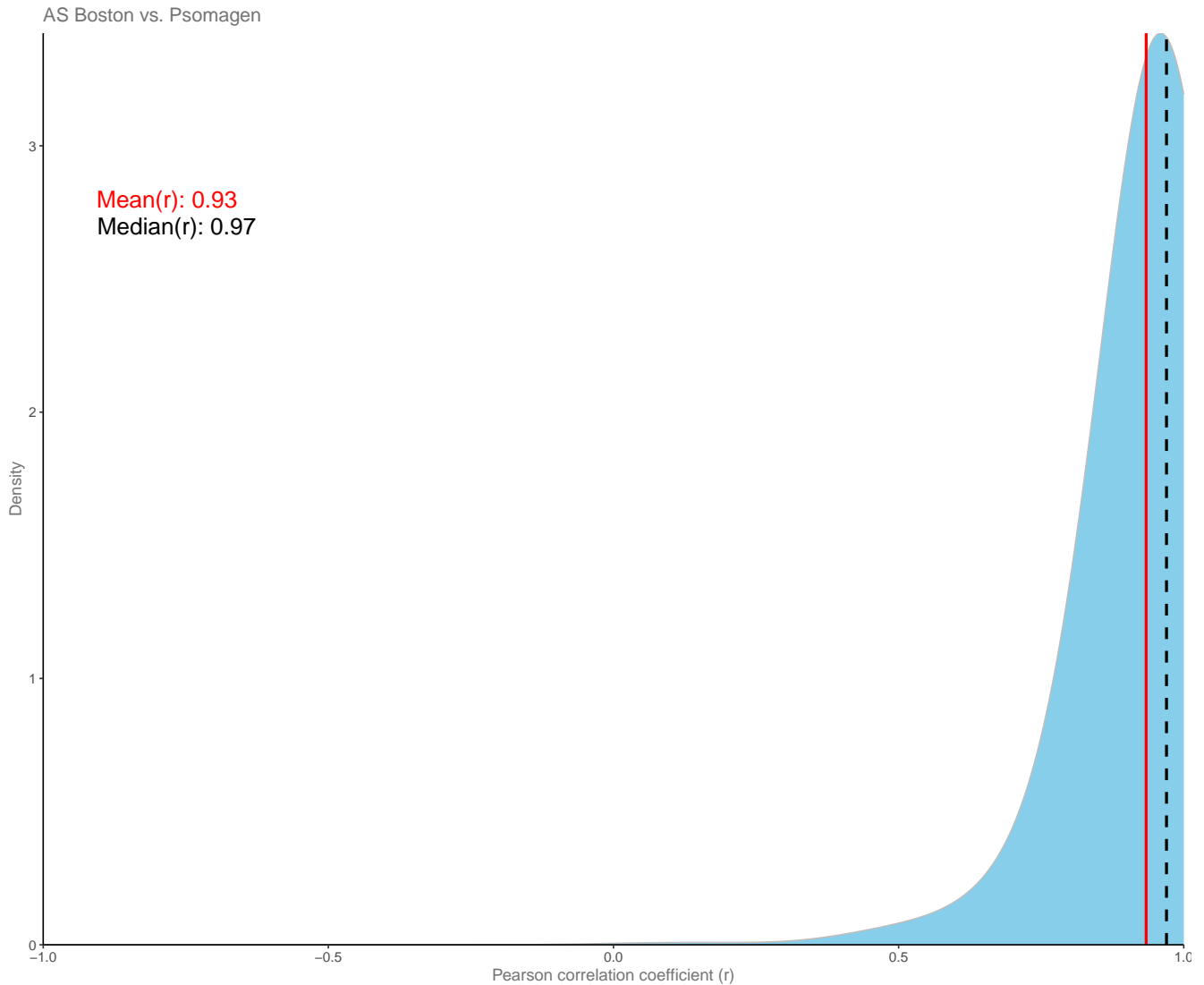

Figure 2: Density plot of Pearson correlation coefficients between two sites. The solid red line represents the mean of the correlation coefficients, serving as a central reference point, while the dashed black line indicates the median, providing insight into the distribution's central position. This figure provides a powerful tool for understanding complex interdependencies within the dataset, facilitating the identification of underlying patterns and trends in variable relationships.

Regression

Figure 3 shows the NPX values from AS Boston on the x-axis and from Psomagen on the y-axis. The regression line is fitted using a linear model.
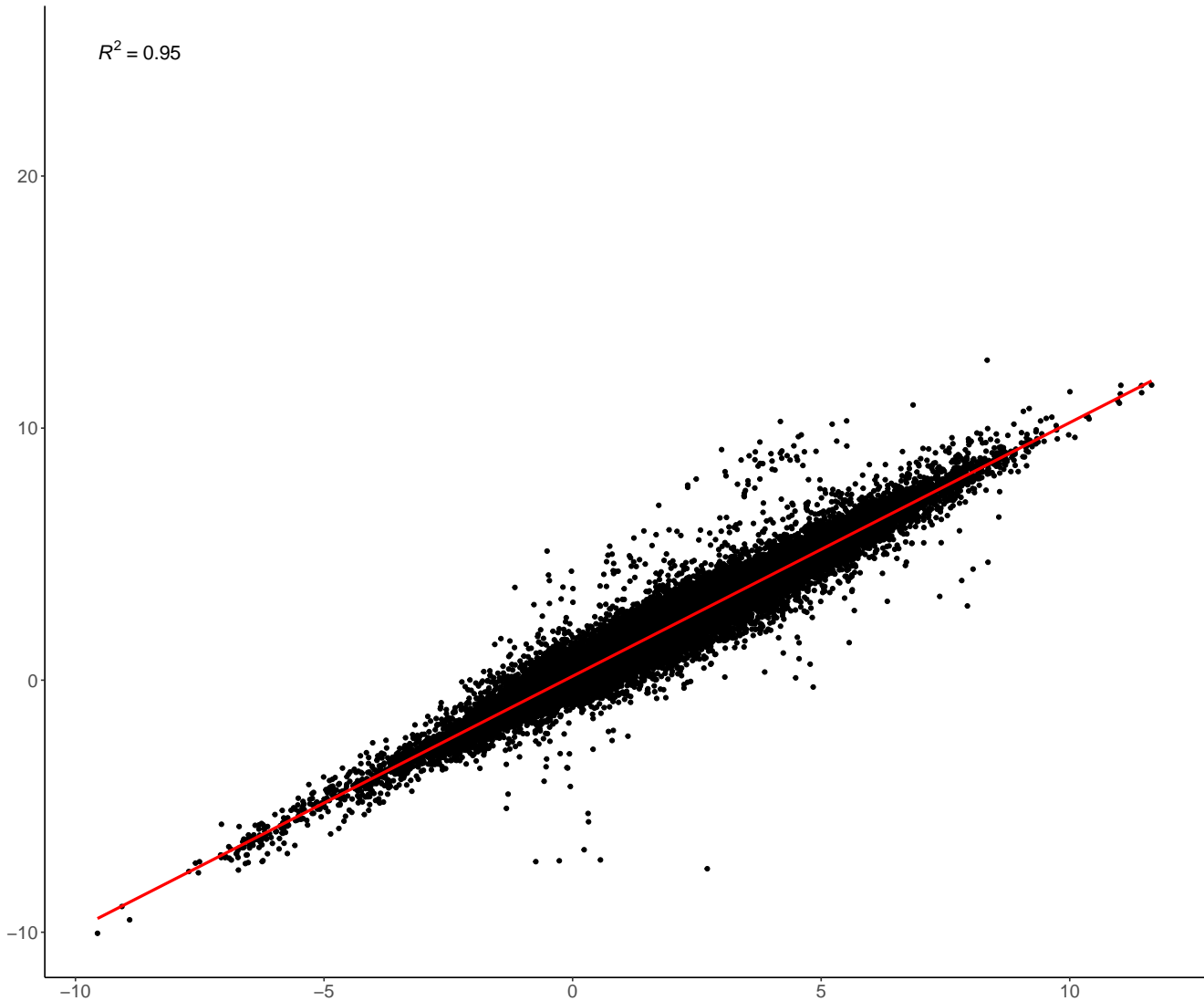

Figure 3: Scatter plot of data from both sites with a regression line fitted to present the linear relationship between two sites. In addition to the best-fit line, the figure includes the R-squared (R^2) value, which quantifies the goodness of fit of the regression model.

Summary

CV, correlation and regression analysis were performed to compare the concordance of data generated with the same set of samples at AS Boston and Psomagen.

Psomagen had 2 % QC warnings (maximum 10 % allowed). Hence, **passing** the QC warning criteria.

Psomagen scored 10.5 % intra CV (maximum 15 % allowed). Hence, **passing** the CV criteria.

Median (0.97) correlation coefficient (r) of Psomagen vs. AS Boston scored more than the minimum allowed value (0.9). Hence, **passing** the correlation criteria.

Psomagen scored a coefficient of determination (R^2) of 0.95 (minimum 0.9 allowed). Hence, **passing** the regression criteria.

In total, Psomagen failed 0 QC criterias (maximum 1 fail allowed). Hence, **passing the Concordance Test**.

Appendix

R Session Information

- R version 4.3.1 (2023-06-16), `x86_64-pc-linux-gnu`

- Locale: `LC_CTYPE=en_US.UTF-8`, `LC_NUMERIC=C`, `LC_TIME=en_US.UTF-8`,
  `LC_COLLATE=en_US.UTF-8`, `LC_MONETARY=en_US.UTF-8`, `LC_MESSAGES=en_US.UTF-8`,
  `LC_PAPER=en_US.UTF-8`, `LC_NAME=C`, `LC_ADDRESS=C`, `LC_TELEPHONE=C`,
  `LC_MEASUREMENT=en_US.UTF-8`, `LC_IDENTIFICATION=C`

- Time zone: `Etc/UTC`

- TZcode source: `system (glibc)`

- Running under: `Ubuntu 20.04.6 LTS`

- Matrix products: default

- BLAS: `/usr/lib/x86_64-linux-gnu/blas/libblas.so.3.9.0`

- LAPACK: `/usr/lib/x86_64-linux-gnu/lapack/liblapack.so.3.9.0`

- Base packages: base, datasets, graphics, grDevices, methods, stats, utils

- Other packages: cicerone 1.0.4, Concordance 0.0.0.9000, dplyr 1.1.3, DT 0.30, extrafont 0.19,
  forcats 1.0.0, ggplot2 3.4.4, ggpubr 0.6.0, gtsummary 1.7.2, kableExtra 1.3.4, knitr 1.44,
  lubridate 1.9.3, OlinkAnalyze 3.6.0, plotly 4.10.3, purrr 1.0.2, readr 2.1.4, readxl 1.4.3, shiny 1.7.5.1,
  shinycssloaders 1.0.0, stringr 1.5.0, tibble 3.2.1, tidyr 1.3.0, tidyverse 2.0.0

- Loaded via a namespace (and not attached): abind 1.4-5, arrow 13.0.0.1, assertthat 0.2.1,
  attempt 0.3.1, backports 1.4.1, base64enc 0.1-3, bit 4.0.5, bit64 4.0.5, boot 1.3-28.1, broom 1.0.5,
  broom.helpers 1.14.0, bslib 0.5.1, ca 0.71.1, cachem 1.0.8, callr 3.7.3, car 3.1-2, carData 3.0-5,
  cellranger 1.1.0, cli 3.6.1, codetools 0.2-19, colorspace 2.1-0, compiler 4.3.1, config 0.3.2,
  cowplot 1.1.1, crayon 1.5.2, crosstalk 1.2.0, data.table 1.14.8, dendextend 1.17.1, desc 1.4.2,
  digest 0.6.33, ellipsis 0.3.2, emmeans 1.8.9, estimability 1.4.1, evaluate 0.22, extrafontdb 1.0,
  fansi 1.0.5, farver 2.1.1, fastmap 1.1.1, fontawesome 0.5.2, foreach 1.5.2, fs 1.6.3, generics 0.1.3,
  ggrepel 0.9.4, ggsignif 0.6.4, glue 1.6.2, golem 0.4.1, grid 4.3.1, gridExtra 2.3, gt 0.10.0, gtable 0.3.4,
  heatmaply 1.5.0, hms 1.1.3, htmltools 0.5.6.1, htmlwidgets 1.6.2, httpuv 1.6.12, httr 1.4.7,
  iterators 1.0.14, janitor 2.2.0, jquerylib 0.1.4, jsonlite 1.8.7, labeling 0.4.3, later 1.3.1, lattice 0.22-5,
  lazyeval 0.2.2, lifecycle 1.0.3, lme4 1.1-34, lmerTest 3.1-3, magrittr 2.0.3, MASS 7.3-60, Matrix 1.6-1.1,
  memoise 2.0.1, mgcv 1.9-0, mime 0.12, minqa 1.2.6, munsell 0.5.0, mvtnorm 1.2-3, nlme 3.1-163,
  nloptr 2.0.3, npxexplorer 2.0.0, numDeriv 2016.8-1.1, pillar 1.9.0, pkgbuild 1.4.2, pkgconfig 2.0.3,
  pkgload 1.3.3, plyr 1.8.9, polynom 1.4-1, prettyunits 1.2.0, processx 3.8.2, promises 1.2.1, ps 1.7.5,
  R.methodsS3 1.8.2, R.oo 1.25.0, R.utils 2.12.2, R6 2.5.1, RColorBrewer 1.1-3, Rcpp 1.0.11,
  registry 0.5-1, repr 1.1.6, rlang 1.1.1, rmarkdown 2.25, rprojroot 2.0.3, rstatix 0.7.2, rstudioapi 0.15.0,
  Rttf2pt1 1.3.12, rvest 1.0.3, sass 0.4.7, scales 1.2.1, seriation 1.5.1, shinyalert 3.0.0, shinyjs 2.1.0,
  shinythemes 1.2.0, shinyWidgets 0.8.0, skimr 2.1.5, snakecase 0.11.1, splines 4.3.1, stringi 1.7.12,

svglite 2.1.2, systemfonts 1.0.5, tidyselect 1.2.0, timechange 0.2.0, tinytex 0.48, tools 4.3.1, TSP 1.2-4, tzdb 0.4.0, usethis 2.2.2, utf8 1.2.4, uuid 1.1-1, vctrs 0.6.4, viridis 0.6.4, viridisLite 0.4.2, webshot 0.5.5, withr 2.5.1, xfun 0.40, xml2 1.3.5, xtable 1.8-4, yaml 2.3.7, zip 2.3.0