# MINEX III Report Card

## Matcher 0071+0021



Last Updated: August 11, 2022

## **Participant Details**

**Company:** Miaxis Biometrics Co. Ltd. **Provided CBEFF PID:** 0071 0021

**Provided Marketing Name:** "MXFMRMatcherV1.0"

Date Application Received: 06/21/2022

**Date First Submitted:** 06/21/2022 (as generator version 0021)

**Date Validated:** 06/21/2022 **Date Completed:** 06/22/2022

| Library                  | Size (bytes) | MD5 Checksum                     |
|--------------------------|--------------|----------------------------------|
| libminexiii_0071_0021.so | 448736       | f01d92db6a68986859817592adc7162d |

## **Compliance Test Results**

The following presents **PIV compliance** results per the criteria detailed in NIST Special Publication 800-76-2: Biometric Specifications for Personal Identity Verification.

It also includes **MINEX III compliance** results per the criteria detailed in sections 4 through 8 of the Minutiae Interoperability Exchange (MINEX) III Test Plan and Application Programming Interface.

#### PIV Level One: PASS

- Must match templates from all certified template generators with an FNMR<sub>FMR</sub>(0.01) ≤ 0.01 using two fingers (4.5.2.1-4).
- Average template comparison time must be no more than 10 milliseconds (6.4). ✓

#### PIV Level Two: PASS

- Must pass PIV level one compliance. ✓
- Native template generator must pass level one compliance. 🗸
- Must match templates from native template generator with an FNMR<sub>FMR</sub>(0.0001) ≤ 0.02 using one finger (4.5.3-2) ✓

#### **MINEX III: PASS**

- Must pass MINEX III validation. ✓
- Must pass PIV level two matcher compliance. 🗸
- Matcher must produce at least 512 distinct comparison scores over the entire dataset when comparing templates from different subjects. (2915) ✓

#### **Notes**

- This report will be updated as new matching algorithms and template generators pass the compliance test. These updates will not change the PASS/FAIL decision above.
- NIST reserves the right to decertify a matcher if it later discovers the matcher violates MINEX III or PIV specifications in some previously undetected way.
- This is the "best" compliant submission from Miaxis Biometrics Co. Ltd., and is therefore a member of the pooled DET curves published throughout all MINEX III report cards.

## Contents

| Pa | ticipant Details                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1                                                                               |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Co | mpliance Test Results                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1                                                                               |
| N  | tes                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1                                                                               |
| 1  | Introduction                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3                                                                               |
| 2  | Methodology 2.1 Dataset                                                                                                                                                                                                                                                                                                                                                                                                                                                   | . 3                                                                             |
| 3  | Results 3.1 Single Finger                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                 |
|    | 3.2 Two Finger                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <ul><li>. 12</li><li>. 13</li><li>. 14</li><li>. 15</li></ul>                   |
| 4  | Performance Tables                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 18                                                                              |
| 5  | References                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 22                                                                              |
| L  | st of Figures                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                 |
| T  | MINEX III Interoperability Test Setup  DET (Single Finger)  DET (Right Index)  DET (Left Index)  FNMR @ FMR = 0.01 (Single Finger)  DET Scatterplot (Single Finger)  DET (Two Finger)  FNMR @ FMR = 0.01 (Two Finger)  DET Scatterplot (Two Finger)  DET Scatterplot (Two Finger)  Cummulative Score Functions (Single Finger)  Cummulative Score Functions (Two Finger)  Q-Q Plot (Left vs. Right Index)  FNMR and FMR vs. Minutia Count  FNMR and FMR vs. Minutia Count | . 5<br>. 6<br>. 7<br>. 8<br>. 9<br>. 10<br>. 11<br>. 12<br>. 13<br>. 13<br>. 14 |
| L  | st of Tables1Threshold calibration table                                                                                                                                                                                                                                                                                                                                                                                                                                  | <ul><li>. 16</li><li>. 16</li><li>. 18</li><li>. 19</li><li>. 20</li></ul>      |

## 1 Introduction

This report card presents measurements of performance and interoperability for a single fingerprint matching algorithm submitted to NIST as part of the ongoing MINEX III Evaluation. It reports whether the matcher passes the technical requirements for MINEX III as described in Section 8 of the MINEX III Test Plan and Application Programming Interface. Full details on the ongoing MINEX III program can be found on the MINEX III homepage. Questions should be directed to minex@nist.gov.

## 2 Methodology

Testing is performed at a NIST facility. Each participant's submission is validated by NIST (https://github.com/usnistgov/minex/tree/master/minexiii/validation) before undergoing full testing to ensure it operates correctly. If the matcher passes the validation procedure, it is then used to compare standard fingerprint templates. Performance is assessed against templates created by a template generation algorithm submitted by the participant as well as templates created by other MINEX III compliant template generators.

#### 2.1 Dataset

Testing is performed over a single dataset of sequestered fingerprint images. The images were collected by U.S. Visit at ports of entry into the United States. They consist of Live-scan plain impressions of left and right index fingers. WSQ [1] compression was applied to all images at a ratio of 15:1. The most recent capture of each subject was treated as the authentication sample, and the next most recent as the enrolled sample.

The dataset was divided into  $533\,767$  mated and  $1\,067\,530$  non-mated subject pairings. Since both left and right index fingerprints are available for each subject, this provides  $1\,061\,657$  mated and  $2\,127\,712$  non-mated single-finger comparisons (after database consolidation). When left and right index fingers are fused at the score level [3, 7], the sets condense to  $530\,394$  mated and  $1\,062\,814$  non-mated comparison scores.

#### 2.2 Accuracy Metrics

Core matching accuracy is presented in the form of Detection Error Tradeoff (DET) plots [6], which show the trade-off between the False Match Rate (FMR) and the False Non-Match Rate (FNMR) as a decision threshold is adjusted. Formally, let  $m_i$  (i=1...M) be the ith mated comparison score, and  $n_j$  (j=1...N) the jth non-mated comparison score. Then the statistics are

$$FNMR(\tau) = \frac{1}{M} \sum_{i=1}^{M} \mathbb{1}\{m_i < \tau\},$$
 (1)

$$FMR(\tau) = \frac{1}{N} \sum_{j=1}^{N} \mathbb{1}\{n_j \ge \tau\}.$$
 (2)

where  $\mathbb{1}\{A\}$  is the indicator [4] of event A. Equations 1 and 2 define the curve parametrically with the decision threshold,  $\tau$ , as the free parameter. In some figures and tables, FNMR is presented as a function of FMR. This relationship is determined by

$$FNMR_{FMR}(\alpha) = \min_{\tau} \{ FNMR(\tau) \mid FMR(\tau) \le \alpha \},$$
 (3)

which reads as the smallest FNMR that can be achieved while maintaining an FMR less than or equal to  $\alpha$ , the targeted FMR. This method of relating the two error statistics ensures FNMR is well-defined for all  $0 \le \alpha \le 1$ . When the matching algorithm produces only a few unique comparison scores, the maximum threshold,  $\tau_0$ , that elicits an FMR( $\tau_0$ )  $\le \alpha$  may, in fact, be quite a bit lower than  $\alpha$ . Thus, Equation 3 imposes a natural penalty on matching algorithms that produce overly discretized scores.

Some figures show *pooled* DET accuracy, which is a measure of the accuracy of the matcher against all compliant template generators. Accuracy is measured by concatenating all comparison scores involving the matcher together and computing FMR and FNMR using Equations 2 and 1. This roughly simulates performance for a biometric system that employs one matcher and templates created by several template generators.



Figure 1: MINEX III Interoperability Test Setup

### 2.3 Interoperability

Interoperability is tested in a manner similar to *Scenario 1* from the MINEX Evaluation Report [5] (see Figure 1). An enrolment template is prepared using submission X. Submission Y is used to prepare the authentication template and perform the match. The authentication template is always prepared by the same submission used to compare the templates. However, enrolment templates need not originate from the same submission. When they do, we refer to it as "native" mode.

#### 2.4 Uncertainty Estimation

Some figures in this report include boxplots that convey the uncertainty associated with a statistic. The boxplots are intended to show the expected variation in the observed value if one assumes repeated iid sampling from the same population. They are not intended to reflect how the statistic might change over different test data or even different sampling strategies over the same data.

Estimates of uncertainty are computed using the Wilson Score method [8] which overcomes certain problems associated with applying the Central Limit Theorem to a discretized estimator. We make several simplifying assumptions when applying the method to biometric identification. Most notably, separate searches against the same enrollment database are treated as independent samples, yet we know positive correlations exist due to Doddingtons Zoo [2]. We also report estimates of the variability of FNIR at a fixed FPIR when in fact it is the decision threshold that is fixed. Uncertainty with respect to what decision threshold corresponds to the targeted FPIR results in increased uncertainty about the true value of FNIR. However, our estimates of FPIR are fairly tight due to the large number of non-mated searches performed, so they are not expected to have a large impact on the estimates.

## 3 Results

This section details the performance of matcher 0071+0021 when it compares verification templates created by its own template generator to enrolment templates created by all MINEX III compliant template generators. Sections 3.1 and 3.2 present accuracy results for single finger and two finger matching respectively. Sections 3.4 and 3.5 present potentially useful statistics not directly related to the performance of the matcher.

#### 3.1 Single Finger

Singe finger comparison results show the combined results for left and right index comparisons. For reference, NIST Special Publication 800-76-2 requires that the matcher and template generator achieve a native accuracy of  $FNMR_{FMR}(0.0001) \leq 0.02$ .

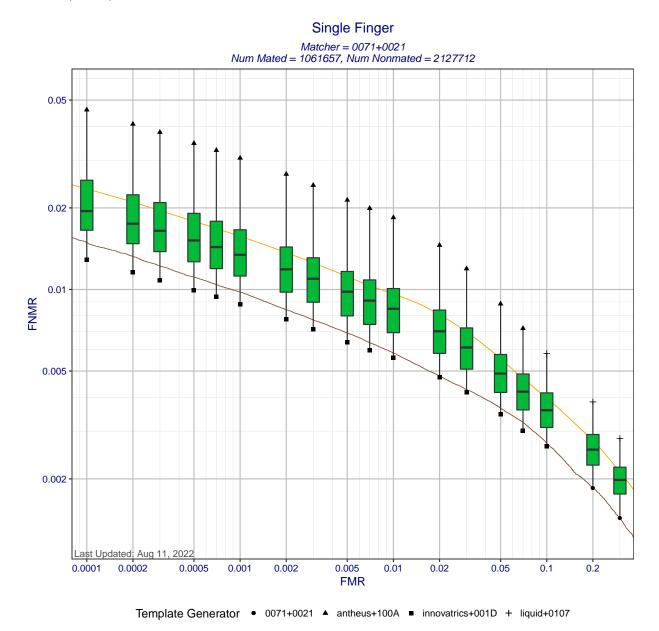


Figure 2: Single finger DET statistics for matcher 0071+0021. Each box shows the distribution of FNMRs at a fixed FMR across all MINEX III compliant template generators. The ends of the whiskers show the minimum and maximum FNMRs. The orange DET curve shows pooled performance against all template generators.

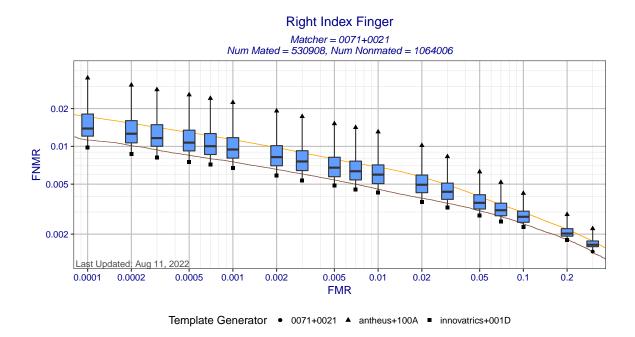


Figure 3: Right index finger DET statistics for matcher 0071+0021. Each box shows the distribution of FNMR at a fixed FMR across all MINEX III compliant template generators. The ends of the whiskers show the minimum and maximum FNMRs. The orange DET curve shows pooled performance against all template generators.

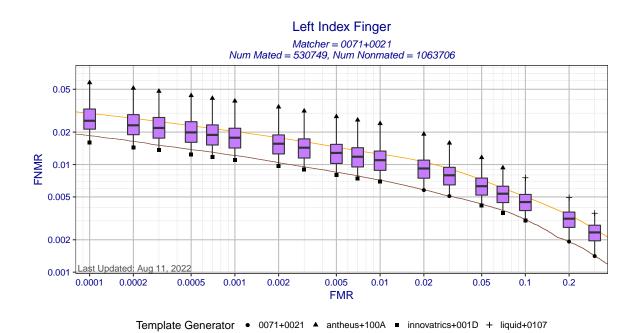


Figure 4: Left index finger DET statistics for matcher 0071+0021. Each box shows the distribution of FNMRs at a fixed FMR across all MINEX III compliant template generators. The ends of whiskers show the minimum and maximum FNMRs. The orange DET curve shows pooled performance against all template generators.

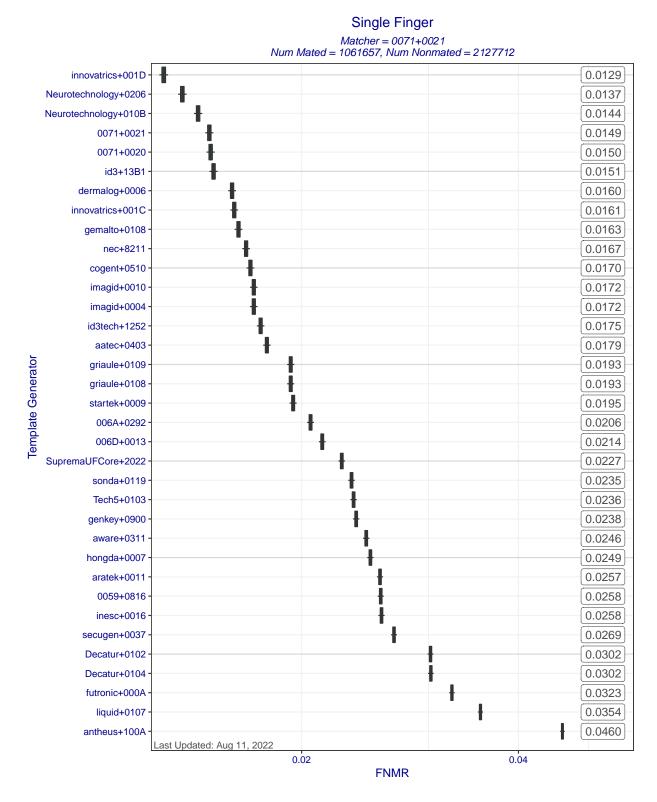


Figure 5: Single finger FNMRs at FMR = 0.0001 when matcher 0071+0021 compares templates created by different template generators. The ends of the whiskers show the minimum and maximum FNMRs. Each box represents uncertainty about the true FNMR. The box edges mark the 50% confidence intervals while the whiskers mark the 90% confidence intervals. The numbers on the right show the actual computed FNMRs.

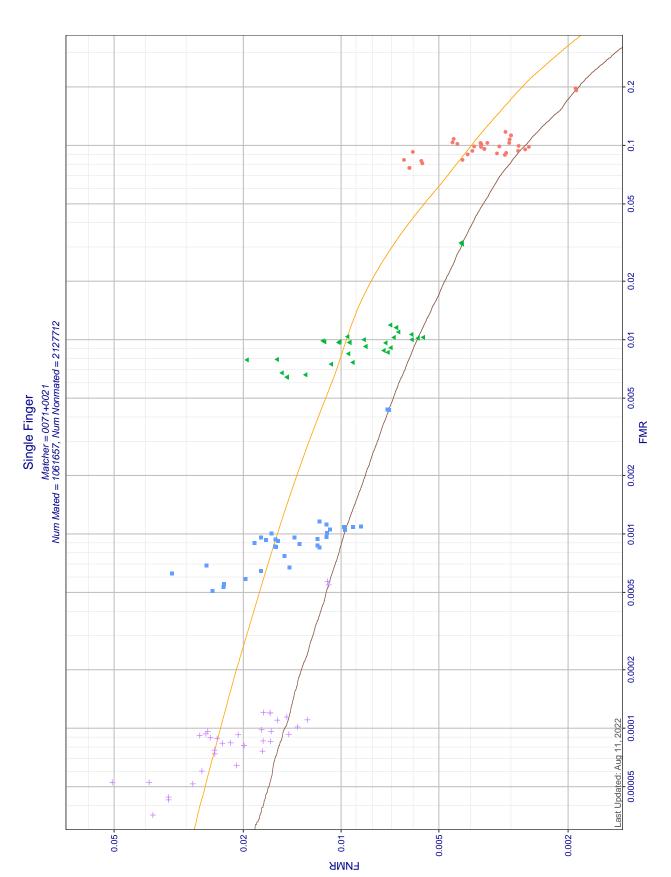
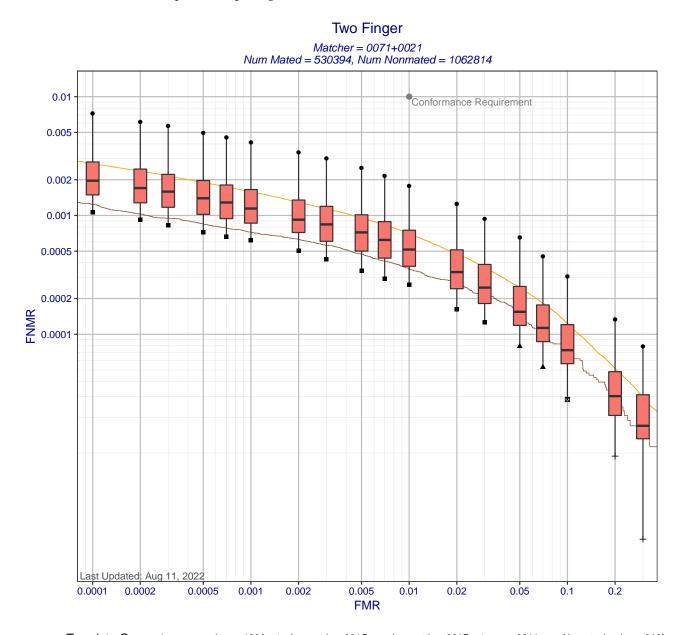


Figure 6: Single finger DET accuracy for matcher 0071+0021. Each cluster of points represents the variation in FMR and FNMR across MINEX III compliant template generators at a fixed decision threshold. Each point corresponds to an (FMR, FNMR) pair for a specific template generator at a particular decision thresholds which produce pooled FMRs of  $10^{-1}$ ,  $10^{-2}$ ,  $10^{-3}$ , and  $10^{-4}$ . The orange DET curve shows pooled performance against all template generators.

#### 3.2 Two Finger

This section presents accuracy when matcher 0071+0021 compares templates created by all MINEX III compliant template generators. Two-finger fusion is achieved by averaging the scores for left and right index fingers for each person. NIST Special Publication 800-76-2 requires the matcher to achieve an accuracy of FNMR<sub>FMR</sub> $(0.01) \le 0.01$  for all MINEX III compliant template generators.



Template Generator ● antheus+100A ▲ innovatrics+001C ■ innovatrics+001D + nec+8211 

Neurotechnology+010F

Figure 7: Two finger DET statistics for matcher 0071+0021. Each box shows the distribution of FNMRs at a fixed FMR across all MINEX III compliant template generators. The whisker ends show the minimum and maximum FNMRs. The orange DET curve shows pooled performance against all template generators. Score-level fusion is achieved by averaging the scores for left and right index fingers.

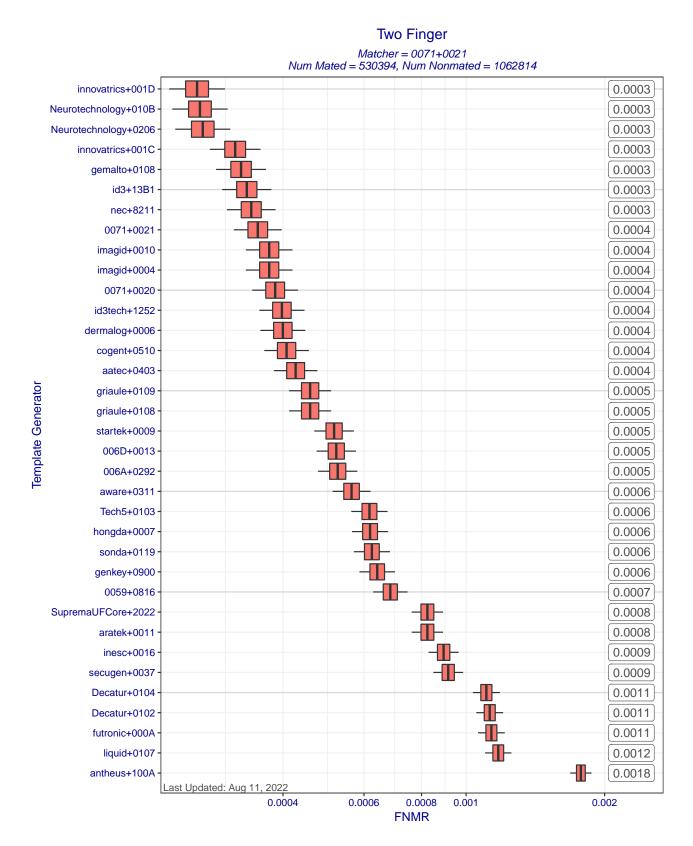


Figure 8: Two finger FNMR at FMR=0.01 when matcher 0071+0021 compares templates created by different template generators. Each box represents uncertainty about the true FNMR. The box edges mark the 50% confidence intervals while the whiskers mark the 90% confidence intervals. The numbers on the right show the actual computed FNMRs. Score-level fusion is achieved by averaging the scores for left and right index fingers.

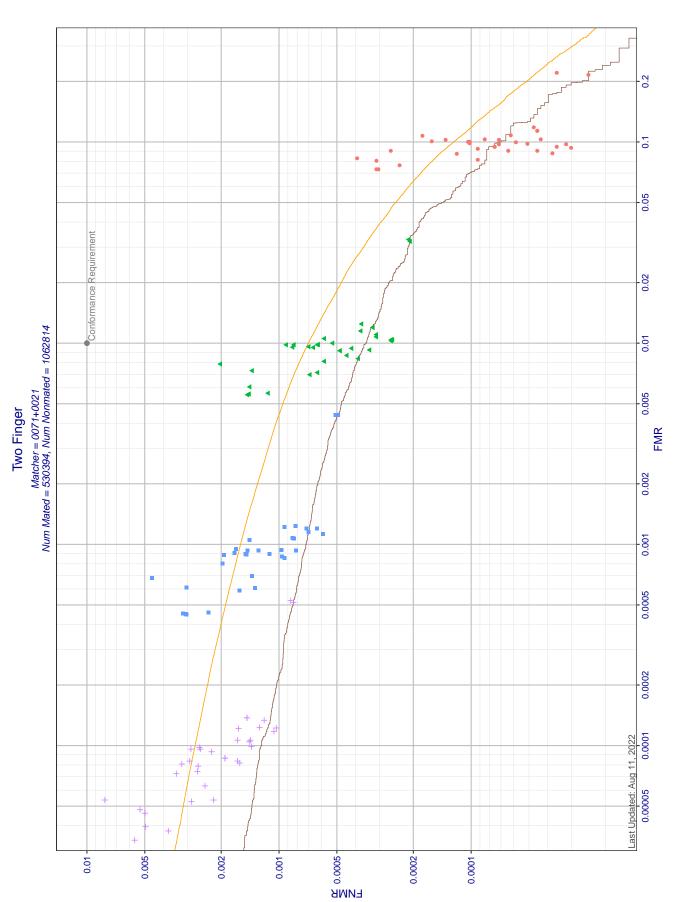


Figure 9: Two finger DET accuracy for matcher 0071+0021. Each cluster of points represents the variation in FMR and FNMR across MINEX III compliant template generators at a fixed decision threshold. Each point corresponds to an (FMR, FNMR) pair for a specific template generator at a particular decision thresholds. Four clusters are produced corresponding to four decision thresholds which produce pooled FMRs of  $10^{-1}$ ,  $10^{-2}$ ,  $10^{-3}$ , and  $10^{-4}$ . The orange DET curve shows pooled performance against all template generators. Score-level fusion is achieved by averaging the scores for left and right index fingers.

#### 3.3 Match Times

To achieve PIV compliance, the matcher must average no more than 10 milliseconds (0.01 seconds) per comparison. Speeds are timed on a machine with an Intel Xeon E5-2680 CPU.



Figure 10: Boxplot of match times for single finger comparisons. The box edges mark the 10th and 90th percentiles while the whiskers mark the maximum and minimum comparison times.

12

#### 3.4 Threshold Statistics

Results in this section are computed by concatenating comparison scores for matcher 0071+0021 across all MINEX III compliant template generators.

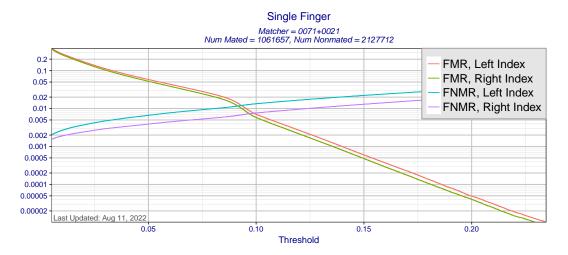


Figure 11: Single finger FMR and FNMR as a function of score threshold for matcher 0071+0021 using templates created by all MINEX III compliant template generators. Separate curves are presented for left and right index fingers.

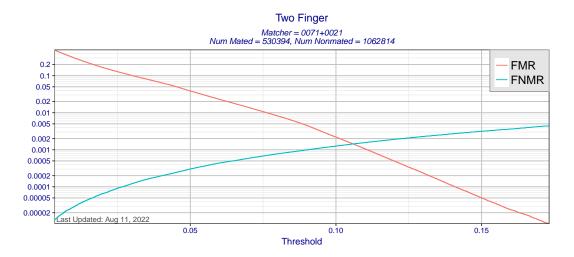


Figure 12: Two finger FMR and FNMR as a function of score threshold for matcher 0071+0021 using templates created by all MINEX III compliant template generators. Score-level fusion is achieved by averaging scores for the left and right index fingers.

|                    | FMR=0.1  | FMR=0.01 | FMR=0.001 | FMR=0.0001 |
|--------------------|----------|----------|-----------|------------|
| Right index finger | 0.030940 | 0.093348 | 0.13554   | 0.18109    |
| Left index finger  | 0.033229 | 0.095332 | 0.13981   | 0.18597    |
| Single finger      | 0.032084 | 0.094340 | 0.13783   | 0.18360    |
| Two finger         | 0.030253 | 0.076258 | 0.11074   | 0.14088    |

Table 1: Threshold calibration table. The cells show the thresholds corresponding to the FMR indicated by the column header.

### 3.5 Q-Q Plot

The Q-Q plot compares two probability distributions. It plots the quantile of one distribution as a function of the other. If the curve follows the y=x line, then the distributions are identical. If the FMR curve is above the y=x line, then the left index finger tends to produce lower non-mated scores than the right index finger. If the FNMR curve is above the y=x line, then the left index finger tends to produce lower mated scores than the right index finger. A jagged and/or truncated curve is indicative of discretized scores.

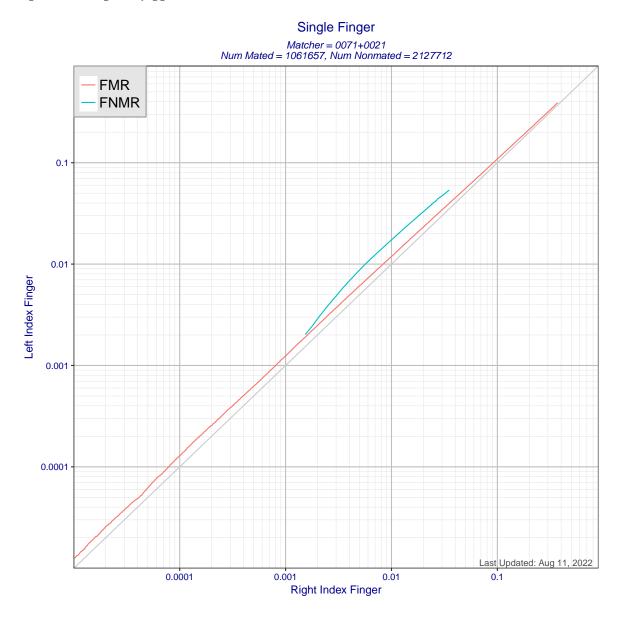


Figure 13: Q-Q plot comparing score distributions for left and right index fingers.

#### 3.6 Effect of Minutia Count on Accuracy

This section shows how the number of minutia found in the samples affects recognition accuracy. To be robust to spoofing and other active attacks, the algorithm should not allow FMR to rise sharply as the number of available minutia decreases. Nor should it allow FMR to rise sharply as the number of detected minutia increases.

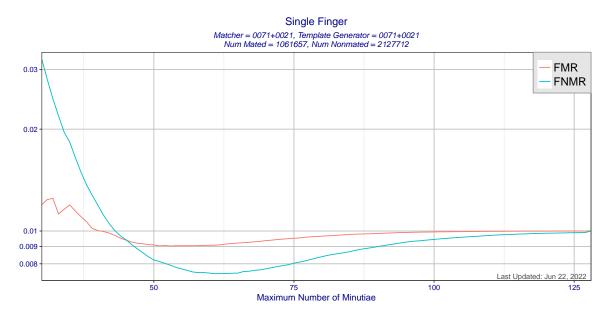


Figure 14: FNMR and FMR as a function of the number of minutia found by the template generator. The vertical axis defines a filter criterion such that FNMR and FMR are computed over only those comparisons where at least one of the compared templates has no more than the specified number of minutia. The threshold is fixed separately for FNMR and FMR to elicit an error rate of approximately 0.01 over unfiltered comparisons.



Figure 15: FNMR and FMR as a function of the number of minutia found by the template generator. The vertical axis defines a filter criterion such that FNMR and FMR are computed over only those comparisons where at least one of the compared templates has at least the indicated number of minutia. The threshold is fixed separately for FNMR and FMR to elicit an error rate of approximately 0.01 over unfiltered comparisons.

### 3.7 Comparison to Ongoing MINEX

MINEX III uses a larger set of comparisons than the older ongoing MINEX evaluation. Although this is generally good because it provides more accurate estimates of performance in MINEX III, it makes it more difficult to directly compare the results in this report to the archived ones from ongoing MINEX. The tables below report DET accuracy at fixed FMRs computed over the same set of comparisons that were used in ongoing MINEX. Ongoing MINEX reported FNMR at FMR = 0.01 for two-finger.

Table 2: Single finger FNMRs at various FMRs when matcher 0071+0021 compares templates created by its template generator and PIV-compliant template generators.

| Enroller             | FNMR @ FMR=0.01     | FNMR @ FMR=0.001    | FNMR @ FMR=0.0001   |
|----------------------|---------------------|---------------------|---------------------|
| 0059+0816            | $0.0107 \pm 0.0003$ | $0.0180 \pm 0.0004$ | $0.0278 \pm 0.0005$ |
| 006A+0292            | $0.0079 \pm 0.0003$ | $0.0129 \pm 0.0004$ | $0.0189 \pm 0.0005$ |
| 006D+0013            | $0.0103 \pm 0.0003$ | $0.0166 \pm 0.0004$ | $0.0239 \pm 0.0005$ |
| 0071+0020            | $0.0057 \pm 0.0002$ | $0.0101 \pm 0.0003$ | $0.0162 \pm 0.0004$ |
| 0071+0021            | $0.0056 \pm 0.0002$ | $0.0098 \pm 0.0003$ | $0.0157 \pm 0.0004$ |
| aatec+0403           | $0.0073 \pm 0.0003$ | $0.0122 \pm 0.0004$ | $0.0183 \pm 0.0004$ |
| antheus+100A         | $0.0220 \pm 0.0005$ | $0.0359 \pm 0.0006$ | $0.0507 \pm 0.0007$ |
| aratek+0011          | $0.0129 \pm 0.0004$ | $0.0205 \pm 0.0005$ | $0.0295 \pm 0.0006$ |
| aware+0311           | $0.0113 \pm 0.0003$ | $0.0178 \pm 0.0004$ | $0.0273 \pm 0.0005$ |
| cogent+0510          | $0.0074 \pm 0.0003$ | $0.0121 \pm 0.0004$ | $0.0183 \pm 0.0004$ |
| Decatur+0102         | $0.0157 \pm 0.0004$ | $0.0237 \pm 0.0005$ | $0.0339 \pm 0.0006$ |
| Decatur+0104         | $0.0157 \pm 0.0004$ | $0.0238 \pm 0.0005$ | $0.0337 \pm 0.0006$ |
| dermalog+0006        | $0.0068 \pm 0.0003$ | $0.0113 \pm 0.0003$ | $0.0174 \pm 0.0004$ |
| futronic+000A        | $0.0160 \pm 0.0004$ | $0.0248 \pm 0.0005$ | $0.0383 \pm 0.0006$ |
| gemalto+0108         | $0.0071 \pm 0.0003$ | $0.0115 \pm 0.0004$ | $0.0173 \pm 0.0004$ |
| genkey+0900          | $0.0097 \pm 0.0003$ | $0.0165 \pm 0.0004$ | $0.0264 \pm 0.0005$ |
| griaule+0108         | $0.0088 \pm 0.0003$ | $0.0144 \pm 0.0004$ | $0.0208 \pm 0.0005$ |
| griaule+0109         | $0.0088 \pm 0.0003$ | $0.0144 \pm 0.0004$ | $0.0208 \pm 0.0005$ |
| hongda+0007          | $0.0102 \pm 0.0003$ | $0.0175 \pm 0.0004$ | $0.0276 \pm 0.0005$ |
| id3+13B1             | $0.0059 \pm 0.0003$ | $0.0100 \pm 0.0003$ | $0.0161 \pm 0.0004$ |
| id3tech+1252         | $0.0071 \pm 0.0003$ | $0.0119 \pm 0.0004$ | $0.0183 \pm 0.0004$ |
| imagid+0004          | $0.0069 \pm 0.0003$ | $0.0117 \pm 0.0004$ | $0.0173 \pm 0.0004$ |
| imagid+0010          | $0.0069 \pm 0.0003$ | $0.0117 \pm 0.0004$ | $0.0173 \pm 0.0004$ |
| inesc+0016           | $0.0136 \pm 0.0004$ | $0.0209 \pm 0.0005$ | $0.0298 \pm 0.0006$ |
| innovatrics+001C     | $0.0075 \pm 0.0003$ | $0.0122 \pm 0.0004$ | $0.0171 \pm 0.0004$ |
| innovatrics+001D     | $0.0055 \pm 0.0002$ | $0.0088 \pm 0.0003$ | $0.0129 \pm 0.0004$ |
| liquid+0107          | $0.0165 \pm 0.0004$ | $0.0269 \pm 0.0005$ | $0.0402 \pm 0.0006$ |
| nec+8211             | $0.0072 \pm 0.0003$ | $0.0118 \pm 0.0004$ | $0.0175 \pm 0.0004$ |
| Neurotechnology+010B | $0.0057 \pm 0.0002$ | $0.0096 \pm 0.0003$ | $0.0141 \pm 0.0004$ |
| Neurotechnology+0206 | $0.0054 \pm 0.0002$ | $0.0089 \pm 0.0003$ | $0.0139 \pm 0.0004$ |
| secugen+0037         | $0.0130 \pm 0.0004$ | $0.0205 \pm 0.0005$ | $0.0316 \pm 0.0006$ |
| sonda+0119           | $0.0096 \pm 0.0003$ | $0.0164 \pm 0.0004$ | $0.0249 \pm 0.0005$ |
| startek+0009         | $0.0095 \pm 0.0003$ | $0.0144 \pm 0.0004$ | $0.0201 \pm 0.0005$ |
| SupremaUFCore+2022   | $0.0112 \pm 0.0003$ | $0.0177 \pm 0.0004$ | $0.0258 \pm 0.0005$ |
| Tech5+0103           | $0.0096 \pm 0.0003$ | $0.0164 \pm 0.0004$ | $0.0253 \pm 0.0005$ |

Table 3: Two finger FNMRs at various FMRs when matcher 0071+0021 compares templates created by its template generator and PIV-compliant template generators.

| Enroller  | FNMR @ FMR=0.01     | FNMR @ FMR=0.001    | FNMR @ FMR=0.0001   |
|-----------|---------------------|---------------------|---------------------|
| 0059+0816 | $0.0008 \pm 0.0001$ | $0.0019 \pm 0.0002$ | $0.0034 \pm 0.0003$ |
| 006A+0292 | $0.0005 \pm 0.0001$ | $0.0010 \pm 0.0001$ | $0.0017 \pm 0.0002$ |
| 006D+0013 | $0.0006 \pm 0.0001$ | $0.0015 \pm 0.0002$ | $0.0026 \pm 0.0002$ |

Table 3: (continued)

|                      | ENIMB & EMB   0.04    | ENDAD OF EMD 0 001  | ENDAD O END O 2024  |
|----------------------|-----------------------|---------------------|---------------------|
| Enroller             | FNMR @ FMR=0.01       | FNMR @ FMR=0.001    | FNMR @ FMR=0.0001   |
| 0071+0020            | $0.00040 \pm 0.00009$ | $0.0008 \pm 0.0001$ | $0.0012 \pm 0.0002$ |
| 0071+0021            | $0.00038 \pm 0.00009$ | $0.0007 \pm 0.0001$ | $0.0011 \pm 0.0002$ |
| aatec+0403           | $0.00043 \pm 0.00010$ | $0.0010 \pm 0.0001$ | $0.0017 \pm 0.0002$ |
| antheus+100A         | $0.0023 \pm 0.0002$   | $0.0051 \pm 0.0003$ | $0.0085 \pm 0.0004$ |
| aratek+0011          | $0.0010 \pm 0.0001$   | $0.0022 \pm 0.0002$ | $0.0036 \pm 0.0003$ |
| aware+0311           | $0.0007 \pm 0.0001$   | $0.0016 \pm 0.0002$ | $0.0027 \pm 0.0002$ |
| cogent+0510          | $0.0005 \pm 0.0001$   | $0.0010 \pm 0.0001$ | $0.0016 \pm 0.0002$ |
| Decatur+0102         | $0.0014 \pm 0.0002$   | $0.0030 \pm 0.0003$ | $0.0051 \pm 0.0003$ |
| Decatur+0104         | $0.0014 \pm 0.0002$   | $0.0030 \pm 0.0003$ | $0.0051 \pm 0.0003$ |
| dermalog+0006        | $0.00040 \pm 0.00009$ | $0.0008 \pm 0.0001$ | $0.0015 \pm 0.0002$ |
| futronic+000A        | $0.0012 \pm 0.0002$   | $0.0028 \pm 0.0002$ | $0.0056 \pm 0.0003$ |
| gemalto+0108         | $0.00032 \pm 0.00008$ | $0.0009 \pm 0.0001$ | $0.0015 \pm 0.0002$ |
| genkey+0900          | $0.0008 \pm 0.0001$   | $0.0016 \pm 0.0002$ | $0.0027 \pm 0.0002$ |
| griaule+0108         | $0.0006 \pm 0.0001$   | $0.0012 \pm 0.0002$ | $0.0019 \pm 0.0002$ |
| griaule+0109         | $0.0006 \pm 0.0001$   | $0.0012 \pm 0.0002$ | $0.0019 \pm 0.0002$ |
| hongda+0007          | $0.0006 \pm 0.0001$   | $0.0015 \pm 0.0002$ | $0.0025 \pm 0.0002$ |
| id3+13B1             | $0.00037 \pm 0.00009$ | $0.0008 \pm 0.0001$ | $0.0014 \pm 0.0002$ |
| id3tech+1252         | $0.00041 \pm 0.00010$ | $0.0010 \pm 0.0001$ | $0.0016 \pm 0.0002$ |
| imagid+0004          | $0.00036 \pm 0.00009$ | $0.0008 \pm 0.0001$ | $0.0015 \pm 0.0002$ |
| imagid+0010          | $0.00036 \pm 0.00009$ | $0.0008 \pm 0.0001$ | $0.0015 \pm 0.0002$ |
| inesc+0016           | $0.0012 \pm 0.0002$   | $0.0024 \pm 0.0002$ | $0.0038 \pm 0.0003$ |
| innovatrics+001C     | $0.00037 \pm 0.00009$ | $0.0009 \pm 0.0001$ | $0.0016 \pm 0.0002$ |
| innovatrics+001D     | $0.00029 \pm 0.00008$ | $0.0006 \pm 0.0001$ | $0.0010 \pm 0.0002$ |
| liquid+0107          | $0.0014 \pm 0.0002$   | $0.0030 \pm 0.0003$ | $0.0053 \pm 0.0003$ |
| nec+8211             | $0.00035 \pm 0.00009$ | $0.0009 \pm 0.0001$ | $0.0017 \pm 0.0002$ |
| Neurotechnology+010B | $0.00031 \pm 0.00008$ | $0.0008 \pm 0.0001$ | $0.0013 \pm 0.0002$ |
| Neurotechnology+0206 | $0.00036 \pm 0.00009$ | $0.0007 \pm 0.0001$ | $0.0011 \pm 0.0002$ |
| secugen+0037         | $0.0010 \pm 0.0002$   | $0.0021 \pm 0.0002$ | $0.0040 \pm 0.0003$ |
| sonda+0119           | $0.0008 \pm 0.0001$   | $0.0017 \pm 0.0002$ | $0.0028 \pm 0.0002$ |
| startek+0009         | $0.0006 \pm 0.0001$   | $0.0012 \pm 0.0002$ | $0.0019 \pm 0.0002$ |
| SupremaUFCore+2022   | $0.0009 \pm 0.0001$   | $0.0019 \pm 0.0002$ | $0.0032 \pm 0.0003$ |
| Tech5+0103           | $0.0007 \pm 0.0001$   | $0.0016 \pm 0.0002$ | $0.0029 \pm 0.0003$ |
|                      |                       |                     |                     |

## 4 Performance Tables

The following tables present accuracy numbers, including estimates of uncertainty in the form of 90% confidence bounds. These tables are provided because most of the figures in the main body of this report do not present numerical results.

Table 4: Single finger FNMRs at various FMRs when matcher 0071+0021 compares templates created by its template generator and PIV-compliant template generators.

| Enroller             | FNMR @ FMR=0.01     | FNMR @ FMR=0.001    | FNMR @ FMR=0.0001   |
|----------------------|---------------------|---------------------|---------------------|
| 0059+0816            | $0.0101 \pm 0.0002$ | $0.0168 \pm 0.0002$ | $0.0258 \pm 0.0003$ |
| 006A+0292            | $0.0085 \pm 0.0001$ | $0.0138 \pm 0.0002$ | $0.0206 \pm 0.0002$ |
| 006D+0013            | $0.0092 \pm 0.0002$ | $0.0143 \pm 0.0002$ | $0.0214 \pm 0.0002$ |
| 0071+0020            | $0.0058 \pm 0.0001$ | $0.0099 \pm 0.0002$ | $0.0150 \pm 0.0002$ |
| 0071+0021            | $0.0058 \pm 0.0001$ | $0.0098 \pm 0.0002$ | $0.0149 \pm 0.0002$ |
| aatec+0403           | $0.0073 \pm 0.0001$ | $0.0120 \pm 0.0002$ | $0.0179 \pm 0.0002$ |
| antheus+100A         | $0.0184 \pm 0.0002$ | $0.0306 \pm 0.0003$ | $0.0460 \pm 0.0003$ |
| aratek+0011          | $0.0112 \pm 0.0002$ | $0.0175 \pm 0.0002$ | $0.0257 \pm 0.0003$ |
| aware+0311           | $0.0101 \pm 0.0002$ | $0.0163 \pm 0.0002$ | $0.0246 \pm 0.0002$ |
| cogent+0510          | $0.0072 \pm 0.0001$ | $0.0115 \pm 0.0002$ | $0.0170 \pm 0.0002$ |
| Decatur+0102         | $0.0135 \pm 0.0002$ | $0.0207 \pm 0.0002$ | $0.0302 \pm 0.0003$ |
| Decatur+0104         | $0.0135 \pm 0.0002$ | $0.0208 \pm 0.0002$ | $0.0302 \pm 0.0003$ |
| dermalog+0006        | $0.0068 \pm 0.0001$ | $0.0109 \pm 0.0002$ | $0.0160 \pm 0.0002$ |
| futronic+000A        | $0.0141 \pm 0.0002$ | $0.0220 \pm 0.0002$ | $0.0323 \pm 0.0003$ |
| gemalto+0108         | $0.0069 \pm 0.0001$ | $0.0111 \pm 0.0002$ | $0.0163 \pm 0.0002$ |
| genkey+0900          | $0.0093 \pm 0.0002$ | $0.0154 \pm 0.0002$ | $0.0238 \pm 0.0002$ |
| griaule+0108         | $0.0083 \pm 0.0001$ | $0.0132 \pm 0.0002$ | $0.0193 \pm 0.0002$ |
| griaule+0109         | $0.0083 \pm 0.0001$ | $0.0132 \pm 0.0002$ | $0.0193 \pm 0.0002$ |
| hongda+0007          | $0.0096 \pm 0.0002$ | $0.0164 \pm 0.0002$ | $0.0249 \pm 0.0002$ |
| id3+13B1             | $0.0061 \pm 0.0001$ | $0.0100 \pm 0.0002$ | $0.0151 \pm 0.0002$ |
| id3tech+1252         | $0.0072 \pm 0.0001$ | $0.0117 \pm 0.0002$ | $0.0175 \pm 0.0002$ |
| imagid+0004          | $0.0070 \pm 0.0001$ | $0.0113 \pm 0.0002$ | $0.0172 \pm 0.0002$ |
| imagid+0010          | $0.0070 \pm 0.0001$ | $0.0113 \pm 0.0002$ | $0.0172 \pm 0.0002$ |
| inesc+0016           | $0.0120 \pm 0.0002$ | $0.0180 \pm 0.0002$ | $0.0258 \pm 0.0003$ |
| innovatrics+001C     | $0.0069 \pm 0.0001$ | $0.0110 \pm 0.0002$ | $0.0161 \pm 0.0002$ |
| innovatrics+001D     | $0.0056 \pm 0.0001$ | $0.0088 \pm 0.0001$ | $0.0129 \pm 0.0002$ |
| liquid+0107          | $0.0150 \pm 0.0002$ | $0.0242 \pm 0.0002$ | $0.0354 \pm 0.0003$ |
| nec+8211             | $0.0069 \pm 0.0001$ | $0.0113 \pm 0.0002$ | $0.0167 \pm 0.0002$ |
| Neurotechnology+010B | $0.0061 \pm 0.0001$ | $0.0098 \pm 0.0002$ | $0.0144 \pm 0.0002$ |
| Neurotechnology+0206 | $0.0058 \pm 0.0001$ | $0.0093 \pm 0.0002$ | $0.0137 \pm 0.0002$ |
| secugen+0037         | $0.0113 \pm 0.0002$ | $0.0182 \pm 0.0002$ | $0.0269 \pm 0.0003$ |
| sonda+0119           | $0.0093 \pm 0.0002$ | $0.0155 \pm 0.0002$ | $0.0235 \pm 0.0002$ |
| startek+0009         | $0.0088 \pm 0.0001$ | $0.0134 \pm 0.0002$ | $0.0195 \pm 0.0002$ |
| SupremaUFCore+2022   | $0.0100 \pm 0.0002$ | $0.0157 \pm 0.0002$ | $0.0227 \pm 0.0002$ |
| Tech5+0103           | $0.0093 \pm 0.0002$ | $0.0154 \pm 0.0002$ | $0.0236 \pm 0.0002$ |
| Pooled               | $0.0096 \pm 0.0002$ | $0.0157 \pm 0.0002$ | $0.0235 \pm 0.0002$ |

Table 5: Right index finger FNMRs at various FMRs when matcher 0071+0021 compares templates created by its template generator and PIV-compliant template generators.

| 0059+0816                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Enroller | FNMR @ FMR=0.01 | FNMR @ FMR=0.001 | FNMR @ FMR=0.0001 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------|------------------|-------------------|
| $\begin{array}{c} 006A+0292 & 0.0061\pm0.0002 & 0.0100\pm0.0002 & 0.0153\pm0.0003 \\ 006D+0013 & 0.0065\pm0.0002 & 0.0102\pm0.0002 & 0.0158\pm0.0003 \\ 0071+0020 & 0.0046\pm0.0002 & 0.0076\pm0.0002 & 0.0115\pm0.0002 \\ 0071+0021 & 0.0046\pm0.0002 & 0.0075\pm0.0002 & 0.0112\pm0.0002 \\ aatec+0403 & 0.0055\pm0.0002 & 0.0090\pm0.0002 & 0.0112\pm0.0003 \\ aatec+0403 & 0.0055\pm0.0002 & 0.0090\pm0.0002 & 0.0137\pm0.0003 \\ antheus+100A & 0.0130\pm0.0003 & 0.0224\pm0.0003 & 0.0351\pm0.0004 \\ aratek+0011 & 0.0077\pm0.0002 & 0.0123\pm0.0002 & 0.0184\pm0.0003 \\ aware+0311 & 0.0068\pm0.0002 & 0.0114\pm0.0002 & 0.0176\pm0.0003 \\ cogent+0510 & 0.0051\pm0.0002 & 0.0081\pm0.0002 & 0.0176\pm0.0002 \\ Decatur+0102 & 0.0091\pm0.0002 & 0.0143\pm0.0003 & 0.0220\pm0.0003 \\ dermalog+0006 & 0.0050\pm0.0002 & 0.0144\pm0.0003 & 0.0217\pm0.0003 \\ dermalog+0006 & 0.0050\pm0.0002 & 0.0079\pm0.0002 & 0.0116\pm0.0002 \\ futronic+000A & 0.0098\pm0.0002 & 0.0159\pm0.0003 & 0.0244\pm0.0003 \\ genkey+0900 & 0.0066\pm0.0002 & 0.0179\pm0.0002 & 0.0116\pm0.0002 \\ genkey+0900 & 0.0066\pm0.0002 & 0.0179\pm0.0002 & 0.0120\pm0.0003 \\ griaule+0108 & 0.0051\pm0.0002 & 0.0079\pm0.0002 & 0.0120\pm0.0003 \\ griaule+0108 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ griaule+0109 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ hongda+0007 & 0.0665\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ id3+13B1 & 0.0049\pm0.0002 & 0.0076\pm0.0002 & 0.0172\pm0.0003 \\ id3ech+1252 & 0.0053\pm0.0002 & 0.0084\pm0.0002 & 0.0172\pm0.0003 \\ imagid+0004 & 0.0051\pm0.0002 & 0.0084\pm0.0002 & 0.0139\pm0.0003 \\ imagid+0010 & 0.0051\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ innovatrics+001C & 0.0051\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ innovatrics+001D & 0.0043\pm0.0002 & 0.0077\pm0.0002 & 0.0126\pm0.0003 \\ innovatrics+001D & 0.0043\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ innovatrics+001D & 0.0043\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ innovatrics+001D & 0.0043\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ innovatrics+001D & 0.0043\pm0.0002 & 0.0081\pm0.0002 & 0.0126\pm0.0002 \\ innovatrics+001D & 0.0045\pm0.0002 & 0.0081\pm0.0002 & 0.0169\pm0.0002 \\ Neurotechnology+0206 & 0.0045\pm0.0002 & 0.0174\pm0.0003 & 0.0169\pm0.0002 \\ Secugen+0037 &$                                                                                                              |          |                 |                  |                   |
| $\begin{array}{c} 006 \mathrm{D} + 0013 & 0.0065 \pm 0.0002 & 0.0102 \pm 0.0002 & 0.0115 \pm 0.0003 \\ 0071 + 0021 & 0.0046 \pm 0.0002 & 0.0076 \pm 0.0002 & 0.0115 \pm 0.0002 \\ 0071 + 0021 & 0.0046 \pm 0.0002 & 0.0075 \pm 0.0002 & 0.0112 \pm 0.0002 \\ 0070 + 0021 & 0.0046 \pm 0.0002 & 0.0075 \pm 0.0002 & 0.0112 \pm 0.0002 \\ 0.0137 \pm 0.0003 & 0.0224 \pm 0.0003 & 0.0351 \pm 0.0004 \\ 0.0130 \pm 0.0003 & 0.0224 \pm 0.0003 & 0.0351 \pm 0.0004 \\ 0.0130 \pm 0.0003 & 0.0224 \pm 0.0002 & 0.0184 \pm 0.0003 \\ 0.0141 \pm 0.0002 & 0.0114 \pm 0.0002 & 0.0184 \pm 0.0003 \\ 0.0176 \pm 0.0003 & 0.00114 \pm 0.0002 & 0.0176 \pm 0.0003 \\ 0.0176 \pm 0.0003 & 0.00114 \pm 0.0002 & 0.0114 \pm 0.0002 \\ 0.0122 \pm 0.0002 & 0.00114 \pm 0.0002 & 0.0122 \pm 0.0002 \\ 0.0122 \pm 0.0002 & 0.00114 \pm 0.0003 & 0.0220 \pm 0.0003 \\ 0.0217 \pm 0.0003 & 0.0220 \pm 0.0003 \\ 0.0217 \pm 0.0003 & 0.0217 \pm 0.0003 \\ 0.0217 \pm 0.0003 & 0.00114 \pm 0.0002 & 0.0116 \pm 0.0002 \\ 0.0176 \pm 0.0002 & 0.0079 \pm 0.0002 & 0.0116 \pm 0.0002 \\ 0.0176 \pm 0.0003 & 0.00116 \pm 0.0002 & 0.0079 \pm 0.0002 \\ 0.0176 \pm 0.0003 & 0.00116 \pm 0.0002 \\ 0.0176 \pm 0.0003 & 0.00116 \pm 0.0002 \\ 0.0178 \pm 0.0003 & 0.00116 \pm 0.0002 \\ 0.0178 \pm 0.0003 \\ 0.0178 \pm 0.0003 \\ 0.0172 \pm 0.0002 \\ 0.0172 \pm 0.0003 \\ 0.0172 \pm 0.0003 \\ 0.0172 \pm 0.0003 \\ 0.0172 \pm$                                  |          |                 |                  |                   |
| $\begin{array}{c} 0071+0020 & 0.0046\pm0.0002 & 0.0076\pm0.0002 & 0.0115\pm0.0002 \\ 0071+0021 & 0.0046\pm0.0002 & 0.0075\pm0.0002 & 0.0112\pm0.0002 \\ aatec+0403 & 0.0055\pm0.0002 & 0.0090\pm0.0002 & 0.0137\pm0.0003 \\ antheus+100A & 0.0130\pm0.0003 & 0.0224\pm0.0003 & 0.0351\pm0.0004 \\ aratek+0011 & 0.0077\pm0.0002 & 0.0123\pm0.0002 & 0.0184\pm0.0003 \\ aware+0311 & 0.0068\pm0.0002 & 0.0114\pm0.0002 & 0.0176\pm0.0003 \\ cogent+0510 & 0.0051\pm0.0002 & 0.0081\pm0.0002 & 0.0122\pm0.0002 \\ Decatur+0102 & 0.0091\pm0.0002 & 0.0143\pm0.0003 & 0.0220\pm0.0003 \\ Decatur+0104 & 0.0091\pm0.0002 & 0.0143\pm0.0003 & 0.0217\pm0.0003 \\ dermalog+0006 & 0.0050\pm0.0002 & 0.0079\pm0.0002 & 0.0116\pm0.0002 \\ futronic+000A & 0.0098\pm0.0002 & 0.0079\pm0.0002 & 0.0116\pm0.0002 \\ genkey+0900 & 0.0066\pm0.0002 & 0.0079\pm0.0002 & 0.0120\pm0.0003 \\ griaule+0108 & 0.0051\pm0.0002 & 0.0079\pm0.0002 & 0.0120\pm0.0003 \\ griaule+0108 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0178\pm0.0003 \\ griaule+0109 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ id3+13B1 & 0.0049\pm0.0002 & 0.0013\pm0.0002 & 0.0139\pm0.0003 \\ id3+13B1 & 0.0049\pm0.0002 & 0.0076\pm0.0002 & 0.0119\pm0.0002 \\ id3tech+1252 & 0.0053\pm0.0002 & 0.0087\pm0.0002 & 0.0119\pm0.0003 \\ imagid+0004 & 0.0051\pm0.0002 & 0.0087\pm0.0002 & 0.0119\pm0.0003 \\ imagid+0010 & 0.0051\pm0.0002 & 0.0087\pm0.0002 & 0.0126\pm0.0003 \\ imagid+0010 & 0.0051\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ imagid+0010 & 0.0051\pm0.0002 & 0.0088\pm0.0002 & 0.0126\pm0.0003 \\ innovatrics+001D & 0.0043\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ innovatrics+001D & 0.0043\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ innovatrics+001D & 0.0043\pm0.0002 & 0.0081\pm0.0002 & 0.0126\pm0.0002 \\ innovatrics+001D & 0.0043\pm0.0002 & 0.0081\pm0.0002 & 0.0113\pm0.0002 \\ Neurotechnology+010B & 0.0047\pm0.0002 & 0.0011\pm0.0002 & 0.0115\pm0.0002 \\ Neurotechnology+0206 & 0.0045\pm0.0002 & 0.0012\pm0.0002 & 0.0116\pm0.0002 \\ Neurotechnology+0206 & 0.0045\pm0.0002 & 0.0129\pm0.0003 & 0.0126\pm0.0003 \\ secugen+0037 & 0.0080\pm0.0002 & 0.0129\pm0.0003 & 0.0169\pm0.0003 \\ SupremaUFCore+2022 & 0.0073\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ SupremaUFCore+2022 & 0.0073\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0$                                                                                                               |          |                 |                  |                   |
| $\begin{array}{c} 0071+0021 \\ aatec+0403 \\ aatec+0403 \\ 0.0055 \pm 0.0002 \\ 0.0090 \pm 0.0002 \\ 0.0090 \pm 0.0002 \\ 0.0037 \pm 0.0003 \\ 0.0224 \pm 0.0003 \\ 0.0351 \pm 0.0004 \\ 0.0031 \\ 0.0051 \pm 0.0002 \\ 0.0123 \pm 0.0002 \\ 0.0114 \pm 0.0002 \\ 0.0114 \pm 0.0002 \\ 0.0114 \pm 0.0003 \\ 0.0051 \pm 0.0002 \\ 0.0114 \pm 0.0002 \\ 0.0114 \pm 0.0002 \\ 0.0114 \pm 0.0003 \\ 0.0075 \pm 0.0002 \\ 0.0114 \pm 0.0002 \\ 0.0081 \pm 0.0002 \\ 0.0114 \pm 0.0002 \\ 0.0091 \pm 0.0002 \\ 0.0091 \pm 0.0002 \\ 0.0003 \\ 0.0003 \\ 0.0021 \pm 0.0003 \\ 0.0003 \\ 0.0014 \pm 0.0003 \\ 0.0021 \pm 0.0003 \\ 0.0014 \pm 0.0003 \\ 0.0021 \pm 0.0003 \\ 0.0014 \pm 0.0003 \\ 0.0014 \pm 0.0003 \\ 0.00116 \pm 0.0002 \\ 0.0019 \pm 0.0003 \\ 0.00112 \pm 0.0003 \\ 0.0024 \pm 0.0003 \\ 0.0024 \pm 0.0003 \\ 0.0120 \pm 0.0003 \\ 0.0139 \pm 0.0003 \\ 0.0035 \pm 0.0002 \\ 0.0094 \pm 0.0002 \\ 0.0113 \pm 0.0002 \\ 0.0178 \pm 0.0003 \\ 0.0172 \pm 0.0003 \\ 0.003 \pm 0.0002 \\ 0.0126 \pm 0.0003 \\ 0.003 \pm 0.0002 \\ 0.0126 \pm 0.0003 \\ 0.003 \pm 0.0002 \\ 0.0126 \pm 0.0003 \\ 0.0126 \pm 0.0002 \\ 0.0126 \pm 0.0003 \\ 0.0126 \pm 0.0002 \\ 0.0126 \pm 0.0003 \\ 0.0123 \pm 0.0002 \\ 0.0126 \pm 0.0003 \\ 0.0123 \pm 0.0002 \\ 0.0114 \pm 0.0002 \\ 0.0115 \pm 0.0002 \\ 0.0115 \pm 0.0002 \\ 0.0115 \pm 0.0002 \\ 0.0115 \pm 0.0002 \\ 0.0116 \pm 0.0002 \\ 0.0116 \pm 0.0003 \\ 0.0123 \pm 0.0003 \\ 0.0123 \pm 0.0003 \\ 0.0134 \pm 0.0003 \\ 0.0169 \pm 0$ |          |                 |                  |                   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $\begin{array}{c} aware+0311 \\ cogent+0510 \\ cogent+0510 \\ do 0.0051\pm 0.0002 \\ do 0.0081\pm 0.0002 \\ do 0.0081\pm 0.0002 \\ do 0.0122\pm 0.0002 \\ do 0.0122\pm 0.0002 \\ do 0.0122\pm 0.0002 \\ do 0.0122\pm 0.0003 \\ do 0.0220\pm 0.0003 \\ dermalog+0006 \\ do 0.0050\pm 0.0002 \\ dermalog+0006 \\ do 0.0050\pm 0.0002 \\ dermalog+0006 \\ do 0.0050\pm 0.0002 \\ dermalog+0000A \\ do 0.0098\pm 0.0002 \\ dermalog+0000A \\ do 0.0098\pm 0.0002 \\ dermalog+0000A \\ do 0.0098\pm 0.0002 \\ do 0.0159\pm 0.0003 \\ do 0.0244\pm 0.0003 \\ do 0.0024\pm 0.0002 \\ do 0.0159\pm 0.0002 \\ do 0.0159\pm 0.0002 \\ do 0.0120\pm 0.0002 \\ do 0.0120\pm 0.0002 \\ do 0.0120\pm 0.0002 \\ do 0.0120\pm 0.0003 \\$                                        |          |                 |                  |                   |
| $\begin{array}{c} cogent+0510 & 0.0051\pm0.0002 & 0.0081\pm0.0002 & 0.0122\pm0.0002 \\ Decatur+0102 & 0.0091\pm0.0002 & 0.0143\pm0.0003 & 0.0220\pm0.0003 \\ Decatur+0104 & 0.0091\pm0.0002 & 0.0144\pm0.0003 & 0.0217\pm0.0003 \\ dermalog+0006 & 0.0050\pm0.0002 & 0.0079\pm0.0002 & 0.0116\pm0.0002 \\ futronic+000A & 0.0098\pm0.0002 & 0.0159\pm0.0003 & 0.0244\pm0.0003 \\ gemalto+0108 & 0.0051\pm0.0002 & 0.0079\pm0.0002 & 0.0120\pm0.0002 \\ genkey+0900 & 0.0066\pm0.0002 & 0.0112\pm0.0002 & 0.0178\pm0.0003 \\ griaule+0108 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ griaule+0109 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ hongda+0007 & 0.0065\pm0.0002 & 0.0013\pm0.0002 & 0.0139\pm0.0003 \\ id3+13B1 & 0.0049\pm0.0002 & 0.0076\pm0.0002 & 0.0119\pm0.0002 \\ id3tech+1252 & 0.0053\pm0.0002 & 0.0087\pm0.0002 & 0.0119\pm0.0003 \\ imagid+0004 & 0.0051\pm0.0002 & 0.0087\pm0.0002 & 0.0135\pm0.0003 \\ imagid+0010 & 0.0051\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ inesc+0016 & 0.0081\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ innovatrics+001C & 0.0050\pm0.0002 & 0.0080\pm0.0002 & 0.0126\pm0.0003 \\ innovatrics+001D & 0.0043\pm0.0001 & 0.0067\pm0.0002 & 0.0125\pm0.0003 \\ incec+8211 & 0.0049\pm0.0002 & 0.0080\pm0.0002 & 0.0123\pm0.0002 \\ Neurotechnology+010B & 0.0047\pm0.0002 & 0.0077\pm0.0002 & 0.0115\pm0.0002 \\ Neurotechnology+010B & 0.0047\pm0.0002 & 0.0077\pm0.0002 & 0.0115\pm0.0002 \\ Neurotechnology+0206 & 0.0045\pm0.0002 & 0.0071\pm0.0002 & 0.0166\pm0.0002 \\ secugen+0037 & 0.0080\pm0.0002 & 0.0071\pm0.0002 & 0.0166\pm0.0002 \\ Neurotechnology+0206 & 0.0045\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ startek+0009 & 0.0060\pm0.0002 & 0.0011\pm0.0002 & 0.0168\pm0.0003 \\ SupremaUFCore+2022 & 0.0073\pm0.0002 & 0.0111\pm0.0002 & 0.0168\pm0.0003 \\ SupremaUFCore+2022 & 0.0073\pm0.0002 & 0.0111\pm0.0002 & 0.0168\pm0.0003 \\ SupremaUFCore+2022 & 0.0073\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ SupremaUFCore+2022 & 0.0073\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ SupremaUF$                                                                                                                     |          |                 |                  |                   |
| $\begin{array}{c} Decatur+0102 & 0.0091\pm0.0002 & 0.0143\pm0.0003 & 0.0220\pm0.0003 \\ Decatur+0104 & 0.0091\pm0.0002 & 0.0144\pm0.0003 & 0.0217\pm0.0003 \\ dermalog+0006 & 0.0050\pm0.0002 & 0.0079\pm0.0002 & 0.0116\pm0.0002 \\ futronic+000A & 0.0098\pm0.0002 & 0.0159\pm0.0003 & 0.0244\pm0.0003 \\ gemklo+0108 & 0.0051\pm0.0002 & 0.0079\pm0.0002 & 0.0120\pm0.0002 \\ genkey+0900 & 0.0066\pm0.0002 & 0.0112\pm0.0002 & 0.0178\pm0.0003 \\ griaule+0108 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ griaule+0109 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ griaule+0109 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ hongda+0007 & 0.0065\pm0.0002 & 0.0113\pm0.0002 & 0.0172\pm0.0003 \\ id3+13B1 & 0.0049\pm0.0002 & 0.0076\pm0.0002 & 0.0119\pm0.0002 \\ id3tech+1252 & 0.0053\pm0.0002 & 0.0087\pm0.0002 & 0.0135\pm0.0003 \\ imagid+0004 & 0.0051\pm0.0002 & 0.0087\pm0.0002 & 0.0126\pm0.0003 \\ imagid+0010 & 0.0051\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ inesc+0016 & 0.0081\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ innovatrics+001C & 0.0050\pm0.0002 & 0.0080\pm0.0002 & 0.0120\pm0.0003 \\ innovatrics+001D & 0.0043\pm0.0001 & 0.0067\pm0.0002 & 0.0120\pm0.0002 \\ liquid+0107 & 0.0105\pm0.0002 & 0.0174\pm0.0002 & 0.0123\pm0.0002 \\ liquid+0107 & 0.0105\pm0.0002 & 0.0174\pm0.0002 & 0.0123\pm0.0002 \\ Neurotechnology+010B & 0.0047\pm0.0002 & 0.0077\pm0.0002 & 0.0115\pm0.0002 \\ Neurotechnology+0206 & 0.0045\pm0.0002 & 0.0077\pm0.0002 & 0.0115\pm0.0002 \\ secugen+0037 & 0.0080\pm0.0002 & 0.0171\pm0.0002 & 0.0166\pm0.0002 \\ secugen+0037 & 0.0080\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ startek+0009 & 0.0060\pm0.0002 & 0.00111\pm0.0002 & 0.0168\pm0.0003 \\ SupremaUFCore+2022 & 0.0073\pm0.0002 & 0.0111\pm0.0002 & 0.0168\pm0.0003 \\ Tech5+0103 & 0.0067\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ \end{array} $                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |                 |                  |                   |
| $\begin{array}{c} Decatur+0104 & 0.0091\pm0.0002 & 0.0144\pm0.0003 & 0.0217\pm0.0003 \\ dermalog+0006 & 0.0050\pm0.0002 & 0.0079\pm0.0002 & 0.0116\pm0.0002 \\ futronic+000A & 0.0098\pm0.0002 & 0.0159\pm0.0003 & 0.0244\pm0.0003 \\ gemalto+0108 & 0.0051\pm0.0002 & 0.0079\pm0.0002 & 0.0120\pm0.0002 \\ genkey+0900 & 0.0066\pm0.0002 & 0.0112\pm0.0002 & 0.0178\pm0.0003 \\ griaule+0108 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ griaule+0109 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ hongda+0007 & 0.0065\pm0.0002 & 0.0113\pm0.0002 & 0.0172\pm0.0003 \\ id3+13B1 & 0.0049\pm0.0002 & 0.0076\pm0.0002 & 0.0119\pm0.0002 \\ id3tech+1252 & 0.0053\pm0.0002 & 0.0087\pm0.0002 & 0.0135\pm0.0003 \\ imagid+0004 & 0.0051\pm0.0002 & 0.0087\pm0.0002 & 0.0126\pm0.0003 \\ imagid+0010 & 0.0051\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ inesc+0016 & 0.0081\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ innovatrics+001C & 0.0050\pm0.0002 & 0.0080\pm0.0002 & 0.0120\pm0.0002 \\ innovatrics+001D & 0.0043\pm0.0001 & 0.0067\pm0.0002 & 0.0098\pm0.0002 \\ liquid+0107 & 0.0105\pm0.0002 & 0.0174\pm0.0002 & 0.0123\pm0.0002 \\ liquid+0107 & 0.0105\pm0.0002 & 0.0174\pm0.0003 & 0.0265\pm0.0004 \\ nec+8211 & 0.0049\pm0.0002 & 0.0071\pm0.0002 & 0.0123\pm0.0002 \\ Neurotechnology+010B & 0.0047\pm0.0002 & 0.0077\pm0.0002 & 0.0115\pm0.0002 \\ Neurotechnology+0206 & 0.0045\pm0.0002 & 0.0077\pm0.0002 & 0.0169\pm0.0003 \\ secugen+0037 & 0.0080\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ SupremaUFCore+2022 & 0.0073\pm0.0002 & 0.0111\pm0.0002 & 0.0168\pm0.0003 \\ Tech5+0103 & 0.0067\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ Tech5+0103 & 0.0067\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ \hline \end{tabular}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          |                 |                  |                   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $\begin{array}{c} gemalto+0108 & 0.0051\pm0.0002 & 0.0079\pm0.0002 & 0.0120\pm0.0002 \\ genkey+0900 & 0.0066\pm0.0002 & 0.0112\pm0.0002 & 0.0178\pm0.0003 \\ griaule+0108 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ griaule+0109 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ hongda+0007 & 0.0065\pm0.0002 & 0.0113\pm0.0002 & 0.0172\pm0.0003 \\ id3+13B1 & 0.0049\pm0.0002 & 0.0076\pm0.0002 & 0.0119\pm0.0002 \\ id3tech+1252 & 0.0053\pm0.0002 & 0.0087\pm0.0002 & 0.0135\pm0.0003 \\ imagid+0004 & 0.0051\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ imagid+0010 & 0.0051\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ innovatrics+0016 & 0.0081\pm0.0002 & 0.0125\pm0.0003 & 0.0183\pm0.0003 \\ innovatrics+001D & 0.0050\pm0.0002 & 0.0080\pm0.0002 & 0.0120\pm0.0002 \\ ilquid+0107 & 0.0105\pm0.0002 & 0.0174\pm0.0002 & 0.0098\pm0.0002 \\ liquid+0107 & 0.0105\pm0.0002 & 0.0174\pm0.0003 & 0.0265\pm0.0004 \\ nec+8211 & 0.0049\pm0.0002 & 0.0081\pm0.0002 & 0.0123\pm0.0002 \\ Neurotechnology+010B & 0.0047\pm0.0002 & 0.0071\pm0.0002 & 0.0115\pm0.0002 \\ Neurotechnology+0206 & 0.0045\pm0.0002 & 0.0071\pm0.0002 & 0.0115\pm0.0002 \\ secugen+0037 & 0.0080\pm0.0002 & 0.0129\pm0.0003 & 0.0169\pm0.0003 \\ startek+0009 & 0.0067\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ SupremaUFCore+2022 & 0.0073\pm0.0002 & 0.0116\pm0.0002 & 0.0168\pm0.0003 \\ Tech5+0103 & 0.0067\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ Tech5+0103 & 0.0067\pm0.0002 & 0.01$                                                                                                            |          |                 |                  |                   |
| $\begin{array}{c} genkey+0900 & 0.0066\pm0.0002 & 0.0112\pm0.0002 & 0.0178\pm0.0003 \\ griaule+0108 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ griaule+0109 & 0.0059\pm0.0002 & 0.0094\pm0.0002 & 0.0139\pm0.0003 \\ hongda+0007 & 0.0065\pm0.0002 & 0.0113\pm0.0002 & 0.0172\pm0.0003 \\ id3+13B1 & 0.0049\pm0.0002 & 0.0076\pm0.0002 & 0.0119\pm0.0002 \\ id3tech+1252 & 0.0053\pm0.0002 & 0.0087\pm0.0002 & 0.0135\pm0.0003 \\ imagid+0004 & 0.0051\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ imagid+0010 & 0.0051\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ inesc+0016 & 0.0081\pm0.0002 & 0.0125\pm0.0003 & 0.0183\pm0.0003 \\ innovatrics+001C & 0.0050\pm0.0002 & 0.0080\pm0.0002 & 0.0120\pm0.0002 \\ innovatrics+001D & 0.0043\pm0.0001 & 0.0067\pm0.0002 & 0.0098\pm0.0002 \\ liquid+0107 & 0.0105\pm0.0002 & 0.0174\pm0.0003 & 0.0265\pm0.0004 \\ nec+8211 & 0.0049\pm0.0002 & 0.0081\pm0.0002 & 0.0123\pm0.0002 \\ Neurotechnology+010B & 0.0047\pm0.0002 & 0.0077\pm0.0002 & 0.0115\pm0.0002 \\ Neurotechnology+0206 & 0.0045\pm0.0002 & 0.0077\pm0.0002 & 0.0115\pm0.0002 \\ secugen+0037 & 0.0080\pm0.0002 & 0.0171\pm0.0002 & 0.0160\pm0.0002 \\ secugen+0037 & 0.0080\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ startek+0009 & 0.0060\pm0.0002 & 0.0091\pm0.0002 & 0.0134\pm0.0003 \\ SupremaUFCore+2022 & 0.0073\pm0.0002 & 0.0111\pm0.0002 & 0.0168\pm0.0003 \\ Tech5+0103 & 0.0067\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ Tech5+0103 & 0.0067\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |          |                 |                  |                   |
| $\begin{array}{c} \mbox{griaule} + 0108 & 0.0059 \pm 0.0002 & 0.0094 \pm 0.0002 & 0.0139 \pm 0.0003 \\ \mbox{griaule} + 0109 & 0.0059 \pm 0.0002 & 0.0094 \pm 0.0002 & 0.0139 \pm 0.0003 \\ \mbox{hongda} + 0007 & 0.0065 \pm 0.0002 & 0.0113 \pm 0.0002 & 0.0172 \pm 0.0003 \\ \mbox{id3} + 13B1 & 0.0049 \pm 0.0002 & 0.0076 \pm 0.0002 & 0.0119 \pm 0.0002 \\ \mbox{id3tech} + 1252 & 0.0053 \pm 0.0002 & 0.0087 \pm 0.0002 & 0.0135 \pm 0.0003 \\ \mbox{imagid} + 0004 & 0.0051 \pm 0.0002 & 0.0084 \pm 0.0002 & 0.0126 \pm 0.0003 \\ \mbox{imagid} + 0010 & 0.0051 \pm 0.0002 & 0.0084 \pm 0.0002 & 0.0126 \pm 0.0003 \\ \mbox{innesc} + 0016 & 0.0081 \pm 0.0002 & 0.0125 \pm 0.0003 & 0.0183 \pm 0.0003 \\ \mbox{innovatrics} + 001C & 0.0050 \pm 0.0002 & 0.0080 \pm 0.0002 & 0.0120 \pm 0.0002 \\ \mbox{innovatrics} + 001D & 0.0043 \pm 0.0001 & 0.0067 \pm 0.0002 & 0.0098 \pm 0.0002 \\ \mbox{liquid} + 0107 & 0.0105 \pm 0.0002 & 0.0174 \pm 0.0003 & 0.0265 \pm 0.0004 \\ \mbox{nec} + 8211 & 0.0049 \pm 0.0002 & 0.0081 \pm 0.0002 & 0.0123 \pm 0.0002 \\ \mbox{Neurotechnology} + 010B & 0.0047 \pm 0.0002 & 0.0077 \pm 0.0002 & 0.0115 \pm 0.0002 \\ \mbox{Neurotechnology} + 0206 & 0.0045 \pm 0.0002 & 0.0071 \pm 0.0002 & 0.0166 \pm 0.0002 \\ \mbox{secugen} + 0037 & 0.0080 \pm 0.0002 & 0.0129 \pm 0.0003 & 0.0192 \pm 0.0003 \\ \mbox{sonda} + 0119 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{SupremaUFCore} + 2022 & 0.0073 \pm 0.0002 & 0.0116 \pm 0.0002 & 0.0168 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 01003 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 01003 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5}$                                                                                                                                                        |          |                 |                  |                   |
| $\begin{array}{c} \mbox{griaule} + 0109 & 0.0059 \pm 0.0002 & 0.0094 \pm 0.0002 & 0.0139 \pm 0.0003 \\ \mbox{hongda} + 0007 & 0.0065 \pm 0.0002 & 0.0113 \pm 0.0002 & 0.0172 \pm 0.0003 \\ \mbox{id3} + 13B1 & 0.0049 \pm 0.0002 & 0.0076 \pm 0.0002 & 0.0119 \pm 0.0002 \\ \mbox{id3} + 0.0049 & 0.0053 \pm 0.0002 & 0.0087 \pm 0.0002 & 0.0135 \pm 0.0003 \\ \mbox{imagid} + 0004 & 0.0051 \pm 0.0002 & 0.0084 \pm 0.0002 & 0.0126 \pm 0.0003 \\ \mbox{imagid} + 0010 & 0.0051 \pm 0.0002 & 0.0084 \pm 0.0002 & 0.0126 \pm 0.0003 \\ \mbox{inesc} + 0016 & 0.0081 \pm 0.0002 & 0.0125 \pm 0.0003 & 0.0183 \pm 0.0003 \\ \mbox{innovatrics} + 001C & 0.0050 \pm 0.0002 & 0.0080 \pm 0.0002 & 0.0120 \pm 0.0002 \\ \mbox{innovatrics} + 001D & 0.0043 \pm 0.0001 & 0.0067 \pm 0.0002 & 0.0098 \pm 0.0002 \\ \mbox{liquid} + 0107 & 0.0105 \pm 0.0002 & 0.0174 \pm 0.0003 & 0.0265 \pm 0.0004 \\ \mbox{nec} + 8211 & 0.0049 \pm 0.0002 & 0.0081 \pm 0.0002 & 0.0123 \pm 0.0002 \\ \mbox{Neurotechnology} + 010B & 0.0047 \pm 0.0002 & 0.0077 \pm 0.0002 & 0.0115 \pm 0.0002 \\ \mbox{Neurotechnology} + 0206 & 0.0045 \pm 0.0002 & 0.0071 \pm 0.0002 & 0.0106 \pm 0.0002 \\ \mbox{secugen} + 0037 & 0.0080 \pm 0.0002 & 0.0129 \pm 0.0003 & 0.0192 \pm 0.0003 \\ \mbox{sonda} + 0119 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{SupremaUFCore} + 2022 & 0.0073 \pm 0.0002 & 0.0116 \pm 0.0002 & 0.0168 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.01111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0.0$                                                                                                                                                        |          |                 |                  |                   |
| $\begin{array}{c} \mbox{hongda} + 0007 & 0.0065 \pm 0.0002 & 0.0113 \pm 0.0002 & 0.0172 \pm 0.0003 \\ \mbox{id3} + 13B1 & 0.0049 \pm 0.0002 & 0.0076 \pm 0.0002 & 0.0119 \pm 0.0002 \\ \mbox{id3} + 1252 & 0.0053 \pm 0.0002 & 0.0087 \pm 0.0002 & 0.0135 \pm 0.0003 \\ \mbox{imagid} + 0004 & 0.0051 \pm 0.0002 & 0.0084 \pm 0.0002 & 0.0126 \pm 0.0003 \\ \mbox{imagid} + 0010 & 0.0051 \pm 0.0002 & 0.0084 \pm 0.0002 & 0.0126 \pm 0.0003 \\ \mbox{inesc} + 0016 & 0.0081 \pm 0.0002 & 0.0125 \pm 0.0003 & 0.0183 \pm 0.0003 \\ \mbox{innovatrics} + 001C & 0.0050 \pm 0.0002 & 0.0080 \pm 0.0002 & 0.0120 \pm 0.0002 \\ \mbox{innovatrics} + 001D & 0.0043 \pm 0.0001 & 0.0067 \pm 0.0002 & 0.0098 \pm 0.0002 \\ \mbox{liquid} + 0107 & 0.0105 \pm 0.0002 & 0.0174 \pm 0.0003 & 0.0265 \pm 0.0004 \\ \mbox{nec} + 8211 & 0.0049 \pm 0.0002 & 0.0081 \pm 0.0002 & 0.0123 \pm 0.0002 \\ \mbox{Neurotechnology} + 010B & 0.0047 \pm 0.0002 & 0.0077 \pm 0.0002 & 0.0115 \pm 0.0002 \\ \mbox{Neurotechnology} + 0206 & 0.0045 \pm 0.0002 & 0.0071 \pm 0.0002 & 0.0106 \pm 0.0002 \\ \mbox{secugen} + 0037 & 0.0080 \pm 0.0002 & 0.0129 \pm 0.0003 & 0.0192 \pm 0.0003 \\ \mbox{sonda} + 0119 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{SupremaUFCore} + 2022 & 0.0073 \pm 0.0002 & 0.0116 \pm 0.0002 & 0.0168 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0103 & 0.0067 \pm 0.0002 & 0.0111 \pm 0.0002 & 0.0169 \pm 0.0003 \\ \mbox{Tech5} + 0.0003 & 0.0169 \pm 0.0003 \\ T$                                                                                                                                                                |          |                 |                  |                   |
| $\begin{array}{c} id3+13B1 & 0.0049\pm0.0002 & 0.0076\pm0.0002 & 0.0119\pm0.0002 \\ id3tech+1252 & 0.0053\pm0.0002 & 0.0087\pm0.0002 & 0.0135\pm0.0003 \\ imagid+0004 & 0.0051\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ imagid+0010 & 0.0051\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ inesc+0016 & 0.0081\pm0.0002 & 0.0125\pm0.0003 & 0.0183\pm0.0003 \\ innovatrics+001C & 0.0050\pm0.0002 & 0.0080\pm0.0002 & 0.0120\pm0.0002 \\ innovatrics+001D & 0.0043\pm0.0001 & 0.0067\pm0.0002 & 0.0098\pm0.0002 \\ liquid+0107 & 0.0105\pm0.0002 & 0.0174\pm0.0003 & 0.0265\pm0.0004 \\ nec+8211 & 0.0049\pm0.0002 & 0.0081\pm0.0002 & 0.0123\pm0.0002 \\ Neurotechnology+010B & 0.0047\pm0.0002 & 0.0077\pm0.0002 & 0.0115\pm0.0002 \\ Neurotechnology+0206 & 0.0045\pm0.0002 & 0.0071\pm0.0002 & 0.0116\pm0.0002 \\ secugen+0037 & 0.0080\pm0.0002 & 0.0129\pm0.0003 & 0.0192\pm0.0003 \\ sonda+0119 & 0.0067\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ SupremaUFCore+2022 & 0.0073\pm0.0002 & 0.0116\pm0.0002 & 0.0168\pm0.0003 \\ Tech5+0103 & 0.0067\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ Tech5+0103 & 0.0067\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ \hline \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |          |                 |                  |                   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $\begin{array}{c} imagid+0010 & 0.0051\pm0.0002 & 0.0084\pm0.0002 & 0.0126\pm0.0003 \\ inesc+0016 & 0.0081\pm0.0002 & 0.0125\pm0.0003 & 0.0183\pm0.0003 \\ inmovatrics+001C & 0.0050\pm0.0002 & 0.0080\pm0.0002 & 0.0120\pm0.0002 \\ innovatrics+001D & 0.0043\pm0.0001 & 0.0067\pm0.0002 & 0.0098\pm0.0002 \\ liquid+0107 & 0.0105\pm0.0002 & 0.0174\pm0.0003 & 0.0265\pm0.0004 \\ nec+8211 & 0.0049\pm0.0002 & 0.0081\pm0.0002 & 0.0123\pm0.0002 \\ Neurotechnology+010B & 0.0047\pm0.0002 & 0.0077\pm0.0002 & 0.0115\pm0.0002 \\ Neurotechnology+0206 & 0.0045\pm0.0002 & 0.0071\pm0.0002 & 0.0106\pm0.0002 \\ secugen+0037 & 0.0080\pm0.0002 & 0.0129\pm0.0003 & 0.0192\pm0.0003 \\ sonda+0119 & 0.0067\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ startek+0009 & 0.0060\pm0.0002 & 0.0091\pm0.0002 & 0.0134\pm0.0003 \\ SupremaUFCore+2022 & 0.0073\pm0.0002 & 0.0116\pm0.0002 & 0.0168\pm0.0003 \\ Tech5+0103 & 0.0067\pm0.0002 & 0.0111\pm0.0002 & 0.0169\pm0.0003 \\ \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |          |                 |                  |                   |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Ö        |                 |                  |                   |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <u> </u> |                 |                  |                   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |                 |                  |                   |
| $ \begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |          |                 |                  |                   |
| Tech5+0103 $0.0067 \pm 0.0002$ $0.0111 \pm 0.0002$ $0.0169 \pm 0.0003$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          |                 |                  |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |          |                 |                  |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |          |                 |                  |                   |

Table 6: Left index finger FNMRs at various FMRs when matcher 0071+0021 compares templates created by its template generator and PIV-compliant template generators.

| 0059+0816                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Enroller             | FNMR @ FMR=0.01     | FNMR @ FMR=0.001    | FNMR @ FMR=0.0001   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------|---------------------|---------------------|
| $\begin{array}{c} 006A+0292 & 0.0110\pm0.0002 & 0.0177\pm0.0003 & 0.0259\pm0.0004 \\ 006D+0013 & 0.0120\pm0.0002 & 0.0185\pm0.0003 & 0.0270\pm0.0004 \\ 0071+0020 & 0.0072\pm0.0002 & 0.0124\pm0.0002 & 0.0185\pm0.0003 \\ 0071+0021 & 0.0072\pm0.0002 & 0.0121\pm0.0002 & 0.0185\pm0.0003 \\ aatec+0403 & 0.0092\pm0.0002 & 0.0150\pm0.0003 & 0.0224\pm0.0003 \\ aatec+0403 & 0.0092\pm0.0002 & 0.0150\pm0.0003 & 0.0224\pm0.0003 \\ aatek+0011 & 0.0147\pm0.0003 & 0.0389\pm0.0004 & 0.0576\pm0.0005 \\ aratek+0011 & 0.0147\pm0.0003 & 0.0230\pm0.0003 & 0.0330\pm0.0004 \\ aware+0311 & 0.0134\pm0.0003 & 0.0213\pm0.0003 & 0.0319\pm0.0004 \\ cogent+0510 & 0.0094\pm0.0002 & 0.0150\pm0.0003 & 0.0219\pm0.0003 \\ Decatur+0102 & 0.0180\pm0.0003 & 0.0271\pm0.0004 & 0.0384\pm0.0004 \\ dermalog+0006 & 0.0087\pm0.0002 & 0.0150\pm0.0003 & 0.0204\pm0.0003 \\ futronic+000A & 0.0184\pm0.0003 & 0.0273\pm0.0004 & 0.0388\pm0.0004 \\ dermalog+0900 & 0.0121\pm0.0002 & 0.0144\pm0.0003 & 0.0212\pm0.0003 \\ genkey+0900 & 0.0121\pm0.0002 & 0.0144\pm0.0003 & 0.0212\pm0.0003 \\ griaule+0108 & 0.0087\pm0.0002 & 0.0144\pm0.0003 & 0.0212\pm0.0003 \\ griaule+0109 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0299\pm0.0004 \\ griaule+0109 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0299\pm0.0004 \\ hongda+0007 & 0.0128\pm0.0003 & 0.0216\pm0.0003 & 0.0249\pm0.0004 \\ hongda+0007 & 0.0128\pm0.0003 & 0.0216\pm0.0003 & 0.0249\pm0.0004 \\ hongda+0007 & 0.0128\pm0.0003 & 0.0216\pm0.0003 & 0.0219\pm0.0004 \\ hongda+0007 & 0.0128\pm0.0003 & 0.0216\pm0.0003 & 0.0216\pm0.0003 \\ imagid+0010 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ imagid+0010 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ inagid+0010 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0141\pm0.0002 & 0.0160\pm0.0003 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0141\pm0.0002 & 0.0160\pm0.0003 \\ Neurotechnology+010B & 0.0074\pm0.0002 & 0.0147\pm0.0003 & 0.0236\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0178\pm0.0003 & 0.0258\pm0.0004 \\ SupremaUFCore+$                                                                                                                                                          |                      |                     |                     |                     |
| $\begin{array}{c} 006D+0013 & 0.0120\pm0.0002 & 0.0185\pm0.0003 & 0.0270\pm0.0004 \\ 0071+0020 & 0.0072\pm0.0002 & 0.0121\pm0.0002 & 0.0185\pm0.0003 \\ 0071+0021 & 0.0072\pm0.0002 & 0.0121\pm0.0002 & 0.0185\pm0.0003 \\ 0071+0021 & 0.0072\pm0.0002 & 0.0150\pm0.0002 & 0.0185\pm0.0003 \\ 0.0185\pm0.0003 & 0.0092\pm0.0002 & 0.0150\pm0.0003 & 0.0224\pm0.0003 \\ 0.0185\pm0.0003 & 0.0289\pm0.0004 & 0.0576\pm0.0005 \\ 0.0185\pm0.0003 & 0.0389\pm0.0004 & 0.0576\pm0.0005 \\ 0.024\pm0.013 & 0.0033 & 0.0389\pm0.0003 & 0.0330\pm0.0004 \\ 0.0270\pm0.0003 & 0.0230\pm0.0003 & 0.0330\pm0.0004 \\ 0.0319\pm0.0004 & 0.0003 & 0.0213\pm0.0003 & 0.0319\pm0.0004 \\ 0.0290\pm0.0003 & 0.0213\pm0.0003 & 0.0219\pm0.0003 \\ 0.0220\pm0.0003 & 0.0271\pm0.0004 & 0.0384\pm0.0004 \\ 0.0280\pm0.0003 & 0.0271\pm0.0004 & 0.0384\pm0.0004 \\ 0.0280\pm0.0003 & 0.0271\pm0.0004 & 0.0384\pm0.0004 \\ 0.0204\pm0.0003 & 0.0273\pm0.0004 & 0.0388\pm0.0004 \\ 0.0380\pm0.0003 & 0.0273\pm0.0004 & 0.0388\pm0.0004 \\ 0.0380\pm0.0003 & 0.0273\pm0.0004 & 0.0389\pm0.0004 \\ 0.0380\pm0.0003 & 0.0273\pm0.0003 & 0.0204\pm0.0003 \\ 0.0204\pm0.0003 & 0.0234\pm0.0003 & 0.0212\pm0.0003 \\ 0.0204\pm0.0003 & 0.0212\pm0.0003 & 0.0212\pm0.0003 \\ 0.0204\pm0.0003 & 0.0212\pm0.0003 & 0.0212\pm0.0003 \\ 0.0212\pm0.0003 & 0.0212\pm0.0003 & 0.0212\pm0.0003 \\ 0.0212\pm0.0003 & 0.0212\pm0.0003 & 0.0212\pm0.0003 \\ 0.0212\pm0.0003 & 0.0210\pm0.0003 & 0.0229\pm0.0004 \\ 0.0104\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ 0.0104\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ 0.0124\pm0.0003 & 0.0216\pm0.0003 & 0.0216\pm0.0003 \\ 0.0216\pm0.0003 & 0.0206\pm0.0003 & 0.0206\pm$                                                                                          |                      |                     |                     |                     |
| $\begin{array}{c} 0071+0020 & 0.0072\pm0.0002 & 0.0124\pm0.0002 & 0.0185\pm0.0003 \\ 0071+0021 & 0.0072\pm0.0002 & 0.0121\pm0.0002 & 0.0185\pm0.0003 \\ 0071+0021 & 0.0072\pm0.0002 & 0.0150\pm0.0003 & 0.0224\pm0.0003 \\ 0.0092\pm0.0002 & 0.0150\pm0.0003 & 0.0224\pm0.0003 \\ 0.0389\pm0.0004 & 0.0576\pm0.0005 \\ 0.0389\pm0.0004 & 0.0576\pm0.0005 \\ 0.0330\pm0.0003 & 0.0230\pm0.0003 & 0.0330\pm0.0004 \\ 0.0576\pm0.0005 & 0.0030 & 0.0230\pm0.0003 & 0.0319\pm0.0004 \\ 0.0576\pm0.0005 & 0.0030 & 0.0230\pm0.0003 & 0.0319\pm0.0004 \\ 0.0590\pm0.0003 & 0.0213\pm0.0003 & 0.0219\pm0.0004 \\ 0.0590\pm0.0003 & 0.0271\pm0.0003 & 0.0220\pm0.0003 \\ 0.0220\pm0.0003 & 0.0271\pm0.0004 & 0.0384\pm0.0004 \\ 0.0804\pm0.0003 & 0.0273\pm0.0004 & 0.0384\pm0.0004 \\ 0.0808\pm0.0003 & 0.0273\pm0.0004 & 0.0388\pm0.0004 \\ 0.0808\pm0.0003 & 0.0273\pm0.0004 & 0.0389\pm0.0004 \\ 0.0808\pm0.0003 & 0.0238\pm0.0004 & 0.0399\pm0.0004 \\ 0.0808\pm0.0003 & 0.0283\pm0.0004 & 0.0399\pm0.0004 \\ 0.0808\pm0.0003 & 0.0244\pm0.0003 & 0.0212\pm0.0003 \\ 0.0808\pm0.0002 & 0.0144\pm0.0003 & 0.0212\pm0.0003 \\ 0.0212\pm0.0003 & 0.0144\pm0.0003 & 0.0229\pm0.0004 \\ 0.0108\pm0.0003 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ 0.0108\pm0.0003 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ 0.0108\pm0.0003 & 0.0216\pm0.0003 & 0.0249\pm0.0004 \\ 0.0128\pm0.0003 & 0.0216\pm0.0003 & 0.0249\pm0.0004 \\ 0.0128\pm0.0003 & 0.0216\pm0.0003 & 0.0249\pm0.0004 \\ 0.0128\pm0.0003 & 0.0216\pm0.0003 & 0.0249\pm0.0003 \\ 0.0142\pm0.0003 & 0.0216\pm0.0003 & 0.0216\pm0.0003 \\ 0.0218\pm0.0003 & 0.0216\pm0.0003 & 0.0216\pm0.0003 \\ 0.0214\pm0.0003 & 0.0216\pm0.0003 & 0.0216\pm0.0003 \\ 0.0214\pm0.0003 & 0.0206\pm0.0003 & 0.0306\pm0.0004 \\ 0.0045\pm0.0003 & 0.0206\pm0.0003 & 0.0303\pm0.0004 \\ 0.0171\pm0.0002 & 0.0116\pm0.0002 & 0.0167\pm0.0003 \\ 0$                                                                                        |                      |                     |                     |                     |
| $\begin{array}{c} 0071+0021 & 0.0072\pm0.0002 & 0.0121\pm0.0002 & 0.0185\pm0.0003 \\ aatec+0403 & 0.0092\pm0.0002 & 0.0150\pm0.0003 & 0.0224\pm0.0003 \\ antheus+100A & 0.0240\pm0.0003 & 0.0389\pm0.0004 & 0.0576\pm0.0005 \\ aratek+0011 & 0.0147\pm0.0003 & 0.0230\pm0.0003 & 0.0330\pm0.0004 \\ aware+0311 & 0.0134\pm0.0003 & 0.0213\pm0.0003 & 0.0319\pm0.0004 \\ cogent+0510 & 0.0094\pm0.0002 & 0.0150\pm0.0003 & 0.0220\pm0.0003 \\ Decatur+0102 & 0.0180\pm0.0003 & 0.0271\pm0.0004 & 0.0384\pm0.0004 \\ Decatur+0104 & 0.0180\pm0.0003 & 0.0271\pm0.0004 & 0.0388\pm0.0004 \\ dermalog+0006 & 0.0087\pm0.0002 & 0.0141\pm0.0003 & 0.0204\pm0.0003 \\ futronic+000A & 0.0184\pm0.0003 & 0.0283\pm0.0004 & 0.0399\pm0.0004 \\ gemalto+0108 & 0.0087\pm0.0002 & 0.0144\pm0.0003 & 0.0212\pm0.0003 \\ genkey+0900 & 0.0121\pm0.0002 & 0.0196\pm0.0003 & 0.0219\pm0.0004 \\ griaule+0108 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ griaule+0109 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ driaule+0109 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ id3+13B1 & 0.0074\pm0.0002 & 0.0170\pm0.0003 & 0.0327\pm0.0004 \\ id3+ch+1252 & 0.0092\pm0.0002 & 0.0147\pm0.0002 & 0.0185\pm0.0003 \\ imagid+0004 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0216\pm0.0003 \\ imagid+0010 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ innovatrics+001C & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ innovatrics+001D & 0.0079\pm0.0002 & 0.0141\pm0.0003 & 0.0218\pm0.0003 \\ innovatrics+001D & 0.0079\pm0.0002 & 0.0141\pm0.0002 & 0.0160\pm0.0003 \\ innovatrics+001D & 0.0079\pm0.0002 & 0.0141\pm0.0003 & 0.0218\pm0.0003 \\ innovatrics+001D & 0.0079\pm0.0002 & 0.0141\pm0.0003 & 0.0218\pm0.0003 \\ innovatrics+001D & 0.0079\pm0.0002 & 0.0141\pm0.0003 & 0.0214\pm0.0003 \\ innovatrics+001D & 0.0079\pm0.0002 & 0.0147\pm0.0003 & 0.0214\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0002 & 0.0160\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0167\pm0.0003 & 0.0303\pm0.0004 \\ seruentoly Core+2022 & 0.0128\pm0.0003 & 0.0209$                                                                                                                                                               |                      |                     |                     |                     |
| $\begin{array}{c} aatec+0403 & 0.0092\pm0.0002 & 0.0150\pm0.0003 & 0.0224\pm0.0003 \\ antheus+100A & 0.0240\pm0.0003 & 0.0389\pm0.0004 & 0.0576\pm0.0005 \\ aratek+0011 & 0.0147\pm0.0003 & 0.0230\pm0.0003 & 0.0330\pm0.0004 \\ aware+0311 & 0.0134\pm0.0003 & 0.0213\pm0.0003 & 0.0319\pm0.0004 \\ cogent+0510 & 0.0094\pm0.0002 & 0.0150\pm0.0003 & 0.0220\pm0.0003 \\ Decatur+0102 & 0.0180\pm0.0003 & 0.0271\pm0.0004 & 0.0384\pm0.0004 \\ Decatur+0104 & 0.0180\pm0.0003 & 0.0273\pm0.0004 & 0.0388\pm0.0004 \\ dermalog+0006 & 0.0087\pm0.0002 & 0.0141\pm0.0003 & 0.0204\pm0.0003 \\ futronic+000A & 0.0184\pm0.0003 & 0.0283\pm0.0004 & 0.0399\pm0.0004 \\ gemalto+0108 & 0.0087\pm0.0002 & 0.0144\pm0.0003 & 0.0201\pm0.0003 \\ genkey+0900 & 0.0121\pm0.0002 & 0.0196\pm0.0003 & 0.0299\pm0.0004 \\ griaule+0108 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ griaule+0109 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ griaule+0109 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ hongda+0007 & 0.0128\pm0.0003 & 0.0216\pm0.0003 & 0.0327\pm0.0004 \\ id3+13B1 & 0.0074\pm0.0002 & 0.0124\pm0.0002 & 0.0185\pm0.0003 \\ id3tech+1252 & 0.0092\pm0.0002 & 0.0147\pm0.0003 & 0.0216\pm0.0003 \\ imagid+0004 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ imagid+0010 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ insec+0016 & 0.0159\pm0.0003 & 0.0236\pm0.0003 & 0.0238\pm0.0003 \\ innovatrics+001C & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0147\pm0.0002 & 0.0160\pm0.0003 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0147\pm0.00003 & 0.0218\pm0.0003 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0147\pm0.00003 & 0.0218\pm0.0003 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0147\pm0.00003 & 0.0214\pm0.00003 \\ Neurotechnology+010B & 0.0074\pm0.0002 & 0.0116\pm0.00002 & 0.0160\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.00003 & 0.0214\pm0.00003 \\ secugen+0037 & 0.0147\pm0.0002 & 0.0116\pm0.00003 & 0.0347\pm0.00004 \\ sonda+0119 & 0.0121\pm0.0002 & 0.0116\pm0.00003 & 0.0255\pm0.0004 \\ startek+0009 & 0.0117\pm0.00002 & 0.0178\pm0.0003 & 0.0255\pm0.0004 \\ SupremaUFCore+2022 & 0.0128\pm0.0003 & 0.0209\pm0.0003 & 0.036\pm0.0004 \\ SupremaUFCore+2022 & 0.0128\pm0.0003 & 0.0199\pm0.0003$                                                                                                                                                             |                      |                     |                     |                     |
| antheus+100A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                      |                     |                     |                     |
| aratek+0011                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                     |                     |                     |
| $\begin{array}{c} aware+0311 \\ cogent+0510 \\ cogent+0510 \\ 0.0094\pm0.0002 \\ 0.0150\pm0.0003 \\ 0.0215\pm0.0003 \\ 0.0220\pm0.0003 \\ 0.0220\pm0.0003 \\ 0.0220\pm0.0003 \\ 0.0220\pm0.0003 \\ 0.0220\pm0.0003 \\ 0.0221\pm0.0004 \\ 0.0384\pm0.0004 \\ 0.0384\pm0.0004 \\ 0.0388\pm0.0004 \\ 0.0399\pm0.0003 \\ 0.0204\pm0.0003 \\ 0.0204\pm0.0003 \\ 0.0204\pm0.0003 \\ 0.0204\pm0.0003 \\ 0.0204\pm0.0003 \\ 0.0212\pm0.0003 \\ 0.0219\pm0.0004 \\ 0.0107\pm0.0002 \\ 0.0170\pm0.0003 \\ 0.0219\pm0.0004 \\ 0.0299\pm0.0004 \\ 0.0107\pm0.0002 \\ 0.0170\pm0.0003 \\ 0.0249\pm0.0004 \\ 0.0299\pm0.0004 \\ 0.0299\pm0.0004 \\ 0.0299\pm0.0004 \\ 0.0299\pm0.0004 \\ 0.0299\pm0.0004 \\ 0.0299\pm0.0003 \\ 0.0249\pm0.0003 \\ 0.0249\pm0.0003 \\ 0.0249\pm0.0004 \\ 0.0385\pm0.0003 \\ 0.0327\pm0.0004 \\ 0.0385\pm0.0003 \\ 0.0327\pm0.0004 \\ 0.0385\pm0.0003 \\ 0.0327\pm0.0003 \\ 0.0216\pm0.0003 \\ 0.0216\pm0.0003 \\ 0.0216\pm0.0003 \\ 0.0216\pm0.0003 \\ 0.0218\pm0.0003 \\ 0.0203\pm0.0003 \\ 0.0203\pm0.0003 \\ 0.0214\pm0.0003 \\ 0.0204\pm0.0003 \\ 0.0204\pm0.0005 \\ 0.0160\pm0.0005 \\ 0.0160\pm0.0005 \\ 0.0167\pm0.0003 \\ 0.0214\pm0.0003 $ |                      |                     |                     |                     |
| $\begin{array}{c} cogent+0510 & 0.0094\pm0.0002 & 0.0150\pm0.0003 & 0.0220\pm0.0003 \\ Decatur+0102 & 0.0180\pm0.0003 & 0.0271\pm0.0004 & 0.0384\pm0.0004 \\ Decatur+0104 & 0.0180\pm0.0003 & 0.0273\pm0.0004 & 0.0388\pm0.0004 \\ dermalog+0006 & 0.0087\pm0.0002 & 0.0141\pm0.0003 & 0.0204\pm0.0003 \\ futronic+000A & 0.0184\pm0.0003 & 0.0283\pm0.0004 & 0.0399\pm0.0004 \\ gemalto+0108 & 0.0087\pm0.0002 & 0.0144\pm0.0003 & 0.0212\pm0.0003 \\ genkey+0900 & 0.0121\pm0.0002 & 0.0196\pm0.0003 & 0.0299\pm0.0004 \\ griaule+0108 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0299\pm0.0004 \\ griaule+0109 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ hongda+0007 & 0.0128\pm0.0003 & 0.0216\pm0.0003 & 0.0249\pm0.0004 \\ id3+13B1 & 0.0074\pm0.0002 & 0.0124\pm0.0002 & 0.0185\pm0.0003 \\ id3tech+1252 & 0.0092\pm0.0002 & 0.0147\pm0.0003 & 0.0216\pm0.0003 \\ imagid+0004 & 0.0088\pm0.0002 & 0.0147\pm0.0003 & 0.0218\pm0.0003 \\ imagid+0010 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ inesc+0016 & 0.0159\pm0.0003 & 0.0236\pm0.0003 & 0.0218\pm0.0003 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0141\pm0.0003 & 0.0218\pm0.0003 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0141\pm0.0003 & 0.0203\pm0.0003 \\ inec+8211 & 0.0090\pm0.0002 & 0.0147\pm0.0002 & 0.0160\pm0.0003 \\ Neurotechnology+010B & 0.0074\pm0.0002 & 0.0147\pm0.0003 & 0.0214\pm0.0003 \\ Neurotechnology+010B & 0.0074\pm0.0002 & 0.0116\pm0.0002 & 0.0160\pm0.0003 \\ Neurotechnology+010B & 0.0074\pm0.0002 & 0.0116\pm0.0002 & 0.0167\pm0.0003 \\ Secugen+0037 & 0.0147\pm0.0002 & 0.0116\pm0.0002 & 0.0167\pm0.0003 \\ SupremaUFCore+2022 & 0.0128\pm0.0003 & 0.0236\pm0.0003 & 0.0238\pm0.0004 \\ SupremaUFCore+2022 & 0.0128\pm0.0003 & 0.0209\pm0.0003 & 0.0288\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0179\pm0.0003 & 0.0288\pm0.0004 \\ SupremaUFCore+2022 & 0.0128\pm0.0003 & 0.0209\pm0.0003 & 0.0288\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0179\pm0.0003 & 0.0288\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0199\pm0.0003 & 0.0306\pm0.0004 \\$                                                                                                                                                          |                      |                     |                     |                     |
| $\begin{array}{c} Decatur+0102 & 0.0180\pm0.0003 & 0.0271\pm0.0004 & 0.0384\pm0.0004 \\ Decatur+0104 & 0.0180\pm0.0003 & 0.0273\pm0.0004 & 0.0388\pm0.0004 \\ dermalog+0006 & 0.0087\pm0.0002 & 0.0141\pm0.0003 & 0.0204\pm0.0003 \\ futronic+000A & 0.0184\pm0.0003 & 0.0283\pm0.0004 & 0.0399\pm0.0004 \\ gemalto+0108 & 0.0087\pm0.0002 & 0.0144\pm0.0003 & 0.0212\pm0.0003 \\ genkey+0900 & 0.0121\pm0.0002 & 0.0196\pm0.0003 & 0.0299\pm0.0004 \\ griaule+0108 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ griaule+0109 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ hongda+0007 & 0.0128\pm0.0003 & 0.0216\pm0.0003 & 0.0327\pm0.0004 \\ id3+13B1 & 0.0074\pm0.0002 & 0.0170\pm0.0002 & 0.0185\pm0.0003 \\ id3tech+1252 & 0.0092\pm0.0002 & 0.0142\pm0.0003 & 0.0216\pm0.0003 \\ imagid+0004 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ imagid+0010 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ inesc+0016 & 0.0159\pm0.0003 & 0.0236\pm0.0003 & 0.0218\pm0.0003 \\ innovatrics+001C & 0.0088\pm0.0002 & 0.0141\pm0.0003 & 0.0236\pm0.0003 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0110\pm0.0003 & 0.0203\pm0.0003 \\ ince+8211 & 0.0090\pm0.0002 & 0.0147\pm0.0003 & 0.0214\pm0.0003 \\ Neurotechnology+010B & 0.0074\pm0.0002 & 0.0110\pm0.0002 & 0.0160\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0002 & 0.0173\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0002 & 0.0167\pm0.0003 \\ secugen+0037 & 0.0147\pm0.0003 & 0.0236\pm0.0003 & 0.0347\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0002 & 0.0167\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0002 & 0.0167\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0003 & 0.0347\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0003 & 0.0347\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0003 & 0.0347\pm0.0004 \\ startek+0009 & 0.0117\pm0.0002 & 0.0178\pm0.0003 & 0.0347\pm0.0004 \\ startek+0009 & 0.0117\pm0.0002 & 0.0178\pm0.0003 & 0.038\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0199\pm0.0003 & 0.0306\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0199\pm0.0003 & 0.0306\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0199\pm0.0003 & 0.0306\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0$                                                                                                                                                               |                      |                     |                     |                     |
| $\begin{array}{c} Decatur+0104 & 0.0180\pm0.0003 & 0.0273\pm0.0004 & 0.0388\pm0.0004 \\ dermalog+0006 & 0.0087\pm0.0002 & 0.0141\pm0.0003 & 0.0204\pm0.0003 \\ futronic+000A & 0.0184\pm0.0003 & 0.0283\pm0.0004 & 0.0399\pm0.0004 \\ gemalto+0108 & 0.0087\pm0.0002 & 0.0144\pm0.0003 & 0.0212\pm0.0003 \\ genkey+0900 & 0.0121\pm0.0002 & 0.0196\pm0.0003 & 0.0299\pm0.0004 \\ griaule+0108 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ griaule+0109 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ hongda+0007 & 0.0128\pm0.0003 & 0.0216\pm0.0003 & 0.0327\pm0.0004 \\ id3+13B1 & 0.0074\pm0.0002 & 0.0124\pm0.0002 & 0.0185\pm0.0003 \\ id3tech+1252 & 0.0092\pm0.0002 & 0.0147\pm0.0003 & 0.0216\pm0.0003 \\ imagid+0004 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ imagid+0010 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ inesc+0016 & 0.0159\pm0.0003 & 0.0236\pm0.0003 & 0.0336\pm0.0004 \\ innovatrics+001C & 0.0088\pm0.0002 & 0.0141\pm0.0003 & 0.0336\pm0.0004 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0110\pm0.0002 & 0.0160\pm0.0003 \\ inguid+0107 & 0.0197\pm0.0003 & 0.0311\pm0.0004 & 0.0445\pm0.0005 \\ nec+8211 & 0.0090\pm0.0002 & 0.0147\pm0.0003 & 0.0214\pm0.0003 \\ Neurotechnology+010B & 0.0074\pm0.0002 & 0.0116\pm0.0002 & 0.0173\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0002 & 0.0167\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0002 & 0.0167\pm0.0003 \\ secugen+0037 & 0.0147\pm0.0003 & 0.0236\pm0.0003 & 0.0347\pm0.0004 \\ sonda+0119 & 0.0121\pm0.0002 & 0.0178\pm0.0003 & 0.0306\pm0.0004 \\ SupremaUFCore+2022 & 0.0128\pm0.0003 & 0.0200\pm0.0003 & 0.0208\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0199\pm0.0003 & 0.0306\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0199\pm0.0003 & 0.0306\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0199\pm0.0003 & 0.0306\pm0.0004 \\ \hline \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                      |                     |                     |                     |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |                     |                     |                     |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |                     |                     |                     |
| $\begin{array}{c} \text{gemalto} + 0108 & 0.0087 \pm 0.0002 & 0.0144 \pm 0.0003 & 0.0212 \pm 0.0003 \\ \text{genkey} + 0900 & 0.0121 \pm 0.0002 & 0.0196 \pm 0.0003 & 0.0299 \pm 0.0004 \\ \text{griaule} + 0108 & 0.0107 \pm 0.0002 & 0.0170 \pm 0.0003 & 0.0249 \pm 0.0004 \\ \text{griaule} + 0109 & 0.0107 \pm 0.0002 & 0.0170 \pm 0.0003 & 0.0249 \pm 0.0004 \\ \text{hongda} + 0007 & 0.0128 \pm 0.0003 & 0.0216 \pm 0.0003 & 0.0327 \pm 0.0004 \\ \text{id3} + 13B1 & 0.0074 \pm 0.0002 & 0.0124 \pm 0.0002 & 0.0185 \pm 0.0003 \\ \text{id3} + 0.004 & 0.0088 \pm 0.0002 & 0.0147 \pm 0.0003 & 0.0216 \pm 0.0003 \\ \text{imagid} + 0004 & 0.0088 \pm 0.0002 & 0.0142 \pm 0.0003 & 0.0218 \pm 0.0003 \\ \text{imagid} + 0010 & 0.0088 \pm 0.0002 & 0.0142 \pm 0.0003 & 0.0218 \pm 0.0003 \\ \text{innovatrics} + 0016 & 0.0159 \pm 0.0003 & 0.0236 \pm 0.0003 & 0.0336 \pm 0.0004 \\ \text{innovatrics} + 001D & 0.0070 \pm 0.0002 & 0.0141 \pm 0.0003 & 0.0203 \pm 0.0003 \\ \text{innovatrics} + 001D & 0.0070 \pm 0.0002 & 0.0110 \pm 0.0002 & 0.0160 \pm 0.0003 \\ \text{liquid} + 0107 & 0.0197 \pm 0.0003 & 0.0311 \pm 0.0004 & 0.0445 \pm 0.0005 \\ \text{nec} + 8211 & 0.0090 \pm 0.0002 & 0.0147 \pm 0.0003 & 0.0214 \pm 0.0003 \\ \text{Neurotechnology} + 010B & 0.0074 \pm 0.0002 & 0.0116 \pm 0.0002 & 0.0173 \pm 0.0003 \\ \text{Neurotechnology} + 0206 & 0.0072 \pm 0.0002 & 0.0116 \pm 0.0002 & 0.0167 \pm 0.0003 \\ \text{secugen} + 0037 & 0.0147 \pm 0.0003 & 0.0236 \pm 0.0003 & 0.0347 \pm 0.0004 \\ \text{sonda} + 0119 & 0.0121 \pm 0.0002 & 0.0178 \pm 0.0003 & 0.0303 \pm 0.0004 \\ \text{SupremaUFCore} + 2022 & 0.0128 \pm 0.0003 & 0.0200 \pm 0.0003 & 0.0288 \pm 0.0004 \\ \text{Tech5} + 0103 & 0.0121 \pm 0.0002 & 0.0199 \pm 0.0003 & 0.0306 \pm 0.0004 \\ \text{Tech5} + 0103 & 0.0121 \pm 0.0002 & 0.0199 \pm 0.0003 & 0.0306 \pm 0.0004 \\ \text{Tech5} + 0103 & 0.0121 \pm 0.0002 & 0.0199 \pm 0.0003 & 0.0306 \pm 0.0004 \\ \text{Tech5} + 0103 & 0.0121 \pm 0.0002 & 0.0199 \pm 0.0003 & 0.0306 \pm 0.0004 \\ \text{Tech5} + 0103 & 0.0121 \pm 0.0002 & 0.0199 \pm 0.0003 & 0.0306 \pm 0.0004 \\ \text{Tech5} + 0103 & 0.0121 \pm 0.0002 & 0.0199 \pm 0.0003 & 0.0306 \pm 0.0004 \\ \text{Tech5} + 0103 & 0.0121 \pm 0.0002 & 0.0199 \pm 0.0003 & 0.0306 \pm 0.0004 \\ \text{Tech5} + 0103 & 0.0121 \pm 0.0002 & 0.0199 \pm 0.0003 & 0.0306 \pm 0.0004 \\ \text{Tech5} + 0103 & 0.0121 \pm 0.0002 & 0.019$                                                                           |                      |                     |                     |                     |
| $\begin{array}{c} genkey+0900 & 0.0121\pm0.0002 & 0.0196\pm0.0003 & 0.0299\pm0.0004 \\ griaule+0108 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ griaule+0109 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ hongda+0007 & 0.0128\pm0.0003 & 0.0216\pm0.0003 & 0.0327\pm0.0004 \\ id3+13B1 & 0.0074\pm0.0002 & 0.0124\pm0.0002 & 0.0185\pm0.0003 \\ id3tech+1252 & 0.0092\pm0.0002 & 0.0147\pm0.0003 & 0.0216\pm0.0003 \\ imagid+0004 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ imagid+0010 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ inesc+0016 & 0.0159\pm0.0003 & 0.0236\pm0.0003 & 0.0336\pm0.0004 \\ innovatrics+001C & 0.0088\pm0.0002 & 0.0141\pm0.0003 & 0.0203\pm0.0003 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0110\pm0.0002 & 0.0160\pm0.0003 \\ liquid+0107 & 0.0197\pm0.0003 & 0.0311\pm0.0004 & 0.0445\pm0.0005 \\ nec+8211 & 0.0090\pm0.0002 & 0.0147\pm0.0003 & 0.0214\pm0.0003 \\ Neurotechnology+010B & 0.0074\pm0.0002 & 0.0121\pm0.0002 & 0.0173\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0002 & 0.0167\pm0.0003 \\ secugen+0037 & 0.0147\pm0.0003 & 0.0236\pm0.0003 & 0.0347\pm0.0003 \\ secugen+0037 & 0.0147\pm0.0002 & 0.0116\pm0.0002 & 0.0167\pm0.0003 \\ secugen+0037 & 0.0147\pm0.0002 & 0.0166\pm0.0003 & 0.0347\pm0.0004 \\ sonda+0119 & 0.0121\pm0.0002 & 0.0178\pm0.0003 & 0.0303\pm0.0004 \\ startek+0009 & 0.0117\pm0.0002 & 0.0178\pm0.0003 & 0.0255\pm0.0004 \\ SupremaUFCore+2022 & 0.0128\pm0.0003 & 0.0200\pm0.0003 & 0.0288\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0199\pm0.0003 & 0.0306\pm0.0004 \\ \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                      |                     |                     |                     |
| $\begin{array}{c} \text{griaule} + 0108 & 0.0107 \pm 0.0002 & 0.0170 \pm 0.0003 & 0.0249 \pm 0.0004 \\ \text{griaule} + 0109 & 0.0107 \pm 0.0002 & 0.0170 \pm 0.0003 & 0.0249 \pm 0.0004 \\ \text{hongda} + 0007 & 0.0128 \pm 0.0003 & 0.0216 \pm 0.0003 & 0.0327 \pm 0.0004 \\ \text{id3} + 13B1 & 0.0074 \pm 0.0002 & 0.0124 \pm 0.0002 & 0.0185 \pm 0.0003 \\ \text{id3tech} + 1252 & 0.0092 \pm 0.0002 & 0.0147 \pm 0.0003 & 0.0216 \pm 0.0003 \\ \text{imagid} + 0004 & 0.0088 \pm 0.0002 & 0.0142 \pm 0.0003 & 0.0218 \pm 0.0003 \\ \text{imagid} + 0010 & 0.0088 \pm 0.0002 & 0.0142 \pm 0.0003 & 0.0218 \pm 0.0003 \\ \text{innovatrics} + 0016 & 0.0159 \pm 0.0003 & 0.0236 \pm 0.0003 & 0.0336 \pm 0.0004 \\ \text{innovatrics} + 001C & 0.0088 \pm 0.0002 & 0.0141 \pm 0.0003 & 0.0203 \pm 0.0003 \\ \text{innovatrics} + 001D & 0.0070 \pm 0.0002 & 0.0110 \pm 0.0002 & 0.0160 \pm 0.0003 \\ \text{liquid} + 0107 & 0.0197 \pm 0.0003 & 0.0311 \pm 0.0004 & 0.0445 \pm 0.0005 \\ \text{nec} + 8211 & 0.0090 \pm 0.0002 & 0.0147 \pm 0.0003 & 0.0214 \pm 0.0003 \\ \text{Neurotechnology} + 010B & 0.0074 \pm 0.0002 & 0.0116 \pm 0.0002 & 0.0173 \pm 0.0003 \\ \text{Neurotechnology} + 0206 & 0.0072 \pm 0.0002 & 0.0116 \pm 0.0002 & 0.0167 \pm 0.0003 \\ \text{secugen} + 0037 & 0.0147 \pm 0.0003 & 0.0236 \pm 0.0003 & 0.0347 \pm 0.0004 \\ \text{sonda} + 0119 & 0.0121 \pm 0.0002 & 0.0206 \pm 0.0003 & 0.0303 \pm 0.0004 \\ \text{startek} + 0009 & 0.0117 \pm 0.0002 & 0.0178 \pm 0.0003 & 0.0255 \pm 0.0004 \\ \text{SupremaUFCore} + 2022 & 0.0128 \pm 0.0003 & 0.0200 \pm 0.0003 & 0.0288 \pm 0.0004 \\ \text{Tech5} + 0103 & 0.0121 \pm 0.0002 & 0.0199 \pm 0.0003 & 0.0306 \pm 0.0004 \\ \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                      |                     |                     |                     |
| $\begin{array}{c} griaule+0109 & 0.0107\pm0.0002 & 0.0170\pm0.0003 & 0.0249\pm0.0004 \\ hongda+0007 & 0.0128\pm0.0003 & 0.0216\pm0.0003 & 0.0327\pm0.0004 \\ id3+13B1 & 0.0074\pm0.0002 & 0.0124\pm0.0002 & 0.0185\pm0.0003 \\ id3tech+1252 & 0.0092\pm0.0002 & 0.0147\pm0.0003 & 0.0216\pm0.0003 \\ imagid+0004 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ imagid+0010 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ inesc+0016 & 0.0159\pm0.0003 & 0.0236\pm0.0003 & 0.0336\pm0.0004 \\ innovatrics+001C & 0.0088\pm0.0002 & 0.0141\pm0.0003 & 0.0203\pm0.0003 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0110\pm0.0002 & 0.0160\pm0.0003 \\ liquid+0107 & 0.0197\pm0.0003 & 0.0311\pm0.0004 & 0.0445\pm0.0005 \\ nec+8211 & 0.0090\pm0.0002 & 0.0147\pm0.0003 & 0.0214\pm0.0003 \\ Neurotechnology+010B & 0.0074\pm0.0002 & 0.0121\pm0.0002 & 0.0173\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0002 & 0.0167\pm0.0003 \\ secugen+0037 & 0.0147\pm0.0003 & 0.0236\pm0.0003 & 0.0347\pm0.0004 \\ sonda+0119 & 0.0121\pm0.0002 & 0.0178\pm0.0003 & 0.0303\pm0.0004 \\ startek+0009 & 0.0117\pm0.0002 & 0.0178\pm0.0003 & 0.0303\pm0.0004 \\ SupremaUFCore+2022 & 0.0128\pm0.0003 & 0.0200\pm0.0003 & 0.0288\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0199\pm0.0003 & 0.0306\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0199\pm0.0003 & 0.0306\pm0.0004 \\ \hline \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                      |                     |                     |                     |
| $\begin{array}{c} hongda+0007 & 0.0128\pm0.0003 & 0.0216\pm0.0003 & 0.0327\pm0.0004 \\ id3+13B1 & 0.0074\pm0.0002 & 0.0124\pm0.0002 & 0.0185\pm0.0003 \\ id3tech+1252 & 0.0092\pm0.0002 & 0.0147\pm0.0003 & 0.0216\pm0.0003 \\ imagid+0004 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ imagid+0010 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ inesc+0016 & 0.0159\pm0.0003 & 0.0236\pm0.0003 & 0.0336\pm0.0004 \\ innovatrics+001C & 0.0088\pm0.0002 & 0.0141\pm0.0003 & 0.0203\pm0.0003 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0110\pm0.0002 & 0.0160\pm0.0003 \\ liquid+0107 & 0.0197\pm0.0003 & 0.0311\pm0.0004 & 0.0445\pm0.0005 \\ nec+8211 & 0.0090\pm0.0002 & 0.0147\pm0.0003 & 0.0214\pm0.0003 \\ Neurotechnology+010B & 0.0074\pm0.0002 & 0.0121\pm0.0002 & 0.0173\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0002 & 0.0167\pm0.0003 \\ secugen+0037 & 0.0147\pm0.0003 & 0.0236\pm0.0003 & 0.0347\pm0.0004 \\ sonda+0119 & 0.0121\pm0.0002 & 0.0200\pm0.0003 & 0.0303\pm0.0004 \\ startek+0009 & 0.0117\pm0.0002 & 0.0178\pm0.0003 & 0.0255\pm0.0004 \\ SupremaUFCore+2022 & 0.0128\pm0.0003 & 0.0200\pm0.0003 & 0.0208\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0199\pm0.0003 & 0.0306\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0199\pm0.0003 & 0.0306\pm0.0004 \\ \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |                     |                     |                     |
| $\begin{array}{c} id3+13B1 & 0.0074\pm0.0002 & 0.0124\pm0.0002 & 0.0185\pm0.0003 \\ id3tech+1252 & 0.0092\pm0.0002 & 0.0147\pm0.0003 & 0.0216\pm0.0003 \\ imagid+0004 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ imagid+0010 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ inesc+0016 & 0.0159\pm0.0003 & 0.0236\pm0.0003 & 0.0336\pm0.0004 \\ innovatrics+001C & 0.0088\pm0.0002 & 0.0141\pm0.0003 & 0.0203\pm0.0003 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0110\pm0.0002 & 0.0160\pm0.0003 \\ liquid+0107 & 0.0197\pm0.0003 & 0.0311\pm0.0004 & 0.0445\pm0.0005 \\ nec+8211 & 0.0090\pm0.0002 & 0.0147\pm0.0003 & 0.0214\pm0.0003 \\ Neurotechnology+010B & 0.0074\pm0.0002 & 0.0121\pm0.0002 & 0.0173\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0002 & 0.0167\pm0.0003 \\ secugen+0037 & 0.0147\pm0.0003 & 0.0236\pm0.0003 & 0.0347\pm0.0004 \\ sonda+0119 & 0.0121\pm0.0002 & 0.0200\pm0.0003 & 0.0303\pm0.0004 \\ startek+0009 & 0.0117\pm0.0002 & 0.0178\pm0.0003 & 0.0255\pm0.0004 \\ SupremaUFCore+2022 & 0.0128\pm0.0003 & 0.0200\pm0.0003 & 0.0288\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0199\pm0.0003 & 0.0306\pm0.0004 \\ \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                     |                     |                     |
| $\begin{array}{c} id3 tech + 1252 & 0.0092 \pm 0.0002 & 0.0147 \pm 0.0003 & 0.0216 \pm 0.0003 \\ imagid + 0004 & 0.0088 \pm 0.0002 & 0.0142 \pm 0.0003 & 0.0218 \pm 0.0003 \\ imagid + 0010 & 0.0088 \pm 0.0002 & 0.0142 \pm 0.0003 & 0.0218 \pm 0.0003 \\ inesc + 0016 & 0.0159 \pm 0.0003 & 0.0236 \pm 0.0003 & 0.0336 \pm 0.0004 \\ innovatrics + 001C & 0.0088 \pm 0.0002 & 0.0141 \pm 0.0003 & 0.0203 \pm 0.0003 \\ innovatrics + 001D & 0.0070 \pm 0.0002 & 0.0110 \pm 0.0002 & 0.0160 \pm 0.0003 \\ liquid + 0107 & 0.0197 \pm 0.0003 & 0.0311 \pm 0.0004 & 0.0445 \pm 0.0005 \\ nec + 8211 & 0.0090 \pm 0.0002 & 0.0147 \pm 0.0003 & 0.0214 \pm 0.0003 \\ Neurotechnology + 010B & 0.0074 \pm 0.0002 & 0.0121 \pm 0.0002 & 0.0173 \pm 0.0003 \\ Neurotechnology + 0206 & 0.0072 \pm 0.0002 & 0.0116 \pm 0.0002 & 0.0167 \pm 0.0003 \\ secugen + 0037 & 0.0147 \pm 0.0003 & 0.0236 \pm 0.0003 & 0.0347 \pm 0.0004 \\ sonda + 0119 & 0.0121 \pm 0.0002 & 0.0200 \pm 0.0003 & 0.0303 \pm 0.0004 \\ startek + 0009 & 0.0117 \pm 0.0002 & 0.0178 \pm 0.0003 & 0.0255 \pm 0.0004 \\ Suprema UFC core + 2022 & 0.0128 \pm 0.0003 & 0.0200 \pm 0.0003 & 0.0288 \pm 0.0004 \\ Tech 5 + 0103 & 0.0121 \pm 0.0002 & 0.0199 \pm 0.0003 & 0.0306 \pm 0.0004 \\ \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      |                     |                     |                     |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |                     |                     |                     |
| $\begin{array}{c} imagid+0010 & 0.0088\pm0.0002 & 0.0142\pm0.0003 & 0.0218\pm0.0003 \\ inesc+0016 & 0.0159\pm0.0003 & 0.0236\pm0.0003 & 0.0336\pm0.0004 \\ innovatrics+001C & 0.0088\pm0.0002 & 0.0141\pm0.0003 & 0.0203\pm0.0003 \\ innovatrics+001D & 0.0070\pm0.0002 & 0.0110\pm0.0002 & 0.0160\pm0.0003 \\ liquid+0107 & 0.0197\pm0.0003 & 0.0311\pm0.0004 & 0.0445\pm0.0005 \\ nec+8211 & 0.0090\pm0.0002 & 0.0147\pm0.0003 & 0.0214\pm0.0003 \\ Neurotechnology+010B & 0.0074\pm0.0002 & 0.0121\pm0.0002 & 0.0173\pm0.0003 \\ Neurotechnology+0206 & 0.0072\pm0.0002 & 0.0116\pm0.0002 & 0.0167\pm0.0003 \\ secugen+0037 & 0.0147\pm0.0003 & 0.0236\pm0.0003 & 0.0347\pm0.0004 \\ sonda+0119 & 0.0121\pm0.0002 & 0.0103 & 0.0303\pm0.0004 \\ startek+0009 & 0.0117\pm0.0002 & 0.0178\pm0.0003 & 0.0255\pm0.0004 \\ SupremaUFCore+2022 & 0.0128\pm0.0003 & 0.0200\pm0.0003 & 0.0288\pm0.0004 \\ Tech5+0103 & 0.0121\pm0.0002 & 0.0199\pm0.0003 & 0.0306\pm0.0004 \\ \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                      |                     |                     |                     |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |                     |                     |                     |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0                    |                     |                     |                     |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |                     |                     |                     |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |                     |                     |                     |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |                     |                     |                     |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |                     |                     |                     |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Neurotechnology+010B |                     |                     |                     |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |                     |                     |                     |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |                     |                     |                     |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |                     |                     |                     |
| $ \begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                      |                     |                     |                     |
| Tech5+0103 $0.0121 \pm 0.0002$ $0.0199 \pm 0.0003$ $0.0306 \pm 0.0004$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      |                     |                     |                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                      |                     |                     |                     |
| 1 00160 0.0120 $\pm$ 0.0000 0.0200 $\pm$ 0.0000 0.0299 $\pm$ 0.0004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Pooled               | $0.0125 \pm 0.0003$ | $0.0203 \pm 0.0003$ | $0.0299 \pm 0.0004$ |

 $Table \ 7: \ Two\ finger\ FNMRs\ at\ various\ FMRs\ when\ matcher\ 0071+0021\ compares\ templates\ created\ by\ its\ template\ generator\ and\ PIV-compliant\ template\ generators.$ 

| 0059+0816                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Enroller             | FNMR @ FMR=0.01       | FNMR @ FMR=0.001      | FNMR @ FMR=0.0001     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------|-----------------------|-----------------------|
| $\begin{array}{c} 006A+0292 & 0.00053\pm0.00005 & 0.00124\pm0.00008 & 0.0022\pm0.0001 \\ 006D+0013 & 0.00052\pm0.00005 & 0.00126\pm0.00008 & 0.0022\pm0.0001 \\ 0071+0020 & 0.00038\pm0.00004 & 0.00076\pm0.00006 & 0.00125\pm0.00008 \\ 0071+0021 & 0.00035\pm0.00004 & 0.00072\pm0.00006 & 0.00125\pm0.00008 \\ 0071+0021 & 0.00035\pm0.00005 & 0.00101\pm0.00007 & 0.00175\pm0.00009 \\ 0.00124\pm0.00005 & 0.00101\pm0.00007 & 0.00175\pm0.00009 \\ 0.00138\pm0.00005 & 0.00101\pm0.00007 & 0.00175\pm0.00009 \\ 0.00138\pm0.0001 & 0.00178\pm0.00009 & 0.0041\pm0.0001 & 0.0072\pm0.0002 \\ 0.00138\pm0.0001 & 0.00032\pm0.00006 & 0.00188\pm0.00010 & 0.0013\pm0.0001 \\ 0.00131\pm0.0001 & 0.00031\pm0.0001 & 0.00031\pm0.0001 \\ 0.00131\pm0.0001 & 0.00011\pm0.00005 & 0.00142\pm0.00008 & 0.0025\pm0.0001 \\ 0.00131\pm0.0001 & 0.00041\pm0.00005 & 0.00094\pm0.00007 & 0.00156\pm0.0001 \\ 0.00131\pm0.0001 & 0.00005 & 0.00094\pm0.00007 & 0.00156\pm0.0001 \\ 0.00131\pm0.00001 & 0.00005 & 0.00094\pm0.00007 & 0.00156\pm0.0001 \\ 0.00131\pm0.00001 & 0.00005 & 0.00055\pm0.0001 & 0.0042\pm0.0001 \\ 0.00141\pm0.00008 & 0.0025\pm0.0001 & 0.0043\pm0.0001 \\ 0.00145\pm0.00009 & 0.00064\pm0.00005 & 0.00087\pm0.00007 & 0.00145\pm0.00009 \\ 0.00145\pm0.00001 & 0.000414\pm0.00009 & 0.00067\pm0.0001 & 0.0047\pm0.0002 \\ 0.00141\pm0.00008 & 0.00064\pm0.00006 & 0.00144\pm0.00009 & 0.00139\pm0.00008 \\ 0.00141\pm0.00009 & 0.00064\pm0.00006 & 0.00144\pm0.00009 & 0.0026\pm0.0001 \\ 0.001431310 & 0.00032\pm0.00004 & 0.00085\pm0.00007 & 0.00139\pm0.00008 \\ 0.00144\pm0.00009 & 0.00064\pm0.00005 & 0.00109\pm0.00007 & 0.00183\pm0.00010 \\ 0.001313131 & 0.00033\pm0.00004 & 0.00072\pm0.00006 & 0.00129\pm0.00008 \\ 0.0014141522 & 0.00046\pm0.00005 & 0.00199\pm0.00007 & 0.00183\pm0.00010 \\ 0.0014141522 & 0.00046\pm0.00005 & 0.00095\pm0.00007 & 0.00165\pm0.00009 \\ 0.00161\pm0.00009 & 0.00062\pm0.00006 & 0.00146\pm0.00009 & 0.0026\pm0.00009 \\ 0.00161\pm0.00009 & 0.00064\pm0.00009 & 0.00065\pm0.00009 \\ 0.00161\pm0.00009 & 0.00064\pm0.00009 & 0.00065\pm0.00009 \\ 0.00161\pm0.00009 & 0.00017\pm0.00000 & 0.00106\pm0.00009 \\ 0.00161\pm0.00009 & 0.000114\pm0.00009 & 0.00012\pm0.00009 \\ 0.00161\pm0.00009 & 0.00012\pm0.000009 & 0.00012\pm0.00001 \\ 0.0010141401007 & 0.00117\pm0.00008 & 0.00146\pm0.00009 & 0.0015\pm0.00001 \\$                                       |                      |                       |                       |                       |
| $\begin{array}{c} 006 \text{D} + 0013 & 0.00052 \pm 0.00005 & 0.00126 \pm 0.00008 & 0.0022 \pm 0.0001 \\ 0071 + 0021 & 0.00038 \pm 0.00004 & 0.00076 \pm 0.00006 & 0.00125 \pm 0.00008 \\ 0071 + 0021 & 0.00035 \pm 0.00004 & 0.00072 \pm 0.00006 & 0.00124 \pm 0.00008 \\ \text{aatec} + 0403 & 0.00043 \pm 0.00005 & 0.00101 \pm 0.00007 & 0.00175 \pm 0.00009 \\ \text{antheus} + 100A & 0.00178 \pm 0.00009 & 0.0041 \pm 0.0001 & 0.0072 \pm 0.0002 \\ \text{aratek} + 0011 & 0.00082 \pm 0.00006 & 0.00188 \pm 0.00010 & 0.0031 \pm 0.0001 \\ \text{aware} + 0311 & 0.00056 \pm 0.00005 & 0.00142 \pm 0.00008 & 0.0025 \pm 0.0001 \\ \text{cogent} + 0510 & 0.00041 \pm 0.00005 & 0.00094 \pm 0.00007 & 0.00156 \pm 0.00001 \\ \text{cogent} + 0102 & 0.00113 \pm 0.00008 & 0.0025 \pm 0.0001 & 0.0042 \pm 0.0001 \\ \text{Decatur} + 0102 & 0.00113 \pm 0.00008 & 0.0025 \pm 0.0001 & 0.0042 \pm 0.0001 \\ \text{Decatur} + 0104 & 0.00111 \pm 0.00007 & 0.0025 \pm 0.0001 & 0.0043 \pm 0.0001 \\ \text{dermalog} + 0006 & 0.00040 \pm 0.00005 & 0.00087 \pm 0.00007 & 0.00145 \pm 0.00009 \\ \text{futronic} + 0000A & 0.00114 \pm 0.00008 & 0.0026 \pm 0.0001 & 0.0047 \pm 0.0002 \\ \text{gemalto} + 0108 & 0.00032 \pm 0.00004 & 0.00085 \pm 0.00007 & 0.00145 \pm 0.00009 \\ \text{griaule} + 0108 & 0.00032 \pm 0.00004 & 0.00085 \pm 0.00007 & 0.00139 \pm 0.00008 \\ \text{genkey} + 0900 & 0.00064 \pm 0.00005 & 0.00109 \pm 0.00007 & 0.00139 \pm 0.00008 \\ \text{genkey} + 0900 & 0.00064 \pm 0.00005 & 0.00109 \pm 0.00007 & 0.00183 \pm 0.00010 \\ \text{griaule} + 0108 & 0.00046 \pm 0.00005 & 0.00109 \pm 0.00007 & 0.00183 \pm 0.00010 \\ \text{griaule} + 0109 & 0.00046 \pm 0.00005 & 0.00109 \pm 0.00007 & 0.00183 \pm 0.00010 \\ \text{id3} + 1381 & 0.00033 \pm 0.00004 & 0.00072 \pm 0.00006 & 0.00129 \pm 0.00008 \\ \text{id3tech} + 1252 & 0.00040 \pm 0.00005 & 0.00095 \pm 0.00007 & 0.00163 \pm 0.00009 \\ \text{imagid} + 0010 & 0.0037 \pm 0.00004 & 0.00086 \pm 0.00007 & 0.00165 \pm 0.00009 \\ \text{imagid} + 0010 & 0.00037 \pm 0.00004 & 0.00086 \pm 0.00007 & 0.00161 \pm 0.00009 \\ \text{imagid} + 0010 & 0.00038 \pm 0.00007 & 0.00162 \pm 0.00001 & 0.0032 \pm 0.00001 \\ \text{innovatrics} + 001D & 0.00026 \pm 0.00004 & 0.00086 \pm 0.00007 & 0.00163 \pm 0.00009 \\ \text{nec+8211} & 0.00033 \pm 0.00004 & 0.00067 \pm 0.00001 & 0.00165 \pm 0.00001 \\ \text{secugen} + 003$ |                      |                       |                       |                       |
| $\begin{array}{c} 0071+0020 & 0.00038\pm0.00004 & 0.00076\pm0.00006 & 0.00125\pm0.00008 \\ 0071+0021 & 0.00035\pm0.00004 & 0.00072\pm0.00006 & 0.00124\pm0.00008 \\ aatec+0403 & 0.00043\pm0.00005 & 0.00101\pm0.00007 & 0.00175\pm0.00009 \\ antheus+100A & 0.00178\pm0.00009 & 0.0041\pm0.0001 & 0.0072\pm0.0002 \\ aratek+0011 & 0.00082\pm0.00006 & 0.00188\pm0.00010 & 0.0031\pm0.0001 \\ aware+0311 & 0.00056\pm0.00005 & 0.00142\pm0.00008 & 0.0025\pm0.0001 \\ cogent+0510 & 0.00041\pm0.00005 & 0.00044\pm0.00007 & 0.00156\pm0.00009 \\ Decatur+0102 & 0.00113\pm0.00008 & 0.0025\pm0.0001 & 0.0042\pm0.0001 \\ Decatur+0104 & 0.00111\pm0.00007 & 0.0025\pm0.0001 & 0.0042\pm0.0001 \\ dermalog+0006 & 0.00040\pm0.00005 & 0.00087\pm0.0001 & 0.0043\pm0.0001 \\ dermalog+0006 & 0.00040\pm0.00005 & 0.00087\pm0.00007 & 0.00145\pm0.00009 \\ futronic+000A & 0.00114\pm0.000008 & 0.0026\pm0.0001 & 0.0047\pm0.00002 \\ gemalto+0108 & 0.00032\pm0.00004 & 0.00085\pm0.00007 & 0.00139\pm0.00008 \\ genkey+0900 & 0.00064\pm0.00006 & 0.00144\pm0.00009 & 0.0026\pm0.0001 \\ griaule+0108 & 0.00046\pm0.00005 & 0.00109\pm0.00007 & 0.00139\pm0.00001 \\ griaule+0109 & 0.00046\pm0.00005 & 0.00109\pm0.00007 & 0.00183\pm0.00010 \\ griaule+0109 & 0.00062\pm0.00006 & 0.00146\pm0.00009 & 0.0026\pm0.0001 \\ id3+13B1 & 0.00033\pm0.00004 & 0.00072\pm0.00009 & 0.00183\pm0.00010 \\ id3tech+1252 & 0.00040\pm0.00005 & 0.00055\pm0.00007 & 0.00183\pm0.00010 \\ imagid+0010 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00165\pm0.00009 \\ imagid+0010 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00165\pm0.00009 \\ insec+0016 & 0.00089\pm0.00007 & 0.00192\pm0.00010 & 0.00161\pm0.00009 \\ insec+0016 & 0.00089\pm0.00007 & 0.00192\pm0.00010 & 0.00144\pm0.00009 \\ insec+0016 & 0.00031\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ insec+0016 & 0.00031\pm0.00004 & 0.00062\pm0.000007 & 0.00161\pm0.00009 \\ insec+0016 & 0.00031\pm0.00004 & 0.00062\pm0.000007 & 0.00161\pm0.00009 \\ insec+0016 & 0.00031\pm0.00004 & 0.00062\pm0.00000 & 0.00132\pm0.00001 \\ innovatrics+001D & 0.00027\pm0.00004 & 0.00067\pm0.00001 & 0.00132\pm0.00009 \\ Neurotechnology+010B & 0.00026\pm0.00004 & 0.00067\pm0.00000 & 0.00132\pm0.00009 \\ Neurotechnology+010B & 0.00026\pm0.000006 & 0.00146\pm0.000009 & 0.0025\pm0.00001 \\$                                                                         |                      |                       |                       |                       |
| $\begin{array}{c} 0071+0021 & 0.00035\pm0.00004 & 0.00072\pm0.00006 & 0.00124\pm0.00008 \\ aatec+0403 & 0.00043\pm0.00005 & 0.00101\pm0.00007 & 0.00175\pm0.00009 \\ antheus+100A & 0.00178\pm0.00009 & 0.0041\pm0.0001 & 0.0072\pm0.0002 \\ aratek+0011 & 0.0082\pm0.00006 & 0.00188\pm0.00010 & 0.0031\pm0.0001 \\ aware+0311 & 0.00056\pm0.00005 & 0.00142\pm0.00008 & 0.0025\pm0.0001 \\ cogent+0510 & 0.00041\pm0.00005 & 0.00094\pm0.00007 & 0.00156\pm0.00009 \\ Decatur+0102 & 0.0013\pm0.00008 & 0.0025\pm0.0001 & 0.0042\pm0.0001 \\ Decatur+0104 & 0.00111\pm0.00007 & 0.0025\pm0.0001 & 0.0042\pm0.0001 \\ dermalog+0006 & 0.00040\pm0.00005 & 0.00087\pm0.00007 & 0.00145\pm0.00009 \\ futronic+000A & 0.00114\pm0.00008 & 0.0026\pm0.0001 & 0.0047\pm0.0002 \\ gemalto+0108 & 0.00032\pm0.00004 & 0.00085\pm0.00007 & 0.00145\pm0.00009 \\ genkey+0900 & 0.00064\pm0.00006 & 0.00144\pm0.00009 & 0.0026\pm0.0001 \\ griaule+0108 & 0.00032\pm0.00004 & 0.00019\pm0.00007 & 0.00133\pm0.00010 \\ griaule+0109 & 0.00046\pm0.00005 & 0.00109\pm0.00007 & 0.00183\pm0.00010 \\ griaule+0109 & 0.00046\pm0.00005 & 0.00109\pm0.00007 & 0.00183\pm0.00010 \\ hongda+0007 & 0.00062\pm0.00006 & 0.00146\pm0.00009 & 0.0026\pm0.0001 \\ id3+13B1 & 0.00033\pm0.00004 & 0.00072\pm0.00006 & 0.00129\pm0.00008 \\ id3tech+1252 & 0.00040\pm0.00005 & 0.00095\pm0.00007 & 0.00183\pm0.00010 \\ imagid+0010 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00163\pm0.00009 \\ imagid+0010 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ imagid+0010 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ intovatrics+001C & 0.00031\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ intovatrics+001D & 0.00036\pm0.00004 & 0.00086\pm0.00007 & 0.00163\pm0.00009 \\ intovatrics+001D & 0.00036\pm0.00004 & 0.00077\pm0.00006 & 0.00144\pm0.00009 \\ intovatrics+001D & 0.00036\pm0.00004 & 0.00067\pm0.00006 & 0.00144\pm0.00009 \\ intovatrics+001D & 0.00032\pm0.00004 & 0.00067\pm0.00006 & 0.00144\pm0.00009 \\ intovatrics+001D & 0.00032\pm0.00004 & 0.00067\pm0.00006 & 0.00145\pm0.00009 \\ Neurotechnology+010B & 0.00026\pm0.00004 & 0.00067\pm0.00006 & 0.00132\pm0.00001 \\ secugen+0037 & 0.00091\pm0.000007 & 0.00187\pm0.00010 & 0.00132\pm0.00001 \\ setatek+0009 & 0.00052\pm0.00006 & 0.00146\pm0.0000$                                                                            |                      |                       |                       |                       |
| $\begin{array}{c} aatec+0403 & 0.00043\pm0.00005 & 0.00101\pm0.00007 & 0.00175\pm0.00009 \\ antheus+100A & 0.00178\pm0.00009 & 0.0041\pm0.0001 & 0.0072\pm0.0002 \\ aratek+0011 & 0.00082\pm0.00006 & 0.00188\pm0.00010 & 0.0031\pm0.0001 \\ aware+0311 & 0.00056\pm0.00005 & 0.00142\pm0.00008 & 0.0025\pm0.0001 \\ cogent+0510 & 0.00041\pm0.00005 & 0.00094\pm0.00007 & 0.00156\pm0.00009 \\ Decatur+0102 & 0.00113\pm0.00008 & 0.0025\pm0.0001 & 0.0042\pm0.0001 \\ Decatur+0104 & 0.00111\pm0.00007 & 0.0025\pm0.0001 & 0.0043\pm0.0001 \\ dermalog+0006 & 0.00040\pm0.00005 & 0.00087\pm0.00007 & 0.00145\pm0.00009 \\ futronic+000A & 0.00114\pm0.00008 & 0.0026\pm0.0001 & 0.0047\pm0.00009 \\ gemalto+0108 & 0.00032\pm0.00004 & 0.00085\pm0.00007 & 0.00139\pm0.00008 \\ genkey+0900 & 0.00064\pm0.00006 & 0.00144\pm0.00009 & 0.0026\pm0.0001 \\ griaule+0108 & 0.00032\pm0.00006 & 0.00144\pm0.00009 & 0.0026\pm0.0001 \\ griaule+0109 & 0.00046\pm0.00005 & 0.00109\pm0.00007 & 0.00183\pm0.00010 \\ hongda+0007 & 0.00662\pm0.00006 & 0.00109\pm0.00007 & 0.00183\pm0.00010 \\ id3+13B1 & 0.00033\pm0.00004 & 0.00072\pm0.00006 & 0.00129\pm0.00008 \\ id3tech+1252 & 0.00040\pm0.00005 & 0.00095\pm0.00007 & 0.00183\pm0.00010 \\ imagid+0004 & 0.00037\pm0.00004 & 0.00072\pm0.00006 & 0.00129\pm0.00008 \\ imagid+0010 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00165\pm0.00009 \\ imagid+0016 & 0.00039\pm0.00007 & 0.00162\pm0.00009 \\ inesc+0016 & 0.00039\pm0.00007 & 0.00162\pm0.00009 \\ innovatrics+001C & 0.00031\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ innovatrics+001D & 0.00026\pm0.00004 & 0.00086\pm0.00006 & 0.00144\pm0.00009 \\ innovatrics+001D & 0.00026\pm0.00004 & 0.00080\pm0.00006 & 0.00144\pm0.00009 \\ innovatrics+001D & 0.00026\pm0.00004 & 0.00097\pm0.00006 & 0.00132\pm0.00001 \\ Neurotechnology+010B & 0.00026\pm0.00004 & 0.00067\pm0.00006 & 0.00132\pm0.00001 \\ Secugen+0037 & 0.00025\pm0.00004 & 0.00067\pm0.00006 & 0.00132\pm0.00001 \\ setatek+0009 & 0.00025\pm0.00006 & 0.00146\pm0.00009 & 0.0025\pm0.0001 \\ SupremaUFCore+2022 & 0.00062\pm0.00006 & 0.00146\pm0.00009 & 0.0025\pm0.0001 \\ SupremaUFCore+2022 & 0.00082\pm0.00006 & 0.00146\pm0.00009 & 0.0025\pm0.0001 \\ SupremaUFCore+2022 & 0.00082\pm0.00006 & 0.00146\pm0.00009 & 0.0025\pm0.0001 \\ SupremaUF$                                                                             |                      |                       |                       |                       |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |                       |                       |                       |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |                       |                       |                       |
| $\begin{array}{c} cogent+0510 & 0.00041\pm0.00005 & 0.00094\pm0.00007 & 0.00156\pm0.00009 \\ Decatur+0102 & 0.00113\pm0.00008 & 0.0025\pm0.0001 & 0.0042\pm0.0001 \\ Decatur+0104 & 0.00111\pm0.00007 & 0.0025\pm0.0001 & 0.0043\pm0.0001 \\ dermalog+0006 & 0.00040\pm0.00005 & 0.00087\pm0.00007 & 0.00145\pm0.0009 \\ futronic+000A & 0.00114\pm0.00008 & 0.0026\pm0.00001 & 0.0047\pm0.0002 \\ gemalto+0108 & 0.00032\pm0.00004 & 0.00085\pm0.00007 & 0.00139\pm0.00008 \\ genkey+0900 & 0.00064\pm0.00006 & 0.00144\pm0.00009 & 0.0026\pm0.0001 \\ griaule+0108 & 0.00032\pm0.00005 & 0.00109\pm0.00007 & 0.00139\pm0.00010 \\ griaule+0109 & 0.00046\pm0.00005 & 0.00109\pm0.00007 & 0.00183\pm0.00010 \\ hongda+0007 & 0.00062\pm0.00006 & 0.00146\pm0.00009 & 0.0026\pm0.0001 \\ id3+13B1 & 0.00033\pm0.00004 & 0.00072\pm0.00006 & 0.00129\pm0.00008 \\ id3tech+1252 & 0.00040\pm0.00005 & 0.00095\pm0.00007 & 0.00165\pm0.00009 \\ imagid+0004 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.001615\pm0.00009 \\ imagid+0010 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ inesc+0016 & 0.00089\pm0.00007 & 0.00192\pm0.0001 & 0.0032\pm0.0001 \\ innovatrics+001D & 0.00031\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ innovatrics+001D & 0.00026\pm0.00004 & 0.00082\pm0.0001 & 0.00144\pm0.00009 \\ inec+8211 & 0.00034\pm0.00004 & 0.00082\pm0.00006 & 0.00144\pm0.00009 \\ nec+8211 & 0.00034\pm0.00004 & 0.00090\pm0.00006 & 0.00163\pm0.00007 \\ Neurotechnology+010B & 0.00026\pm0.00004 & 0.00077\pm0.00006 & 0.00132\pm0.00009 \\ Neurotechnology+010B & 0.00026\pm0.00004 & 0.00077\pm0.00006 & 0.00132\pm0.00009 \\ Neurotechnology+0206 & 0.00027\pm0.00004 & 0.00067\pm0.00006 & 0.00132\pm0.00007 \\ secugen+0037 & 0.00091\pm0.00007 & 0.00187\pm0.00006 & 0.00132\pm0.00001 \\ startek+0009 & 0.00052\pm0.00006 & 0.00146\pm0.00009 & 0.0025\pm0.0001 \\ SupremaUFCore+2022 & 0.00082\pm0.00006 & 0.00146\pm0.00009 & 0.0025\pm0.0001 \\ SupremaUFCore+2022 & 0.$                                                                                | aratek+0011          | $0.00082 \pm 0.00006$ | $0.00188 \pm 0.00010$ | $0.0031 \pm 0.0001$   |
| $\begin{array}{c} Decatur+0102 & 0.00113\pm0.00008 & 0.0025\pm0.0001 & 0.0042\pm0.0001 \\ Decatur+0104 & 0.00111\pm0.00007 & 0.0025\pm0.0001 & 0.0043\pm0.0001 \\ dermalog+0006 & 0.00040\pm0.00005 & 0.00087\pm0.00007 & 0.00145\pm0.00009 \\ futronic+000A & 0.00114\pm0.00008 & 0.0026\pm0.0001 & 0.0047\pm0.0002 \\ gemalto+0108 & 0.00032\pm0.00004 & 0.00085\pm0.00007 & 0.00139\pm0.00008 \\ genkey+0900 & 0.00064\pm0.00006 & 0.00144\pm0.00009 & 0.0026\pm0.0001 \\ griaule+0108 & 0.00046\pm0.00005 & 0.00109\pm0.00007 & 0.00183\pm0.00010 \\ griaule+0109 & 0.00046\pm0.00005 & 0.00109\pm0.00007 & 0.00183\pm0.00010 \\ hongda+0007 & 0.00062\pm0.00006 & 0.00146\pm0.00009 & 0.0026\pm0.0001 \\ id3+13B1 & 0.00033\pm0.00004 & 0.00072\pm0.00006 & 0.00129\pm0.00008 \\ id3tech+1252 & 0.00040\pm0.00005 & 0.00095\pm0.00007 & 0.00165\pm0.00009 \\ imagid+0004 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00165\pm0.00009 \\ imagid+0010 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ inesc+0016 & 0.00089\pm0.00007 & 0.00192\pm0.00010 & 0.0032\pm0.00011 \\ innovatrics+001D & 0.00026\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ innovatrics+001D & 0.00026\pm0.00004 & 0.00082\pm0.00006 & 0.00144\pm0.00009 \\ innovatrics+001D & 0.00026\pm0.00004 & 0.00062\pm0.00006 & 0.00164\pm0.00007 \\ liquid+0107 & 0.00117\pm0.00008 & 0.0027\pm0.0001 & 0.0045\pm0.0002 \\ nec+8211 & 0.00034\pm0.00004 & 0.00062\pm0.00006 & 0.00164\pm0.00009 \\ Neurotechnology+010B & 0.00026\pm0.00004 & 0.00067\pm0.00006 & 0.00132\pm0.00008 \\ Neurotechnology+0206 & 0.00027\pm0.00004 & 0.00067\pm0.00006 & 0.00132\pm0.00008 \\ Neurotechnology+0206 & 0.00027\pm0.00004 & 0.00067\pm0.00006 & 0.00132\pm0.00001 \\ startek+0009 & 0.00052\pm0.00006 & 0.00146\pm0.00009 & 0.0025\pm0.0001 \\ SupremaUFCore+2022 & 0.00082\pm0.00006 & 0.00146\pm0.00009 & 0.0025\pm0.0001 \\ Tech5+0103 & 0.00062\pm0.00006 & 0.00146\pm0.00009 & 0.002$                                                                            | aware+0311           |                       |                       |                       |
| $\begin{array}{c} Decatur+0102 \\ Decatur+0104 \\ Decatur+0106 \\ Decatur+0108 \\ Decatur+0109 \\$                                                                                                                                                   | cogent+0510          | $0.00041 \pm 0.00005$ | $0.00094 \pm 0.00007$ | $0.00156 \pm 0.00009$ |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      | $0.00113 \pm 0.00008$ | $0.0025 \pm 0.0001$   | $0.0042 \pm 0.0001$   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Decatur+0104         | $0.00111 \pm 0.00007$ | $0.0025 \pm 0.0001$   | $0.0043 \pm 0.0001$   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | dermalog+0006        | $0.00040 \pm 0.00005$ | $0.00087 \pm 0.00007$ | $0.00145 \pm 0.00009$ |
| $\begin{array}{c} genkey+0900 & 0.00064 \pm 0.00006 & 0.00144 \pm 0.00009 & 0.0026 \pm 0.0001 \\ griaule+0108 & 0.00046 \pm 0.00005 & 0.00109 \pm 0.00007 & 0.00183 \pm 0.00010 \\ griaule+0109 & 0.00046 \pm 0.00005 & 0.00109 \pm 0.00007 & 0.00183 \pm 0.00010 \\ hongda+0007 & 0.00062 \pm 0.00006 & 0.00146 \pm 0.00009 & 0.0026 \pm 0.0001 \\ id3+13B1 & 0.00033 \pm 0.00004 & 0.00072 \pm 0.00006 & 0.00129 \pm 0.00008 \\ id3tech+1252 & 0.00040 \pm 0.00005 & 0.00095 \pm 0.00007 & 0.00165 \pm 0.00009 \\ imagid+0004 & 0.00037 \pm 0.00004 & 0.00086 \pm 0.00007 & 0.00161 \pm 0.00009 \\ imagid+0010 & 0.00037 \pm 0.00004 & 0.00086 \pm 0.00007 & 0.00161 \pm 0.00009 \\ inesc+0016 & 0.00089 \pm 0.00007 & 0.00192 \pm 0.00010 & 0.0032 \pm 0.0001 \\ innovatrics+001C & 0.00031 \pm 0.00004 & 0.00080 \pm 0.00006 & 0.00144 \pm 0.00009 \\ innovatrics+001D & 0.00026 \pm 0.00004 & 0.00062 \pm 0.00006 & 0.00106 \pm 0.00007 \\ liquid+0107 & 0.00117 \pm 0.00008 & 0.0027 \pm 0.0001 & 0.0045 \pm 0.0002 \\ nec+8211 & 0.00034 \pm 0.00004 & 0.00090 \pm 0.00007 & 0.00153 \pm 0.00009 \\ Neurotechnology+010B & 0.00026 \pm 0.00004 & 0.00077 \pm 0.00006 & 0.00132 \pm 0.00008 \\ Neurotechnology+0206 & 0.00027 \pm 0.00004 & 0.00077 \pm 0.00006 & 0.00109 \pm 0.00007 \\ secugen+0037 & 0.00091 \pm 0.00007 & 0.00187 \pm 0.00010 & 0.0032 \pm 0.0001 \\ sonda+0119 & 0.00062 \pm 0.00006 & 0.00146 \pm 0.00009 & 0.0025 \pm 0.0001 \\ startek+0009 & 0.00052 \pm 0.00006 & 0.00146 \pm 0.00009 & 0.0025 \pm 0.0001 \\ SupremaUFCore+2022 & 0.00082 \pm 0.00006 & 0.00146 \pm 0.00009 & 0.0025 \pm 0.0001 \\ Tech5+0103 & 0.00062 \pm 0.00006 & 0.00146 \pm 0.00009 & 0.0025 \pm 0.0001 \\ \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                      | $0.00114 \pm 0.00008$ | $0.0026 \pm 0.0001$   | $0.0047 \pm 0.0002$   |
| $\begin{array}{c} griaule+0108\\ griaule+0109\\ griaule+0109\\ hongda+0007\\ hongda+00008\\ hongda+00009\\ hongda+1010\\ hongda+1010\\ hongda+0010\\ hongda+00009\\ hongda+0010\\ hongda+0010\\ hongda+00009\\ hongda+000007\\ hongda+000009\\ hongda+000000\\ hongda+000000\\ hongda+000000\\ hongda+00000\\ hongda+00000\\ hongda+00000\\ hongda+00000\\ hongda+00000\\ hongda+00000\\ hongda+00000\\ hongda+00000\\ hongda+000000\\ hongda+00000\\ hongda+000000\\ hongda+00000\\ hongda+00000\\ hongda+00000\\ hongda+00000\\ hongda+00000\\ hongda+000000\\ hong$                                                                                                                                         | gemalto+0108         | $0.00032 \pm 0.00004$ | $0.00085 \pm 0.00007$ | $0.00139 \pm 0.00008$ |
| $\begin{array}{c} griaule+0109 & 0.00046\pm0.00005 & 0.00109\pm0.00007 & 0.00183\pm0.00010 \\ hongda+0007 & 0.00062\pm0.00006 & 0.00146\pm0.00009 & 0.0026\pm0.0001 \\ id3+13B1 & 0.00033\pm0.00004 & 0.00072\pm0.00006 & 0.00129\pm0.00008 \\ id3tech+1252 & 0.00040\pm0.00005 & 0.00095\pm0.00007 & 0.00165\pm0.00009 \\ imagid+0004 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ imagid+0010 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ inesc+0016 & 0.00089\pm0.00007 & 0.00192\pm0.00010 & 0.0032\pm0.0001 \\ innovatrics+001C & 0.00031\pm0.00004 & 0.00080\pm0.00006 & 0.00144\pm0.00009 \\ innovatrics+001D & 0.00026\pm0.00004 & 0.00062\pm0.00006 & 0.00166\pm0.00007 \\ liquid+0107 & 0.00117\pm0.00008 & 0.0027\pm0.0001 & 0.0045\pm0.0002 \\ nec+8211 & 0.00034\pm0.00004 & 0.00090\pm0.00007 & 0.00153\pm0.00009 \\ Neurotechnology+010B & 0.00026\pm0.00004 & 0.00077\pm0.00006 & 0.00132\pm0.00008 \\ Neurotechnology+0206 & 0.00027\pm0.00004 & 0.00067\pm0.00006 & 0.00109\pm0.00007 \\ secugen+0037 & 0.00091\pm0.00007 & 0.00187\pm0.00010 & 0.0032\pm0.0001 \\ startek+0009 & 0.00052\pm0.00006 & 0.00146\pm0.00009 & 0.0025\pm0.0001 \\ SupremaUFCore+2022 & 0.00082\pm0.00006 & 0.00166\pm0.00009 & 0.0025\pm0.0001 \\ Tech5+0103 & 0.00062\pm0.00006 & 0.00146\pm0.00009 & 0.0025\pm0.0001 \\ \hline \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | genkey+0900          | $0.00064 \pm 0.00006$ | $0.00144 \pm 0.00009$ | $0.0026 \pm 0.0001$   |
| $\begin{array}{c} griaule+0109 & 0.00046\pm0.00005 & 0.00109\pm0.00007 & 0.00183\pm0.00010 \\ hongda+0007 & 0.00062\pm0.00006 & 0.00146\pm0.00009 & 0.0026\pm0.0001 \\ id3+13B1 & 0.00033\pm0.00004 & 0.00072\pm0.00006 & 0.00129\pm0.00008 \\ id3tech+1252 & 0.00040\pm0.00005 & 0.00095\pm0.00007 & 0.00165\pm0.00009 \\ imagid+0004 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ imagid+0010 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ inesc+0016 & 0.00089\pm0.00007 & 0.00192\pm0.00010 & 0.0032\pm0.0001 \\ innovatrics+001C & 0.00031\pm0.00004 & 0.00080\pm0.00006 & 0.00144\pm0.00009 \\ innovatrics+001D & 0.00026\pm0.00004 & 0.00062\pm0.00006 & 0.00166\pm0.00007 \\ liquid+0107 & 0.00117\pm0.00008 & 0.0027\pm0.0001 & 0.0045\pm0.0002 \\ nec+8211 & 0.00034\pm0.00004 & 0.00090\pm0.00007 & 0.00153\pm0.00009 \\ Neurotechnology+010B & 0.00026\pm0.00004 & 0.00077\pm0.00006 & 0.00132\pm0.00008 \\ Neurotechnology+0206 & 0.00027\pm0.00004 & 0.00067\pm0.00006 & 0.00109\pm0.00007 \\ secugen+0037 & 0.00091\pm0.00007 & 0.00187\pm0.00010 & 0.0032\pm0.0001 \\ startek+0009 & 0.00052\pm0.00006 & 0.00146\pm0.00009 & 0.0025\pm0.0001 \\ SupremaUFCore+2022 & 0.00082\pm0.00006 & 0.00166\pm0.00009 & 0.0025\pm0.0001 \\ Tech5+0103 & 0.00062\pm0.00006 & 0.00146\pm0.00009 & 0.0025\pm0.0001 \\ \hline \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | griaule+0108         | $0.00046 \pm 0.00005$ | $0.00109 \pm 0.00007$ | $0.00183 \pm 0.00010$ |
| $\begin{array}{c} id3+13B1 & 0.00033\pm0.00004 & 0.00072\pm0.00006 & 0.00129\pm0.00008 \\ id3tech+1252 & 0.00040\pm0.00005 & 0.00095\pm0.00007 & 0.00165\pm0.00009 \\ imagid+0004 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ imagid+0010 & 0.00037\pm0.00004 & 0.00086\pm0.00007 & 0.00161\pm0.00009 \\ inesc+0016 & 0.00089\pm0.00007 & 0.00192\pm0.00010 & 0.0032\pm0.0001 \\ innovatrics+001C & 0.00031\pm0.00004 & 0.00080\pm0.00006 & 0.00144\pm0.00009 \\ innovatrics+001D & 0.00026\pm0.00004 & 0.00062\pm0.00006 & 0.00106\pm0.00007 \\ liquid+0107 & 0.00117\pm0.00008 & 0.0027\pm0.0001 & 0.0045\pm0.0002 \\ nec+8211 & 0.00034\pm0.00004 & 0.00090\pm0.00007 & 0.00153\pm0.00009 \\ Neurotechnology+010B & 0.00026\pm0.00004 & 0.00077\pm0.00006 & 0.00132\pm0.00008 \\ Neurotechnology+0206 & 0.00027\pm0.00004 & 0.00067\pm0.00006 & 0.00109\pm0.00007 \\ secugen+0037 & 0.00091\pm0.00007 & 0.00187\pm0.00006 & 0.00109\pm0.00007 \\ sonda+0119 & 0.00062\pm0.00006 & 0.00146\pm0.00009 & 0.0025\pm0.0001 \\ startek+0009 & 0.00052\pm0.00005 & 0.00114\pm0.00008 & 0.00196\pm0.00010 \\ SupremaUFCore+2022 & 0.00082\pm0.00006 & 0.00166\pm0.00009 & 0.0025\pm0.0001 \\ Tech5+0103 & 0.00062\pm0.00006 & 0.00146\pm0.00009 & 0.0025\pm0.0001 \\ \end{array}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | griaule+0109         | $0.00046 \pm 0.00005$ | $0.00109 \pm 0.00007$ | $0.00183 \pm 0.00010$ |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | hongda+0007          | $0.00062 \pm 0.00006$ | $0.00146 \pm 0.00009$ | $0.0026 \pm 0.0001$   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | id3+13B1             | $0.00033 \pm 0.00004$ | $0.00072 \pm 0.00006$ | $0.00129 \pm 0.00008$ |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | id3tech+1252         | $0.00040 \pm 0.00005$ | $0.00095 \pm 0.00007$ | $0.00165 \pm 0.00009$ |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imagid+0004          | $0.00037 \pm 0.00004$ | $0.00086 \pm 0.00007$ | $0.00161 \pm 0.00009$ |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | imagid+0010          | $0.00037 \pm 0.00004$ | $0.00086 \pm 0.00007$ | $0.00161 \pm 0.00009$ |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | inesc+0016           | $0.00089 \pm 0.00007$ | $0.00192 \pm 0.00010$ | $0.0032 \pm 0.0001$   |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | innovatrics+001C     | $0.00031 \pm 0.00004$ | $0.00080 \pm 0.00006$ | $0.00144 \pm 0.00009$ |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | innovatrics+001D     | $0.00026 \pm 0.00004$ | $0.00062 \pm 0.00006$ | $0.00106 \pm 0.00007$ |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | liquid+0107          | $0.00117 \pm 0.00008$ | $0.0027 \pm 0.0001$   | $0.0045 \pm 0.0002$   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | nec+8211             | $0.00034 \pm 0.00004$ | $0.00090 \pm 0.00007$ | $0.00153 \pm 0.00009$ |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Neurotechnology+010B | $0.00026 \pm 0.00004$ | $0.00077 \pm 0.00006$ | $0.00132 \pm 0.00008$ |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Neurotechnology+0206 | $0.00027 \pm 0.00004$ | $0.00067 \pm 0.00006$ | $0.00109 \pm 0.00007$ |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | secugen+0037         | $0.00091 \pm 0.00007$ | $0.00187 \pm 0.00010$ | $0.0032 \pm 0.0001$   |
| $ \begin{array}{llllllllllllllllllllllllllllllllllll$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      | $0.00062 \pm 0.00006$ | $0.00146 \pm 0.00009$ | $0.0025 \pm 0.0001$   |
| Tech5+0103 $0.00062 \pm 0.00006$ $0.00146 \pm 0.00009$ $0.0025 \pm 0.0001$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | startek+0009         | $0.00052 \pm 0.00005$ | $0.00114 \pm 0.00008$ | $0.00196 \pm 0.00010$ |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                      | $0.00082 \pm 0.00006$ | $0.00166 \pm 0.00009$ | $0.0028 \pm 0.0001$   |
| Pooled $0.00070 \pm 0.00006$ $0.00159 \pm 0.00009$ $0.0027 \pm 0.0001$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Tech5+0103           | $0.00062 \pm 0.00006$ | $0.00146 \pm 0.00009$ | $0.0025 \pm 0.0001$   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Pooled               | $0.00070 \pm 0.00006$ | $0.00159 \pm 0.00009$ | $0.0027 \pm 0.0001$   |

## 5 References

- [1] Jonathan N. Bradley, Christopher M. Brislawn, and Thomas Hopper. FBI wavelet/scalar quantization standard for gray-scale fingerprint image compression. In *SPIE*, *Visual Information Processing II*, 1961. 3
- [2] George Doddington, Walter Liggett, Alvin Martin, Mark Przybocki, and Douglas Reynolds. Sheep, goats, lambs and wolves a statistical analysis of speaker performance in the nist 1998 speaker recognition evaluation. In INTERNATIONAL CONFERENCE ON SPOKEN LANGUAGE PROCESSING, 1998. 4
- [3] Patrick Grother Elham Tabassi, George W. Quinn. When to fuse two biometrics. In *IEEE Computer Society on Computer Vision and Pattern Recognition, Workshop on Multi-Biometrics*, 2006. 3
- [4] Robert Fontana, Giovanni Pistone, and Maria Rogantin. Classification of two-level factorial fractions. *Journal of Statistical Planning and Inference*, 87:149–172, 2000. 3
- [5] P. Grother, M. McCabe, C. Watson, M. Indovina, W. Salamon, P. Flanagan, E. Tabassi, E. Newton, and C. Wilson. Performance and Interoperability of the INCITS 378 Fingerprint Template. Technical report, NIST, 2006.
- [6] A. Martin, G. Doddington, T. Kamm, M. Ordowski, and M. Przybocki. The DET curve in assessment of detection task performance. In *Proc. Eurospeech*, pages 1895–1898, 1997. 3
- [7] George W. Quinn. Evaluation of latent fingerprint technologies: Fusion. In NIST Latent Fingerprint Testing Workshop Recognition, Workshop, 2009. 3
- [8] Edwin B. Wilson. Probable Inference, the Law of Succession, and Statistical Inference. *Journal of the American Statistical Association*, 22(158):209–212, 1927. 4

22