

**Table S1.** Selected samples from 10 unrelated individuals.

| <b>Individuals</b> | <b>Sample Code Buccal Swab</b> | <b>Sample Code Urine</b> |
|--------------------|--------------------------------|--------------------------|
| 1                  | 19-131                         | 19-145                   |
| 2                  | 19-133                         | 19-147                   |
| 3                  | 19-134                         | 19-148                   |
| 4                  | 19-135                         | 19-149                   |
| 5                  | 18-431                         | 19-154                   |
| 6                  | 19-205                         | 19-208                   |
| 7                  | 19-206                         | 19-209                   |
| 8                  | 19-207                         | 19-210                   |
| 9                  | 19-142                         | 19-211                   |
| 10                 | 19-141                         | 19-212                   |

**Table S2.** Different mixtures utilized in this studio

| Sample Code Buccal Swab | Sample Code Urine |
|-------------------------|-------------------|
| TB_1:2                  | UR_1:2            |
| TB_1:4                  | UR_1:4            |
| TB_1:6                  | UR_1:6            |
| TB_1:8                  | UR_1:8            |
| TB_1:10                 | UR_1:10           |
| TB_1:20                 | UR_1:20           |

**Table S3.** Loci evaluated for the comparison of the two methods.

| <b>Locus</b> | <b>Repeat</b> | <b>Chromosome location</b> |
|--------------|---------------|----------------------------|
| D3S1358      | TCTA/TCTG     | 3p21.31                    |
| vWA          | TCTA/TCTG     | 12p13.31                   |
| D16S539      | GATA          | 16q24.1                    |
| CSF1PO       | AGAT          | 5q33.3-34                  |
| TPOX         | AATG          | 2p23-2per                  |
| AMEL-X       | Indel         | p22.1-22.3                 |
| AMEL-Y       | Indel         | p11.2                      |
| D8S1179      | TCTA/TCTG     | 8q24.13                    |
| D21S11       | TCTA/TCTG     | 21q11.2-q21                |
| DYS391       | TCTA          | Yq11.21                    |
| D2S441       | TCTA/TCAA     | 2p14                       |
| D19S433      | AAGG/TAG<br>G | 19q12                      |
| FGA          | CTTT/TTCC     | 4q28                       |
| D22S1045     | ATT           | 22q12.3                    |
| D5S818       | AGAT          | 5q21-31                    |
| D13S317      | TATC          | 13q22-31                   |
| D7S820       | GATA          | 7q11.21-22                 |
| D10S1248     | GGAA          | 10q26.3 8                  |
| D1S1656      | TAGA          | 1q42.2 9                   |
| D12S391      | AGAT/AGA<br>C | 12p13.2 1                  |
| D2S1338      | TGCC/TTCC     | 2q35                       |
| Y indel      | Indel         | Yq11.221                   |
| D18S51       | AGAA          | 18q21.33                   |
| TH01         | TCAT          | 11p15.5                    |

**Table S4.** Quantification and degradation data of buccal swab samples.

| <b>Individuals</b> | <b>Sample Code<br/>Buccal Swab</b> | <b>□ DNA<br/>buccal swab</b> | <b>Degradation<br/>Index</b> |
|--------------------|------------------------------------|------------------------------|------------------------------|
| 1                  | 19-131                             | 22,987 ng/μL                 | 0,86                         |
| 2                  | 19-133                             | 55,911 ng/μL                 | 1,07                         |
| 3                  | 19-134                             | 27,068 ng/μL                 | 0,75                         |
| 4                  | 19-135                             | 29,68 ng/μL                  | 0,68                         |
| 5                  | 18-431                             | 34,322 ng/μL                 | 1,22                         |
| 6                  | 19-205                             | 108,248 ng/μL                | 1,00                         |
| 7                  | 19-206                             | 52,903 ng/μL                 | 0,93                         |
| 8                  | 19-207                             | 34,755 ng/μL                 | 0,77                         |
| 9                  | 19-142                             | 55,384 ng/μL                 | 0,69                         |
| 10                 | 19-141                             | 66,827 ng/μL                 | 0,77                         |

**Table. S5.** Quantification and degradation data of urine samples.

| <b>Individuals</b> | <b>Sample<br/>Code Urine</b> | <b>[<math>\square</math>] DNA Urine</b> | <b>Degradation<br/>Index</b> |
|--------------------|------------------------------|-----------------------------------------|------------------------------|
| 1                  | 19-145                       | 3,523 ng/ $\mu$ L                       | 1,23                         |
| 2                  | 19-147                       | 13,26 ng/ $\mu$ L                       | 0,78                         |
| 3                  | 19-148                       | 2,814 ng/ $\mu$ L                       | 0,92                         |
| 4                  | 19-149                       | 9,447 ng/ $\mu$ L                       | 1,11                         |
| 5                  | 19-154                       | 0,136 ng/ $\mu$ L                       | 1,02                         |
| 6                  | 19-208                       | 0,687 ng/ $\mu$ L                       | 1,03                         |
| 7                  | 19-209                       | 0,479 ng/ $\mu$ L                       | 0,90                         |
| 8                  | 19-210                       | 6,683 ng/ $\mu$ L                       | 1,33                         |
| 9                  | 19-211                       | 0,195 ng/ $\mu$ L                       | 0,83                         |
| 10                 | 19-212                       | 0,794 ng/ $\mu$ L                       | 0,87                         |

**Table S6.** Genotyping results for the 23 loci by mean of CE methodology regarding samples from buccal swabs. CE: Capillary Electrophoresis.

| CE Global Filer Single DNA Profiles (Buccal Swabs) |         |         |         |         |         |           |           |         |         |         |
|----------------------------------------------------|---------|---------|---------|---------|---------|-----------|-----------|---------|---------|---------|
| Sample<br>Locus                                    | 19-135  | 19-141  | 19-207  | 19-205  | 19-142  | 19-206    | 19-131    | 19-133  | 19-134  | 18-431  |
| D3S1358                                            | 18-18   | 18-18   | 16-16   | 16-18   | 15-17   | 14-16     | 14-15     | 14-17   | 16-18   | 15-18   |
| VWA                                                | 15-18   | 16-17   | 14-17   | 17-17   | 14-17   | 14-17     | 16-17     | 14-18   | 16-18   | 18-18   |
| D16S539                                            | 13-13   | 9-11    | 9-13    | 9-11    | 11-12   | 9-12      | 12-13     | 10-11   | 11-12   | 9-11    |
| CSF1PO                                             | 11-12   | 11-12   | 10-12   | 10-12   | 10-12   | 10-13     | 10-10     | 10-10   | 10-12   | 11-12   |
| TPOX                                               | 8-12    | 8-8     | 8-9     | 8-8     | 11-11   | 8-10      | 11-11     | 8-8     | 11-11   | 8-11    |
| AMEL                                               | X-X     | X-X     | X-X     | X-Y     | X-X     | X-Y       | X-X       | X-Y     | X-X     | X-Y     |
| D8S1179                                            | 13-14   | 10-14   | 14-15   | 13-13   | 10-14   | 13-14     | 11-14     | 13-16   | 12-14   | 11-14   |
| D21S11                                             | 29-31.2 | 28-30   | 28-29   | 28-29   | 29-33.2 | 31.2-33.2 | 31-31.2   | 29-30   | 29-32.2 | 30-30   |
| DYS391                                             | /       | /       | /       | 10      | /       | 9         | /         | 10      | /       | 10      |
| D2S441                                             | 11-11.3 | 11-11   | 11-11   | 10-11   | 11-15   | 13-14     | 10-14     | 10-11   | 12-15   | 11-14   |
| D19S433                                            | 11-14   | 15-15.2 | 13-14.2 | 13-13   | 13-16   | 14-14     | 15-15     | 13-14   | 15-15.2 | 14-14   |
| TH01                                               | 6-9.3   | 6-10    | 7-7     | 6-9     | 9-9.3   | 9-9.3     | 9.3-9.3   | 6-6     | 9-9.3   | 8-9.3   |
| FGA                                                | 22-25   | 21-26   | 20-22   | 20-23   | 23-26   | 23-23     | 23-24     | 20-22   | 20-21   | 22-23   |
| D22S1045                                           | 11-15   | 16-16   | 16-16   | 15-15   | 16-16   | 11-16     | 16-16     | 15-17   | 16-16   | 15-16   |
| D5S818                                             | 12-13   | 12-13   | 11-13   | 9-13    | 12-12   | 9-10      | 9-12      | 10-13   | 12-13   | 11-12   |
| D13S317                                            | 8-10    | 12-12   | 11-12   | 11-13   | 11-11   | 12-13     | 8-13      | 8-11    | 11-12   | 9-14    |
| D7S820                                             | 9-10    | 7-11    | 10-11   | 12-12   | 11-11   | 8-8       | 8-8       | 9-11    | 10-11   | 12-12   |
| D10S1248                                           | 14-14   | 14-16   | 15-16   | 13-15   | 14-14   | 14-15     | 14-14     | 13-14   | 15-16   | 14-14   |
| D1S1656                                            | 15-15   | 15-15   | 15-16   | 12-17.3 | 13-17.3 | 12-15     | 16.3-17.3 | 15-17.3 | 17.3-18 | 11-17   |
| D12S391                                            | 22-23   | 23-23   | 20-26   | 17-23   | 18.3-19 | 18.3-23   | 16-18     | 17.3-22 | 18-20   | 18.3-20 |
| D2S1338                                            | 17-19   | 17-23   | 17-17   | 17-21   | 17-23   | 17-24     | 17-24     | 17-25   | 17-24   | 19-23   |
| YINDEL                                             | /       | /       | /       | 2       | /       | 2         | /         | 2       | /       | 2       |
| D18S51                                             | 13-14   | 12-13   | 12-17   | 12-13   | 12-14   | 14-20     | 13-14     | 13-13   | 10-12   | 14-16   |

**Table S7.** Genotyping results for the 23 loci by mean of NGS methodology regarding samples from buccal swabs.  
NGS: Next Generation Sequencing.

| NGS Global Filer Single DNA Profiles (Buccal Swabs) |         |         |         |         |         |           |           |         |         |         |
|-----------------------------------------------------|---------|---------|---------|---------|---------|-----------|-----------|---------|---------|---------|
| Sample<br>Locus                                     | 19-135  | 19-141  | 19-207  | 19-205  | 19-142  | 19-206    | 19-131    | 19-133  | 19-134  | 18-431  |
| D3S1358                                             | 18-18   | 18-18   | 16-16   | 16-18   | 15-17   | 14-16     | 14-15     | 14-17   | 16-18   | 15-18   |
| VWA                                                 | 15-18   | 16-17   | 14-17   | 17-17   | 14-17   | 14-17     | 16-17     | 14-18   | 16-18   | 18-18   |
| D16S539                                             | 13-13   | 9-11    | 9-13    | 9-11    | 11-12   | 9-12      | 12-13     | 10-11   | 11-12   | 9-11    |
| CSF1PO                                              | 11-12   | 11-12   | 10-12   | 10-12   | 10-12   | 10-13     | 10-10     | 10-10   | 10-12   | 11-12   |
| TPOX                                                | 8-12    | 8-8     | 8-9     | 8-8     | 11-11   | 8-10      | 11-11     | 8-8     | 11-11   | 8-11    |
| AMEL                                                | X-X     | X-X     | X-X     | X-Y     | X-X     | X-Y       | X-X       | X-Y     | X-X     | X-Y     |
| D8S1179                                             | 13-14   | 10-14   | 14-15   | 13-13   | 10-14   | 13-14     | 11-14     | 13-16   | 12-14   | 11-14   |
| D21S11                                              | 29-31.2 | 28-30   | 28-29   | 28-29   | 29-33.2 | 31.2-33.2 | 31-31.2   | 29-30   | 29-32.2 | 30-30   |
| DYS391                                              | /       | /       | /       | 10      | /       | 9         | /         | 10      | /       | 10      |
| D2S441                                              | 11-11.3 | 11-11   | 11-11   | 10-11   | 11-15   | 13-14     | 10-14     | 10-11   | 12-15   | 11-14   |
| D19S433                                             | 11-14   | 15-15.2 | 13-14.2 | 13-13   | 13-16   | 14-14     | 15-15     | 13-14   | 15-15.2 | 14-14   |
| TH01                                                | 6-9.3   | 6-10    | 7-7     | 6-9     | 9-9.3   | 9-9.3     | 9.3-9.3   | 6-6     | 9-9.3   | 8-9.3   |
| FGA                                                 | 22-25   | 21-26   | 20-22   | 20-23   | 23-26   | 23-23     | 23-24     | 20-22   | 20-21   | 22-23   |
| D22S1045                                            | 11-15   | 16-16   | 16-16   | 15-15   | 16-16   | 11-16     | 16-16     | 15-17   | 16-16   | 15-16   |
| D5S818                                              | 12-13   | 12-13   | 11-13   | 9-13    | 12-12   | 9-10      | 9-12      | 10-13   | 12-13   | 11-12   |
| D13S317                                             | 8-10    | 12-12   | 11-12   | 11-13   | 11-11   | 12-13     | 8-13      | 8-11    | 11-12   | 9-14    |
| D7S820                                              | 9-10    | 7-11    | 10-11   | 12-12   | 11-11   | 8-8       | 8-8       | 9-11    | 10-11   | 12-12   |
| D10S1248                                            | 14-14   | 14-16   | 15-16   | 13-15   | 14-14   | 14-15     | 14-14     | 13-14   | 15-16   | 14-14   |
| D1S1656                                             | 15-15   | 15-15   | 15-16   | 12-17.3 | 13-17.3 | 12-15     | 16.3-17.3 | 15-17.3 | 17.3-18 | 11-17   |
| D12S391                                             | 22-23   | 23-23   | 20-26   | 17-23   | 18.3-19 | 18.3-23   | 16-18     | 17.3-22 | 18-20   | 18.3-20 |
| D2S1338                                             | 17-19   | 17-23   | 17-17   | 17-21   | 17-23   | 17-24     | 17-24     | 17-25   | 17-24   | 19-23   |
| YINDEL                                              | /       | /       | /       | 2       | /       | 2         | /         | 2       | /       | 2       |
| D18S51                                              | 13-14   | 12-13   | 12-17   | 12-13   | 12-14   | 14-20     | 13-14     | 13-13   | 10-12   | 14-16   |

**Table S8.** Genotyping results for the 23 loci by mean of CE methodology regarding samples from urine. CE: Capillary Electrophoresis.

| CE Global Filer Single DNA Profiles (Urine) |         |         |         |         |         |           |           |         |         |         |
|---------------------------------------------|---------|---------|---------|---------|---------|-----------|-----------|---------|---------|---------|
| Sample<br>Locus                             | 19-149  | 19-212  | 19-210  | 19-208  | 19-211  | 19-209    | 19-145    | 19-147  | 19-148  | 19-154  |
| D3S1358                                     | 18-18   | 18-18   | 16-16   | 16-18   | 15-17   | 14-16     | 14-15     | 14-17   | 16-18   | 15-18   |
| VWA                                         | 15-18   | 16-17   | 14-17   | 17-17   | 14-17   | 14-17     | 16-17     | 14-18   | 16-18   | 18-18   |
| D16S539                                     | 13-13   | 9-11    | 9-13    | 9-11    | 11-12   | 9-12      | 12-13     | 10-11   | 11-12   | 9-11    |
| CSF1PO                                      | 11-12   | 11-12   | 10-12   | 10-12   | 10-12   | 10-13     | 10-10     | 10-10   | 10-12   | 11-12   |
| TPOX                                        | 8-12    | 8-8     | 8-9     | 8-8     | 11-11   | 8-10      | 11-11     | 8-8     | 11-11   | 8-11    |
| AMEL                                        | X-X     | X-X     | X-X     | X-Y     | X-X     | X-Y       | X-X       | X-Y     | X-X     | X-Y     |
| D8S1179                                     | 13-14   | 10-14   | 14-15   | 13-13   | 10-14   | 13-14     | 11-14     | 13-16   | 12-14   | 11-14   |
| D21S11                                      | 29-31.2 | 28-30   | 28-29   | 28-29   | 29-33.2 | 31.2-33.2 | 31-31.2   | 29-30   | 29-32.2 | 30-30   |
| DYS391                                      | /       | /       | /       | 10      | /       | 9         | /         | 10      | /       | 10      |
| D2S441                                      | 11-11.3 | 11-11   | 11-11   | 10-11   | 11-15   | 13-14     | 10-14     | 10-11   | 12-15   | 11-14   |
| D19S433                                     | 11-14   | 15-15.2 | 13-14.2 | 13-13   | 13-16   | 14-14     | 15-15     | 13-14   | 15-15.2 | 14-14   |
| TH01                                        | 6-9.3   | 6-10    | 7-7     | 6-9     | 9-9.3   | 9-9.3     | 9.3-9.3   | 6-6     | 9-9.3   | 8-9.3   |
| FGA                                         | 22-25   | 21-26   | 20-22   | 20-23   | 23-26   | 23-23     | 23-24     | 20-22   | 20-21   | 22-23   |
| D22S1045                                    | 11-15   | 16-16   | 16-16   | 15-15   | 16-16   | 11-16     | 16-16     | 15-17   | 16-16   | 15-16   |
| D5S818                                      | 12-13   | 12-13   | 11-13   | 9-13    | 12-12   | 9-10      | 9-12      | 10-13   | 12-13   | 11-12   |
| D13S317                                     | 8-10    | 12-12   | 11-12   | 11-13   | 11-11   | 12-13     | 8-13      | 8-11    | 11-12   | 9-14    |
| D7S820                                      | 9-10    | 7-11    | 10-11   | 12-12   | 11-11   | 8-8       | 8-8       | 9-11    | 10-11   | 12-12   |
| D10S1248                                    | 14-14   | 14-16   | 15-16   | 13-15   | 14-14   | 14-15     | 14-14     | 13-14   | 15-16   | 14-14   |
| D1S1656                                     | 15-15   | 15-15   | 15-16   | 12-17.3 | 13-17.3 | 12-15     | 16.3-17.3 | 15-17.3 | 17.3-18 | 11-17   |
| D12S391                                     | 22-23   | 23-23   | 20-26   | 17-23   | 18.3-19 | 18.3-23   | 16-18     | 17.3-22 | 18-20   | 18.3-20 |
| D2S1338                                     | 17-19   | 17-23   | 17-17   | 17-21   | 17-23   | 17-24     | 17-24     | 17-25   | 17-24   | 19-23   |
| YINDEL                                      | /       | /       | /       | 2       | /       | 2         | /         | 2       | /       | 2       |
| D18S51                                      | 13-14   | 12-13   | 12-17   | 12-13   | 12-14   | 14-20     | 13-14     | 13-13   | 10-12   | 14-16   |

**Table S9.** Genotyping results for the 23 loci by mean of NGS methodology regarding samples from urine. NGS: Next Generation Sequencing

| NGS Global Filer Single DNA Profiles (Urine) |         |         |         |         |         |           |           |         |         |         |
|----------------------------------------------|---------|---------|---------|---------|---------|-----------|-----------|---------|---------|---------|
| Sample<br>Locus                              | 19-149  | 19-212  | 19-210  | 19-208  | 19-211  | 19-209    | 19-145    | 19-147  | 19-148  | 19-154  |
| D3S1358                                      | 18-18   | 18-18   | 16-16   | 16-18   | 15-17   | 14-16     | 14-15     | 14-17   | 16-18   | 15-18   |
| VWA                                          | 15-18   | 16-17   | 14-17   | 17-17   | 14-17   | 14-17     | 16-17     | 14-18   | 16-18   | 18-18   |
| D16S539                                      | 13-13   | 9-11    | 9-13    | 9-11    | 11-12   | 9-12      | 12-13     | 10-11   | 11-12   | 9-11    |
| CSF1PO                                       | 11-12   | 11-12   | 10-12   | 10-12   | 10-12   | 10-13     | 10-10     | 10-10   | 10-12   | 11-12   |
| TPOX                                         | 8-12    | 8-8     | 8-9     | 8-8     | 11-11   | 6-10      | 11-11     | 8-8     | 11-11   | 8-11    |
| AMEL                                         | X-X     | X-X     | X-X     | X-Y     | X-X     | X-Y       | X-X       | X-Y     | X-X     | X-Y     |
| D8S1179                                      | 13-14   | 10-14   | 14-15   | 13-13   | 10-14   | 13-14     | 11-14     | 13-16   | 12-14   | 11-14   |
| D21S11                                       | 29-31.2 | 28-30   | 28-29   | 28-29   | 29-33.2 | 31.2-33.2 | 31-31.2   | 29-30   | 29-32.2 | 30-30   |
| DYS391                                       | /       | /       | /       | 10      | /       | 9         | /         | 10      | /       | 10      |
| D2S441                                       | 11-11.3 | 11-11   | 11-11   | 10-11   | 11-15   | 13-14     | 10-14     | 10-11   | 12-15   | 11-14   |
| D19S433                                      | 11-14   | 15-15.2 | 13-14.2 | 13-13   | 13-16   | 14-14     | 15-15     | 13-14   | 15-15.2 | 14-14   |
| TH01                                         | 6-9.3   | 6-10    | 7-7     | 6-9     | 9-9.3   | 9-9.3     | 9.3-9.3   | 6-6     | 9-9.3   | 8-9.3   |
| FGA                                          | 22-25   | 21-26   | 20-22   | 20-23   | 23-26   | 23-23     | 23-24     | 20-22   | 20-21   | 22-23   |
| D22S1045                                     | 11-15   | 16-16   | 16-16   | 15-15   | 16-16   | 11-16     | 16-16     | 15-17   | 16-16   | 15-16   |
| D5S818                                       | 12-13   | 12-13   | 11-13   | 9-13    | 12-12   | 9-10      | 9-12      | 10-13   | 12-13   | 11-12   |
| D13S317                                      | 8-10    | 12-12   | 11-12   | 11-13   | 11-11   | 12-13     | 8-13      | 8-11    | 11-12   | 9-14    |
| D7S820                                       | 9-10    | 7-11    | 10-11   | 12-12   | 11-11   | 8-9       | 8-8       | 9-11    | 10-11   | 12-12   |
| D10S1248                                     | 14-14   | 14-16   | 15-16   | 13-15   | 14-14   | 14-15     | 14-14     | 13-14   | 15-16   | 14-14   |
| D1S1656                                      | 15-15   | 15-15   | 15-16   | 12-17.3 | 13-17.3 | 12-15     | 16.3-17.3 | 15-17.3 | 17.3-18 | 11-17   |
| D12S391                                      | 22-23   | 23-23   | 20-26   | 17-23   | 18.3-19 | 18.3-23   | 16-18     | 17.3-22 | 18-20   | 18.3-20 |
| D2S1338                                      | 17-19   | 17-23   | 17-17   | 17-21   | 17-23   | 17-24     | 17-24     | 17-25   | 17-24   | 19-23   |
| YINDEL                                       | /       | /       | /       | 2       | /       | 2         | /         | 2       | /       | 2       |
| D18S51                                       | 13-14   | 12-13   | 12-17   | 12-13   | 12-14   | 14-20     | 13-14     | 13-13   | 10-12   | 14-16   |

**Table S10.** The mixture samples DNA concentration.

| Sample Code                | □ DNA         |
|----------------------------|---------------|
| Major Contributor (19-133) | 55,911 ng/μL  |
| Minor contributor (19-205) | 108,248 ng/μL |
| TB-1-2                     | 53,355 ng/μL  |
| TB-1-4                     | 51,619 ng/μL  |
| TB-1-6                     | 50,266 ng/μL  |
| TB-1-8                     | 49,572 ng/μL  |
| TB-1-10                    | 47,569 ng/μL  |
| TB-1-20                    | 44,894 ng/μL  |
| Major Contributor (19-147) | 13,26 ng/μL   |
| Minor contributor (19-208) | 0,687 ng/μL   |
| UR-1-2                     | 12,231 ng/μL  |
| UR-1-4                     | 10,851ng/μL   |
| UR-1-6                     | 9,429 ng/μL   |
| UR-1-8                     | 7,144 ng/μL   |
| UR_1:10                    | 6,010 ng/μL   |
| UR-1-20                    | 4,987 ng/μL   |