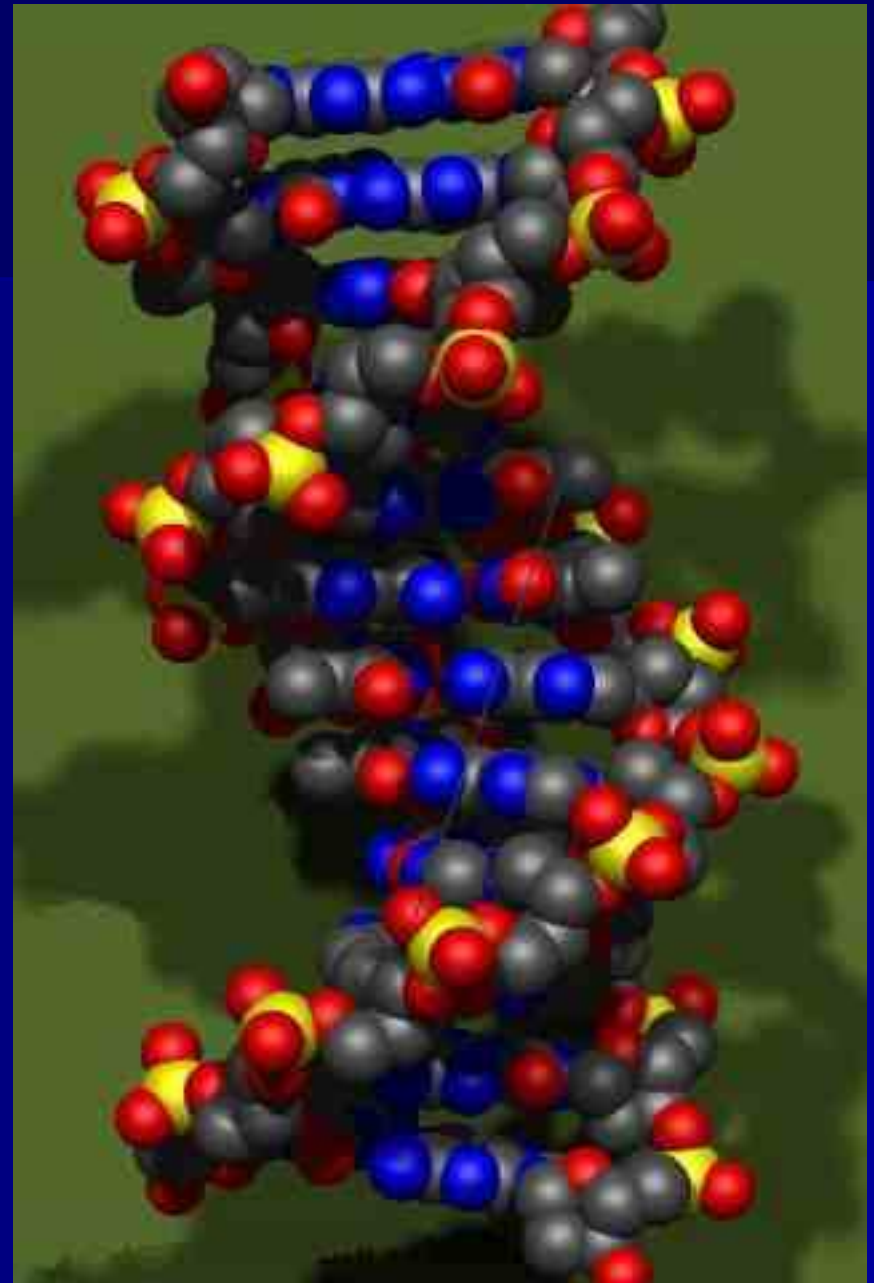
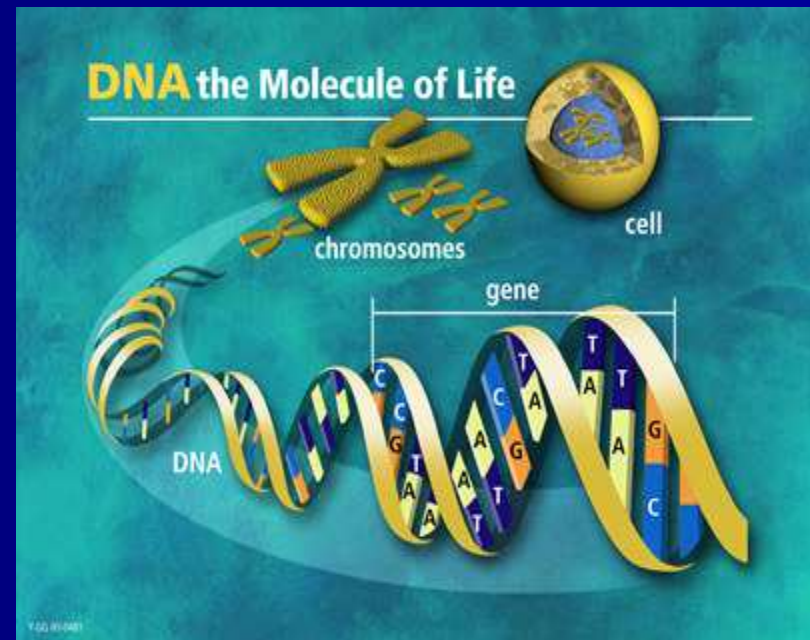


*DNA*  
*deoxyribonucleic*  
*acid*



# DNA

- Genetic blueprint
- Directs cellular development
- Inherited from biological parents



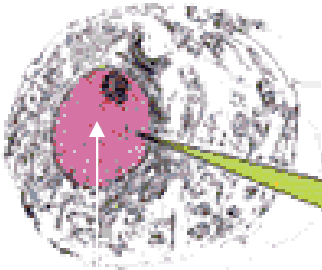
# Sources of Biological Evidence

- Blood
- Semen
- Saliva
- Urine
- Hair
- Teeth
- Bone
- Tissue



# **DNA/STR Typing**

# DNA in the Cell

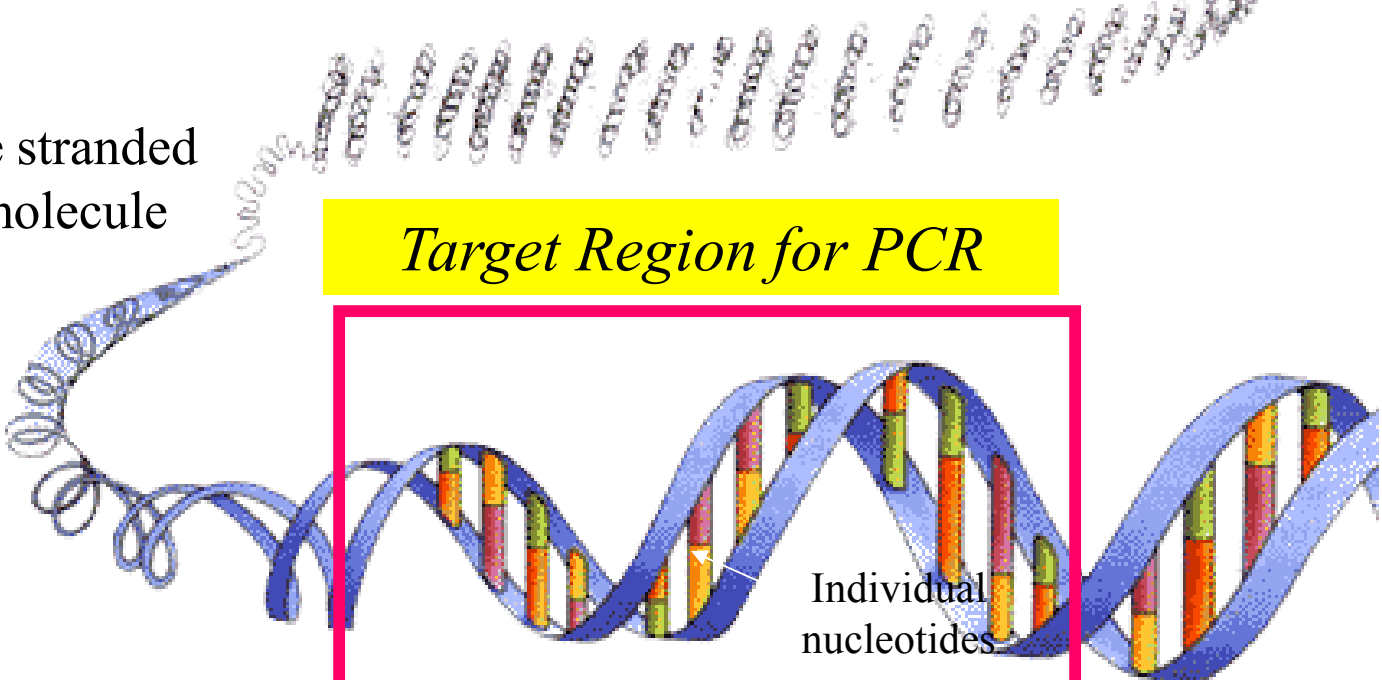


cell nucleus

chromosome



Double stranded DNA molecule



*Target Region for PCR*

Individual nucleotides

# **DNA/STR Typing Steps**

- **Extraction**
- **Quantitation**
- **Amplification**
- **Interpretation**
- **Statistical Analysis**





















# Teresa Halbach DNA Profile (Item EF)

| Genetic Marker | Profile  |
|----------------|----------|
| D3S1358        | 16, 18   |
| TH01           | 6, 9.3   |
| D21S11         | 28, 34.2 |
| D18S51         | 14, 16   |
| Penta E        | 5, 7     |
| D5S818         | 12, 13   |
| D13S317        | 12, 13   |
| D7S820         | 11       |
| D16S539        | 12, 13   |
| CSF1PO         | 10       |
| Penta D        | 11, 13   |
| vWA            | 16       |
| D8S1179        | 11, 15   |
| TPOX           | 10, 11   |
| FGA            | 21, 22   |
| Amelogenin     | X        |











# Item A – RAV 4

| <b>Genetic Marker</b> | <b>A1,A2,A3,A4,A14</b> |
|-----------------------|------------------------|
| <b>D3S1358</b>        | <b>16, 18</b>          |
| <b>TH01</b>           | <b>6, 9.3</b>          |
| <b>D21S11</b>         | <b>28, 34.2</b>        |
| <b>D18S51</b>         | <b>14, 16</b>          |
| <b>Penta E</b>        | <b>5, 7</b>            |
| <b>D5S818</b>         | <b>12, 13</b>          |
| <b>D13S317</b>        | <b>12, 13</b>          |
| <b>D7S820</b>         | <b>11</b>              |
| <b>D16S539</b>        | <b>12, 13</b>          |
| <b>CSF1PO</b>         | <b>10</b>              |
| <b>Penta D</b>        | <b>11, 13</b>          |
| <b>vWA</b>            | <b>16</b>              |
| <b>D8S1179</b>        | <b>11, 15</b>          |
| <b>TPOX</b>           | <b>10, 11</b>          |
| <b>FGA</b>            | <b>21, 22</b>          |
| <b>Amelogenin</b>     | <b>X</b>               |

# Comparison

| <b>Genetic Marker</b> | <b>A1,A2,A3,A4,A14</b> | <b>Teresa Halbach</b> |
|-----------------------|------------------------|-----------------------|
| <b>D3S1358</b>        | <b>16, 18</b>          | <b>16, 18</b>         |
| <b>TH01</b>           | <b>6, 9.3</b>          | <b>6, 9.3</b>         |
| <b>D21S11</b>         | <b>28, 34.2</b>        | <b>28, 34.2</b>       |
| <b>D18S51</b>         | <b>14, 16</b>          | <b>14, 16</b>         |
| <b>Penta E</b>        | <b>5, 7</b>            | <b>5, 7</b>           |
| <b>D5S818</b>         | <b>12, 13</b>          | <b>12, 13</b>         |
| <b>D13S317</b>        | <b>12, 13</b>          | <b>12, 13</b>         |
| <b>D7S820</b>         | <b>11</b>              | <b>11</b>             |
| <b>D16S539</b>        | <b>12, 13</b>          | <b>12, 13</b>         |
| <b>CSF1PO</b>         | <b>10</b>              | <b>10</b>             |
| <b>Penta D</b>        | <b>11, 13</b>          | <b>11, 13</b>         |
| <b>vWA</b>            | <b>16</b>              | <b>16</b>             |
| <b>D8S1179</b>        | <b>11, 15</b>          | <b>11, 15</b>         |
| <b>TPOX</b>           | <b>10, 11</b>          | <b>10, 11</b>         |
| <b>FGA</b>            | <b>21, 22</b>          | <b>21, 22</b>         |
| <b>Amelogenin</b>     | <b>X</b>               | <b>X</b>              |

# Frequency in Population

- 1 person in 416 quadrillion in Caucasian population
- 1 person in 642 quadrillion in the African American population
- 1 person in 641 quadrillion in the Southeastern Hispanic population
- 1 person in 1 quintillion in the Southwestern Hispanic population





# Item BZ – Charred Remains

| <b>Genetic Marker</b> | <b>Item BZ</b>  |
|-----------------------|-----------------|
| <b>D3S1358</b>        | <b>16, 18</b>   |
| <b>TH01</b>           | <b>6, 9.3</b>   |
| <b>D21S11</b>         | <b>28, 34.2</b> |
| <b>D18S51</b>         | <b>-</b>        |
| <b>Penta E</b>        | <b>-</b>        |
| <b>D5S818</b>         | <b>12, 13</b>   |
| <b>D13S317</b>        | <b>12, 13</b>   |
| <b>D7S820</b>         | <b>11</b>       |
| <b>D16S539</b>        | <b>-</b>        |
| <b>CSF1PO</b>         | <b>-</b>        |
| <b>Penta D</b>        | <b>-</b>        |
| <b>vWA</b>            | <b>16</b>       |
| <b>D8S1179</b>        | <b>-</b>        |
| <b>TPOX</b>           | <b>-</b>        |
| <b>FGA</b>            | <b>-</b>        |
| <b>Amelogenin</b>     | <b>X</b>        |

# Comparison

| <b>Genetic Marker</b> | <b>Item BZ</b>  | <b>Teresa Halbach</b> |
|-----------------------|-----------------|-----------------------|
| <b>D3S1358</b>        | <b>16, 18</b>   | <b>16, 18</b>         |
| <b>TH01</b>           | <b>6, 9.3</b>   | <b>6, 9.3</b>         |
| <b>D21S11</b>         | <b>28, 34.2</b> | <b>28, 34.2</b>       |
| <b>D18S51</b>         | <b>-</b>        | <b>14, 16</b>         |
| <b>Penta E</b>        | <b>-</b>        | <b>5, 7</b>           |
| <b>D5S818</b>         | <b>12, 13</b>   | <b>12, 13</b>         |
| <b>D13S317</b>        | <b>12, 13</b>   | <b>12, 13</b>         |
| <b>D7S870</b>         | <b>11</b>       | <b>11</b>             |
| <b>D16S539</b>        | <b>-</b>        | <b>12, 13</b>         |
| <b>CSF1PO</b>         | <b>-</b>        | <b>10</b>             |
| <b>Penta D</b>        | <b>-</b>        | <b>11, 13</b>         |
| <b>vWA</b>            | <b>16</b>       | <b>16</b>             |
| <b>D8S1179</b>        | <b>-</b>        | <b>11, 15</b>         |
| <b>TPOX</b>           | <b>-</b>        | <b>10, 11</b>         |
| <b>FGA</b>            | <b>-</b>        | <b>21, 22</b>         |
| <b>Amelogenin</b>     | <b>X</b>        | <b>X</b>              |

# Frequency in Population

- 1 person in 1 billion in the Caucasian population
- 1 person in 2 billion in the African American population
- 1 person in 2 billion in the Southeastern Hispanic population
- 1 person in 3 billion in the Southwestern Hispanic population

# Item FL – Bullet Fragment

| <b>Genetic Marker</b> | <b>Item FL</b>  |
|-----------------------|-----------------|
| <b>D3S1358</b>        | <b>16, 18</b>   |
| <b>TH01</b>           | <b>6, 9.3</b>   |
| <b>D21S11</b>         | <b>28, 34.2</b> |
| <b>D18S51</b>         | <b>14, 16</b>   |
| <b>Penta E</b>        | <b>5, 7</b>     |
| <b>D5S818</b>         | <b>12, 13</b>   |
| <b>D13S317</b>        | <b>12, 13</b>   |
| <b>D7S820</b>         | <b>11</b>       |
| <b>D16S539</b>        | <b>12, *</b>    |
| <b>CSF1PO</b>         | <b>10</b>       |
| <b>Penta D</b>        | <b>11, 13</b>   |
| <b>vWA</b>            | <b>16</b>       |
| <b>D8S1179</b>        | <b>11, 15</b>   |
| <b>TPOX</b>           | <b>*, 11</b>    |
| <b>FGA</b>            | <b>21, 22</b>   |
| <b>Amelogenin</b>     | <b>X</b>        |

# Comparison

| <b>Genetic Marker</b> | <b>Item FL</b>  | <b>Teresa Halbach</b> |
|-----------------------|-----------------|-----------------------|
| <b>D3S1358</b>        | <b>16, 18</b>   | <b>16, 18</b>         |
| <b>TH01</b>           | <b>6, 9.3</b>   | <b>6, 9.3</b>         |
| <b>D21S11</b>         | <b>28, 34.2</b> | <b>28, 34.2</b>       |
| <b>D18S51</b>         | <b>14, 16</b>   | <b>14, 16</b>         |
| <b>Penta E</b>        | <b>5, 7</b>     | <b>5, 7</b>           |
| <b>D5S818</b>         | <b>12, 13</b>   | <b>12, 13</b>         |
| <b>D13S317</b>        | <b>12, 13</b>   | <b>12, 13</b>         |
| <b>D7S820</b>         | <b>11</b>       | <b>11</b>             |
| <b>D16S539</b>        | <b>12, *</b>    | <b>12, 13</b>         |
| <b>CSF1PO</b>         | <b>10</b>       | <b>10</b>             |
| <b>Penta D</b>        | <b>11, 13</b>   | <b>11, 13</b>         |
| <b>vWA</b>            | <b>16</b>       | <b>16</b>             |
| <b>D8S1179</b>        | <b>11, 15</b>   | <b>11, 15</b>         |
| <b>TPOX</b>           | <b>*, 11</b>    | <b>10, 11</b>         |
| <b>FGA</b>            | <b>21, 22</b>   | <b>21, 22</b>         |
| <b>Amelogenin</b>     | <b>X</b>        | <b>X</b>              |

# Item BU - Steven Avery

| Genetic Marker | Steven Avery |
|----------------|--------------|
| D3S1358        | 16, 18       |
| TH01           | 9.3          |
| D21S11         | 28, 30       |
| D18S51         | 14, 20       |
| Penta E        | 5, 10        |
| D5S818         | 11, 12       |
| D13S317        | 8, 12        |
| D7S820         | 7, 10        |
| D16S539        | 11, 14       |
| CSF1PO         | 12           |
| Penta D        | 10, 11       |
| vWA            | 15, 19       |
| D8S1179        | 10, 15       |
| TPOX           | 9, 11        |
| FGA            | 20, 26       |
| Amelogenin     | X, Y         |

# Comparison of swabs of garage floor

| <b>Genetic Marker</b> | <b>Items G,I1,J,K,O,P</b> | <b>Steven Avery</b> |
|-----------------------|---------------------------|---------------------|
| <b>D3S1358</b>        | <b>16, 18</b>             | <b>16, 18</b>       |
| <b>TH01</b>           | <b>9.3</b>                | <b>9.3</b>          |
| <b>D21S11</b>         | <b>28, 30</b>             | <b>28, 30</b>       |
| <b>D18S51</b>         | <b>14, 20</b>             | <b>14, 20</b>       |
| <b>Penta E</b>        | <b>5, 10</b>              | <b>5, 10</b>        |
| <b>D5S818</b>         | <b>11, 12</b>             | <b>11, 12</b>       |
| <b>D13S317</b>        | <b>8, 12</b>              | <b>8, 12</b>        |
| <b>D7S820</b>         | <b>7, 10</b>              | <b>7, 10</b>        |
| <b>D16S539</b>        | <b>11, 14</b>             | <b>11, 14</b>       |
| <b>CSF1PO</b>         | <b>12</b>                 | <b>12</b>           |
| <b>Penta D</b>        | <b>10, 11</b>             | <b>10, 11</b>       |
| <b>vWA</b>            | <b>15, 19</b>             | <b>15, 19</b>       |
| <b>D8S1179</b>        | <b>10, 15</b>             | <b>10, 15</b>       |
| <b>TPOX</b>           | <b>9, 11</b>              | <b>9, 11</b>        |
| <b>FGA</b>            | <b>20, 26</b>             | <b>20, 26</b>       |
| <b>Amelogenin</b>     | <b>X, Y</b>               | <b>X, Y</b>         |

# Grand Am





# Blood Stains



# Swab of Hood latch of RAV4

## Item ID

| Genetic Marker | Item ID |
|----------------|---------|
| D3S1358        | 16, 18  |
| TH01           | 9.3     |
| D21S11         | 28, 30  |
| D18S51         | 14, 20  |
| Penta E        | 5, 10   |
| D5S818         | 11, 12  |
| D13S317        | 8, 12   |
| D7S820         | 7, 10   |
| D16S539        | 11, 14  |
| CSF1PO         | 12      |
| Penta D        | 10, 11  |
| vWA            | 15, 19  |
| D8S1179        | 10, 15  |
| TPOX           | 9, 11   |
| FGA            | 20, 26  |
| Amelogenin     | X, Y    |

# Swab of RAV4 Hood Latch – Item ID Comparison

| <b>Genetic Marker</b> | <b>Item ID</b> | <b>Steven Avery</b> |
|-----------------------|----------------|---------------------|
| <b>D3S1358</b>        | <b>16, 18</b>  | <b>16, 18</b>       |
| <b>TH01</b>           | <b>9.3</b>     | <b>9.3</b>          |
| <b>D21S11</b>         | <b>28, 30</b>  | <b>28, 30</b>       |
| <b>D18S51</b>         | <b>14, 20</b>  | <b>14, 20</b>       |
| <b>Penta E</b>        | <b>5, 10</b>   | <b>5, 10</b>        |
| <b>D5S818</b>         | <b>11, 12</b>  | <b>11, 12</b>       |
| <b>D13S317</b>        | <b>8, 12</b>   | <b>8, 12</b>        |
| <b>D7S820</b>         | <b>7, 10</b>   | <b>7, 10</b>        |
| <b>D16S539</b>        | <b>11, 14</b>  | <b>11, 14</b>       |
| <b>CSF1PO</b>         | <b>12</b>      | <b>12</b>           |
| <b>Penta D</b>        | <b>10, 11</b>  | <b>10, 11</b>       |
| <b>vWA</b>            | <b>15, 19</b>  | <b>15, 19</b>       |
| <b>D8S1179</b>        | <b>10, 15</b>  | <b>10, 15</b>       |
| <b>TPOX</b>           | <b>9, 11</b>   | <b>9, 11</b>        |
| <b>FGA</b>            | <b>20, 26</b>  | <b>20, 26</b>       |
| <b>Amelogenin</b>     | <b>X, Y</b>    | <b>X, Y</b>         |



Madison Lab  
M05-2467 HC  
Calumet County Sheriff's Office - 05-0157-95

*11-08-05  
11-08-05  
11-08-05*

05-179 05-157-5  
LEDGER # CASE REPORT #  
DATE: 11-08-05 EVIDENCE TAG # 7620  
RECEIVED FROM: Red Trailer 17432 Avery Rd  
LOCATION: Back Bed room  
OFFICER: Kuzharster  
CASH: \$ OFFICER WITNESSING  
DESCRIPTION/INFORMATION: Toyota key

Calumet County Sheriff's Department

TO JUST  
MADISON

EVIDENCE  
OPENED BY AUTHORIZED PERSONNEL ONLY  
SEALED BY  
TO BE OPENED BY AUTHORIZED PERSONNEL ONLY





# Swab of Toyota Key-Item C

| Genetic Marker | Item C |
|----------------|--------|
| D3S1358        | 16, 18 |
| TH01           | 9.3    |
| D21S11         | 28, 30 |
| D18S51         | 14, 20 |
| Penta E        | 5, 10  |
| D5S818         | 11, 12 |
| D13S317        | 8, 12  |
| D7S820         | 7, 10  |
| D16S539        | 11, 14 |
| CSF1PO         | 12     |
| Penta D        | 10, 11 |
| vWA            | 15, 19 |
| D8S1179        | 10, 15 |
| TPOX           | 9, 11  |
| FGA            | 20, 26 |
| Amelogenin     | X, Y   |

# Swab of Item C comparison

| <b>Genetic Marker</b> | <b>Item C</b> | <b>Steven Avery</b> |
|-----------------------|---------------|---------------------|
| <b>D3S1358</b>        | <b>16, 18</b> | <b>16, 18</b>       |
| <b>TH01</b>           | <b>9.3</b>    | <b>9.3</b>          |
| <b>D21S11</b>         | <b>28, 30</b> | <b>28, 30</b>       |
| <b>D18S51</b>         | <b>14, 20</b> | <b>14, 20</b>       |
| <b>Penta E</b>        | <b>5, 10</b>  | <b>5, 10</b>        |
| <b>D5S818</b>         | <b>11, 12</b> | <b>11, 12</b>       |
| <b>D13S317</b>        | <b>8, 12</b>  | <b>8, 12</b>        |
| <b>D7S820</b>         | <b>7, 10</b>  | <b>7, 10</b>        |
| <b>D16S539</b>        | <b>11, 14</b> | <b>11, 14</b>       |
| <b>CSF1PO</b>         | <b>12</b>     | <b>12</b>           |
| <b>Penta D</b>        | <b>10, 11</b> | <b>10, 11</b>       |
| <b>vWA</b>            | <b>15, 19</b> | <b>15, 19</b>       |
| <b>D8S1179</b>        | <b>10, 15</b> | <b>10, 15</b>       |
| <b>TPOX</b>           | <b>9, 11</b>  | <b>9, 11</b>        |
| <b>FGA</b>            | <b>20, 26</b> | <b>20, 26</b>       |
| <b>Amelogenin</b>     | <b>X, Y</b>   | <b>X, Y</b>         |





# Item A6 – bloodstain from RAV4 driver's seat

| <b>Genetic Marker</b> | <b>Profile</b> |
|-----------------------|----------------|
| <b>D3S1358</b>        | <b>16, 18</b>  |
| <b>TH01</b>           | <b>9.3</b>     |
| <b>D21S11</b>         | <b>28, 30</b>  |
| <b>D18S51</b>         | <b>14, 20</b>  |
| <b>Penta E</b>        | <b>5, 10</b>   |
| <b>D5S818</b>         | <b>11, 12</b>  |
| <b>D13S317</b>        | <b>8, 12</b>   |
| <b>D7S820</b>         | <b>7, 10</b>   |
| <b>D16S539</b>        | <b>11, 14</b>  |
| <b>CSF1PO</b>         | <b>12</b>      |
| <b>Penta D</b>        | <b>10, 11</b>  |
| <b>vWA</b>            | <b>15, 19</b>  |
| <b>D8S1179</b>        | <b>10, 15</b>  |
| <b>TPOX</b>           | <b>9, 11</b>   |
| <b>FGA</b>            | <b>20, 26</b>  |
| <b>Amelogenin</b>     | <b>X, Y</b>    |

# Blood Found on driver's seat – Item A6 Comparison

| <b>Genetic Marker</b> | <b>Item A6</b> | <b>Steven Avery</b> |
|-----------------------|----------------|---------------------|
| <b>D3S1358</b>        | <b>16, 18</b>  | <b>16, 18</b>       |
| <b>TH01</b>           | <b>9.3</b>     | <b>9.3</b>          |
| <b>D21S11</b>         | <b>28, 30</b>  | <b>28, 30</b>       |
| <b>D18S51</b>         | <b>14, 20</b>  | <b>14, 20</b>       |
| <b>Penta E</b>        | <b>5, 10</b>   | <b>5, 10</b>        |
| <b>D5S818</b>         | <b>11, 12</b>  | <b>11, 12</b>       |
| <b>D13S317</b>        | <b>8, 12</b>   | <b>8, 12</b>        |
| <b>D7S820</b>         | <b>7, 10</b>   | <b>7, 10</b>        |
| <b>D16S539</b>        | <b>11, 14</b>  | <b>11, 14</b>       |
| <b>CSF1PO</b>         | <b>12</b>      | <b>12</b>           |
| <b>Penta D</b>        | <b>10, 11</b>  | <b>10, 11</b>       |
| <b>vWA</b>            | <b>15, 19</b>  | <b>15, 19</b>       |
| <b>D8S1179</b>        | <b>10, 15</b>  | <b>10, 15</b>       |
| <b>TPOX</b>           | <b>9, 11</b>   | <b>9, 11</b>        |
| <b>FGA</b>            | <b>20, 26</b>  | <b>20, 26</b>       |
| <b>Amelogenin</b>     | <b>X, Y</b>    | <b>X, Y</b>         |

# Item A7 – blood from RAV4 from center console

| <b>Genetic Marker</b> | <b>Profile</b> |
|-----------------------|----------------|
| <b>D3S1358</b>        | <b>16, 18</b>  |
| <b>TH01</b>           | <b>9.3</b>     |
| <b>D21S11</b>         | <b>28, 30</b>  |
| <b>D18S51</b>         | <b>14, 20</b>  |
| <b>Penta E</b>        | <b>5, 10</b>   |
| <b>D5S818</b>         | <b>11, *</b>   |
| <b>D13S317</b>        | <b>8, 12</b>   |
| <b>D7S870</b>         | <b>7, 10</b>   |
| <b>D16S539</b>        | <b>11, 14</b>  |
| <b>CSF1PO</b>         | <b>12</b>      |
| <b>Penta D</b>        | <b>10, 11</b>  |
| <b>vWA</b>            | <b>15, 19</b>  |
| <b>D8S1179</b>        | <b>10, 15</b>  |
| <b>TPOX</b>           | <b>9, 11</b>   |
| <b>FGA</b>            | <b>20, 26</b>  |
| <b>Amelogenin</b>     | <b>X, Y</b>    |

# Blood found by console – Item A7 Comparison

| <b>Genetic Marker</b> | <b>Item 7A</b> | <b>Steven Avery</b> |
|-----------------------|----------------|---------------------|
| <b>D3S1358</b>        | <b>16, 18</b>  | <b>16, 18</b>       |
| <b>TH01</b>           | <b>9.3</b>     | <b>9.3</b>          |
| <b>D21S11</b>         | <b>28, 30</b>  | <b>28, 30</b>       |
| <b>D18S51</b>         | <b>14, 20</b>  | <b>14, 20</b>       |
| <b>Penta E</b>        | <b>5, 10</b>   | <b>5, 10</b>        |
| <b>D5S818</b>         | <b>11, *</b>   | <b>11, 12</b>       |
| <b>D13S317</b>        | <b>8, 12</b>   | <b>8, 12</b>        |
| <b>D7S820</b>         | <b>7, 10</b>   | <b>7, 10</b>        |
| <b>D16S539</b>        | <b>11, 14</b>  | <b>11, 14</b>       |
| <b>CSF1PO</b>         | <b>12</b>      | <b>12</b>           |
| <b>Penta D</b>        | <b>10, 11</b>  | <b>10, 11</b>       |
| <b>vWA</b>            | <b>15, 19</b>  | <b>15, 19</b>       |
| <b>D8S1179</b>        | <b>10, 15</b>  | <b>10, 15</b>       |
| <b>TPOX</b>           | <b>9, 11</b>   | <b>9, 11</b>        |
| <b>FGA</b>            | <b>20, 26</b>  | <b>20, 26</b>       |
| <b>Amelogenin</b>     | <b>X, Y</b>    | <b>X, Y</b>         |



# Item A9 – bloodstain from RAV4 front passenger seat

| Genetic Marker | Profile |
|----------------|---------|
| D3S1358        | 16, 18  |
| TH01           | 9.3     |
| D21S11         | 28, 30  |
| D18S51         | 14, 20  |
| Penta E        | 5, 10   |
| D5S818         | 11, 12  |
| D13S317        | 8, 12   |
| D7S820         | 7, 10   |
| D16S539        | 11, 14  |
| CSF1PO         | 12      |
| Penta D        | 10, 11  |
| vWA            | 15, 19  |
| D8S1179        | 10, 15  |
| TPOX           | 9, 11   |
| FGA            | 20, 26  |
| Amelogenin     | X, Y    |

# Item A9 - Bloodstain front passenger seat Comparison

| <b>Genetic Marker</b> | <b>Item A9</b> | <b>Steven Avery</b> |
|-----------------------|----------------|---------------------|
| <b>D3S1358</b>        | <b>16, 18</b>  | <b>16, 18</b>       |
| <b>TH01</b>           | <b>9.3</b>     | <b>9.3</b>          |
| <b>D21S11</b>         | <b>28, 30</b>  | <b>28, 30</b>       |
| <b>D18S51</b>         | <b>14, 20</b>  | <b>14, 20</b>       |
| <b>Penta E</b>        | <b>5, 10</b>   | <b>5, 10</b>        |
| <b>D5S818</b>         | <b>11, 12</b>  | <b>11, 12</b>       |
| <b>D13S317</b>        | <b>8, 12</b>   | <b>8, 12</b>        |
| <b>D7S820</b>         | <b>7, 10</b>   | <b>7, 10</b>        |
| <b>D16S539</b>        | <b>11, 14</b>  | <b>11, 14</b>       |
| <b>CSF1PO</b>         | <b>12</b>      | <b>12</b>           |
| <b>Penta D</b>        | <b>10, 11</b>  | <b>10, 11</b>       |
| <b>vWA</b>            | <b>15, 19</b>  | <b>15, 19</b>       |
| <b>D8S1179</b>        | <b>10, 15</b>  | <b>10, 15</b>       |
| <b>TPOX</b>           | <b>9, 11</b>   | <b>9, 11</b>        |
| <b>FGA</b>            | <b>20, 26</b>  | <b>20, 26</b>       |
| <b>Amelogenin</b>     | <b>X, Y</b>    | <b>X, Y</b>         |

# Item A10 – Bloodstain on CD case in RAV4

| <b>Genetic Marker</b> | <b>Profile</b> |
|-----------------------|----------------|
| <b>D3S1358</b>        | <b>16, 18</b>  |
| <b>TH01</b>           | <b>9.3</b>     |
| <b>D21S11</b>         | <b>28, 30</b>  |
| <b>D18S51</b>         | <b>14, 20</b>  |
| <b>Penta E</b>        | <b>5, 10</b>   |
| <b>D5S818</b>         | <b>11, 12</b>  |
| <b>D13S317</b>        | <b>8, 12</b>   |
| <b>D7S820</b>         | <b>7, 10</b>   |
| <b>D16S539</b>        | <b>11, 14</b>  |
| <b>CSF1PO</b>         | <b>12</b>      |
| <b>Penta D</b>        | <b>10, 11</b>  |
| <b>vWA</b>            | <b>15, 19</b>  |
| <b>D8S1179</b>        | <b>10, 15</b>  |
| <b>TPOX</b>           | <b>9, 11</b>   |
| <b>FGA</b>            | <b>20, 26</b>  |
| <b>Amelogenin</b>     | <b>X, Y</b>    |



# Blood Found on CD case - Item A10 Comparison

| <b>Genetic Marker</b> | <b>Item A10</b> | <b>Steven Avery</b> |
|-----------------------|-----------------|---------------------|
| <b>D3S1358</b>        | <b>16, 18</b>   | <b>16, 18</b>       |
| <b>TH01</b>           | <b>9.3</b>      | <b>9.3</b>          |
| <b>D21S11</b>         | <b>28, 30</b>   | <b>28, 30</b>       |
| <b>D18S51</b>         | <b>14, 20</b>   | <b>14, 20</b>       |
| <b>Penta E</b>        | <b>5, 10</b>    | <b>5, 10</b>        |
| <b>D5S818</b>         | <b>11, 12</b>   | <b>11, 12</b>       |
| <b>D13S317</b>        | <b>8, 12</b>    | <b>8, 12</b>        |
| <b>D7S820</b>         | <b>7, 10</b>    | <b>7, 10</b>        |
| <b>D16S539</b>        | <b>11, 14</b>   | <b>11, 14</b>       |
| <b>CSF1PO</b>         | <b>12</b>       | <b>12</b>           |
| <b>Penta D</b>        | <b>10, 11</b>   | <b>10, 11</b>       |
| <b>vWA</b>            | <b>15, 19</b>   | <b>15, 19</b>       |
| <b>D8S1179</b>        | <b>10, 15</b>   | <b>10, 15</b>       |
| <b>TPOX</b>           | <b>9, 11</b>    | <b>9, 11</b>        |
| <b>FGA</b>            | <b>20, 26</b>   | <b>20, 26</b>       |
| <b>Amelogenin</b>     | <b>X, Y</b>     | <b>X, Y</b>         |



# Item A12 – bloodstain on RAV4 rear passenger door

| Genetic Marker | Profile |
|----------------|---------|
| D3S1358        | 16, 18  |
| TH01           | 9.3     |
| D21S11         | 28, 30  |
| D18S51         | 14, 20  |
| Penta E        | 5, 10   |
| D5S818         | 11, 12  |
| D13S317        | 8, 12   |
| D7S820         | 7, 10   |
| D16S539        | 11, 14  |
| CSF1PO         | 12      |
| Penta D        | 10, 11  |
| vWA            | 15, 19  |
| D8S1179        | 10, 15  |
| TPOX           | 9, 11   |
| FGA            | 20, 26  |
| Amelogenin     | X, Y    |

# Item A12 - Bloodstain rear passenger door Comparison

| <b>Genetic Marker</b> | <b>Item A12</b> | <b><u>Steven Avery</u></b> |
|-----------------------|-----------------|----------------------------|
| <b>D3S1358</b>        | <b>16, 18</b>   | <b>16, 18</b>              |
| <b>TH01</b>           | <b>9.3</b>      | <b>9.3</b>                 |
| <b>D21S11</b>         | <b>28, 30</b>   | <b>28, 30</b>              |
| <b>D18S51</b>         | <b>14, 20</b>   | <b>14, 20</b>              |
| <b>Penta E</b>        | <b>5, 10</b>    | <b>5, 10</b>               |
| <b>D5S818</b>         | <b>11, 12</b>   | <b>11, 12</b>              |
| <b>D13S317</b>        | <b>8, 12</b>    | <b>8, 12</b>               |
| <b>D7S820</b>         | <b>7, 10</b>    | <b>7, 10</b>               |
| <b>D16S539</b>        | <b>11, 14</b>   | <b>11, 14</b>              |
| <b>CSF1PO</b>         | <b>12</b>       | <b>12</b>                  |
| <b>Penta D</b>        | <b>10, 11</b>   | <b>10, 11</b>              |
| <b>vWA</b>            | <b>15, 19</b>   | <b>15, 19</b>              |
| <b>D8S1179</b>        | <b>10, 15</b>   | <b>10, 15</b>              |
| <b>TPOX</b>           | <b>9, 11</b>    | <b>9, 11</b>               |
| <b>FGA</b>            | <b>20, 26</b>   | <b>20, 26</b>              |
| <b>Amelogenin</b>     | <b>X, Y</b>     | <b>X, Y</b>                |



# Item A8 – blood from RAV4 dashboard by ignition

| Genetic Marker | Profile |
|----------------|---------|
| D3S1358        | 16, 18  |
| TH01           | 9.3     |
| D21S11         | 28, 30  |
| D18S51         | 14, 20  |
| Penta E        | 5, 10   |
| D5S818         | 11, 12  |
| D13S317        | 8, 12   |
| D7S820         | 7, 10   |
| D16S539        | 11, 14  |
| CSF1PO         | 12      |
| Penta D        | 10, 11  |
| vWA            | 15, 19  |
| D8S1179        | 10, 15  |
| TPOX           | 9, 11   |
| FGA            | 20, 26  |
| Amelogenin     | X, Y    |

# Blood Found Near Ignition

## Comparison - Item A8

| <b>Genetic Marker</b> | <b>Item A8</b> | <b><u>Steven Avery</u></b> |
|-----------------------|----------------|----------------------------|
| <b>D3S1358</b>        | <b>16, 18</b>  | <b>16, 18</b>              |
| <b>TH01</b>           | <b>9.3</b>     | <b>9.3</b>                 |
| <b>D21S11</b>         | <b>28, 30</b>  | <b>28, 30</b>              |
| <b>D18S51</b>         | <b>14, 20</b>  | <b>14, 20</b>              |
| <b>Penta E</b>        | <b>5, 10</b>   | <b>5, 10</b>               |
| <b>D5S818</b>         | <b>11, 12</b>  | <b>11, 12</b>              |
| <b>D13S317</b>        | <b>8, 12</b>   | <b>8, 12</b>               |
| <b>D7S820</b>         | <b>7, 10</b>   | <b>7, 10</b>               |
| <b>D16S539</b>        | <b>11, 14</b>  | <b>11, 14</b>              |
| <b>CSF1PO</b>         | <b>12</b>      | <b>12</b>                  |
| <b>Penta D</b>        | <b>10, 11</b>  | <b>10, 11</b>              |
| <b>vWA</b>            | <b>15, 19</b>  | <b>15, 19</b>              |
| <b>D8S1179</b>        | <b>10, 15</b>  | <b>10, 15</b>              |
| <b>TPOX</b>           | <b>9, 11</b>   | <b>9, 11</b>               |
| <b>FGA</b>            | <b>20, 26</b>  | <b>20, 26</b>              |
| <b>Amelogenin</b>     | <b>X, Y</b>    | <b>X, Y</b>                |

# Frequency in Population

- 1 person in 4 quintillion in the Caucasian population
- 1 person in 898 Quintillion in the African American population
- 1 person in 25 quintillion in the Southeastern Hispanic population
- 1 person in 123 quintillion in the Southwestern Hispanic population