STR Authentication: Using the ATCC public STR Database

Brief Tutorial March 2016
Using the Public STR Database

STR Profile Background

• The ATCC STR database includes profile standards for all distributed cell lines.

• 8 loci are enough to authenticate a cell line for research and publication purposes.

• ATCC uses STR analysis to screen all human cell lines for authenticity and purity before distribution providing a true baseline for researchers using these cell lines.

• Comparing an STR profile using the ATCC database will provide a measureable relationship between the tested cells and accepted standard cell lines.

• Tumor and transformed cell lines are more prone to genetic drift which can accelerate with passage number, media content and other factors.

• STR profiles assume two alleles; the presence of more than two alleles in DNA from normal cells indicates genomic heterogeneity, which is typically equated with contamination or genetic instability. Some cell lines may have more than 2 alleles at a loci as they are generally not normal cells. See the example on the last page.

Cell authentication services are available from ATCC

www.atcc.org/str
Using the Public STR Database

Go to the STR service landing page or directly to the database https://www.atcc.org/STR_Database.aspx?slp=1

There is a very simple registration required to access the database.
Using the Public STR Database

There are 2 Choices

1. Select either search by ATCC number to obtain an STR profile standard

   OR

2. Input a profile to run it against the ATCC public database
1. Search by ATCC Number

to Obtain an STR Profile Standard

Example:
ATCC catalog CCL-2 are HeLa cells

Hit the search button
1. Search by ATCC Number to Obtain an STR Profile Standard

Example:
Find your CCL-2 HeLa cell STR profile at the top of the page.

Export the data to Excel

<table>
<thead>
<tr>
<th>Search by ATCC Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCL-2</td>
</tr>
</tbody>
</table>

Search by Amelogenin (AMEL) + at least 7 loci:
2. Search by STR Profile to Match Against Others in the Database

Input a profile to run against the ATCC public database

Search by Amelogenin (AMEL) + at least 7 loci:
Separate each allele entry with a comma (e.g., CSF1PO = 11, 12)
2. Search by STR Profile to Match Against Others in the Database

Profile from a recent cancer research paper.

Separate alleles using a comma. For homozygous use a single number and NOT “10,10” for example.

To limit the number of results:

- select either 80% match and higher
- OR
- 56% match or higher
2. Search by STR Profile to Match Against Others in the Database

Results can take 30 seconds +/-

In this case there were no matches below 80% for this profile
2. Search by STR Profile

Practice Profile

In this example you will find a number of results only by selecting $\geq 80\%$
2. Search by STR Profile to Match Against Others in the Database

Results can take 30 seconds +/-

In this case there were no matches below 80% for this profile
2. Search by STR Profile to Match Against Others in the Database

Results can take 30 seconds +/-

In this case there were no matches 80% and above, so only the 56% and lower selection provided results.
2. Search by STR Profile to Match Against Others in the Database

Sort by “% match” then check off the records you would like to keep.

Export your data to Excel
Test your cells...
...Trust your data

Consider ATCC STR Cell Authentication