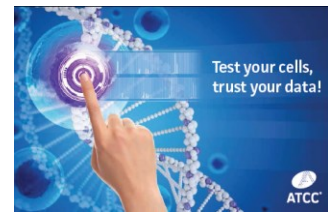# STR Authentication: Using the ATCC public STR Database

Brief Tutorial March 2016

ATCC
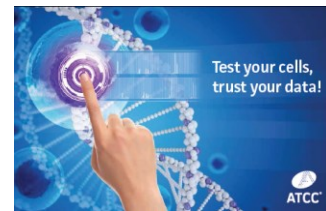
Using the Public STR Database

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.

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

Search by ATCC Number:

[ ] Search   Clear

OR

Search by Amelogenin (AMEL) + at least 7 loci:
Separate each allele entry with a comma (e.g., CSF1PO = 11, 12)

AMEL: [ ] (?)

Plus

D5S818: [ ]

D13S317: [ ]

D7S820: [ ]

D16S539: [ ]

vWA: [ ]

TH01: [ ]

TPOX: [ ]

CSF1PO: [ ]

Matches >= 80%   Matches >= 56%   Clear

to Obtain an STR Profile Standard

Example:
ATCC catalog CCL-2 are
HeLa cells

Hit the search button

Search by ATCC Number:

CCL-2 | Search | Clear

OR

Search by Amelogenin (AMEL) + at least 7 loci:
Separate each allele entry with a comma (e.g., CSF1PO = 11, 12)

AMEL: [   ] (?)

Plus

D5S818: [   ]

D13S317: [   ]

D7S820: [   ]

D16S539: [   ]

vWA: [   ]

TH01: [   ]

TPOX: [   ]

CSF1PO: [   ]

Matches >= 80% | Matches >= 56% | Clear

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

Export the data to Excel

Showing 1 - 1 Of 1 | PageSize: 100 ▾

Add to Cart	%Match	ATCC® Number	Designation	D5S818	D13S317	D7S820	D16S539	vWA	TH01	AMEL	TPOX	CSF1PO
☐	100	CCL-2	HeLa	11,12	12,13.3	8,12	9,10	16,18	7	X	8,12	9,10

Add to Cart   Export to Excel

Disclaimer: Reference to this database and the data contained therein may be cited in publications, and ATCC encourages such citation or reference. While every reasonable effort has been made to assure the accuracy of these data, no warranty, express or implied, is made by ATCC as to their accuracy.

While ATCC has largely used the Promega PowerPlex® 1.2 System in the creation of these data and recommends that researchers wishing to produce data for comparison also use a Promega PowerPlex® System ATCC does not provide a general endorsement of this product or provide any warranty or representation regarding its quality or performance in the scientific community for the identification of human cell lines.

As in the past, when we find a misidentified cell line among our holdings (i.e., the DNA profile is similar or identical to that of an unrelated cell line), we will post a note on the Misidentified Cell Lines page of our website.

Search by ATCC Number:

[CCL-2]   Search   Clear

OR

Search by Amelogenin (AMEL) + at least 7 loci:

to Match Against Others in the Database

Search by Amelogenin (AMEL) + at least 7 loci:
Separate each allele entry with a comma (e.g., CSF1PO = 11, 12)

AMEL: [   ] (?)

Plus

Input a profile to run against the
ATCC public database

D5S818: [   ]

D13S317: [   ]

D7S820: [   ]

D16S539: [   ]

vWA: [   ]

TH01: [   ]

TPOX: [   ]

CSF1PO: [   ]

[Matches >= 80%] [Matches >= 56%] [Clear]

to Match Against Others in the Database

Search by Amelogenin (AMEL) + at least 7 loci:
Separate each allele entry with a comma (e.g., CSF1PO = 11, 12)

Profile from a recent cancer research paper.

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

AMEL:	XY

Plus

D5S818:	11,12
D13S317:	11,14
D7S820:	10,11
D16S539:	11
vWA:	15
TH01:	8
TPOX:	8
CSF1PO:	11,12

To limit the number of results:

select either 80% match and higher
OR
56% match or higher
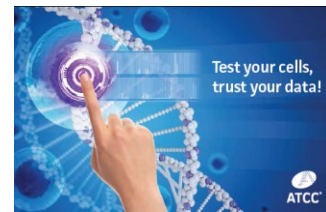
Matches >= 80%   Matches >= 56%   Clear

2. Search by STR Profile
to Match Against Others in the Database

Searching STR Database...

This process will take a few seconds. Please Wait.
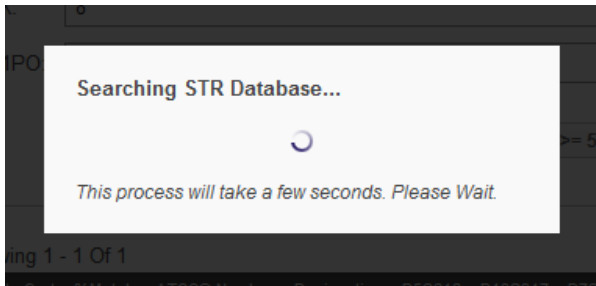
Results can take 30 seconds +/-

In this case there were no matches below 80% for this profile

Showing 1 - 1 Of 1 — PageSize: 100

Add to Cart	%Match	ATCC® Number	Designation	D5S818	D13S317	D7S820	D16S539	vWA	TH01	AMEL	TPOX	CSF1PO
☐	80	CCL-171	MRC-5	11,12	11,14	10,11	9,11	15	8	X,Y	8	11,12

Add to Cart   Export to Excel

Disclaimer: Reference to this database and the data contained therein may be cited in publications, and ATCC encourages such citation or reference. While every reasonable effort has been made to assure the accuracy of these data, no warranty, express or implied, is made by ATCC as to their accuracy.

While ATCC has largely used the Promega PowerPlex® 1.2 System in the creation of these data and recommends that researchers wishing to produce data for comparison also use a Promega PowerPlex® System ATCC does not provide a general endorsement of this product or provide any warranty or representation regarding its quality or performance in the scientific community for the identification of human cell lines.

As in the past, when we find a misidentified cell line among our holdings (i.e., the DNA profile is similar or identical to that of an unrelated cell line), we will post a note on the Misidentified Cell Lines page of our website.

Search by ATCC Number:

Search   Clear

OR

Search by Amelogenin (AMEL) + at least 7 loci:
Separate each allele entry with a comma (e.g., CSF1PO = 11, 12)

AMEL: XY

Plus

D5S818:	11,12
D13S317:	11,14
D7S820:	10,11
D16S539:	11
vWA:	15
TH01:	8
TPOX:	8
CSF1PO:	11,12

Matches >= 80%   Matches >= 56%   Clear

Practice Profile

In this example you will find a number of results only by selecting >=80%

Search by ATCC Number:

[   ] Search   Clear

OR

Search by Amelogenin (AMEL) + at least 7 loci:
Separate each allele entry with a comma (e.g., CSF1PO = 11, 12)
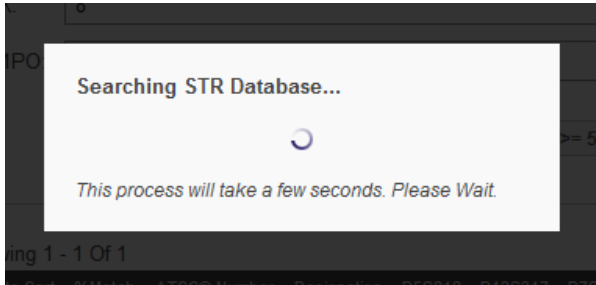
AMEL: [X   ] (?)

Plus

D5S818:	12,13
D13S317:	11,13,14
D7S820:	11,12
D16S539:	12,13
vWA:	15,18
TH01:	6
TPOX:	9,11
CSF1PO:	11

Matches >= 80%   Matches >= 56%   Clear

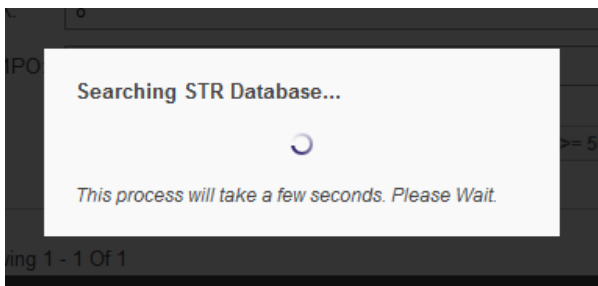## 2. Search by STR Profile

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

Searching STR Database...

This process will take a few seconds. Please Wait.

Results can take 30 seconds +/-

In this case there were no matches 80% and above, so only the 56% and lower selection provided results.

Search by Amelogenin (AMEL) + at least 7 loci: Separate each allele entry with a comma (e.g., CSF1PO = 11, 12)

AMEL: X,Y

Plus:

D5S818:	12,13
D13S317:	11
D7S820:	9,10
D16S539:	12
vWA:	14,16
TH01:	6
TPOX:	8
CSF1PO:	10

Matches >= 80% Matches >= 56% Clear

Showing 1 - 100 Of 1139   PageSize: 100

Add to Cart	% Match	ATCC® Number	Designation	D5S818	D13S317	D7S820	D16S539	vWA	TH01	AMEL	TPOX	CSF1PO
☐	31.25	CCL-2	HeLa	11,12	12,13.3	8,12	9,10	16,18	7	X	8,12	9,10
☐	31.25	CCL-5	L-132	11,12	12,13.3	8,12	9,10	16,18	7	X	8,12	9,10
☐	31.25	CCL-6	Intestine 407	11,12	12,13.3	8,12	9,10	16,18	7	X	8,12	9,10
☐	35.71	CCL-13	Chang Liver	12	12,13.3	8,12	9,10	16,18	7	X	8,12	10
☐	31.25	CCL-17	KB	11,12	12,13.3	8,12	9,10	16,18	7	X	8,12	9,10
☐	35.71	CCL-21	AV3	11,12	13.3	12	9,10	16,18	7	X	8,12	9,10
☐	31.25	CCL-23	HEp-2	11,12	12,13.3	8,12	9,10	16,18	7	X	8,12	9,10
☐	31.25	CCL-23	HEp-2	11,12	12,13.3	8,12	9,10	16,18	7	X	8,12	9,10
☐	33.33	CCL-25	WISH	11,12	13.3	8,12	9,10	16,18	7	X	8,12	9,10
☐	52.94	CCL-30	RPMI 2650	12,13	11,12	8,11	11,12	16,18	6,8	X,Y	8	9,11
☐	31.25	CCL-62	FL	11,12	12,13.3	8,12	9,10	16,18	7	X	8,12	9,10
☐	42.86	CCL-75	WI 38	10	11	9,11	11,12	19,20	8,9.3	X	8	10,12
☐	46.15	CCL-75.1	WI-38 VA13	10	11	9,11	11,12	19,20	9.3	X	8	10,12

to Match Against Others in the Database

	37.5	CRL-1552	MOLT-3	12	12,13	8,10	11,13,14	17	6,8	X,Y	8	11,12
	37.5	CRL-1740	LNCaP.FGC	11,12	10,12	9.1,10.3	11	16,18	9	X,Y	8,9	10,11
	37.5	CRL-1740	LNCaP.FGC	11,12	10,12	9.1,10.3	11	16,18	9	X,Y	8,9	10,11
	37.5	CRL-1740	LNCaP.FGC	11,12	10,12	9.1,10.3	11	16,18	9	X,Y	8,9	10,11
	28.57	CRL-1598	A673	11,12	8,13	10,12	11	15,18	9.3	X	8	11,12
	46.67	TIB-202	THP-1	11,12	13	10	11,12	16	8,9.3	X,Y	8,11	11,13

<< < 1 2 3 4 5 ... > >>

Add to Cart   Export to Excel

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

Export your data to Excel

	File	Home	Insert	Page Layout	Formulas	Data	Review	View	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	% Match	Sample Count	Matches	Atcc Number	Designation	D5S818	D13S317	D7S820	D16S539	vWA	TH01	AMEL	TPOX	CSF1PO	
2	31.25	16	5	CCL-2	HeLa	11,12	12,13.3	8,12	9,10	16,18	7	X	8,12	9,10	
3	31.25	16	5	CCL-5	L-132	11,12	12,13.3	8,12	9,10	16,18	7	X	8,12	9,10	
4	31.25	16	5	CCL-6	Intestine 407	11,12	12,13.3	8,12	9,10	16,18	7	X	8,12	9,10	
5	35.71	14	5	CCL-13	Chang Liver		12	12,13.3	8,12	9,10	16,18	7	X	8,12	10
6	31.25	16	5	CCL-17	KB	11,12	12,13.3	8,12	9,10	16,18	7	X	8,12	9,10	
7	35.71	14	5	CCL-21	AV3	11,12	13.3		12	9,10	16,18	7	X	8,12	9,10
8	31.25	16	5	CCL-23	HEp-2	11,12	12,13.3	8,12	9,10	16,18	7	X	8,12	9,10	
9	31.25	16	5	CCL-23	HEp-2	11,12	12,13.3	8,12	9,10	16,18	7	X	8,12	9,10	
10	33.33	15	5	CCL-25	WISH	11,12		13.3	8,12	9,10	16,18	7	X	8,12	9,10
11	52.94	17	9	CCL-30	RPMI 2650	12,13	11,12	8,11	11,12	16,18	6,8	X,Y		8	9,11
12															
13															

Test your cells…
…Trust your data

Consider ATCC STR Cell Authentication

ATCC