

## Cell Line Authentication

### Introduction

Contamination and misidentification of cell lines used in biomedical research has been problematic for decades<sup>1-2</sup>. Data derived from misidentified cell lines can result in incorrect conclusions and pose challenges to reproducibility. A growing number of scientific journals<sup>3</sup> as well as NIH<sup>4</sup> now require researchers to authenticate their cell lines using a standard method such as short tandem repeat (STR) profiling. STR profiling is a PCR-based method that uses fluorescently labeled primers to target specific genomic loci. The amplicons are then separated by capillary electrophoresis, and the size of each amplicon is determined. When a minimum of 13 STR loci are interrogated, an individual fingerprint for each cell line can be established and compared to expected profiles in publicly available database.

### Service Description

Genomics provides STR profiling for cell line authentication using the CLA IdentiFiler Plus PCR Amplification Kit (ThermoFisher Scientific P/N A65672) which profiles 16 genomic loci. Cell line DNA is amplified using the reagents provided in the kit and the PCR products are then analyzed using our ABI 3730xl Genetic Analyzer. The resulting fragment profiles can then be assigned to alleles using the freely available, online ThermoFisher MSA Software or GeneMapper 6. A representative panel of STR profiles for several loci is shown in Figure 1. Resulting allele profiles can then be compared to the profiles in the ATCC or DSMZ databases<sup>6-7</sup>.

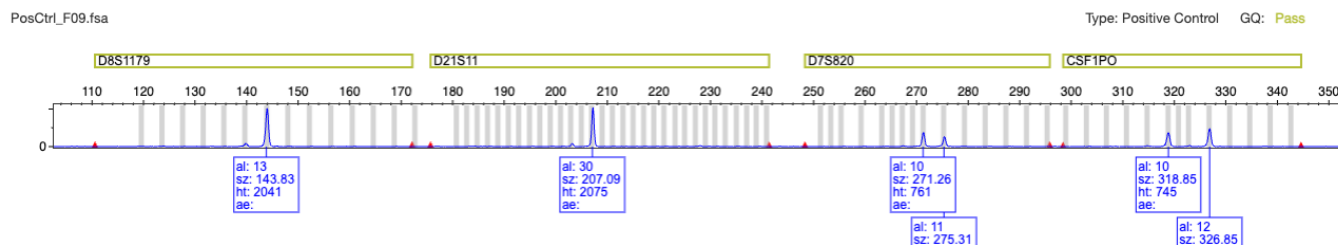


Figure 1. Representative STR Profiles of Several Loci

### Submission Requirements

Genomics will run a batch of samples for STR profiling during the first week of each calendar quarter (e.g. first weeks of Jan, Apr, Jul, Oct) or when a full batch of samples has been received. Samples must be received at least one week prior to be included in the batch.

Samples must be provided as 20µL of isolated DNA at a concentration of 0.1 ng/µL in 10mM Tris pH 8.0 + 0.1mM EDTA buffer (Low TE buffer). Please contact us directly at [genomics@fredhutch.org](mailto:genomics@fredhutch.org) to submit samples.

### References

1. <https://iclac.org/resources/human-cell-line-authentication/>
2. <https://iclac.org/references/further-reading-human/>
3. <https://www.atcc.org/the-science/authentication/cell-line-authentication-publication-requirements>
4. <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-17-068.html>
5. <https://www.thermofisher.com/order/catalog/product/A65672?SID=srch-srp-A65672>
6. <https://www.atcc.org/search-str-database>
7. <https://celldive.dsmz.de/str/search>
8. <https://fredhutch.sharepoint.com/sites/GenomicsandBioinformaticsSharedResource-Public/SitePages/Cell-Line-Authentication.aspx>