



Creative Bioarray

A Division Of Creative Dynamics Inc

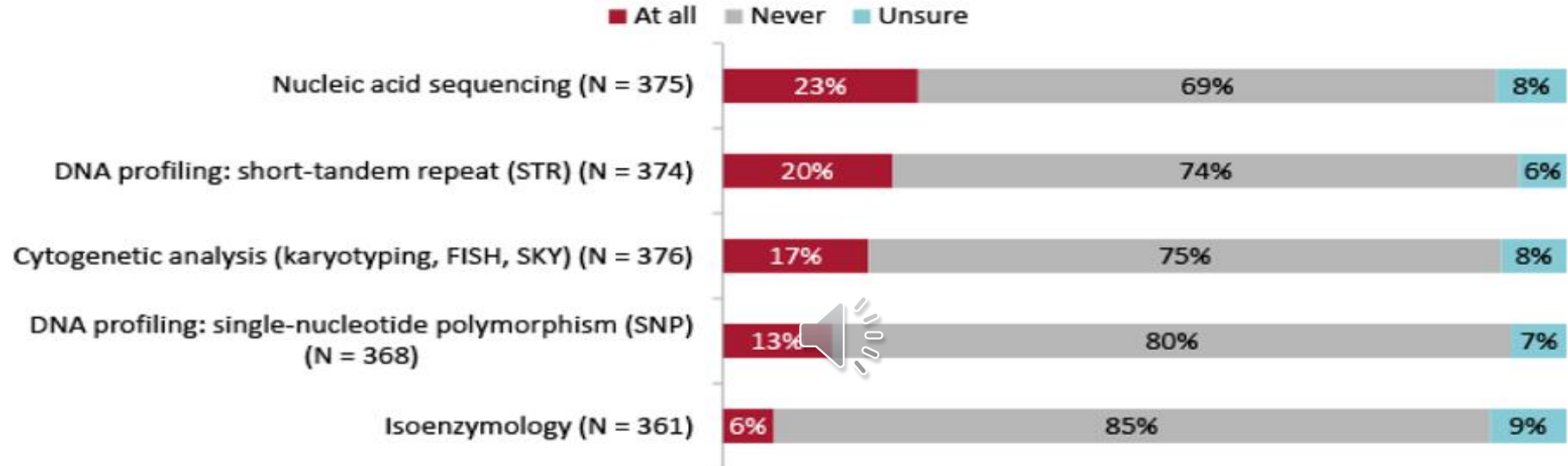
Cell Authentication By STR Profiling



Cell Line Culture Survey Results

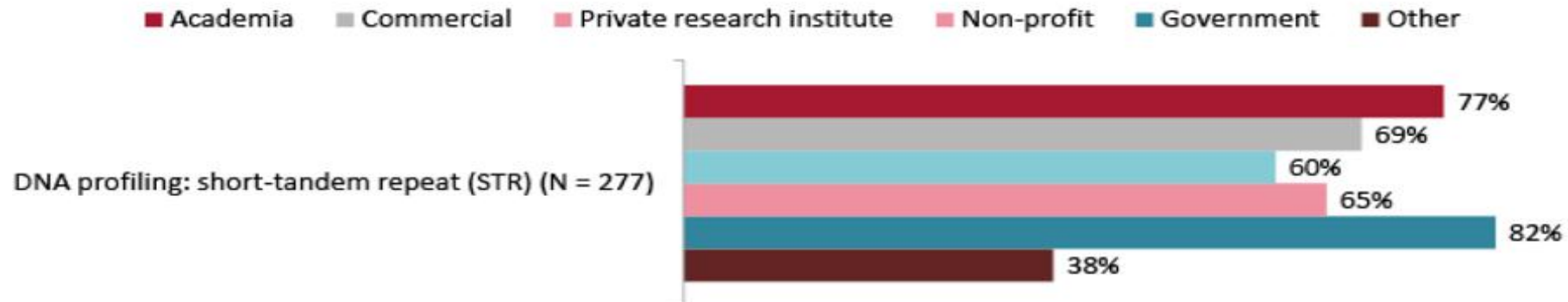
A.

How frequently do you perform the following confirmation of species-related quality controls on your cultured cells/cell lines?



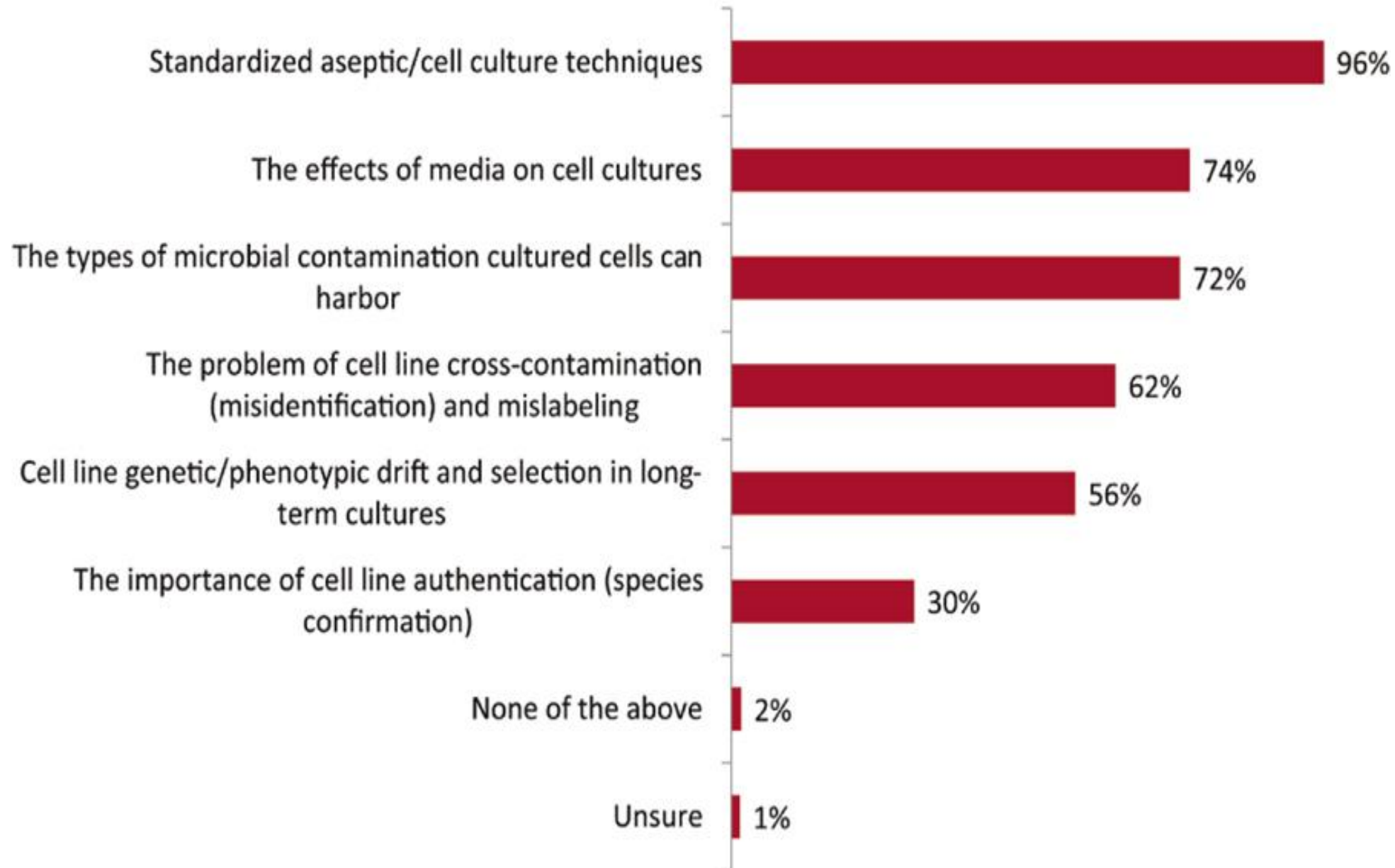
B.

Percent of respondents who never perform STR profiling by work setting



Survey responses: Quality control of cultured cells/cell lines. (Click to enlarge)

Please indicate which of the following specific trainings you received when you were taught cell culture. Select all that apply. (N = 366)



Journals that Require Cell Line Authentication

The following is a list of just some of many peer-review journals that are known to require cell line authentication for all submitted research involving cell lines.

AACR Journals

- Cancer Discovery
- Cancer Research
- Clinical Cancer Research
- Cancer Epidemiology, Biomarkers & Prevention
- Molecular Cancer Research
- Molecular Cancer Therapeutics
- Cancer Prevention Research

Endocrine Society Journals

- Endocrinology
- Endocrine Reviews
- Journal of Clinical Endocrinology & Metabolism
- Molecular Endocrinology
- Hormones and Cancer

BioTechniques

Require Cell Line Authentication

Nature Publishing Group


- Nature Reviews Molecular Cell Biology
- Nature
- Nature Genetics
- Nature Reviews Immunology
- Nature Reviews Cancer
- Nature Reviews Neuroscience
- Nature Biotechnology
- Nature Methods

Society for Endocrinology Journals

- Journal of Endocrinology
- Journal of Molecular Endocrinology
- Endocrine-Related Cancer



Failure to monitor cell lines for cross-contamination or misidentification, a problem that has persisted for cell lines for decades, may result in compromised data and ultimately irreproducible results. How to solve this problem?

- A** Misidentification due to labeling errors 
- B** Incorrect classification by pathologists
- C** Cross-contamination with other cell types

Standards for Cell Line Authentication

short tandem repeat [STR] profiling



Introduction



What is Short tandem repeat?

Short tandem repeat is a microsatellite, consisting of a unit of two to thirteen nucleotides repeated hundreds of times in a row on the DNA strand.

STR Background



DNA Polymorphisms

Most of our DNA is identical to DNA of others. However, there are inherited regions of our DNA that can vary from person to person. Variations in DNA sequence between individuals are termed "polymorphisms".



STR

STRs are short sequences of DNA, normally of length 2-5 base pairs, that are repeated numerous times in a head-tail manner.

These Sequences with the highest degree of polymorphism are very useful for DNA analysis in forensics cases and paternity testing.

13 Core STR Loci

STR Loci	Chromosomal Location	Repeat Motif	Allele Range ^a	PCR Product Sizes in Identifier Kit (dye label)
CSF1PO	5q33.1	TAGA	6–15	305–342 bp (6-FAM)
FGA	4q31.3	CTTT	17–51.2	215–355 bp (PET)
TH01	11p15.5	TCAT	4–13.3	163–202 bp (VIC)
TPOX	2p25.3	GAAT	6–13	222–250 bp (NED)
VWA	12p13.31	[TCTG] [TCTA]	11–24	155–207 bp (NED)
D3S1358	3p21.31	[TCTG] [TCTA]	12–19	112–140 bp (VIC)
D5S818	5q23.2	AGAT	7–16	134–172 bp (PET)
D7S820	7q21.11	GATA	6–15	255–291 bp (6-FAM)
D8S1179	8q24.13	[TCTA] [TCTG]	8–19	123–170 bp (6-FAM)
D13S317	13q31.1	TATC	8–15	217–245 bp (VIC)
D16S539	16q24.1	GATA	5–15	252–292 bp (VIC)
D18S51	18q21.33	AGAA	7–27	262–345 bp (NED)
D21S11	21q21.1	[TCTA] [TCTG]	24–38	185–239 bp (6-FAM)
D2S1338	2q35	[TGCC] [TTCC]	15–28	307–359 bp (VIC)
D19S433	19q12	AAGG	9–17.2	102–135 bp (NED)
Amelogenin (sex-typing)	Xp22.22 Yp11.2	Not applicable	Not applicable	X = 107 bp (PET) Y = 113 bp (PET)

The 13 core STR loci used for the U.S. national DNA database are shown in bold font. See www.cstl.nist.gov/biotech/strbase/multiplx.htm for information on other commercially available STR kits.

^aRanges are calculated from kit allelic ladders (see Figure 1) and do not represent the full range of alleles observed in world populations. A more complete allele listing of these short tandem repeat (STR) loci is available at www.cstl.nist.gov/biotech/strbase/str_fact.htm.



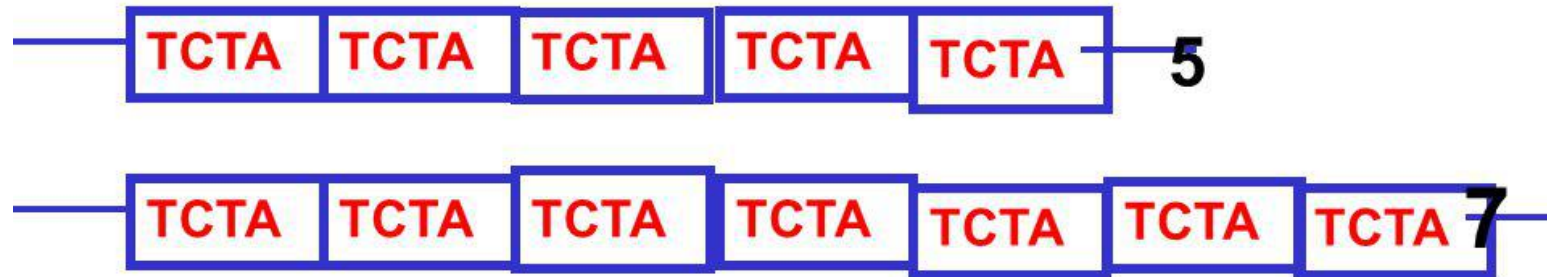
STR Profiling

STR

Short Tandem Repeat



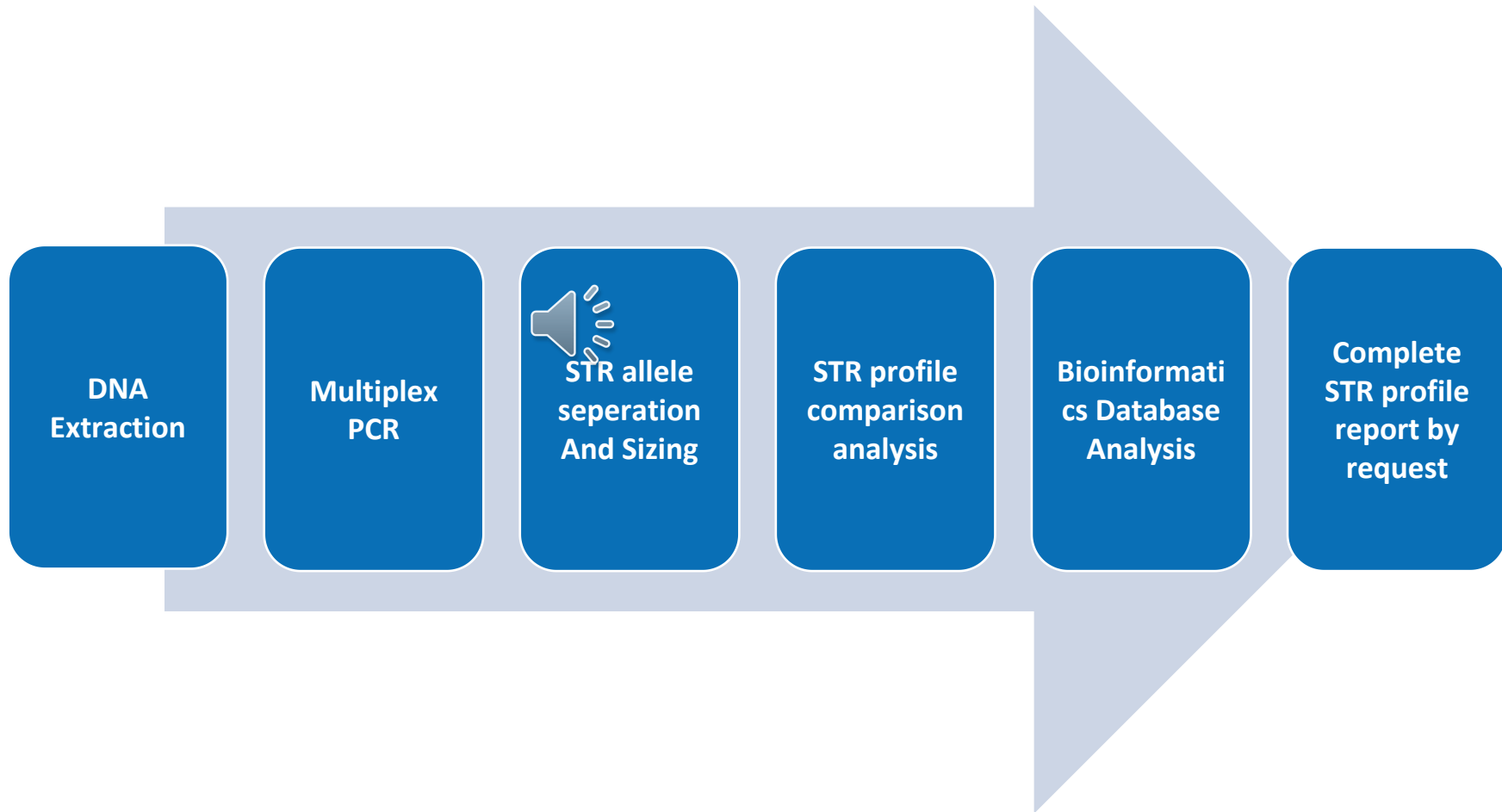
DNA Profile = 4,6



DNA Profile = 5,7



STR Profiling Workflow



Highlight

1

Complete STR profile report by request

2

STR profile comparison analysis

3

DNA extraction and amplification included

4

Cross contamination detection and analysis

5

Fast turnaround time

6

High Accuracy, Competitive Price



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