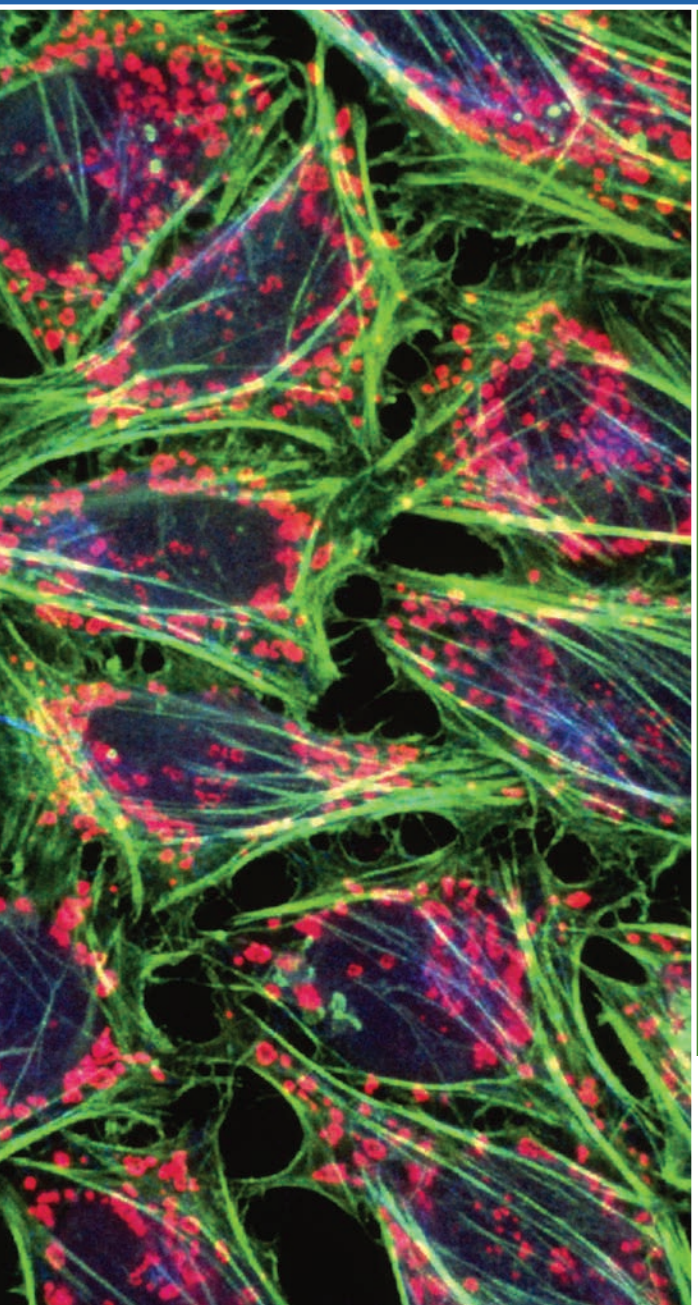
The integrity of your research depends on the integrity of your cell line.



How well do you know your cell line?

Despite the best efforts of researchers, a significant number of cell lines are contaminated or misidentified, and continue to be compromised.

Take control.

Confirm, protect, and maintain the integrity of your cell line throughout your research.

Fisher Scientific

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The need to be absolutely certain has never been greater.

The growing body of evidence is concerning

Despite the best efforts of researchers and laboratories…

36% As many as 36% of cell lines currently in use may be contaminated[1]

18% 18% are completely misidentified[2]

360 A recent review of scientific literature cited a total of 360 cross-contaminated and misidentified cell lines, most with no known authentic stocks[2]

"One of the most serious issues facing the biomedical research community today is the authentication of human cell lines used in research and drug development as models of normal and cancer tissue."[2]

—ATCC, 2012

"The role of cell authentication in biomedical science has received considerable attention, especially within the past decade. This quality control attribute is now beginning to be given the emphasis it deserves by granting agencies and by scientific journals."[3]

—NIH, 2007

"Since cell lines are immortal and can live forever, they are critical to research and a major issue is cell line contamination leading to misidentification and drawing incorrect conclusions for specific cancers."[4]

—Mayo Clinic, 2010

Research institutions are starting to care about this issue

- In just 3 years, new standards and mandates have been established around the world and are rapidly gaining momentum
- In January 2012, the **ATCC** issued standards specifically identifying Short Tandem Repeat (STR) profiling as the preferred protocol
- The **FDA** has already incorporated cell line authentication (CLA) into its policies for clinical trials and manufacturing
- Many of the nation's top research centers (such as Johns Hopkins, MD Anderson, and Mayo Clinic) have already embraced CLA to verify their programs and gain a competitive edge in getting published
- The **NIH** considers cell line misidentification and contamination to be a serious and ongoing problem

"Grant applications that fail to employ [acceptable CLA] methods would not be considered of the highest quality."

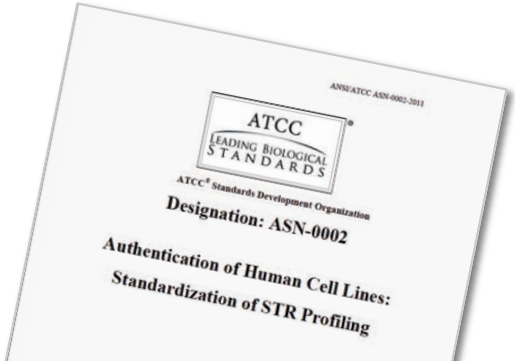
"Such manuscripts would not fare well in the journal review process."

"We encourage all reviewers to consider these issues carefully in order to protect and promote the validity of the science we support."

—NIH, 2007

NIH National Institutes of Health

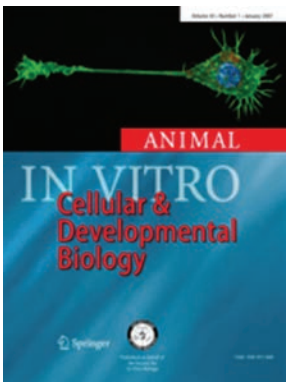
FDA

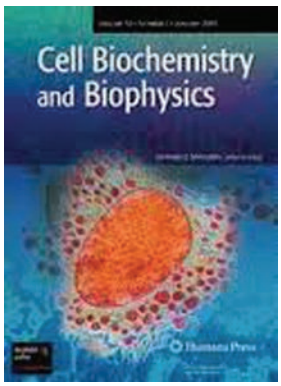


Prominent Journals have already taken action

- Many have already adopted cell line authentication policies for manuscript submission, including *NATURE*

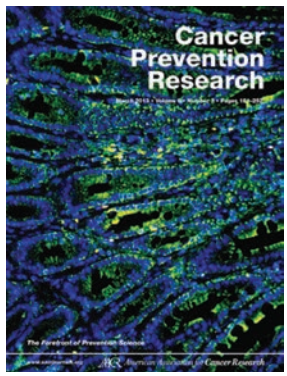
Masters JR, 2012. *NATURE* 492:186.

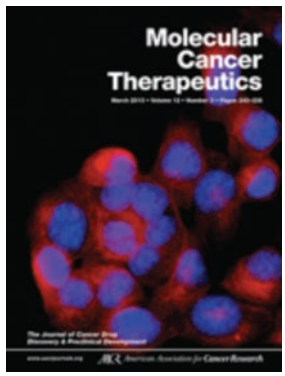


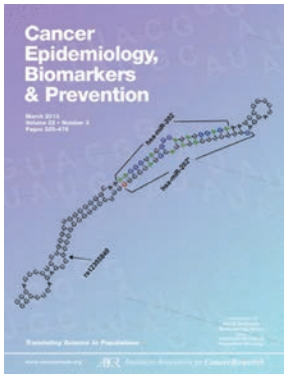


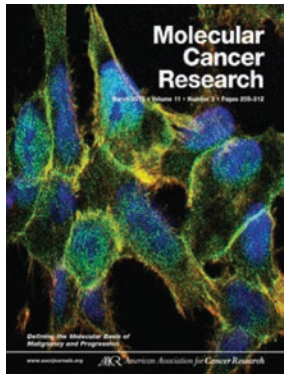
"Work involving human cell lines must indicate where and when the cells were obtained, whether the cell lines have been tested and authenticated, how the cells were tested, and when."

AACR American Association for Cancer Research









Protect your research and future funding.

Verify your cell line

- To support your research efforts, Fisher Scientific and DDC Medical, the leading experts in DNA testing, are providing you with unique DNA testing services

Cell Line Authentication Service	Mycoplasma Detection Service
The most advanced Short Tandem Repeat (STR) DNA analysis available	**State-of-the-art analysis to rule out difficult-to-detect bacterial infections**
• 17 highly polymorphic markers as genetic markers to establish identity and confirm authenticity • Exceeds the ASN-0002 guidelines of 8 loci • Suitable for use with highly fragile human embryonic stem cells (hES)	• Screens for 19 species, including the 6 most common • Proprietary technology detects 95% of all mycoplasma contaminants • These contaminants are otherwise undetectable through visual inspection and other routine assessments of cell culture purity • Detection sensitivity demonstrated at 3 to 5 genomes per microliter

About STR profiling

- Short Tandem Repeat (STR) DNA analysis is used to establish the unique genetic signature of your cell line, which can be used for authentication

" At the present, cell line STR-profiling would appear to represent the greatest value to the scientific community for authenticating human cell lines unambiguously, quickly, and for the least expense."

—ATCC, 2012

" Short tandem repeat (STR) profiling, one of a few DNA profiling technologies now available, is being proposed for routine identification (authentication) of human cell lines, stem cells, and tissues."

—NIH, 2010

The quality control of your cell line is essential to solid research results

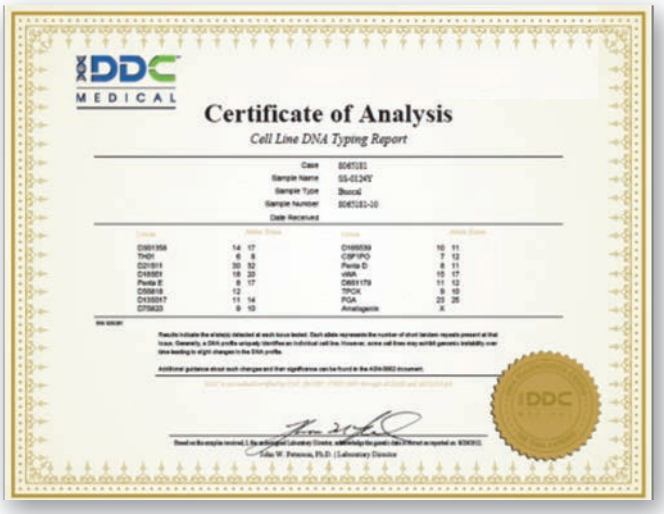
Cell line authentication is simple to integrate into your research protocols

Take advantage of the Fisher Scientific/DDC Medical turnkey CLA Testing Services

Comprehensive capabilities and reporting deliver certainty you can count on

- DNA extraction and complete Certificate of Analysis provided for every test
  - —Authenticating your cell line with a genetic signature
  - —Raw data also provided in electronic spreadsheet
  - —Results stored confidentially and securely
- Electropherogram reports also available
  - —Visual representation of the data generated by STR analysis
  - —Shows the alleles detected and a plot of their distribution
  - —Provides additional documentation

Also available: Reference sample comparison to the ATCC database for identity confirmation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Certificate of Analysis

Cell Line DNA Typing Report

Perform cell line authentication when…

RECEIVING a cell line from an outside source, prior to or when preparing initial frozen stock
- Especially if another investigator has handled the cell line

CREATING a new cell line, when preparing initial frozen stock

ESTABLISHING subsequently prepared new frozen stocks
- To provide a reference for future cultures

EXPANDING beyond 2 or 3 passages or when maintaining cell lines for long periods of time
- To check for contaminants previously undetected during initial freezing
- To check for mutations due to long-term culturing

SHARING equipment or if many cell lines are present in a single lab
- To rule out cross-contamination

CONDUCTING any individual research project (at the beginning, middle, and end)
- Especially prior to publication

Take control.

Confirm, protect, and maintain the integrity of your cell line throughout your research.

From sample to results with ease, efficiency, and economy

- Convenient collection kit includes DNA collection card
- Process and return to DDC Medical
- Free return shipping
- Results within 5 business days from receipt of sample

- **Results are confidential**

Trust the experts at DDC Medical for your DNA testing needs

Independent third-party laboratory combined with cutting-edge technology, experience, and service to deliver results

- The world's largest private DNA laboratory
- More than 18 years of experience in DNA testing
- More than a half million DNA tests performed in 2012
- Nationally and internationally recognized for excellence
- Ranked "perfect" in 18 past inspections, including those by the American Association of Blood Banks (AABB) and the College of American Pathologists (CAP)
- Accredited by the AABB, CLIA, ACLASS for ISO/IEC 17025:2005, CAP, and NYSDOH

DDC Medical is recognized by healthcare workers, legal professionals, and the media as the best resource for DNA testing

ORDERING INFORMATION

Product #	Description
TFDDC-C1	Cell Line Authentication Service
TFDDC-M1	Mycoplasma Detection Service
TFDDC-CM1	Combined Cell Line Authentication and Mycoplasma Detection
TFDDC-C1EP	Cell Line Authentication with Electropherogram
TFDDC-CM1EP	Combined Cell Line Authentication with Electropherogram and Mycoplasma Detection
TFDDC-STE	Stem Elite™ Mouse Feeder Cell Detection
TFDDC-C1CA	Cell Line Authentication with Comparative Analysis
TFDDC-CM1CA	Combined Cell Line Authentication with Comparative Analysis and Mycoplasma Detection
TFDDC-C1EPCA	Cell Line Authentication with Electropherogram and Comparative Analysis
TFDDC-CMEPCA	Combined Cell Line Authentication with Electropherogram and Comparative Analysis and Mycoplasma Detection

Fisher Scientific

US: 1.800.766.7000
fishersci.com

Canada: 1.800.234.7437
www.fishersci.ca

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CellAuthentication.DDCMedical.com

1. Hughes P, Marshall D, Reid Y, et al. 2007. *BioTechniques* 43:575-586.
2. ATCC Standards Development Organization. 2012. Authentication of Human Cell Lines: Standardization of STR Profiling. ANSI/ATCC Designation; ASN-0002.
3. Notice Regarding Authentication of Cultured Cell Lines. November 28, 2007. http://grants.nih.gov/grants/guide/notice-files/NOT-OD-08-017.html.
4. Mayo Clinic researchers develop new laboratory cell lines to study treatment for anaplastic thyroid cancer. Mayo Clinic Web site. http://www.mayoclinic.org/news2010-jax/5921.html. Accessed May 2, 2013.

BN0502134