

Life | Wed Mar 16, 2016 2:02pm EDT

Related: HEALTH

Scientists develop new human stem cells with half a genome

NEW YORK | BY [BILL BERKROT](#)

Scientists for the first time have generated a type of embryonic stem cell that carries a single copy of the human genome rather than the usual two, a development that could advance research in gene editing, genetic screening and regenerative medicine.

Derived from a female egg, the stem cells are the first human cells known to be capable of cell division with just one copy of the parent cell's genome, according to a study appearing on Wednesday in the journal *Nature*.

The breakthrough is expected to reduce the complexity of identifying genetic abnormalities, which in turn could advance understanding of many diseases, researchers said.

Human cells are considered diploid because they inherit two sets of chromosomes, 23 from the mother and 23 from the father. Reproductive egg and sperm cells are known as haploid because they contain a single set of chromosomes. They cannot divide to make more eggs and sperm.

"What is fundamentally new is we have cells that can divide and renew with a single genome. That is just unprecedented," said Dieter Egli of Columbia University Medical Center in New York, co-author of the study with Dr. Nissim Benvenisty of The Hebrew University of Jerusalem.

The researchers, including scientists from The New York Stem Cell Foundation Research Institute, found the haploid stem cells capable of differentiating into many other cell types, such as nerve, heart, and pancreatic cells, while retaining a single set of chromosomes.

Sequencing of the human genome has yielded a wealth of new information about myriad genetic variations and how they interact with each other. But isolating and understanding specific gene abnormalities is challenging with diploid cells because they typically have a copy that is normal and serves as a backup.

"We have two genes of everything and if one is mutated the effect is not so obvious," said Egli in a telephone interview while vacationing in the French Alps. "Because these cells reduce the number of possible combinations and reduce the number of variance, it should be easier to get the answers."

A next logical step in the research, Egli said, is to modify these haploid stem cells either to introduce new disease variances or correct those that are already there.

"That should give us a way to better understand those many, many variances that are being identified in genome sequencing efforts that we think have something to do with disease."

(Reporting by Bill Berkrot; Editing by Steve Orlofsky)

PHOTOS OF THE WEEK



Our top news photography this week. [Slideshow »](#)

BUILD YOUR PERFECT CANDIDATE


[Download Reuters' White House Run from the App Store](#)

Sponsored Financial Content (?)

- [Day Trading: 15 Secrets to Success - Capital at risk](#) *Guardian Stockbrokers*
- [Including 28 new funds within Quantum, Oracle, Paragon and LifePlan.](#) *RL360°*
- [Sign up for personalised news updates to help you trade successfully](#) *News.Markets*
- [Open a Forex Account and Get 60% Bonus on All Deposits.](#) *IronFX*
- [Top 10 reasons to invest in income](#) *MarketViews*



TRENDING ON REUTERS

- 1 [Pakistanis hunt militants behind blast that killed at least 70](#) |  VIDEO
- 2 [The race against time that Belgium lost](#)
- 3 [Dell nears sale of IT services unit to Japan's NTT Data: sources](#)
- 4 [Japan opens radar station close to disputed isles in move bound to rile China](#)
- 5 [Dollar firms, Asia stocks slip as U.S. data, Fed comments awaited](#)

Sponsored Topics

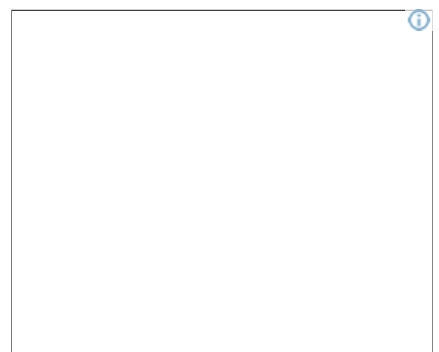
Vitamins for Hair Growth	Cheap Cable TV Packages
Retirement Annuity Rates	Reverse Mortgage Quotes
Best Cars to Own	Roth IRA Interest Rates
New HD Security Cameras	New Convertible Cars

Sponsored Financial Content (?)

- [Day Trading: 15 Secrets to Success - Capital at risk](#) *Guardian Stockbrokers*
- [Sign up for personalised news updates to help you trade successfully](#) *News.Markets*
- [Including 28 new funds within Quantum, Oracle, Paragon and LifePlan.](#) *RL360°*
- [Open a Forex Account and Get 60% Bonus on All Deposits.](#) *IronFX*
- [Get the latest Market Views from the experts](#) *MarketViews*

SPONSORED TOPICS

1. [Reverse Mortgage Calculator](#)
2. [10 Best Income Funds](#)
3. [Luxury Crossover SUVs](#)
4. [Best Retirement Investments](#)
5. [Hybrid SUV Reviews](#)
6. [Retirement Planning Calculator](#)



- [Reuters.com](#) | [Business](#) | [Markets](#) | [World](#) | [Politics](#) | [Technology](#) | [Opinion](#) | [Money](#) | [Pictures](#) | [Videos](#) | [Site Index](#)
- [More from Reuters](#) | [Reuters News Agency](#) | [Brand Attribution Guidelines](#) | [Delivery Options](#)
- [Support & Contact](#) | [Support](#) | [Corrections](#)
- [Account Information](#) | [Register](#) | [Sign In](#)
- [Connect with Reuters](#) | [Twitter](#) | [Facebook](#) | [LinkedIn](#) | [RSS](#) | [Podcast](#) | [Newsletters](#) | [Mobile](#)
- [About](#) | [Privacy Policy](#) | [Terms of Use](#) | [Advertise With Us](#) | [Advertising Guidelines](#) | [AdChoices](#) | [Copyright](#)

Thomson Reuters is the world's leading source of intelligent information for businesses and professionals.

- [Thomsonreuters.com](#)
- [About Thomson Reuters](#)
- [Investor Relations](#)
- [Careers](#)
- [Contact Us](#)

Our Flagship financial information platform incorporating Reuters Insider

An ultra-low latency infrastructure for electronic trading and data distribution

A connected approach to governance, risk and compliance

Our next generation legal research platform

Our global tax workstation

Thomson Reuters is the world's largest international multimedia news agency, providing investing news, world news, business news, technology news, headline news, small business news, news alerts, personal finance, stock market, and mutual funds information available on Reuters.com, video, mobile, and interactive television platforms. Thomson Reuters journalists are subject to an Editorial Handbook which requires fair presentation and disclosure of relevant interests.

NYSE and AMEX quotes delayed by at least 20 minutes. Nasdaq delayed by at least 15 minutes. For a complete list of exchanges and delays, please click here.