

No designer babies, but gene editing to avoid disease? Maybe

By LAURAN NEERGAARD
AP Medical Writer

WASHINGTON — Don't expect designer babies any time soon — but a major new ethics report leaves open the possibility of one day altering human heredity to fight genetic diseases, with stringent oversight, using new tools that precisely edit genes inside living cells.

What's called genome editing already is transforming biological research, and being used to develop treatments for patients struggling with a range of diseases.

The science is nowhere near ready for a huge next step that raises ethical questions — altering sperm, eggs or embryos so that babies don't inherit a disease that runs in the family, says a report Tuesday from the National Academy

Gene editing within a living cell

A technique called CRISPR-Cas9 is one method of what is called genome editing, allowing scientists to precisely repair or modify genes in the quest for new ways to treat or prevent inherited diseases.

Guide RNA
Scientists customize RNA molecules to guide an enzyme named Cas9 to the correct spot.

Cas9
The enzyme precisely cuts DNA like scissors. The cell repairs itself or a new piece of DNA can be inserted.



SOURCE: University of California, Berkeley AP

of Sciences and National Academy of Medicine.

But if scientists learn how to safely pass alterations of the genetic code to future generations, the panel said "germline" editing could be attempted under strict

criteria, including that it targets a serious disease with no reasonable alternative and is conducted under rigorous oversight.

"Caution is absolutely needed, but being cautious does not mean prohibition,"

said bioethicist R. Alta Charo of the University of Wisconsin-Madison.

"This committee is not saying we will or should do germline — heritable — editing. What we are saying is that we can identify a set of strict conditions under which it would be permissible to do it," Charo added. "But we are far, far away from being ready to try."

Genome editing should not go beyond healing the sick and enhance traits such as physical strength, what's commonly called "designer babies," the panel stressed.

But the public should get involved in these debates now, to say what might one day be acceptable. The long-awaited report offers advice — the prestigious academies cannot set policy. But it is considered a step toward creating international norms for responsible development of

this powerful technology.

The U.S. National Academies and its counterparts in Britain and China have been holding international meetings with the hope of doing just that.

"Genome editing is a new tool for gene therapy and it has tremendous promise," Charo said. But, she added, it has to be pursued in a way that promotes well-being and is responsible, respectful and fair.

Genome editing is essentially a biological version of cut-and-paste software, allowing scientists to turn genes on or off, repair or modify them inside living cells. There are a few older methods but one with the wonky name CRISPR-Cas9 is so much faster, cheaper and simpler to use that it has spurred an explosion of research.

Under development are ways to treat a range of

diseases from sickle cell and hemophilia to cancer. In lab experiments using human cells or animals engineered with humanlike disorders, scientists are unraveling how gene defects fuel disease — and are even trying to grow transplantable human organs inside pigs.

That kind of research is very promising, is adequately regulated today and should continue at full speed, the National Academies panel concluded.

When it comes to the more sci-fi-sounding uses, it's quite possible scientists will learn how to perform germline editing in five to 10 years, said panel co-chair Richard Hynes of the Massachusetts Institute of Technology. Safety is one reason for caution, he said, as scientists will have to learn whether editing one gene has unwanted downstream effects.



AP Photo/Shizuo Kambayashi, File
In this 2001 file photo, a man believed to be Kim Jong Nam, the eldest son of then North Korean leader Kim Jong Il, looks at photographers as he boards a plane to Beijing at Narita international airport in Tokyo.

North Korean leader's brother killed at airport, assailants unknown

KUALA LUMPUR, Malaysia (AP) — Police were checking surveillance tapes Wednesday for clues about who may have assassinated the half-brother of North Korean leader Kim Jong Un at an airport in Kuala Lumpur, a senior official said.

An autopsy will also be performed on the body of Kim Jong Nam, police said. Kim, 46, was targeted Monday in the shopping concourse at the airport and had not gone through immigration yet for his flight to Macau, said a senior government official, who spoke on condition of anonymity because the case involves sensitive diplomacy.

Kim, who died on the way to a hospital, told medical workers before he died that he had been attacked with a chemical spray, the official said.

Selangor police chief Abdul Samah Mat said police were searching for clues in the CCTV footage. The airport is in Selangor near Kuala Lumpur.

Kim Jong Nam was estranged from his younger brother, the North Korean leader. Although he had been tipped by some outsiders as a possible successor to his dictator father, others thought that was unlikely because he lived outside the country, including recently in Macau, Singapore and Malaysia.

He reportedly fell further out of favor when he was caught trying to enter Japan on a false passport in 2001, saying he wanted to visit Tokyo Disneyland.

Multiple South Korean media reports, citing unidentified sources, said Kim Jong Nam was killed at the airport by two women believed to be North Korean agents. They fled in a taxi and were being sought by Malaysian police, the reports said.

A Malaysian police statement confirmed the death of a 46-year-old North Korean man whom it identified from his travel document as Kim Chol, born in Pyongyang on June 10, 1970.

Ken Gause, at the CNA think tank in Washington who has studied North Korea's leadership for 30 years, said Kim Chol was a name that Kim Jong Nam has traveled under. He is believed to have been born May 10, 1971, although birthdays are always unclear

for senior North Koreans, Gause said.

Mark Tokola, vice president of the Korea Economic Institute in Washington and a former deputy chief of mission at the U.S. Embassy in Seoul, said it would be surprising if Kim Jong Nam was not killed on the orders of his brother, given that North Korean agents have reportedly tried to assassinate Kim Jong Nam in the past.

"It seems probable that the motivation for the murder was a continuing sense of paranoia on the part of Kim Jong Un," Tokola wrote in a commentary Tuesday. Although there was scant evidence that Kim Jong Nam was plotting against the North Korean leader, he provided an alternative for North Koreans who would want to depose his brother.

The reported killing came as North Korea celebrated its latest missile launch, which foreign experts were analyzing for evidence of advancement in the country's missile capabilities. For the next several days, North Korea will be marking the birthday of its late leader Kim Jong Il, the brothers' father, though they have different mothers. The major holiday this Thursday is called the "Day of the Shining Star" and will be feted with figure skating and synchronized swimming exhibitions, fireworks and mass rallies.

Since taking power in late 2011, Kim Jong Un has executed or purged a slew of high-level government officials. The most spectacular was the 2013 execution by anti-aircraft fire of his uncle, Jang Song Thaek, once considered the country's second-most-powerful man.

Gause said Kim Jong Nam had been forthright that he did not have political ambitions, although he was publicly critical of the North Korean regime and his brother's legitimacy in the past.

Kim Jong Nam had been less outspoken since 2011, when North Korean assassins reportedly tried to shoot him in Macau, Gause said, though the details of the attempted killing are murky. South Korea also reportedly jailed a North Korean spy in 2012 who admitted to trying to organize a hit-and-run accident targeting Kim Jong Nam in China in 2010.

Wednesday Morning

STATION	6 AM	6:30	7 AM	7:30	8 AM	8:30	9 AM	9:30	10 AM	10:30	11 AM	11:30	
FOX	11 KFFX	11 AgDay	Hot/ Cleve.	Good Day				Brain	Steve Harvey		Crime Watch Daily		
FOX	KPTV	3 Good Day Oregon at 6	Good Day Oregon					Good Day	The 700 Club		Rachael Ray (N)		
CBS	19 KEPR	2 News	News	CBS This Morning (N)				Harry (N)	The Price Is Right		Young & Restless		
CBS	KOIN	19 KOIN 6 News at 6 a.m.	CBS This Morning (N)					Let's Make a Deal	The Price Is Right		Young & Restless		
NBC	25 KNDU	6 Wake Up Northwest	Today Show Tracy Morgan, Gwen Stefani (N)					Today Show II (N)	Today Show III (N)		Million? Million?		
NBC	KGW	8 KGW News at Sunrise	Today Show Tracy Morgan, Gwen Stefani (N)					Today Show II (N)	Today Show III (N)		Portland Today		
ABC	42 KVEW	4 Northwest	Northwest	Good Morning America (N)				Live! With Kelly (N)	The View		Paid	Middle	
ABC	KATU	5 KATU News Morning	Good Morning America (N)					AM Northwest	The View		Live! With Kelly (N)		
PBS	31 KTNW	Stretch	W.L.Yoga	Wild Kratts	Jet Gol	Nature Cat	C.George	D.Tiger	Thomas	Sesame St.	Sesame St.	SplashB.	Sit and Fit
PBS	59 OPB	13 Power	Jet Gol	Nature Cat	C.George	D.Tiger	D.Tiger	SplashB.	Sesame St.	DinoTrain	Peg + Cat	SuperWI	Bob Build

February 15, 2017

AFTERNOON

STATION	12 PM	12:30	1 PM	1:30	2 PM	2:30	3 PM	3:30	4 PM	4:30	5 PM	5:30	
FOX	11 KFFX	11 Paid	Pat. Court	Divorce	Divorce	Judge Mathis	The People's Court		2 1/2 Men	Mike&M.	Last Man	Last Man	
FOX	KPTV	3 12 O'Clock News	Wendy Williams			The Dr. Oz Show	TMZ Live!		Judge Judy	Judge Judy	5 O'Clock News		
CBS	19 KEPR	2 NameG.	Bold & B.	The Talk (N)		Let's Make a Deal	Dr. Phil		Judge Judy	Judge Judy	News	News	
CBS	KOIN	19 News	Bold & B.	The Talk (N)		The Doctors	Dr. Phil		KOIN 6 News at 4 p.m.		News	News	
NBC	25 KNDU	6 TMZ	Paid	Days of Our Lives		Hot Bench	Hot Bench		Wendy Williams		News	NBC News	
NBC	KGW	8 KGW New	Paid	Days of Our Lives		T.D. Jakes (N)			Ellen DeGeneres (N)		KGW News	KGW News	
NBC	42 KVEW	4 The Chew		General Hospital		The Doctors			Rachael Ray (N)		Minute	Minute	
ABC	KATU	5 The Chew		General Hospital		Harry (N)			Afternoon Live		KATU News @ 4	News	
PBS	31 KTNW	Charlie Rose		Meals	F&Porter	Stretch	C.George	Speaks	WordGirl	Arthur	Odd Squad	Wild Kratts	Business
PBS	59 OPB	13 Paint	Chef	Charlie Rose (N)		Nature Cat	Thomas	Cat/ Hat	Jet Gol	Speaks	WordGirl	Odd Squad	Wild Kratts

EVENING

STATION	6 PM	6:30	7 PM	7:30	8 PM	8:30	9 PM	9:30	10 PM	10:30	11 PM	11:30	
FOX	11 KFFX	11 Modern Family "Caught in the Act"	Modern Family "Princess Party"	2 Broke G. "And the Disappointing Unit"	2 Broke G. "And the Dumpster Sex"	Lethal Weapon "As Good as It Getz" (N)		Star "Mama's Boy" (N)	FOX News First at Ten	:35 Law & Order: Criminal Intent "Palimpsest"		:35 Anger Management	
FOX	KPTV	3 6 O'Clock News	Family Feud	Family Feud	Lethal Weapon "As Good as It Getz" (N)		Star "Mama's Boy" (N)		10 O'Clock News		11 O'Clock News	2 Broke Girls	
CBS	19 KEPR	2 Action News at 6:00 p.m.	Inside Edition	The Big Bang Theory	The Simpsons "The Girl Code"	Hunted "A \$250,000 Gamble" (N)		Criminal Minds "Spencer" (N)	Doubt "Pilot" (P) (N)		Action News at 11:00 p.m.	:35 Stephen Colbert	
CBS	KOIN	19 KOIN Local 6 at 6	Evening News	Extra	Ent. Tonight	Hunted "A \$250,000 Gamble" (N)		Criminal Minds "Spencer" (N)	Doubt "Pilot" (P) (N)		KOIN 6 News/ 11	:35 S. Colbert	
NBC	25 KNDU	6 Local News	Family Feud	Wheel of Fortune	Jeopardy!	Blindspot "Borrow or Rob" (N)		Law & Order: Special Victims Unit "Great Expectations" (N)	Chicago P.D. "Seven Indictments" (N)		Local News	:35 The Tonight Show	
NBC	KGW	8 KGW News at 6:00 p.m.		Live at Seven	Inside Edition	Blindspot "Borrow or Rob" (N)		Law&O: SVU "Great Expectations" (N)	Chicago P.D. "Seven Indictments" (N)		KGW News	:35 Tonight at 11	
ABC	42 KVEW	4 Extra	Local News at 6:30	Entertainment Tonight	The Insider	Goldberg "The Spencer's Gift" (N)	Speechless "I'm a Survivor" (N)	Modern Family "Do It Yourself" (N)	Black-ish "I'm a Survivor" (N)		Local News at 11 :05 Jimmy Kimmel Live		
ABC	KATU	5 KATU News at 6		Jeopardy!	Wheel of Fortune	Goldberg (N)	Speechless (N)	Modern Family (N)	Black-ish (N)		KATU News	:35 Jimmy Kimmel	
PBS	31 KTNW		PBS NewsHour	BBC World News	WealthTrack	Nature "Spy in the Wild: Friendship" (N)		Nova "The Origami Revolution" (N)	City in the Sky "Airborne" (N)		Charlie Rose (N)		
PBS	59 OPB	13 Journeys in Japan	Business (N)	PBS NewsHour		Nature "Spy in the Wild: Friendship" (N)		Nova "The Origami Revolution" (N)	9 Months That Made You "One of a Kind"		Mystery of Matter "Unruly Elements"		
STATION	PEN	6 PM	6:30	7 PM	7:30	8 PM	8:30	9 PM	9:30	10 PM	10:30	11 PM	11:30
A&E	52	The First 48 "Ringside Seat"	Duck Dynasty	Duck Dynasty	Duck Dynasty	Duck Dynasty	Duck Dynasty	Duck Dynasty	Duck Dynasty	:05 Duck Dynasty "Till Duck Do Us Part"	:05 Duck Dynasty	:35 Duck Dynasty	
AMC	60	*** The Shawshank Redemption '94, (Dra) Morgan Freeman, Tim Robbins.				*** True Grit '10, (Adv) Jeff Bridges. A 14-year-old girl helps her father's killer.				*** Walk the Line '05, (Bio) Joaquin Phoenix.			
ANPL	24	Treehouse Masters	Treehouse Masters	Treehouse Masters	Treehouse Masters	Tree. Mast: Branched			"Texas Two Step" (N)		Insane Pools DeepEnd		
CMT	43	*** Failure to Launch		*** Failure to Launch '06, (Com) Matthew McConaughey.		Roseanne	Roseanne	Roseanne	Roseanne	Roseanne	Roseanne	Roseanne	
CNBC	72	Shark Tank	Blue (N)	Blue Collar	Shark Tank	Shark Tank			Blue Collar	Blue Collar	Paid	Paid	
CNN	68	Anderson Cooper 360	CNN Tonight	CNN Tonight	CNN Tonight	Anderson Cooper 360			Anderson Cooper 360		CNN Tonight		
DISC	51	Alaskan Bush People	Alaskan Bush People	Alaskan Bush (N)	Bush People (N)	Bush People (N)			Bering Sea Gold (N)		Alaskan Bush People		
DISN	26	Bunk'd	Bizaard.	Underc.	Good Luck	StuckMid	Good Luck		Liv Maddie/Liv Maddie		Bunk'd	Bunk'd	
ESPN	33	NBA	NBA Basketball New York Knicks at Oklahoma City Thunder	Basket. (L) Site: Chesapeake Energy Arena -- Oklahoma City, Okla. (L)		SportsCenter			SportsCenter		SportsCenter	SportsCenter	
ESPN2	34	NCAA Basketball Duke at Virginia (L)		SportsCenter		30Shorts	NFL Live		Basketball		NBA Basketb. N.Y./Okla.		
FNC	66	TuckerCarlsonTonight	Hannity	The O'Reilly Factor		Hannity			The First 100 Days				
FOOD	61	Cooks vs. Cons	Cooks vs. Cons	Cooks vs. Cons	Cooks vs. Cons	Cooks vs. Cons (N)			Bakers vs. Fakers (N)		Bakers vs. Fakers		
FREE	32	Middle	*** Zookeeper '11, (Com) Kevin James.	*** Free Willy '93, (Fam) Lori Petty, Jason James Richter.		Legion "Chapter 2" (N)			Legion "Chapter 2"				
FX	65	X-Men: Days of Future Past	*** Guardians of the Galaxy '14, (Adv) Chris Pratt.			Legion "Chapter 2" (N)			Legion "Chapter 2"				
GOLF	88	LPGA Golf Australian Open Round 1 Site: Royal Adelaide Golf Club -- Seaton, Australia (L)				LPGA Golf			LPGA Golf				
GSN	76	Divided (N)	Divided (N)	Fam. Feud	Fam. Feud	Fam. Feud	Fam. Feud	Divided	Divided	Fam. Feud	Fam. Feud	Baggage	Baggage
HALL	87	Last Man Standing	Last Man	Last Man	Last Man	Last Man	Last Man	Middle	Middle	Middle	Middle	G. Girls	G. Girls
HGTV	62	Buying and Selling	Buying and Selling	Property Brothers	Property Brothers	Property Brothers (N)			H.Hunt	House	Property Brothers		
HIST	50	Navy SEALs: America's Secret Warriors Pt. 1 of 2 cont'd next		Navy SEALs: America's Secret Warriors Pt. 2 of 2 from Feb 8 (N)		Six "Collateral" (N)			Six "Collateral" (N)		Six "Collateral"		
LIFE	29	LittleW. "Just a Friend"	Little Women: Atlanta		Little Women ATL (N)	LW Atlanta (N)			Black Magic (N)		Little Women: Atlanta		
NICK	27	H.Danger	H.Danger	Thunder	Thunder	Ride	GSshakers	Full House	Full House	Full House	Full House	Friends	Friends
ROOT	37	Snow Motion	Wild Places (N)	Charlie Moore	Flag Football	UFC Unleashed "UFC Strawweights"	UFC Main Event	UFC Fight Flashback	Fight Sports MMA		Fight: Kickboxing		
SPIKE	42	*** The Dark Knight Rises (2012, Action) Christian Bale, Tom Hardy, Anne Hathaway.		*** RoboCop '14, (Act) Joel Kinnaman. A cop is transformed into a crime-fighting cyborg, but memories of his past life remain.		*** The Book of Eli Denzel Washington.			*** Oz the Great & Po...				
SYFY	67	:20 *** Mission: Impossible III '06, (Act) Tom Cruise.		The Magicians (N)		The Expanse (N)			Conan (N)				
TBS	59	Seinf. "The Cartoon"	Seinf. "The Strongbox"	Seinf. "The Wizard"	Seinf. "The Burning"	Big Bang Theory	Big Bang Theory	Big Bang Theory	Big Bang Theory	Big Bang Theory	Full Frontal (N)	Conan (N)	
TCM	56	The Lost: Weekend	*** Love Affair (1939, Romance) Irene Dunne, Maria Ouspenskaya, Charles Boyer.		*** Love Me or Leave Me '55, (Biography) James Cagney, Cameron Mitchell, Doris Day.			:45 *** Lust for Life '56, (Bio) Anthony Quinn, Kirk Douglas.					
TLC	49	600-lb "Erica's Story"	600-lb "Erica's Story"	My 600-lb Life "Diana's Story" (N)		To Close to Home (N)			600-lb "Diana's Story"				
TNT	57	Bones	Bones	*** Bad Boys II '03, (Action) Will Smith, Jordi Mollà, Martin Lawrence.		Hawaii Five-0							
UNI	21	Includo	Noticiero	La rosa de Guadalupe	Pequeños Gigantes	Vino el amor			El color de la pasion		Impacto	Noticie.	
USA	58	NCIS "Cabin Fever"	NCIS	NCIS "Deja Vu"		NCIS "Decompressed"			Suits (N)		Modern	Modern	
WE	118	*** You've Got Mail	Meg Ryan. *** You've Got Mail '98, (Rom) Tom Hanks, Meg Ryan.			CSI "Come as You Are"			CSI "Backstabbers"				
WGN		Cops	Cops	*** The Devil's Advocate '97, (Susp) Al Pacino, Keanu Reeves.		Mother	Mother	Rules	Rules				
STZ ENC	644	Amistad	:55 *** Philadelphia '93, (Dra) Tom Hanks.			*** Jarhead '05, (Act) Jake Gyllenhaal.			:05 *** Thirteen Days				
HBO	518	:05 Eagles of Death		*** Interview With the Vampire Brad Pitt.		:05 The Young Pope			:05 The Young Pope				
HBO2	520	*** 300 '06, (Epic) Gerard Butler.		The Young Pope		LastWeek	:35 Central Intelligence	Wayne Johnson.	Movie				
HBO3	521	:15 Bill Maher	:15 *** Crossroads '02, (Dra) Britney Spears.			*** Rendition	Reese Witherspoon.		LastWeek		Movie		
MAX													