Cloning technology comes of age

Ever since the Soviet Union shocked the world in 1957 by launching Sputnik, the first human-made satellite, the rate of scientific progress in medicine, computer technology, telecommunications and biology has been astounding.

Nowhere are advances more spectacular than in genetics. My daughter, a thirdyear student in university, is doing experiments in her genetics course with DNA, the genetic material, that I never dreamed would be possible in my lifetime when I graduated with a PhD in genetics in 1961.

The great science writer, Isaac Asimov, once remarked in the 1970s that to estimate how far science will advance by the end of the century, take the wildest estimates, then double that and double it again. Nothing illustrates it better than cloning.

The concept is very simple. At fertilization, an egg and a sperm unite to form a cell containing all the information needed to make a complete individual. That cell will then divide numerous times, faithfully duplicating and passing on to all cells all of the genetic information in the original fertilized egg. In a human adult, this comes to some 60 trillion cells, each one of which carries the entire genetic blueprints that were in the sperm and egg. Thus, in principle, every cell in our bodies contains all the genes needed to turn it into a full human being. This would be a clone of the person the cell comes from (clone comes from the Greek word meaning cutting - the way plants can be reproduced).

Cloning itself is not unnatural. Some micro organisms, including bacteria and yeast, naturally reproduce by cloning (asexual reproduction) rather than by sexual reproduction and many plants like strawberries and aspen clone naturally. Identical twins are clones of one cell,

Science Matters

- by David Suzuki



as were the Dionne quintuplets. Interestingly, armadillos always give birth to identical quintuplets.

The interesting question is whether a cell from an adult animal can be clones. In 1932, Aldous Huxley anticipated the social potential of cloning humans in his classic book Brave New World, And ever since, popular movies and books like The Boys from Brazil about cloning Hitler and In His Image, a fictional book claiming a multibillionaire had cloned himself, have explored the explosive ramifications of cloning.

The first breakthroughs in modern cloning began in the late 1950s, when biologist John Gurdon cloned African clawed toads, Xenopus laevis, thus showing it could be done with a complex animal. Still, when I began to give public lectures in the 1960s and talked about cloning humans, I was admonished by my colleagues that it was so far on the horizon that I was needlessly alarming people.

Yet by the 1970s, fruit flies had been cloned and by the late 1980s, mammals like mice and rabbits had been successfully cloned. In the 1990s, scientists managed to clone sheep and even primates. Genetically, primates and humans aren't that much different, and with a lot of money and effort I have no doubt that a human could be cloned with techniques already in use.

Human cloning raises many ethical questions, but the process also has significant medical potential, including using our own cells to clone organs for ourselves, which could then be used to replace those that are damaged or diseased. This would negate one of the most dangerous aspects of organ transplantation - rejection of the donor by the host - because the donor organ would be genetically identical to the host.

Such techniques are still a ways off. Cloning is still in its infancy and there may be underlying biological constraints that prevent animals from being cloned through multiple generations.

POLICE BEAT

Assaults

Halton Regional Police are warning area residents to keep an eye peeled after two Acton women were assaulted in the past two weeks.

On Sept. 24 a woman left Manny's Roadhouse with friends around 2:30 p.m. to get a hotdog from the cart in the alley beside the bar. When she stepped away from her friends to have a cigarette, a man punched her.

Then Saturday night around 1 a.m. another woman in the Victoria Avenue -Holmesway area was pushed to the ground.

Police are investigating both incidents and anyone with information is asked to contact Det. Const. A. Watt at 878-5511, ext. 2416.

Peeping Tom Police are looking for a 16 to 18 year old male seen looking through house windows on Victoria Avenue in the early morning hours on September 30.

Arts, crafts tour on weekend

The Fine Arts Society of Milton (FASM) is planning the third arts and craft tour for Saturday, October 14 and Sunday, October 15 from 10 a.m. to 5 p.m. It will feature the work of over 20 artisans in 13 locations. Work on display and for sale by these multi-talented artists includes paintings in divers media and subject matter, pottery, sculpture in wood and stone. First Nations art in fur and hide, Victorian screen doors and native west coast wood carving.

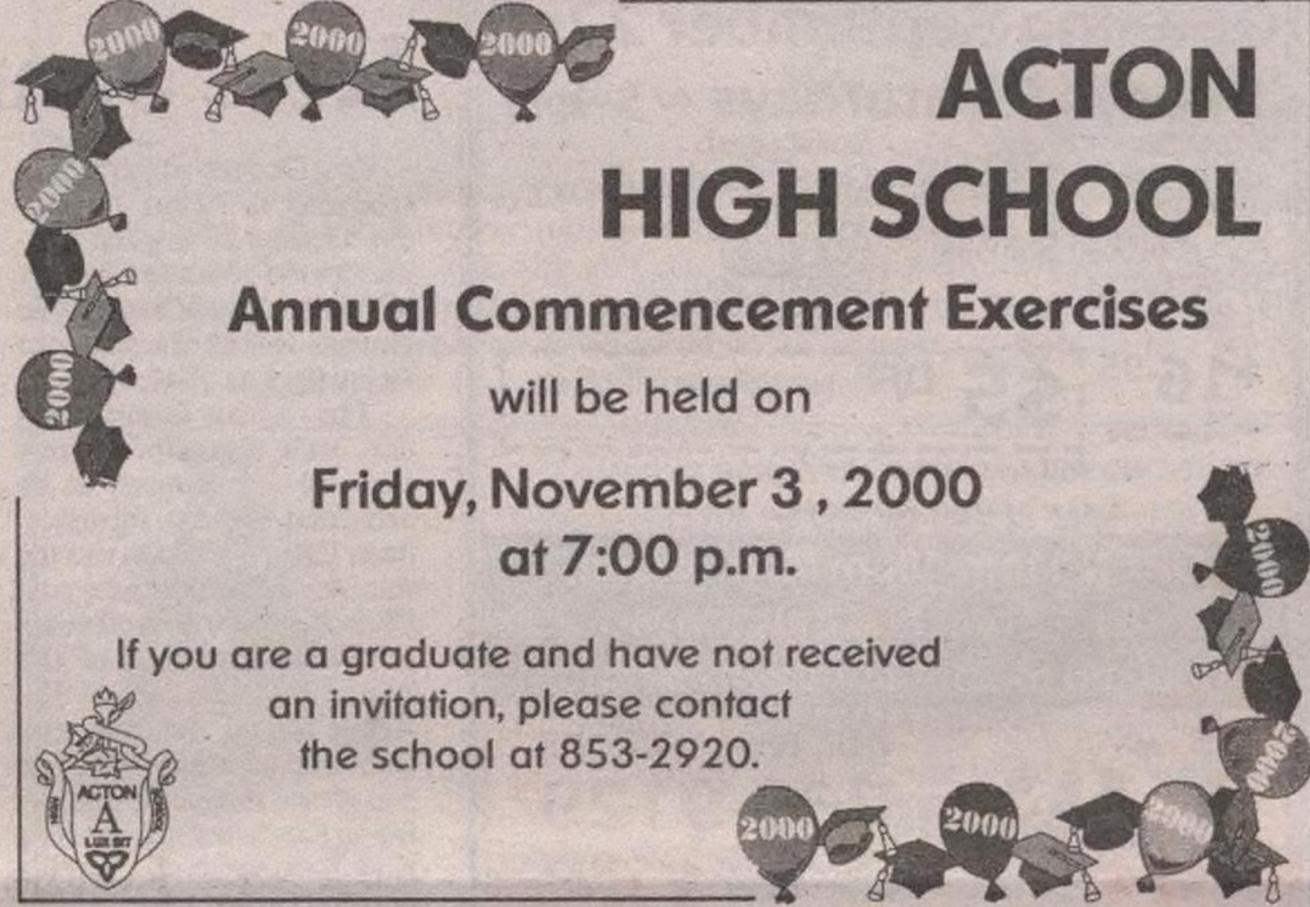
The tour is self-guided and free. It can be started from any of the 13 locations, all with blue, yellow and white balloons at their driveways. Tour brochures with maps are available at a variety of convenient

public and retail locations where people can pick them up prior to the tour or on the day of the tour.

Two convenient locations for visitors from Acton are Unique Frame and Art off highway 25, right at the south end of urban Milton, or Apple Lane Pottery at 5470 Tremaine Road.

The tour will take visitors through some of the most scenic byways in this area to enjoy the fall colours. Some of the studios are a few minutes from Acton.







HOW MANY INNINGS WERE PLAYED IN THE LONGEST SOFTBALL GAME ON RECORD?

DINER TEAM WON 491 TO 467. UNTIL 4 P.M. AUG. 15. THE GAGER'S LASTED FROM 10 A.M. AUG. 14 IN A 365-INNING GAME, WHICH THE BEND'N ELBOW TAYERN TEAM DINER SOFTBALL TEAM PLAYED ANSWER: IN 1976, THE GAGER'S

Fruit Fill-In

Fill in the blanks below, and discover 12 delicious fruits.

1. C_AN_E_RY

7. _AN_N_

2. _ PP_E

8. M_N_O

3. AP_I_OT

9. _A_AY_

4. _AN_E_O

10. GU_V_

5. _ U _ R A _ T

11. R_IS_N

6. N_CT_R_NE

12. G_AP_

II. Raisin 9. Papaya 15. Grape 10. Guava 6. Nectarine 7. Banana 8. Mango 5. Currant 2. Apple 3. Apricot 4. Tangelo I. Cranberry Answers

KC008303

Food Match

Match the type of restaurant with a typical food that it serves by drawing a line from the left column to the right column.

1. Mexican

A. Moussaka

2. Japanese

B. Won ton

3. Greek

C. Kielbasa

D. Sushi

4. American

5. Chinese

6. German

7. Polish

8. Italian

E. Sauerbraten

F. Tortellini

G. Burrito

H. Cheeseburger

I'C 5'D 3'Y 4'H 5'B 6.E 7.C 8.F Answers



· IN THIS YEAR. WILLIAM WRIGLEY STARTED SELLING CHEWING GUM, WHICH HE PREVIOUSLY GAVE AWAY FREE WITH OTHER SALES, AS HIS MAIN PRODUCT.

. NOVELIST J.R.R. TOLKIEN, KNOWN FOR THE "LORD OF THE RINGS" TRILOGY, WAS BORN JAN. 3 IN SOUTH AFRICA.

ON NOV. B, GROVER CLEVELAND WAS **ELECTED PRESIDENT** OF THE UNITED STATES.

KC008305



A bird that is used as food or hunted as game

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