



Cloned Cows and Biotech Beef

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Chronicle / Lacy Atkins

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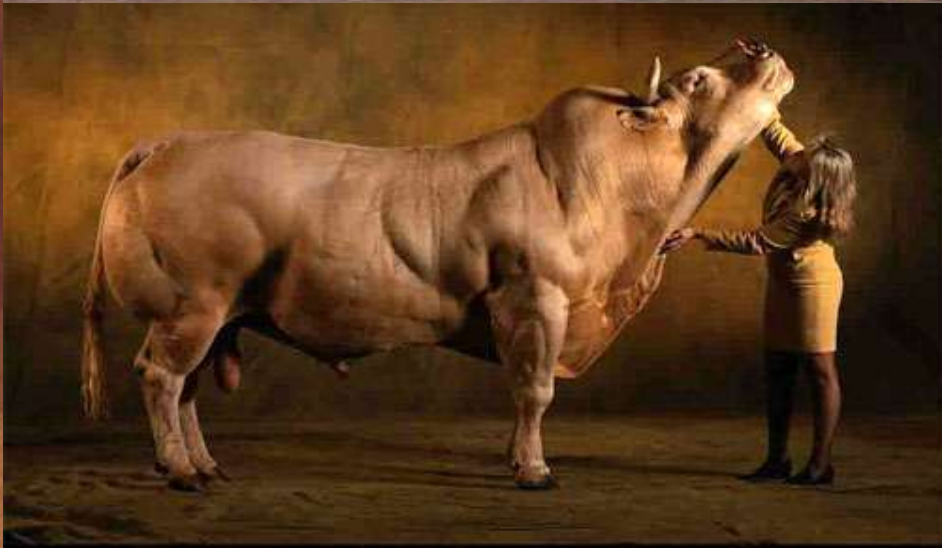
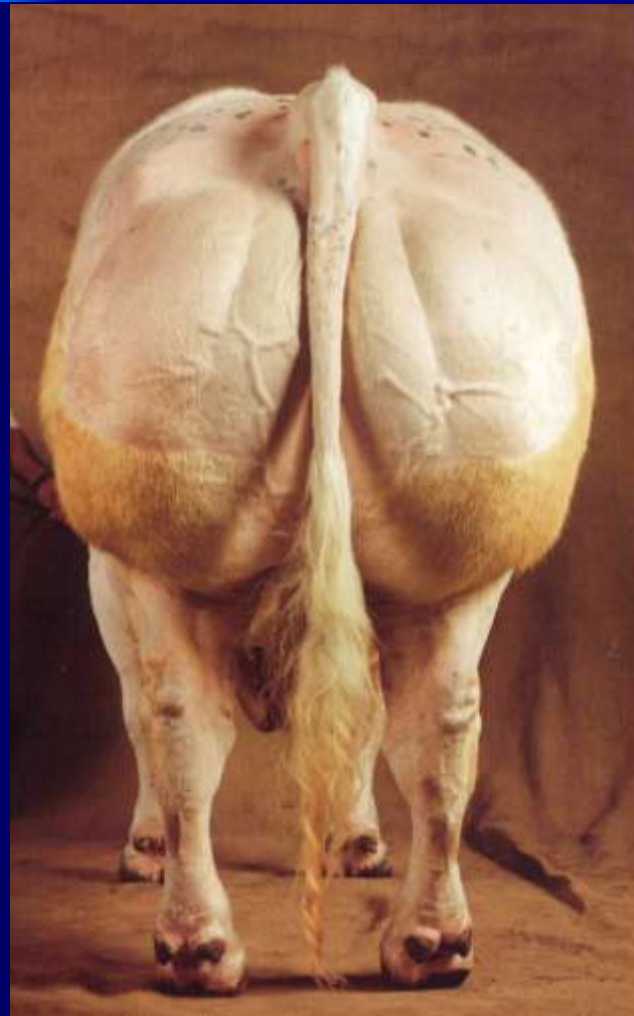


Animal breeders have made amazing progress.....



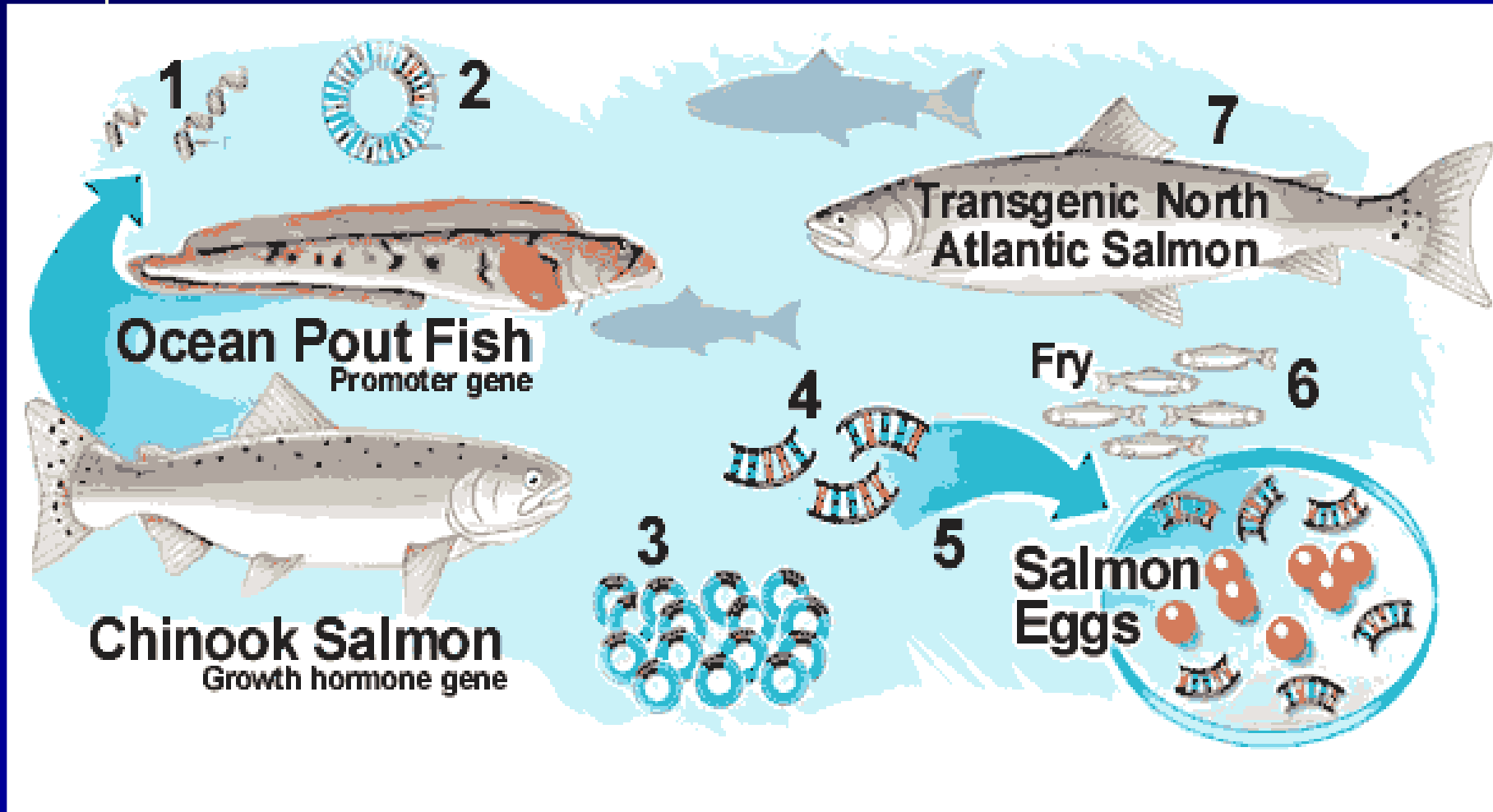


But only by using natural genetic variation..... like myostatin deletion





Let us consider the case of the Aquabounty genetically engineered salmon





What the AquaAdvantage salmon actually looks like....





Retrieved from "AquAdvantage" image search on web Frankenfish



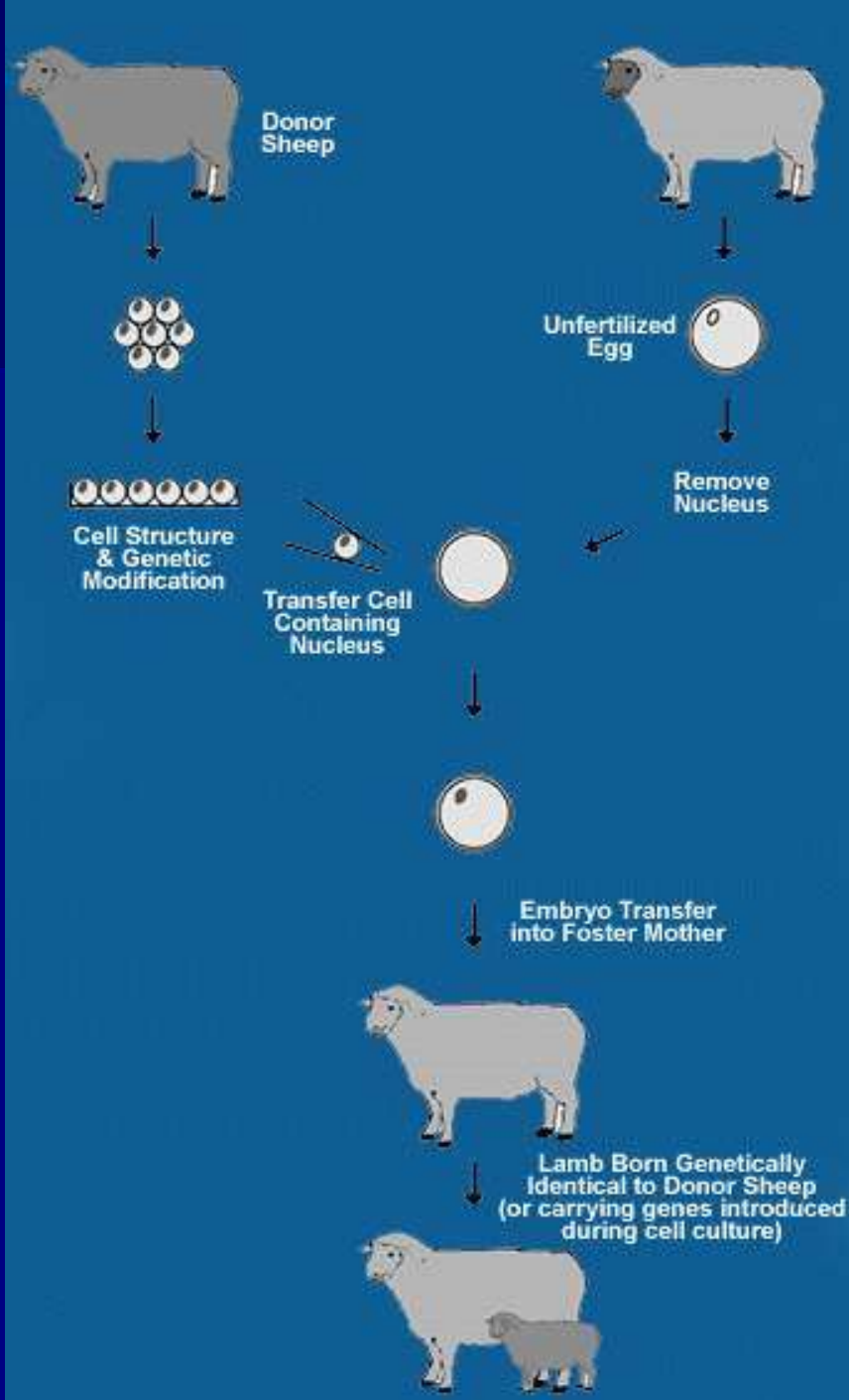


Let's switch gears to cloning





Dolly (1996), the first adult somatic cell nuclear transfer (SCNT) clone





News

Cloning opens door to 'farmyard freaks'

By SEAN POULTER - [More by this author »](#)

Last updated at 08:35am on 11th January 2007

[Comments \(38\)](#)

Moves to clone and genetically modify farm livestock have opened the door to the creation of "Farmyard Freaks", experts have warned.

News that the daughter of a US clone cow has been born on a British farm has moved the issue from science fiction to consumer reality.

A former government adviser has painted a nightmarish picture of "zombie" and fast-growing supersize animals.

Professor Ben Mepham, of Nottingham University, said the impact of bio-engineering, creating GM and cloned animals, is huge.

Factory farming techniques, most commonly used with pigs and chicken, often involve keeping animals confined in cramped conditions.

For pigs, who are highly intelligent, these conditions can lead to stress and aggression.

However, GM scientists are actively investigating ways to remove the stress and aggression gene from animals, effectively turning them into complacent zombies.

The professor said it might become technically possible to produce "animal vegetables", beasts which are "highly



The cloned cow Dundee Paradise

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Femail



Coleen's fashion gaffes exposed

When Coleen McLoughlin announced she was writing a style manual, cynics questioned whether she was ideally placed to dispense advice. Now the Wag has been exposed as ignoring her own advice

Women messy? What rubbish!



This week the Mail's Martin Newland berated women for their

untidiness. Now his wife Benedicte gets her revenge in a stinging rebuke

Kate admits she, too, has gone to drastic measures to lose weight



She has boasted of being proud of her curves and scorned

faddish diets. But now Oscar hopeful Kate Winslet has admitted she was once



I AM: ☐ Female ☐ Male

SEEKING: ☐ Female ☐ Male

FROM:

18

TO:

35

ZIP CODE:

[GO!](#)



Not milk?



not milk?

TELL THE FDA:
KEEP ANIMAL
CLONES OUT
OF OUR FOOD



Cloned Food is Coming. But YOU Can Stop It!

URGENT ACTION: FDA is poised to approve milk and meat from animal clones. Send your comments to FDA today.

 CENTER FOR
FOOD SAFETY

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Food from clones has been a part of our diet for years. Many common fruits (e.g., pears, apples, oranges and lemons) and several vegetables (e.g., potatoes and truffles) are clones.



Not milk?

Got food?

not milk?

TELL THE FDA:
KEEP ANIMAL
CLONES OUT
OF OUR FOOD



MILK
100% CLONED MILK
LAB CLONED WHOLE MILK
100% CLONED MILK

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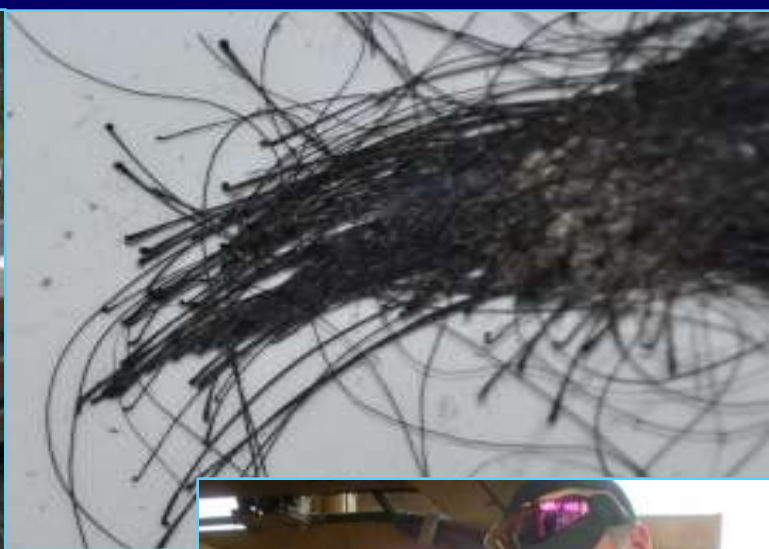
"How do you make use of DNA information in commercial animal production systems?"







Commercial ranch applications





Problems experienced included



Tail should
be here
!????



Genomic selection is enabled by high-throughput genotyping technology

- The sequencing of the bovine genome allowed for the development of a 800,000 marker chip!
- Can simultaneously test 800,000 markers





Whole genome selection - can trace all segments of the genome with markers

THEORY

- Population
- Phenotypes
- Genotypes

Training population = estimate the value of every chromosome fragment contributing variation in a population with phenotypic observations

Prediction = the results of training can then be used to predict the merit of new animals, not contained in the training data set



Genomic selection can help breeders identify animals with superior breeding values at a young age

$$\Delta G = \frac{\text{intensity of selection } \times \text{accuracy of selection}}{(\sqrt{\text{genetic variance in population}} / \text{generation interval})}$$



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