

The Tools That Guide Us to Enhanced Efficiency

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Thinking of Technology



Is this Technology?



DIGITAL SCALE



DIGITAL TIMER



**SPER
CLINICAL
REFRACTOMETER**



**BRIX
REFRACTOMETER**

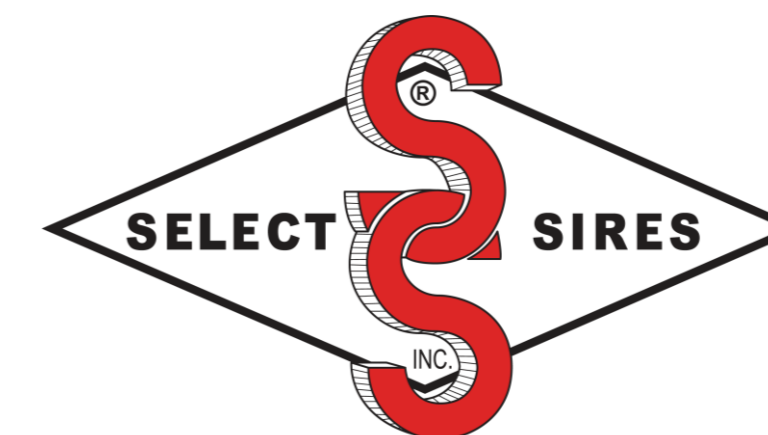
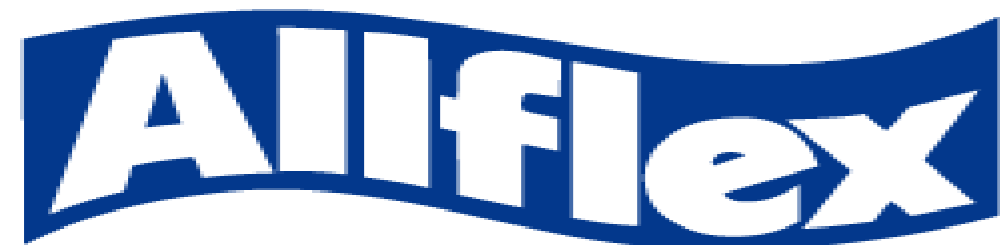


Technology: The practical application of knowledge especially in a particular area

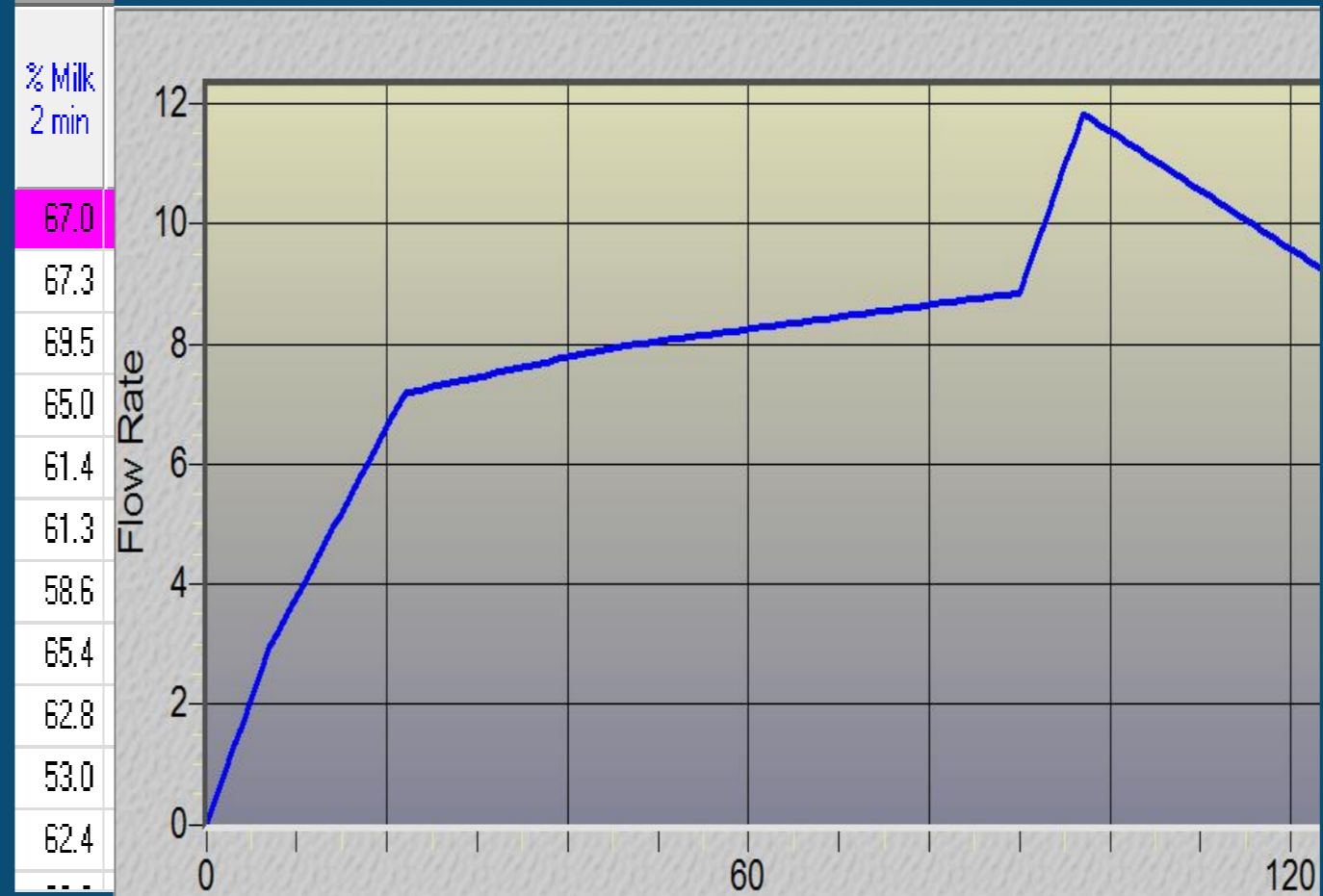




— innovators in agriculture —



Why is Data Important?



Milking procedure
report

Total	305ME		305ME	
	<26500		>=26500	
GMILK	158		503	661
>=1000	8%		27%	35%
	-----	+	-----	
GMILK	661		538	1199
<1000	36%		29%	65%
	=====	==	=====	=====
	819		1041	1860
	44%		56%	100%

Genetic comparison of
milk

Data allows for better management decisions and
COWSISTENCY!



Why Robots?



Labor

- No one wants to milk cows
- Harder to find and keep
- Cost more, 5 years from now?

What is best for the cow?

- Not putting the cow in the holding pen
- Giving them more freedom
- Significant cow behavior change

Consumer Friendly

- Cow deciding what she wants to do
- Consistency
- Safer product



Why Autofeeders?

Before Building

- Environmental change required
- Labor efficiency
- Maybe better growth?

2 Years Later

- Labor efficiency
- 30% increase in growth
- Consumer friendly

Current Protocol

- Calves go in day 1 after colostrum
- Dehorn day 1
- Up to 24 Liters milk per day for 30 days
- Added 30 % Protein 5 % Fat milk balancer
- 54 – 60 calves per pen 2 nipples



THE
FUTURE
OF

BIG DATA

What is in the future?



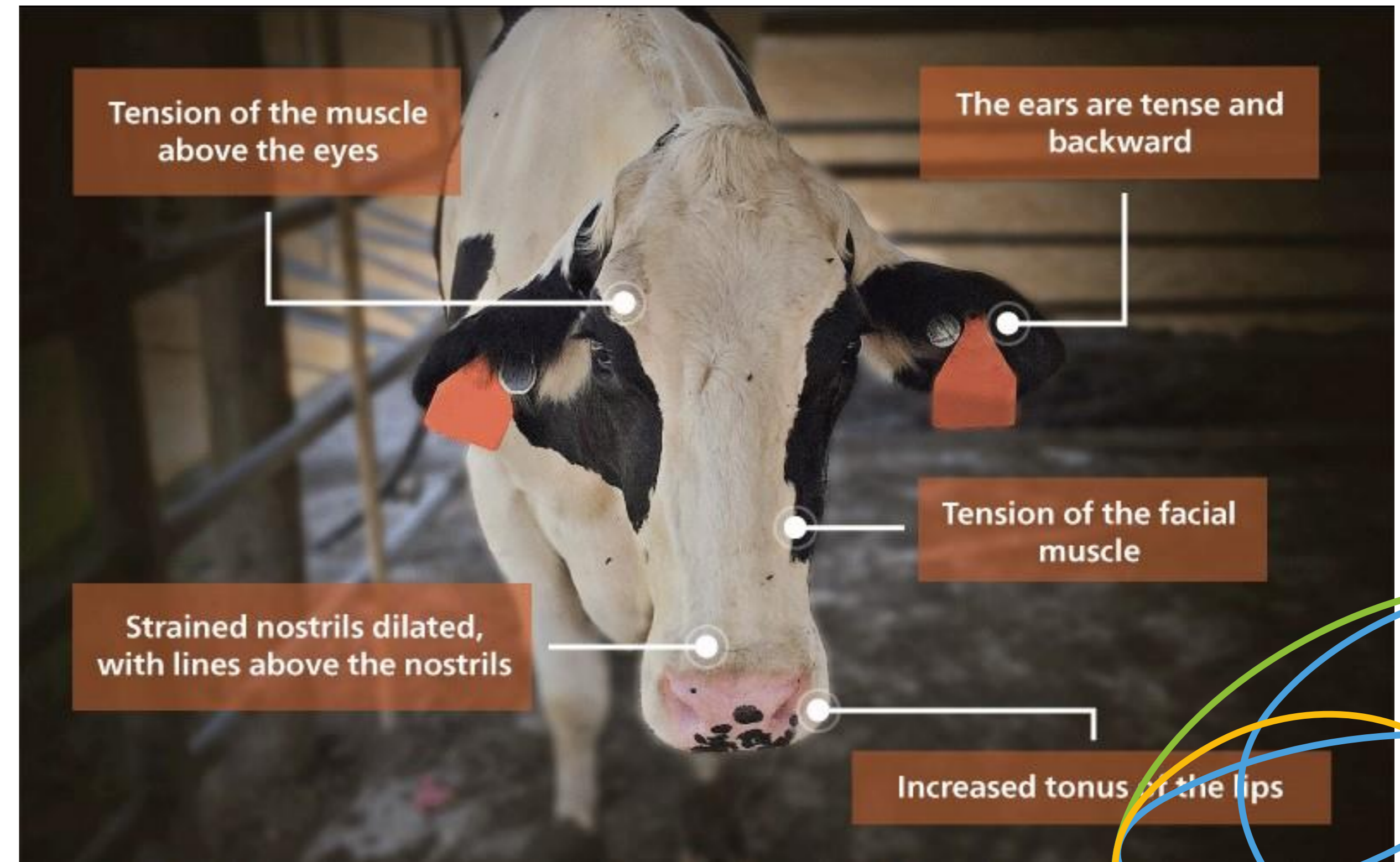
Automated Feeding

- Labor savings
- More consistent
- Cost savings
 - 40 – 50 % of Gross sales



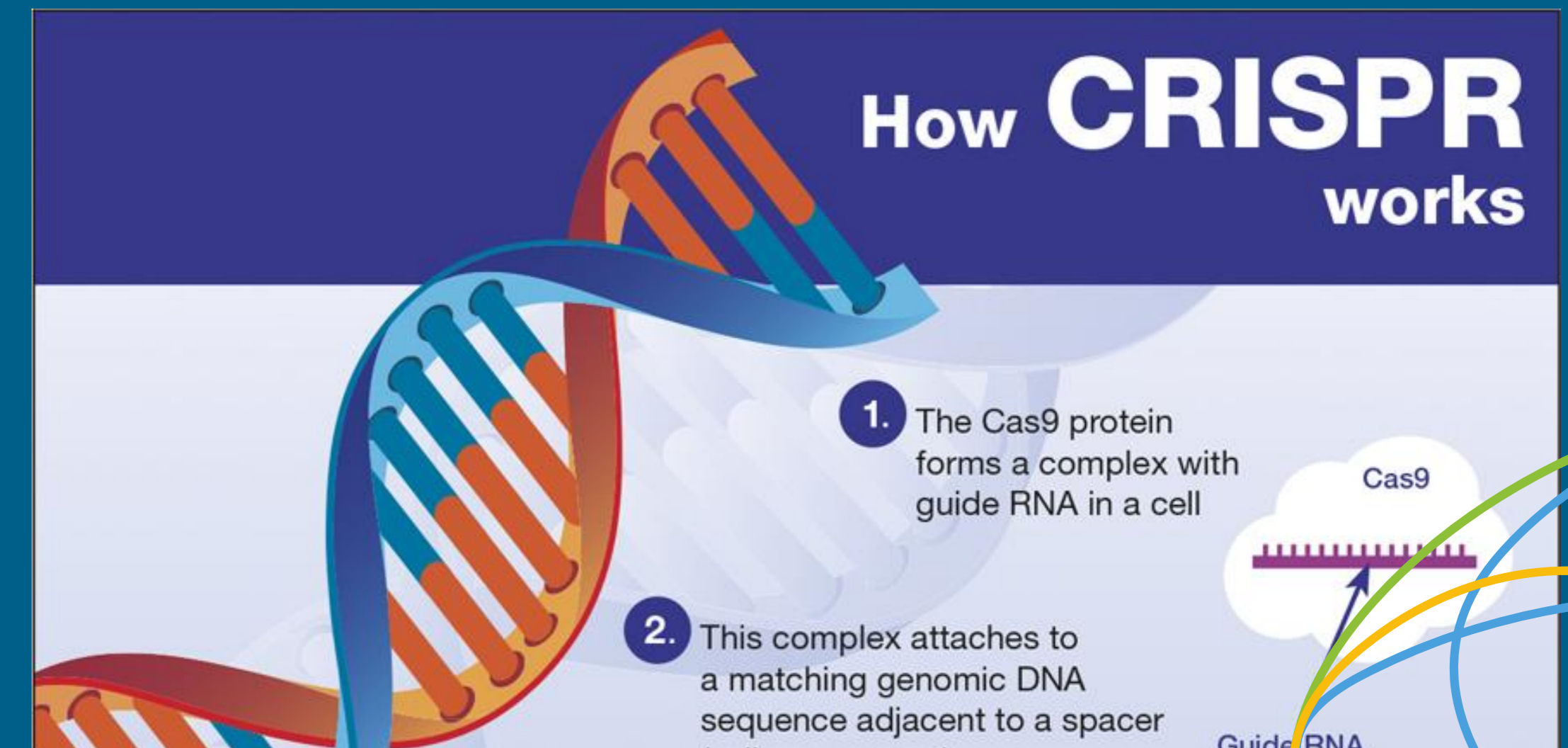
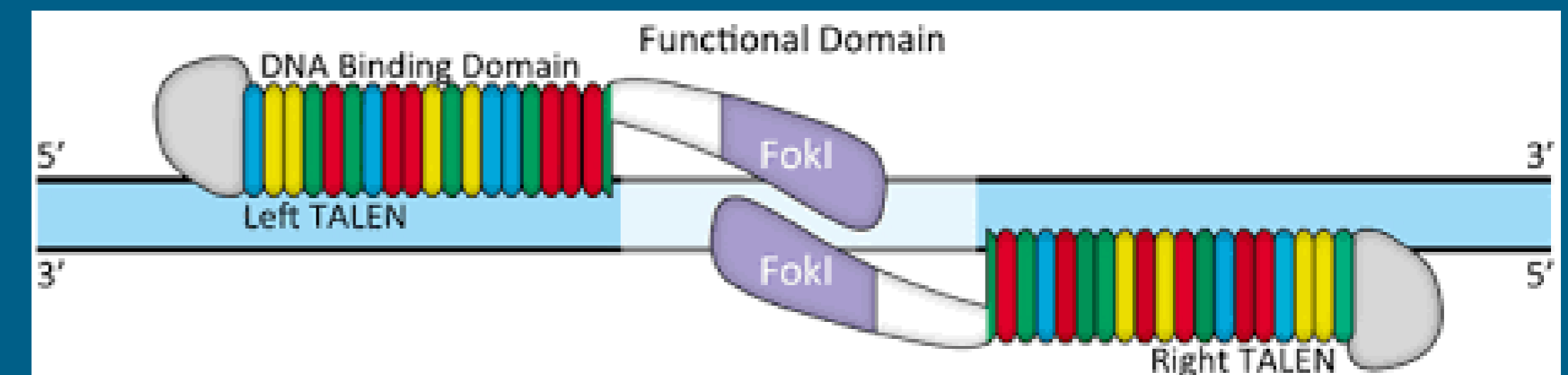
Facial Recognition

- No need for wearable technology
- Cow locator
- Individual feed intake possible
- Lameness scoring
- Endless possibilities



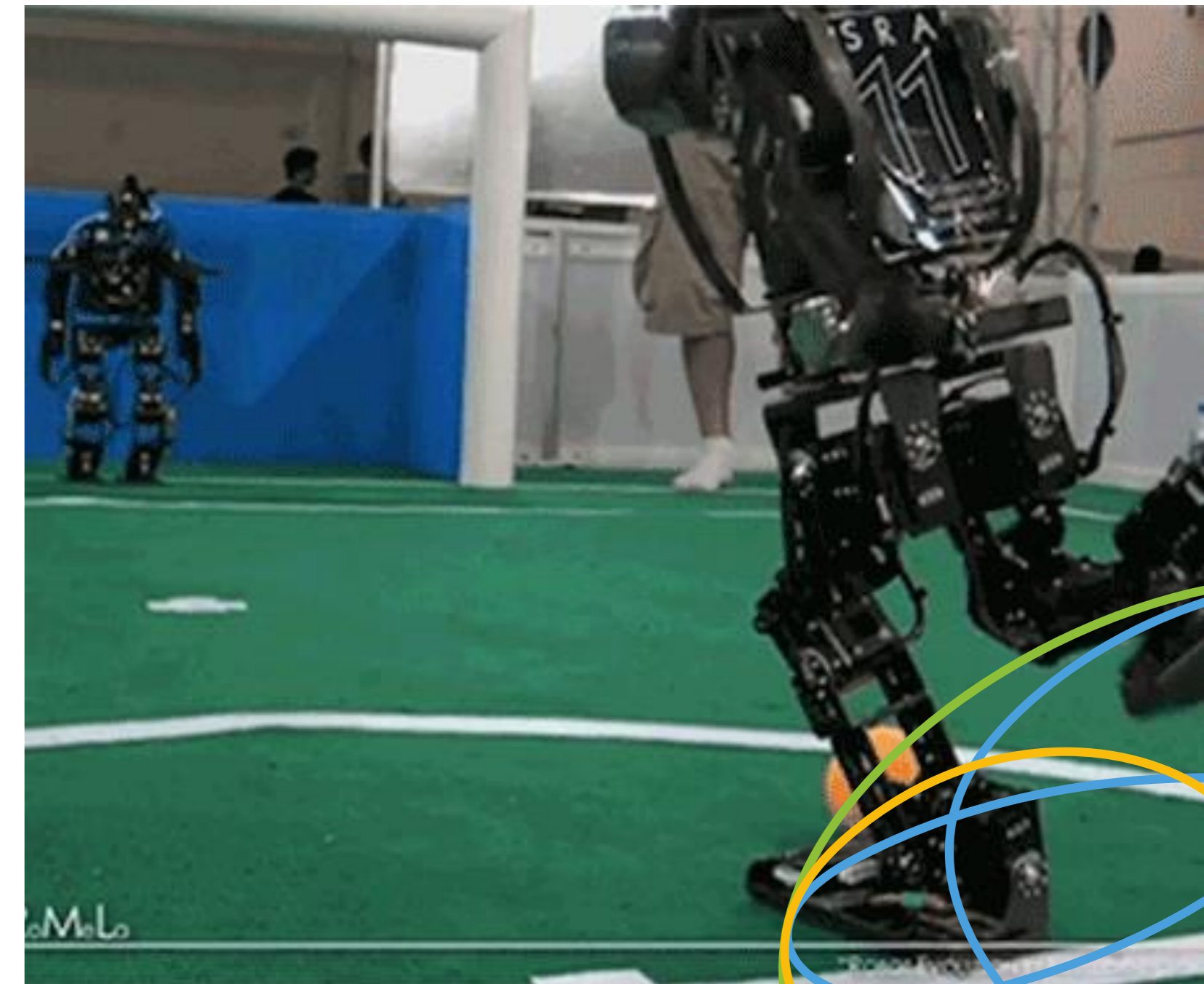
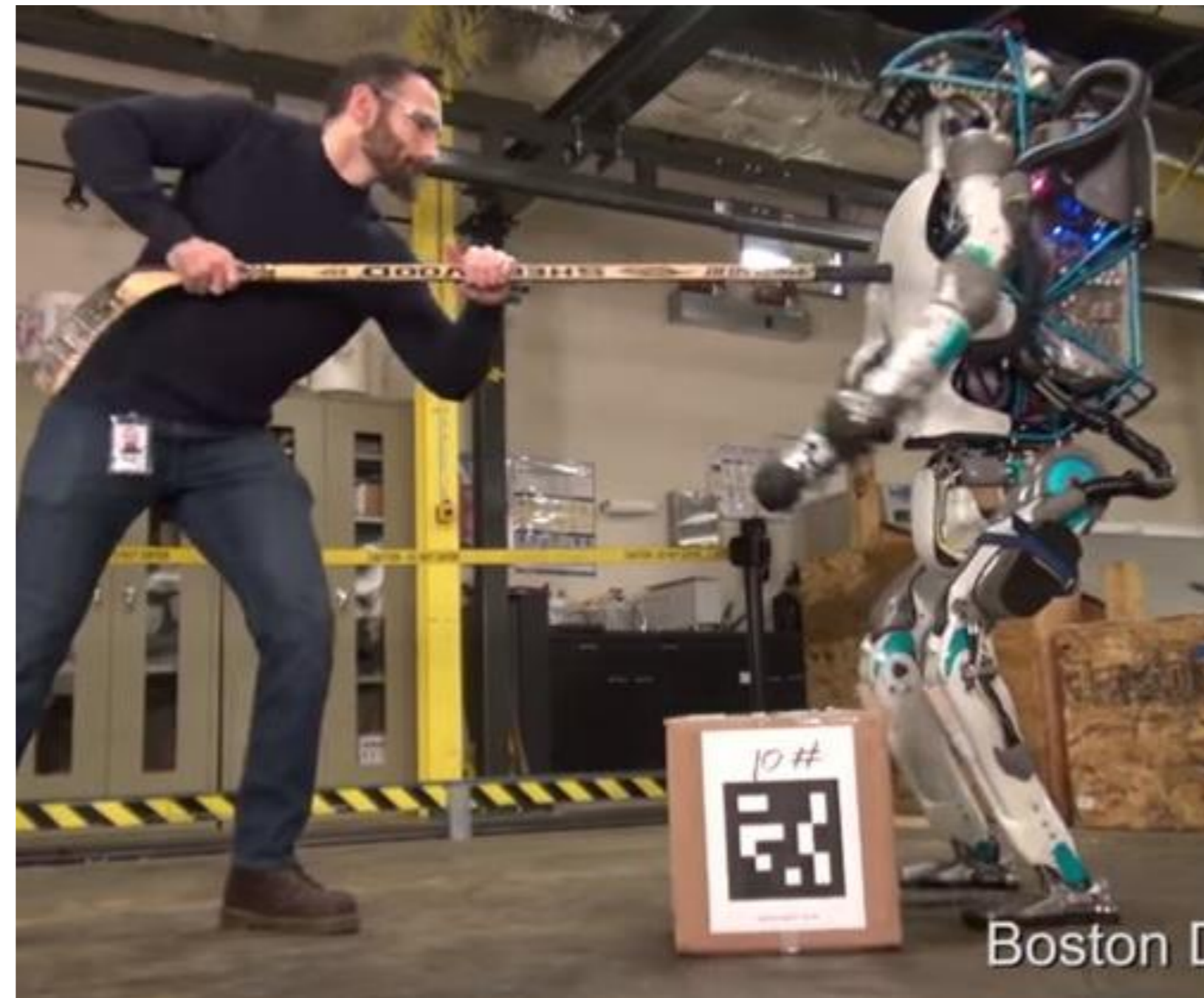
Gene Editing

- **ZFN** – Zinc Finger Nuclease
 - **TALEN** – transcription activator-like effector nuclease
 - **CRISPR** – Clustered regulatory interspersed short palindromic repeat
-
- **Polled Gene** – Eliminate the need for Dehorning
 - **Epigenetics** – Modification of gene expression rather than alteration of the genetic code
 - **Healthier Cows** – More disease resistant
 - **How far can we go?** – How will FDA and consumers react?



Workers of the Future?

- Fetch Cows in robot barns with facial recognition
- Cow pusher in conventional barns
- *Maybe* just future World Cup All-Stars



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Our mission is to supply the highest quality agricultural products in a sustainable way, while creating a positive impact for cows, business, and community.

Thank you! | brian@homesteaddairy.com

