

FUTURE
[SHAPE THE]

DAIRY FORUM 2018

WWW.IDFA.ORG | [#DAIRYFORUM](https://twitter.com/DAIRYFORUM)

[GO]

BACK TO THE FUTURE OF DAIRY: PART 1

DAIRY FORUM 2018

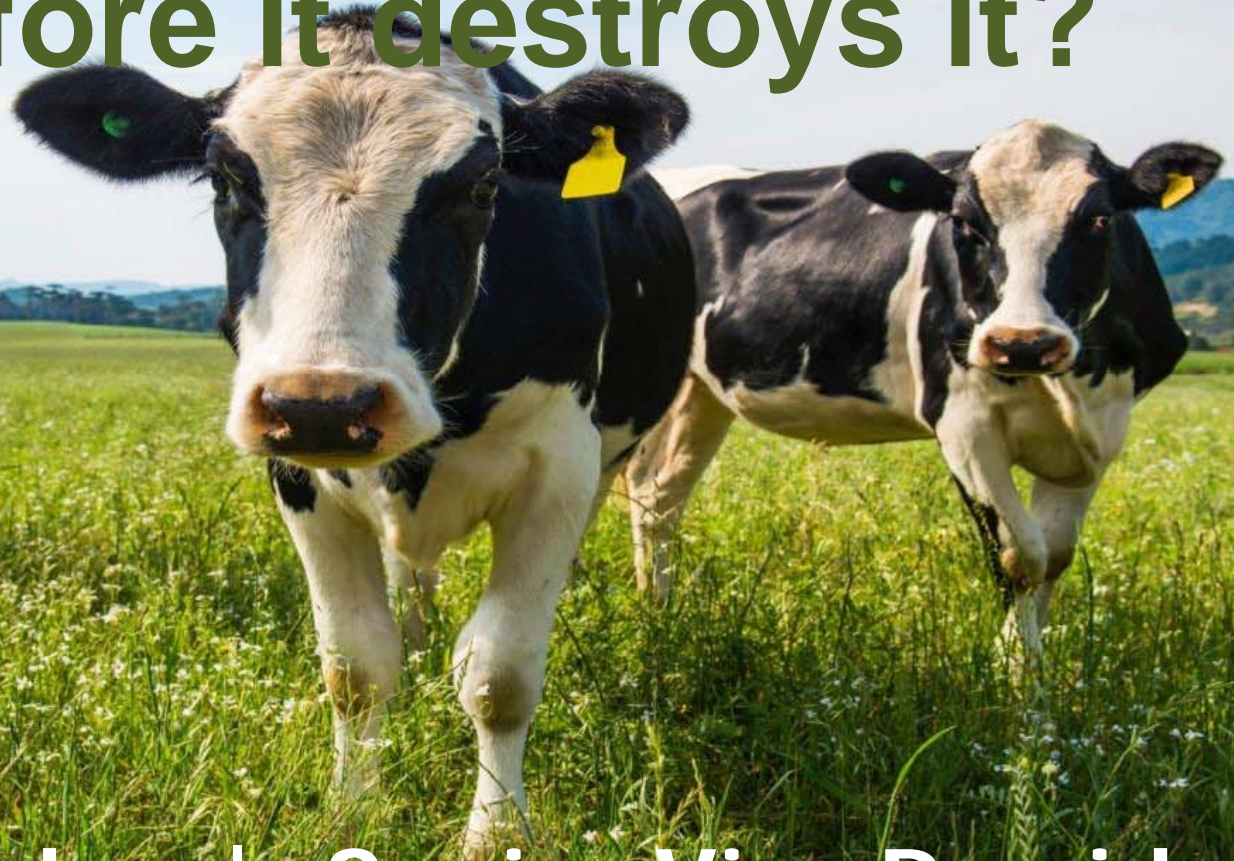
WWW.IDFA.ORG | [#DAIRYFORUM](https://twitter.com/DAIRYFORUM)

Jack Bobo

Senior Vice President,
Chief Communications Officer
Intrexon



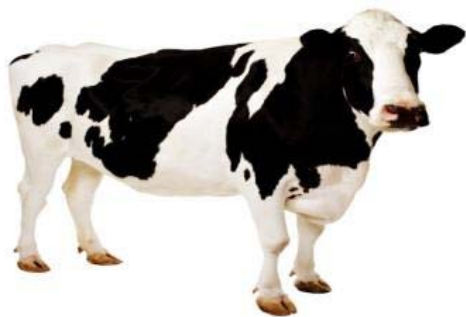
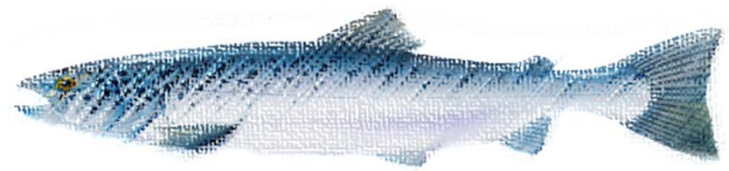
Can agriculture save the planet before it destroys it?



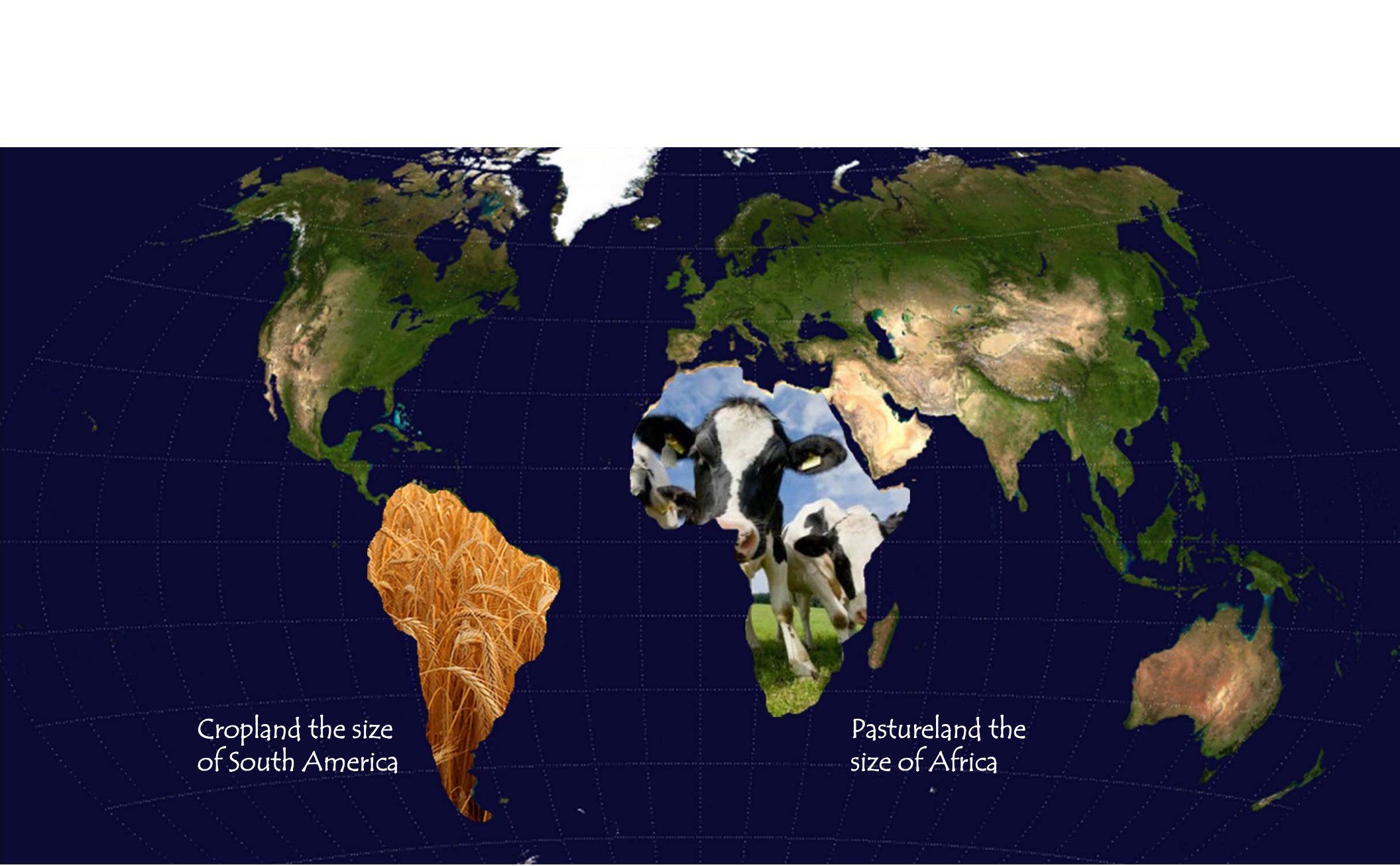
Jack A. Bobo | Senior Vice President

INTREXON®

INTREXON®



INTREXON®

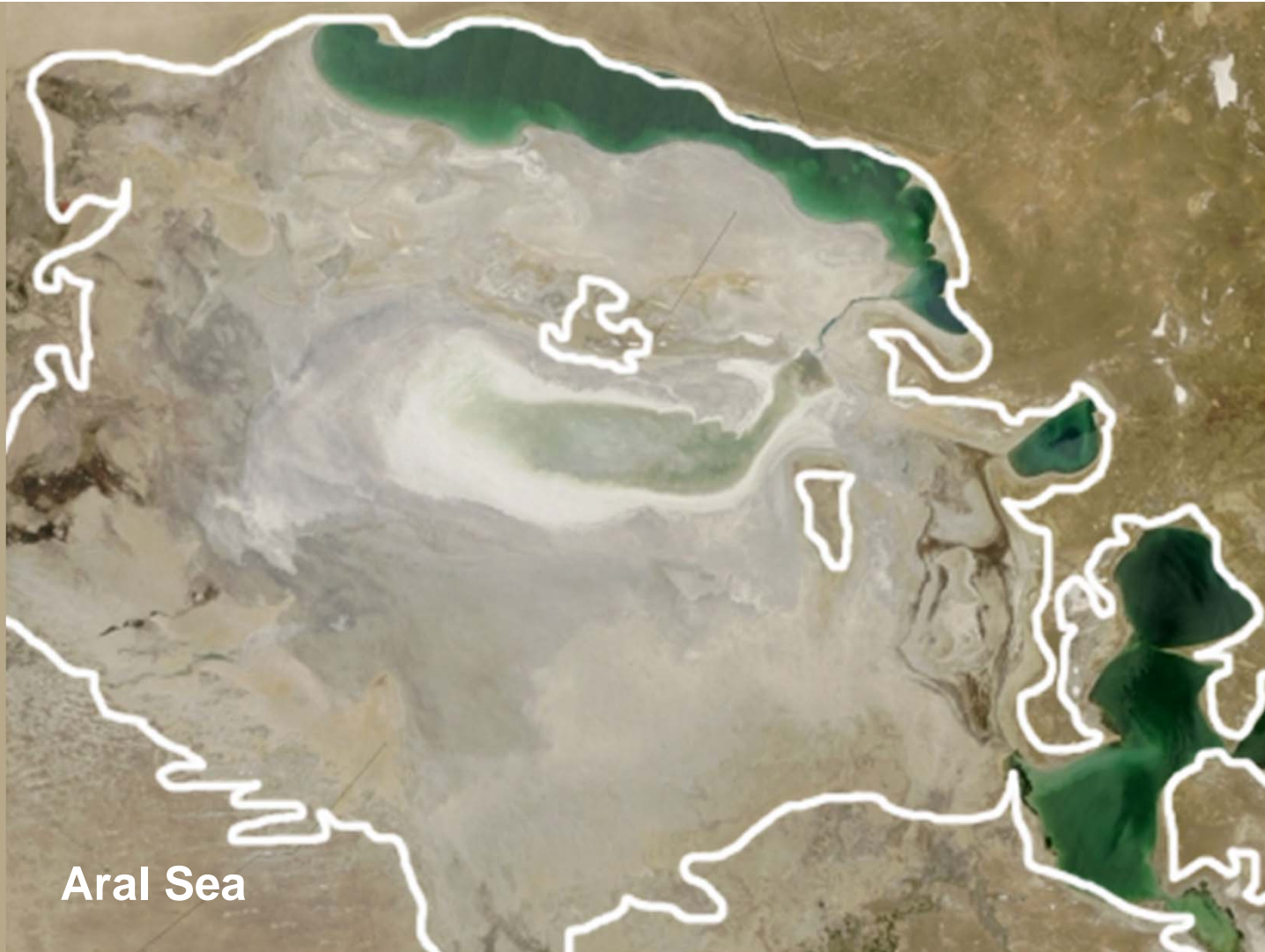


Cropland the size
of South America

Pastureland the
size of Africa

INTREXON®

70% of fresh
water used for
agriculture




Aral Sea

Colorado River runs dry



INTREXON[®]

An aerial photograph showing a landscape with three distinct areas: a green agricultural field on the left, a brown cleared area at the bottom, and a dense forest on the right. The text '25% of all greenhouse gases from agriculture' is overlaid on the green field.

25% of all
greenhouse gases
from agriculture

INTREXON[®]



7B
2015

9B
2050

INTREXON®

**800 million people
will go to bed hungry
today**

**9 million will die
of hunger this year**



HIV
1.7 million

**Road
Accidents**
1.2 million

Malaria
650,000



We will need 60-100% more food by 2050



A person wearing a light blue t-shirt is standing in a field of tall green rice plants. They are holding a black smartphone in their hands, looking at the screen. The background is a clear blue sky. The text "Innovation can solve the problems of agriculture." is overlaid on the right side of the image.

Innovation can solve the
problems of agriculture.

INTREXON[®]

35% Fewer
Greenhouse Gases



Resources Per Bushel of Corn 1980 – 2011



60% Less Erosion



40% Less Land

50% Less Water



40% Less Energy

Competing World Views



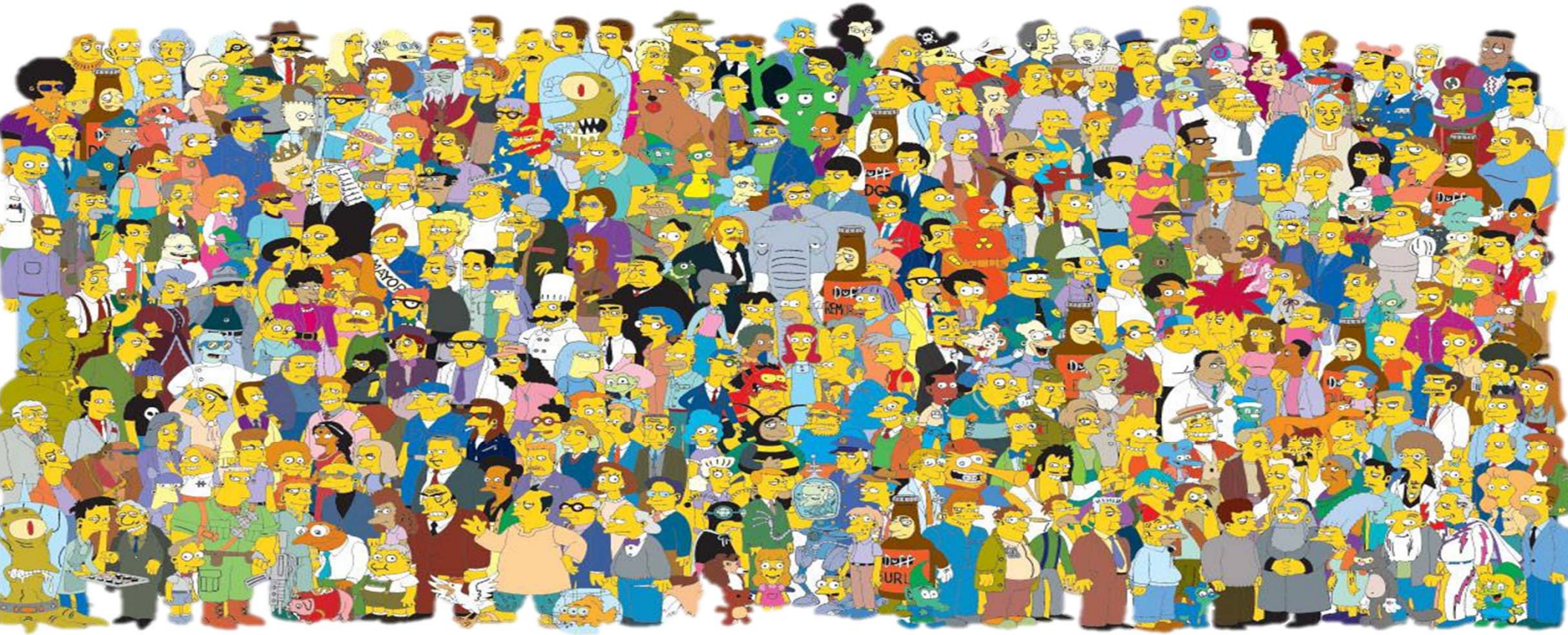
INTREXON[®]

A straw doll with a straw hat and a wooden stick in its mouth, standing in a desert landscape with a city skyline in the background.

Consumers have
never cared more,
nor known less,
how their food
was produced

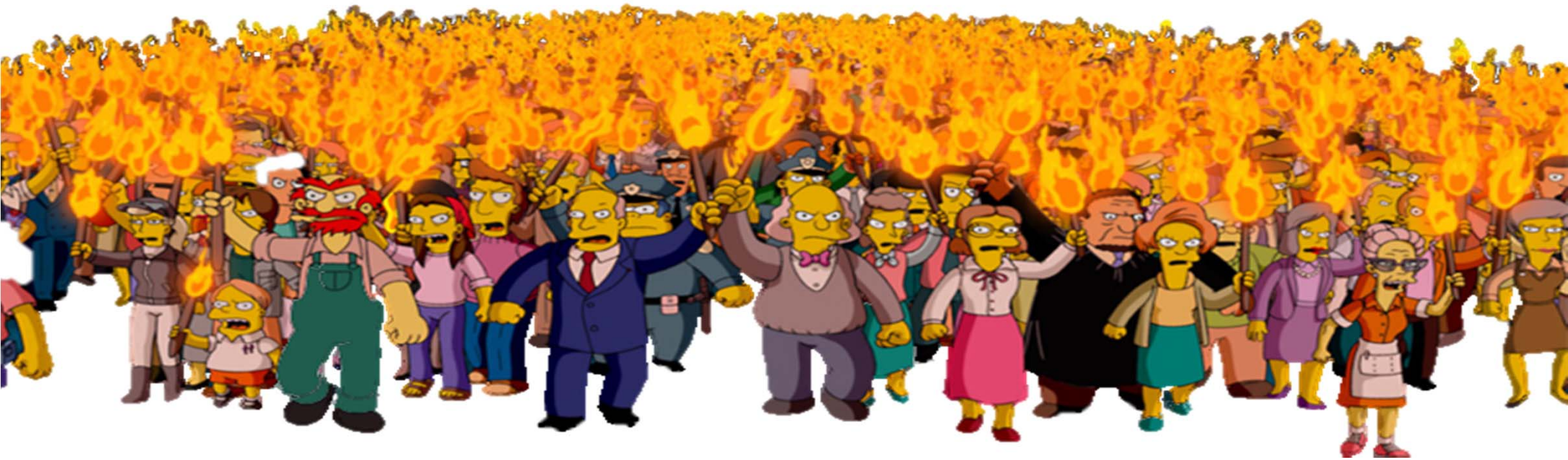
INTREXON[®]

People love innovation



INTREXON®

People love innovation



Almost as much as they despise change

INTREXON[®]

Choices and Consequences

Farming Area



Europe



Production



Production



Farming Area

Brazilian production and deforestation driven by demand in primary export market – Europe.

Brazil




When the public has a false belief
it is more often in the interest of
industry to cater to the belief
than to try eradicate.

Marketing versus reality



By the way, this is dog food

INTREXON[®]

A woman with blonde hair, wearing a light blue short-sleeved shirt, is shown in profile, looking thoughtfully at a grocery store aisle. Her hand is resting on her chin. The background is filled with blurred shelves of various products, creating a sense of being in a large retail environment.

Skeptical Consumers

INTREXON[®]

There is no failure
to innovate in
agriculture. There is
a failure to
communicate.



Hazard
x
Exposure
=
Risk

INTREXON[®]

Hazard x Media Exposure = Perception of Risk



The Tweet-ification of Risk

INTREXON[®]

When to communicate?

Risk High



Media Attention Low

Risk Low

**GMO
OMG**

Media Attention High

What to communicate?

Language that turns people off:

- Amount is miniscule

- Research shows it's safe

- Let us feed the world

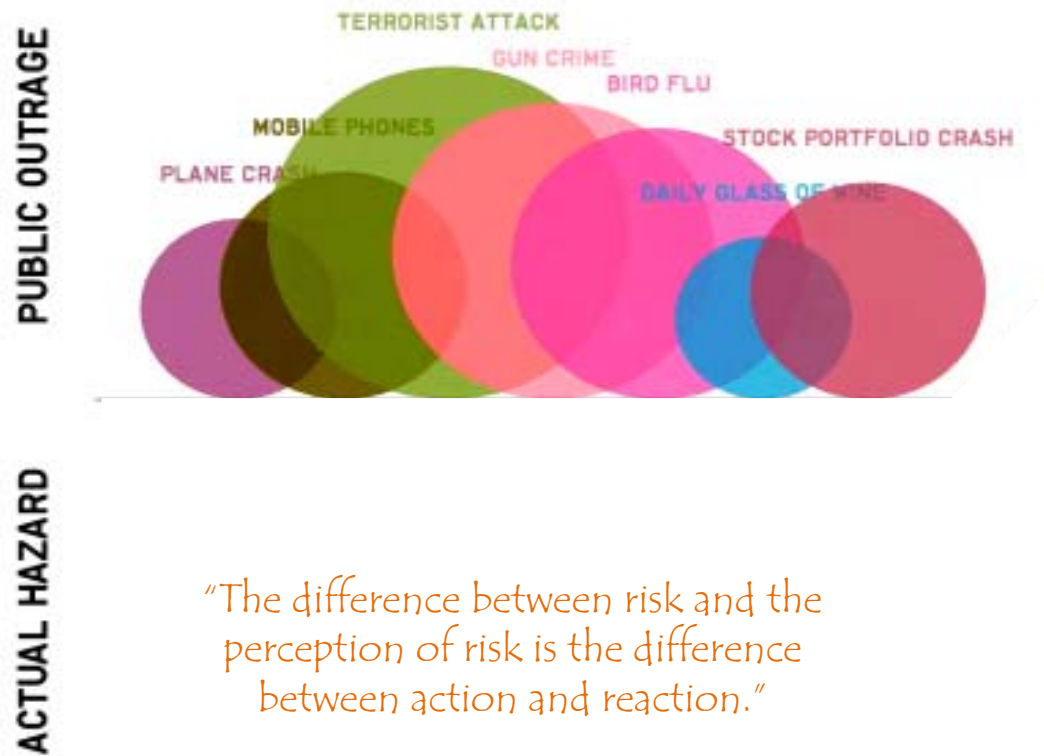
- Keeps prices low

- Better for the environment

Lesson: If you lead with the science,
you will lose with the science



Risk in Context



"The difference between risk and the perception of risk is the difference between action and reaction."

WHERE WE DONATE VS. DISEASES THAT KILL US

| | |
|--|---|
| Heart Disease Jump Rope for Heart (2013) | Suicide Out of Darkness Overnight Walk (2014) |
| Diabetes Step Out: Walk to Stop Diabetes (2013) | HIV / AIDS Ride to End Aids (2013) |
| Motor Neuron Disease (including ALS) ALS Ice Bucket Challenge (2014) | Breast Cancer Komen Race for the Cure (2012) |
| Chronic Obstructive Pulmonary Disease Fight for Air Climb (2013) | Prostate Cancer Movember (2013) |

How do we
demystify
food science
and food
production?



Food doesn't have to be scary
...and neither does science



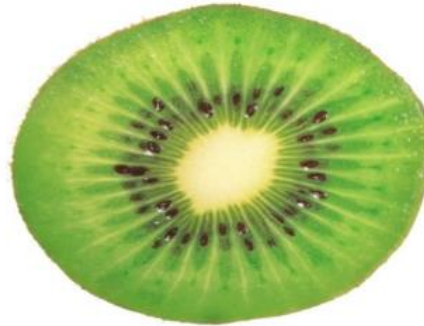
INTREXON[®]

Has anybody eaten a Chinese gooseberry?



INTREXON[®]

AN ALL-NATURAL KIWI



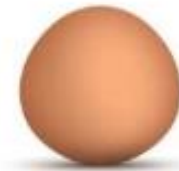
AN ALL-NATURAL BANANA



INGREDIENTS: WATER (75%), **SUGARS** (12%) (GLUCOSE (40%), FRUCTOSE (40%), SUCROSE (2%), MALTOS (1%), STARCH (8%), FIBRE E460 (3%), **AMINO ACIDS** (<1%) (GLUTAMIC ACID (19%), ASPARTIC ACID (16%), HISTIDINE (11%), LEUCINE (7%), LYSINE (5%), PHENYLALANINE (4%), ARGININE (4%), VALINE (4%), ALANINE (4%), SERINE (4%), GLYCINE (3%), THREONINE (3%), ISOLEUCINE (3%), PROLINE (3%), TRYPTOPHAN (1%), CYSTINE (1%), TYROSINE (1%), METHIONINE (1%), **FATTY ACIDS** (1%) (PALMITIC ACID (30%), OMEGA-6 FATTY ACID: LINOLEIC ACID (14%), OMEGA-3 FATTY ACID: LINOLENIC ACID (8%), OLIC ACID (7%), PALMITOLEIC ACID (3%), STEARIC ACID (2%), LAURIC ACID (1%), MYRISTIC ACID (1%), CAPRIC ACID (<1%)), ASH (<1%), PHYTOSTEROLS, E315, OXALIC ACID, E300, E306 (TOCOPHEROL), PHYLOQUINONE, THIAMIN, **COLOURS** (YELLOW-ORANGE E101 (RIBOFLAVIN), YELLOW-BROWN E160a), **FLAVOURS** (3-METHYLBUT-3-YL ETHANOATE, 2-METHYLBUTYL ETHANOATE, 2-METHYLPROPAN-1-OL, 3-METHYLBUTYL-1-OL, 2-HYDROXY-3-METHYLETHYL BUTANOATE, 3-METHYLBUTANAL, ETHYL HEXANOATE, ETHYL BUTANOATE, PENTYL ACETATE), E1510, NATURAL RIPENING AGENT (ETHENE GAS).

INGREDIENTS: AQUA (83.1%), **SUGARS** (9.0%) (FRUCTOSE (48%), GLUCOSE (46%), MALTOS (2%), GALACTOSE (2%), SUCROSE (2%)), FIBRE E460 (3.0%), ASH, **AMINO ACIDS** (1.1%) (GLUTAMIC ACID (17%), ASPARTIC ACID (12%), ARGININE (8%), LYSINE (6%), GLYCINE (6%), LEUCINE (6%), VALINE (5%), ISOLEUCINE (5%), ALANINE (5%), SERINE (5%), PHENYLALANINE (4%), PROLINE (4%), THREONINE (4%), HISTIDINE (3%), CYSTINE (3%), TYROSINE (3%), METHIONINE (3%), TRYPTOPHAN (1%)), **PRESERVATIVES** (E236, E296) **FATTY ACIDS** (<1%) (OMEGA-6 FATTY ACID: OCTADECADIENOIC ACID (68%), OCTADECANOIC ACID (13%), OMEGA-3 FATTY ACID: OCTADECATRIENOIC ACID (12%), HEXADECANOIC ACID (4%), OCTADECANOIC ACID (3%)), **COLOURS** (E160a, E161b, E161c, E140, E161d, E161e, E161g, E161h) E300, E307, FOLATE, CHOLINE, BETAINE, PHYTOSTEROLS, **FLAVOURS** (2,5-DIMETHYL-4-HYDROXY-3(2H)-FURANONE, 3-HYDROXY-BETA-DAMASCONE, 4-VINYLGUAIACOL, (Z)-3-HEXEN-1-OL, UNRIPE FLAVOUR: (E)-2-HEXENAL, RIPE FLAVOUR: ETHYL BUTANOATE, METHYL ETHANOATE, METHYL BUTANOATE, ETHYL BUTANOATE, METHYL HEXANOATE), E210.

INGREDIENTS OF AN ALL-NATURAL EGG



INGREDIENTS: AQUA (75.8%), **AMINO ACIDS** (12.6%) (GLUTAMIC ACID (14%), ASPARTIC ACID (11%), VALINE (9%), ARGONINE (8%), LEUCINE (7%), LYSINE (7%), SERINE (7%), PHENYLALANINE (4%), ALANINE (3%), ISOLEUCINE (3%), PROLINE (3%), TYROSINE (3%), THREONINE (3%), GLYCINE (3%), HISTIDINE (3%), METHIONINE (3%), CYSTINE (2%), TRYPTOPHAN (1%), **FATTY ACIDS** (8.8%) (OCTADECENOIC ACID (45%), HEXADECANOIC ACID (33%), OCTADECANOIC ACID (13%), EICOSATETRAENOIC ACID (3%), EICOSANOIC ACID (2%), DODECANOIC ACID (1%), TETRACOSANOIC ACID (1%), OCTANOIC ACID (<1%), DECANOIC ACID (<1%), DODECANOIC ACID (<1%), TETRADECANOIC ACID (<1%), PENTADECANOIC ACID (<1%), HEPTADECANOIC ACID (<1%), TETRACENOIC ACID (<1%), HEXADECENOIC ACID (<1%), EICOSENOIC ACID (<1%), DODECENOIC ACID (<1%), OMEGA-6 FATTY ACID: OCTADECADIENOIC ACID (12%), OMEGA-3 FATTY ACID: OCTADECATRIENOIC ACID (<1%), EICOSAPENTAENOIC ACID (8%), (<1%), OMEGA-3 FATTY ACID: DODECAHEXAENOIC ACID (DHA) (<1%), **SUGARS** (8.8%) (GLUCOSE (30%), SUCROSE (15%), FRUCTOSE (15%), LACTOSE (15%), MALTOS (15%), GALACTOSE (15%)), **COLOUR** (E160a, E160b, E101, **FLAVOURS** (PHENYLACETALDEHYDE, DODECA-2-ENAL, HEPTA-2-ENAL, HEXADECANAL, OCTADECANAL, PENTAN-2-ONE, BUTAN-2-ONE, ACETALDEHYDE, FORMALDEHYDE, ACETONE, SHELL (E170), ALSO CONTAINS BENZENE & BENZENE DERIVATIVES, ESTERS, FURANS, SULFUR-CONTAINING COMPOUNDS AND TERPENES).

Jameskennedymonash.wordpress.com

INTREXON [®]

How do you get a seedless watermelon?



Treat seeds with colchicine
(natural plant extract)

Highly toxic
and mutagenic



Three sets of
chromosomes
Sterile seedless
melon



INTREXON[®]

Perception



“The eye sees only what the mind is prepared to comprehend.”

— *Robertson Davies*

INTREXON[®]

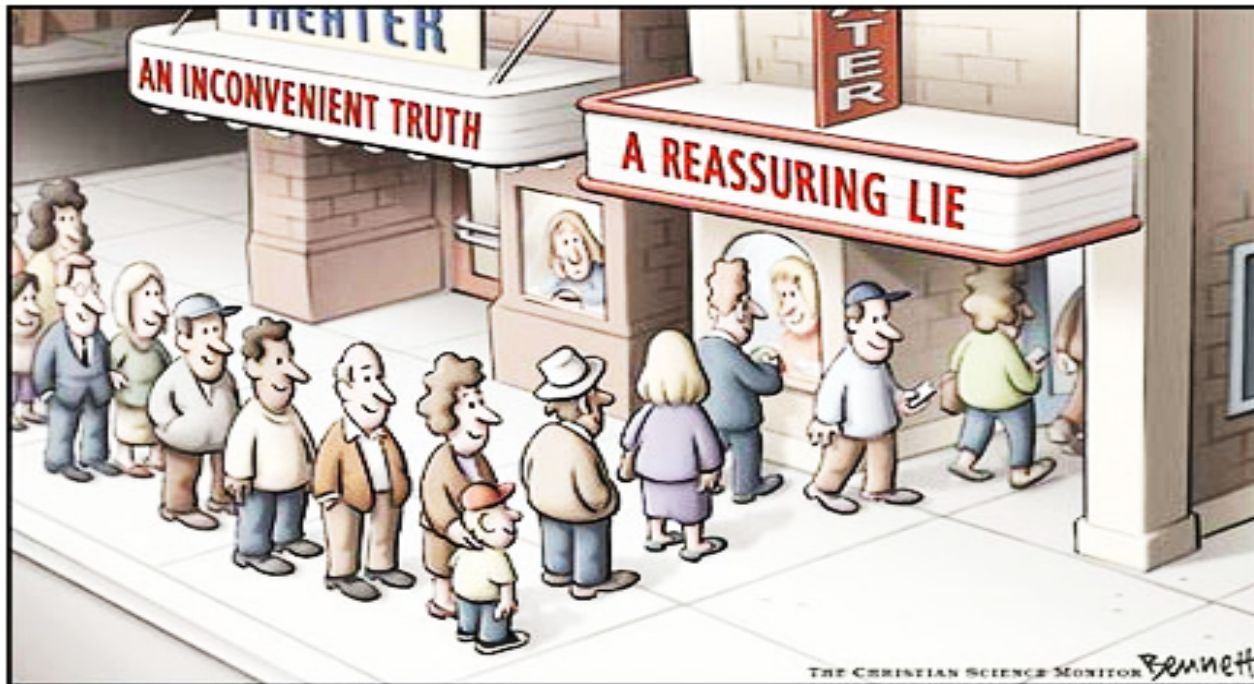
Bat and Ball Problem



Jack A. Bobo | Senior Vice President | Intrexon

Confirmation Bias

The tendency to search for, interpret, focus on and remember information in a way that confirms one's preconceptions.



Availability Heuristic

The tendency to overestimate the likelihood of events with greater "availability" in memory.





The biggest threat to the future
of the planet is not agriculture.

It is our inability to work together to apply the
solutions we have at hand to the problems we all face.

Scientist as Storyteller

Personalize
Acknowledge
Connect
Build Trust

Only then can we talk about the science



INTREXON[®]

Framing



Health and Safety



INTREXON[®]



SALON

MARCH 20, 2015

New York's trendiest restaurant is
serving you garbage (and it's awesome)

Sustainability

INTREXON[®]

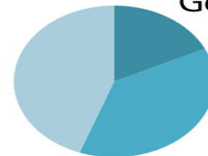
waste
whole
Waste

*Survey
**Donor
***Recy
Source
condu

100%

Gen

Generated 44.3 billion lbs of food waste



Generated 3.8 billion lbs of food waste



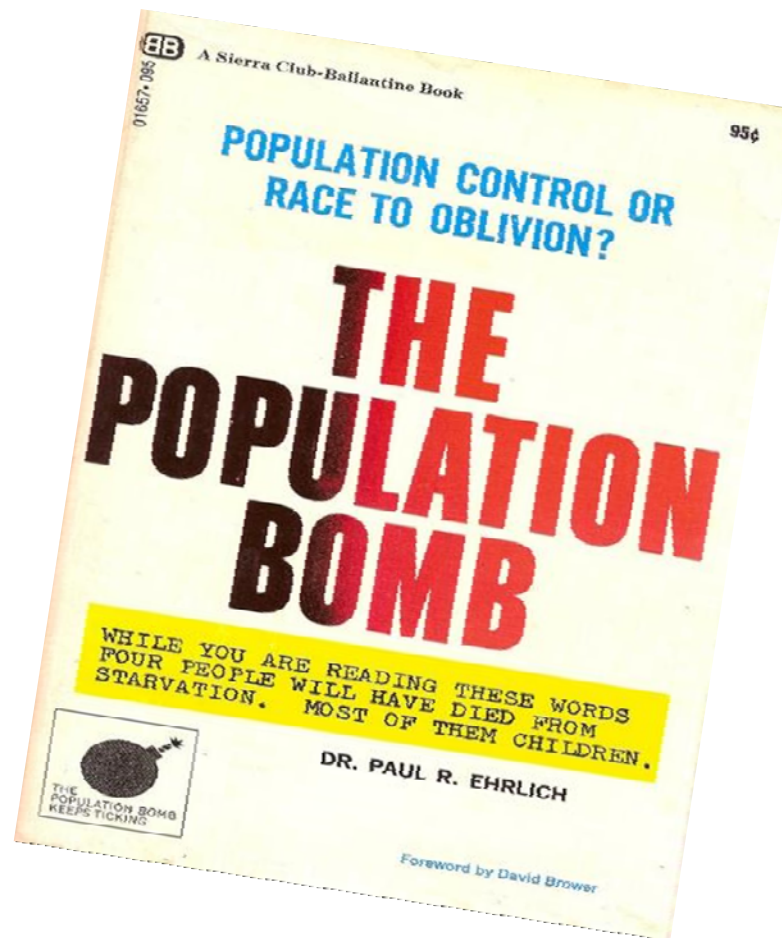


INTREXON[®]



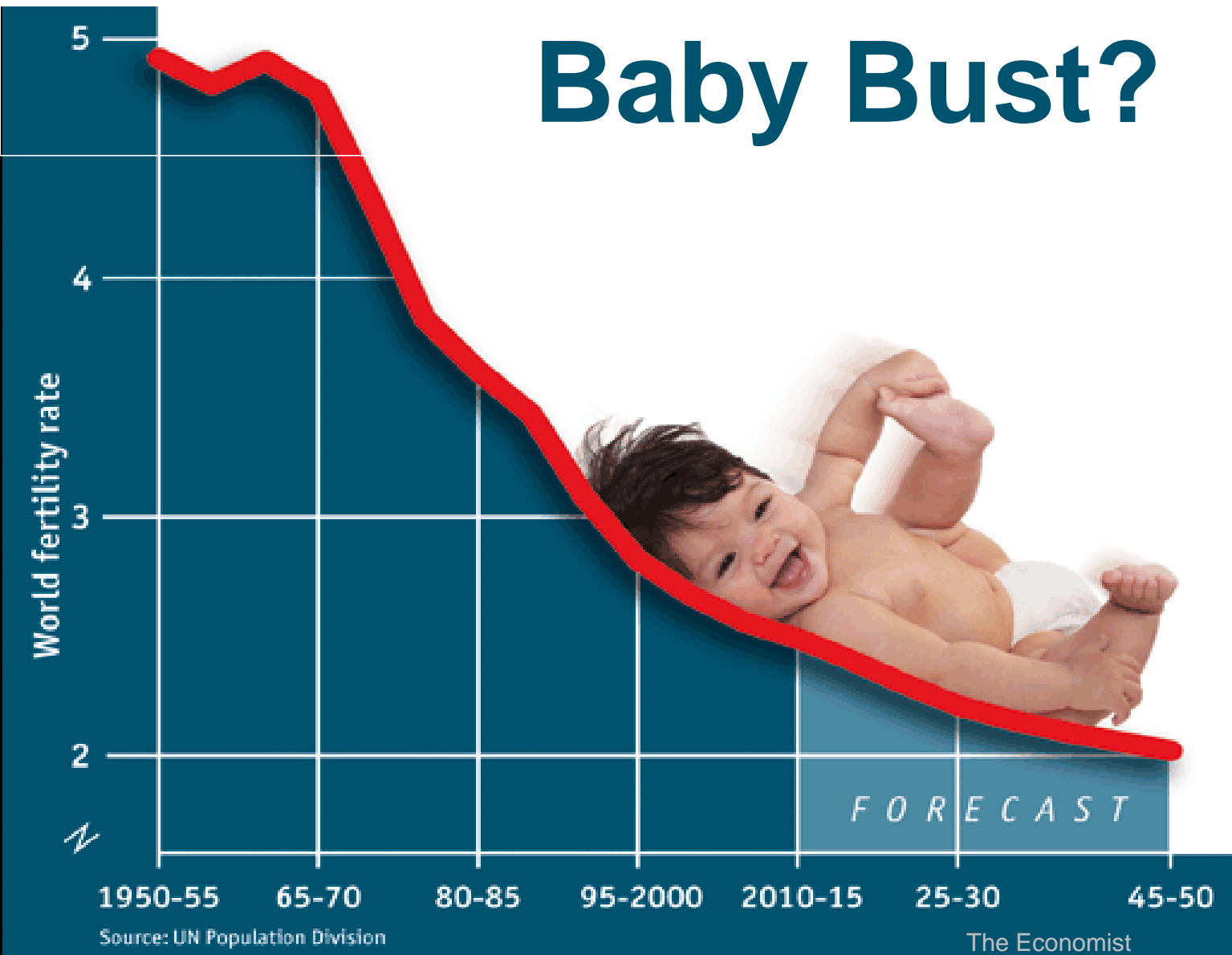
INTREXON[®]

Baby Boom?



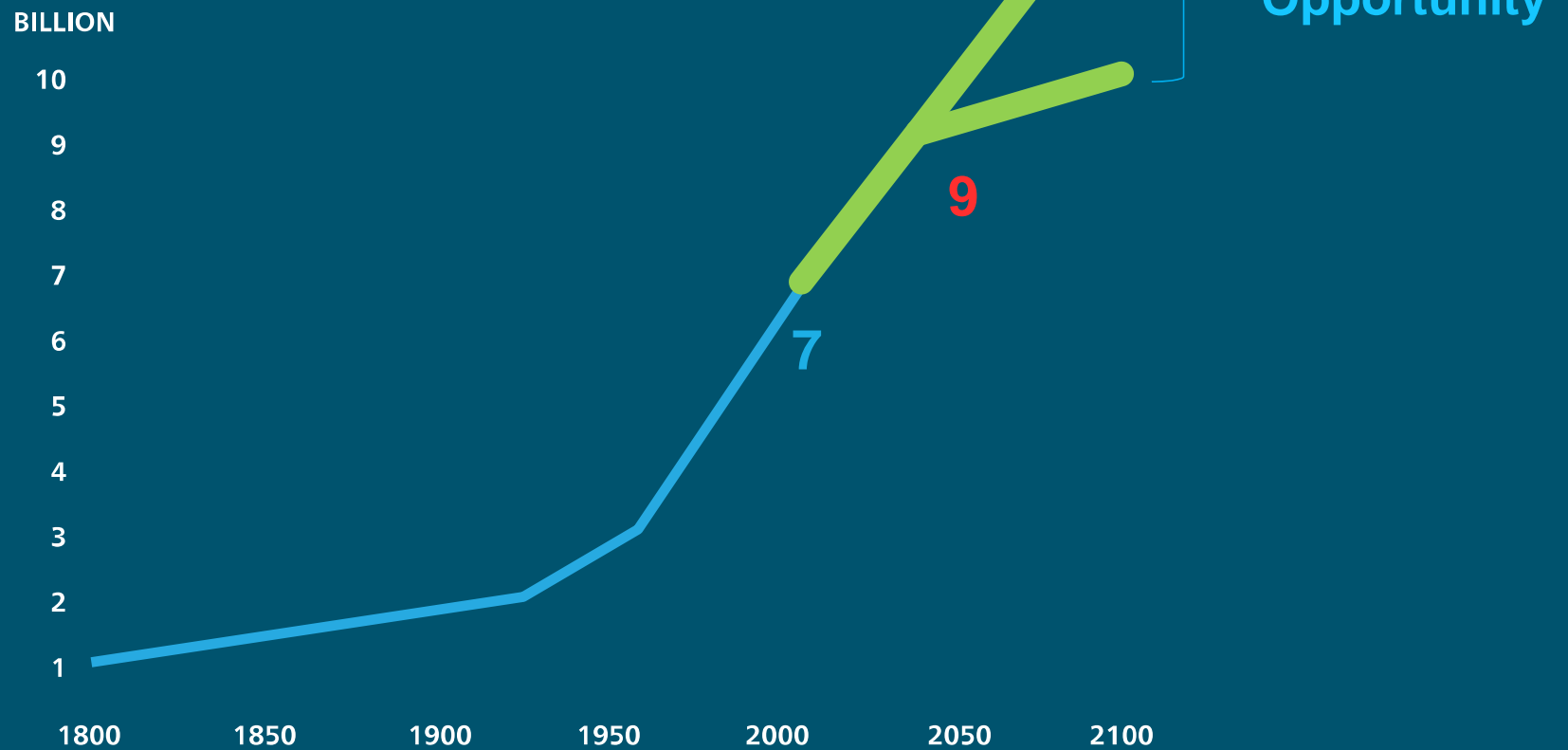
INTREXON®

Baby Bust?



INTREXON[®]

Why Now Matters



The next 35 years is not just the most important 35 years
in the history of agriculture.

It is the most important 35 years there will ever be
in the history of agriculture.



Jack A. Bobo

Senior Vice President

jbobo@Intrexon.com

www.dna.com



[GO]

BACK TO THE FUTURE OF DAIRY: PART 1

DAIRY FORUM 2018

WWW.IDFA.ORG | [#DAIRYFORUM](https://twitter.com/DAIRYFORUM)

FUTURE
[SHAPE THE]

DAIRY FORUM 2018

WWW.IDFA.ORG | [#DAIRYFORUM](https://twitter.com/DAIRYFORUM)