THE PORK SHOW

CONFERENCES • EXHIBITION • CELEBRATIONS

6th edition

FOOD 5.0

How We Feed The Future

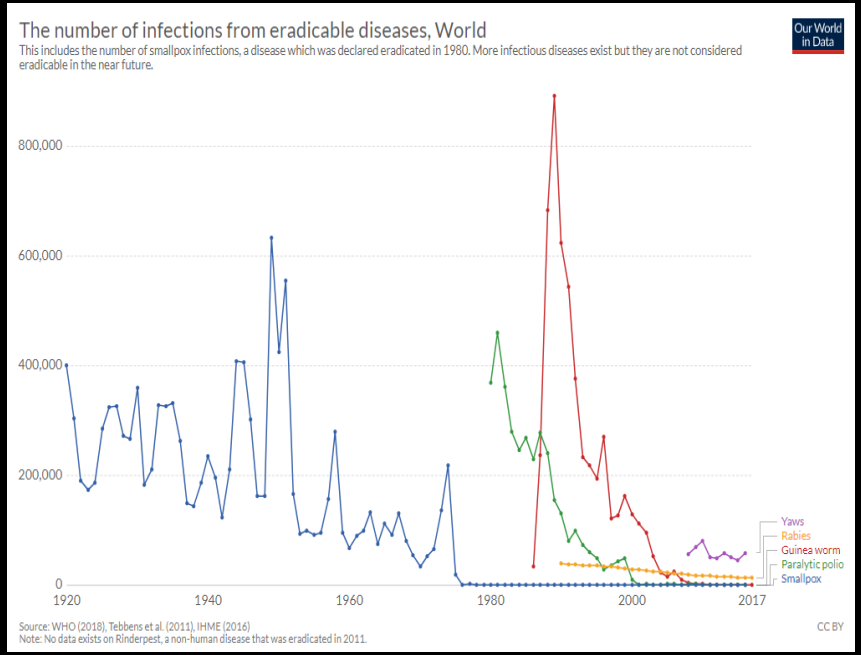
Just 100 years ago

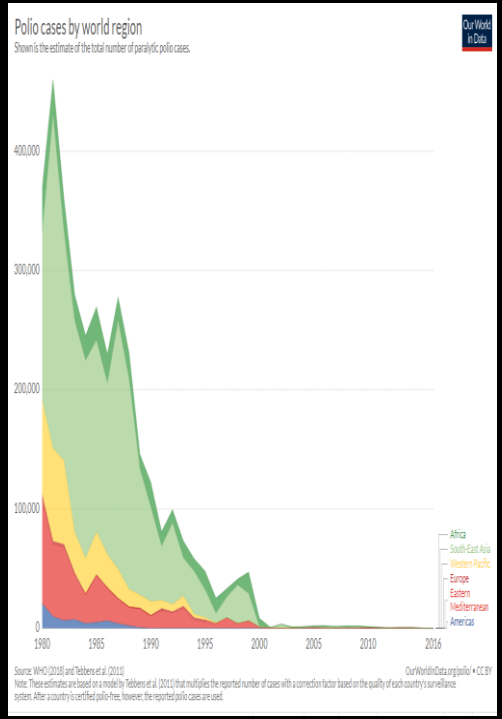
- Word War One 15,000,000 to 19,000,000 dead
- Spanish Flu 50,000,00 to 100,000,000 dead
- Famine 2,000,000 to 10,000,000 dead

Today we live in better times

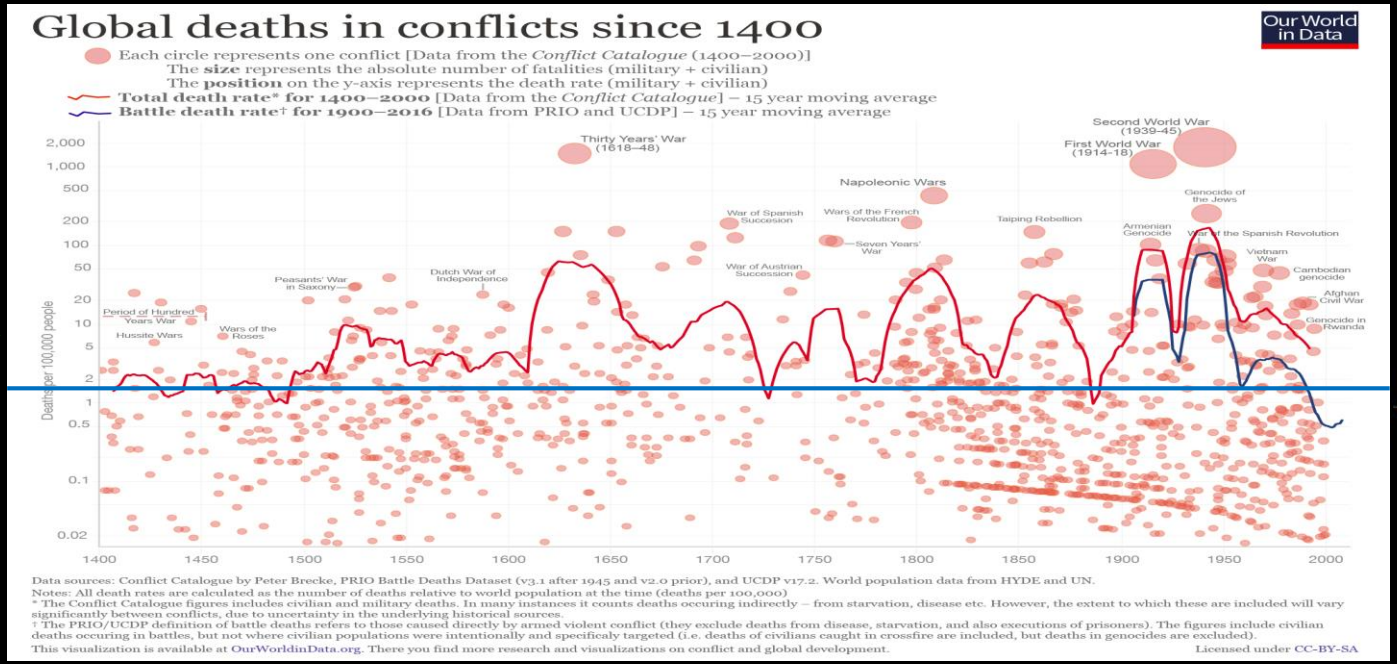
But mass media has you thinking we live in terrible times

Disease

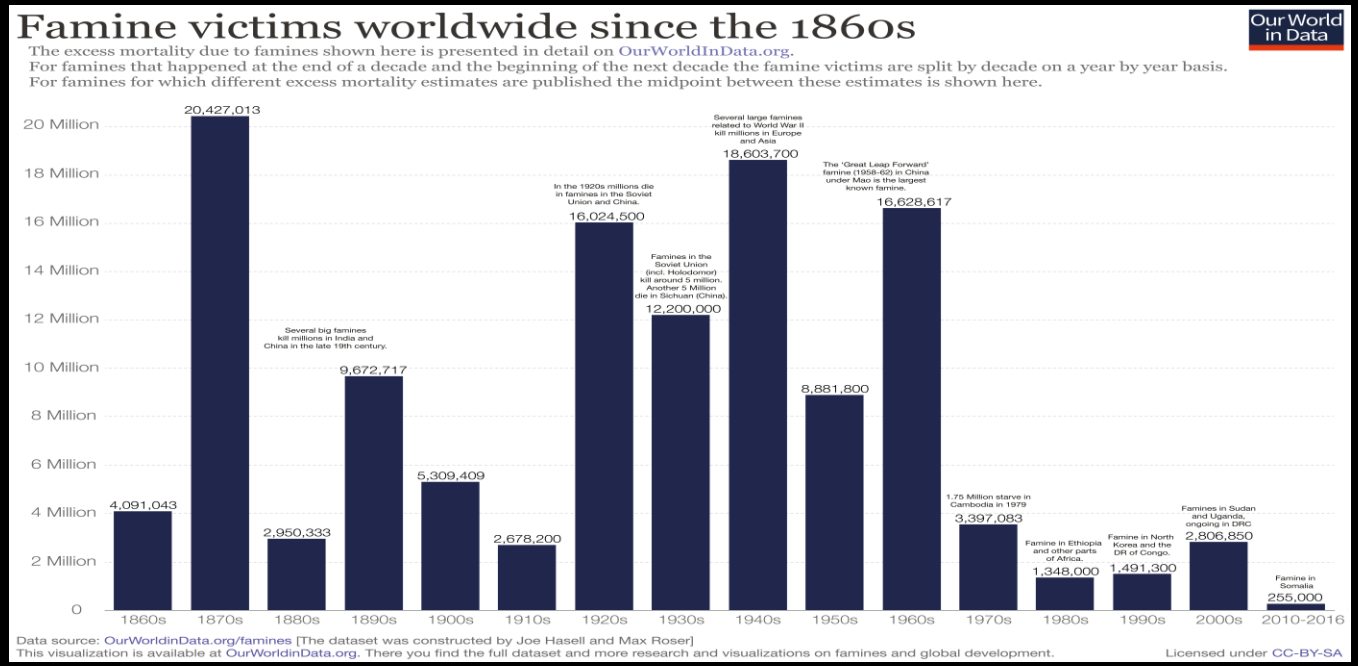




War



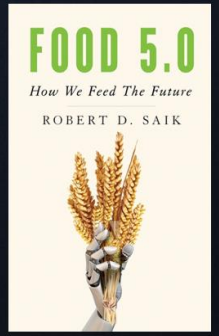
Famine

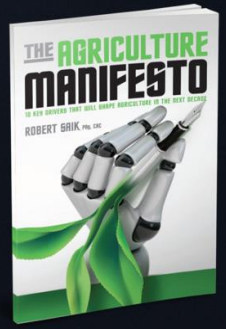


I have not experienced WAR / PLAGUE / FAMINE (at least not yet)

AG VISOR PRO

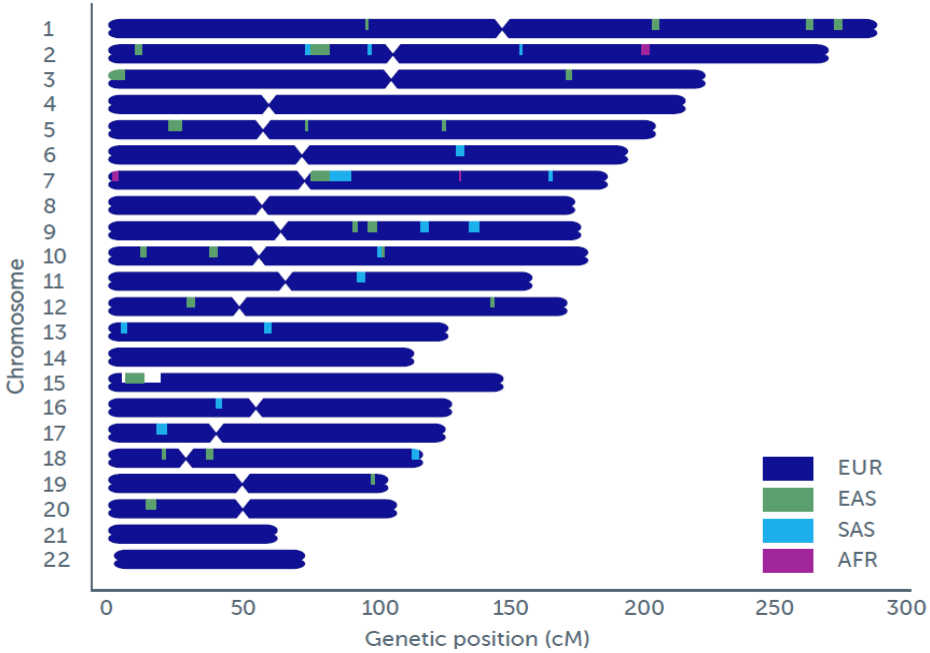
ANSWERS NOW!



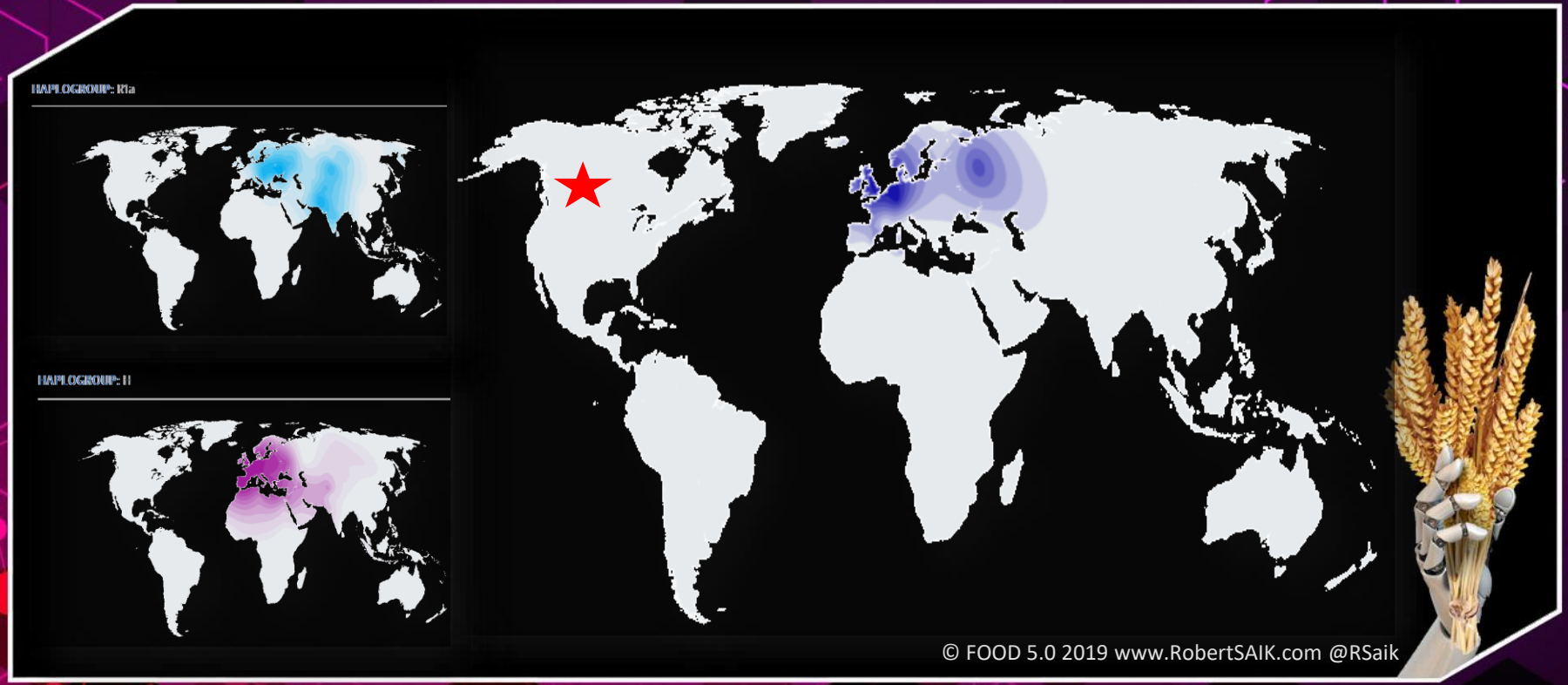


THE PORKSHOW

Who Am I?



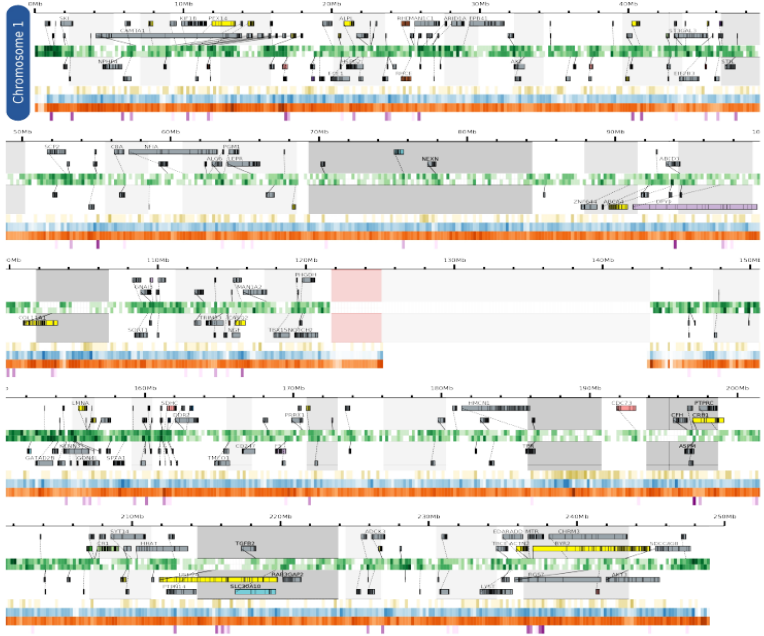
Where do I come from?



THE PORKSHOW

3.7.1. Chromosome 1

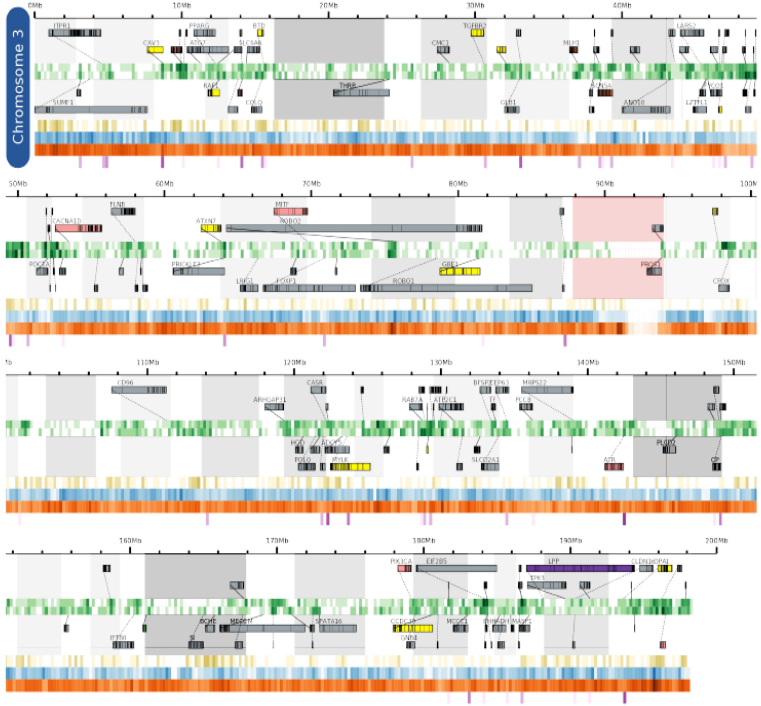
Chromosome 1 contains over 240 million base pairs which makes it the largest human chromosome representing about 9% of the DNA in the cell. Approximately 90% of chromosme 1's sequence has been determined. It contains over 3,000 genes, including genes associated with Alzheimer disease (PS2), prostate cancer (HPC1), glaucoma (GLC1A), Gaucher disease (GBA), malignant hyperthermia (CACNA1S), and porphyria cutanea tarda (UROD). Rearrangements and mutations of chromosome 1 are prevalent in cancer and many other diseases. Patterns of sequence variation reveal signals of recent selection in specific genes that may contribute to human fitness.



HEALTH NUCLEUS WGS Sample ID: 187523657

3.7.3. Chromosome 3

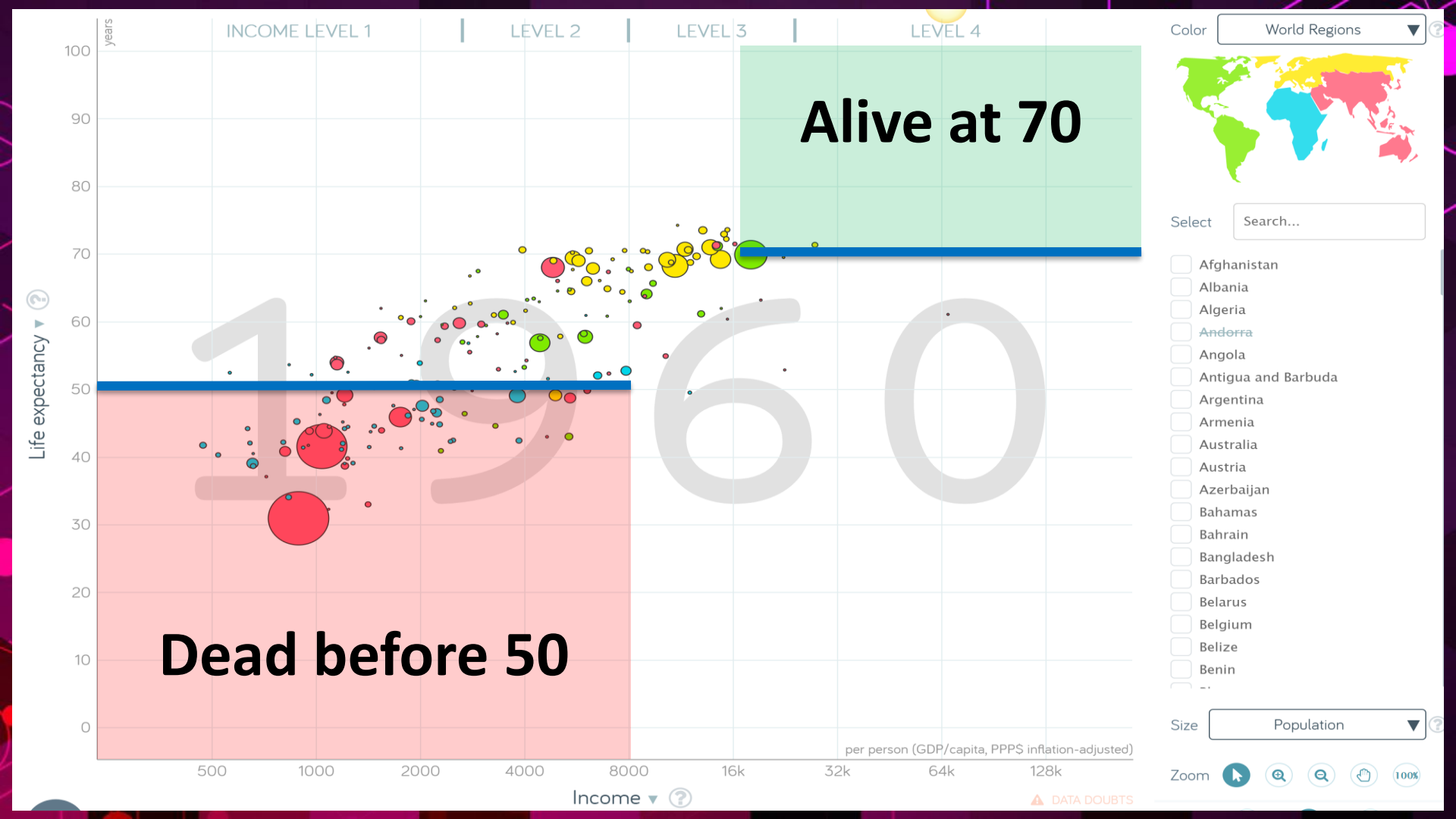
Chromosome 3 contains approximately 200 million base pairs of which about 95% have been determined. Chromosome 3 represents about 6.5 percent of the DNA in the cell. It comprises about 1,900 genes including VHL (von Hippel-Lindau), MLH1 (colorectal cancer), SCLC1 (lung cancer), and ILDR1 (autosomal recessive deafness).



FACTFULNESS

FACTFULNESS

Hans Rosling
with Ola Rosling
and Anna Rosling Rönnlund


INCOME LEVEL 1
LEVEL 2
LEVEL 3
LEVEL 4
years
Life expectancy
Alive at 70
Dead before 50
1960
per person (GDP/capita, PPP$ inflation-adjusted)
Income
DATA DOUBTS
Color
World Regions
Select
Search...
Afghanistan
Albania
Algeria
Andorra
Angola
Antigua and Barbuda
Argentina
Armenia
Australia
Austria
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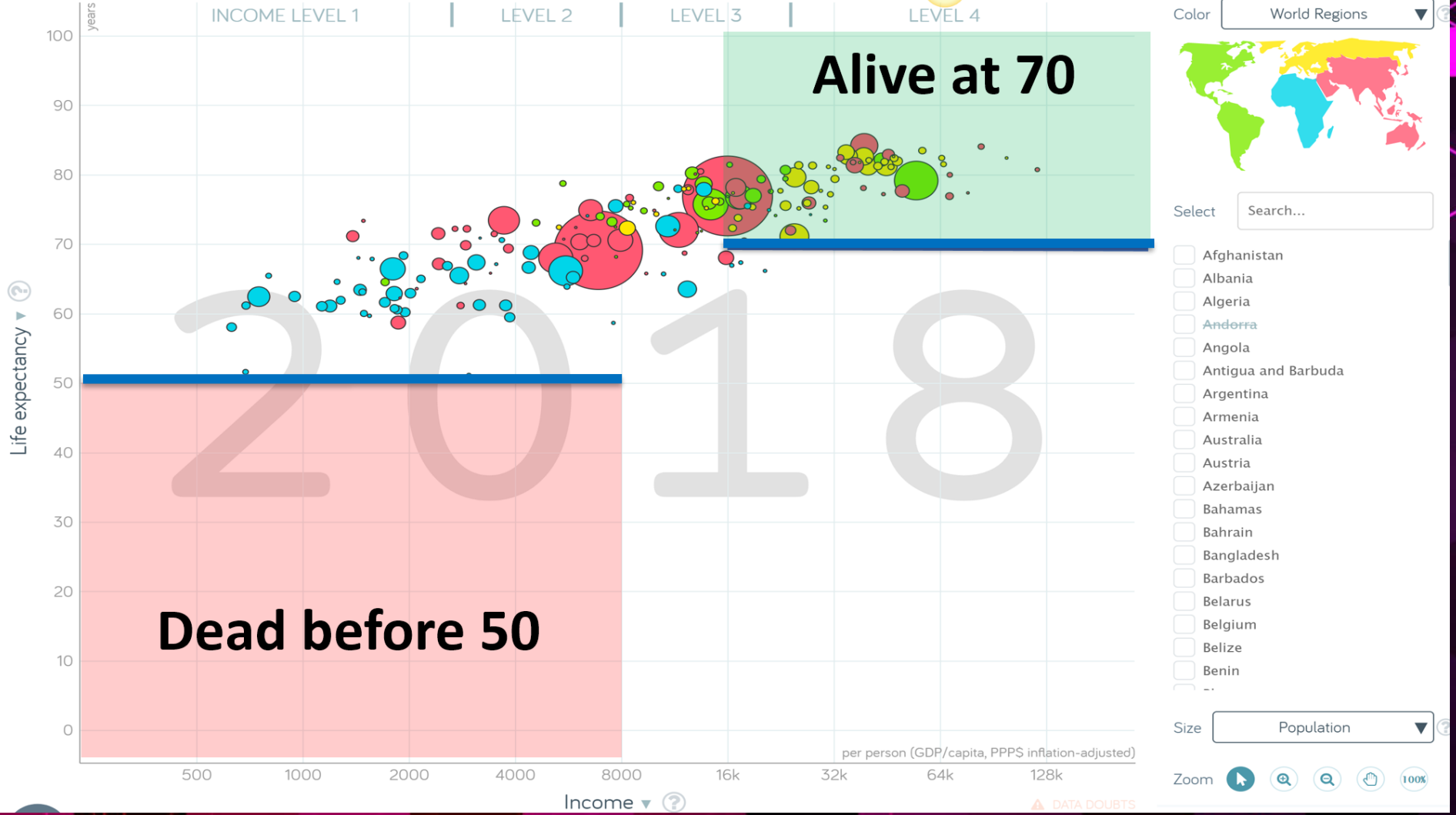
Bahamas
Bahrain
Bangladesh
Barbados
Belarus
Belgium
Belize
Benin
Size
Population
Zoom
100%


INCOME LEVEL 1
LEVEL 2
LEVEL 3
LEVEL 4
years
Alive at 70
2018
Dead before 50
Life expectancy
100
90
80
70
60
50
40
30
20
10
0
500
1000
2000
4000
8000
16k
32k
64k
128k
per person (GDP/capita, PPPS inflation-adjusted)
Income
DATA DOUBTS
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Size
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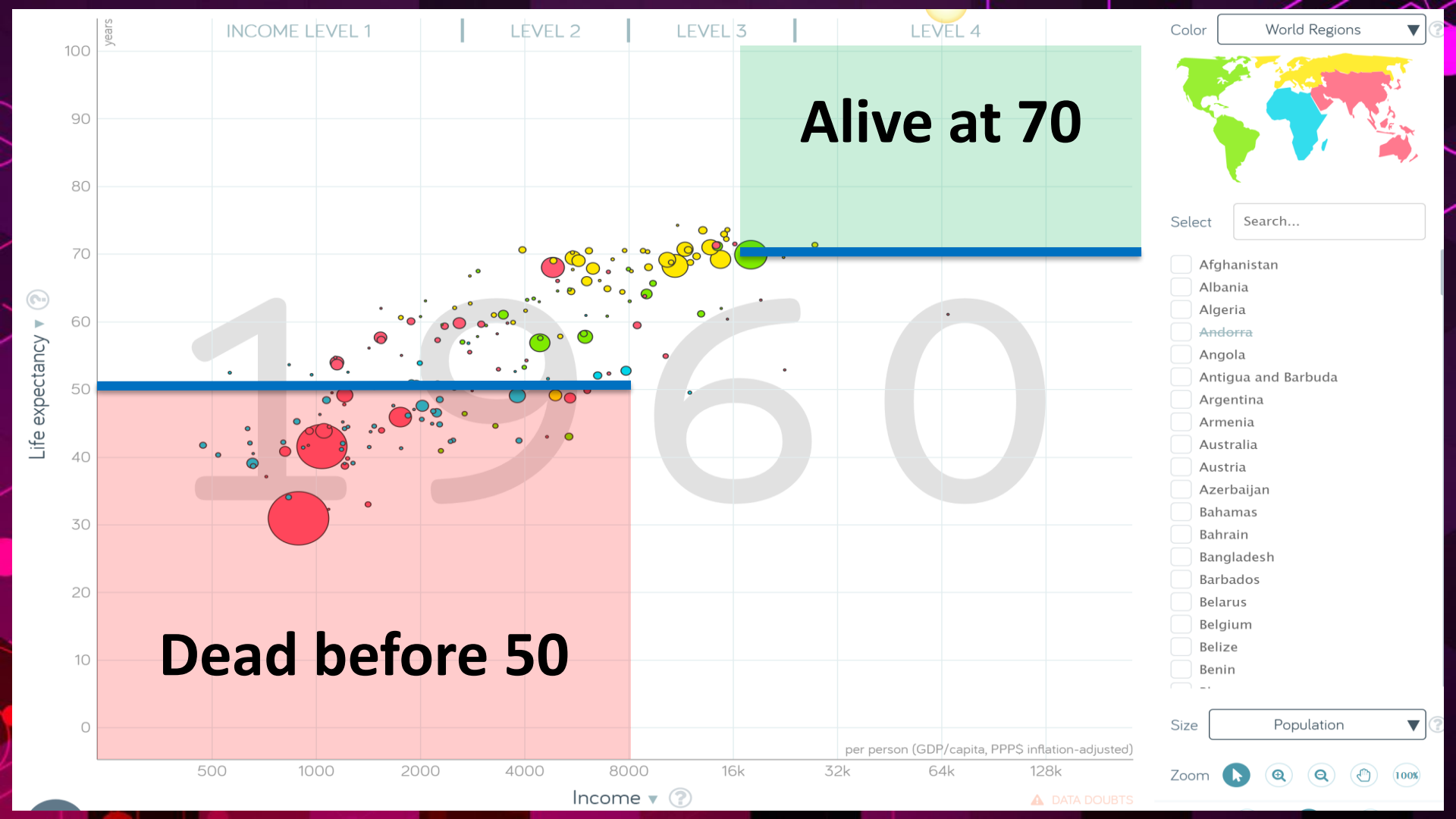
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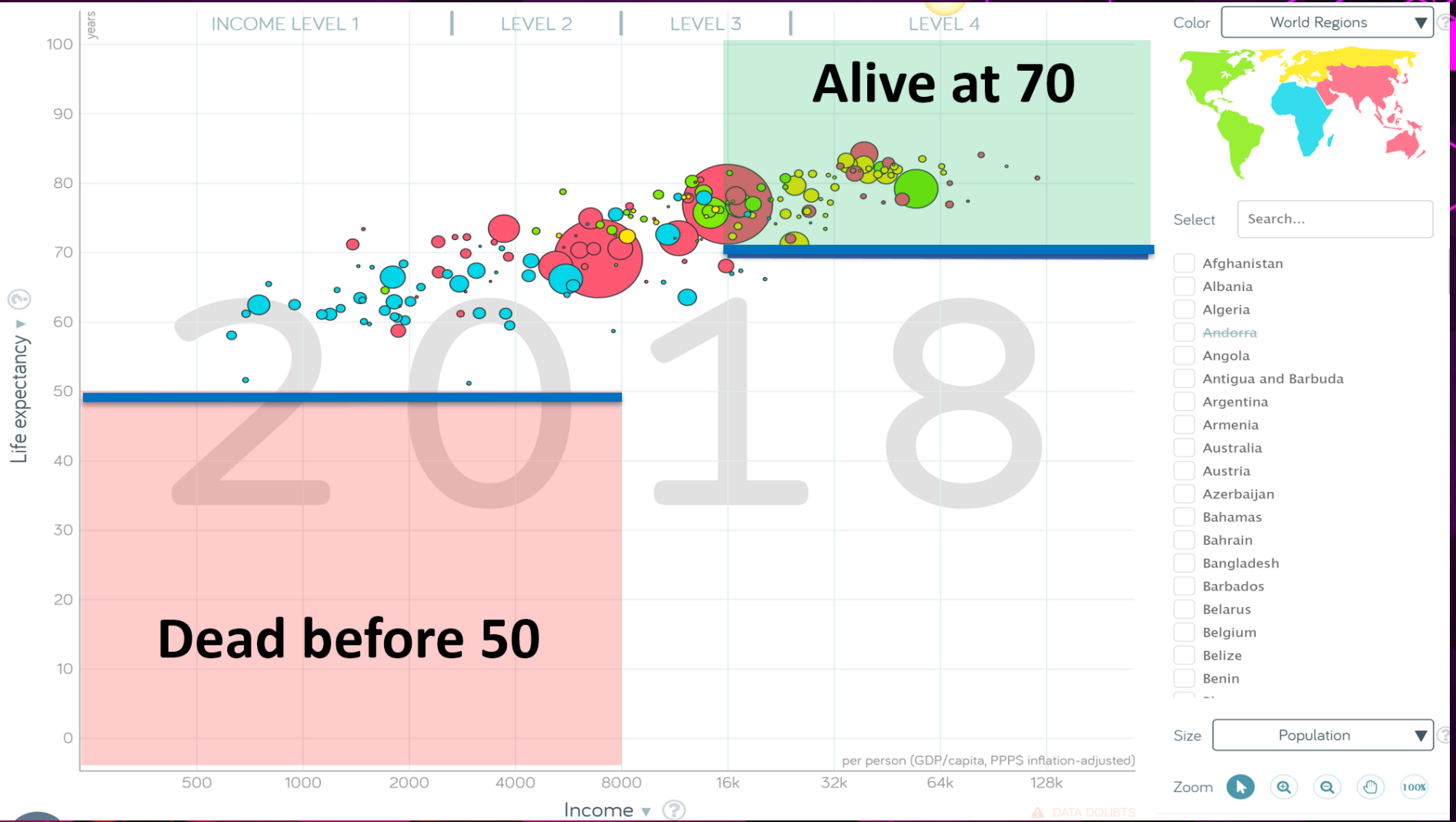
Population
Zoom
100%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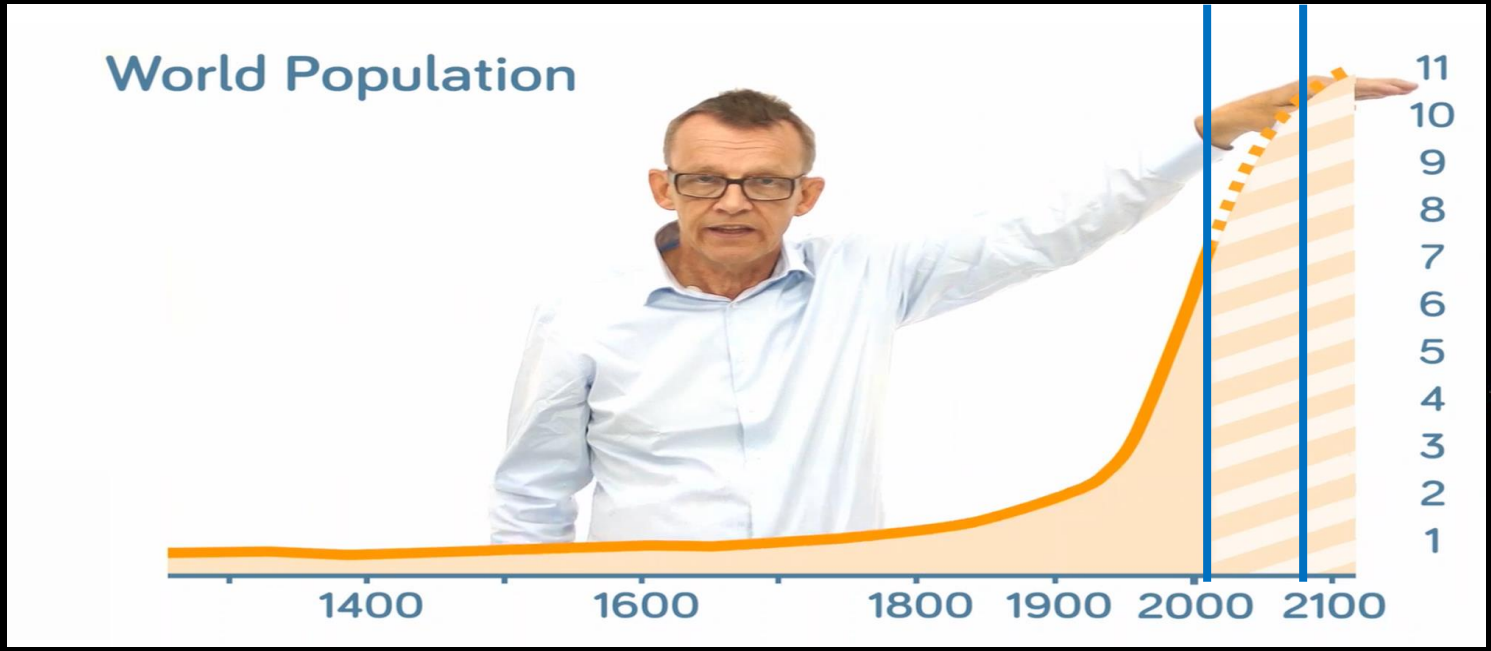
Belarus
Belgium
Belize
Benin
Size
Population
Zoom
100%
DATA DOUBTS

The next 30 years could be the most Important in agriculture history.



When it comes to dealing with population growth...
we have three choices...

Kill People
Mandatory Birth Control
Feed them

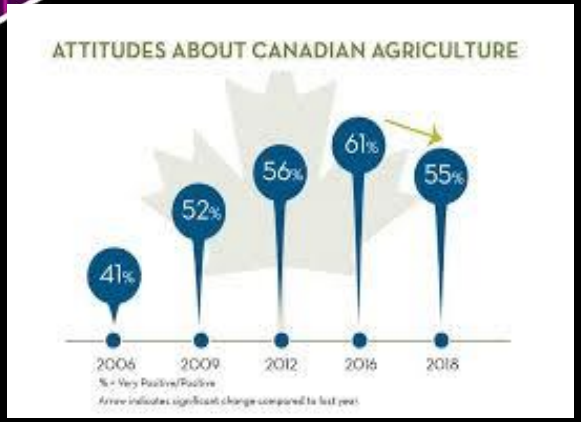
In the next 30 years

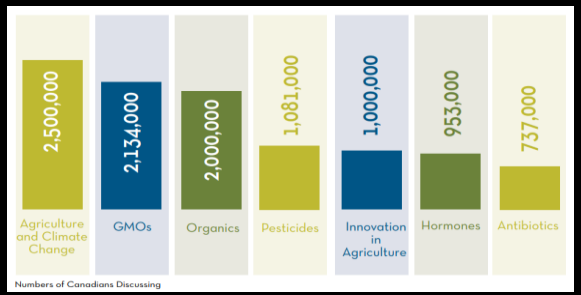
- We must grow 10,000 years worth of food
- We must increase food production 60-70%
- We must ensure agriculture is infinitely sustainable
- We will be tested like never before

Can we feed 10 billion people?

YES....if we leverage the tools.

Most people are disconnected from the farm





Millennials are less trusting of the food system in this country…

This is WHY I wrote FOOD 5.0 How We Feed The Future!

Not your Grandpa's Farm

ROB'S RANT

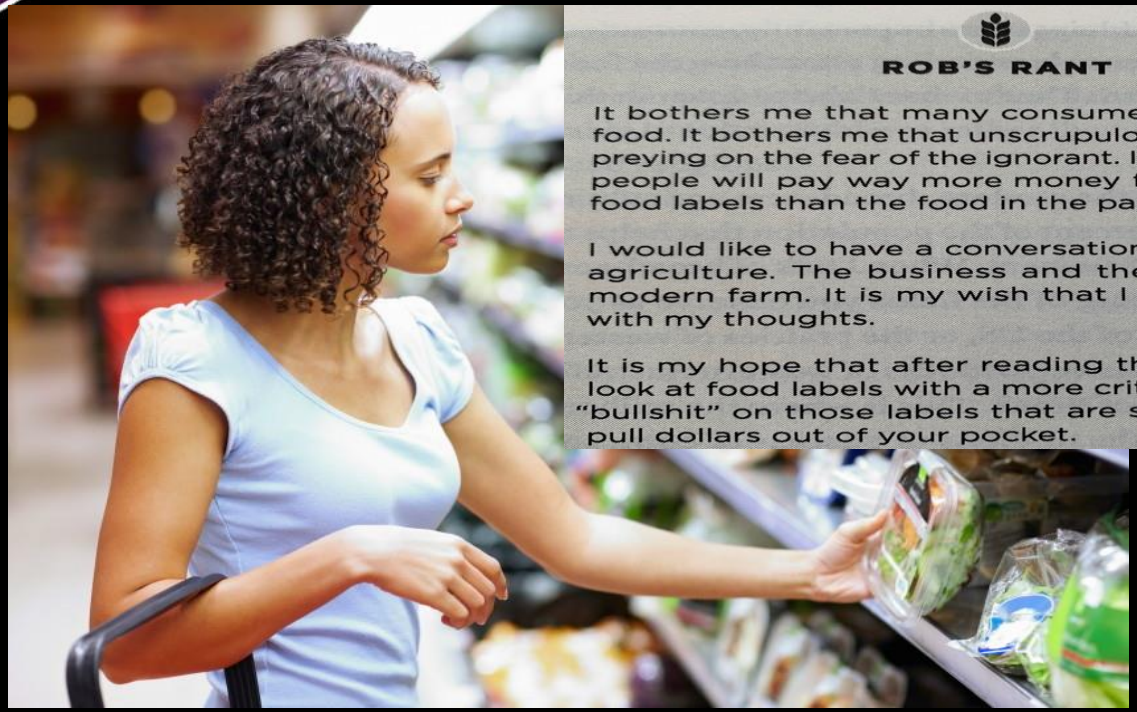
Can we just get rid of the image of the big red barn? Please!?

If you hear the word "farm" and think of a red barn, a round-fender pickup truck, a ruddy-faced guy or gal wearing bib overalls and a straw hat, you're watching the History Channel. Today's agriculture isn't your grandpa's farm.

Farmers of Consequence

- **They say**
  - 2% of North America are farmers
  - Really?
  - 370M x 2% = 7.4M Farmers (I don't think so)
- **Farmers of Consequence**
  - Those that actually make a living farming
  - Are more like .2% or 740,000 out of 370M
- **In Canada we could fit most of the farmers of consequence in the Bell Center Hockey arena.**
- **This is a challenge re: VOICE**

Consumers are disconnected from Agriculture



ROB'S RANT

It bothers me that many consumers are scared of food. It bothers me that unscrupulous marketers are preying on the fear of the ignorant. It bothers me that people will pay way more money for adjectives on food labels than the food in the package.

I would like to have a conversation with you about agriculture. The business and the science of the modern farm. It is my wish that I can engage you with my thoughts.

It is my hope that after reading this book you will look at food labels with a more critical eye, and call "bullshit" on those labels that are spreading fear to pull dollars out of your pocket.

No matter what food RELIGION you believe in;

ORGANIC

Vegan

Regenerative

Conventional

Paleo

AGROECOLOGY

GMO

MEATATARIAN

VEGETARIAN

we can ALL agree that…

THE PORKSHOW

Agriculture Must Be Infinitely Sustainable

THE PORKSHOW

Let's look at where we came from and where we are going

Five Eras of Agriculture

Agriculture 5.0
FOOD 5.0

Convergence

Biotech

Chemistry

Machine

Muscle

Agriculture 1.0
The Era of Muscle

Agriculture 2.0
The Machine Age

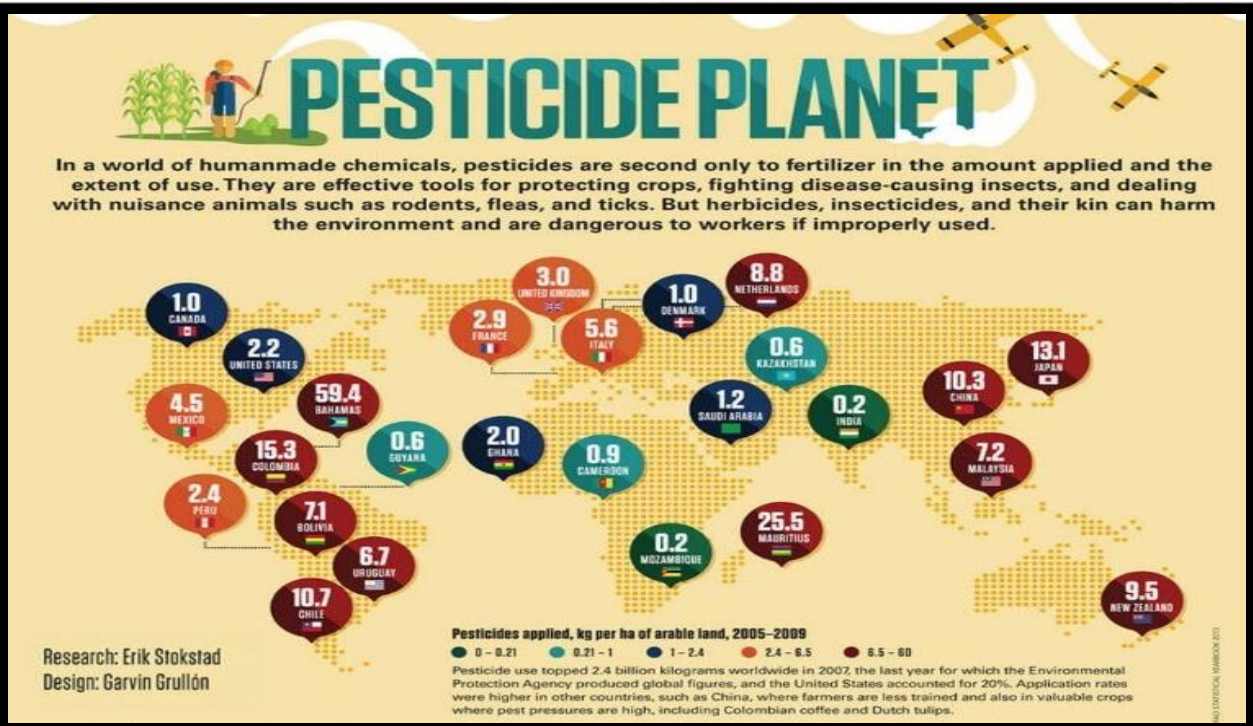
Agriculture 3.0
The era of Chemistry

You do realize it's mostly water...right?

ROB'S RANT

My hackles rise when I hear people say farmers want to "douse" their crops with chemicals or "slaughter" their land with fertilizer. Their comments make no sense because chemicals and fertilizer are expensive. Farmers have to operate on razor-thin margins, and consequently the judicious application of nutrients is important.

Who uses more chemical – NA or EU?



Agriculture 4.0
Biotech / Genetic Engineering Revolution

GMO...a poor name for an amazing science

Generally
Misunderstood
Organism

Genetic Engineering is an advancement of the breeding process.

Genetically Modified Organisms

OPs Hybrids Polypoids Mutagenesis Cross Species RNAi Transgenics Cisgenics Gene Editing CSRPR Cas9

Genetic Engineering

GMO is NOT an ingredient…

it’s a process.

If we label one process…we should label all!

THE PORKSHOW

Consumers fooled (or scared) by labels

ROB'S RANT

Consumers are often fooled by labels. They'll pay extra money for non-GMO spinach, when there's no such thing as GMO spinach—all spinach is non-GMO, so why pay more for the label?


NON GMO Project VERIFIED
Vegan | Gluten
CHIPOTLE
07 21 2017
NEW LOOK
RW Garcia
3 Seed · Graines
Kale Crackers
Craquelins de kale
Flaxseed, Sesame and Chia
Graines de lin, sésame et chia
Gluten Free/Sans Gluten
TRADITIONAL MEDICINALS
WHOLESOME SWEETENERS
ORGANIC · BIOLOGIQUE
Pancake Syrup
Sirop de table
Original


BACON
SCANDINAVIAN
MEAT MASTERS
NON-GMO
Naturally Leaner
Applewood Smoked
UNCURED
BACON
American Humane Certified
Non-GMO Project Verified
Vegetarian whole grain feed
No added hormones
Federal regulations prohibit the use of hormones in pork
No animal by-products
NT WT 12 oz (355 g)
PORK
100% DUROC PORK
Humanely Raised GMO-Free
NON GMO Project VERIFIED
nongmoproject.org
We are proud to be the first Non-GMO project verified pork using American Humane seal on packages, meeting AHA's strict guidelines on animal care, nutrition and environment.
American Humane CERTIFIED
humaneheartland.com

Is the NON-GMO label worth MORE than the PORK?

FEAR SELLS...SO DOES ACTIVISM!

(Greenpeace 2014 revs) $210,000,000 USD

ANIMAL RIGHTS NATIONAL CONFERENCE 2016

July 7th - 10th • Los Angeles, CA

at the Sheraton Gateway Hotel

ABOUT | PROGRAM | SPEAKERS | SPONSORS | EXHIBITORS | DONATE | WRAP-UP REPORT

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FOLLOW US ON TWITTER

WATCH CONFERENCE VIDEOS

AR2016 REPORT

AR2016 PHOTOS

AR2016 Informed, Inspired, and Activated for Animals!

"This was my second Conference and I feel I have come away having learned more and more. I have been a vegetarian for 40 years UNTIL I attended my first Animal Rights Conference three years ago in DC. Then, I became a vegan!! Always more to learn and more to ways to 'carry the message' everyday and in so many ways!" - AR2016 Attendee

BEEF Daily

Animal rights activists ramping up efforts to abolish animal ag

by Amanda Radke
Aug 23, 2016

"The speakers made their end goal—
ending animal agriculture and securing a vegan society—very clear.

If you have a vested interest in producing, processing or selling meat, poultry, eggs and dairy, you need to understand the forces our industry is up against."

According to the Animal Agriculture Alliance, various conference speakers offered a consistent message— **the animal rights movement is pushing for an end to the consumption of animal products**, and they believe they are progressing toward that goal.

"We are trying to destroy animal agriculture," said Wayne Hsiung, Direct Action Everywhere.

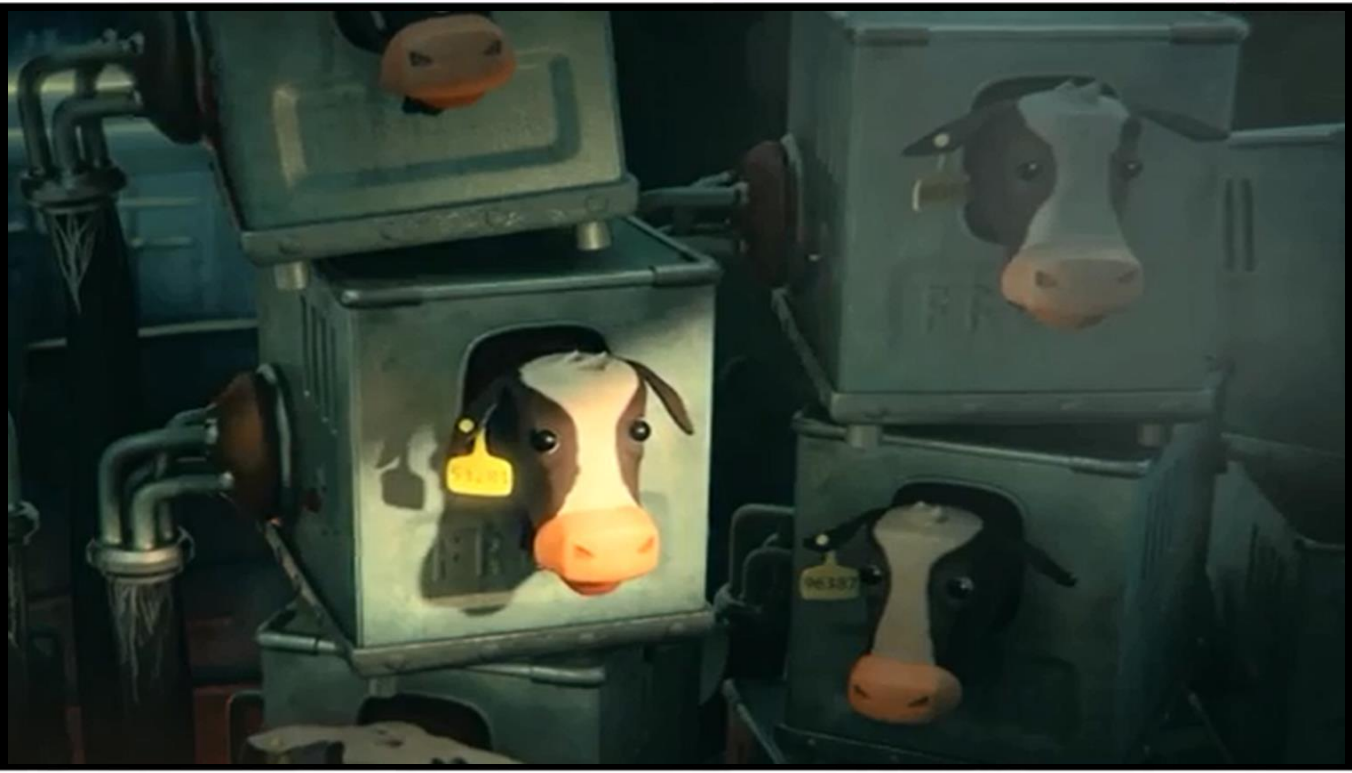
Television personality Simone Reyes stated, "We're preying on emotions to push our vegan agenda," likening animal agriculture to slavery and murder.

Karen Davis, founder and president of United Poultry Concerns, told the audience to **target the industry as a whole**, suggesting they "stop saying 'stop factory farming' and say ''**stop all animal farming**.''

"A final concerning trend was a **focus on engaging with youth and college students**," according to the Alliance report.

Who’s feeding your kids information?

Can you guess who made this?




CHIPOTLE
GMO FREE

Now we need to defend farms against activists.

Bulletproof Your Hog Farm from Activists

Portia Stewart
July 24, 2019 01:48 PM

Print

We are fed FEAR daily....

Climate Change

Agriculture is being vilified…
are we getting the whole story?

THE PORKSHOW

The Beef with GHG's

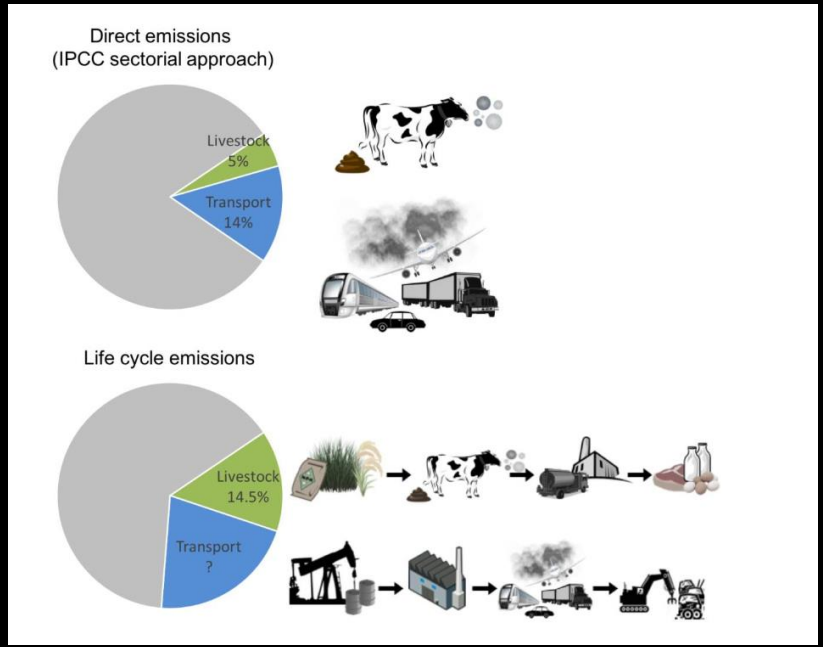
Cows vs Cars

The Apples vs Oranges of the IPCC info.

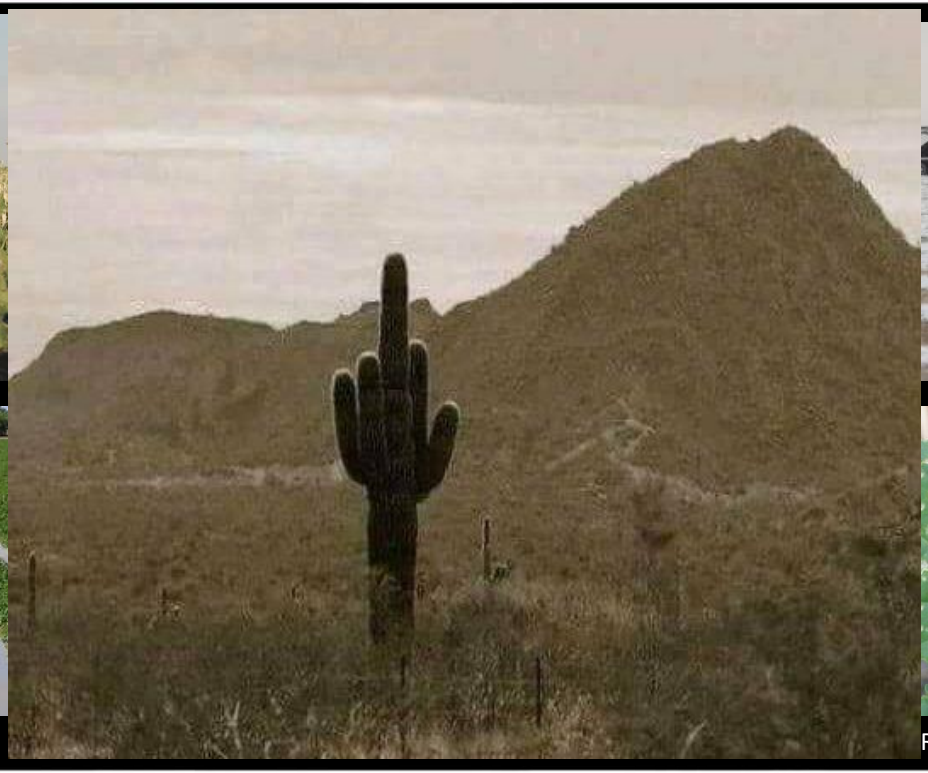
Direct vs Full Life Cycle

NO!

Livestock at 5%
is not the same as
Transport at 14%



Mother Nature – not always "motherly"
We will need technology to deal with challenge.



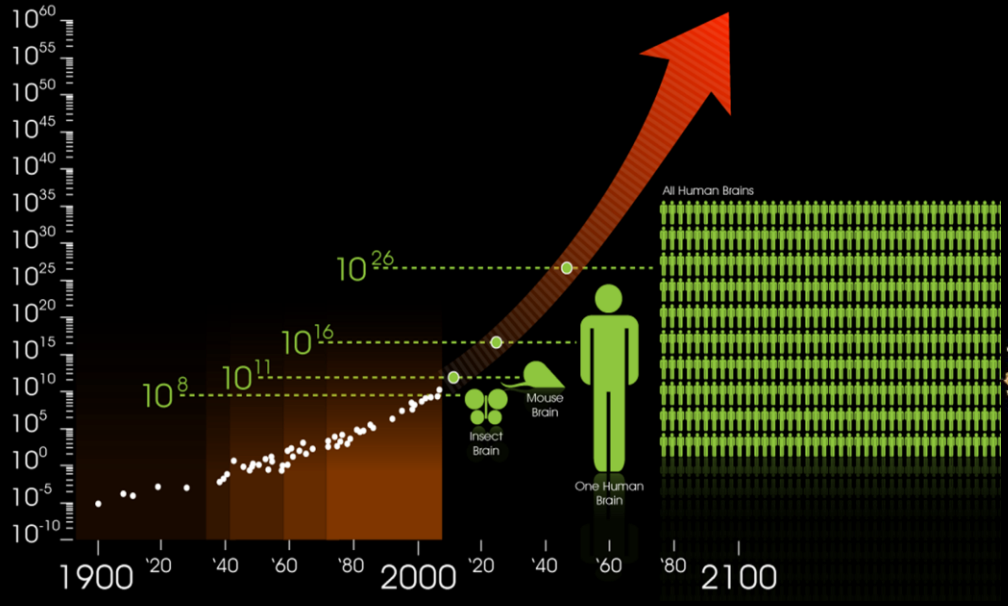
RobertSAIK.com @RSaik

Agriculture 5.0
Convergence

Agriculture 5.0 Convergence

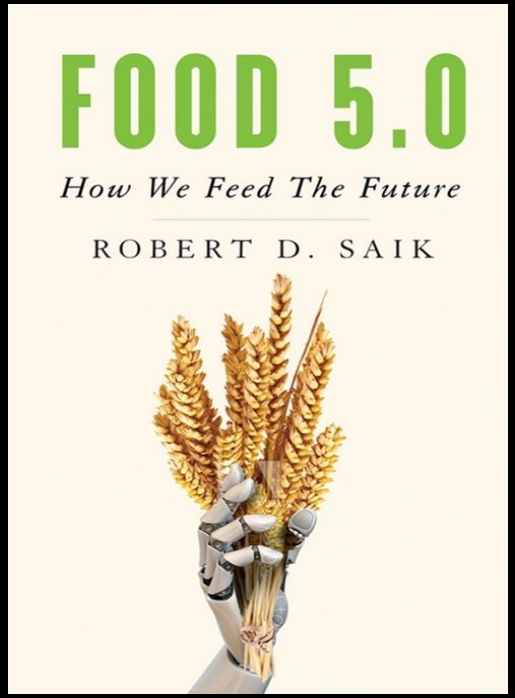
- Moore's Law
- Linear vs Exponential
- Data
- Connectivity

- A look at convergence

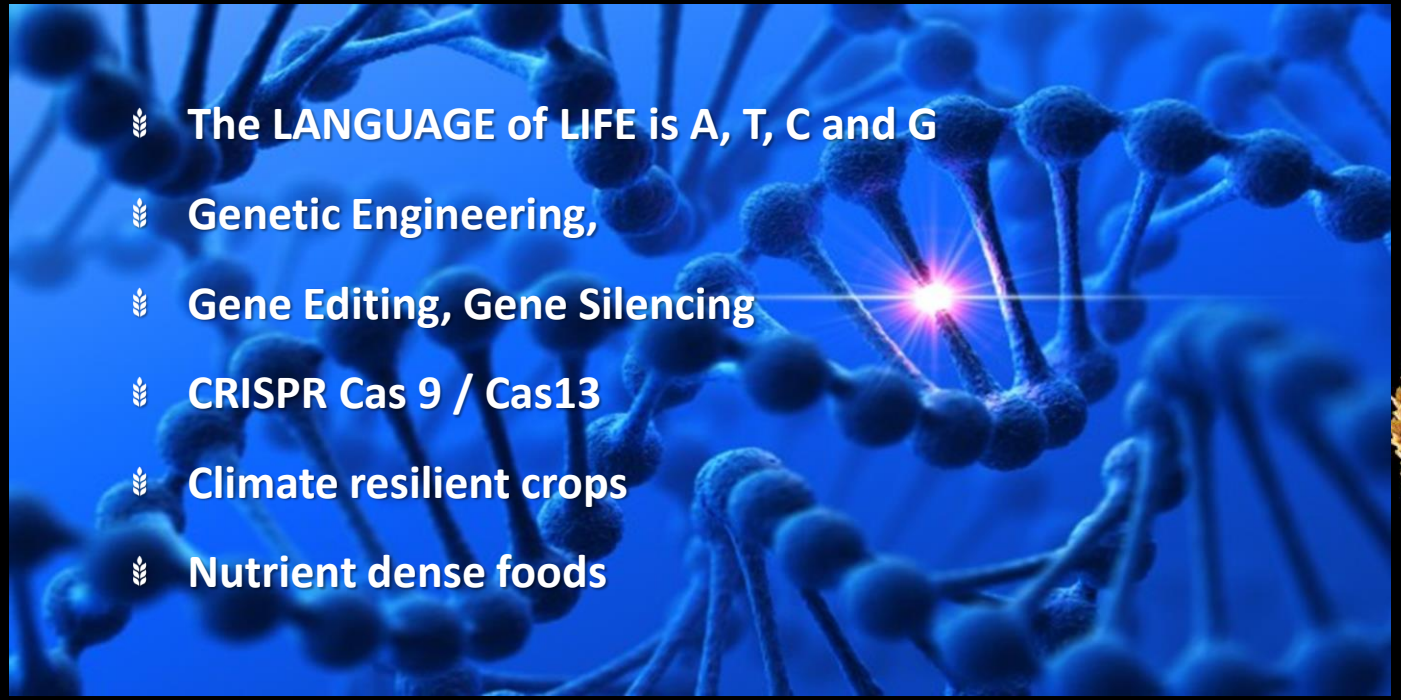



INITIALIZ

How We Feed The Future

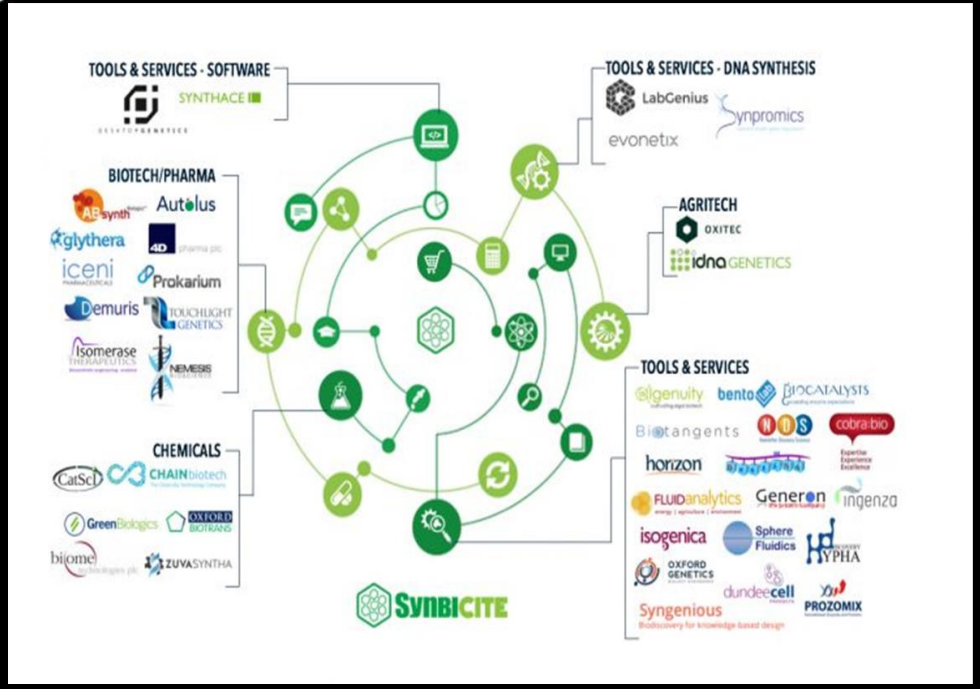


Bio-Engineering; perhaps our most important tool.



- The LANGUAGE of LIFE is A, T, C and G
- Genetic Engineering,
- Gene Editing, Gene Silencing
- CRISPR Cas 9 / Cas13
- Climate resilient crops
- Nutrient dense foods

Synthetic Biology



Synthetic biology is a new interdisciplinary area that involves the application of engineering principles to **biology**. It aims at the (re-)design and fabrication of **biological** components and systems that do not already exist in the natural world.

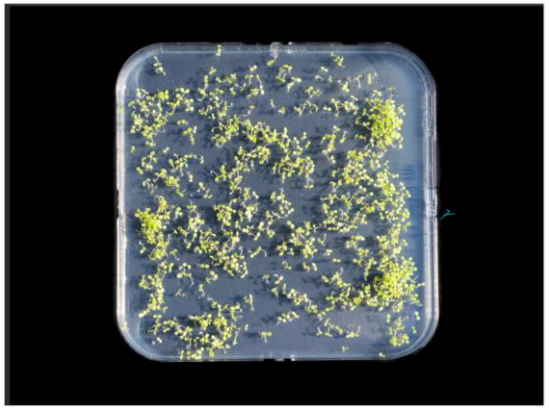
There will be new

- Fertilizers
- Crop Protection Products
- Crops
- Foods

Crispr, Gene Silincing and Nanotubes

MEGAN MOLTENI SCIENCE 08.08.19 01:41 PM

CRISPR CAN HELP SOLVE OUR LOOMING FOOD CRISIS—HERE'S HOW



The potential for gene editing to make every acre of land more productive in the face of climate change has captured the imagination of plant scientists, the agtech industry, and governments alike. JOSE A. BERNAT BACETE/GETTY IMAGES

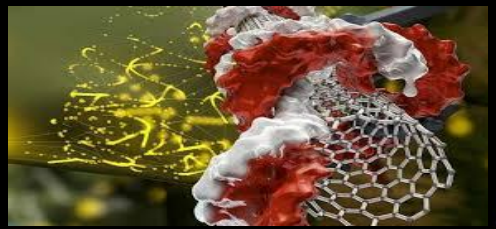
Argentina developing pest-resistant, GMO cotton using gene-silencing technology

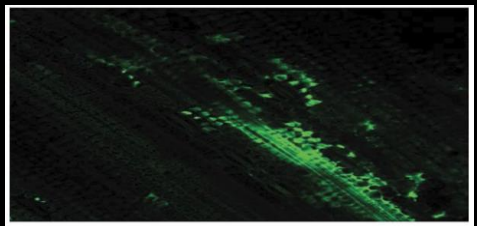
National Institute for Agricultural and Livestock (Argentina) | July 18, 2019

In Argentina, the presence of the cotton weevil represents a challenge for cotton production due to the productive losses it causes. For this reason, for nine years, [Argentina's National Institute for Agricultural and Livestock] and the cotton provinces of Chaco, Formosa, Santa Fe and Santiago del Estero have been working on the development of different strategies to deal with this plague.

In a battle that the scientists fight on several fronts, they obtained varieties resistant to the boll weevil (Anthonomus grandis) by means of the RNA interference strategy (RNAi). This technique consists of obtaining a very small sequence of RNA in the plant to specifically block the functionality of an essential gene in the boll weevil and, in this way, diminish its damage capacity.

In the seven years since Crispr's gene-editing potential was unleashed on the world, scientists like Qi have used it (or newer versions of it) to make jointless tomatoes, fungus-resistant bananas, and higher yield corn, soy, and wheat.





Wheat

Researchers used carbon nanotubes to deliver DNA that codes for a green fluorescent protein into the leaves of wheat (bottom) and a relative of tobacco (top).

To Meat or Not to Meat?

The Impossible Burger.
Impossible Foods

The Impossible Burger contains:

> Water, Soy Protein Concentrate, Coconut Oil, Sunflower Oil, Natural Flavors, 2% or less of: Potato Protein, Methylcellulose, Yeast Extract, Cultured Dextrose, Food Starch Modified, Soy Leghemoglobin, Salt, Soy Protein Isolate, Mixed Tocopherols (Vitamin E), Zinc Gluconate, Thiamine Hydrochloride (Vitamin B1), Sodium Ascorbate (Vitamin C), Niacin, Pyridoxine Hydrochloride (Vitamin B6), Riboflavin (Vitamin B2), Vitamin B12.

The Beyond Meat Burger.
Beyond Meat

The Beyond Burger contains:

> Water, Pea Protein Isolate, Expeller-Pressed Canola Oil, Refined Coconut Oil, Contains 2% or less of the following: Cellulose from Bamboo, Methylcellulose, Potato Starch, Natural Flavor, Maltodextrin, Yeast Extract, Salt, Sunflower Oil, Vegetable Glycerin, Dried Yeast, Gum Arabic, Citrus Extract (to protect quality), Ascorbic Acid (to maintain color), Beet Juice Extract (for color), Acetic Acid, Succinic Acid, Modified Food Starch, Annatto (for color).

In terms of ingredients, the two burgers are pretty similar, the exception being the main protein source. Beyond Meat uses pea protein instead of soy protein, and there's no soy leghemoglobin, which is Impossible's key ingredient that makes the burger "bleed."

3D Printed Food

Food Attributes – are farmers and consumers aligned?

ANDI (Aggregate Nutrient Density Index)

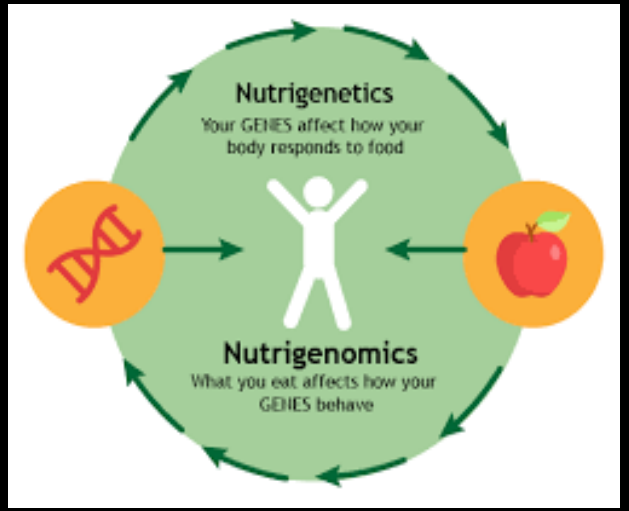
ANDI Scores *

Kale	1000	Kidney Beans	100	Walnuts	34
Collards	1000	Sweet Potato	83	Grapes	31
Bok Choy	824	Sunflower Seeds	78	White Potato	31
Spinach	739	Peach	73	Banana	30
Brussel Sprouts	672	Apple	72	Chicken Breast	27
Arugula	559	Green Peas	70	Eggs	27
Cabbage	481	Cherries	68	Peanut Butter	26
Romaine	389	Flax Seeds	65	Whole Wheat Bread	25
Broccoli	376	Sesame Seeds	65	Low Fat Yogurt	24
Cauliflower	295	Pineapple	64	Feta Cheese	21
Green Pepper	258	Edamame	58	Whole Milk	20
Artichoke	244	Oatmeal	53	Ground Beef	20
Carrots	240	Mango	51	White Pasta	18
Asparagus	234	Cucumber	50	White Bread	18
Strawberry	212	Pistachio Nuts	48	Apple Juice	16
Pomeg. Juice	193	Corn	44	Swiss Cheese	15
Tomato	164	Salmon	39	Potato Chips	11
Blueberries	130	Almonds	38	Cheddar Cheese	11
Iceberg	110	Shrimp	38	Vanilla Ice Cream	9
Orange	109	Tofu	37	Olive Oil	9
Lentils	104	Avocado	37	French Fries	7
Cantaloupe	100	Skim Milk	36	Cola	1

*PATENTED

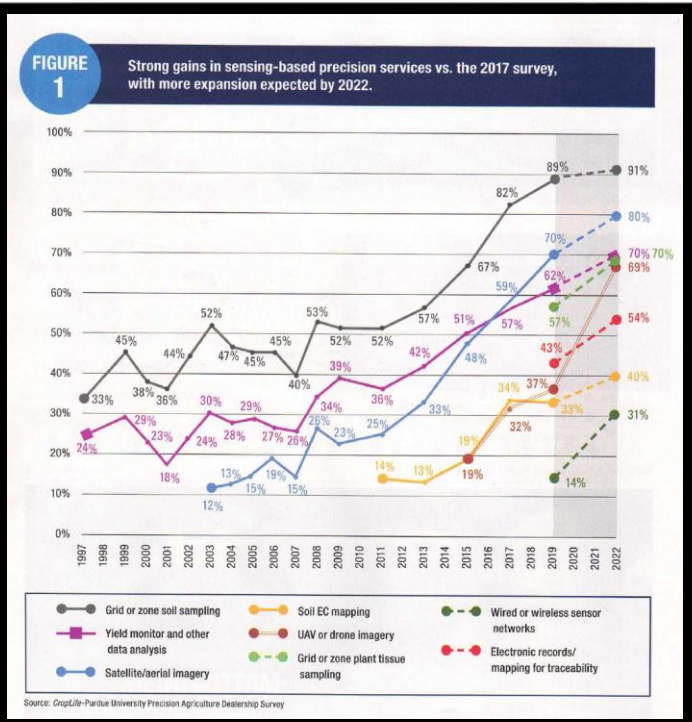
NUTRIGENOMICS

Does Food Influence How Our Genes Behave?



Technology Convergence in the Field

- Precision Sampling
- Yield Data
- Satellite/Aerial Imagery
- UAV Imagery
- Grid/Zone Tissue Testing
- Wireless Sensor Networks
- Electronic Records
  - Management
  - Traceability
  - Sustainability



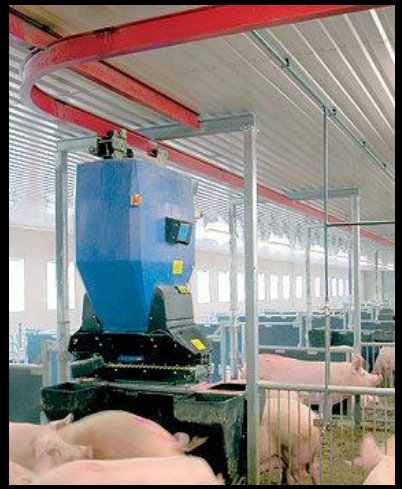
Sensors … everywhere

- In-field sensors
  - Soil moisture sensors
  - Weather sensors
  - Pest sensors
  - Nutrient sensors
- Remote monitoring
  - Satellites
  - Micro-Satellites
  - Aerial Imagery
  - UAV / Drone and robot monitoring

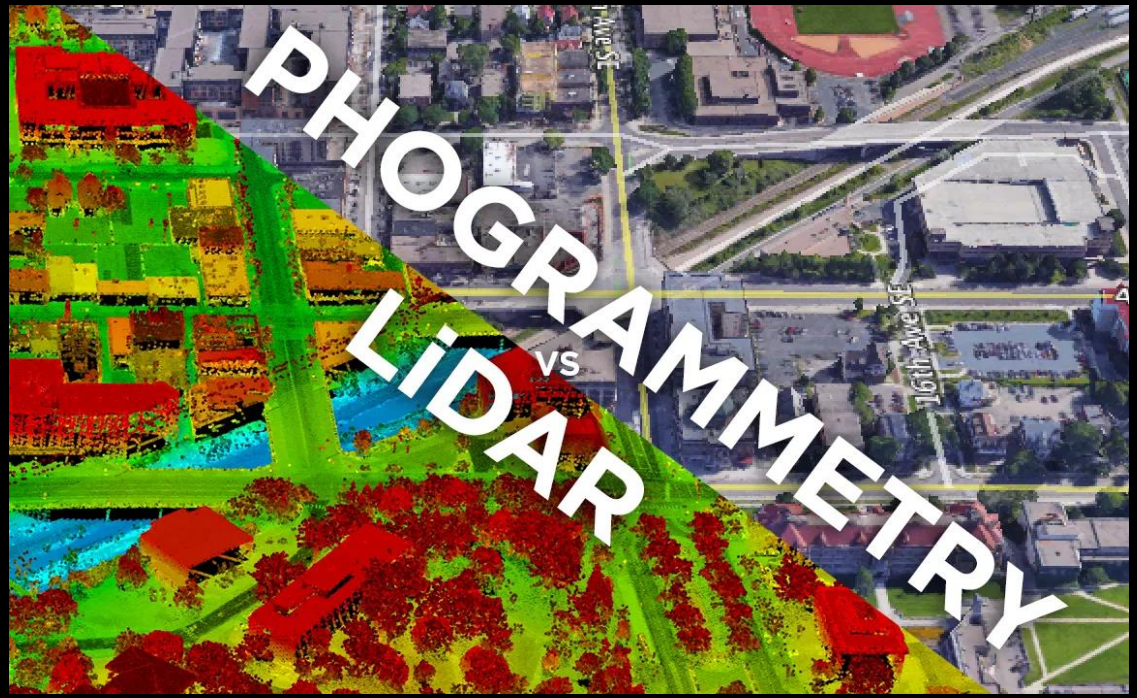
Technology Convergence in the Barn

Robotics, in the barn, in the field...meet Dot.

- Robots are suited for the 3D's
  - Dangerous
  - Dirty
  - Dull
- Issues
  - Labor
  - CapEX
  - Operating Costs
  - Soil Compaction



DOT has eyes



Augmented Reality

The Internet of Farm - Connectivity


MACHINE DATA
CRM
SENSORS
POINT OF CONTACT
AGRONOMIC HISTORY
HISTORIC BILLING
BENCHMARKING
PREFERENCES
NOTES
Big
(ish)
SCALES
SOIL
LOCATION HISTORY
ENGINE HOURS
FUEL LEVEL USAGE
ISO
AUTO-GENERATED
MANAGEMENT ZONES
MULTI-SPECTRAL
SATELLITE
DRONE
NDVI
HISTORIC
SHP
NATIVE / INTEGRATED
PROPRIETARY
MODUS
IMAGERY
DOC XLS PDF
TIF
Data
IMPORT / EXPORT
MOBILE ENTERED
ISOXML ADAPT
MARKETING
COMMODITY PRICES
FARMING
RECORDS
AUTOMATIC
TRIMBLE
AGCO
SLINGSHOT
JOHN DEERE
USB FILE SYNC
CNH
FILE
MANAGEMENT
LOCAL GRAIN
ELEVATORS
WEATHER STATIONS
SOIL MOISTURE PROBES
GUIDANCE
AB
LINES
OBSTACLES
OPERATION TYPES
INPUTS
SEED
CHEMICAL
FERTILIZER
NUTRIENTS
PESTICIDES
REENTRY
PRESCRIPTIONS

What will the Future Bring?

Machine Learning, Artificial Intelligence

or…Augmented Intelligence

Data Management

Algorithms

Agriculture will be a combination of HIGH TECH connected to HIGH TOUCH

THE PORKSHOW

Moonshot Challenge – Instant Connectivity
The Uberization of Knowledge and Wisdom

AG VISOR PRO

ANSWERS NOW!

THE PORKSHOW

Infinite Sustainability

The Holy Grail

- Farm management data providing Augmented Intelligence
- Proof of production – to give the consumer confidence.
- Sustainability index that rewards the farmers.

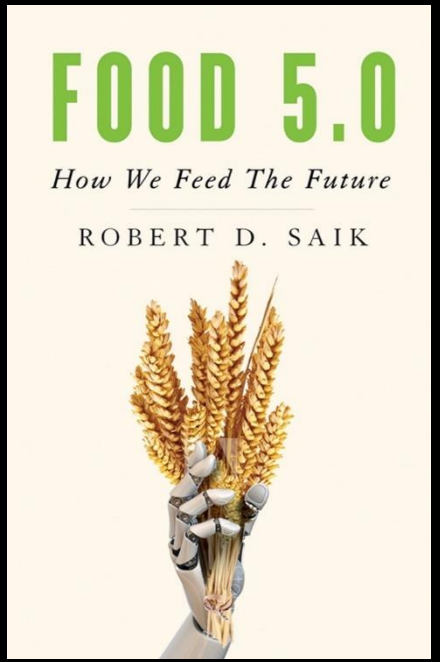
Farmers...this book is about you!

Most importantly, I want to acknowledge farmers.

This book is about you. It is about where you came from and where you are going. I hope, in some small way, people who read this book will look upon the men and women who work the land with a greater level of understanding and respect. Thank you for allowing me to be a part of your world.

"The most important thing a farmer leaves on this earth when he leaves this earth is more earth."

ROBERT SAIK



Thank you!

Snap QR Code for my Contact Info…

FOOD 5.0

How We Feed The Future

www.RobertSAIK.com

THE PORKSHOW