USDA United States Department of Agriculture Office of the Chief Scientist

Visioning of United States, (U.S.) Agricultural Systems for Sustainable Production Stakeholder Listening Session Meeting

Thursday, March 2, 2017 8:30am – 4:30pm USDA South Building Cafeteria

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20min Break and Networking

reminder: stop and restart WebEx Recording to reduce file size

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Paul Shapiro

Vice President of Policy Engagement
The Humane Society of the United States

Jeff Vallet, Ph.D. (USDA-ARS) moderating

THANK YOU

USDA

THE HUMANE SOCIETY OF THE UNITED STATES

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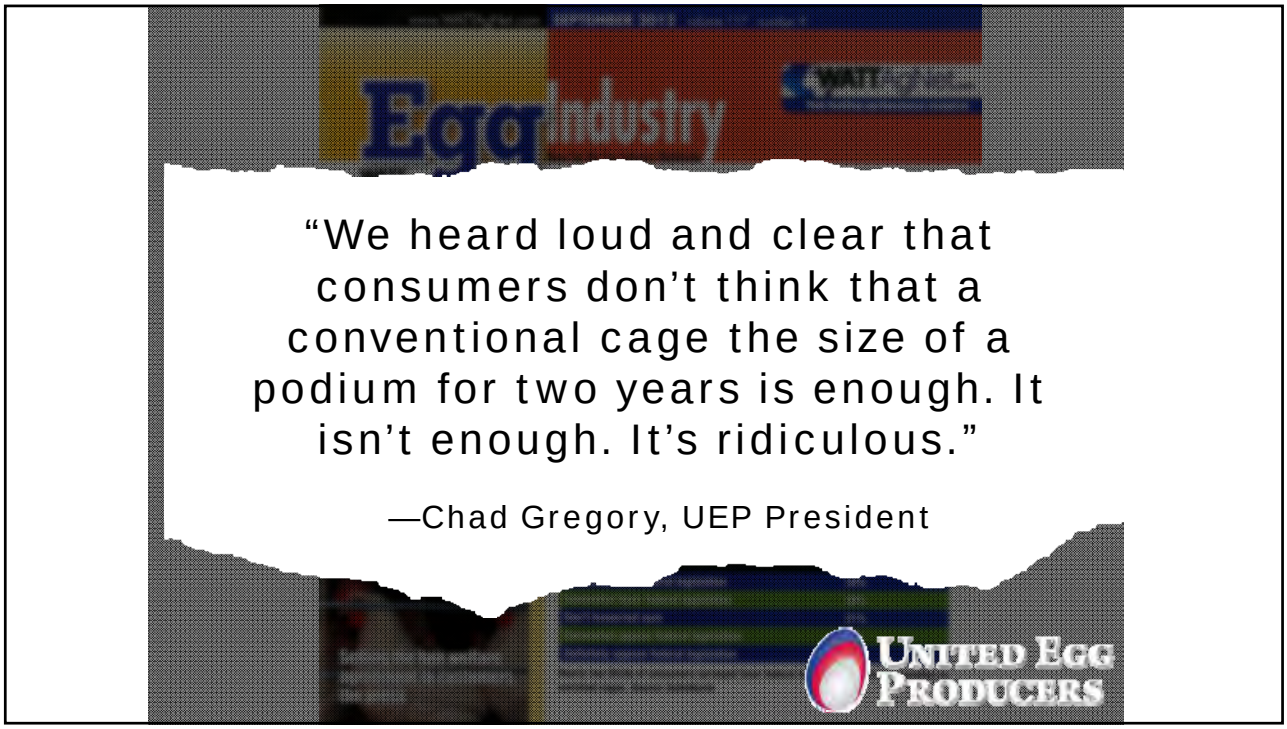
Egg Industry
"We heard loud and clear that consumers don't think that a conventional cage the size of a podium for two years is enough. It isn't enough. It's ridiculous."
—Chad Gregory, UEP President
United Egg Producers


"2015: The Year of the Cage-Free Hen"
FOX NEWS
npr
"Everyone's Going Cage-Free"
"Are Cage-Free Eggs the Future?"
Chicago Tribune

Animalia

Massachusetts voters say no to tight quarters for hens, pigs and calves

The Washington Post

By Karin Brulliard November 9, 2016

Los Angeles Times

Ontario egg farm is charged after thousands of hens are found in 'inhumane' conditions

FEBRUARY 7, 2017, 3:10 PM

How Can the Agency Help the Industry?

- National School Lunch Program
- Surplus buy-ups
- Food and Nutrition Service
- Economic Research Service

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THE
CAGE
FREE
FUTURE


THANK
YOU!
THE HUMANE SOCIETY
OF THE UNITED STATES

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 # 32

David E. Starling

American Veterinary Medical Association

Oral / no slides

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 # 33

Tad Sonstegard, Ph.D.

Chief Scientific Officer
Acceligen

Advanced Breeding: Precise Gene Editing for Animal Welfare & Sustainable Productivity

Tad Sonstegard
CSO of Acceligen

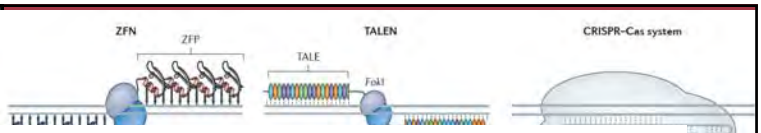
acceligen
A RECOMBINETICS COMPANY

St. Paul, MN USA 55104
tad@recombinetics.com

USDA-OSEC| 28 FEB| Washington DC 2017

PRECISION BREEDING w/ EDITING

Detrimental **PLANT, ANIMAL, MICROBE, ETC.**



The process – it can be undetectable because its breeding!

Ingredients for Editing

- Cas9/CRISPR – the molecular scissors
- Cellular Repair Enzymes –NHEJ already present
- DNA for repair - optional

Food Source/Food additive

- Found in Yogurt; no residual in edited food
- Nothing inserted – ever, unless it is a designed transgenic
- We eat 10^{14} unknown genes every meal; editing avoids unknown changes; no residual in edited food

New

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Acceligen: Healthy, Productive Animals & Safer, Abundant Food

- **Market demand:** Approximately 15 million animals are polled each year in the USA. Cost $5-20 per animal, exclusive of calf mortality. $138 mil in mortality loses in Australia yearly.
- **Animal welfare imperative:** Dehorning is proven painful, increases risk of infection and death, and is unpleasant for producers. Growing consumer and retailer pressures.

Nestlé Walmart Save money. Live better. McDonald's

- **Gene-Editing requirement:** Hornless (polled) genetics in some beef breeds for 1000 years; dairy breeds naturally polled at very low frequency (<1%). Traditional breeding not practical.

- Heat Tolerant (SLICK)
- BRD (Respiratory Disease)
- FMDv (Food and Mouth Disease)
- Meat yield (Heavy Muscling)
- Swine Fever Resistance
- Genetic Castration
- Tail Docking
- Avian Flu Resistance
- Sex Selection

acceligen

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Challenges for Commercialization – Access for the Breeders

- Current regulatory pathway is too costly
  - designed for processes to make animals that produce pharmaceutical products!!
  - The regulation does not match the risk
- Inappropriate to regulate a breeding process over the food product
- Willful ignorance of intelligent people with good intentions
- Producers and retailers wary of Pitchfork Nation (i.e – losing market share while testing the technology)
- International influence - Emerging economies follow our lead in regulation

AGDAILY

Farmer's Daughter: Biotech in animal agriculture becoming a reality

October 7, 2016 - Paul Shapiro, the head of the Humane Society of the United States' (HSUS) farm animal protection division, recently stated at a conference that the organization could potentially support such modifications, provided that those modifications were meant to reduce perceived livestock suffering.

By simply changing one gene, we can have cows that no longer need to go through the process of dehorning. Certainly, that's a genetic solution that even HSUS can support.

Gene Editing Startup Recombinetics Receives $700,000 NIH Grant for Humanized Pig Models Development

NIH Awards Recombinetics a Research Grant to Develop Swine Models of Alzheimer's Disease

October 7, 2016 - Recombinetics received a National Institute on Aging $154,334 grant to create a genetically accurate swine model of Alzheimer's disease.

TwinCities BUSINESS

U of M-Developed Gene Editing Technologies Making Waves In Agriculture, Medicine

October 12, 2016 - "The leading companies in animal agriculture (Recombinetics) and plant genetics (Calyxt) are located here," he said. "Both companies are ahead of the curve."

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Joanna Grossman

Senior Policy Specialist
The Good Food Institute

Animal agriculture

- is one of "the most significant contributors to the most serious environmental problems, at every scale from local to global"
- contributes to "problems of land degradation, climate change and air pollution, water shortage and water pollution, and loss of biodiversity"

"Livestock's Long Shadow"
–The United Nations Food & Agriculture Organization

THE GOOD FOOD INSTITUTE

THE GOOD FOOD INSTITUTE

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THE GOOD FOOD INSTITUTE

Plant-based meats are in the early stages of a macro trend, similar to the way soy and almond milk changed the milk category.

—Robert Gamgort, CEO, Pinnacle Foods

THE GOOD FOOD INSTITUTE

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 # 35

Jeff Vallet, Ph.D. (USDA-ARS)

Moderated Questions and Discussion Time

Paul Shapiro

David E. Starling

Tad Sonstegard

Joanna Grossman

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Breakout

Group number is on badges

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What did you not hear today?

- What are the major strengths of current agricultural systems that are important to maintain in future systems?
- What are the major weaknesses of current agricultural systems that could be improved on in future systems?
- What are the major opportunities for agricultural systems of the future? How can technology and scientific findings facilitate these?
- What are the major threats for agricultural systems of the future?
- What research will be needed and how can this be accelerated?
- What infrastructure will be needed?
- What changes will be needed for new systems to succeed?
- How can we educate the next generation to solve these challenges?

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Report Out

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