

# Data Science for Food Safety

Use of Block Chain to Improve Food Safety

2020 America's Got Regulatory Science Talent Student Competition

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# FDA Strategic Plan for Regulatory Science

## Section 6. Implement a New Prevention-Focused Food Safety System to Protect Public Health: Strategic Plan for Regulatory Science

### 3) Maintain mission critical science capabilities:

- b) Identify and invest in emerging disciplines, sciences, and technologies to mitigate future risks in food safety (also see section 4); and
- c) Maintain and enhance the science/technology infrastructure to support day-to-day operations. This will ensure the infrastructure exists at FDA to promptly recognize, evaluate, and ensure effective controls for food and feed safety hazards (microbiological, chemical, and radiological).

# Difficulty Tracing Contamination Through the Supply-Chain

## Past outbreaks of E.Coli

According to CDC

- **2019-** 2 outbreaks, 173 cases
- **2018-** 2 outbreaks, 272 cases

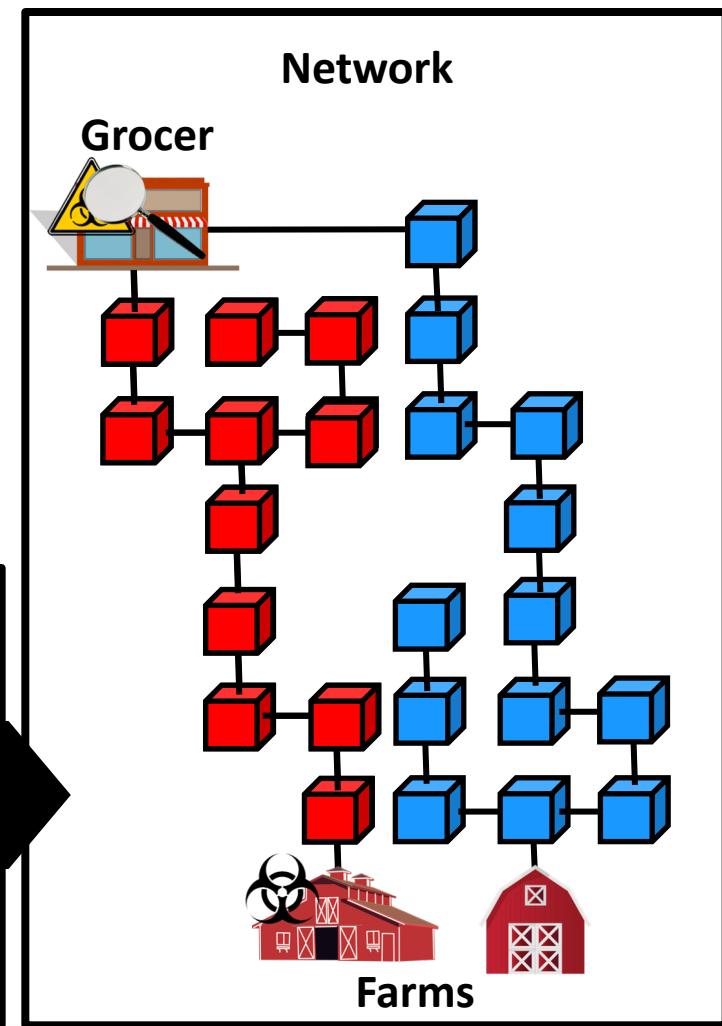
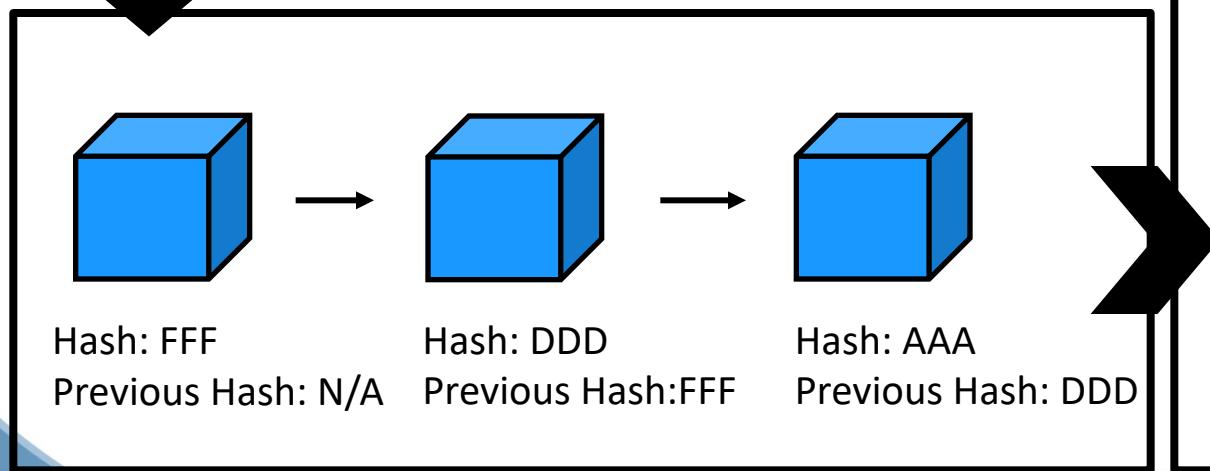
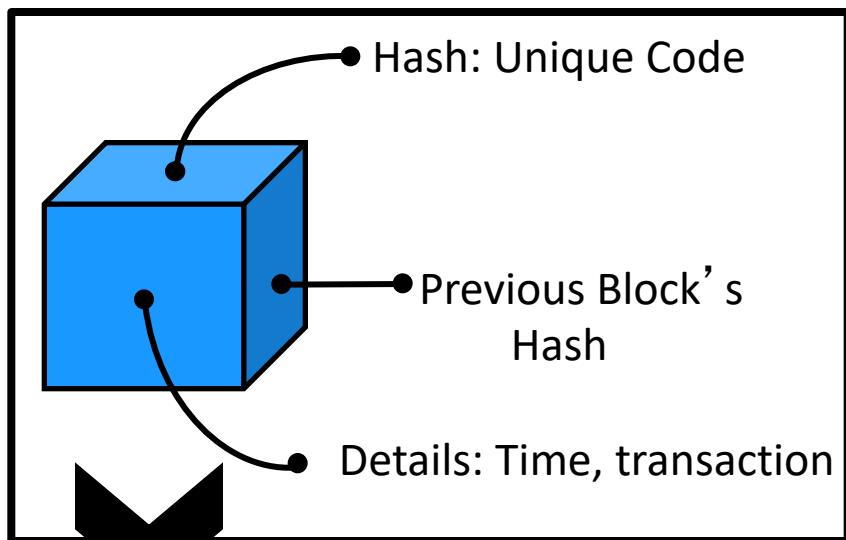


## Current issues:

- Tracebacks-trace contamination through supply chain back to original source
  - Labor intensive
  - Can take Weeks
  - Romaine lettuce has a shelf life of 21 days
- All lettuce was deemed unsafe to eat and disposed of, even though not all lettuce was contaminated
  - It is important to balance waste against safety



# Block Chain Will Improve Traceback Time



# Regulatory Science Policy Recommendations

- Require transactions involving nationally distributed high risk produce, to be recorded in a blockchain database with reporting requirements set by the FDA.
  - Pilot program for “high-risk” produce to evaluate feasibility, cost and effectiveness.
- Ensure that FDA has access to these databases, or for them to sync with a national database. Similar to the Sentinel Program.

## Benefits

- Support current preventative policies without overlap.
- Maximize health and safety while minimizing waste.
- Significantly lower manpower required to trace contamination to original source.
- Dramatically improve response time.
- Prevent unneeded disposal of healthy produce.

# Thank you!

## References

- Centers for Disease Control and Prevention. December 9<sup>th</sup>, 2019. *Reports of Selected E. Coli Outbreak Investigations*.  
<https://www.cdc.gov/ecoli/outbreaks.html>
- U.S. Food and Drug Administration. March 29<sup>th</sup>, 2018. Strategic Plan for Regulatory Science. <https://www.fda.gov/science-research/advancing-regulatory-science/strategic-plan-regulatory-science>