

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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MEDICINE *of* THE HIGHEST ORDER



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

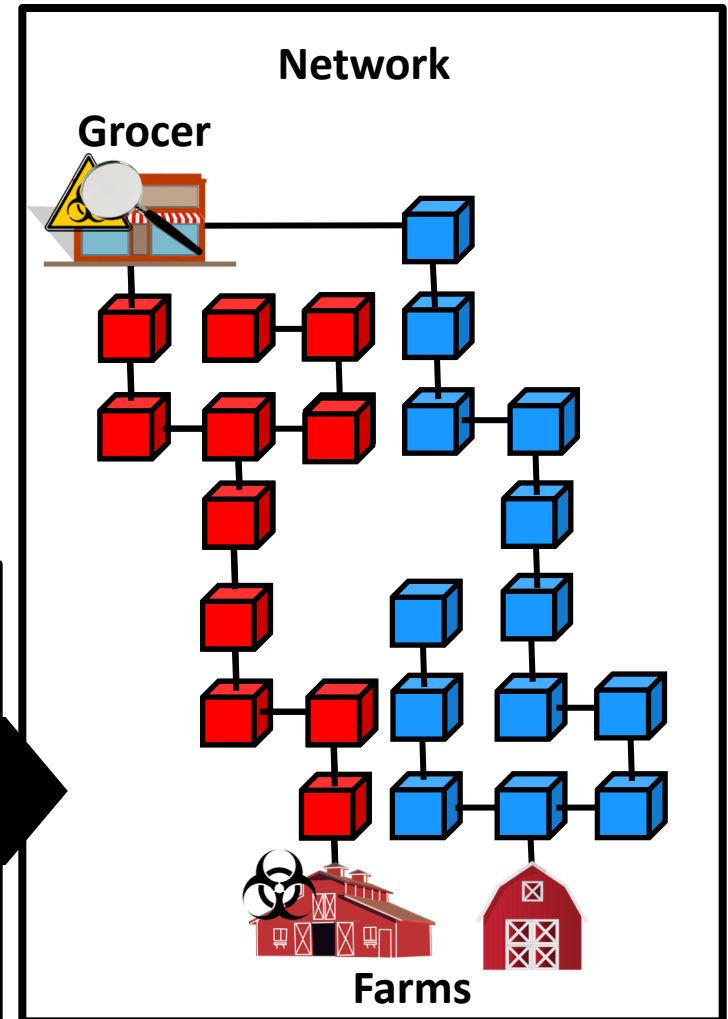
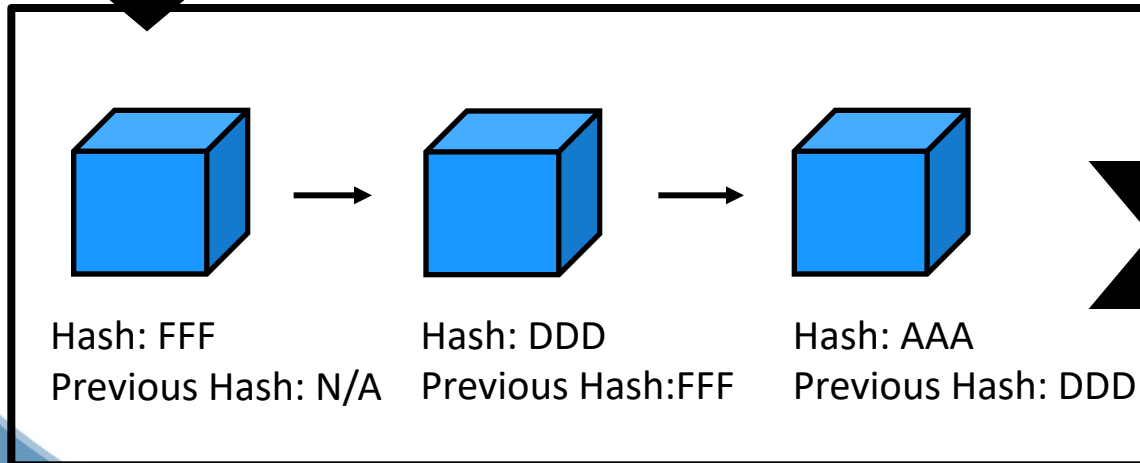
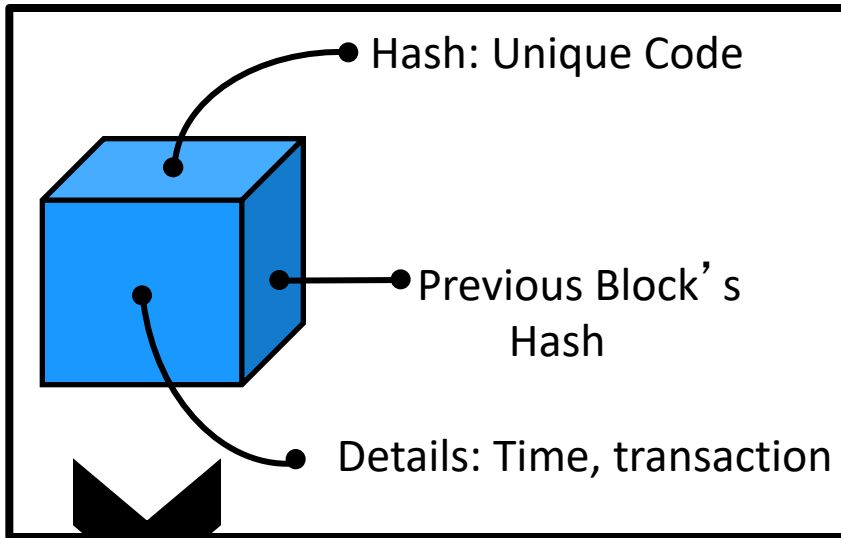


Current issues:

- 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 9th, 2019. *Reports of Selected E. Coli Outbreak Investigations.*

<https://www.cdc.gov/ecoli/outbreaks.html>

•U.S. Food and Drug Administration. March 29th, 2018. Strategic Plan for Regulatory Science. <https://www.fda.gov/science-research/advancing-regulatory-science/strategic-plan-regulatory-science>