Ascaris suum

- Parasitic roundworm of pigs that can affect humans
- Morphologically identical to Ascaris lumbricoides
- Uncommon in the United States
Shimesu Koino
Milk Spots on the liver
Human Roundworm

- From a child in Africa
Transmission

- Eggs can remain in soil for >10 years
- Difficult to eradicate
- Can be transmitted by exposure to soil
- Risk from consuming produce grown in the soil is unclear
Links to small-scale pig farming

- 14 cases of human ascariasis in Maine identified during 2010-2013
- Linked to small-scale farming with pigs
- 7 unrelated small-scale farms identified

Miller et al. Ascariasis in Humans and Pigs on Small-Scale Farm, Maine, USA 2010-2013. cdc.gov/EID
Links to small-scale pig farming

- Use of pig manure as fertilizer
- Pig bedding used in compost
- Proximity of pig pens and produce
Baylisascaris – Raccoon Roundworm
Case definition (probable)

- Clinical symptoms consistent with roundworm infection
- Contact with the farm or its produce
Demographics

- Colorado Department of Public Health and Environment (CDPHE) notified of 4 cases of probable ascariasis
- All 4 had interned at the same organic farm in northern Colorado
- One additional case that visited the farm and consumed produce
Internship program

- Most live and work on the farm
- April through November
- Duties include both field work and animal care
Site visit

- Raise Heritage Pigs (Berkshire & Mangalitsa)
- Good rotation practices
- Reported historic worm issues
Strawberry fields
Wild Turkeys
What is the scope and risk?

- Produce Distributed to
  - Schools—Boulder Valley School District only. Each week, send school and restaurants list of available produce and they can order.
  - Restaurants— 19 in Boulder and Denver
  - CSA—Approximately 200 families.
  - Farm Stand—On property
  - Farmers Markets
  - Summer Camp
Conclusions

- Cluster of probable infections epidemiologically linked to organic farm
- Known *A. suum* infection among pigs
- Due to difficulty eradicating eggs and long incubation period, additional cases remain possible
- Risk to consumers of produce remains unclear
Public Health Recommendations

- Vet directed deworming program
- Handwashing
- Educate farm workers and visitors about the risk
- Remind CSA patrons to thoroughly wash all food
- Revisit current produce washing process
Hi there,

We just slaughtered 2 pigs for personal consumption. One had large worms in the small intestine. We believe them to be Ascaris/roundworm.

We would like to know:

• What other animals can be infected by the eggs? We keep humans, chickens, pigs, cows on the property.
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Th-Th-Th-Th-That's All Folks