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Rijksinstituut voor Volksgezondheid en Milieu
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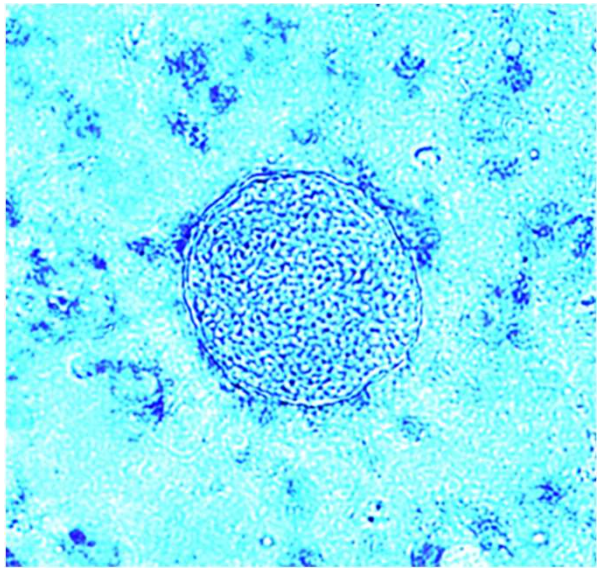


Control of Toxoplasma in Pork

Association between within-herd seroprevalence and risk factors for *Toxoplasma gondii* in fattening pigs in The Netherlands

Perugia, October 2018

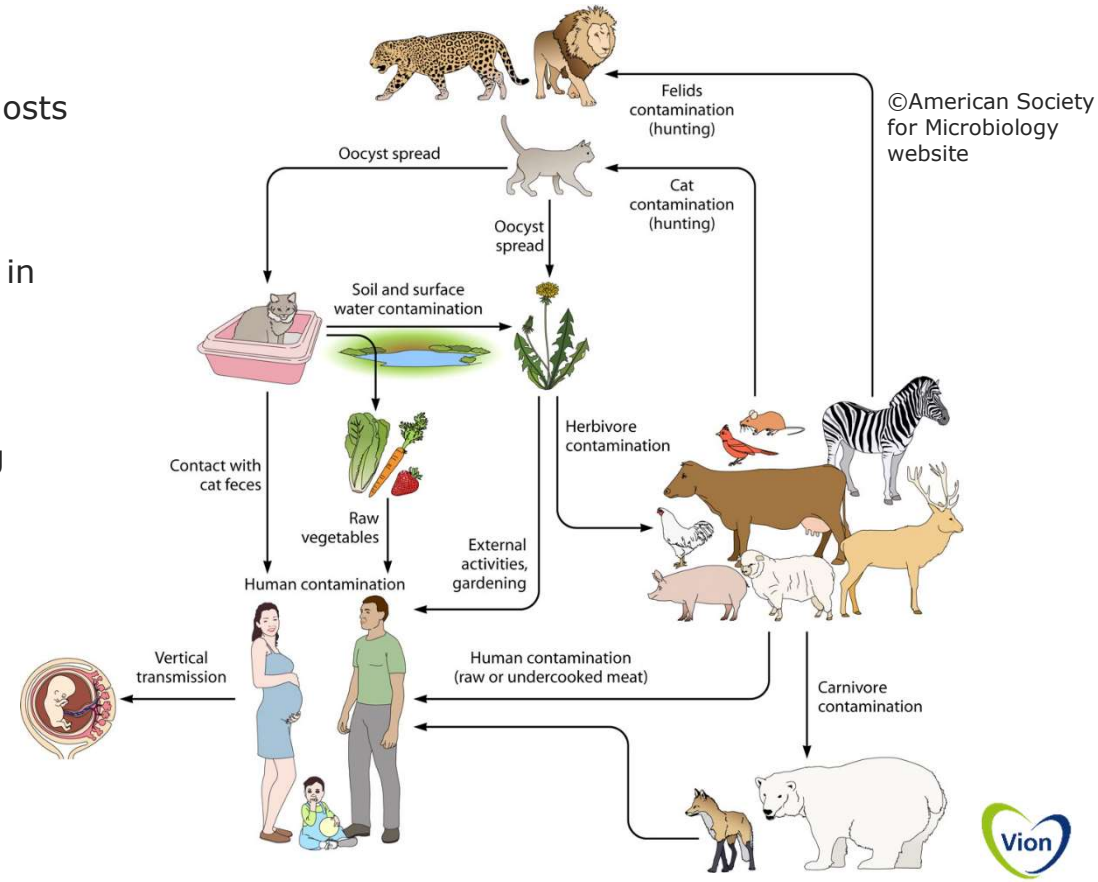
Dorien Eppink DVM/MSc/ECVPH resident

Background: *Toxoplasma gondii*

- **Cat**: definite host
- All warm-blooded animals: intermediate hosts

- **High disease burden**:
  - 2nd in the top 5 pathogens resulting in death from food-born illness (CDC)
  - 2nd based on DALY's for foodborne pathogens NL (Mangen *et al*. 2018)
  - 2nd on list of 86 prioritized emerging zoonoses NL (Havelaar *et al*. 2010)
  - EFSA scientific report 2011

- Toxoplasmosis in humans:
  - **Pregnant women**
  - Immune competent or **immuno–compromised**



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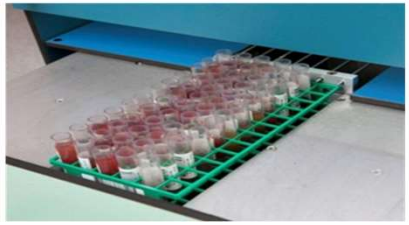
Serological monitoring at Vion abattoirs



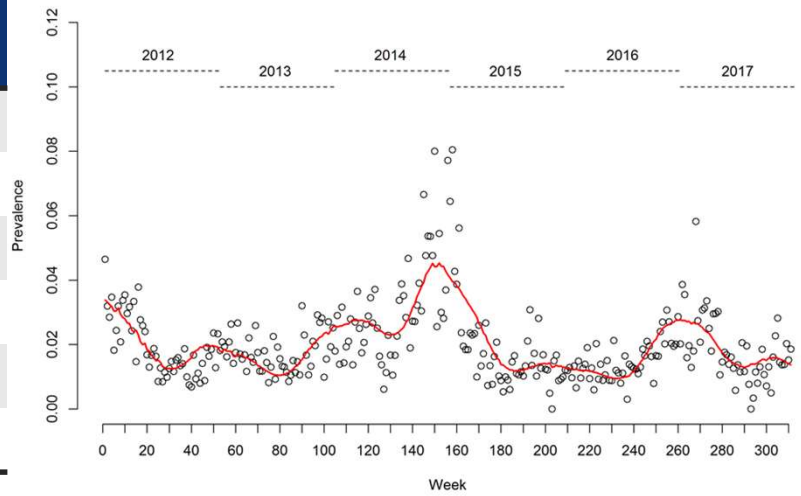
- Uniform procedure on all sites
- Trained staff
- At random sampling (1,2 or 6 samples per herd)
- Use the same external laboratory


Seroprevalence of *Toxoplasma gondii*

Year	Total number of samples	Prevalence (95% CI)
2012	55.681	0.020 (0.013 – 0.029)
2013	41.151	0.016 (0.011 - 0.024)
2014	38.752	0.028 (0.019 – 0.042)
2015	44.462	0.021 (0.014 – 0.031)
2016	46.294	0.014 (0.010 – 0.021)
2017	47.282	0.018 (0.012 – 0.027)

Odd ratio Organic/Conventional = 1.8 (95%CI: 1.5 – 2.15)

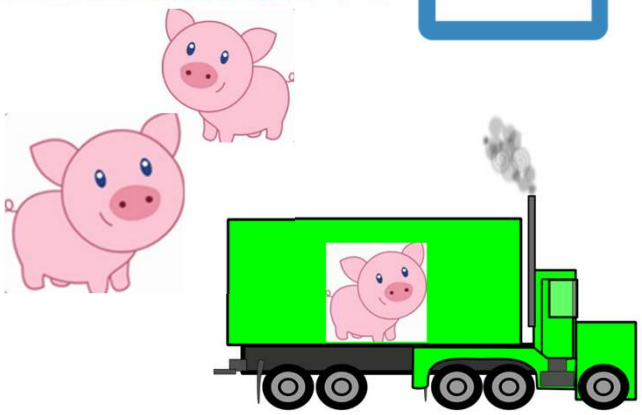


Seroprevalence and seasonal behaviour of toxoplasmosis in fattened pigs 2012-2017

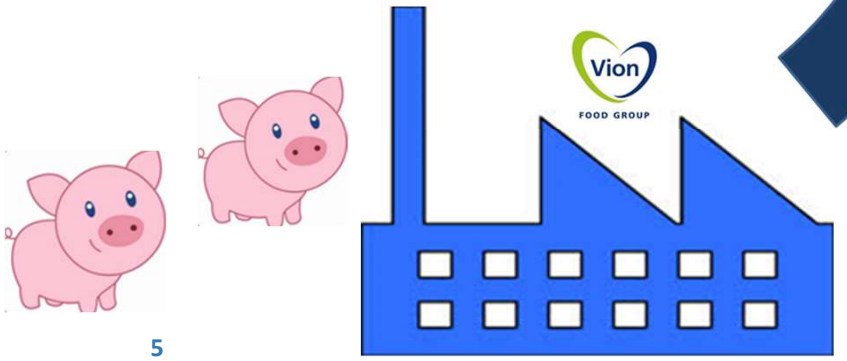
Materials & Methods

HACCP-based audit
at **75 pig farms**
(2015-2018)

Identified **50 case and 25 control** farms
Case: ≥ 1 pos. sample one year before audit
Control: 0 pos. samples



6263 serum samples at abattoir with PrioCHECK™ Toxoplasma Antibody ELISA



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Results

Risk Factor	N Farms	Prevalence (% Case)	OR (95%CI)	*P*-Value
Goats				
- Absent	67	64%	n.a.	0.176
- Present	8	88%		
Boots stable				
- Only inside	28	54%	n.a.	0.524
- Also outside	47	74%		
Prof. pest control				
- Yes	33	76%	n.a.	0.283
- No	42	60%		
Own cats at barnyard				
- Absent	42	60%	n.a.	0.850
- Present	33	76%		
Pigfeed accessible cats				
- Absent	49	53%	**15.4 (3.0-79.4)**	**0.001**
- Present	26	92%		
Pig drinking water				
- Tap water	34	59%	**3.4 (1.1-10.7)**	**0.035**
- Well	41	73%		
Pigfeed contains whey				
- Absent	52	60%	n.a.	0.429
- Present	23	83%		
Pig feed				
- Dry feed	37	54%	n.a.	0.069
- Wet/liquid feed	38	79%		

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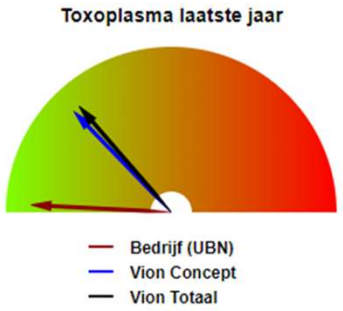
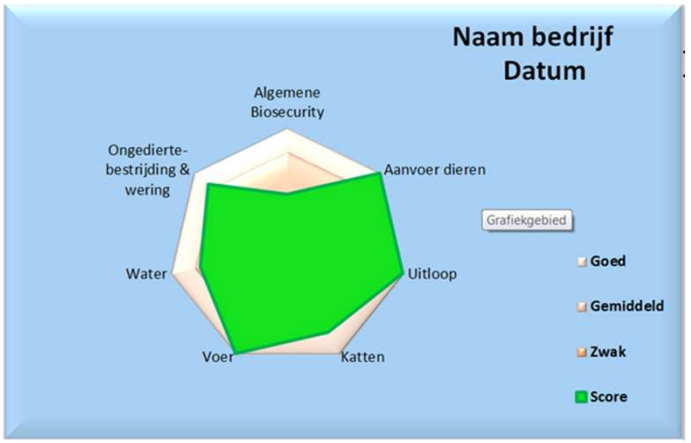
Conclusion and Perspectives

Serological screening of Dutch intensive pig farms **for *T. gondii*** lead to the identification of pig farms where **typical risk factors** were present. Two statistically significant risk factors were identified in this cohort.



Perspectives:

- Analyse data using Bayesian statistics.
- Taking also into account seasonal patterns.
- Changing farm management will likely contribute to reduction of the human disease burden and this is presently studied.



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Thank you for your attention!

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Toxoplasma gondii: a common parasitic infection