Determining the gold standard *ante-mortem* sample type for detection of *Brachyspira* in pigs

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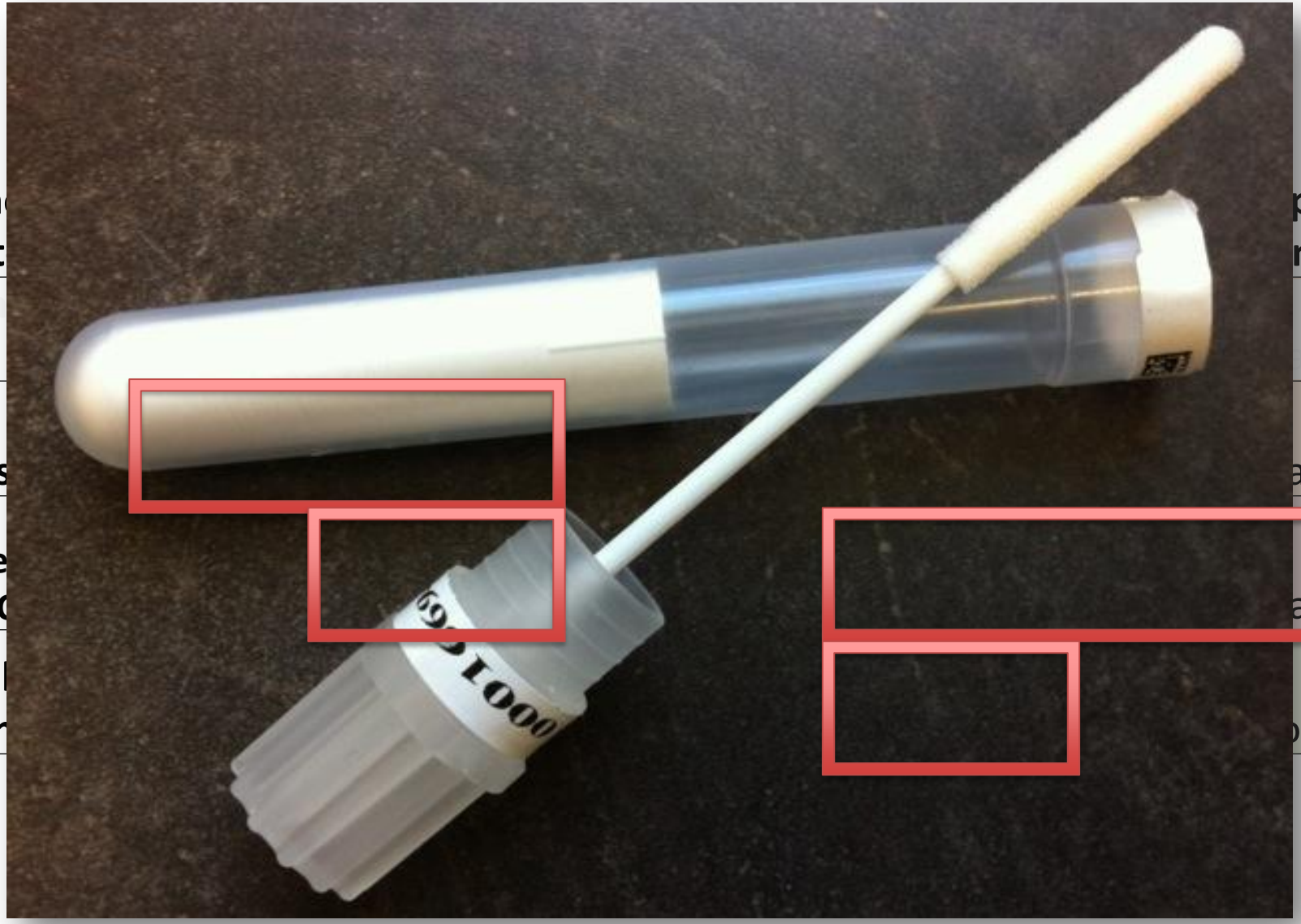
Brachyspira spp. colitis

- Re-emergent
  - *"B. hampsonii"*
- Mucohaemorrhagic diarrhea
- Fecal-oral transmission
- Rapid spreading within farm
- Significant economic impact
- Subclinical individuals
  - Shedding up to 80 days

Brachyspira spp. Colitis Diagnostics



Diagn	ple
Strat	nd time
Feces	ay
Se Media C	ays
Rectal Gram	ours

Study Objective

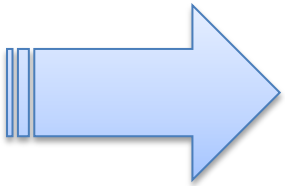
- To determine the sensitivity and specificity of real-time PCR (qPCR) on DNA extracted from feces and rectal swabs

- To compare feces and swab to fecal culture for the detection of "*Brachyspira hampsonii*"

Study Design

12 Pigs

Inoculated with "B. hampsonii"



22 Days

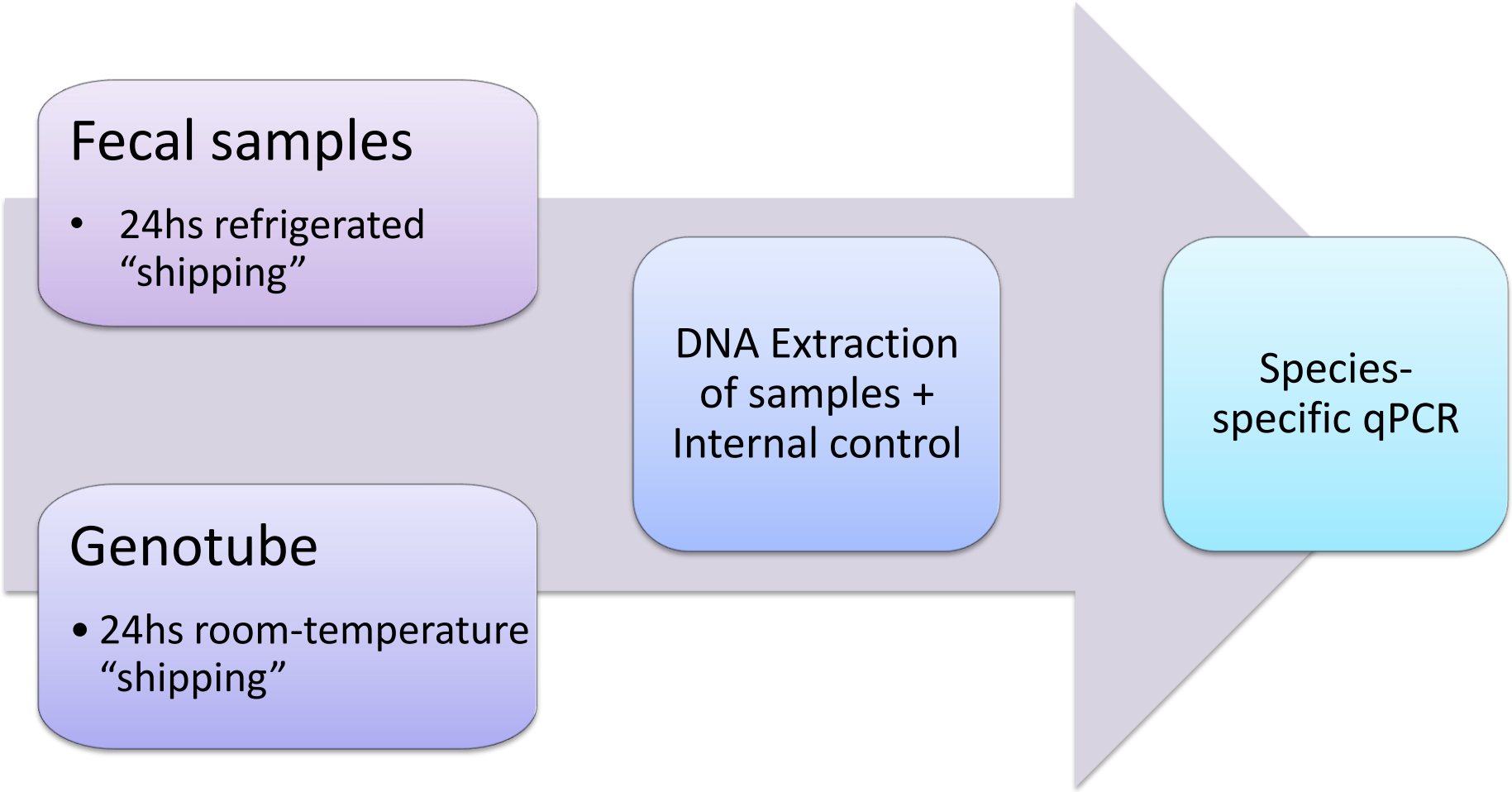
Fecal score

Fecal samples

Culture

Genotube swab

Study Design



Fecal Scoring Results

All Fecal Scores Comparison (n=55)

		Culture +	Culture -
Genotube qPCR	+	14	3
	-	3	35

		Culture +	Culture -
Feces qPCR	+	15	3
	-	2	35
		88	0.92
		tivity	Specificity

Strong Positive Correlation across all techniques

Genotube qPCR	+	15	2
	-	3	35
		0.83	0.95
		Sensitivity	Specificity

Sample Classification

No clinical signs or Subclinical

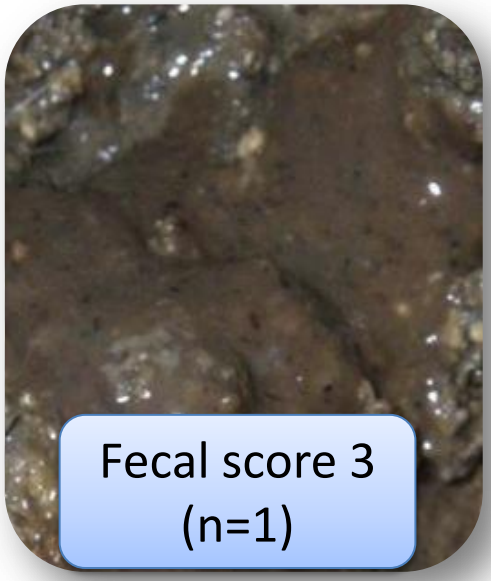
Low Fecal Scores Comparison (n=42)

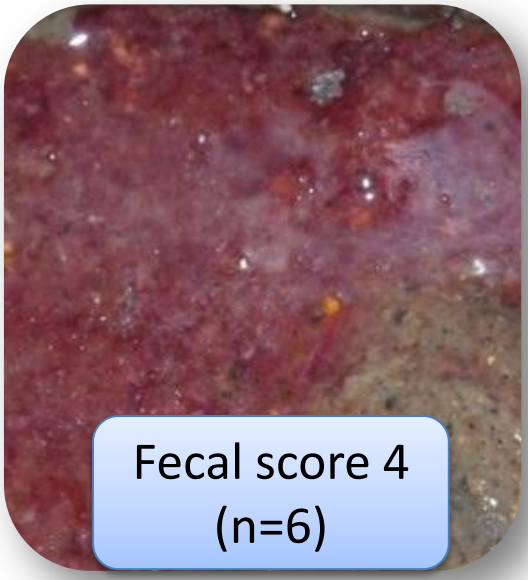
		Culture +	Culture -
Genotube qPCR	+	5	2
	-	2	34
		0.71 Sensitivity	0.94 Specificity

		Culture +	Culture -
Feces qPCR	+	5	2
	-	2	34
		0.71 Sensitivity	0.94 Specificity

		Feces qPCR +	Feces qPCR -
Genotube qPCR	+	5	2
	-	2	34
		0.71 Sensitivity	0.94 Specificity

Sample Classification





Clinical disease present

High Fecal Scores Comparison (n=12)

		Culture +	Culture -
Genotube qPCR	+	9	1
	-	1	1
		0.90 Sensitivity	0.50 Specificity

		Culture +	Culture -
Feces qPCR	+	10	1
	-	0	1
		1.00 Sensitivity	0.50 Specificity

		Feces qPCR +	Feces qPCR -
Genotube qPCR	+	10	0
	-	1	1
		0.91 Sensitivity	1.00 Specificity

Conclusions

- qPCR on feces and Genotube swab perform similarly for detection of "*Brachyspira hampsonii*"
- Both are generally less sensitive than culture
- Genotube is indicated as a powerful tool for *Brachyspira* epidemiological surveillance in commercial herds.

Thank you!

Brachyspira Research Group

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