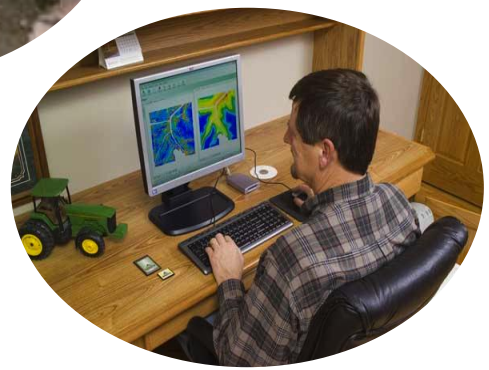
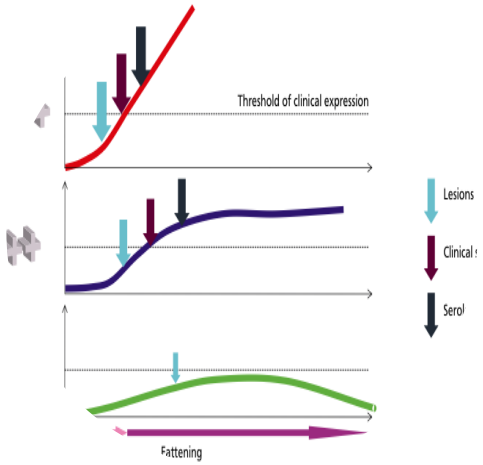
Royal Veterinary College
University of London

Assessment of three novel methods for reduction of pathogen load in the environment of pigs – end of year 1

Christopher Browne

Mycoplasma hyopneumoniae;





Multifactorial!

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Objectives

- Develop novel ways to reduce pathogen load in the environment of pigs, and thereby reducing disease in pigs. Focus on *M. hyopneumoniae*

  - Understand how the pathogen survives in the environment.
  - *In vitro:* efficacy studies of 3 different methods.
  - *In vivo:* laboratory and field

  - **Hypothesis:** differing environmental conditions and building materials will alter the survivability of *M. hyopneumonia*e.

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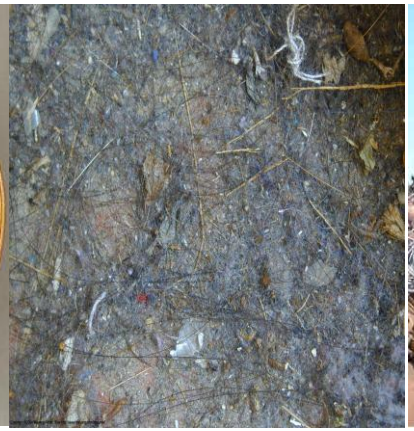
Hypothesis testing;

Various pig building materials including;

Various temperatures including;

- 4° C, 25° C and 37° C

Today I will concentrate on dust!

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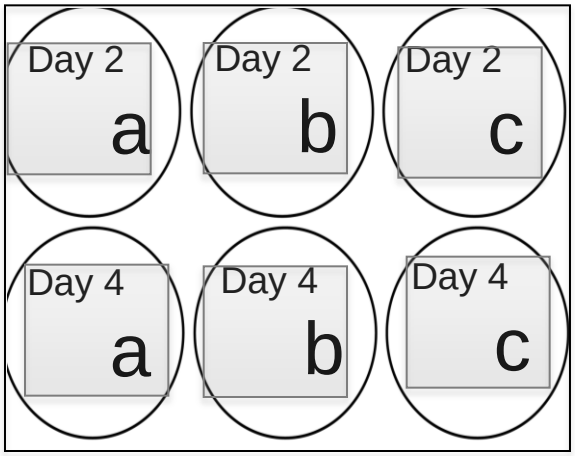
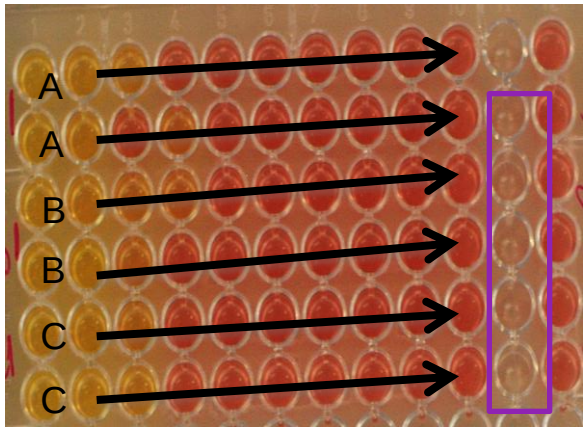
Materials and Methods:

Experiment 1 – dried surface with or without dust

- Reference strain *M. hyo* 232
  - Logarithmic stage of growth
- 40µl deposited on 6 well plate
- +/- 100mg dust
- Allowed to dry (1-1.5h)
- Re-suspended with friis medium on days:
  - Before,0,1,2,4,8,12 and 16
- Serial dilution on 96 well plates
- Colour change indicates growth





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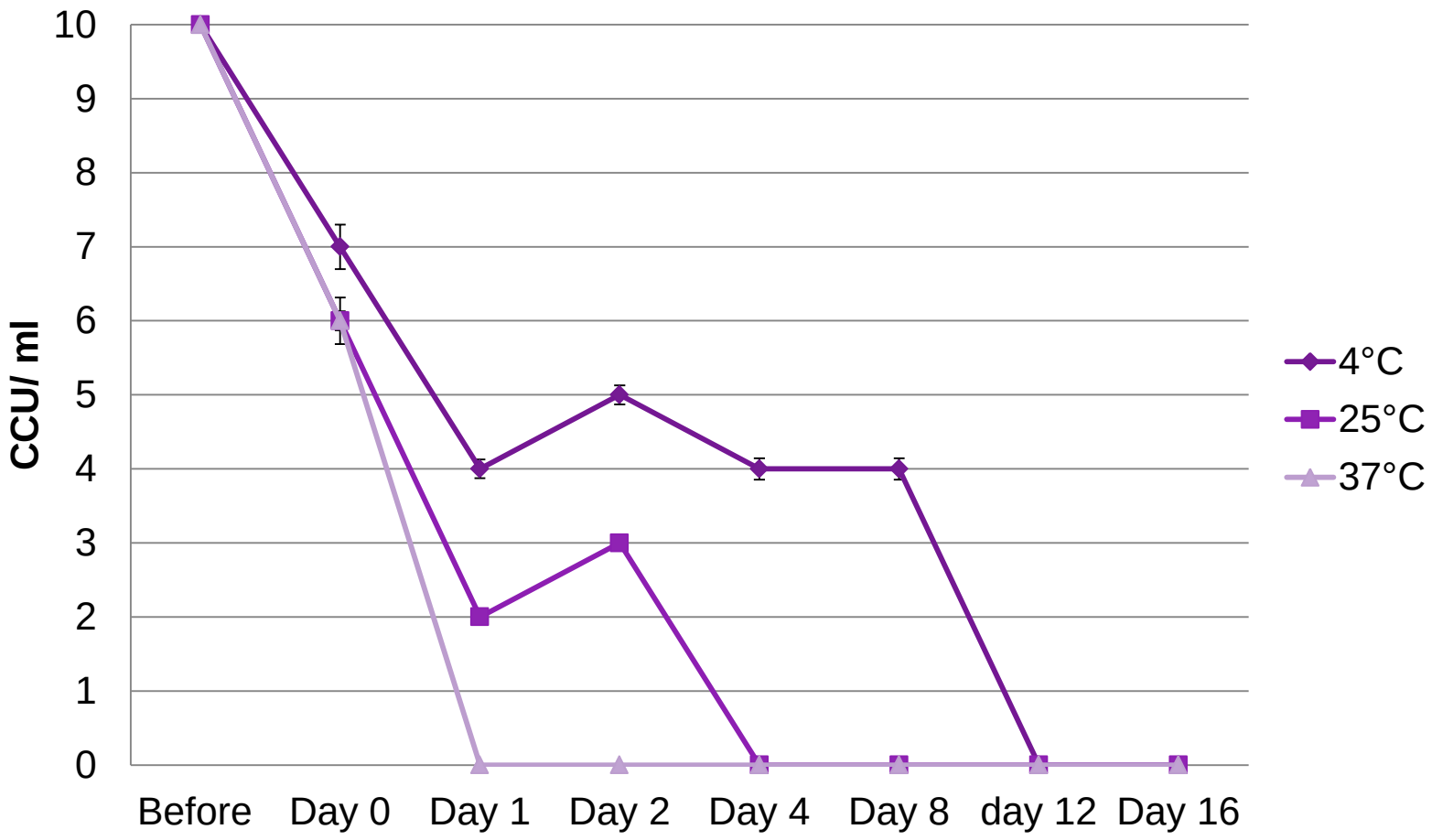
Results: dried surface



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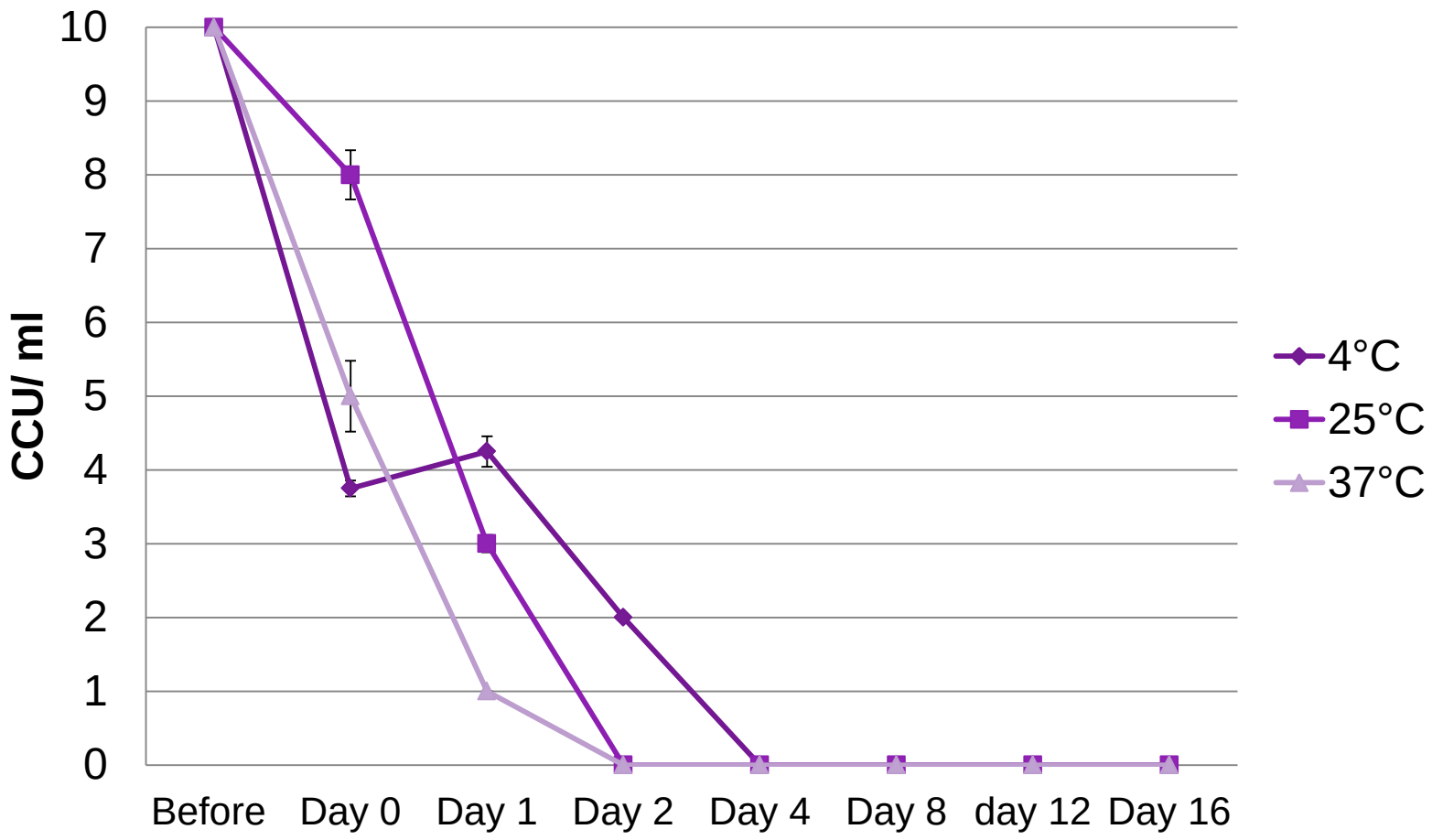
Results: dust



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In vitro: Silver ion solution-

- 10^5 colour changing units of M. hyopneumoniae
- Spun down 5000g @ 20minutes
- Poured off supernatant
- Added the following Silver, PBS, dH20 and Friis
- Kept at various time points
- Spun down again, and added fresh Friis
- Performed serial dilutions

	Silver	PBS	dH20	Friis
1 Minute	10	10	10	10
60 Minute	1.5	10	10	10
12 Hours	0	10	10	10

- Only preliminary work
- More time points will be looked at i.e.24hour
- Different concentrations of *M. hyopneumoniae* may also be explored

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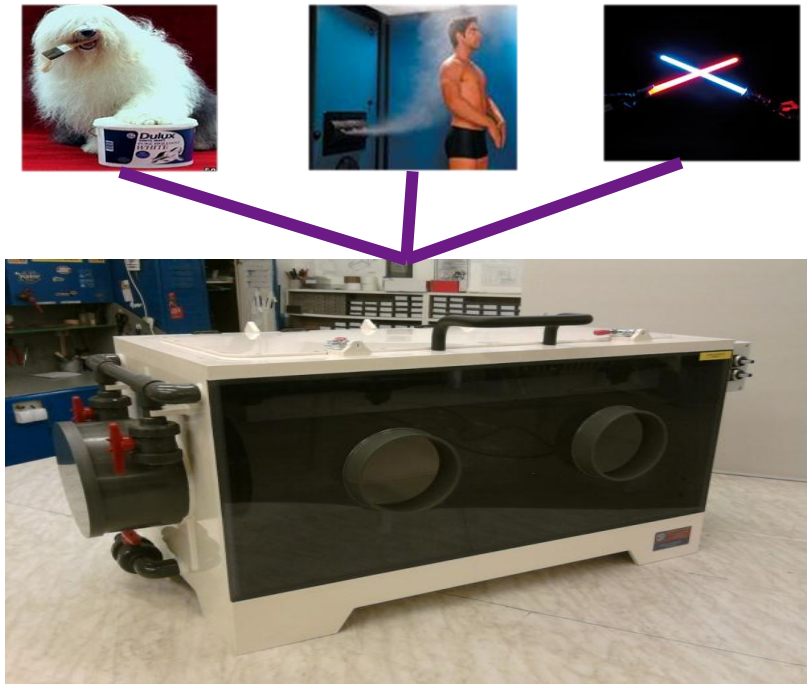
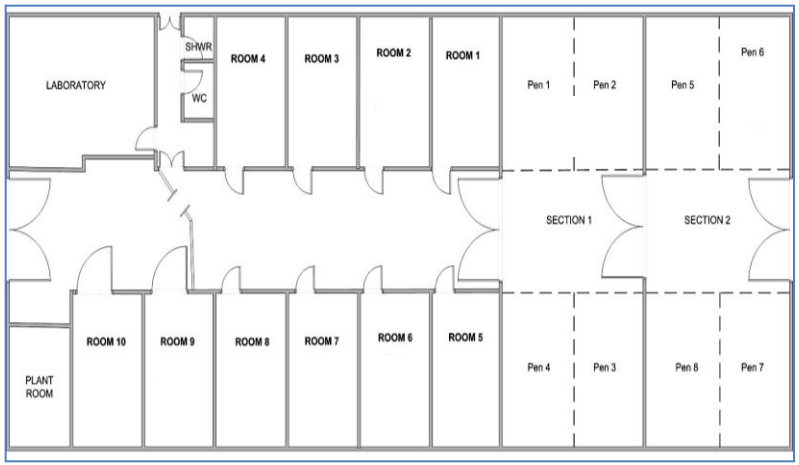
Next steps

in vitro testing of:

- UVC
- Photo-catalytic paint
- Silver ion mist



Factorial experiment:



- Pen effect
- Sentinel animals
- Production, environmental and pathological changes recorded.

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Industry focus

- Better understanding of the survivability of *M. hyopneumoniae*
  - Improve management practices i.e. all in – all out cleaning between batches

- Silver ion solution has the potential to:
  - reduced disease
  - improved production

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Conclusions

- *M. hyopneumoniae* survives for 8 days when dried.
- Dust may inhibit grow of M. hyopneumoniae but only marginally (still surviving 4 days).
- Silver ion solution could be used as a method of reducing *M. hyopneumoniae* in the environment.

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Acknowledgements

Supervisors:

- Dr Mandy Nevel
- Dr Anette Loeffler
- Prof. David Lloyd

Sponsors:

- BPEX
- Pfizer Animal Health

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