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The Equine Infectious Disease Service at the Animal Health Trust

A 'Thoroughbred'
contribution to the
nation's equine health

Background and relevance to the Thoroughbred



- In 1979, UK Thoroughbreds suffered severe outbreaks of equine influenza among racehorses and EHV-1 abortions and neurological disease on stud farms
 - Review of these outbreaks led to creation of a Virology Unit at the Animal Health Trust (AHT) with on-going support provided by the Thoroughbred industry
 - Since then the AHT has grown its equine infectious disease research and diagnostic service capability
 - The AHT still receives financial support annually from owners and breeders of Thoroughbreds & the HBLB
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Background and relevance to the Thoroughbred



- AHT continues to fulfil a critical role through provision of specialist laboratory testing via its Diagnostic Microbiology and Pathology Laboratory Services
 - AHT also provides advice and guidance on disease control and prevention via its veterinary surgeons in the Epidemiology and Disease Surveillance Unit
 - Working with attending vets and governing authorities, the AHT strives to minimise the extent & impact of disease outbreaks by reducing the risk of onward transmission to other groups of horses
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Background and relevance to the Thoroughbred

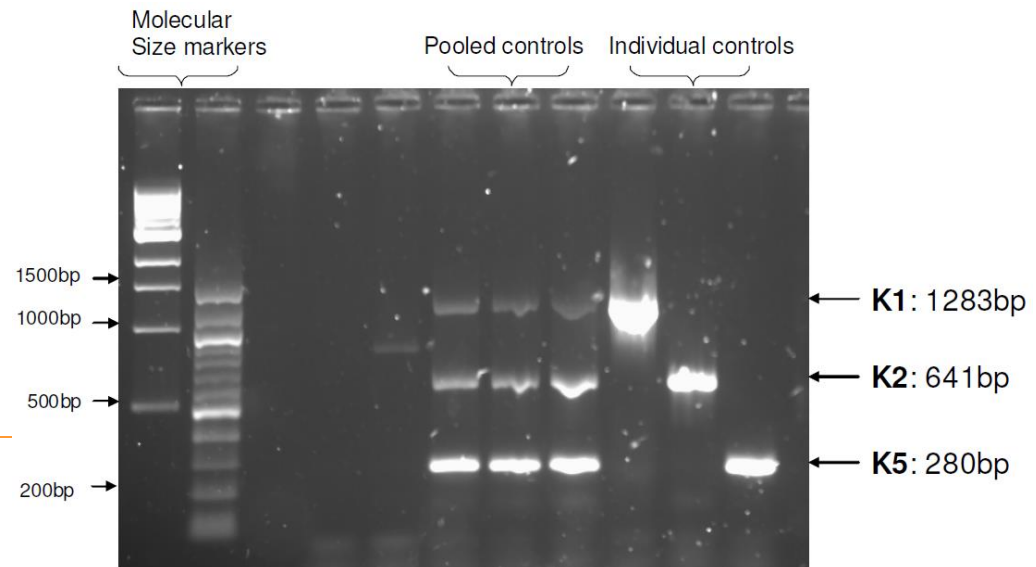


- Thoroughbred industry financial support helps the AHT maintain expert staff, equipment & facilities, allowing:
 - Continual improvements to be made to a wide range of modern equine diagnostic tests
 - Access to specialist pathology services & laboratory capacity to deal with high sample throughputs in large disease outbreaks
 - A pro-active and prompt approach to be taken to investigate & control important endemic diseases e.g. neurological EHV-1
 - Provision of some subsidised laboratory testing to maintain compliance with disease control measures & submission of samples during the clearance phase of an outbreak
 - Access to expert epidemiological and disease control advice
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Examples of success: Klebsiella capsule typing



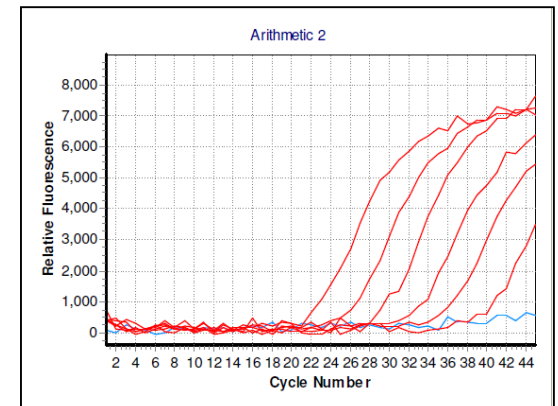
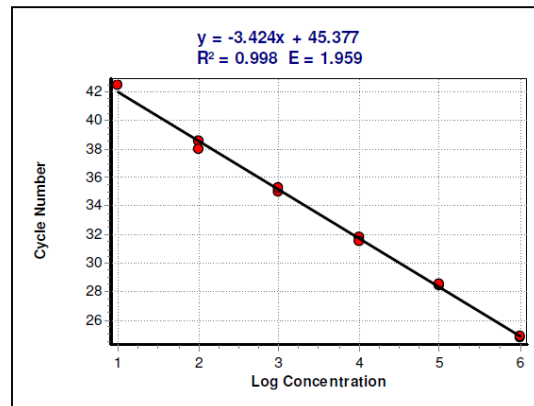
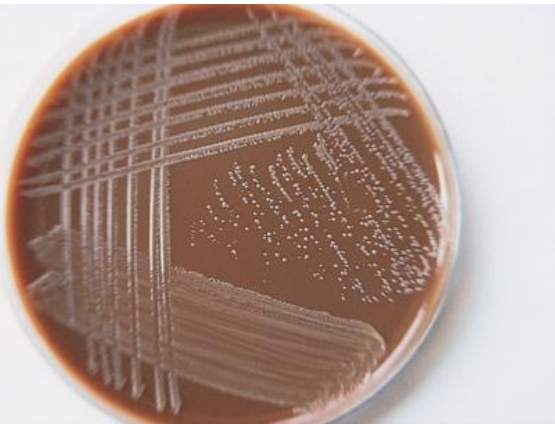
- Technology transfer from human medicine for typing pathogenic capsule types (1, 2 and 5) of equine venereal pathogen *Klebsiella pneumoniae*
 - AHT has validated a multiplex end-point PCR from a method applied by the Health Protection Agency (HPA), London
 - PCR has improved accuracy and turnaround time over the old antiserum typing



Examples of success: Detecting *Taylorella* spp.



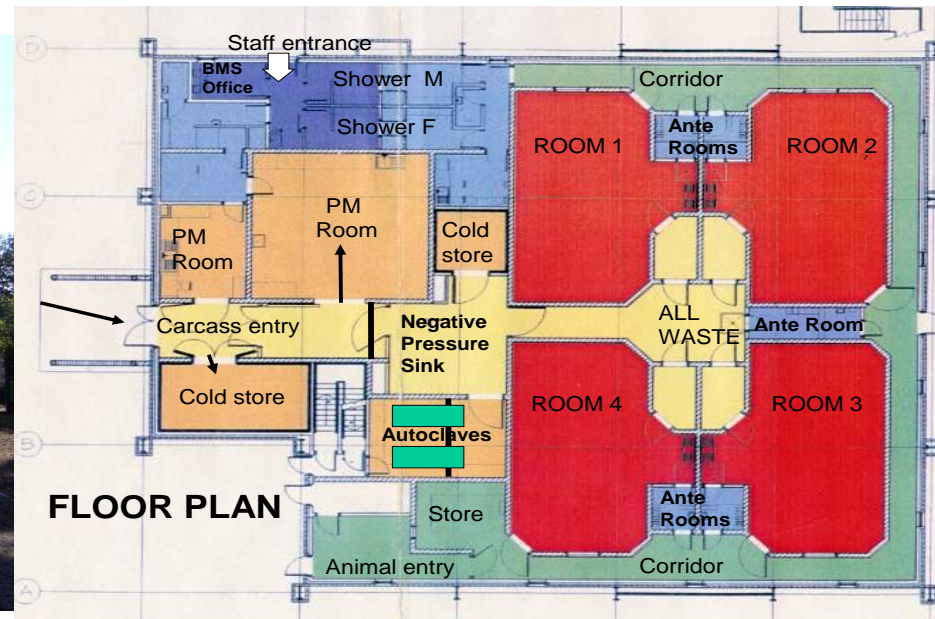
- Development of highly sensitive & discriminatory duplex qPCR diagnostic assay for *Taylorella equigenitalis* and *Taylorella asinigenitalis* – the causes of contagious metritis in horses and donkeys
 - The AHT qPCR detected the CEM outbreak in Glos. in 2012
 - The AHT qPCR detected the first UK case of *T. asinigenitalis* in a 3 y.o. donkey jack in Buckinghamshire in 2013



A dedicated equine pathology service



- Thoroughbred industry funding supports maintenance of dedicated equine pathology staff & facilities at AHT
 - Board-certified specialist equine pathologists and technicians
 - The Allen Centre for Vaccine Studies' dedicated equine *post mortem* and carcass storage facilities



Investigation & control of neurological EHV-1



- Thoroughbred industry funding supports investigation & control of UK outbreaks of neurological EHV-1
 - Outbreaks of neurological EHV-1 in the general equine population may spill over into Thoroughbred racing and/or breeding, where they can have significant impacts
 - A basic premise is that prompt action in establishing diagnoses and taking appropriate control measures will minimise the risk of transmission and spillover
 - Supported by the Thoroughbred industry AHT conducts subsidised investigations of neurological EHV-1 outbreaks
 - The burden of neurological EHV-1 is not the same every year
 - The 10 months since November 2012 saw an unusually high number of outbreaks, both involving Thoroughbreds and non-Thoroughbreds

Neurological EHV-1 investigations 2012-13



No.	Yard Location	Period of Investigation	Premises Type	Comments
1	Devon	Nov 2012 - Jan 2013	TB National Hunt training yard	Multiple cases, some fatal, possible link to yard 2 after re-opening
2	Somerset	Jan - Feb 2013	TB National Hunt training yard	Single non-fatal case, possible link to yard 1 through racing
3	Suffolk	Jan - Feb 2013	TB Flat training yard	Single fatal case, no known link to yard 1 or yard 2
4	Gloucestershire	Feb - Apr 2013	Yards linked to a hunt	Multiple cases, none fatal, known horse movement link to outbreak 7
5	Buckinghamshire	Febr - Mar 2013	Retirement yard	EHV-1 respiratory disease confirmed, neurological EHV-1 excluded
6	Gloucestershire	Mar - Apr 2013	Dressage yard	Single fatal case, same practice, different vet to outbreak 4
7	Gloucestershire	Mar - Apr 2013	Yards linked to a hunt	Several cases, known horse movement link to outbreak 4
8	Gloucestershire	Mar - Apr 2013	Veterinary practice isolation unit	EHV-1 confirmed, no neurological cases, linked to outbreaks 4, 6 & 7
9	Wiltshire	Mar- Apr 2013	Yard linked to a hunt	EHV-1 confirmed, no neurological cases, had hunted with outbreak 7
10	Wiltshire	Mar - Apr 2013	Yard linked to a hunt	EHV-1 confirmed, possible neuro' case, had hunted with outbreak 7
11	Aberdeenshire	Apr 2013	Dressage yard	EHV-1 confirmed, no neurological cases
12	Devon	Jul - Sep 2013	Mixed breed stud incl. TBs	Multiple cases, some fatal, one EHV-1 abortion

- Management of all outbreaks facilitated by use of diagnostic tests
 - Identification of EHV-1 pathogen (qPCR, virus isolation, IHC)
 - Identification of exposure by detecting antibodies raised against EHV-1 (Complement Fixation Test or CFT)

Stages in investigation and control of EHV-1 outbreaks



- Awareness by AHT of possible EHV-1 case/outbreak
 - veterinary surgeon speaks to AHT
 - Preliminary investigation conducted by the vet
 - Laboratory diagnosis of EHV-1 is established
 - Understanding/controlling the situation on the ground e.g. stop movements, increase biosecurity
 - Establish freedom from active infection through clinical & laboratory monitoring
 - Satisfy stringent criteria for freedom from infection in order to return to normal activity
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Actions during control of EHV-1 outbreaks



- **Segregate** population into discrete groups
 - **Collect** full sample set of samples from all horses
 - NP swab (qPCR), 1 x serum (CFT), 3 x hep blood (VI)
 - **Test** full sample set from all horses
 - Identifies extent of infectious & exposed horses
 - Facilitates removal into isolated group of infectious horses
 - **Observe** all groups carefully for 3-4 weeks
 - **No cases seen in a group:** Collect & test NP swabs & sera (pair) from the group. Consider EHV-1 free if CFT pair & qPCR are negative.
 - **Cases seen in a group:** Immediately collect & test NP swabs, sera (as pair) & hep bloods from the group. Remove virus positives to isolation. Repeat after 2-3 weeks observation
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