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Research Institute

Lessons to learn from Scottish BVDV strain typing

BVDzero Congress, 3 July 2019

George Russell, Moredun Research Institute

Genotyping BVDV PI samples

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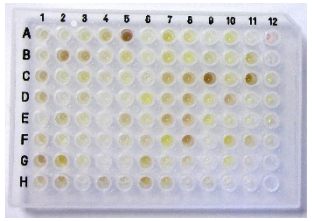
BVDV serum samples from diagnostic labs

SRUC SAC Consulting

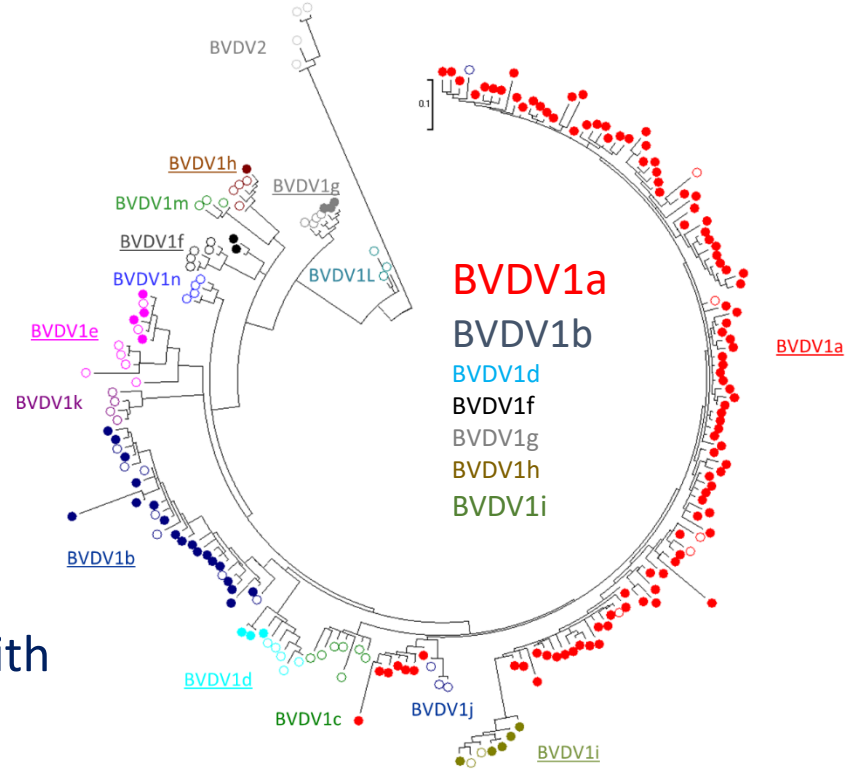
biobest diagnostics



Direct RT-PCR and sequencing

~1000 per year since 2014

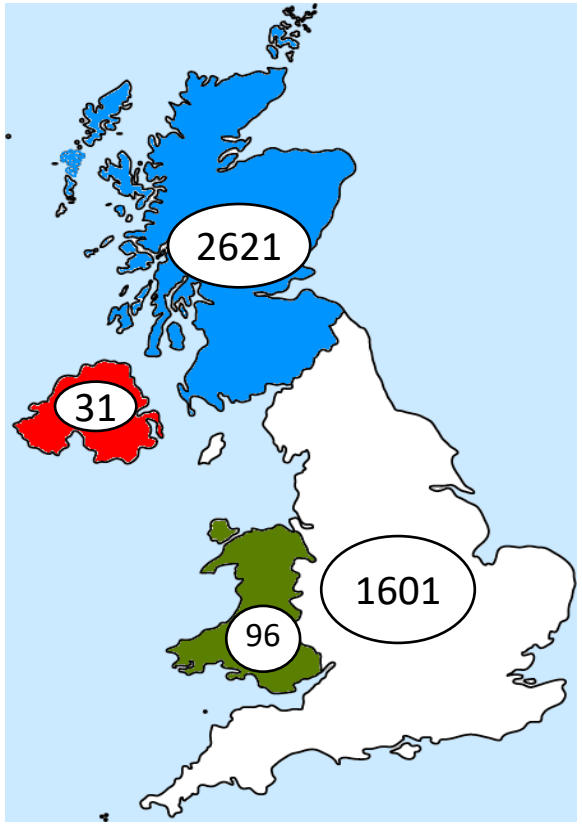
Comparison with known strains



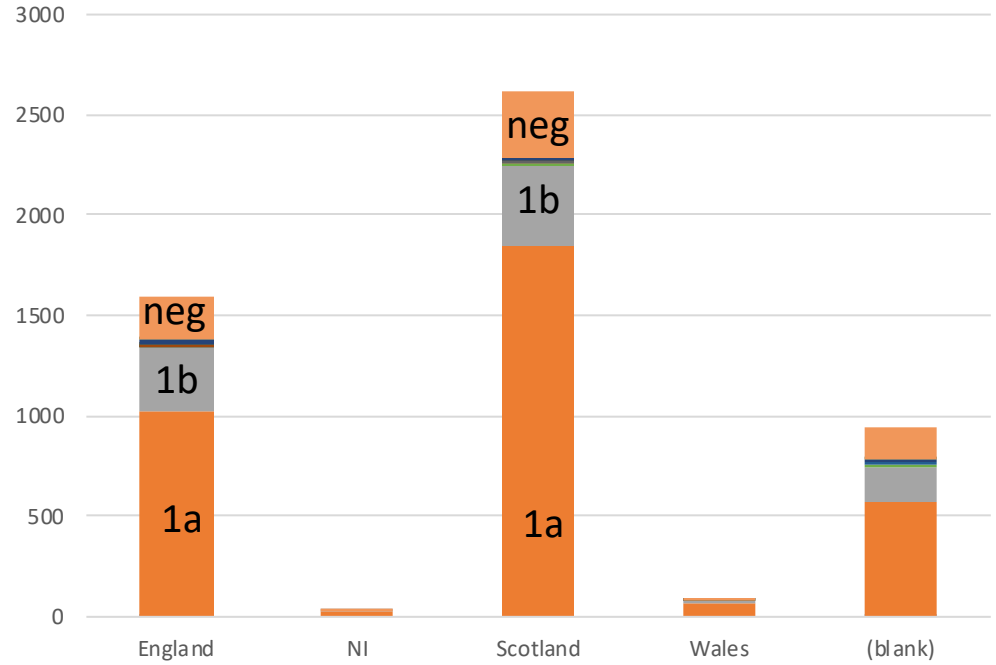
Scottish Government
Riaghaltas na h-Alba
gov.scot

epic Centre of Expertise on Animal Disease Outbreaks

Biobank status Jan 2019



- Over 5000 samples tested
- Over 60% of strains from Scotland
- BVDV1a is the major strain type (78%)
- BVDV1b now 20%
- 2% includes BVDV 1d, 1e, 1f, 1g, 1h, 1i



Biobank samples – herds with most PIs

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Birth Herd No.	No. PIs	No. locations	Postcode region source of sample
A	14	1	DG
B	19	1	DG
C	11	1	CA
D	14	2	KA
E	20	7	AB, DD, IV
F	10	1	CA
G	19	1	KA
H	10	1	KA
J	24	1	AB
K	11	1	DG
L	24	1	TD

- ID/location data obtained retrospectively
- UK numbers & sample postcodes for 3900 samples
- First 6 digits identifies birth herd
- Postcode shows where sample submitted from

Sequencing shows multiple infections

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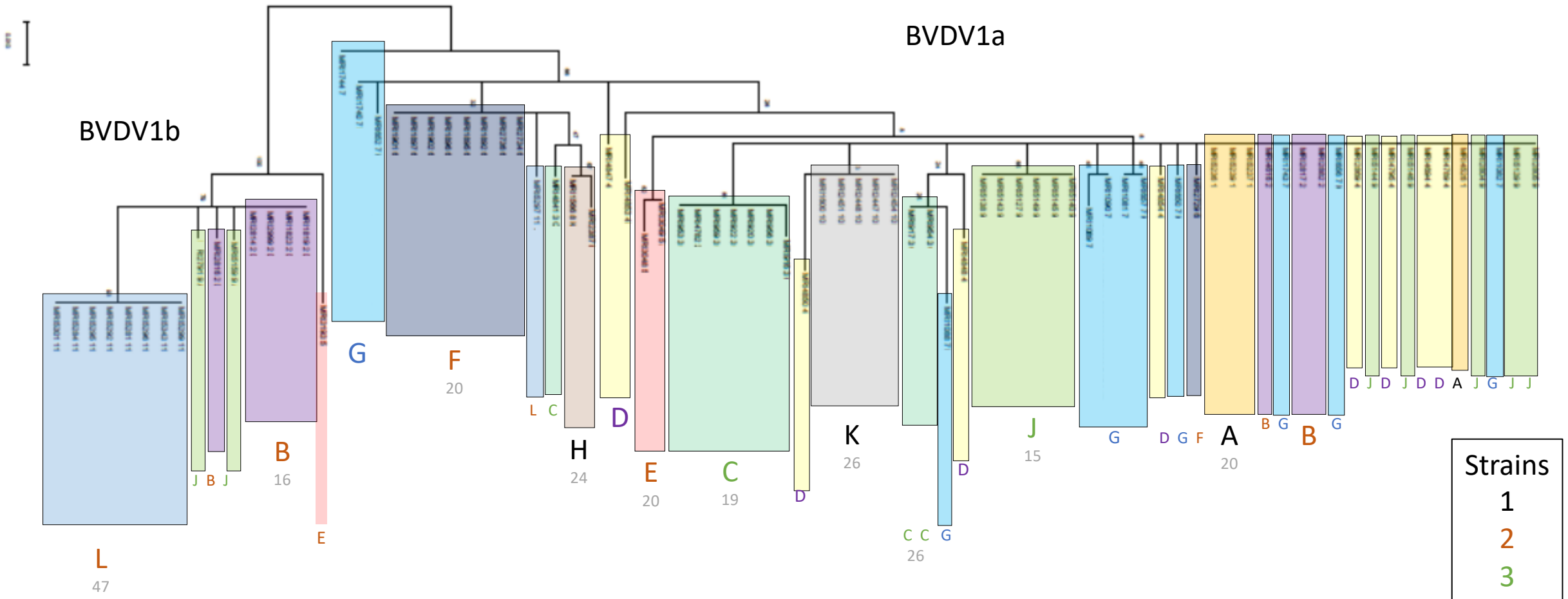

Conclusions about infected herds

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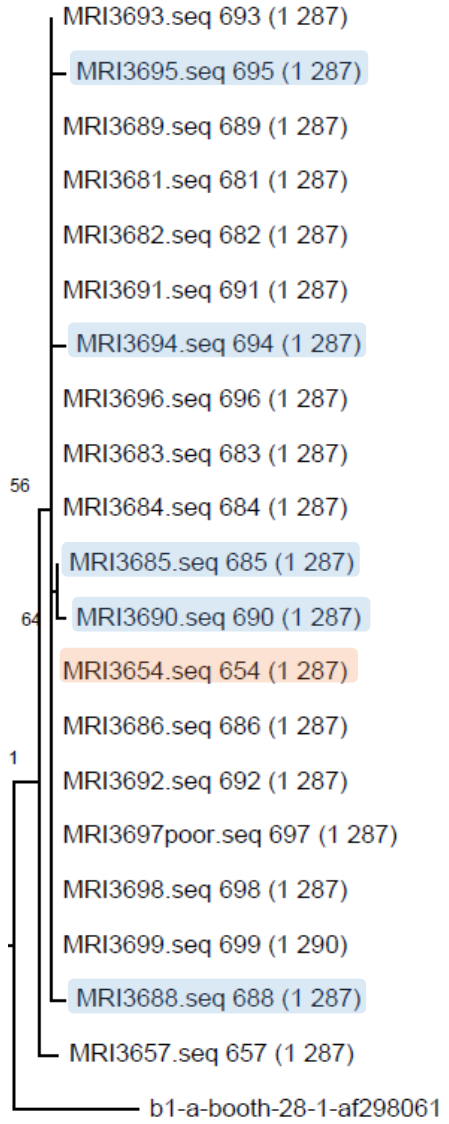
Birth Herd	PIs	Locations	source of samples	Sequences	Conclusions
A	14	1	DG	One strain	poor biosecurity
H	10	1	KA	One strain	poor biosecurity
K	11	1	DG	One strain	poor biosecurity
B	19	1	DG	Two strains	poor biosecurity?
F	10	1	CA	Two strains	poor biosecurity?
L	24	1	TD	Two strains	poor biosecurity?
E	20	7	AB, DD, IV	Two strains	poor biosecurity? – selling on
C	11	1	CA	Three strains	buying PI dams or Trojans – keeping
J	24	1	AB	Three strains	buying PI dams or Trojans - keeping
G	19	1	KA	Five strains	buying PI dams or Trojans - keeping
D	14	2	KA	Six strains	buying PI dams or trojans – selling on

Island outbreak

- Herd previously BVDV-free
- Not vaccinating
- Detected seropositive 2018
- Tested 38 calves
- 20 confirmed PI April 2019
- Sequenced at MRI
- 15 identical (5 differ 1 nt)
- Single infection event likely
- SG satisfied no follow-up required this time



Biobank analysis

- Two samples identical (3654, 4997)
- 3654 from Lanarkshire, 4997 no id (yet)
- ScotEID analysis based on UK numbers
- 3654 born March 2018, died June 2018, no movement recorded
- 4997 tested May 2018
- Movement tracing might reveal connections

Acknowledgements

Sample sources

- VSU
- Glasgow University (Vet School)
- Biobest
- SAC Consulting

Help and advice

- Dawn Grant
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- Mara Rocchi/VSU team
- EPIC colleagues
- SG BVD policy team