

Field and Laboratory Investigation of the 2025 FMD Outbreak in Germany

Friedrich-Loeffler-Institut, Insel Riems

Carola Sauter-Louis, Christoph Staubach, Katja Schulz, Jörn Gethmann, Lisa Rogoll, Hannes Bergmann, Martin Beer, **Michael Eschbaumer**, Christa Kühn and many more



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Institut für Epidemiologie

Water buffaloes are culled

worden. Wie geht es in Brandenburg weiter? Alle Infos im Liveblog.

LIVE • 10. Januar 2025 um 16:38 Uhr • Seelow

Ein Artikel von [Ulf Grieger](#), [Katharina Schmidt](#), [Dirk Schaal](#), [Kerstin Ewald](#)



- 10th January 2025
- Confirmation of FMD
- First case since 1988



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Epidemiological Investigation Group

- At the FLI
- Request through the federal states
- FMD, ASF, HPAI, IBR, BVD, WNF, ...
- In collaboration with the NRLs and the respective institutes of the FLI
- Epidemiological investigations

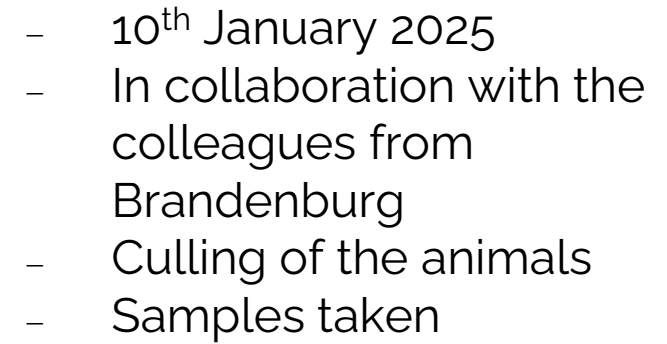


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FMD in Germany 2025

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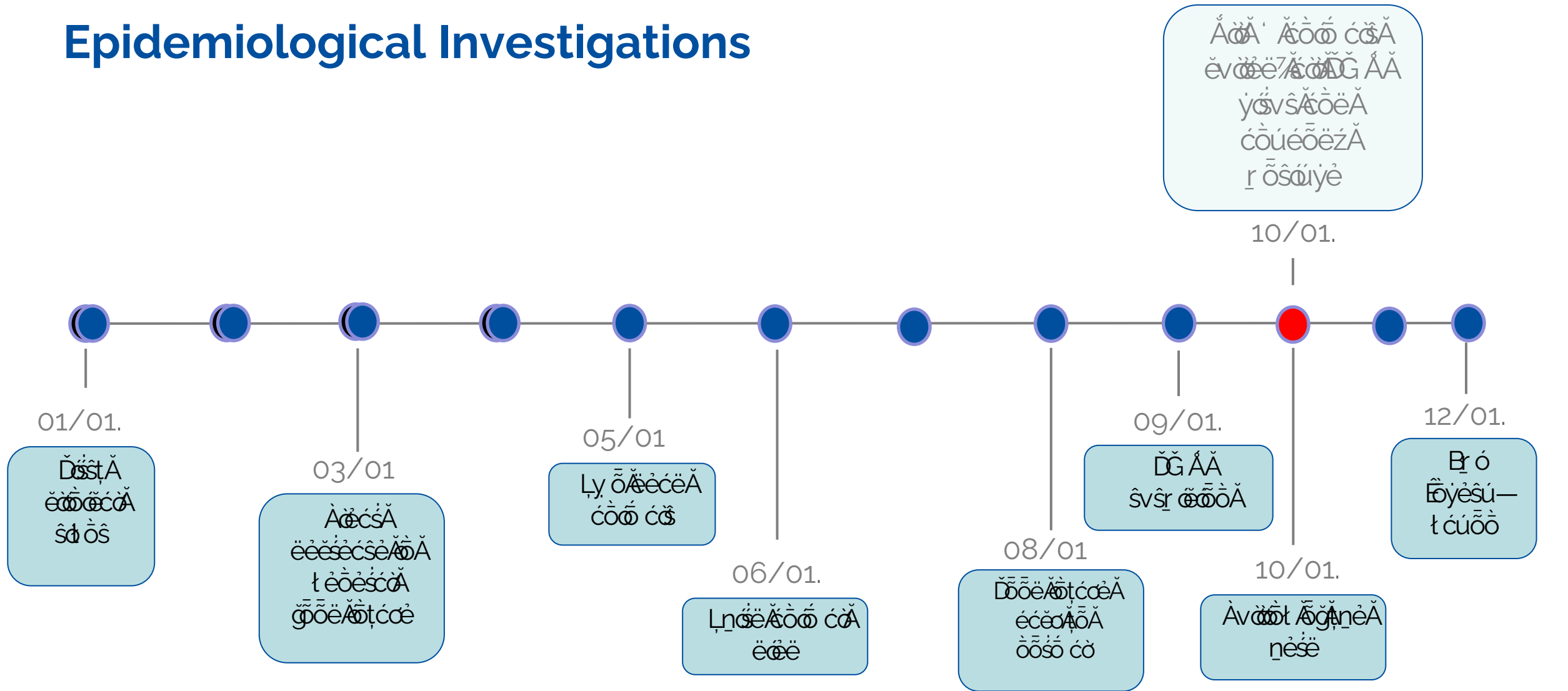
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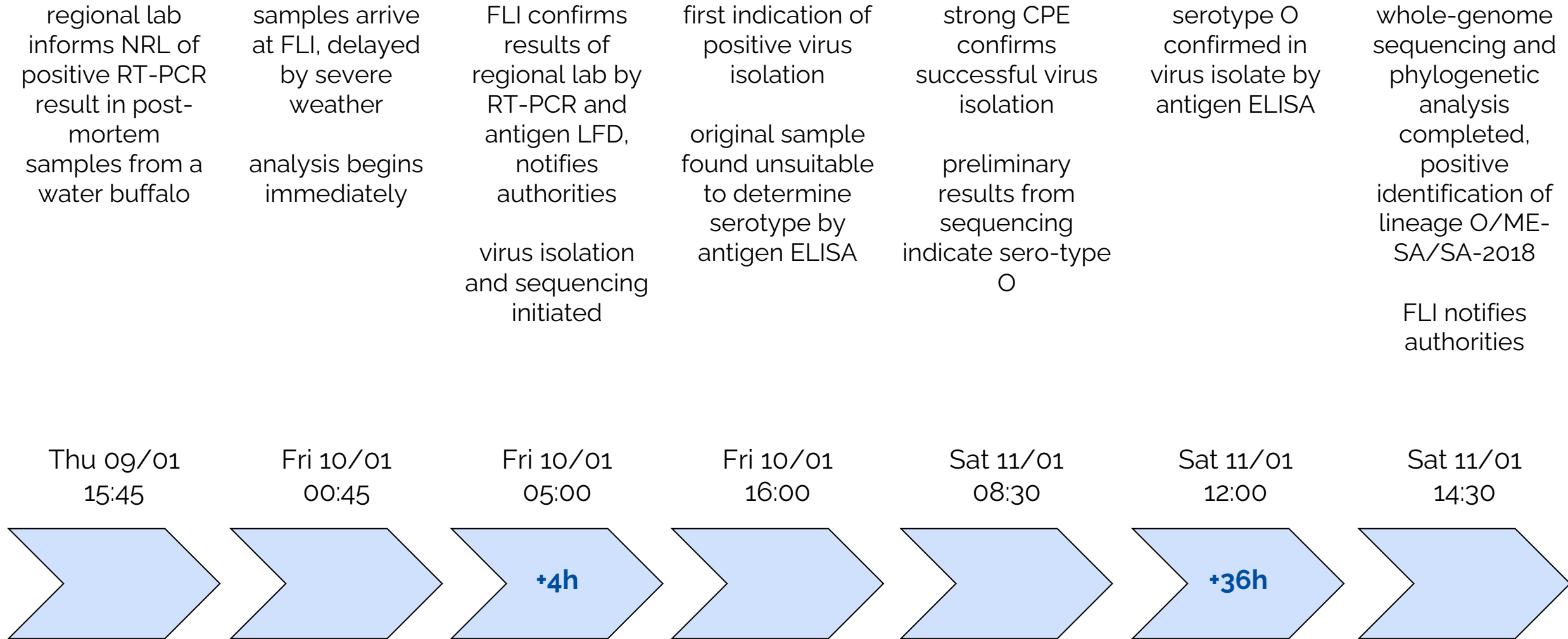
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Epidemiological Investigations



Timeline of laboratory diagnosis at FLI



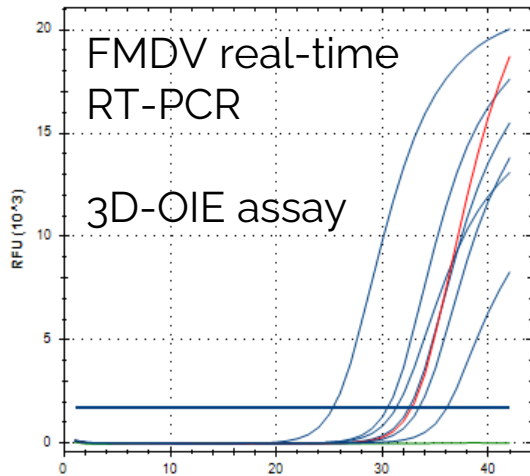
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Overview of diagnostic tests performed on initial sample



	FMDV Cq
<i>lung</i>	25.3
<i>intestine</i>	31.3
<i>spleen</i>	36.1
<i>lymph node</i>	30.5
<i>tonsil</i>	32.5
<i>blood</i>	33.4

sequencing
(Sanger &
NGS)

FMDV NSP
antibody ELISA:
negative

FMDV antigen
lateral flow
device

from lung
homogenate



from lung homogenate

virus isolation
in LFBK-αVβ6
cell culture

in-house
FMDV
antigen
ELISA

	mOD
O	2.415
A	0.643
C	1.403
Asia-1	1.225
SAT1	0.244
SAT2	0.265
SAT3	0.295



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Laboratory results for other animals in herd

animal	Cq serum	Cq nasal swab	Cq mouth lesion	Cq foot lesion
1	33.5	32.8	-	22.6
2	39.7	32.4	32.7	20.9
3	neg	37.1	-	-
4	neg	35.8	34.0	-
5	neg	33.8	35.5	-
6	neg	neg	39.0	-
7	35.7	37.7	36.1	-
8	neg	32.4	37.8	-
9	37.8	31.3	neg	-
10	neg	33.9	neg	-
11	neg	35.2	neg	-

all animals FMDV RNA positive in at least one sample



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Vaccine bank activation & vaccine matching

Session Number	Virus	Serotype	Vaccine	Lab	Heterologous Titre	Homologous Titre	r1
1	O/GER/BB/01/2025	O	O-3039	Lelystad	1.95	2.70	0.18
2	O/GER/BB/01/2025	O	O-3039	Lelystad	1.95	2.40	0.35
3	O/GER/BB/01/2025	O	O-3039	Lelystad	1.80	2.55	0.18
Average:	O/GER/BB/01/2025	O	O-3039	Lelystad	1.90	2.55	0.24
1	O/GER/BB/01/2025	O	O-PanAsia2	Lelystad	1.95	2.70	0.18
2	O/GER/BB/01/2025	O	O-PanAsia2	Lelystad	1.95	2.55	0.25
3	O/GER/BB/01/2025	O	O-PanAsia2	Lelystad	1.95	2.70	0.18
Average:	O/GER/BB/01/2025	O	O-PanAsia2	Lelystad	1.95	2.65	0.20
1	O/GER/BB/01/2025	O	O1 Manisa	Lelystad	1.65	2.10	0.35
2	O/GER/BB/01/2025	O	O1 Manisa	Lelystad	1.95	2.40	0.35
3	O/GER/BB/01/2025	O	O1 Manisa	Lelystad	1.65	2.55	0.13
Average:	O/GER/BB/01/2025	O	O1 Manisa	Lelystad	1.75	2.35	0.28

Data provided by Dr P Hudelet, Boehringer Ingelheim

- Based on sequence data, BI recommended bivalent vaccine O1 Manisa/O-PanAsia2
- Germany activated its vaccine bank on 20/01, opting for 750,000 doses of only PanAsia2
- Vaccine matching by BI was completed on 03/02, showing highest heterologous titers for PanAsia2
- **No vaccine has been used in Germany**



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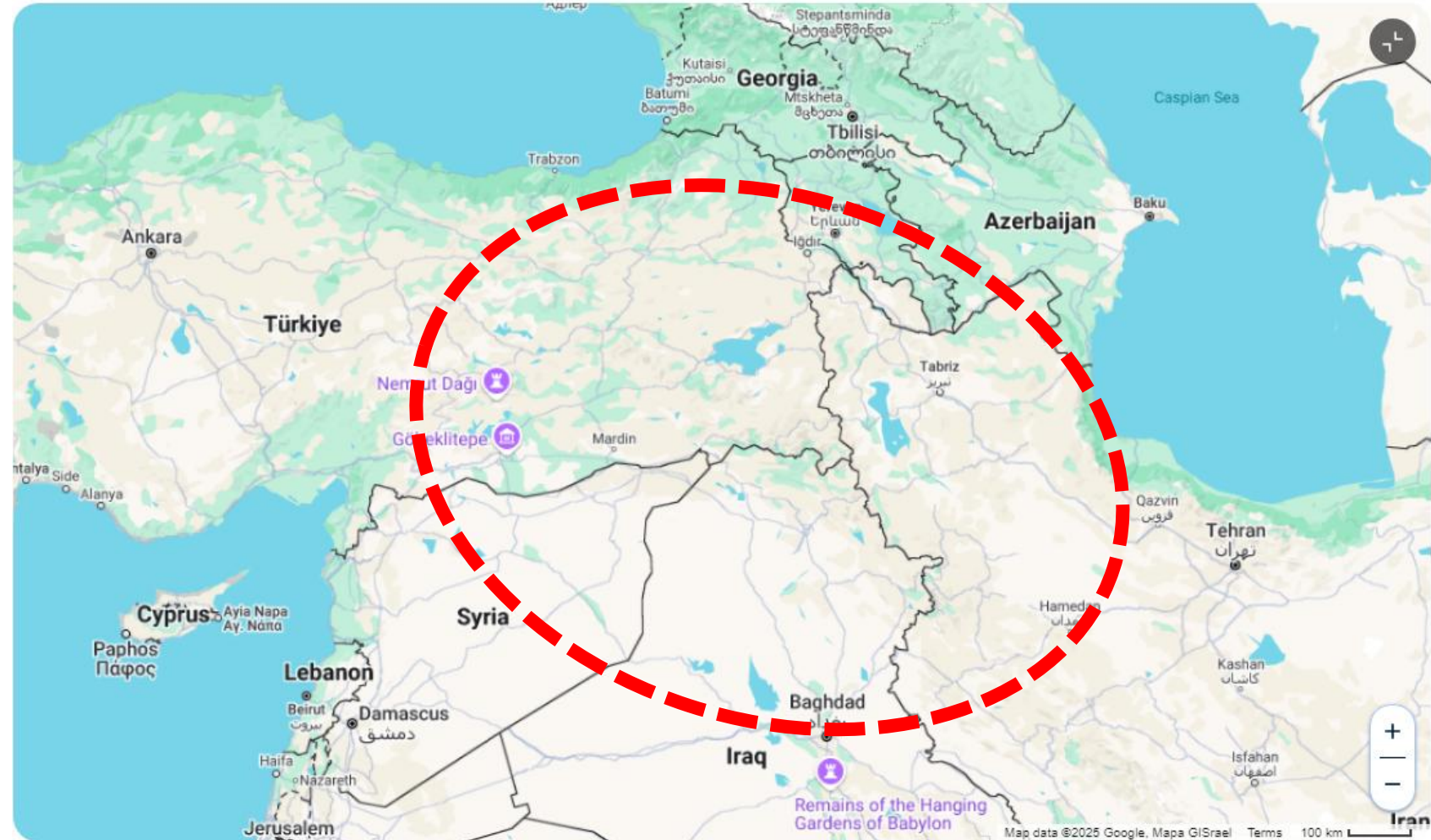
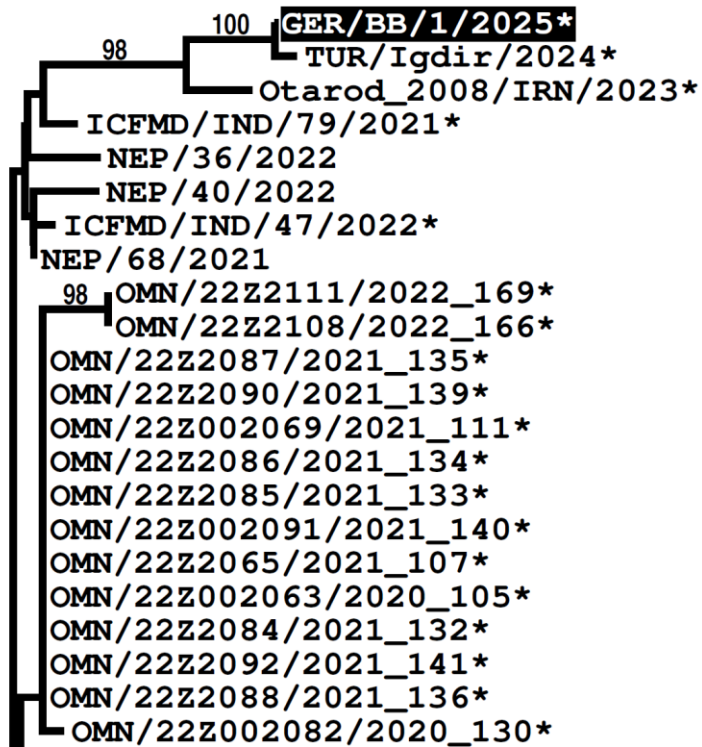
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Virus phylogeny

FMDV serotype: O
Country: Germany
Year: 2025
Batch: WRLMEG/2025/000002
No. of sequences: 1
Report date: 11th January 2025
Report generated by: Nick Knowles
Report checked by: Don King



- Sequence record is very sparse
- Closest matches in database are from Türkiye and Iran, but this virus likely also circulates in other countries in the region

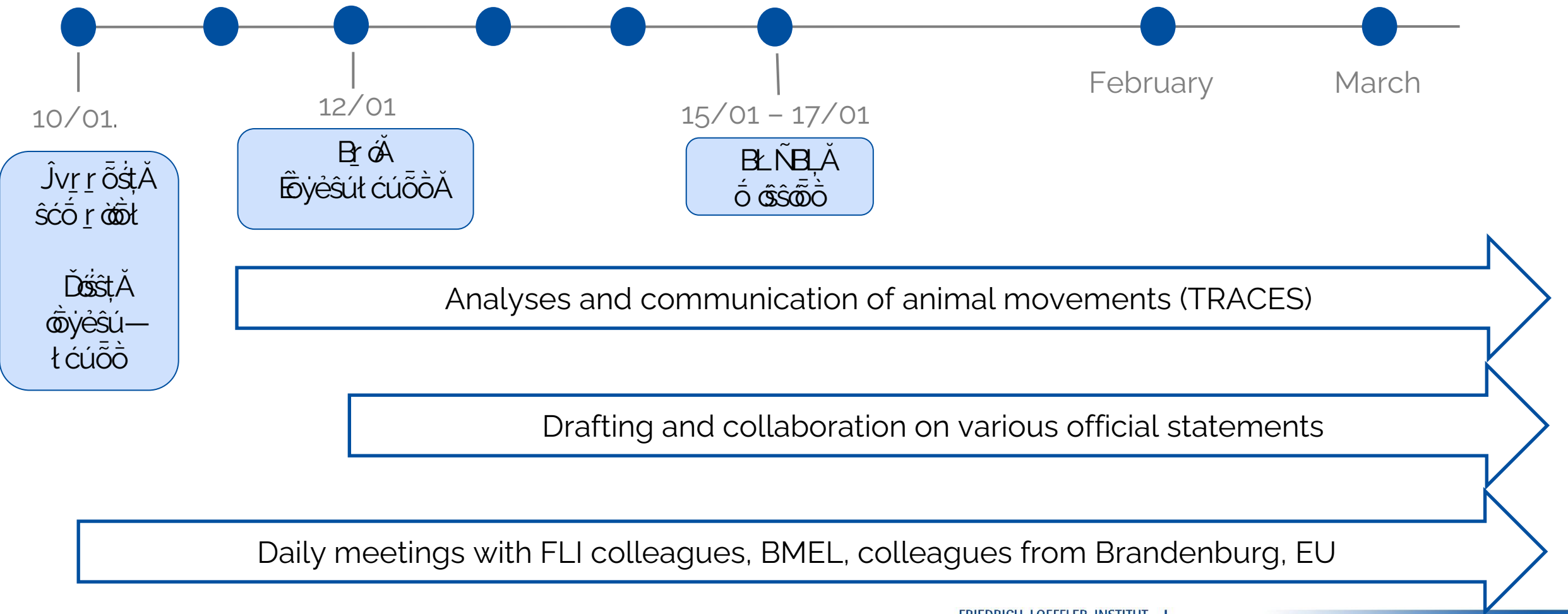


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Epidemiological Work



Immediate measures

- 72h Stand-still
- Brandenburg extended for another 48 hours
- Berlin extended for another week



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Time of introduction

- Water buffaloes culled on 10/01/2025 were PCR-positive and antibody-positive
 - Animal that died on 06/01/2025 did not have antibodies on that day
 - Assumption:
 - Incubation period of 3-7 days
 - Start of antibody production about 7-10 days after infection
- Virus was introduced into the herd about 7-14 days before first clinical signs
- The first unspecific clinical signs were observed on 01/01/2025
- **Introduction possible between 15/12/2024 and 31/12/2024**



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Epidemiological investigations

- No introduction via animals
- No introduction via semen
- No introduction via feed or bedding
- No introduction through travel-related activities
- No introduction via contact farms
- No introduction via vehicles
- No introduction via contaminated equipment



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Epidemiological investigations

- Introduction from other farms in Germany – unlikely (see before)
- Introduction through wildlife – unlikely, as all investigations were negative
- Introduction directly into the water buffalo herd
 - Accidentally through contaminated animal products
 - Intentionally



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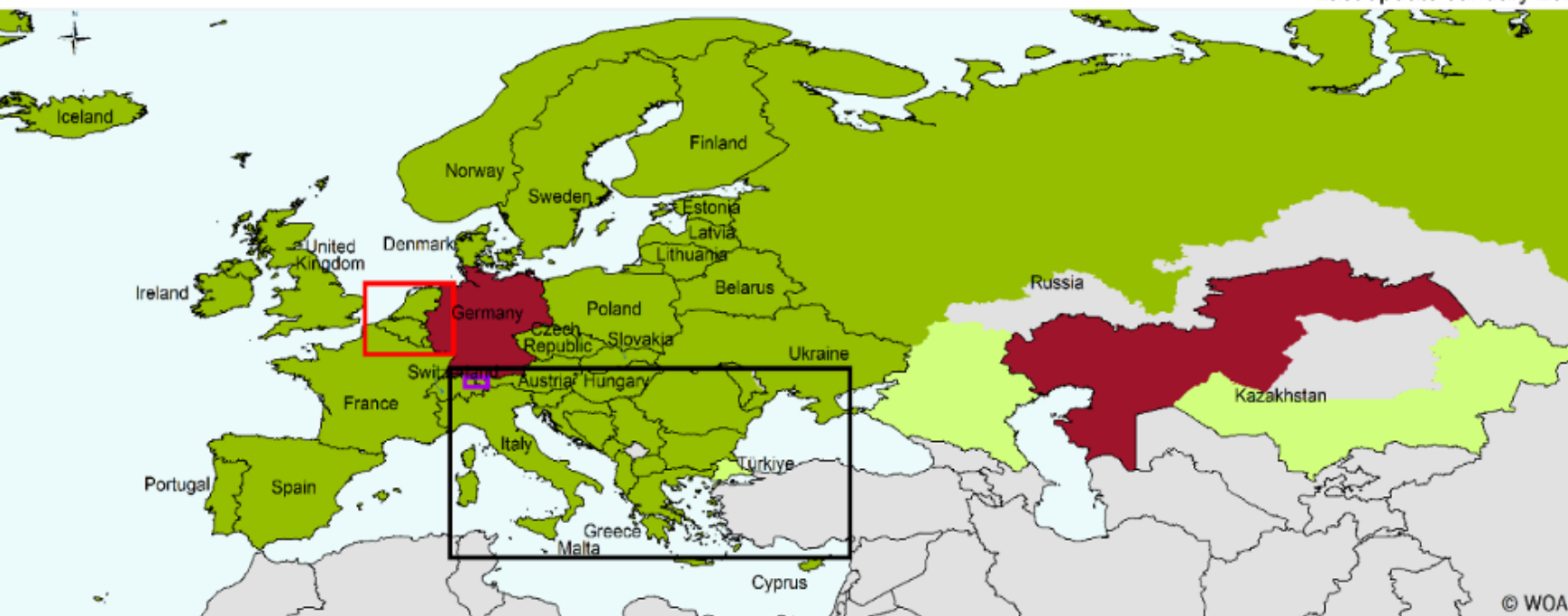
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EUROPE: WOAH Members' official FMD status map

Last update January 202



- WOAH Status suspended on 10/01/25
- Huge impact on export
- Especially third countries

- Members and zones recognised as FMD free without vaccination
- Zones recognised as FMD free with vaccination
- Suspension of FMD free status
- Countries and zones without an official status for FMD



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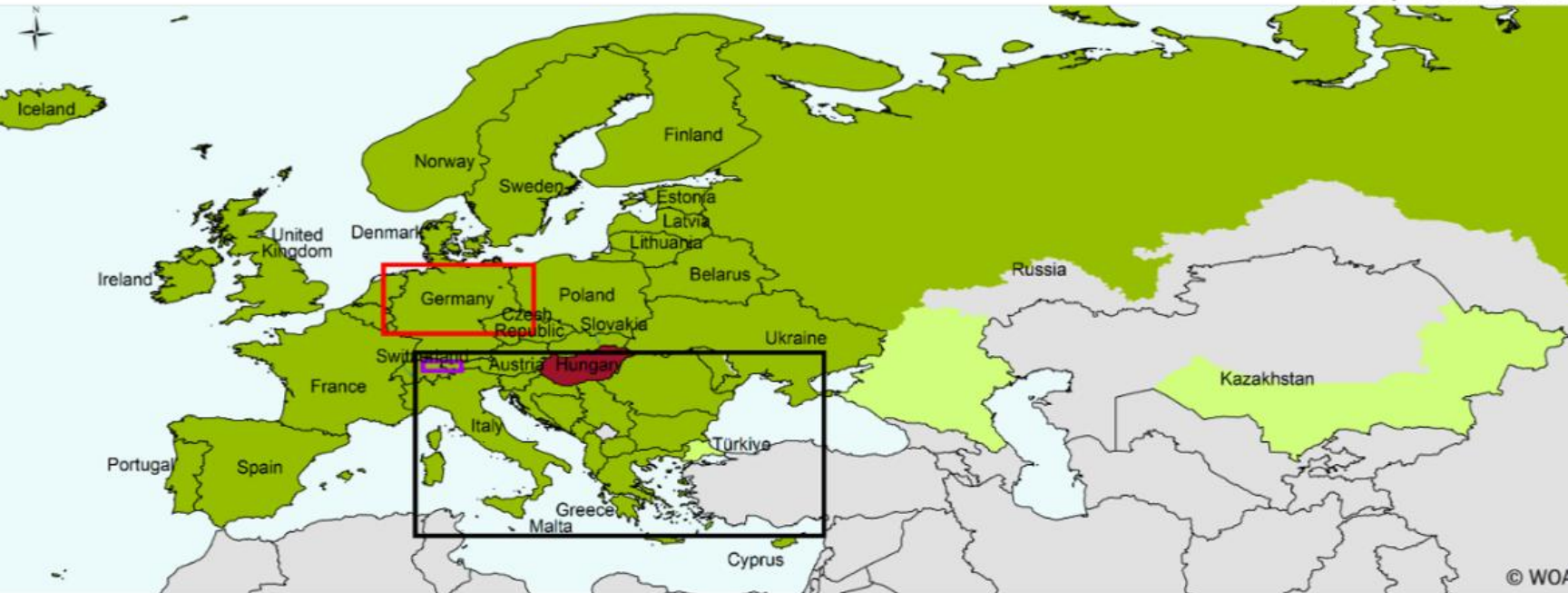
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EUROPE: WOAAH Members' official FMD status map

Last update March 2025



- 12th March 2025
- WOAAH status “FMD-free” reinstated, except for the containment zone

Members and zones recognised as FMD free without vaccination

Zones recognised as FMD free with vaccination

Suspension of FMD free status

Containment zone

Countries and zones without an official status for FMD



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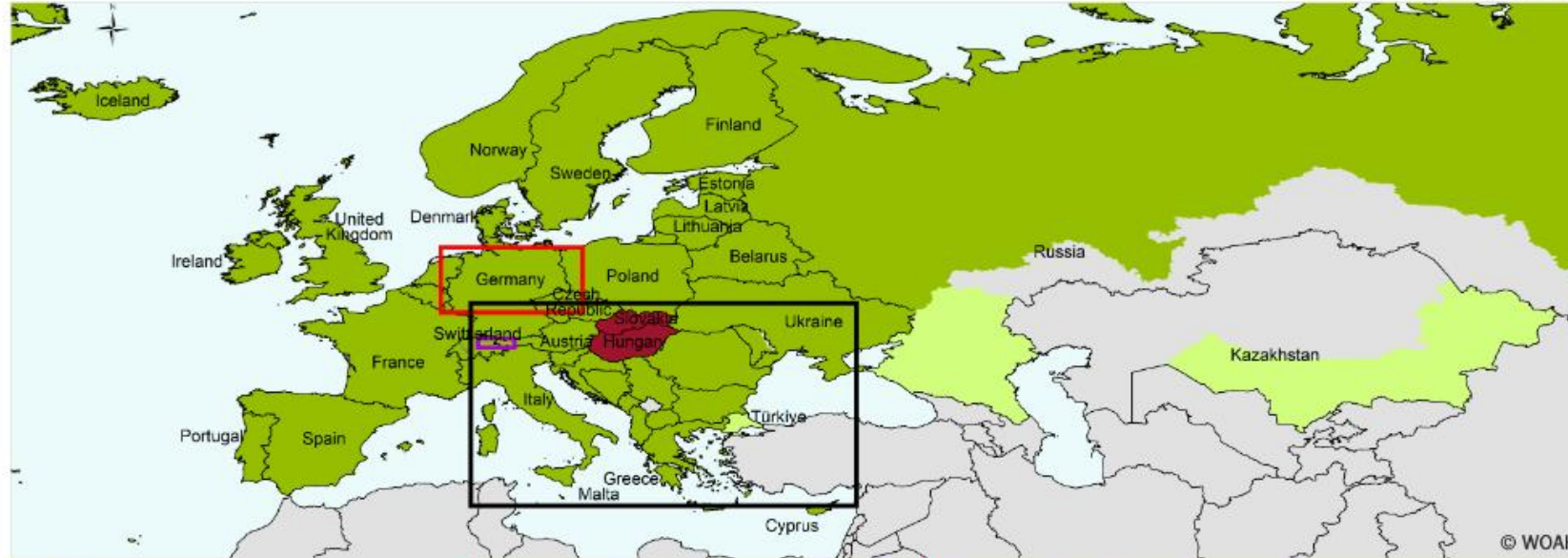
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EUROPE: WOAH Members' official FMD status map

Last update April 2025



- 14th April 2025
- WOAH status “FMD-free” reinstated, for the whole of Germany

Members and zones recognised as FMD free without vaccination

Zones recognised as FMD free with vaccination

Suspension of FMD free status

Countries and zones without an official status for FMD



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Conclusions

- Early detection
- Low animal density in that area
- Not many contacts
- Veterinary authorities were acting fast; “crisis-proven” due to ASF

It is now more important than ever to be vigilant!

Any vesicular disease in cloven-hoofed animals requires a laboratory investigation to rule out FMD!



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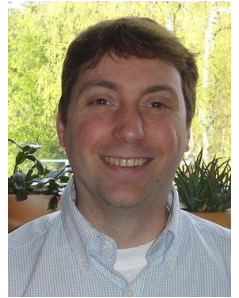
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Thank you

Colleagues in the federal states
Colleagues at the FLI

Christoph Staubach, Katja Schulz, Lisa Rogoll, Jörn Gethmann,
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An aerial photograph of a large, elongated island situated in a vast body of water. The island is densely packed with various buildings, including several large, multi-story structures with light-colored roofs, and smaller residential-style houses. There are green spaces, trees, and what appears to be a sports field or parking area. The surrounding water is a deep blue, and the distant shoreline shows more land with fields and some buildings. The text "Thank you for your attention" is overlaid in white on the right side of the image.

Thank you for your
attention