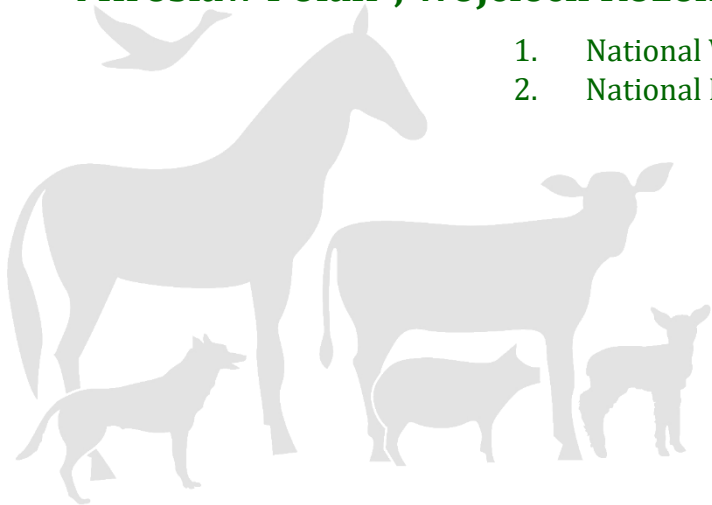


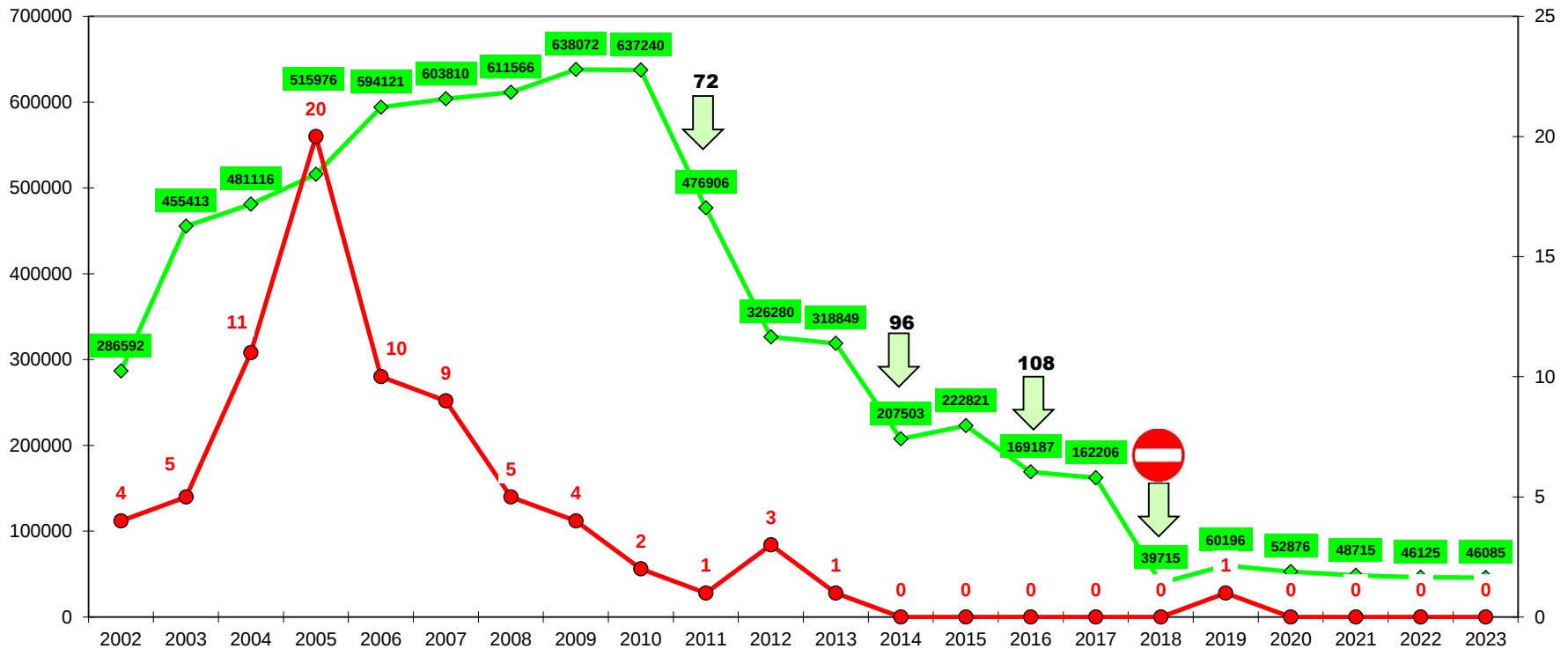
Epidemiological situation with respect to BSE and scrapie in Poland

Mirosław Polak¹, Wojciech Rożek¹, Małgorzata Kwaśnik¹, Agata Piestrzyńska-Kajtoch²

1. National Veterinary Research Institute, Pulawy
2. National Research Institute of Animal Production, Balice

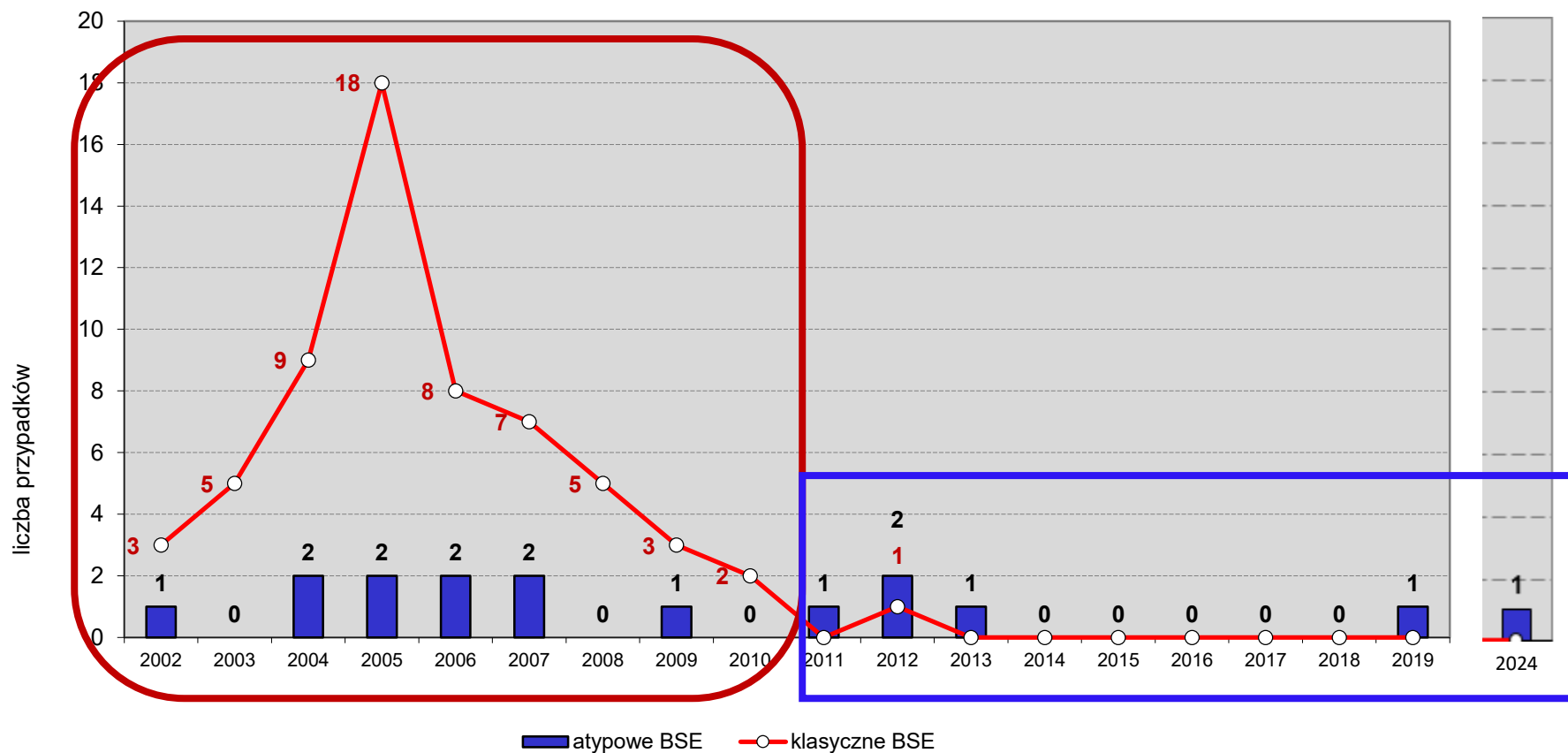


BSE in Poland



77 cases detected between 2002-2026 – over 7 million rapid tests
On average detection of 1 case required 92 522 tests

BSE in Poland



Classical BSE: 61 (79%)

Atypical BSE: 16 (21%)

2002-2010: 60 classical BSE cases comprised 86% of all cases (60/70)

2011-2026: 6 atypical BSE cases comprised 86% of all cases (6/7)



Atypical BSE L type

case #72 – 02.2012, 98 months

Case #72

C-type +ve control

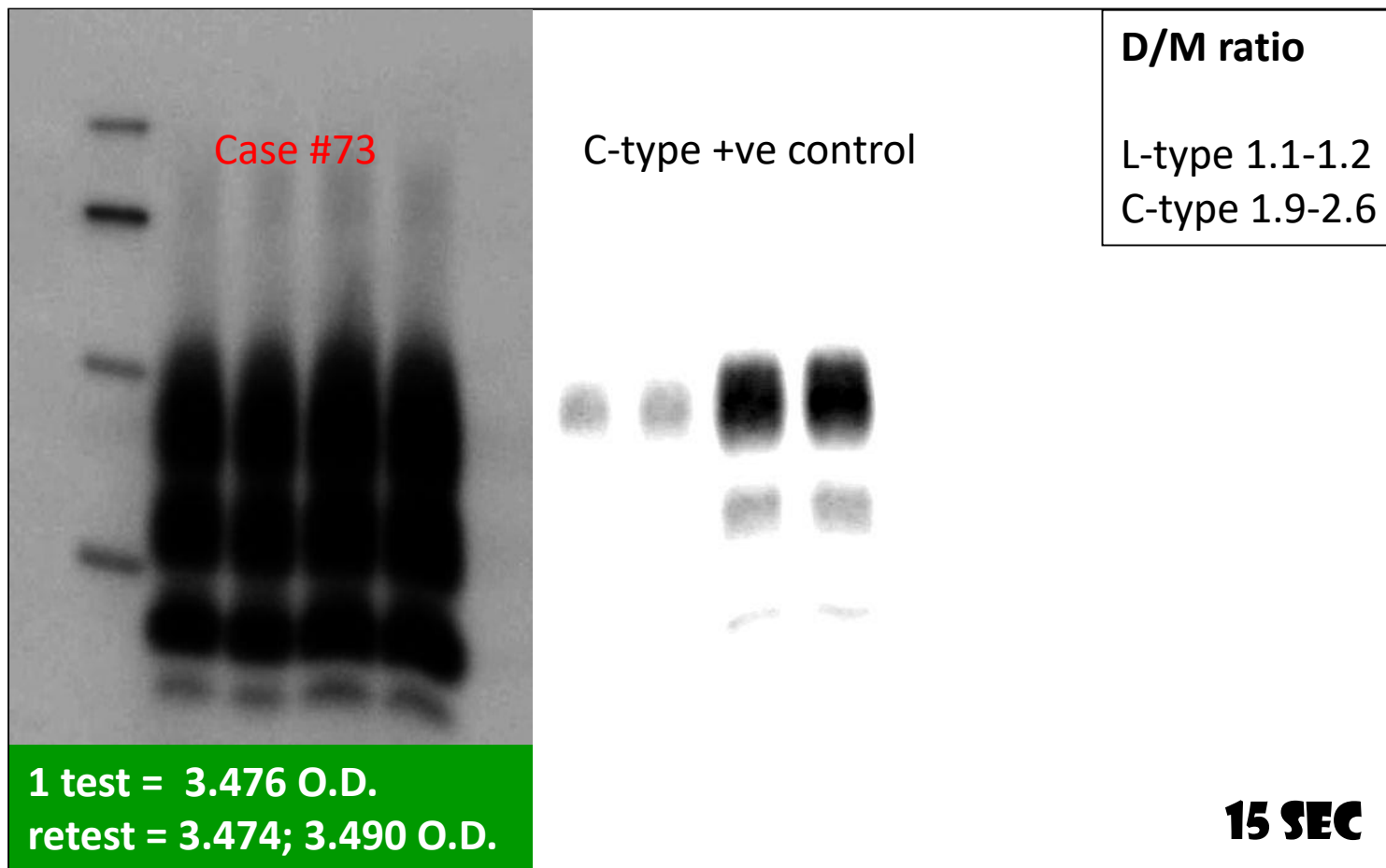
1 test = 0.592 O.D.

retest = 0.777; 0.843; 0.741; 0.823 O.D.

10 MIN

Atypical BSE L type

Case #73 – 02.2012, 208 months

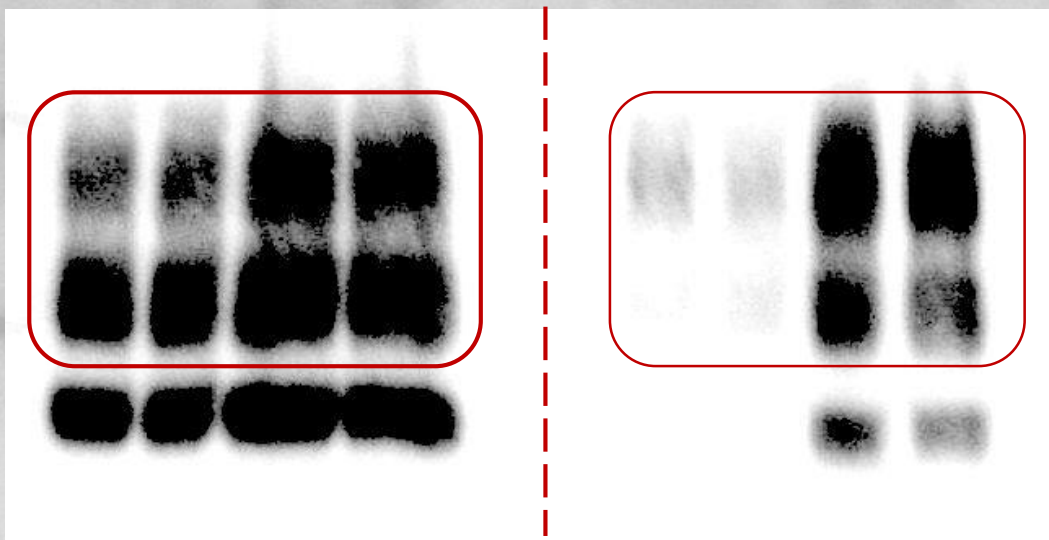


Atypical BSE L type

Case #77 – 15.05.2024, **69 months**

Case #77

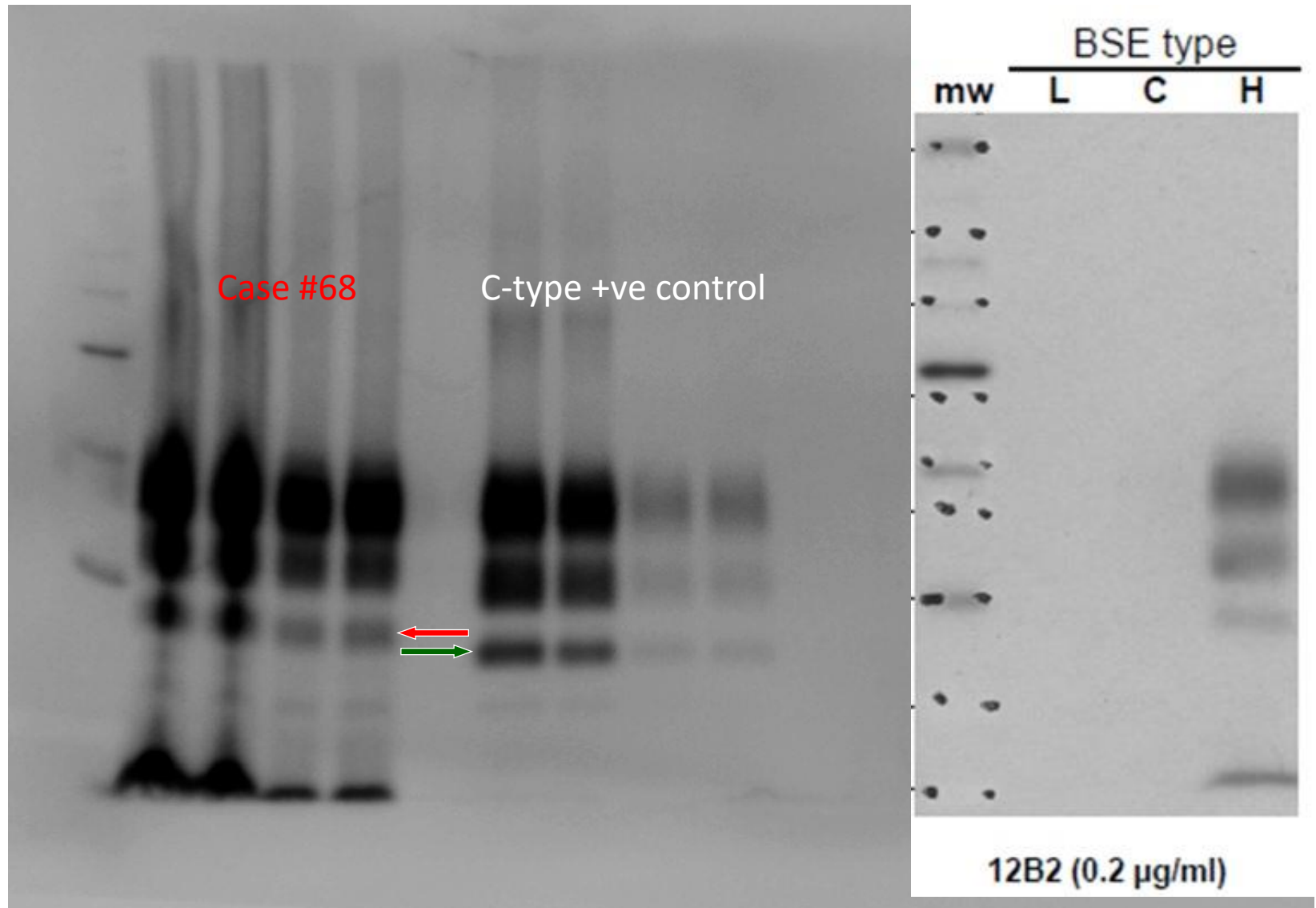
classical BSE



rapid test >3.0 O.D.; exposure – 5 min

Atypical BSE H type

Case #68 – 04.2009, 171 months



Atypical BSE

TABLE 14 Number of reported **atypical BSE cases** in EU and non-EU reporting countries, and worldwide by year (period 2001–2024), type and country.

Country	Year													
	Up to 2019 ^c		2020		2021		2022		2023		2024		Total	
	H	L	H	L	H	L	H	L	H	L	H	L	H	L
AT	1	2											1	2
CZ	1												1	
DE	2	3				1							2	4
DK		1												1
ES	11	10	1		1	1			2				15	11
FR	24	20	1	1	1	2	1		1		1		29	23
IE	4	1	1						1		1		7	1
IT		5												5
NL	1	3								1			1	4
PL ^a	2	13										1	2	14
PT	7												7	
RO		2												2
SE	1												1	
SI	1												1	
Total EU27	55	60	3	1	2	4	1	0	4	1	2	1	67	67
BRA	2				2				1		1		6	
CAN	1	1			1								2	1
CH	1	0		1						2			1	3
NO	1												1	
UK ^b	7	9											7	9
XU ^b									1		1		2	0
USA	1	1								1		1	1	3
Total non-EU	13	11	0	1	3	0	0	0	2	3	2	1	20	16
Total	68	71	3	2	5	4	1	0	6	4	4	2	87	83

134
(78.8%)

170

Atypical BSE

TABLE 14 Number of reported **atypical BSE cases** in EU and non-EU reporting countries, and worldwide by year (period 2001–2024), type and country.

Country	Year														Total BSE cases	
	Up to 2019 ^c		2020		2021		2022		2023		2024		Total			
	H	L	H	L	H	L	H	L	H	L	H	L	H	L		
AT	1	2											1	2	824 1021 1664	
CZ	1												1			
DE	2	3				1							2	4		
DK		1												1		
ES	11	10	1		1	1			2				15	11		26 (3%)
FR	24	20	1	1	1	2	1		1		1		29	23		52 (5%)
IE	4	1	1						1		1		7	1		
IT		5												5		
NL	1	3								1			1	4		
PL ^a	2	13										1	2	14		16 (21%)
PT	7												7			
RO		2												2		
SE	1												1			
SI	1												1			
Total EU27	55	60	3	1	2	4	1	0	4	1	2	1	67	67		134
BRA	2				2				1		1		6		(78.8%)	
CAN	1	1			1								2	1		
CH	1	0		1						2			1	3		
NO	1												1			
UK ^b	7	9											7	9		
XU ^b									1		1		2	0		
USA	1	1								1		1	1	3		
Total non-EU	13	11	0	1	3	0	0	0	2	3	2	1	20	16		
Total	68	71	3	2	5	4	1	0	6	4	4	2	87	83	170	

Atypical BSE

TABLE 14 Number of reported **atypical BSE cases** in EU and non-EU reporting countries, and worldwide by year (period 2001–2024), type and country.

Country	Year														Total BSE cases		
	Up to 2019 ^c		2020		2021		2022		2023		2024		Total				
	H	L	H	L	H	L	H	L	H	L	H	L	H	L			
AT	1	2											1	2	824	1021	
CZ	1												1				
DE	2	3				1							2	4			
DK		1												1			
ES	11	10	1		1	1			2				15	11			
FR	24	20	1	1	1	2	1		1		1		29	23			
IE	4	1	1						1		1		7	1			
IT		5												5			
NL	1	3								1			1	4			
PL ^a	2	13										1	2	14	16 (21%)	77	
PT	7												7		5560	(2.4% are atypicals)	
RO		2												2			
SE	1												1				
SI	1												1				
Total EU27	55	60	3	1	2	4	1	0	4	1	2	1	67	67	134		
BRA	2				2				1		1		6		134 (78.8%)		
CAN	1	1			1								2	1			
CH	1	0		1						2			1	3			
NO	1												1				
UK ^b	7	9											7	9			
XU ^b									1		1		2	0			
USA	1	1								1		1	1	3			
Total non-EU	13	11	0	1	3	0	0	0	2	3	2	1	20	16			
Total	68	71	3	2	5	4	1	0	6	4	4	2	87	83	170		

BSE in Europe in 2024-2025

TABLE 11 Clinical and epidemiological description of the BSE cases detected in 2024.

Country	FR – atypical	IE – atypical	PL – atypical
Surveillance target group	FS (fallen stock)	FS (fallen stock)	FS (fallen stock)
Case type	H-type BSE	H-type BSE	L-type BSE
Month and year of birth	11/2006	03/2009	07/2018
Age at detection (in months)	207	186	69
BARB status	Yes	Yes	Yes
Clinical signs	None	Lateral recumbency	One case of fallen stock was noted, with no other clinical signs observed
Cattle type	Dairy	Beef	Dairy
Breed	Montbéliard	Highland	Holstein-Friesian
Was the case confirmed at herd/holding where the animal was born?	Yes	No (UK Import)	No

EUROPE • UNITED KINGDOM

UK identifies atypical case of mad cow disease

A cow in Essex tested positive for a rare, non-contagious form of BSE, just one day after Britain and the EU struck a post-Brexit deal easing food checks. Officials insist there is no consumer safety risk and that beef exports remain unaffected.

Le Monde with AFP
Published on May 20, 2025, at 7:11 pm (Paris) • ⌚ 1 min read

Clinical suspect (previous case – 2024)



Mean age of atypical BSE in EU

155 months

(range 97 – 253)

Almost all atypical BSE cases were diagnosed > 8 yrs

Mean age: Poland –148 months

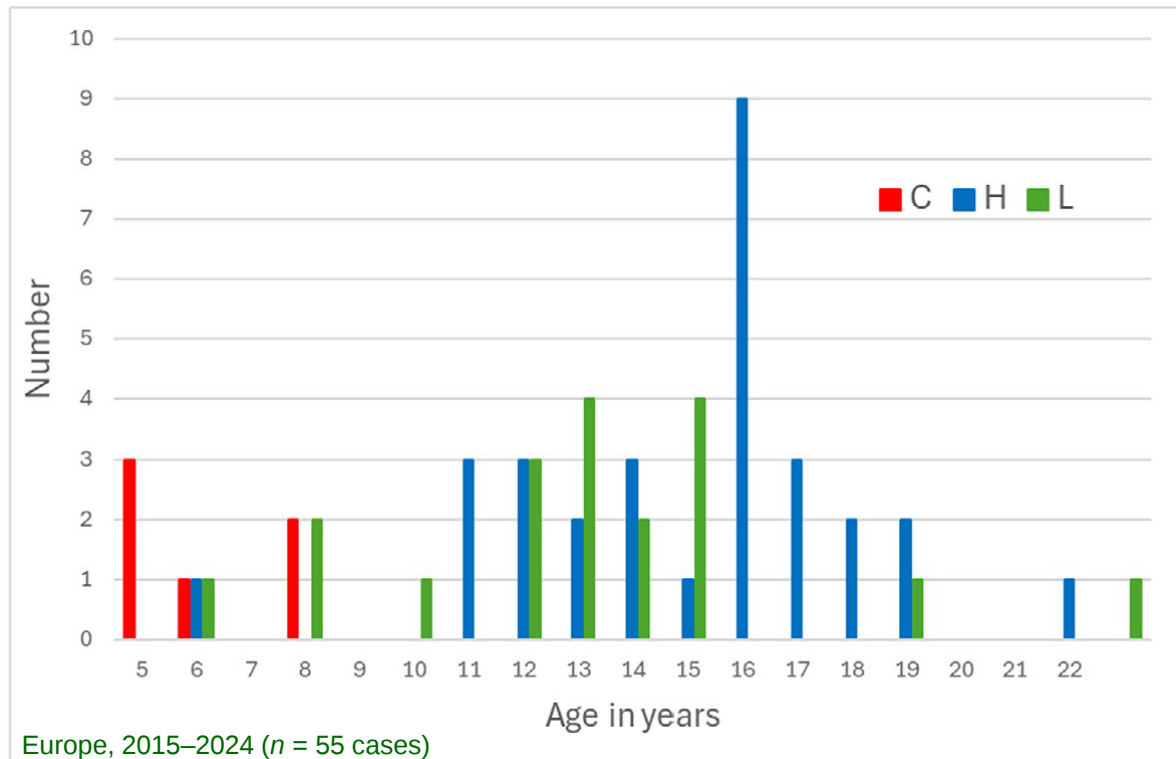
Exceptions:

2 cases in Spain (83, 90 m.)

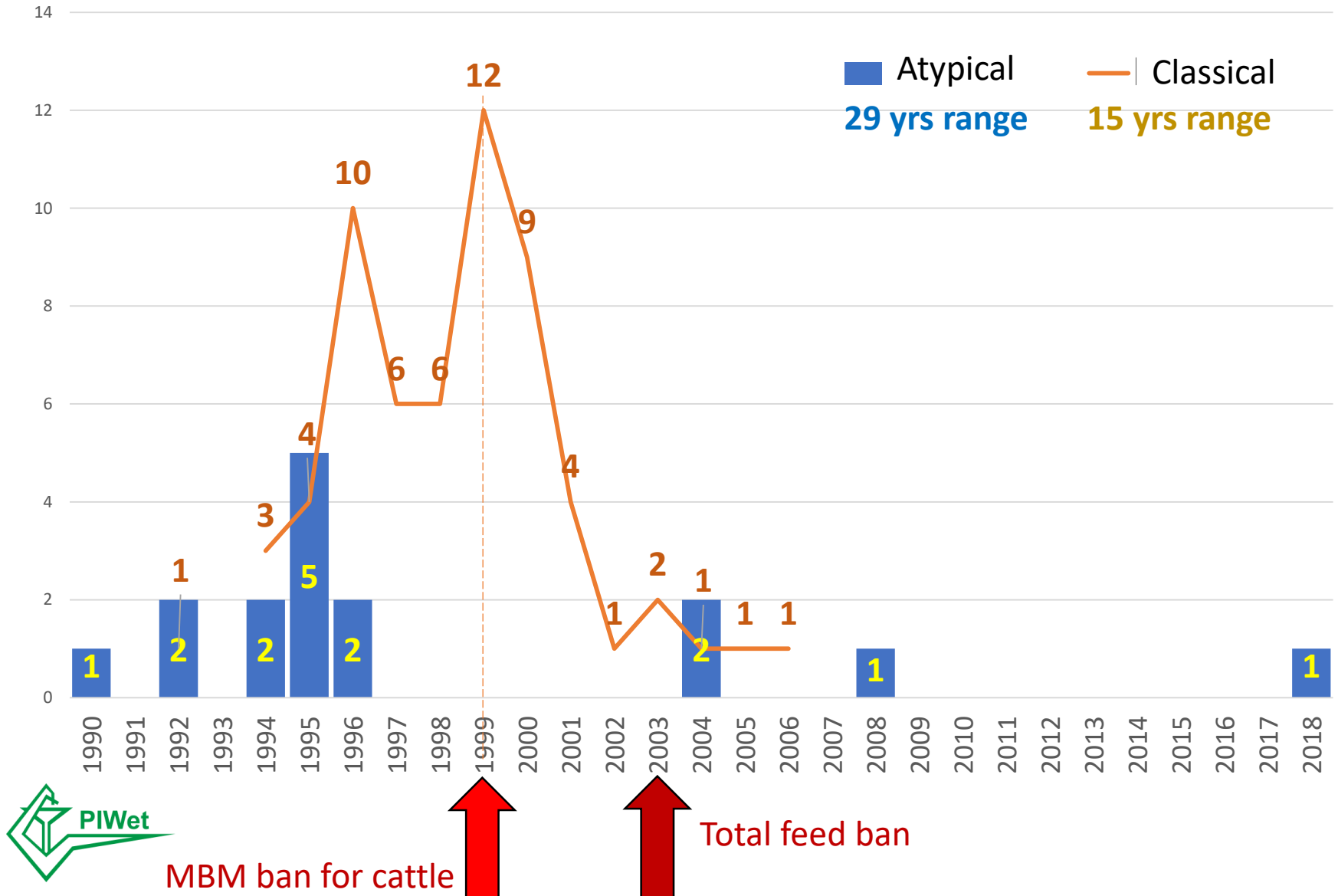
1 imported case

in Switzerland (78 m)

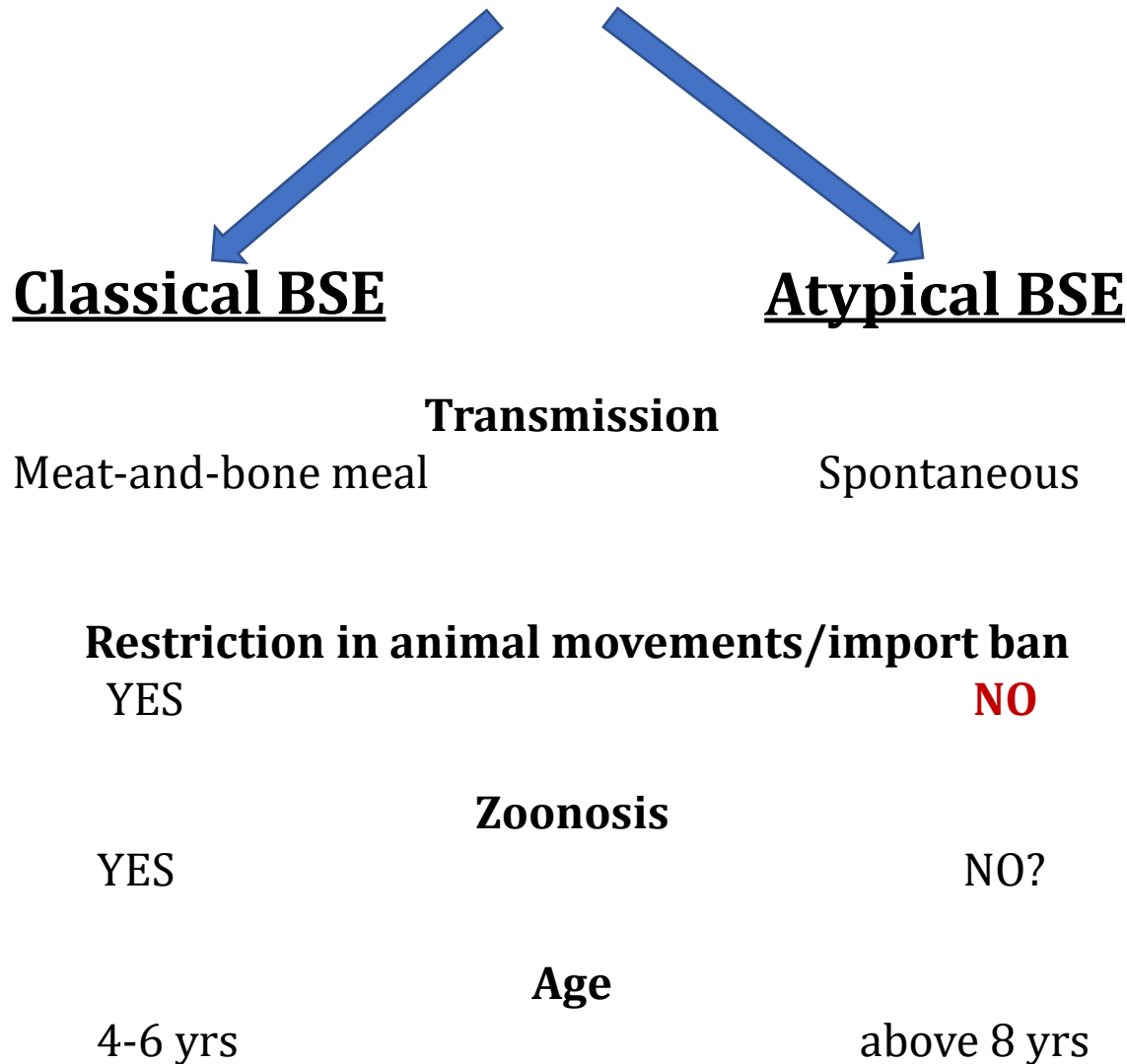
**Last case in Poland –
69 m.**



BSE birth cohorts in Poland



Differentiating Features



Summary of BSE in Poland

Negligible BSE risk – 77 cases of which 16 are atypicals

92 510 test to detect 1 BSE case

No imported cases of BSE

Last classical BSE – 2012

Last atypical BSE – 2024

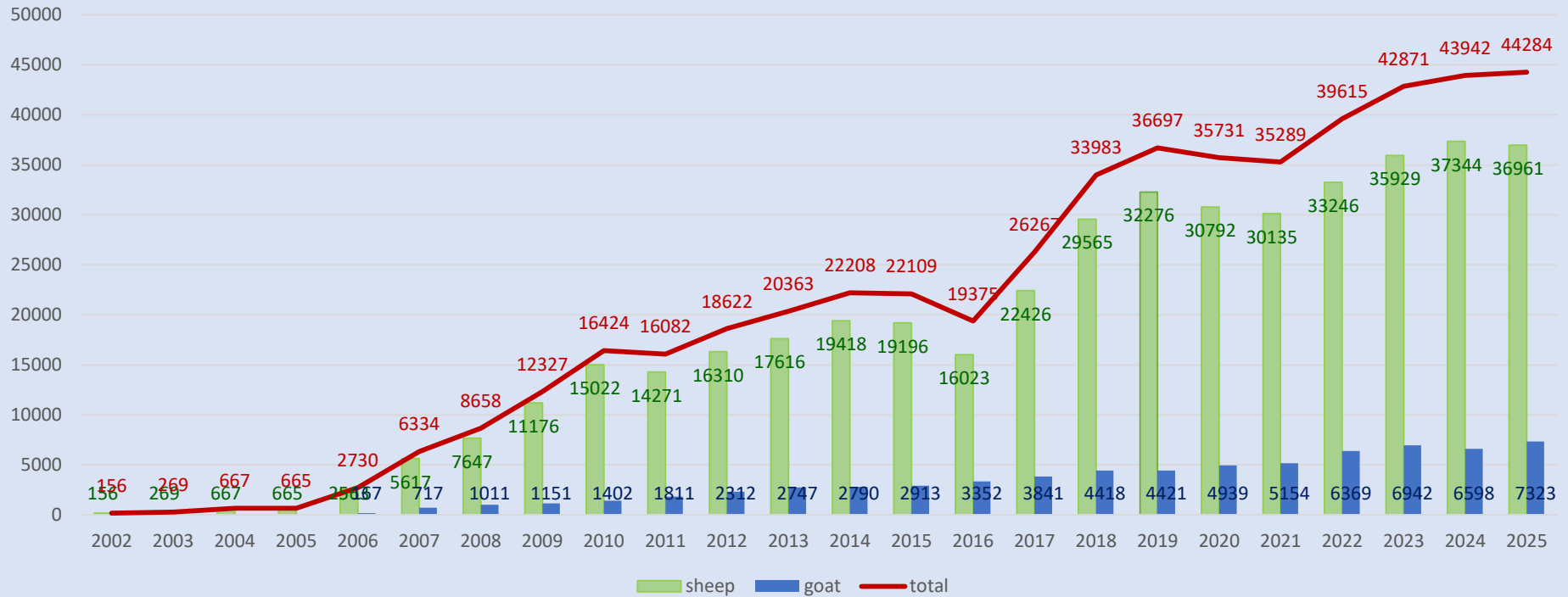
High percentage of atypical BSE compared to all cases (21%)

Predominance of L-type BSE in atypical BSE

Lack of vCJD in humans

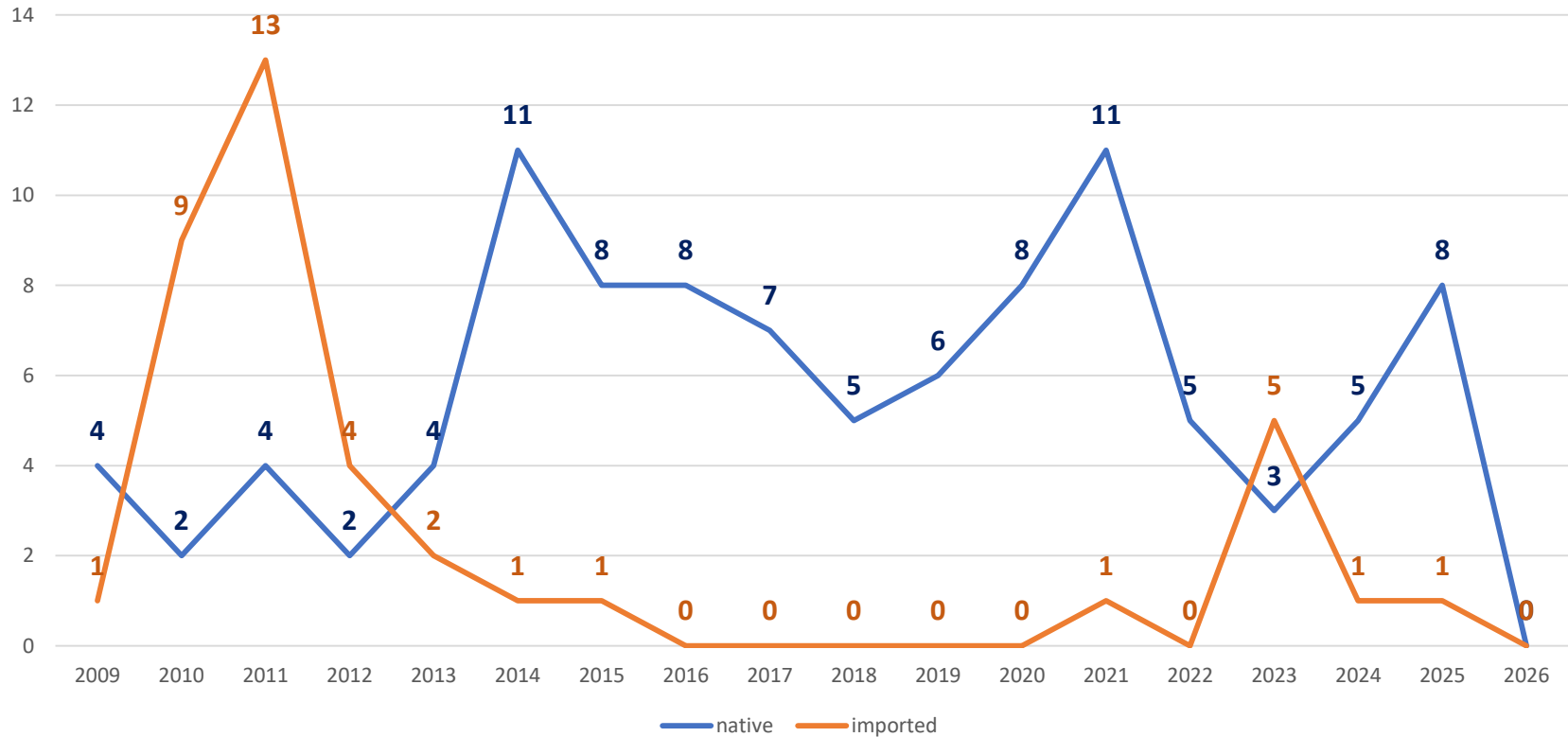
Scrapie in Poland

Number of samples tested for scrapie in Poland in years 2002-2025



Populations 280,000 63,500

Scrapie cases in Poland



140 scrapie cases were identified in years 2009-2025 (no cases in 2026)

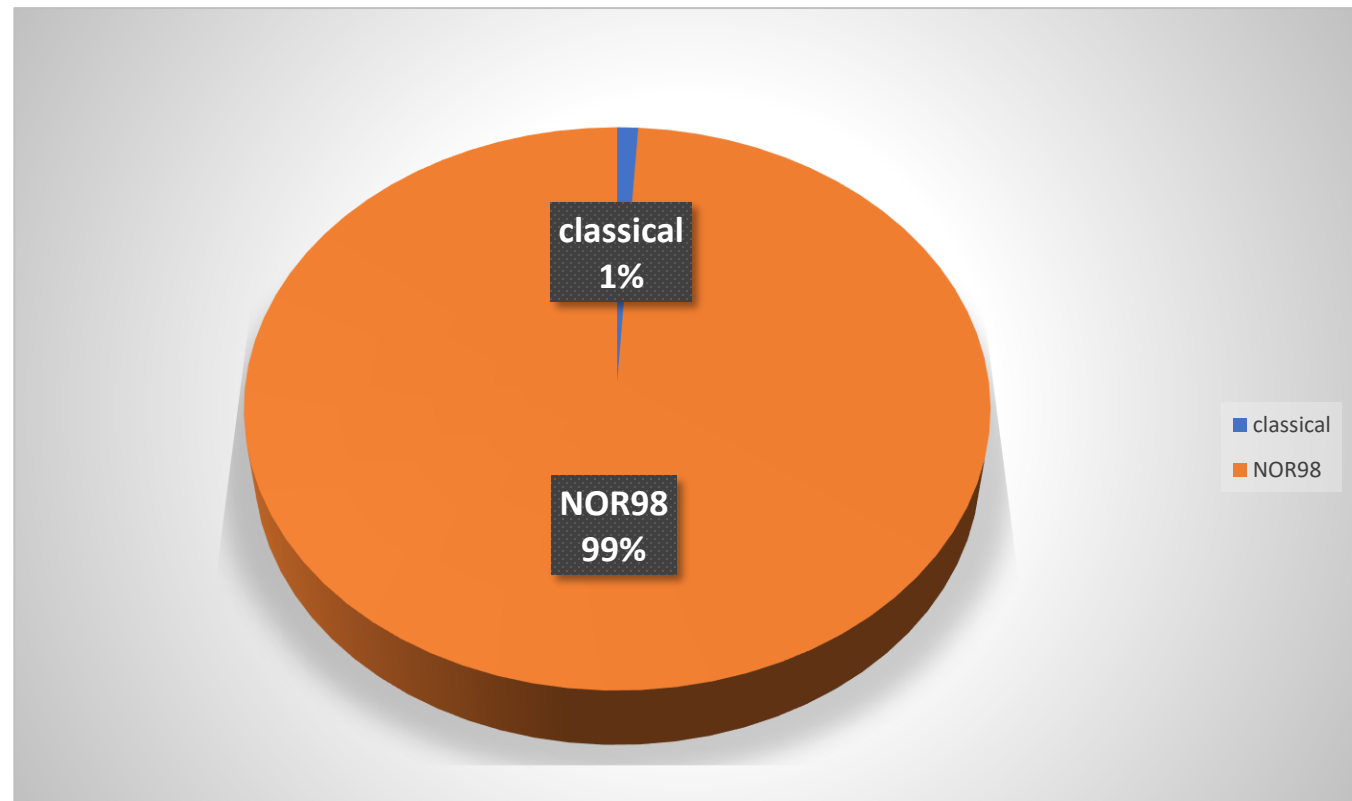
101 were found in Polish flocks

4 cases were diagnosed in goats (1 classical and 3 atypicals)



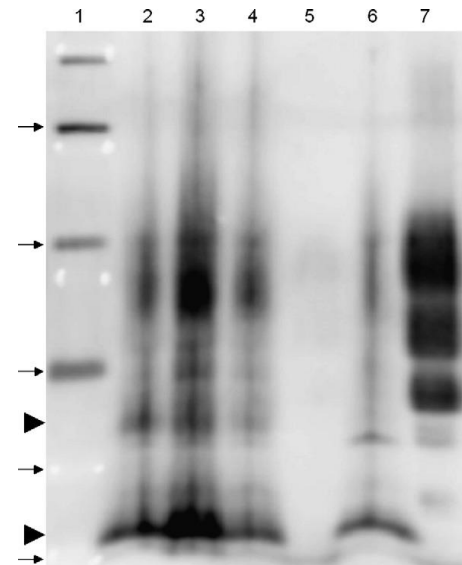
Native scrapie - 101

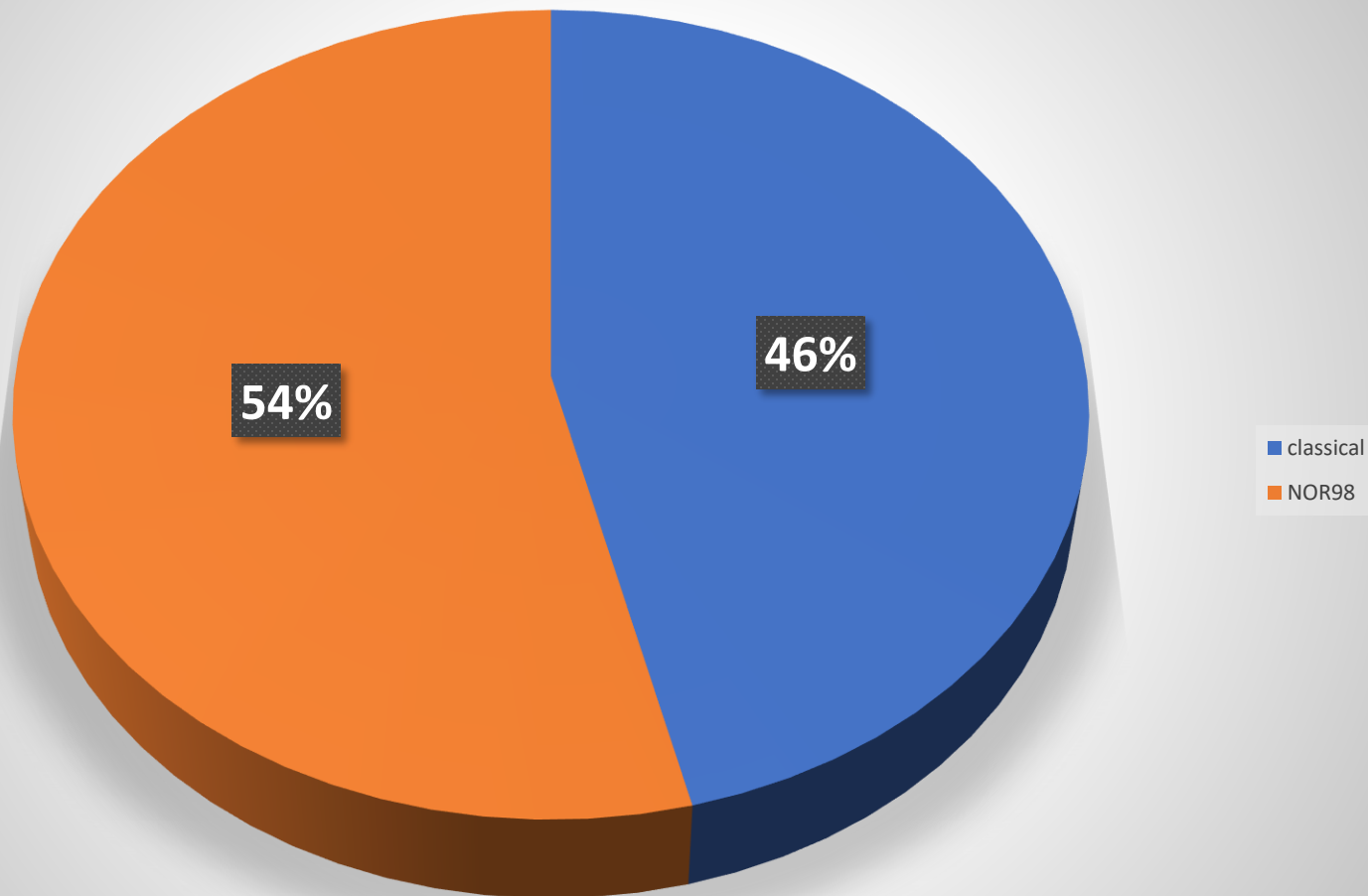
Classical	1
NOR98	100



All Polish scrapie cases (except one) were classified as **atypical scrapie (NOR98)** based on unique glycoprofile of prion protein resistant to proteolysis in WB.

Majority of them were found in fallen stock (85%).
Mean age of Polish Nor98 cases was 97/90 months
for sheep and goats, respectively.





SK	18	atypical
NL	1	atypical
HU	2	atypical
ES	1	classical
RO	15	classical
SK	2	classical

Imported scrapie - 39

Classical 18

NOR98 21

The *PRNP* genotype frequencies [%] in atypical (AS) and classical (CS) scrapie cases

PRNP genotyping methods:

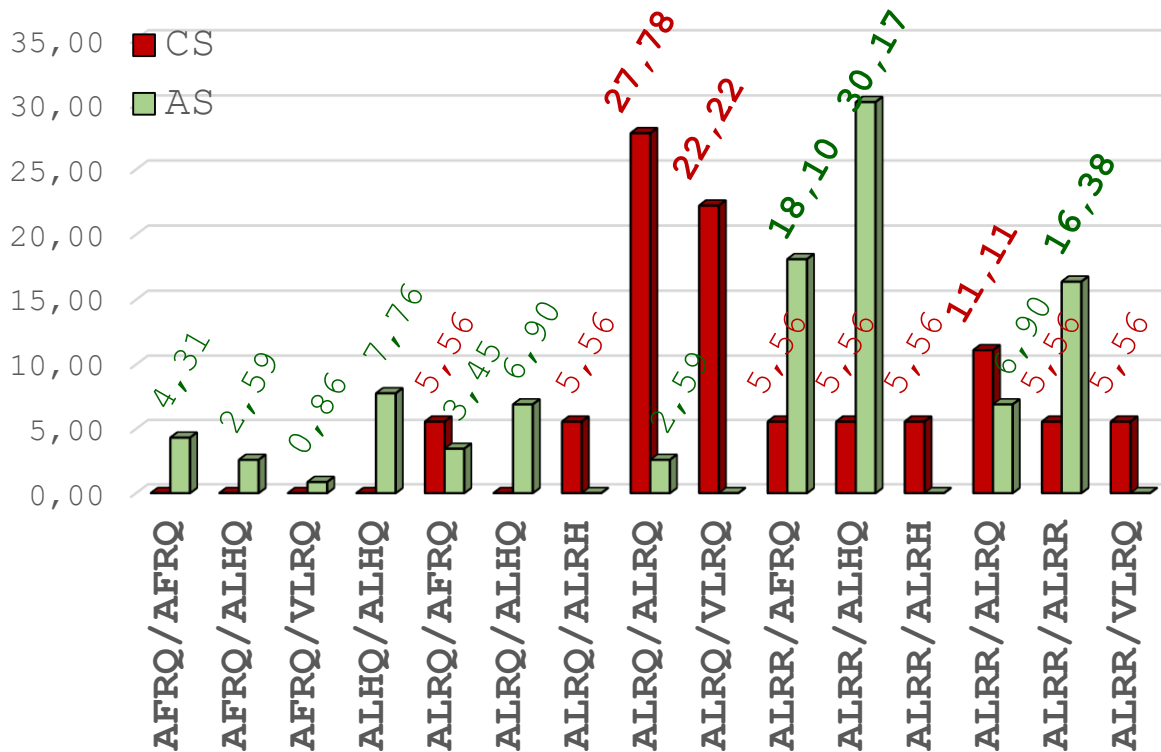
- *PRNP* coding region sequencing
- SNP genotyping by real-time PCR

The most frequent genotypes in **AS** sheep:

- ALRR/ALHQ (30.2%)
- ALRR/AFRQ (18.1%)
- ALRR/ALRR (16.4%)
- 3 AS animals with genotype ALRQ/ALRQ (2 Polish Merino crossbreds and 1 Wielkopolska sheep)

The most frequent genotypes in **CS** sheep:

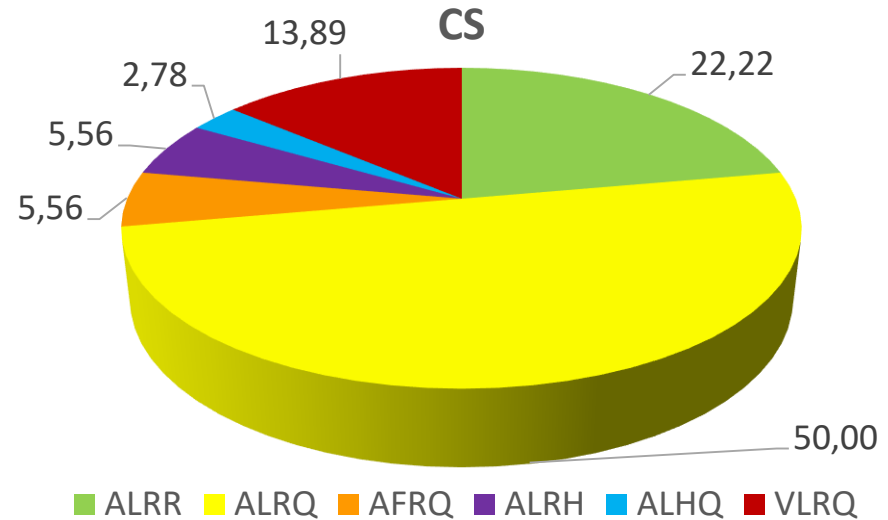
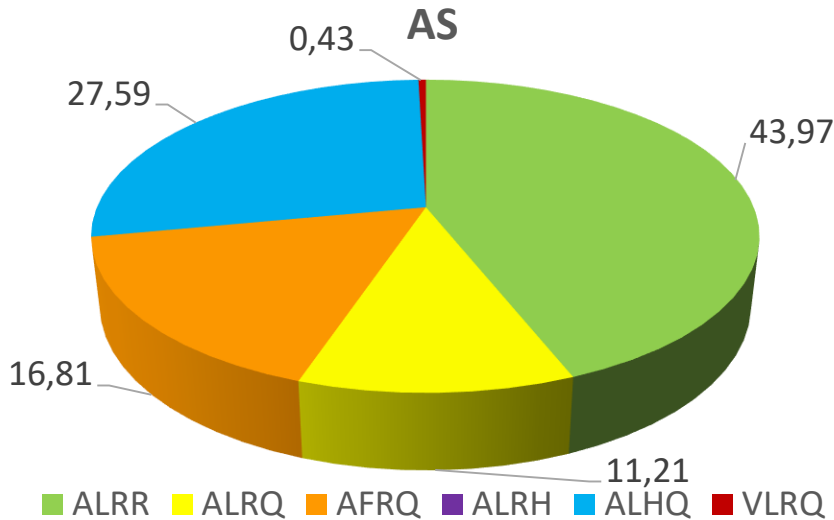
- ALRQ/ALRQ (27.8%)
- ALRQ/VLRQ (22.2%)
- ALRR/ALRQ (11.1%).
- 1 animal had genotype ALRR/ALRR (Turcana breed imported from Romania)



No genotyping results for one atypical scrapie case due to poor DNA quality.

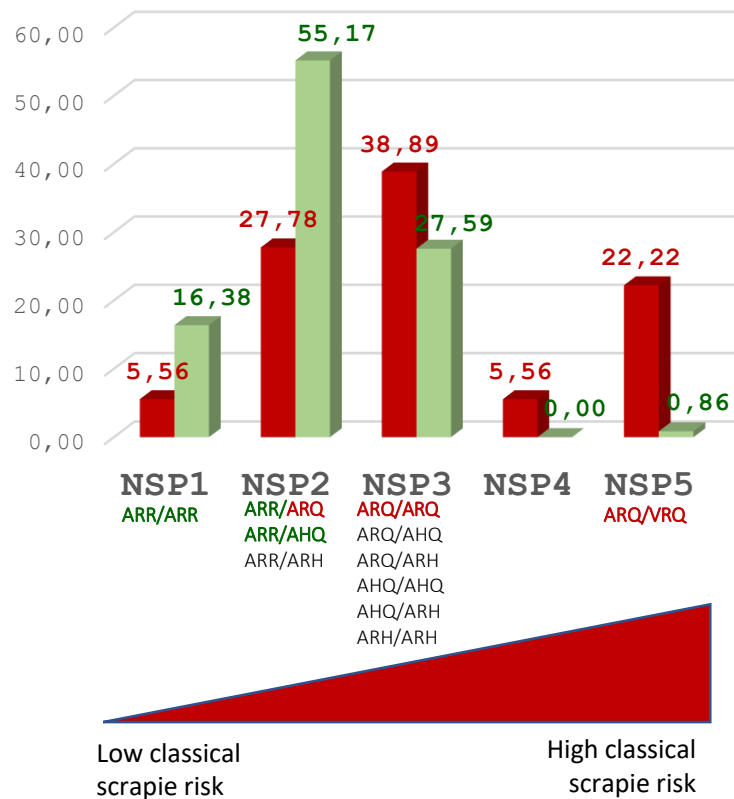
In atypical scrapie, the susceptibility is higher in individuals with the AHQ, AHQ/ARQ, and ARR genotypes along with homozygosity for phenylalanine at codon 141

The *PRNP* allele frequencies [%] in AS and CS cases in sheep



- **Allele VLRQ**, connected with the **highest susceptibility to classical scrapie** was found in 5 classical scrapie sheep and in one atypical scrapie case (AFRQ/VLRQ).
- **Allele ALRR**, associated with **classical scrapie resistance**, had frequency of 43.97% in atypical scrapie sheep and 22.22% in classical scrapie sheep.
- **Allele AFRQ**, connected with **atypical scrapie**, was observed in 29.31% of atypical scrapie sheep and in 11.1% of classical scrapie sheep.
- **Allele ALHQ** was observed in 47.41% of atypical scrapie sheep and in 0.47 % of classical scrapie sheep.

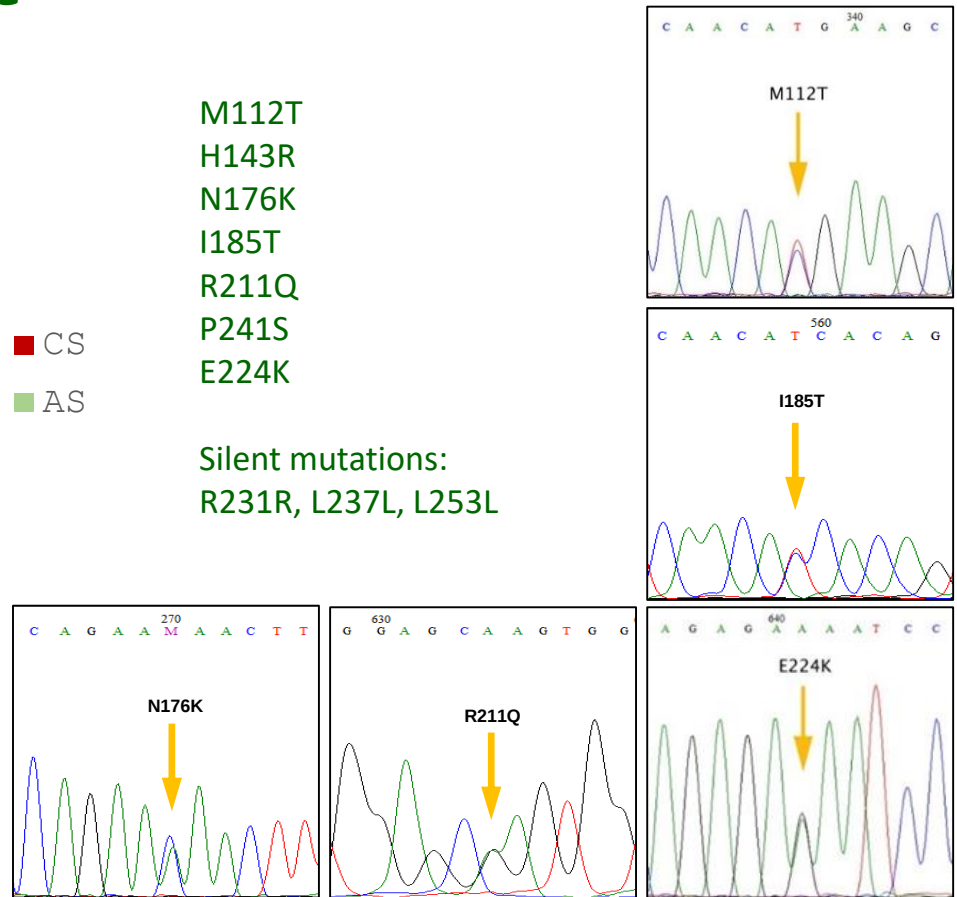
The frequency [%] of genotypes with respect to classical scrapie risk groups



Other polymorphisms in *PRNP* gene observed in sheep with scrapie

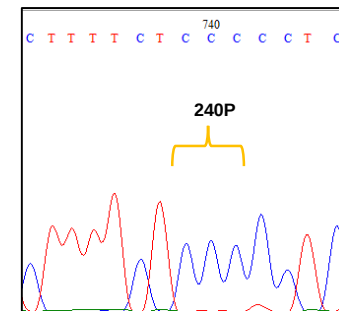
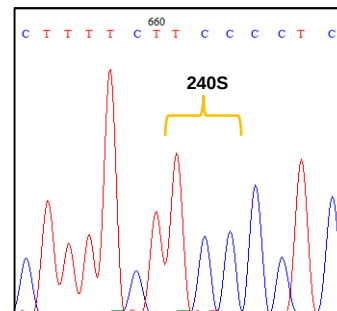
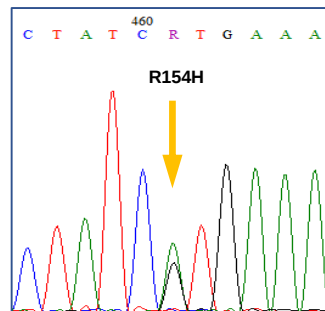
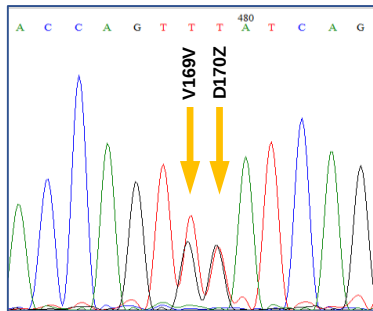
M112T
H143R
N176K
I185T
R211Q
P241S
E224K

Silent mutations:
R231R, L237L, L253L



PRNP genotyping in goats diagnosed with scrapie

- All 4 goats diagnosed with scrapie were 127G, 142I, 146N, 211R and 222Q homozygotes
- Other polymorphism identified in goats: R154H (2), D170Z (1), Q171R (1), S240P (1) and silent mutations P42P (1), S138S (1) and V169V (1)



**Thank you for your
attention**

