

**BIOLOGICAL HEALTH RISKS  
QUALITY OF LABORATORIES**

**COMMITTEE OF EXPERTS**

**PROFICIENCY TEST  
IN VETERINARY DIAGNOSIS**

**DEFINITIVE GLOBAL REPORT**

**VETERINARY MEDICINE**

**SCRAPIE**

**PROFICIENCY TEST 2023-4**

**Sciensano/PT VET SCRAPIE/2023-4/E**

Biological health risks

Quality of laboratories

J. Wytsmanstreet, 14

1050 Brussels | Belgium

[www.sciensano.be](http://www.sciensano.be)

**COMMITTEE OF EXPERTS  
NATIONAL REFERENCE LABORATORIES**

<b>Sciensano</b>					
Secretariat		PHONE:	02/642.55.22	FAX:	02/642.56.45
		e-mail	ql_secretariat@sciensano.be		
Ynse Van de Maele	Scheme coordinator	PHONE:	02/642 55 24		
		e-mail:	Ynse.vandemaele@sciensano.be		
Bernard China	Alternate coordinator	PHONE:	02/642 53 85		
		e-mail:	Bernard.china@sciensano.be		
<b>Expert(s)</b>	<b>Institute</b>				
Severine Matthijs	Sciensano				

A draft version of this report was submitted to the expert(s) on 01/08/2023.

**Authorization of the report:** by Ynse Van de Maele, PT coordinator

**Date of publication:** 11/08/2023

All the reports are also available on our webpage:

- NL: <https://www.sciensano.be/nl/kwaliteit-van-laboratoria>
- FR: <https://www.sciensano.be/fr/qualite-des-laboratoires>
- EN: <https://www.sciensano.be/en/quality-laboratories>

# TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION</b> .....	<b>4</b>
<b>2</b>	<b>AIM</b> .....	<b>4</b>
<b>3</b>	<b>MATERIALS AND METHODS</b> .....	<b>5</b>
<b>3.1</b>	<b>Genotyping (EDTA-blood)</b> .....	<b>5</b>
3.1.1	The participants .....	5
3.1.2	The samples .....	5
3.1.3	Homogeneity.....	5
3.1.4	Target values .....	5
3.1.5	Stability .....	6
3.1.6	Randomisation and panel composition .....	6
<b>4</b>	<b>TIMELINE</b> .....	<b>6</b>
<b>5</b>	<b>RESULTS</b> .....	<b>7</b>
<b>5.1</b>	<b>Genotyping (EDTA-blood)</b> .....	<b>7</b>
5.1.1	Results per sample .....	7
5.1.2	Used method.....	7
5.1.3	Conclusion .....	7
<b>6</b>	<b>ADDITIONAL INFORMATION</b> .....	<b>8</b>

# 1 INTRODUCTION

Details relevant to the proficiency test are available in the procedure SOP 2.5/01 'Management of the proficiency tests organized by the scientific directorate infectious diseases in animals'. The PT was organized according to the ISO17043 'Conformity assessment - General requirements for proficiency testing' norm.

## 2 AIM

The aim of this proficiency test was to assess the capability of the participating laboratories to obtain the PRNP genotype (codons 136, 141, 154 and 171 of the PRNP gene) of EDTA-blood samples from sheep. In the table below, an overview is given of the genotypes.

Group	Genotype result (codons 136, 154, 171)	Degree of resistance / susceptibility
Type 1	ARR/ARR	Sheep that are genetically most resistant to scrapie.
Type 2	ARR/AHQ	Sheep that are genetically most resistant to scrapie, but will need careful selection when used for further breeding.
	ARR/ARH	
	ARR/ARQ	
Type 3	AHQ/AHQ	Sheep that genetically have little resistance to scrapie and will need careful selection when used for further breeding.
	AHQ/ARH	
	AHQ/ARQ	
	ARH/ARH	
	ARH/ARQ	
	ARQ/ARQ	
Type 4	ARR/VRQ	Sheep that are genetically susceptible to scrapie and should not be used for breeding unless in the context of controlled breeding programme.
Type 5	AHQ/VRQ	Sheep that are highly susceptible to scrapie and should not be used for breeding.
	ARH/VRQ	
	ARQ/VRQ	
	VRQ/VRQ	

## 3 MATERIALS AND METHODS

### 3.1 Genotyping (EDTA-blood)

#### 3.1.1 THE PARTICIPANTS

Two laboratories participated in the proficiency test “Scrapie genotyping on EDTA-blood”. The names of the participating laboratories are:

- Sciensano, department of Viral Re-emerging Enzootic and Bee Diseases
- ARSIA

#### 3.1.2 THE SAMPLES

The samples (refrigerated EDTA-blood) were prepared by the National Reference Laboratory (NRL), department of Viral Re-emerging Enzootic and Bee Diseases, Sciensano.

Information about the origin of the samples:

- The samples, collected from healthy sheep by veterinarians/clients/FASFC, are sourced from Belgian farms in 2022 and 2023.

#### 3.1.3 HOMOGENEITY

The homogeneity of the samples was tested once for each of the two used methods by the NRL before the proficiency test (real-time PCR, sequencing). The samples were considered as homogeneous.

#### 3.1.4 THE RESULTS

The results were determined by the NRL based on the homogeneity tests. The panel consisted of 10 different samples. No repetitions were included.

Sample content	Repetition	Expected result (4 codons: 136, 141, 154, 171)
PT2023SCRAPIE_1	1	ALRQ/ALRH
PT2023SCRAPIE_2	1	ALRH/ALRH
PT2023SCRAPIE_3	1	ALRH/VLRQ
PT2023SCRAPIE_4	1	ALRQ/ALHQ
PT2023SCRAPIE_5	1	ALRH/ALHQ
PT2023SCRAPIE_6	1	ALHQ/ALHQ
PT2023SCRAPIE_7	1	ALRR/AFRQ
PT2023SCRAPIE_8	1	ALRR/ALRR
PT2023SCRAPIE_9	1	ALRQ/ALRQ
PT2023SCRAPIE_10	1	AFRQ/VLRQ

### 3.1.5 STABILITY

The stability was determined by comparison of the pre-proficiency test results with the results obtained by the NRL during and after the proficiency test. The samples were considered as stable.

### 3.1.6 RANDOMISATION AND PANEL COMPOSITION

Since a specific number has been assigned to each laboratory, the randomisation has been performed as follows:

Sample ID: SCRAPIE	97505	97507
23-1	ALRQ/ALHQ	ALRR/ALRR
23-2	ALRH/ALHQ	ALRQ/ALHQ
23-3	AFRQ/VLRQ	ALRH/VLRQ
23-4	ALRQ/ALRH	ALRR/AFRQ
23-5	ALRQ/ALRQ	ALRQ/ALRH
23-6	ALHQ/ALHQ	ALHQ/ALHQ
23-7	ALRH/ALRH	AFRQ/VLRQ
23-8	ALRR/AFRQ	ALRQ/ALRQ
23-9	ALRR/ALRR	ALRH/ALRH
23-10	ALRH/VLRQ	ALRH/ALHQ

## 4 TIMELINE

Transfer of the samples from NRL to QL: not done (the randomisation was done in the NRL facilities)

Randomization of the samples by QL: 05/06/2023

Sending samples to participants: in the week of the 5<sup>th</sup> of June 2023

- Storage of the samples : refrigerated at 4 °C

Deadline for submitting the results: 23/06/2023

Individual report to the participants: 25/07/2023

## 5 RESULTS

### 5.1 Genotyping (EDTA-blood)

#### 5.1.1 RESULTS PER SAMPLE

The panel consisted of 10 different samples (see table below). No repetitions were included.

Sample ID	Status	Number of repetitions (total results)	Observed result
PT2023SCRAPIE_1	ALRQ/ALRH	1 (2)	2x (ALRQ/ALRH)
PT2023SCRAPIE_2	ALRH/ALRH	1 (2)	2x (ALRH/ALRH)
PT2023SCRAPIE_3	ALRH/VLRQ	1 (2)	2x (ALRH/VLRQ)
PT2023SCRAPIE_4	ALRQ/ALHQ	1 (2)	2x (ALRQ/ALHQ)
PT2023SCRAPIE_5	ALRH/ALHQ	1 (2)	2x (ALRH/ALHQ)
PT2023SCRAPIE_6	ALHQ/ALHQ	1 (2)	2x (ALHQ/ALHQ)
PT2023SCRAPIE_7	ALRR/AFRQ	1 (2)	2x (ALRR/AFRQ)
PT2023SCRAPIE_8	ALRR/ALRR	1 (2)	2x (ALRR/ALRR)
PT2023SCRAPIE_9	ALRQ/ALRQ	1 (2)	2x (ALRQ/ALRQ)
PT2023SCRAPIE_10	AFRQ/VLRQ	1 (2)	2x (AFRQ/VLRQ)

#### 5.1.2 USED METHOD

Genotyping method		N	NR	NCR	%
Real-time PCR and sequencing	<ul style="list-style-type: none"> <li>Real-time PCR (SOP TSE/ANA/03)</li> <li>Sequencing (SOP TSE/ANA/04)</li> </ul>	1	10	10	100
ARMS PCR coupled with RFLP	<ul style="list-style-type: none"> <li>ARMS PCR (codons 136, 154, 171): Master Mix Scrapie ARMS (SOP/DSP/ANA/03)</li> <li>PCR RFLP (codon 141): Master Mix Scrapie codon 141 (SOP/DSP/ANA/04)</li> </ul>	1	10	10	100
<b>TOTAL</b>		<b>2</b>	<b>20</b>	<b>20</b>	<b>100</b>

(ARMS = amplification refractory mutation system; RFLP = restriction fragment length polymorphism; N= number of laboratories; NR = number of results; NCR = number of correct results).

#### 5.1.3 CONCLUSION

In 2023, two laboratories participated in the proficiency test "Scrapie genotyping (EDTA-blood)" organized by Sciensano. According to the procedure currently in force, the performance of a participating laboratory is satisfactory if at least 90% of the results provided by this laboratory is in agreement with the status of the reference serum samples assigned by the reference laboratory of the Scientific Directorate Infectious Diseases in Animals of Sciensano. All laboratories succeeded in achieving the maximum score (100%) for this test.

## 6 ADDITIONAL INFORMATION

The **calendar** for Proficiency Testing in Veterinary diagnosis is available on our website:

- NL: <https://www.sciensano.be/fr/biblio/eke-kalender-2023>
- FR: <https://www.sciensano.be/en/biblio/calendrier-eeq-2023>
- EN: <https://www.sciensano.be/en/biblio/eqa-calendar-2023>

---

END

---

© Sciensano Brussels 2023.

This report may not be reproduced, published or distributed without the consent of Sciensano. The laboratories individual results are confidential. They are not passed on by Sciensano to third parties. Nevertheless, the results of FASFC licensed laboratories are transferred to FASFC.