MINISTERIUM
FRAUEN
GESUNDHEIT

AGES

ANNUAL VETERINARY REPORT 2015

Federal Ministry of Health and Women´s Affairs (BMGF)
Austrian Agency for Health and Food Safety (AGES)

CONTENTS

FOREWORD

This report, for the year 2015, illustrates the tasks and activities of the veterinary administration at a national level and provides a concise overview of the current status of animal health in the whole of Austria.

Animal health has a direct influence on the foods of animal origin that are produced, in other words on food safety and hence also on consumer health. This is why it is particularly important that we maintain and promote the high standard of animal health. Among those ensuring this are the official veterinarians and the employees of the Austrian Agency for Health and Food Safety (AGES) with their professional work with livestock and in the test centres.

As a result of joint efforts throughout Austria using specific checking and monitoring measures, we are able to ensure that only products from healthy animals enter the food chain and thus supply the population with healthy, domestic products.

Austrian foods and Austrian breeding stock and livestock are highly regarded internationally . Once again in 2015, numerous delegations were able to gain a picture of the efficient operation, performances and structure of our veterinary administration, based on the outstanding cooperation between administration, diagnostics, agriculture and the breeding associations.

I would like to thank most sincerely all those members of staff involved in this positive annual veterinary report for 2015 for preserving and promoting animal health in Austria.

Yours

Dr.in Sabine Oberhauser, MAS

FOREWO

INTRODUCTION

One of the basic prerequisites for the production of high-quality, safe foods of animal origin is the maintenance and promotion of the health of Austrian livestock. Similarly, ensuring freedom from animal diseases is also a prerequisite for trade in animals and makes a fundamental contribution to added value in the context of livestock production. Monitoring animal health and combating animal diseases are undertaken on the basis of EU and national legislation, and of recommendations from the International Office of Epizootic Diseases (OIE), and are implemented in close cooperation between the Austrian national government (Federal Ministry of Health and Women´s Affairs), the federal provinces, the veterinary research facilities of the Austrian Agency for Health and Food Safety GmbH (AGES) and the laboratories in the individual federal provinces.

The official veterinarians of the competent veterinary authorities in all the federal provinces must be highlighted here as the implementing agencies.
The annual testing of the health status of Austrian livestock, guaranteed for the entire country, is ensured by means of statistically verified sampling and monitoring programmes.

The number of samples taken and analysed from Austrian livestock, including fish and bees, is published in this Annual Veterinary Report together with the results of these tests.

ORD

STRUCTURE OF VETERINARY ADMINISTRATION IN AUSTRIA

Austria is a republic with 9 federal provinces (Burgenland, Carinthia, Upper Austria, Lower Austria, Salzburg, Styria, Tyrol, Vorarlberg and Vienna) and 95 districts.

Based on Articles 10 Para. 1 (2) and 12 of the Austrian Federal Constitution Act (B-VG), Fed. Law Gazette 1/1930, as amended, the food sector, including food control and the veterinary sector (including the measures necessary to preserve the health of animals and to combat animal diseases affecting them, as well as to prevent indirect hazards to human health resulting from animal husbandry and from the utilisation of animal body parts and animal products), regulation of trade with feeds, as well as foreign trade with animals and products, are a federal competence in terms of legislation and enforcement. In other words, the federal authorities are responsible for passing and enforcing legislation in these areas within the scope of the federal structure.

Where there are no federal authorities in place, the relevant provincial governor and the provincial authorities reporting to him (including the district administrative authorities) are responsible for enforcement on behalf of the federal government pursuant to Art. 102 Para. 1 B-VG. This system is referred to as indirect federal administration.

In this context, the provincial governor is bound by the instructions issued by the federal minister, and is responsible for organising and implementing the monitoring.

Within the indirect federal administration system, the functions of the central veterinary authorities with regard to the implementation of controls are limited to planning and coordination. The areas in which enforcement is implemented by the federal government's own authorities (direct federal administration) include import control of live animals, foods of animal origin, foods of plant origin (those which are subject to increased levels of controls under EU legislation) and animal by-products.

Pursuant to Art. 11 BV-G, animal welfare is a matter of federal legislation and provincial enforcement. In other words, the federal authorities are responsible for passing legislation, the provinces for enforcement of the regulations.

In these areas, the provinces are solely responsible for enforcement of the regulations, including the plant disease and animal protection monitoring and control measures; in these cases, the provincial government is the supreme authority and the subordinate district authority acts as the authority of first instance.

The Federal Ministries Act defines the functional areas of the individual ministries. The responsibilities of the Federal Ministry of Health and Womens´s Affairs include food control, animal health and animal protection, and – since 2007 – animal protection during transportation, which subject matter is annexed to the transport sector. The areas of feed and plant health are among the responsibilities of the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW).
The Austrian Agency for Health and Food Safety (AGES) and the Federal Office for Food Safety (BAES)

were established under the Health and Food Safety Act (GESG).

AGES comprises all the federal laboratories for food testing, veterinary and human medicine testing, as well as the agricultural laboratories of the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW).

The Federal Ministry of Health and Women´s Affairs employs 25 veterinarians in three departments, who deal with veterinary matters, as well as 13 border veterinarians at the two remaining border inspection posts at the Vienna-Schwechat and Linz-Hörsching airports, where consignments subject to control, imported from third countries, are inspected.

The widely varied functions of veterinary administration are carried out by 214 official veterinarians employed by the provincial governments and their districts. In addition, the federal provinces of Styria and Tyrol employ a total of 28 provincial district veterinarians.
A total of 1,087 official contracts were awarded to practising veterinarians to meet the monitoring obligations in accordance with the Austrian Animal Health Act, the ordinances on TB, BVD, poultry hygiene, and the Animal Transportat Act.
The total number of veterinary practitioners in Austria is just under 3,000; some 50 vets work in veterinary laboratories.

OVERVIEW OF ANIMAL DISEASE SITUATION IN AUSTRIA

Number of animals and holdings

The survey of animal numbers and holdings in Austria (see Table 1) is based on the analyses by Statistics Austria of the Federal Ministry of Health and Womens´s Affairs´ Veterinary Information System (VIS).

Table 1:
Livestock in Austria

Species	Livestock	Holdings
Cattle[1]	1.965.618	63.476
Pigs[1]	3.063.906	34.977
Sheep[1]	445.421	17.901
Goats[1]	103.850	11.373
Sheep & Goats[2]	549.271	25.864
Equidae[3]	89.836	18.584
Poultry[3]	21.445.246	67.071

[1] Cattle, pigs, sheep, goats: Numbers of animals and holdings from VIS, cut-off date 1 April of the calendar year 2015 including the average stocks of those holdings in which a pen was empty on the sampling day but which replaced animals in the pen again in the course of the year

[2] Sheep and goats: Holdings with both sheep and goats were counted only once

[3] Equidae, poultry: Numbers of animals and holdings taken from VIS entries from previous years (no annual survey)

In 2015, Austria was free from the following highly contagious animal diseases:

- Foot and mouth disease
- Vesicular stomatitis
- Swine vesicular disease
- Rinderpest (cattle plague)
- Peste des petits ruminants
- Contagious bovine pleuropneumonia
- Lumpy skin disease
- Rift Valley fever
- Sheep and goat pox
- African swine fever
- Classical swine fever
- Avian influenza
- Newcastle disease
- African horse sickness

OFFICIALLY RECOGNISED FREEDOMS, ADDITIONAL GUARANTEES

As a result of the strictly implemented eradication programmes in the past and subsequent annual monitoring programmes, Austria is officially recognised as being free from certain diseases, such as bovine tuberculosis (*Myobacterium bovis*), bovine brucellosis (*Brucella abortus*), enzootic bovine leukosis (all since 1999) as well as small ruminant brucellosis (*Brucella melitensis* since 2001). For other diseases, such as infectious bovine rhinotracheitis (since 1999), Aujeszky's disease/pseudorabies (since 1997) and scrapie (since 2006), Austria was granted additional guarantees from the EU. The official recognition of disease freedom and granting of additional guarantees is associated with easements for the national livestock industry as well as economic trade benefits. Maintenance of the outstanding animal health status is one of the fundamental aims of the Austrian veterinary authorities and major attention will continue to be focused on monitoring in order to identify any newly occurring or re-introduced diseases as quickly as possible before they can cause serious economic damage.

At the start of 2015, after years without any outbreaks of IBR/IPV in Austria, IBR/IPV-positive animals were detected, originating from a dealer´s premises. Comprehensive investigations and enquiries initiated promptly by the veterinary authorities were successful and were quickly able to contain the outbreak. The additional guarantee recognised by the EU with respect to IBR was maintained.

The good health of the Austrian livestock population must be reconfirmed annually on the basis of the results of the monitoring programmes that have to be implemented every year.

STATUS RECOGNITION

In addition to the officially recognised freedoms and additional guarantees, the European Commission has also recognised the following special animal health status for Austria:

1) Negligible risk of BSE: since August 2012 on the basis of Implementing Decision 2012/489/EU. (OIE recognition was already granted with effect from May 2012).
2) Negligible risk of classical scrapie: Austria is once again in 2015 the only EU Member State to hold this status from the date on which Regulation (EU) No. 1148/2014 came into force on 18.11.2014.

QUALITY MANAGEMENT SYSTEM AND ACCREDITATION

Under the Austrian Act relating to Health and Food Security, in its duty to protect the health of humans, animals and plants, the Austrian Agency for Health and Food Safety must carry out analyses in accordance with the relevant legislation, for which the use of accredited methods is required, e.g. in tests in the context of combating animal diseases and zoonoses.

"Accreditation is the formal recognition by the accreditation body (Federal Ministry of Science, Research and Economy) that the test centres meet the relevant requirements regarding qualification and equipment and may thus be considered competent to perform the activities contained in the notice of accreditation."

The basis for accreditation is derived from the requirements of the Austrian ÖVE/ÖNORM EN ISO/IEC 17025:2007 "General requirements of the competence of test and calibration laboratories".
The procedural rules required are laid down by the Austrian Accreditation Act (AkkG BGBl. I No. 28/2012) by way of supplement to Regulation (EC) No. 765/2008.

Accredited test centres must demonstrate to an independent accreditation body that they perform their activities at a professionally competent level, in compliance with statutory and standardised requirements and that this level is internationally comparable. Accreditation thus guarantees comparability of results

within the EU and confidence in the quality and reliability of the tests. Accreditation therefore means that, within the EU, Austrian test reports are regarded as equivalent to those from foreign countries.
It is hence proving to be increasingly important for successful participation in international competition.

All three institutes in the Animal Health Divisions of AGES (Institutes for Veterinary Disease Control Innsbruck, Linz and Mödling) have been combined into a joint test centre with effect from 14.01.2015 within the framework of a multi-site accreditation. This took place as a logical consequence of the developments in AGES in recent years, which led to increasingly close cooperation between the sites. The need for common procedures and regulations resulted in a joint quality management system with uniform procedures and processes and harmonised test methods. The functioning joint quality management system and competence are regularly checked and confirmed by the accreditation body at all the sites.

NATIONAL REFERENCE LABORATORIES

The competent authority of each Member State designates National Reference Laboratories (NRL) for each EU Reference Laboratory (EU-RL). The Austrian Federal Ministry of Health and Women´s Affairs has designated the sites of the AGES Animal Health divisions as the National Reference Laboratory for 31 diseases.

The tasks of both the EU-RLs and the NRLs are laid down in Regulation (EC) No. 882/2004, Articles 32 and 33, and in additional pertinent legislation.
This Regulation (EC) No. 882/2004 created the basis for ensuring high quality and international comparability of test results by means of the network of EU and national reference laboratories.

The National Reference Laboratories serve as a communications and information hub between the EU Reference Laboratories and the national, official test centres and national authorities. They coordinate the activities of the official test centres and provide scientific and technical support to the national authorities. The NRLs regularly take part in comparison tests organised across the whole of Europe and themselves regularly organise national comparison tests for the official test centres. This serves both quality control purposes and also aids the development of standardised methods within the EU.

Additional tasks of the NRLs are laid down via international and national legislation and include, for example, regular monitoring of the official test centres, making standards available, batch testing and storing samples.

Non-negative test results are verified by the NRL and also forwarded to the EU-RL if necessary.

RISK ASSESSMENT IN THE VETERINARY FIELD

Risk assessments are used in Austria in connection with matters of freedom from disease, the risks of introduction of disease by means of trade and transport or to evaluate the recurrence of animal diseases. These methods are also used to evaluate possible courses of action by the legislature (e.g. monitoring strategies, prohibition strategies, vaccination strategies, etc.).

The procedure is usually in accordance with the guidelines of the OIE (World Organisation for Animal Health). These guidelines start with a detailed identification of the risk and then consist of four stages: release assessment, exposure assessment, consequence assessment and risk assessment.
For example, risk-based random sampling plans are used to monitor classical scrapie, bluetongue disease, bovine brucellosis, enzootic bovine leukosis and IBR/IPV in cattle, and *Brucella melitensis* in sheep and goats.

Within the framework of the transfer of national crisis plans to a modular system, the AGES was commissioned with developing the "epidemiology" module. This establishes framework conditions for the flow of information in the event of an animal desease outbreak. In addition, a concept is being developed that

will allow standardised data from local epidemiological surveys during an outbreak to be combined with other relevant data and evaluated in an automated process. This is intended to ensure that epidemiologically relevant data can be made available to decision-makers promptly in a crisis situation as an information base for risk assessment and the development of risk management measures.

In an analysis of animal movement data, the emphases are on the calculation of key network analysis figures, the determination of contact holdings by means of forward/backward tracing, and simulation of outbreaks of animal epidemics. Thus, in the case of the IBR/IPV outbreak in 2015, contact holdings could be very rapidly identified and lists drawn up of animals arriving for calf auctions, on the basis of the data from the official Veterinary Information System (VIS) and the cattle database. In addition, the competent authorities could be provided with specific summaries of laboratory results, updated on a daily basis.

A similar procedure applied in the case of the BTV-4 outbreak in 2015, in which, in addition to the identification of contact holdings, the map views of the affected holdings and restriction zone, the regular reports regarding movements from the restriction zone, and the assessment of animals moved within the EU from TRACES and the VIS, vaccination lists were also made available.

AUJESZKY'S DISEASE

Aujeszky's disease or pseudorabies is caused by a herpesvirus (Suid herpesvirus 1, SuHV-1) from the subfamily Alphaherpesvirinae. Pigs (domestic and wild) are the natural reservoir for SuHV-1. Carnivores and ruminants are the end hosts. There is no transmission from an infected end host to healthy carnivores or ruminants. The outcome for the host is usually fatal. Humans are not susceptible to SuHV-1 infection.

Pigs that survive an SuHV-1 infection retain at least latent infection throughout their lifetime. Reactivation and spread of the infection in these animals is possible. It is prohibited to vaccinate pigs in Austria.

Under §16 of the Austrian Animal Diseases Act, an outbreak of Aujeszky's disease in domestic pig stocks in Austria is notifiable. A permanent monitoring programme for domestic pig stocks in Austria has been in place since 1997. The Aujeszky situation in Austria is assessed on the basis of the annual monitoring programme. Based on the results of these tests, Austria has been officially recognised as being free from Aujeszky's disease in domestic pigs since 1997.

Domestic pigs - Monitoring:

12,543 pigs from 4,198 holdings were serologically tested for antibodies (Ab) to Aujeszky's disease in 2015. All the tests returned negative results.

BOVINE BRUCELLOSIS, ENZOOTIC BOVINE LEUKOSIS AND IBR/IPV

Bovine brucellosis (Abortus Bang), enzootic bovine leukosis (EBL) and infectious bovine rhinotracheitis / pustulous vulvovaginitis or balanoposthitis (IBR/IPV, IBP) are notifiable animal diseases.

Bovine brucellosis is a bacterial, zoonotic infection. Individuals in close contact with animals are at particular risk, for example farmers, vets and abattoir staff. It is caused by *Brucella abortus*, which is responsible for contagious abortion in cattle and causes the sickness known as Bang's disease in humans.

Enzootic bovine leukosis is a viral disease of cattle. The pathogen belongs to the family of the Retroviridae, genus HTLV-BLV group. The tumours that develop are malignant B-cell lymphomas.

IBR/IPV or IBP (red nose) is a viral disease of cattle, caused by Bovine herpesvirus Type 1 (BHV-1). The pathogen belongs to the family of the Herpesviridae, genus *Varicellovirus*. Austria has been officially recognised as being free of bovine brucellosis and enzootic bovine leukosis and holds additional guarantees for IBR. Annual monitoring programmes are undertaken in order to preserve this status, in accordance with the specifications of Directive 64/432/EEC and the National Regulation on Monitoring of Bovine Health, and this was also the case in 2015.

Holdings supplying milk and those that do not supply milk are sampled in accordance with a risk-based random sampling schedule drawn up by the AGES Integrative Risk Assessment, Data and Statistics Division (AGES-DSR). Agricultural holdings that supply milk are monitored by testing samples from bulk tank milk using ELISA tests. Non-milk supplying holdings are monitored by testing blood samples, again using ELISA tests. The tests are conducted at the Institute for Veterinary Disease Control in Linz.

Table 2 below provides an overview of the number of tests for bovine brucellosis and enzootic bovine leukosis within the framework of the monitoring programme.

Table 2:
Tests for bovine brucellosis and enzootic bovine leukosis

	Blood samples	Bulk milk samples
Bovine Brucellosis	11.753	1.345
Encootic Bovine Leukosis	11.619	1.346

Austrian cattle were once again officially recognised as being free from bovine brucellosis and enzootic bovine leukosis in 2015.

At the end of January 2015, export tests revealed the presence of an IBR/IPV infection in a dealer´s premises in the Austrian province of Tyrol. Comprehensive investigations were immediately arranged by the veterinary authorities. The surveys – starting from the holding in Tyrol where the outbreak was found – showed that the pathogen had also spread to holdings in other Austrian provinces, neighbouring countries and an export third country, as a result of intensive animal movements involving additional livestock dealers and a cattle market. Entry is assumed to have taken place via a dealer operating internationally or the use of a transport vehicle that had not been cleaned and disinfected in compliance with the legislation.

Twenty-six positive holdings were detected overall in the context of the IBR outbreak in Austria in 2015, with a total of 313 positive animals. In addition to the province of Tyrol (18 holdings), the provinces of Vorarlberg (2 holdings), Lower Austria (5 holdings) and Upper Austria (1 holding) were also affected. The last positive holding within the framework of this IBR outbreak was found on 20 March 2015. The relevant follow-ups, which were all negative once more, were completed in summer 2015. Tests were also carried out at cattle markets, before driving cattle up on to the mountain pastures and before commercial movements, and samples from other monitoring programmes (e.g. monitoring for bovine viral diarrhoea, BVD) were additionally tested for IBR/IPV.

Table 3 below provides information about monitoring and the tests carried out by the veterinary authorities in the context of the IBR outbreak; additional laboratory tests arranged are also included.

Table 3:
IBR/IPV tests 2015

Blood tests

Analysed cattle (Monitoring)	Analysed herds	Analysed cattle (Suspicion)	Positive cattle	Positive herds
32.559	7.459	15.823	313	26

Milk tests

Analysed herds	Analysed bulk milk samples
7.400	16.000

As a result of the disease combat measures and the intensive testing, Austria was able to maintain its additional guarantees for IBR.

TUBERCULOSIS (TB)

Human and animal tuberculosis are caused by closely related species of mycobacteria that are combined in what is known as the *Mycobacterium tuberculosis* complex (MTBC).
This complex includes the following species: *Mycobacterium* (*M.*) *tuberculosis*, *M. africanum*, *M. canettii*, *M. bovis*, *M. caprae*, *M. pinnipedii*, *M. mungi*, *M. orygis*, *M. suricattae* and *M. microti*. Identification of the Mycobacterium species and genotyping of the strains is undertaken using various molecular biological methods.
In Austria, the entire *Mycobacterium tuberculosis* complex – which also includes bovine tuberculosis – is a notifiable disease. Pursuant to Decision 1999/467/EC by the EU Commission, Austria has been recognised as being free of bovine tuberculosis (*M. bovis*) since 1999.
cases of tuberculosis – caused by *M. caprae* - in wild red deer in certain regions of the federal provinces of Tyrol and Vorarlberg, the Federal Ministry of Health and Women´s Affairs has ordered annual testing of cattle in specific risk areas (special TB testing zones and special TB monitoring zones) using the comparative (intradermal) test.
In 2015, in the context of these tests, the tuberculosis pathogen *M. caprae* was detected in a total of 5 animals in 4 cattle holdings.
One cattle holding affected was in the district of Reutte in Tyrol, 3 of the affected cattle holdings were in the districts of Bludenz and Bregenz in Vorarlberg.

2011 was the first time that an infection zone with reference to TB was defined and identified in the federal province of Tyrol on the legal basis of the Austrian Red Deer TB Ordinance (Rotwild-TBC-Verordnung). In 2015, infection with *M. caprae* was detected in 27 red deer in this infection zone. Tyrol has also carried out red deer screening since 2012 (2015: hunting grounds in the Karwendel mountains and in the Innsbruck-Land, Schwaz, Landeck and Kufstein districts), with *M. caprae* being detected in 2 red deer in 2015.

Since 2009, the federal province of Vorarlberg has also run a provincial red deer TB monitoring programme, with a control zone being set up in the district of Bludenz in 2013. Distinctions are made in the affected red deer areas of the control zone – in a similar fashion to the infection zone in Tyrol – between core, monitoring and observation areas. In 2015, infection with *M. caprae* was found in 43 of a total of 603 red deer tested in Vorarlberg.

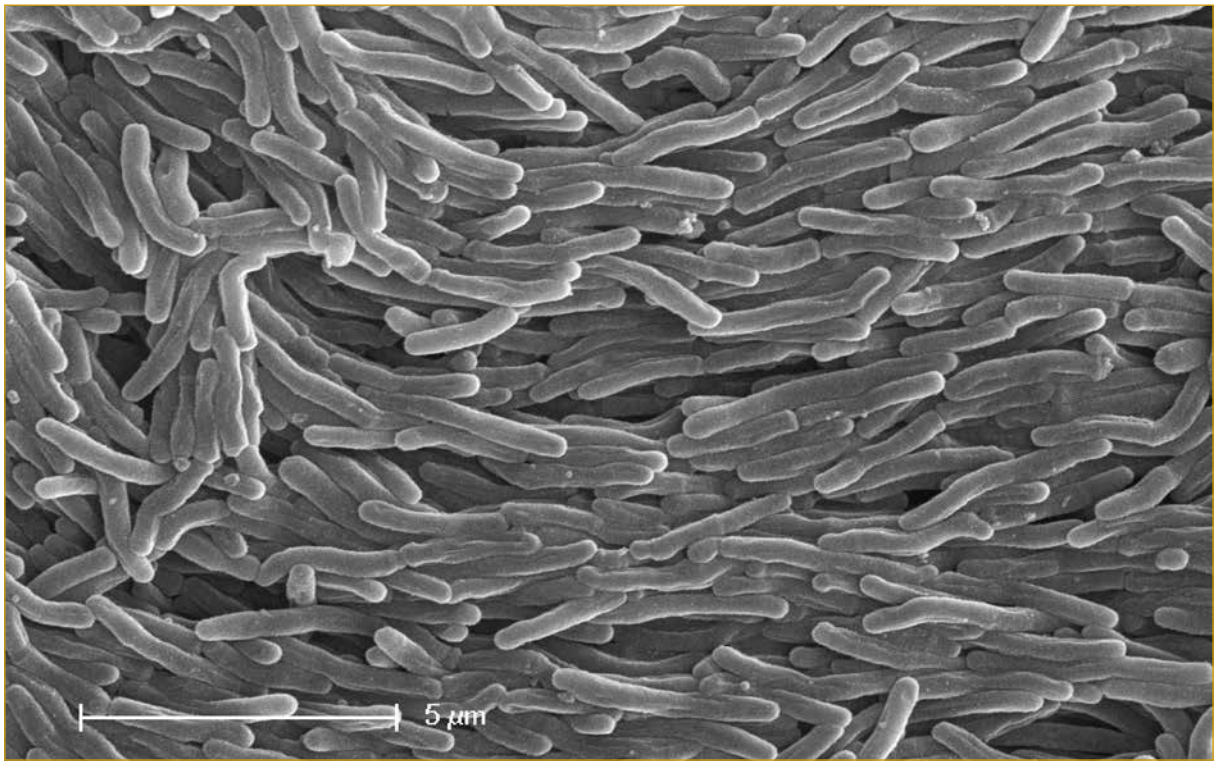


Figure 1:
Scanning electron microscope image of individual *M. caprae*

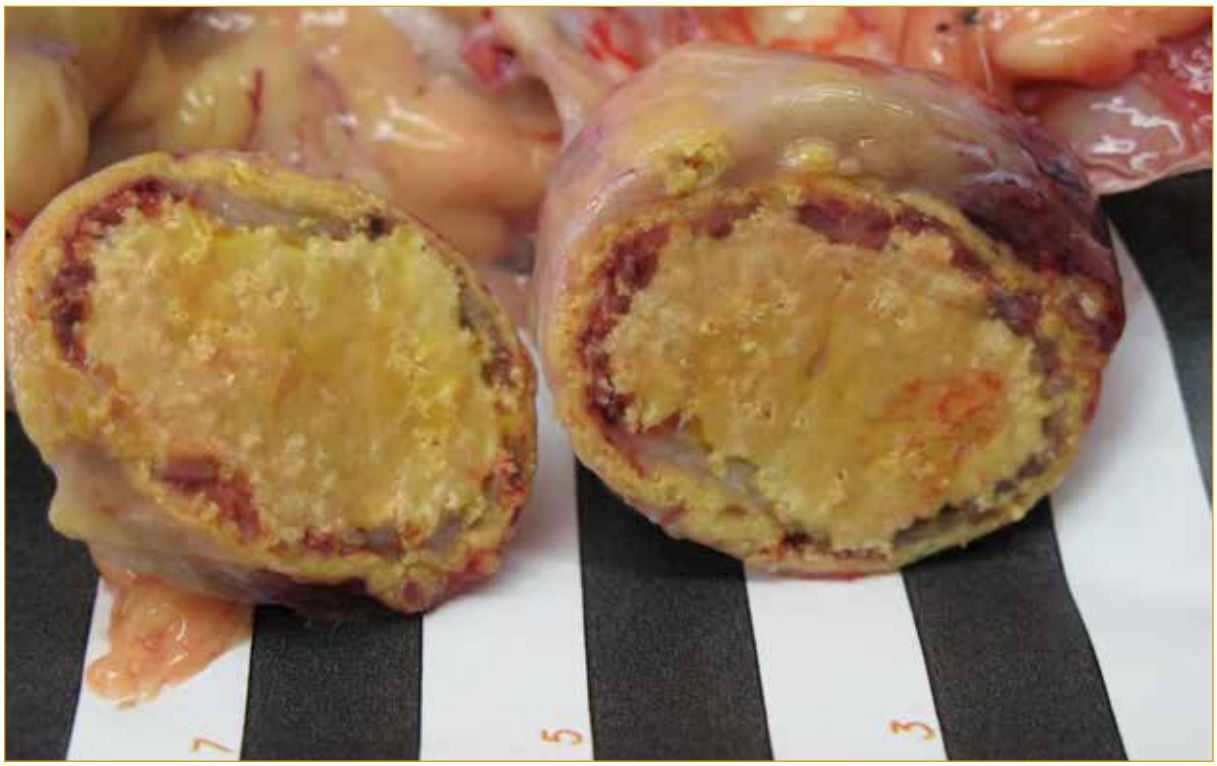


Figure 2:
Red deer – tuberculous lymph node

BRUCELLOSIS OF SMALL RUMINANTS

BRUCELLA MELITENSIS

Brucella melitensis is a small ruminant infection that can also be transmitted to humans (zoonosis). It is caused by the bacterium *Brucella melitensis*. Typical symptoms of the disease, also known as Malta fever, in humans are high fever, shivering, headache and muscle pain. Sources of infection are raw sheep and goat's milk and products derived from them, as well as infected animals, suffering from reproductive organ disorders and, in rare cases, inflammations of the joints. The pathogen causing brucellosis is principally found in the Mediterranean area and the tropics.

Pursuant to Commission Decision 2001/292/EC, Austria has been officially recognised as being free of *Brucella melitensis* since 11 April 2001. This status has to be confirmed with annual, representative sample tests. The sample size is published by the competent federal ministry in the official veterinary bulletin.In 2015, 19,216 blood samples from sheep and goats from a total of 1,543 holdings were tested for antibodies to *B. melitensis*. There were no positive cases of *Brucella melitensis*.

BRUCELLA OVIS

In rams, brucellosis takes the form of infectious epididymitis caused by *Brucella ovis*. This disease is not a zoonosis. A total of 3,034 animals were serologically tested in 2015 and 4 seropositive animals from 4 holdings were found.

RABIES

As a result of the good epidemiological situation in Austria's neighbouring countries and the fact that Austria has been declared rabies-free for the past five years, oral vaccination of foxes was suspended at the start of 2013. The monitoring programme was shifted at the same time from a sampling plan to the examination of indicator animals and suspected clinical cases. Indicator animals include foxes, badgers, racoons and racoon dogs killed on the roads or found dead. Clinically suspect cases are confirmed by the official veterinarian and recorded in the VIS (Veterinary Information System).

The overall risk of the release of rabies in Austria as a result of the disease situation of immediately adjacent neighbouring countries is classed as low, the possibility of its release as a result of legal or illegal animal imports and of latent persistence of rabies in the population is classed as very low.

In 2015, a total of 390 animals were tested for rabies using FAT (Fluorescence Antibody Test); 162 of these animals were suspected cases. All the tests yielded negative results.

Foxes were the species most frequently submitted for testing, with 210 animals tested, and were followed by 59 bats, 32 cats, 37 dogs, 22 badgers, 13 martens and 17 other animal species. No racoons or racoon dogs were tested.

No statistically proven statement could be made in 2015 with respect to the occurrence of rabies in the Austrian bat population. The tests of 59 bats were all negative for rabies.
The testing modalities for animals that had bitten a human remained unchanged in 2015. In total, the Rabies Tissue Culture Inoculation Test (RTCIT) was carried out 64 times in these 69 animals in addition to FAT, and a PCR test in 5 cases. All the tests yielded negative results.

Since the end of 2012, muscle samples have been obtained from the foxes submitted for rabies testing, and tested for Trichinella using the digestion method. After Trichinella was detected four times in these muscle samples, the tests were being continued as part of a project at the accredited Trichinella Laboratory at the AGES site in Mödling until the end of 2015, however no further cases were detected. Within the scope of the animal movement tests, a total of 581 serum samples from dogs and cats were checked for rabies antibodies using the FAVN (Fluorescence Antibody Virus Neutralisation) test in 2015. Of these, 509 samples displayed a sufficiently high antibody titre of more than 0.5 IU/ml, but 52 samples had a lower titre and no antibodies could be detected in 20 animals (quarantined animals).

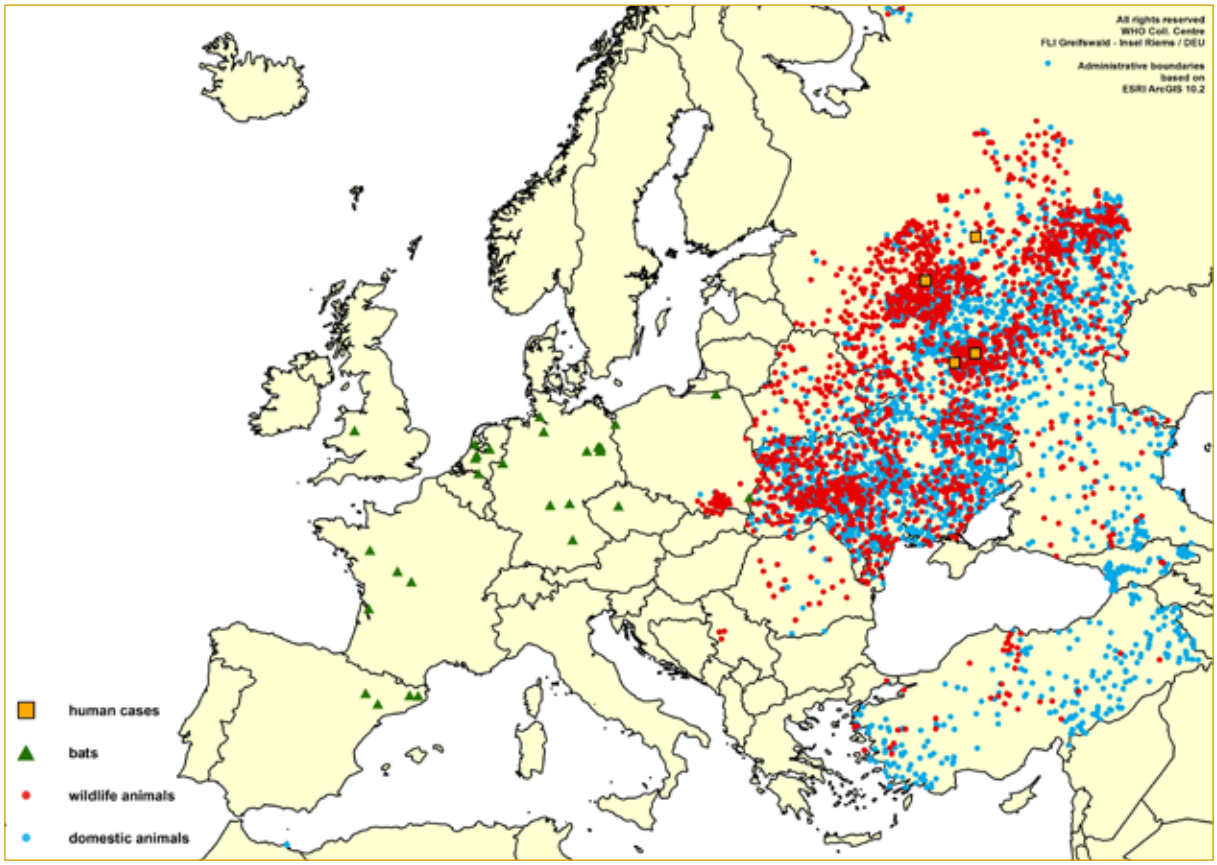


Figure 3:
Prevalence of rabies in Europe in 2015 (Source: Rabies Information System of the WHO Collaboration Centre for Rabies Surveillance and Research, © Friedrich-Loeffler-Institut)

TRANSMISSIBLE SPONGIFORM ENCEPHALOPATHIES (TSE)

BSE

The statutory framework conditions of Regulation (EC) No 999/2001 and Commission Decision 2009/719/EG continued to apply in 2015. Pursuant to the Regulation on the Monitoring of Bovine Health (Federal Law Gazette (BGBl.) II No. 334/2013) and Announcement GZ BMG-74.600/0007-II/B/10/2014 dated 24 January 2014, animals that died or were slaughtered, aged 48 months or above, and were born in Austria or the following countries: B, CY, CZ, DK, D, EE, FIN, F, GR, H, IRL, I, LV, LT, LUX, M, NL, P, PL, S, SK, SLO, SP, UK, Channel Islands, Isle of Man, and bovines aged 24 months or above slaughtered as an emergency or special measure or on health grounds, were subject to testing for BSE. For cattle from EU states without a revised monitoring programme (BG, HR, RO) as well as Switzerland and other non-EU countries, the age limits in Regulation (EC) No 999/2001 continued to apply (30 months for normally slaughtered animals, 24 months for all other categories).
Tests of younger cattle, from the age of 20 months, continued to be possible at the expense of the designated authority, however in 2015 no animal was submitted for testing at the request of the designated authority.

Table 4:
Numbers with respect to BSE tests

Categories cattle	Analysed samples	Age limit in months
Healthy slaughter	5.167	30[1]
Emergency slaughter and slaughter with clinical signs at ante mortem	2.867	24
Fallen stock	12.949	48 bzw. 24[1]
Eradication	0	-
Suspects	25	-
Voluntary tests	0	ab 20
Total	**21.008**	-

[1] Age limit dependent on country of origin and legal basis (Commission Decision 2009/719/EC as amended)

Once again, no cases of BSE were found in Austria in 2015. As of May 2012, Austria has been classed by the OIE as a country with a "negligible BSE risk".

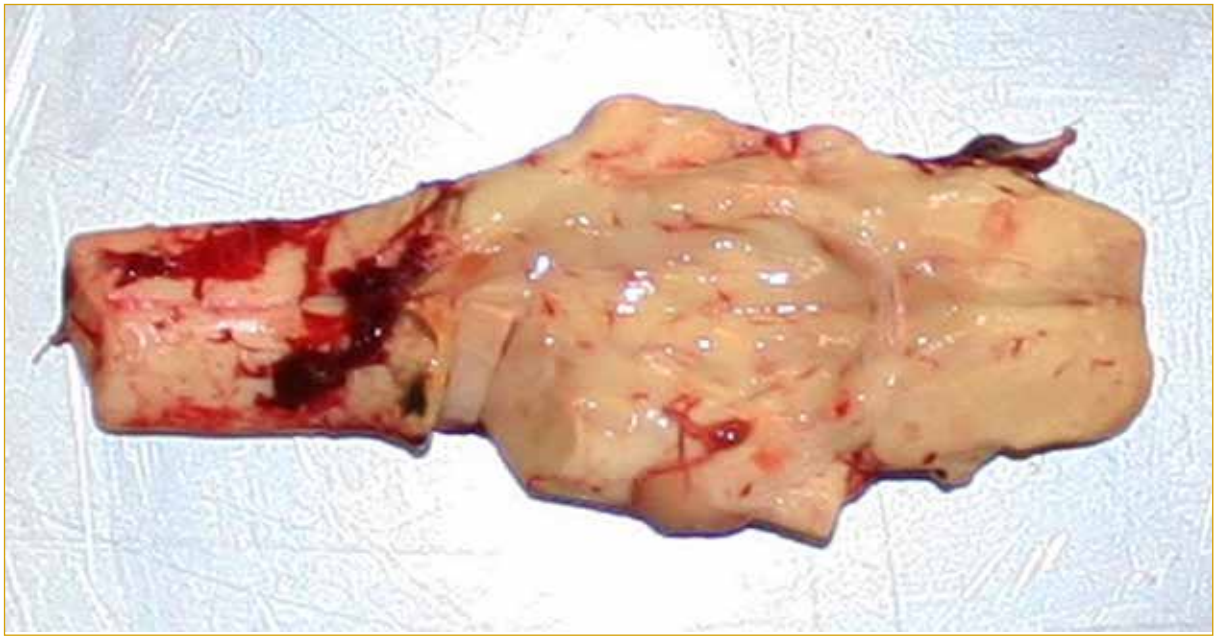


Figure 4:
Brain stem sample from a bovine with laboratory sample already removed from the obex region.

SCRAPIE

In 2015 one case of "atypical scrapie" was detected in a fallen sheep in Austria that had died / been killed at 8 years old.
The diagnosis of this case was made at the NRL Mödling using the Western Blot test and confirmed by the TSE-EURL.
Austria is the only EU member state to have held the status of "negligible risk of classical scrapie" since Commission Regulation (EU) No. 1148/2014 came into force on 18.11.2014.
In 2015 again, within the framework of a risk-based random sampling programme, sheep and goats slaughtered at an age of over 18 months were tested.
The Austrian scrapie monitoring ordinance (Scrapie-Überwachungsverordnung (BGBl. II No. 119/2006)) that has been in force since March 2006 was repealed on publication of the Austrian sheep and goat health monitoring ordinance (Schaf- und Ziegengesundheits-Überwachungs-Verordnung (BGBl. II No. 308/2015)) on 1 November 2015.

Genotyping was carried out in accordance with the provisions of Regulation (EC) No. 999/2001 of the European Parliament and the Council.

Table 5:
Numbers of Scrapie - Examinations

Categories sheep and goats	Analysed samples	Positive samples
Slaughtered	152	0
Fallen stock	6.167	1 (atyp. Scrapie)
Suspects	0	0
Total	**6.319**	**1 (atyp. Scrapie)**

ZOONOSES: CAMPYLOBACTER, VTEC/EHEC AND SALMONELLA

Protection of human health against diseases and infections that can be directly or indirectly transferred between animals and humans (zoonoses) is extremely important. Priority should be given to those zoonoses that constitute the greatest risk to human health. The monitoring systems should also, however, facilitate recognition of emerging or re-emerging zoonoses and new strains of pathogen. The worrying development of resistances to antimicrobial substances (for example, medicines and feed additives with antimicrobial action) should be monitored. It should be ensured that this monitoring covers not only zoonotic pathogens but also other pathogens if they constitute a hazard to public health. Monitoring indicator organisms may be particularly advisable. These organisms form a reservoir for resistance genes that they can transmit to pathogenic bacteria.

As the focus of surveys of the prevalence of selected zoonotic pathogens has shifted across the whole of the EU to monitoring and combating antimicrobial resistance, national zoonosis monitoring has been adapted accordingly. Implementing Decision 2013/652/EU has been in force since 2014, stating that monitoring and reporting of antimicrobial resistance in zoonotic and commensal bacteria must be undertaken. Table 6 provides an overview of the combinations of pathogens and products to be tested.

Table 6:
Overview of combinations of strains of bacteria/products tested, 2014-2018

Species	*C. jejuni*	*E. coli*	*Salmonella*	ESBL, AmpC, Carbapenemase-producer[1]
broiler flocks	2014, 2016, etc.	2014, 2016, etc.	2014, 2016, etc.	2016, 2018, etc.
layer flocks	-	-	2014, 2016, etc.	-
fattening turkey flocks[2]	2014, 2016, etc.	2014, 2016, etc.	2014, 2016, etc.	2016, 2018, etc.
fattening pigs	-	2015, 2017, etc.	-	2015, 2017, etc.
calfs[2]	-	2015, 2017, etc.	-	2015, 2017, etc.
broiler carcases	-	-	2014, 2016, etc.	-
fattening turkey carcases[2]	-	-	2014, 2016, etc.	-
pig carcases	-	-	2015, 2017, etc.	-
calf carcases[2]	-	-	2015, 2017, etc.	-
broiler meat	-	-	-	2016, 2018, etc.
turkey meat[2]	-	-	-	2016, 2018, etc.
pork	-	-	-	2015, 2017, etc.
beef	-	-	-	2015, 2017, etc.

[1] 300 Proben von jeder Tierpopulation (300 Herden bzw. 300 Bestände) oder daraus gewonnene Frischfleischchargen (300 samples of each of the food producing animal populations or food thereof)

[2] if more than 10.000 t/y slaughtered

sampling at Farm
sampling in Abattoir
sampling at Retail

In 2015, caecum samples from fattening pigs were tested for the indicator bacteria E. coli and for ESBL/AmpC/carbapenemase-producing E. coli in the veterinary sector. The isolates obtained were tested according to the specifications for their sensitivity to antimicrobial substances, and the results were published in the Austrian Resistance Report, 2015 (AURES 2015).

The test results are shown in Tables 7 and 8.

Table 7:
Results of the test for ESBL/AmpC/carbapenemase-forming *E. coli* in fattening pigs, 2015

Category	Received samples	Analysed samples	Isolates
fattening pigs	344[1]	257 (100 %)	134 (52 %), out of these 124 ESBL- (48 %), 10 AmpC- (4 %), 0 Carbapenemase-producing *E. coli*

[1] not all samples met the technical specifications

There was no change to the Salmonella control programme in the parent animals of chickens (*Gallus gallus*), layers, broilers and fattening turkeys in accordance with the Poultry Hygiene Ordinance, 2007, as amended. The programme was carried out as in previous years. The results for *Salmonella* spp. and the target serotypes per poultry population are shown in Table 8.

Table 8:
Results of the tests for salmonella in laying hens, broiler chickens and fattening turkeys, 2015

	Parent Broilers	Parent Laying Hens	Laying Hens	Broilers	Turkeys
Number of Flocks	122	27	2.768	4.146	365
N *Salmonella* spp.	4	1	26	129	14
% *Salmonella* spp.	3,4		0,9	3,1	4,1
N SE/ST positive flocks	1[1]	0[1]	10	1	43
% SE/ST positive flocks	0,67[2]		0,36	0,02	0,8

SE ... *S.* Enteritidis
ST ... *S.* Typhimurium incl. monophasic variant

[1] 5 target serotypes: *S.* Enteritidis, *S.* Typhimurium incl. monophasic variant, *S.* Infantis, *S.* Hadar and *S.* Virchow
[2] Calculation of the prevalence refers to all parent animals and all 5 target serotypes (broiler and layer parent animals)

The most common serotype in broilers: *S.* Infantis (n=84) and *S.* Thompson (n=16) (One broiler flock with 2 serotypes (Infantis and Thompson)).
The most common serotype in layers: ST (n=6) and SE (n=4).
In turkeys: *S.* Mbandaka and *S.* Stanley, 3x each.

Monitoring of *Salmonella* prevalence in Austrian poultry flocks revealed that the EU targets for controlling *S.* enteritidis and *S.* typhimurium, including the monophasic variant, (the most common serotypes in human medicine) were met once again. These two serotypes may be detected in no more than 2% of layer flocks and 1% of turkey and broiler flocks. For broiler and layer parent animals, the target serovars, in addition to the two mentioned above, are *S.* infantis, *S.* hadar and *S.* Virchow; the prevalence for all of these may not exceed 1%. The control measures in the poultry populations were thus implemented successfully. Nonetheless, particular attention must be paid to the avoidance of horizontal transmission of Salmonella via humans, feed or rodent pests, and to control of the persistence of the pathogens in animal housing. Comprehensive hygiene measures, in the sense of "bio-security," as described in the Poultry Hygiene Ordinance, are essential for this purpose.

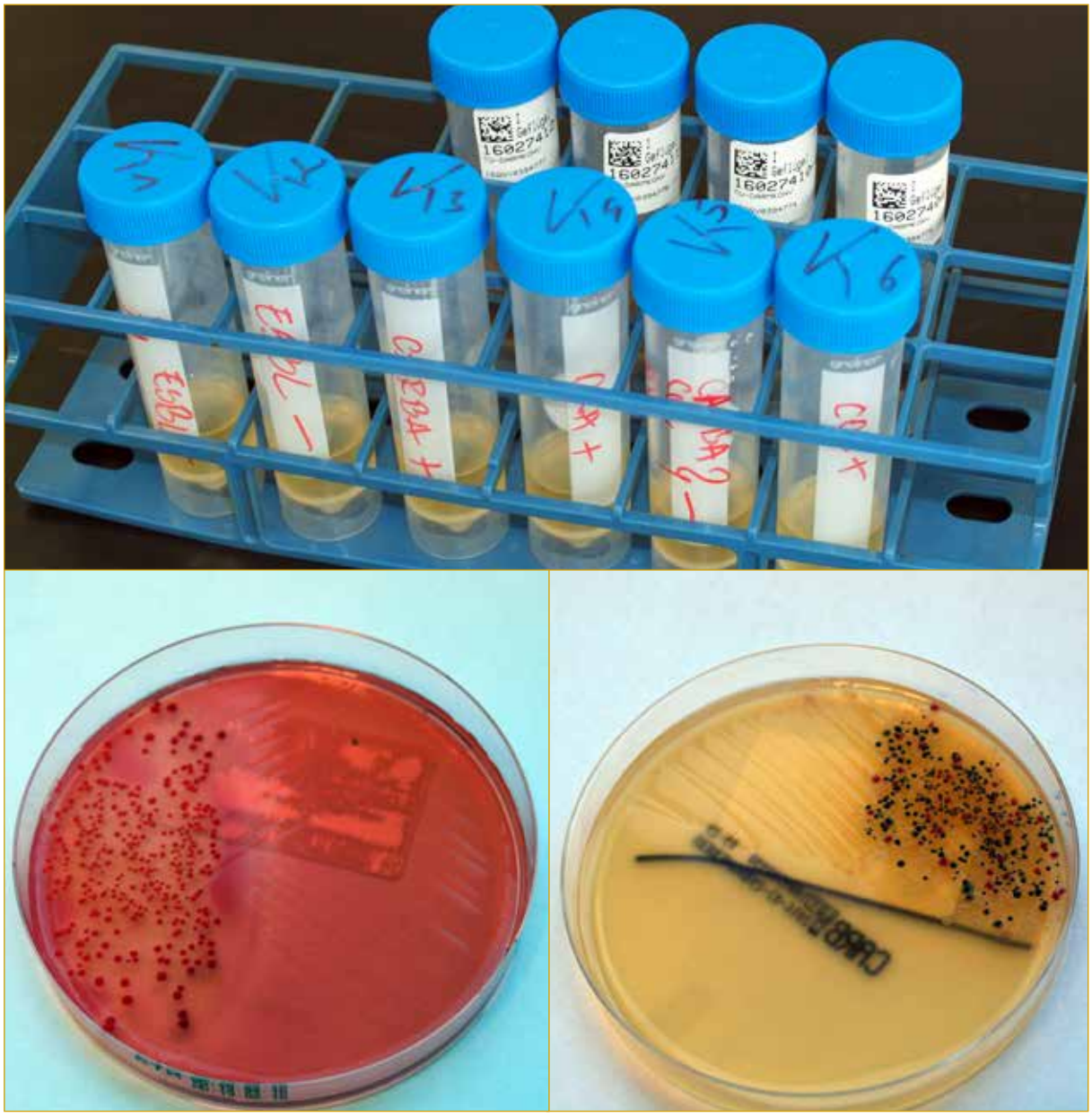


Figure 5:
Series of images ESBL – detection:
Enrichment in buffered peptone water (above) – selective agar, MacConkey/CTX with ESBL-forming *E. coli* (below left) – selective agar, CARB for carbapenemase-forming *E. coli* with mixed flora (below right)

TRICHINAE MONITORING

Trichinosis is a human disease caused by food with outcomes ranging from mild to fatal. It is caused by microscopically small nematode worms of the genus *Trichinella*. Four species of trichinae are known in Europe to date and are differentiated using molecular diagnostic methods. Humans are infected by eating raw or insufficiently heated meat products (e.g. bacon, sausage) from animals that may be carriers of these parasites. The principal hosts for these parasites are domestic and wild pigs and horses, as well as various wild animals (including fox, bear and badger) and rodents (rats).

Trichinae are principally found in the muscles of these animals, usually surrounded by a capsule (with the exception of *Trichinella pseudospiralis*). The larvae are ingested with food and released from the muscle during the digestion process in the stomach. The larvae then bore into the intestinal wall where they develop to the adult stage, capable of reproduction. Subsequently, the females give birth to large numbers of live larvae which disperse throughout the body in the bloodstream. They tend to lodge in the skeletal musculature where a capsule forms around the larvae. The symptoms of disease in humans involve fever, abdominal pain and diarrhoea initially, followed, in the advanced stage of the disease, by muscle and joint pain, in particular, together with a typical facial oedema. Humans are highly receptive hosts and the severity of the infection depends on the number of larvae ingested, on the one hand, and on the specific resistance of the host, on the other. The disease can be treated with drugs and treatment is more likely to be successful the earlier it is commenced.

Trichinosis is a parasitic disease found throughout the world. Several hundred people develop this zoonosis in Europe each year, the majority of cases occurring in the EU Member States of Bulgaria and Romania and frequently being caused by meat products derived from wild pigs. In Austria, human cases of the disease are very rare. Only "imported" cases of trichinosis have been recorded by the health authorities in Austria in the past 40 years. These have involved people who became infected with trichina larvae abroad or who brought infected meat products back to Austria, usually after visiting their home country, and became ill in Austria after eating these products.

To protect consumers and human health, there is an obligation under European legislation (Regulation (EU) No. 1375/2015 for animals that might be carriers of trichinae and that are intended for human consumption to be tested for trichina larvae after slaughter or death and prior to marketing of the meat. Pursuant to this statutory requirement, more than 5 million domestic pigs, about 1,000 horses and the majority of wild pigs killed by hunters are tested for trichinae in Austria every year. Testing uses the digestion technique in which a quantity of muscle from the carcass that has to be tested (usually from the pillar of the diaphragm) is precisely defined by weight and then broken down by artificial digestion. The sediment of the digestion fluid is microscopically examined for the presence of trichina larvae. In the case of positive trichina detection, the whole carcass is confiscated by the competent veterinary authority and passed on for verifiable disposal. Trichinae have only been detected in wild pigs in a few cases in Austria in recent years, and, with two exceptions, the positive animals were of foreign origin: wild pigs from Germany and Hungary that had been butchered in Austria for onward marketing. No positive trichina findings have been reported for decades in Austrian breeding or fattening pigs or in horses.

Scientific studies have shown that the parasite is also found in the fox population in Austria, and that there is a clear west-east-decline in terms of distribution. Continuous monitoring of these wild animals on the basis of random samples is to be recommended from an epidemiological standpoint in order to observe any changes in pathogen frequency and geographical occurrence of this zoonotic parasite.

Trichinae were not detected in wild boars or in breeding or fattening pigs or in horses in Austria in 2015.

Figure 6:
Positive result using the digestion method – *Trichinella pseudospiralis*

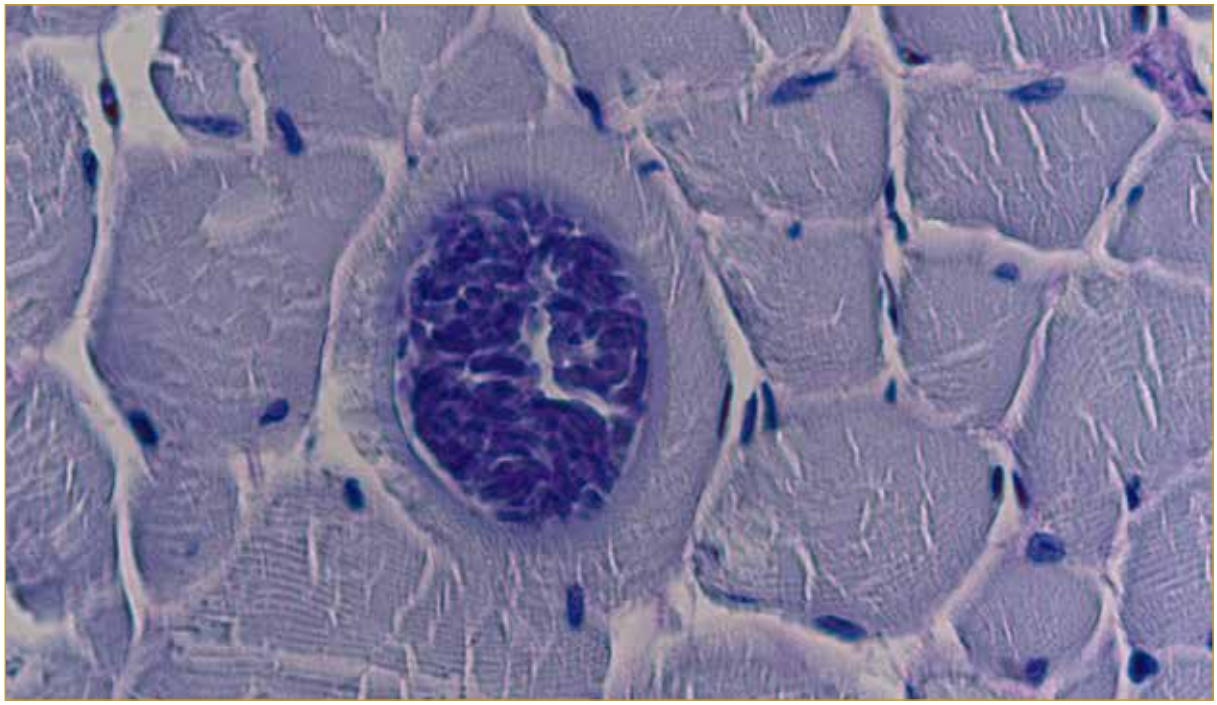


Figure 7:
Histological investigation, PAS – *Trichinella pseudospiralis*

PSITTACOSIS (ORNITHOSIS, PARROT DISEASE)

This disease is notifiable when detected in psittaciforms (parrots and parakeets). The disease is known as ornithosis in other birds. Psittacosis is a zoonosis. The pathogen is the gram-negative bacterium *Chlamydophila psittaci*. It appears in different forms and is inevitably intracellular. The individual species of *Chlamydophila* adapt very well to their host: *Chl. psittaci* to psittacidae, *Chl. abortus* to sheep/goats, *Chl. trachomatis* to the human eye, to name but a few. The disease occurs globally.

Humans are usually infected by aspirating infectious faeces and dust. The resulting symptoms are usually a general fever and subsequent pneumonia.

All secretions and excretions are infectious. The pathogen is usually picked up by droplet infection, in other words by inhalation of infectious faeces and dust or aerosols.

The incubation period is usually 3-29 days, but periods of up to 100 days have also been observed. Symptoms in birds include pneumonia, coughing, emaciation, ruffled feathers, diarrhoea, ophthalmic and nasal discharge. Death can occur from between a few days to several weeks, or the disease may become chronic with the animals appearing to recover but continuing to discharge pathogenic agents.

Prevention involves birds being quarantined and tested for *Chlamydophila*. Standard hygiene measures for working with animals must be observed.

Laboratory diagnostics to detect *Chlamydophila sp.* are performed by immunofluorescent testing (IF) of organ casts (spleen, liver, any aborted material), immunohistochemistry and differentiation of species by means of molecular biology (PCR). When dissecting birds, an enlarged spleen and liver are specific indicators for psittacosis and such changes must always be considered in differential diagnostics.

Table 9:
Number of tests for psittacosis in Austria, 2015

Immunofluorescence	PCR
5	18

Of 18 tests in 2015 4 were positive and 14 negative for *Chlamydophila psittaci*.

AVIAN INFLUENZA (AI)

Avian influenza or fowl plague was seen for the first time in Italy in 1878. The pathogens are Influenza viruses. Sixteen haemagglutinin and 9 neuraminidase subtypes are known to date. Influenza A viruses, subtypes H5 and H7 occur in chickens, turkeys and numerous wild bird species. Ducks, geese and other wild birds either rarely develop the disease or exhibit no symptoms but they are important with respect to the spread of the pathogens.

H5N8 was found in Germany at the start of 2015 and 3 cases of avian influenza, types H5N1, H5N2 and H5N5, occurred simultaneously in the south west of France between the end of 2015 and the start of 2016. The Austrian authorities worked intensively with poultry farmers and their specialist organisations, and with ornithologists, in order to discover as early as possible any infiltration of the animal disease into Austrian stocks. Increased vigilance and increased bio-security measures on the holdings and along the whole of the meat and egg production chain reduces the risk of the virus entering and spreading. 3,701 blood samples were tested for AI antibodies in 2015 – 3,588 samples with the ELISA and 113 with the haemagglutination inhibition test (HAI). Thirty-two samples were tested for virus propagation in egg culture, and 137 dead wild birds, 228 swabs from wild birds and 63 poultry and other bird samples for the viral genome in real-time RT-PCR.

The pan-European AI screening programme consists of an active and a passive component.

COMMERCIAL POULTRY

In the **active surveillance programme**, serological testing was undertaken on the slaughter blood of 1,250 laying hens from 125 holdings (including 62 free-range holdings), 280 parent hens from 28 parent holdings, 530 fattening turkeys from 53 holdings, 1,320 geese and ducks from 74 holdings, and 74 ostriches from 15 holdings. No AI antibodies were detected.

WILD BIRDS

In **passive surveillance**, 137 samples were tested from birds found dead by means of real time RT-PCR.

Faecal swabs from 228 water birds were examined using real time RT-PCR for virus detection.

These also include the swab samples from the sentinel ducks from the Constanze Project in the Lake Constance area.
Non-pathogenic AI virus genome was found in 5 dead water birds.

Table 10:
Number of tests for avian influenza in Austria, 2015

Surveillance	Parent Broilers active	Parent Laying Hens active	Laying Hens passive	routine diagnostic	Sum
AB - ELISA	3.454	-	-	126	**3.693**
AB - HAI	-	-	-	113	
PCR	63	228	137	-	**460**
Virusisolation – egg culture	-	-	-	32	
Gesamt (Total)	**3.517**	**228**	**137**	**271**	**4.153**

Figure 8:
Virus cultivation in egg culture

PARATUBERCULOSIS

Paratuberculosis is a chronic and incurable bacterial infection in domestic and game ruminants that is caused by *Mycobacterium avium* subspecies *paratuberculosis* (MAP). Clinical symptoms usually only appear after an incubation period of 2 – 10 years and are characterised by uncontrollable diarrhoea despite the maintenance of appetite, emaciation, lower milk production, reduced weight gain, fertility disorders and death. The infection is usually transmitted to young animals from faeces containing the pathogen and milk or teats contaminated with faeces

Clinical paratuberculosis in cattle, sheep, goats and wild ruminants in game holdings has been notifiable in Austria since 2006. Testing within the scope of this monitoring programme provided for by regulation is performed centrally at the AGES IVET Linz. Clinically suspected cases can be investigated diagnostically by submitting blood and faecal samples to the testing laboratory. Organ material (intestinal samples, lymph nodes) is submitted for animals that have died or have been killed.

Samples from 104 cattle from 66 holdings, 1 goat from 1 holding and 6 wild ruminants (from game holdings) from 3 holdings were tested in 2015. The clinical suspicion of an MAP infection was diagnostically confirmed in 35 cattle from 28 holdings, in 1 goat from 1 holding and 3 wild game ruminants from 2 holdings. Figure 9 shows the clinically suspected cases for the individual federal provinces submitted for laboratory testing (numbers in black), the number of animals testing MAP-positive (numbers in red) and the number of holdings with confirmed suspected cases (numbers in blue).

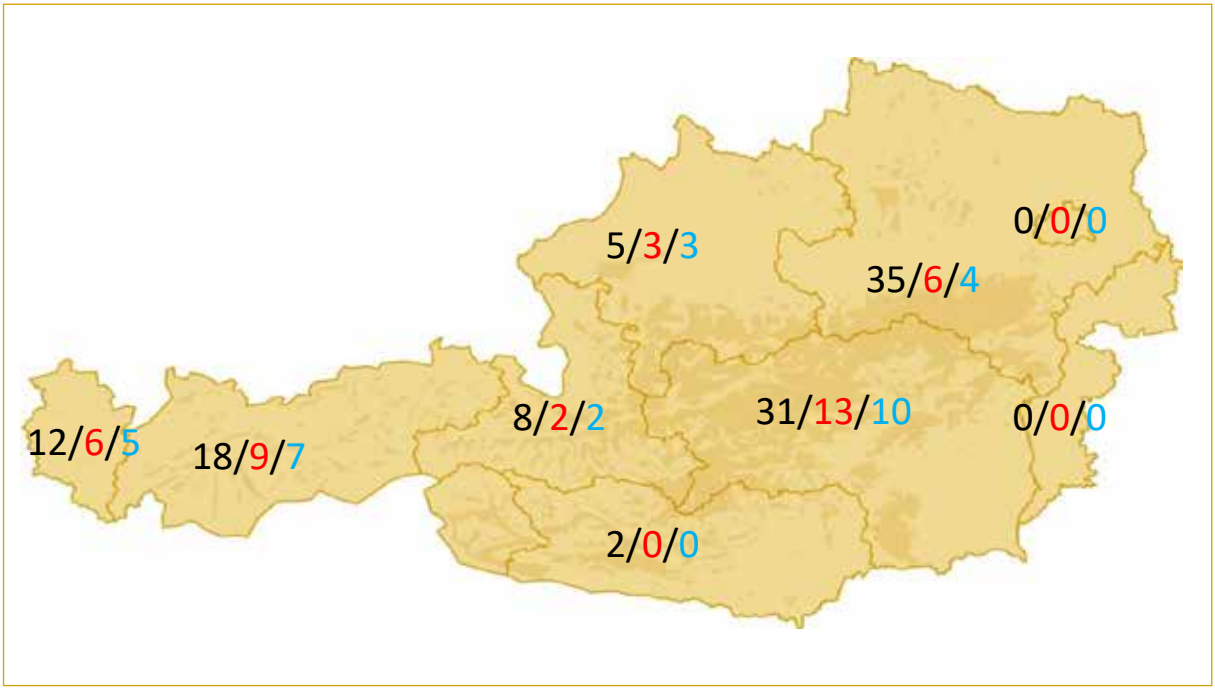


Figure 9:
Number of suspected cases of paratuberculosis submitted (black), of animals confirmed by a positive laboratory finding (red) and of positive holdings (blue)

BOVINE VIRAL DIARRHOEA (BVD)/MUCOSAL DISEASE (MD)

BVD/MD is one of the most economically significant infectious diseases in cattle. Consequently, several European countries, such as Austria, the Scandinavian countries, Switzerland and, since 2011, the Federal Republic of Germany, have opted to eradicate the disease actively.

The disease is found globally and is caused by a pestivirus belonging to the *Flaviviridae* family. Persistently infected cattle (PI animals) play a key role in the spread of the disease since they excrete large amounts of the virus continuously throughout their entire lives via all of their bodily excretions and secretions.

BVD has been combated on a statutory basis in Austria since as long ago as 2004. Many of the diverse clinical pictures often go unrecognised. Respiratory tract infections, diarrhoea, fever, loss of appetite, reduced milk production and general weakening of the immune system are all possible. Fertility problems occur in most cases, and pregnant animals may abort or give birth to deformed and sickly calves. BVD infections in early pregnancy may result in the birth of PI animals. Infection of immunocompetent animals with BVD virus usually triggers only a transitory infection (transient viraemia) and this acute or transient infection subsequently results in the creation of antibodies that can be detected in the blood or in the milk. In PI animals, mutation of the virus or superinfection with an additional viral strain can result in mucosal disease. This disease is particularly severe, resulting in death of the infected animals. Typical symptoms are massive and often bloody diarrhoea, high fever, extreme mucosal erosions and subsequent secondary infections.

Diagnosis is made on the basis of the detection of antibodies in blood, individual milk or bulk tank milk samples. Blood, tissue, secretion and organ samples from the affected animals are suitable for ascertaining the presence of the virus (antigen detection).

In 2015, the Austrian holdings subject to the BVD Ordinance were almost all officially recognised as being free of BVD virus (BVDV). In contrast to the previous year when PI animals were detected in 14 holdings across Austria, PI animals were found in only 6 holdings in 2015 – the actual number of PI animals reduced from a total of 33 to 11 animals in 2015.

As a result of the good BVD situation in Austria, exemptions from the compulsory testing of individual animals in the event of movement of the animals were granted for officially recognised BVD-free stocks from specific regions.
The federal provinces of Upper Austria and Vorarlberg made use of the exemption from compulsory testing of individual animals in accordance with § 14 para. 6 Point 1 of the Austrian Ordinance on BVD (BVD-Verordnung) (Federal Law Gazette (BGBl.) II No. 178/2007, as amended) for animals aged under 6 months, and the federal provinces of Burgenland, Carinthia, Lower Austria, Salzburg and Styria made use of this exemption in accordance with § 14 para. 6 Point 2 for cattle aged under 14 months.
A further improvement was achieved: a total of only 0.01% (6 holdings) of all the holdings covered by the BVD Ordinance 2007 as amended are still infected. But this also means that major caution is required in order to prevent BVD re-entering the livestock holdings.

BLUETONGUE (BT)

Bluetongue (BT) is a viral disease of ruminants (cattle, sheep and goats) that is spread by midges of the Culicoides genus. The pathogenic agent is an RNA virus of the *Orbivirus* genus and 24 serotypes are currently known. Experts are already debating additional serotypes (25 - 27). The pathogen responsible for BT in Europe was detected in Greece in 1998. The first outbreaks of BTV 8, an "exotic" BTV serotype that had not previously been found in Europe, were not seen until 2006 when they occurred in the border area of Germany, Belgium and the Netherlands (north of 40°N).

Austria reported its first case of BT to the EU and the OIE on 07.11.2008; a total of 14 outbreaks (28 animals) were found in the federal provinces of Upper Austria, Salzburg and Vorarlberg. In order to prevent any further spread of the disease, compulsory vaccination of all cattle, sheep and goats was ordered in 2008. Two years after the last BT case, Austria was able to regain a BT-free status on 17 March 2011.

A new BTV-4 epidemic developed in the second half of 2014 in south-east Europe and spread rapidly from Turkey, via Greece, Romania, Bulgaria and the Balkan states into Hungary and Croatia. Serotype 8, which had no longer been present in central Europe up to this time, also led to the re-introduction of restriction zones in France in 2015.In the course of the current outbreak of bluetongue disease in eastern Europe, serotype 4 was also found for the first time in Austria on 17.11.2015. A total of four BTV-4 outbreaks were recorded in the federal provinces of Styria and Burgenland in 2015. Table 11 below provides an overview of the BTV-4 cases in 2015.

Table 11:
Number of BT cases in the relevant Austrian federal provinces, districts and holdings of Austria

Federal state	District	Holdings	Infected animals	BTV serotype
Burgenland	Neusiedl/See	1	1	BTV-4
Burgenland	Jennersdorf	1	1	BTV-4
Steiermark	Hartberg-Fürstenfeld	1	2	BTV-4
Steiermark	Südoststeiermark	1	2	BTV-4

After the outbreaks were found, a restriction zone was set up in the east of Austria in accordance with Regulation (EC) No. 1266/2007, with the aim of preventing any spread into disease-free areas by means of restricting livestock trading. No compulsory vaccination against serotype 4 of bluetongue disease was established although vaccination is possible on a voluntary basis. Figure 10 below illustrates the BTV-4 restriction zone in eastern Austria.

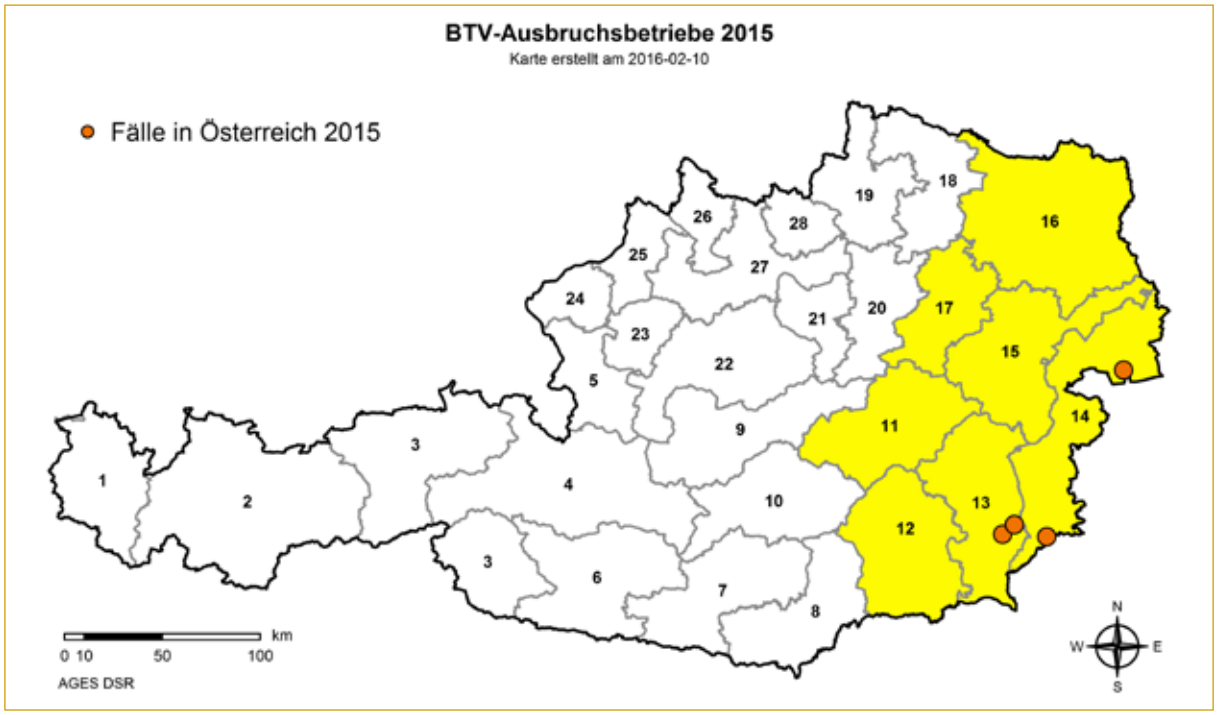


Figure 10:
BTV-4 restriction zone and regional units for BT monitoring, as at 31.12.2015

A seasonal BT monitoring programme, comprising only antibody testing of unvaccinated cattle, has been in place since autumn 2011. Four regions were defined and a sampling plan drawn up at district level in order to ensure comprehensive monitoring.

The first cases involving BTV serotype 4 in south east Hungary at the end of 2014 led to intensification of the BT monitoring programme in 2015 in order to detect any virus circulation in Austria at an early stage. Monitoring in the four regions was undertaken four times a year from April, and a high-risk zone was set up at the border with Hungary and Slovenia, within which monthly sampling of susceptible animals was carried out. Figure 11 below shows the four monitoring regions (I – IV) and the high-risk zone (RZ) before BTV-4 was found in Austria.

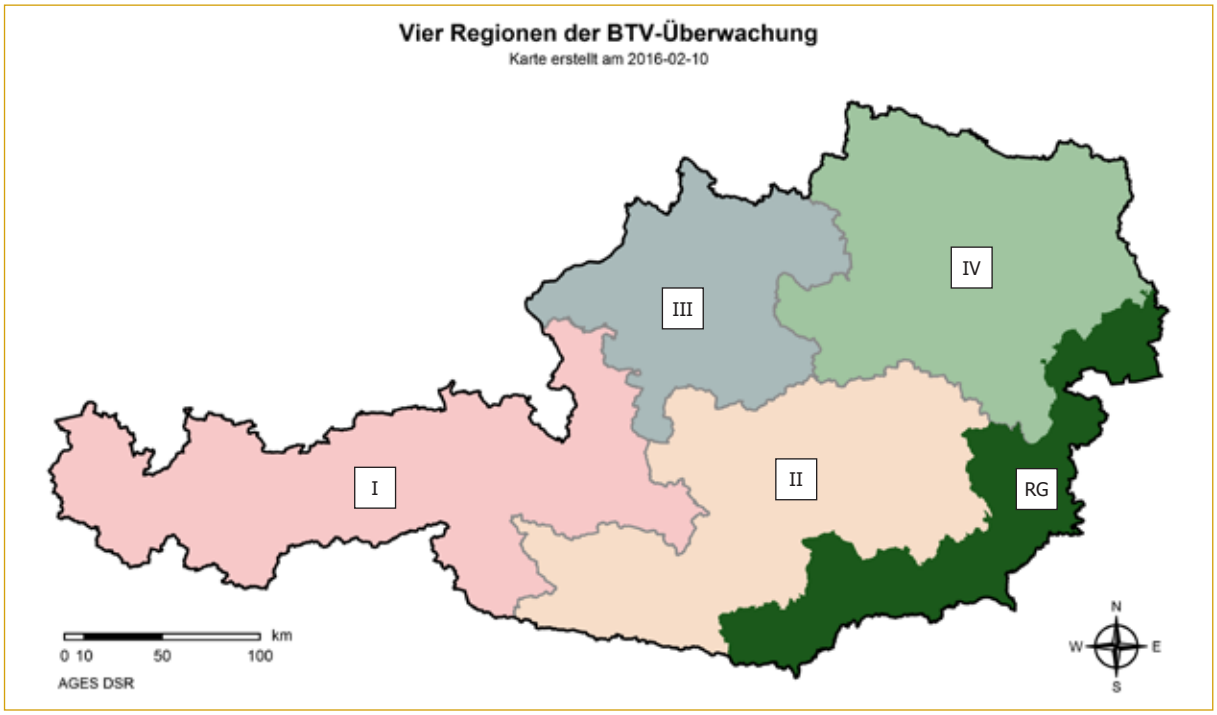


Figure 11:
The four BT monitoring regions (I – IV) and the high-risk area (RG)

After the first cases of BTV-4 were found in Austria, the monitoring programme was adjusted again in order to be able to isolate the precise extent of BT virus circulation accurately. Recourse was made to a monitoring schedule that had already been used in the BTV-8 epidemic in 2008. Twenty-eight regions were established, the size of which took into account area, topographic factors, cattle density and political districts (see also Fig. 10) and 60 unvaccinated animals from each region – in addition to those involved in the monitoring programme that was already in progress – were subjected to serological and virological testing.

A total of 3,242 cattle were assessed as serologically BT-negative and 1,785 were assessed as negative after molecular biological testing in 2015. They came from 91 political districts and 774 holdings (Fig. 12).

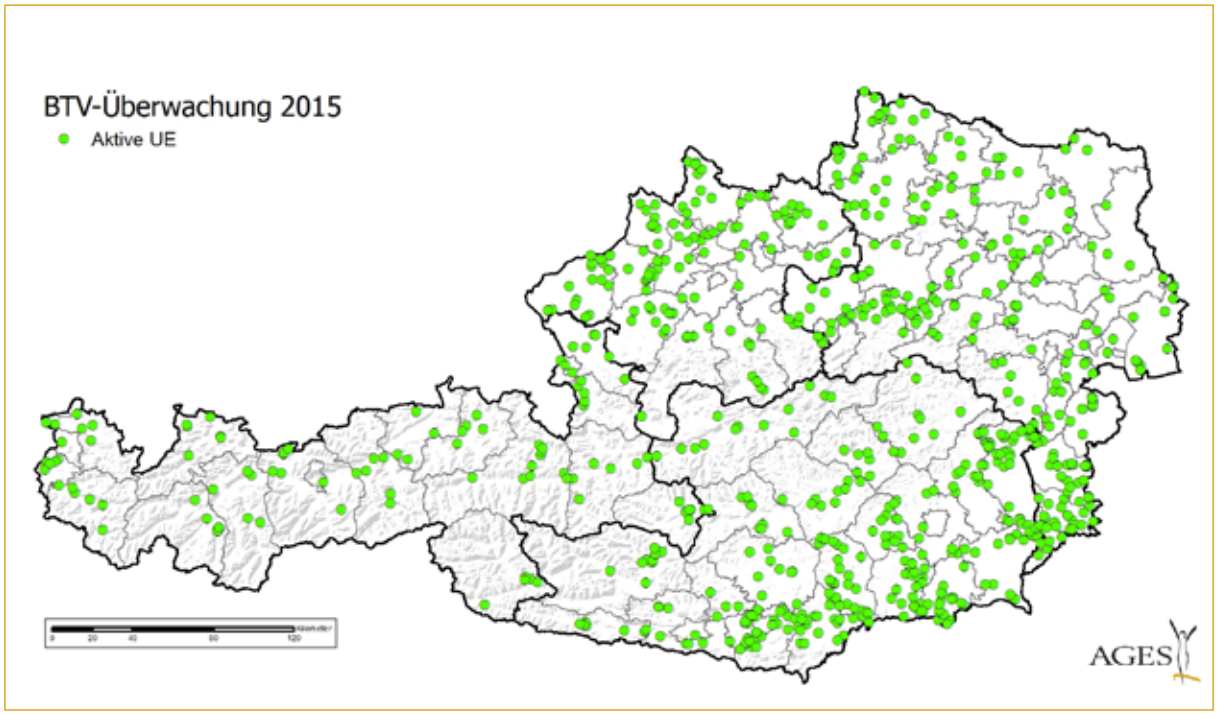


Figure 12:
Holdings sampled in 2015 in the context of the active BT monitoring programme

Cattle from 23 holdings in the provinces of Tyrol, Styria, Upper Austria, Burgenland and Lower Austria were tested within the framework of passive monitoring for bluetongue disease, which is undertaken all year round on the basis of the notification requirement under § 17 of the Austrian Act on Animal Diseases and of livestock testing in holdings where outbreaks occur. A total of 217 serological tests and 175 molecular biology tests were implemented to this end.
The cases of BT mentioned above on the outbreak holdings in the provinces of Styria and Burgenland were confirmed in the context of these tests, while BT virus circulation was ruled out in all the other holdings.

A vector monitoring programme was carried out in Austria between 2008 and 2011 in order to acquire information about the occurrence and the activity periods of the insects transmitting the virus. On the basis of the results of this programme, a „vector-free period" was declared on 15 December 2015, which allowed additional movement options for animal trading. Mosquito traps were installed at selected locations and temperature monitoring was also carried out at the same time, in order to be certain that no vector activity was to be expected.

SCHMALLENBERG VIRUS (SBV)

Schmallenberg virus (SBV) is a member of the *Bunyaviridae* family, genus *Orthobunyavirus*, and, like the bluetongue virus (BTV) and West Nile virus (WNV), is transmitted via vectors. The virus was first identified in Germany by the Friedrich Loeffler Institute (FLI) at the end of 2011 and has – after having spread across large parts of Europe - so far been detected in cattle, sheep and goats, as well as alpacas, and other ruminants, in zoos, in game farms and in the wild. SBV antibodies have also already been detected in dogs and wild boar.

The possibility of the virus being transferred to humans is categorised as fairly unlikely by the European Centre for Disease Prevention and Control (ECDC). Blood-sucking midges (*Cullicoides* spp.) act as vectors for SBV as in the case of BTV. Horizontal transmission without vectors does not appear to occur.
The infection may take a subclinical course in adult animals or may cause clinical symptoms, such as diarrhoea and moderate to severe milk drop, combined with an elevated internal body temperature. Immunocompetent animals eliminate the virus in the body after a short phase of viraemia and it is presently estimated, on the basis of data from the closely related Akabane virus, that they then develop antibodies protecting against future infection.

Virus can usually no longer be detected in the blood as little as 6 days post infection.
Infection of an immunologically naive animal during pregnancy causes transplacental infection of the foetus. Depending on the stage of pregnancy, this may result in foetal death and reabsorption at very early stages and ranges as far as the development of hydranencephaly and arthrogryposis (after infection of cattle between the 62nd and 173rd days of pregnancy and in small ruminants between days 28 and 56). In addition, it may result in malformed aborted foetuses or neonates that are not viable in the long term owing to their malformations.

The first SBV antibodies were detected in an Austrian animal in mid-September 2012 and spread of initial infections was quickly seen widely across Austria. Serological screening for SBV antibodies was carried out in cattle in the autumn of 2013 and 2014 for an epidemiological assessment. Antibody prevalences in young animals, in particular, were investigated within the framework of this autumn monitoring, so as to obtain an overview of the associated immunological protection among the up and coming groups of animals that would be productive in the future. Annual courses of infection of different extents could be seen between late summer and late autumn.
Tests for SBV antibodies and antigens are also carried out in the course of investigations of abortions and export tests.

The results of serological tests for SBV antibodies in the 2015 reporting year were predominantly negative.

CLASSICAL SWINE FEVER (CSF)

7,024 blood samples from pigs were tested for CSF antibodies at the National Reference Laboratory at IVET Mödling. 1,325 of the tests were privately commissioned and 5,699 ordered by the authorities. 1,358 samples were tested using RT-PCR for detection of CSF virus. Neither antibodies nor virus were detected in any of the samples.

Since 2010, the Institute for Veterinary Disease Control in Mödling has been taking and testing samples as part of the Austrian monitoring programme for classical swine fever. A risk-based sampling plan is used and samples are taken in four categories.

CSF monitoring of domestic pigs:
Tables 12 and 13 show the test results. As a result of the occurrence of the first cases of African Swine Fever (ASP) in Eastern Europe and because it is not possible to distinguish clinically between the symptoms of CSF and ASF, the NRL in Mödling developed and validated a new triplex PCR. This method can be used to test for CSF, ASF and an extraction control simultaneously from a single sample thus saving both time and financial resources. This triplex PCR has been used as the screening method for all official testing at the NRL in Mödling since 2014.

Table 12:
CSF – Number of official samples taken from domestic pigs 2015. All the samples were negative.

Category	Group of monitoring	Target pop.	Diagnostics	Samples – half-year and total		
				1. HJ	2. HJ	Σ
I	post mortem Inspection	Slaughtered pigs	Ag	**59**	**18**	**77**
II	Rendering Plant	(All ages)	Ag	**416**	**600**	**1.016**
		Regau Upper Austria		**170**	**109**	**279**
		Tulln Lower Austria		**5**	**271**	**276**
		Landscha Styria		**177**	**93**	**270**
		Unterfrauenhaid Burgenland		**40**	**0**	**40**
		Klagenfurt Carinthia		**24**	**127**	**151**
III	Resulted from routine diagnostic	All ages	Ag	**122**	**106**	**228**
IV	Samples from routine diagnostic	All ages	Ab	**3.159**	**2.529**	**5.688**

Table 13:
Number of CSF tests on domestic pigs in total (official and privately commissioned) in Austria in 2015. All samples returned negative results.

Diagnostic method	Samples in CSF - Surveillance	Other samples	Sum
AB - ELISA	5.688	1.336	7.024
PCR	1.321	37	1.358
Virusisolation		0	
Total	**7.009**	**1.373**	**8.382**

AFRICAN SWINE FEVER (ASF)

African swine fever (ASF) is a highly contagious general illness that occurs only in members of the pig family (Suidae). It is caused by the *African swine fever virus* (ASFV), an enveloped virus with a double-stranded DNA genome and currently the only known DNA arbovirus in the Asfarviridae family. The natural hosts are various species of African wild pigs, particularly warthogs and bushpigs, but all species of pig are susceptible to the infection. In both the European wild boar and in domestic pigs, ASFV infection normally causes a disease with high fever, and high levels of morbidity and mortality. There is no risk of infection to other domestic animals or humans.

Transmission occurs by means of direct contact or via animate (*Ornithodoros* ticks) and inanimate vectors. ASFV remains infectious for a long time even outside a living host, particularly in meat and meat products. In 2007, African swine fever was seen in the region between the Black Sea and the Caspian Sea, known as the Transcaucasus region. Since then, ASF has spread further northwards, including to Russia, Ukraine and Belarus, close to the borders with EU Member States. With the exception of Sardinia (Italy), where the disease has been present since 1978, no other EU Member States had yet been affected by ASF up to 2013. In 2014 the first cases of ASF were seen in Lithuania, Latvia and Poland, at the border with Belarus.

This development of ASF in eastern Europe led to the EU commissioning a scientific report from EFSA which was published on 14 July 2015 (http://www.efsa.europa.eu/de/efsajournal/pub/4163).

By regularly taking part in international collaborative studies, the National Reference Laboratory for ASF at the AGES Mödling Institute of Veterinary Disease Control is ensuring that, in the worst case, ASF can be rapidly and reliably detected with laboratory tests. In 2014 a triplex PCR (ASF, CSF and internal control) was established at the National Reference Laboratory, AGES IVET Mödling, for the differential diagnosis of "swine fever" (classical and African) and was incorporated into the scope of accreditation at the same time. An exclusion test for differential diagnosis purposes is carried out in the case of a suspected case report by an official veterinarian or in the case of pathological laboratory dissection findings that do not rule out the suspicion. An exclusion test of this type was performed on 13 domestic pigs in 2015 – all the samples were assessed as negative for ASP (Table 14).

Table 14:
ASF – investigations of suspected case reports and exclusion tests from 2011 to 2015

year	ASP-AK serological analyses	PCR analyses	species
2011	0	0	pig
2012	0	5	pig
2013	0	5	pig
2014	0	10	pig
2015	0	13	pig

In the course of a domestic pig screening programme, 1,321 official samples and 25 samples commissioned privately were tested using PCR test.1,344 of these samples were assessed as negative and 2 samples could not be assessed.

With effect from 2011 an extensive wildlife survey was conducted, which included tests for the presence of ASF virus. Tests of this type were carried out on a smaller scale in the subsequent years of 2012 and 2013; in 2014 the figure increased again as a result of epidemiological developments in Eastern Europe and a monitoring programme for swine fever in wild boar. In the 2015 wild boar swine fever monitoring programme, 70 samples were tested; in addition, 4 wild boar samples were tested in the course of an exclusion test at NRL Mödling. All the samples were assessed as negative for ASF; the relevant test figures can be seen in Table 15 below.

Table 15:
ASF – investigations of wild boar from 2011 to 2015

year	ASP-AK serological analyses	PCR analyses	species
2011	223	298	wild boar
2012	43	2	wild boar
2013	32	2	wild boar
2014	0	98	wild boar
2015	0	74	wild boar

NEWCASTLE DISEASE (NCD)

Newcastle disease (NCD, atypical fowl pest) is a highly contagious acute to chronic avian disease. The virus belongs to the paramyxovirus family. A distinction is made between apathogenic, lentogenic (low virulence), mesogenic (moderate virulence) and velogenic (high virulence) virus types.
The disease is characterised by rhinitis symptoms, CNS symptoms and diarrhoea. It may be associated with high morbidity and mortality, particularly amongst pigeons. NCD virus is eliminated in large quantities in the faeces, eye, nasal and pharyngeal secretions, as well as all body fluids, and it is spread both directly and indirectly. The incubation period is 4 to 7 days. Symptoms depend on the virulence of the pathogen.

NCD is a notifiable disease. The appearance of clinically suspicious symptoms must be reported to the official veterinarian, who will submit samples for diagnosis. Only highly pathogenic types of virus are reported as an epidemic when the virus has a pathogenicity index (ICPI) of 0.7 or above, and when pathotyping of the virus strain shows it to be "velogenic" (highly virulent).
Different provisions apply to commercial poultry from those applicable to pigeons kept in captivity (carrier pigeons). Prophylactic immunisation is permitted in Austria, and is also carried out with hens, turkeys and pigeons (carrier pigeons and breeding pigeons).

The laboratory diagnosis is determined by detecting the pathogen from tracheal/oropharyngeal swabs and cloacal swabs as well as from animal bodies (CNS, lung, liver, spleen, gut) by breeding viruses in egg culture and subsequent haemagglutination (HA) and haemagglutination inhibition (HAI) tests as well as molecular biology methods (RT-PCR and additional pathotyping).

Detection of antibodies using ELISA and HAI is possible, but must be evaluated in context where vaccination has been permitted.

Table 16:
Number of samples tested for NCD in Austria in 2015

AB - HAI	virusisolation – egg culture	PCR
59	36 (2 cases in pigeons positive)	98 (8 pigeons positive)

Antibody detection is performed primarily to check the effectiveness of vaccination.

In 8 samples, the virus detection test was positive in pigeons and wild pigeons.

WEST NILE VIRUS (WNV)

West Nile virus (WNV) was first described in a human in the North of Uganda's West Nile District in 1937. Currently, WNV strains are classified in 4 genetic lines, with lineage 1 being subdivided into three clusters, 1a, 1b and 1c. Since 2008, endemic occurrence of lineage 1 WNV in humans and horses has been confirmed in the north of the Italian province of Ferrara. In Europe, lineage 2, which originated in Africa, was isolated for the first time in birds of prey in Hungary in 2004 and has since been detected in various species of animals (corvids, horses, cattle, sheep, dogs). Lineage 3 WNV ("Rabensburg virus") has been detected in midges from the Czech Republic.

WNV is transmitted from infected birds via midge bites to humans and animals which are dead-end hosts. The disease has an incubation period of 2 to 14 days. In horses with clinical disease, the infection is lethal for up to 40% of animals.

In humans, the infection is asymptomatic or the symptoms are similar to those of mild 'flu in more than 80% of cases, with only a few exceptions.According to the ECDC, in the reporting year 2015 up to November, about 108 human cases of WNV were reported in Europe and 193 in countries close to the EU, such as Russia and Israel.

Clinical lineage 2 WNV infections were detected for the first time in raptors in Austria in 2008 and, since that time, a WNV monitoring programme for wild birds, and, since 2011, for horses as well, has been implemented at IVET Mödling on behalf of the BMGF The programme focuses on birds of prey (Falconiformes), passerines (Passeriformes) and corvids (ravens and crows), since these birds are considered central to the spread of the pathogen. In addition to that also other birds, like for example free-range geese and ducks from at-risk regions from the passive avian influenza monitoring programme via abattoir blood samples, are tested for WNV.

In 2013 and 2014, the PCR examinations of wild birds and raptors detected lineage II WNV in one northern goshawk in each year. Lineage II WNV was also identified in August 2015 at the University of Veterinary Medicine Vienna, again in a northern goshawk. In the course of the serological tests of 346 wild birds and free-range geese respectively WNV antibodies were detected in 2 abattoir blood samples from free-range geese from a holding in southern Burgenland and 4 abattoir blood samples from ducks from a holding in the Danube region in eastern Upper Austria.
The occurrence of any type of clinical equine encephalomyelitis in Austria is notifiable and all forms of equine encephalomyelitis are also tested for WNV and other flaviviruses as a matter of routine.

No clinical cases have occurred in horses in Austria to date. A WNV-specific real-time RT-PCR was carried out on 10 suspect submissions in 2015; no WNV genome fragment was detected in any of the samples.

Clinical cases of WNV in horses have been reported only in Italy, Hungary, France and Spain in the past 15 years – the cases in France (2003) and Italy (2009) were also accompanied by human cases at the same time. In the serological screening programme for

WNV in horses in 2015, a total of 111 equine serum samples were tested using Flavivirus antibody ELISA tests. Twenty-one of these serum samples reacted positively to flavivirus antibody in the IgG Flavivirus ELISA but reacted negatively on IgM Flavivirus ELISA, 6 of them were also tested positive in the WNV neutralisation test. A cross reactivity between TBE and WNV in the neutralisation test cannot be excluded at all.In Austria, horses can also be vaccinated against WNV (lineage I).

EQUINE INFECTIOUS ANAEMIA (EIA)

Equine infectious anaemia (EIA) is a viral disease of equidae (horses and donkeys) transmitted by midges. It is caused by a reovirus, of which 9 serotypes are known. The disease is endemic in Africa, South America, Asia, and also in Eastern Europe.
EIA is listed in Austria as a notifiable animal disease (§ 16 of the Austrian Animal Diseases Act). The AGES Institute for Veterinary Disease Control (IVET) Mödling is designated as the National Reference Laboratory (NRL). In addition, there are other private laboratories and the Institute of Virology at the University of Veterinary Medicine, Vienna, which undertake EIA diagnostics in the context of tests relating to the transport of livestock.

The following test systems are used in Austria for antibody detection:

1) Coggins test (agar gel immunodiffusion assay) and
2) ELISA (competitive ELISA)

The Coggins test is prescribed in Europe for international animal movement.

Polymerase chain reaction (PCR) from EDTA blood is used for virus detection.

Table 17:
EIA tests using the Coggins test at the National Reference Laboratory in Mödling from 2000 to 2015.

year	2010	2011	2012	2013	2014	2015
AB	149	199	157	154	121	120

No EIA monitoring programme for equidae was in place in Austria in 2015. Two positive cases (in 2002) have been reported in Austria to date in a holding in Lower Austria (district of Wiener Neustadt). All 119 horses and 1 zebra tested in 2015 yielded negative results, including all the imported animals tested.

In 2015, the NRL assessed 4 animals that had been in contact with foreign, EIA-positive horses as negative. Three of these animals were from the federal province of Tyrol (Kufstein district) and one from the Salzburg province (Salzburg-Umgebung district).

In the course of administrative assistance to Hungarian colleagues, 2 horses were tested using the Coggins test and ELISA and one of these was also tested using PCR. The serological tests (ELISA and Coggins test) of both animals were assessed as positive, while the molecular biological test of one of the two animals was negative.

VIRAL HAEMORRHAGIC SEPTICAEMIA (VHS)

VHS is a notifiable viral disease caused by a novirhabdovirus. According to Annex I, List II, Aquaculture Disease Ordinance (Aquakultur - Seuchenverordnung), Federal Law Gazette II, No. 315/2009, susceptible species are rainbow trout (*Oncorhynchus mykiss*), Pacific salmon (*Oncorhynchus* species), trout (*Salmo trutta*), grayling (*Thymallus thymallus*), Coregonus species (*Coregonus spp.*), pike (*Esox lucius*) and various marine fish species. Clinically apparent signs of disease are seen in rainbow trout in particular. The clinical course of the disease affects all age classes.

Losses of up to 90% are possible in young fish (fry) and with temperatures of < 14 °C. In addition to temperature, genotype virulence and the condition and immune status of the fish, together with stress situations relating to living conditions are also decisive with respect to the outbreak and course of this disease.

In 2015, a total of 6 cases of VHS was diagnosed at the National Reference Laboratory for Fish Disease, which is located at the University of Veterinary Medicine, Vienna.

INFECTIOUS HAEMATOPOETIC NECROSIS (IHN)

IHN is a notifiable viral disease of various salmonid species, caused by a novirhabdovirus. According to Annex I, List II, Aquaculture Disease Ordinance (Aquakultur - Seuchenverordnung), Federal Law Gazette II, No. 315/2009, susceptible species are rainbow trout (*Oncorhynchus mykiss*), Atlantic salmon (*Salmo salar*), and various species of Pacific salmon. The clinical course of the disease affects all age classes but particularly the size class < 100 g. The course of the disease is temperature-dependent: within the critical temperature range (10 to 15 °C), losses of up to 100% may be observed among fish of the susceptible size class. Stress-inducing factors, such as stocking density, transport and sorting, promote outbreaks of the disease.

Two outbreaks of IHN occurred in Lower Austria in 2015.

KOI HERPESVIRUS INFECTION (KHVI)

KHVI, known colloquially as koi disease, is a highly infectious, notifiable viral disease that affects commercial carp (common carp, *Cyprinus carpio*) and coloured carp (koi). Carp of all age classes can be affected and losses may range between 80 and 100%. It can cause substantial economic losses and is extremely important in international trade and traffic with carp. The pathogenic agent is known as Koi herpesvirus (KHV). The scientific name is Cyprine herpesvirus 3 (CyHV–3) from the family of *Herpesviridae*. Viruses of varying virulence are confirmed depending on their origin (European, Asian, Israeli) but comparison of genomes from different regions shows that they are virtually identical.

The koi herpesvirus infection was detected for the first time in Austria in the 2015 reporting year. The import of infected koi carp poses a major risk of introducing the pathogen.

AQUACULTURE REGISTER

A public register of approved fish farms in Austria can be found at http://aquakultur.ehealth.gv.at/. The statutory basis of the Aquaculture Register is Directive 2006/88/EC; the formal requirements are to be found in Commission Decision of 30 April 2008 implementing Council Directive 2006/88/EC as regards an Internet-based information pageto make information on aquaculture production businesses and authorised processing establishments available by electronic means (2008/392/EC).

The registers for the other Member States published on the EU Commission homepage can be seen at http://ec.europa.eu/food/animal/liveanimals/aquaculture/register_aquaculture_establishments_en.htm

Publication of all approved fish farms and processing facilities is intended to facilitate internal EU animal trade in the field of aquaculture.

AMERICAN FOULBROOD (*PAENIBACILLUS LARVAE*)

American foulbrood is a brood disease caused by the Paenibacillus larvae bacteria with a global distribution. Outbreaks or suspected outbreaks are notifiable under the Bienenseuchengesetz (Austrian Bee Diseases Act) (Federal Gazette (BGBl.) No. 290/1988, as amended). The clinical symptoms are an incomplete brood nest (brood cells with sunken, perforated cell cappings (Figure 13), ropy masses in sealed brood cells (Figure 14) and firmly attached scales (Figure 15).

If the disease cannot be confirmed on site, test material must be sent to the test centres named in the Bee Diseases Act. At present, these tests are carried out at the AGES Institute for Seeds and Plants, Plant Protection Services and Bees, Apiculture and Bee Protection Department, Spargelfeldstrasse 191, A-1220 Vienna.

P. larvae is a gram-negative, peretrichous, flagellated, rod-shaped bacterium that develops spores in its permanent form; these are highly resistant and can remain infectious for over 40 years.

The outbreak of the disease has extensive economic consequences for the beekeeper involved and also for beekeepers located within the restricted area (setting up a restricted area with a 3 km radius, restrictions in bee migration, costly and time-consuming remedial and disinfection measures).
No drug is licensed in Austria to combat American foulbrood.

American foulbrood is treated either by destroying colonies that have been infected or decontaminating them by means of the "shook swarm" procedure and additional, concomitant disinfection measures and replacement of the entire comb structure. A detailed description of this can be found in the Richtlinien zur Bekämpfung der Amerikanischen Faulbrut (Guidelines for combating American foulbrood), see link: https://www.verbrauchergesundheit.gv.at/tiere/recht/oe/bienen.html.

There are various strains and genotypes of *P. larvae* which differ in terms of virulence, and this also influences symptoms and discovery by the beekeeper or bee expert. Research projects have so far detected 5 different genotypes in Austria. They are not routinely distinguished in the course of analysis of official samples. If the ERIC I genotype is present, most of the diseased larvae do not die until after capping, which leads to a massive development of spores. Typical signs are capped cells with ropy masses and static cells (see Figure 13). The disease spreads like wildfire though the colony.

If the ERIC II genotype is present, diseased larvae usually die before sealing and the cells containing dead brood are cleared out. This results in an incomplete brood nest. Since this is a nontypical symptom, there is a risk that the disease will not be recognised for a fairly long time.

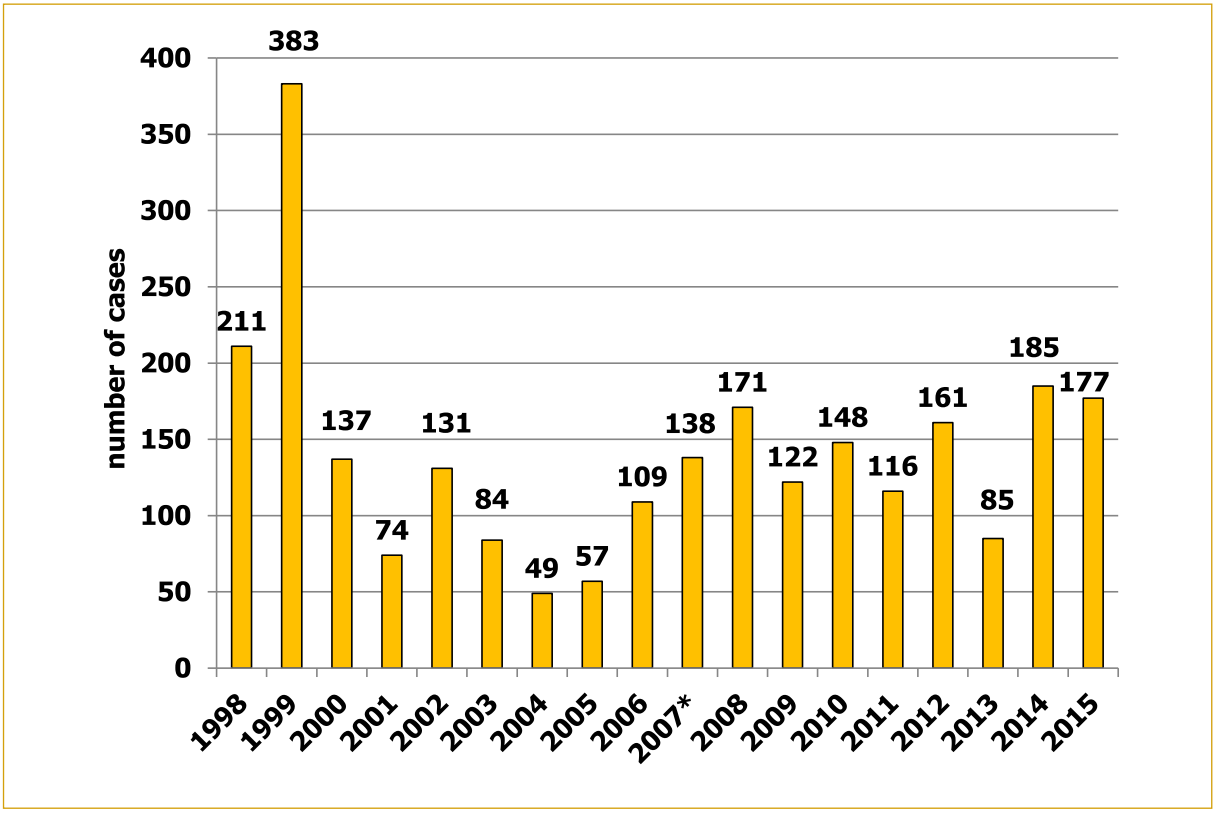
Unmaintained, rundown apiaries may pose a possible source for the spread of American foulbrood, with any residues of honey potentially being taken by bees from stronger colonies. Apiaries such as these and comb material stored so that it is freely accessible to bees are often only discovered on monitoring of the 3 km restricted area.

Figure 13:
American foulbrood (ERIC Type I): static cells; brood cells with sunken, perforated capping

Figure 14:
Ropy masses in American foulbrood

Figure 15:
Queen cell infested with American foulbrood

A total of 177 new outbreaks was recorded in 2015. This is a slight decrease on 2014 (185 new outbreaks) – the course of the disease over the past few years can be seen in Fig. 16. The AGES Apiculture and Bee Protection Department tested 181 officially submitted brood samples for *Paenibacillus larvae* in 2015.



* for 2007 there are no official numbers

Figure 16:
Overview over several years of the outbreaks of American foulbrood in Austria (source: BMGF, official veterinary bulletin; AGES, Annual Veterinary Report)

SMALL HIVE BEETLE INFESTATION (*AETHINA TUMIDA* MURRAY)

Synonyms: SHB
Infestation of bee colonies with small hive beetle is notifiable under the Bee Diseases Act (BGBl. No. 290/1988, as amended).
If it is suspected that small hive beetle is present, the official veterinarian should send the suspect material, after destruction, to the test centres named in the Bee Diseases Act.

National Reference Laboratory for bee diseases in Austria:
AGES Institute for Seeds and Plants, Plant Protection Services and Bees, Apiculture and Bee Protection Department Spargelfeldstrasse 191, A-1220 Vienna; tel.: 050555 33122.

Under Decree BMG-74730/0004-II/B/11/2014 dated 05.12.2014, the following general options for bee diseases are also available at the National Reference Laboratory to the beekeeper and veterinarian treating the bees, and the competent official veterinarian for clarification of those cases in which they want to at least rule out a suspected disease but in which they are unable to confirm or rule it out directly on the basis of the symptoms:

I. Differential diagnostic testing (beekeeper and veterinarian treating the bees):

1. Submission of the samples with an accurate accompanying letter to the relevant National Reference Laboratory in accordance with Annex I after advance notification by telephone and statement of which notifiable animal disease is to be ruled out by means of differential diagnosis.

This cannot be recorded in the VIS either since it is not an official sample.
All costs are to be borne by the authorised person or the person submitting the sample!
The beekeeping operation is not subject to any restriction; in the event of the disease subsequently being identified no compensation will be paid for any animals killed or destroyed up to the time of the actual restriction on the grounds of suspected disease.

or

2. Notification of the district administrative authority, which sends the official veterinarian to the beekeeping operation. The official veterinarian decides on the subsequent procedure on the basis of the clinical symptoms and the epidemiological setting (test to rule out or confirm suspected disease)

II. Test to rule out the disease (official oeterinarian or appointed independent bee expert):

Once the official veterinarian has decided, on the basis of checking the clinical symptoms and the epidemiological setting, on tests to rule out the disease, samples are submitted with a precise accompanying letter to the relevant National Reference Laboratory, the case is entered in the VIS as quickly as possible as "TKH-V uncertain", and the transport and test costs are borne by the national government.

III. Tests for suspected disease

and

IV. Tests on outbreak:

If, on the basis of investigating the clinical symptoms and the epidemiological setting, the official veterinarian already has well-founded suspicions of the possible presence of a notifiable animal disease, the procedure must be as required by the relevant national laws and regulations in force.

The EU Reference Laboratory for Bee Health has drawn up guidelines which are available on the AGES website:
http://www.ages.at/fileadmin/AGES2015/Themen/Umwelt_Dateien/Kleiner_Bienenstockk%C3%A4fer_fuer_Imker_Feb_2013.pdf

The small hive beetle (Coleoptera: Nitidulidae) is a honey bee pest. Clinical symptoms are feeding tunnels made by the larvae in the cells, brood comb destroyed by larval feeding, contaminated, fermented honey and a rotting smell.

The adult beetles (Figure 17) are 5 to 7 mm long and 2.5 to 3.5 mm wide (about one-third of the size of a worker bee (Figure 18). Brood, honey, pollen and even fruit serve as food sources for the beetles and their larvae. Eggs are laid in the hive and hatch into larvae, which constitute the stage that is harmful to the bee colony. Pupation takes place in the ground in front of the hives. The beetles can fly independently up to 15 km in order to infest bee colonies.
Given favourable conditions, the small hive beetle can proliferate massively in a bee colony, in honeycomb storage systems, and in honeycombs stored before centrifuging.

In practice, the most reliable diagnostic method for identifying a beetle infestation has been found in Italy to be examination of the colonies by trained personnel. There are also various types of trap (e.g. double-sheets of ribbed plastic with apertures of a width of 4 mm) that are introduced into the colony but which do not yield such accurate results.

From its original distribution area of South Africa, where it does no damage, it has already spread to third countries (USA, Canada, Australia, Mexico, Central America, the Caribbean, Brazil, the Philippines, Hawaii) where major damage has been reported in some cases.

On 5 September 2014, small hive beetle was detected in Italy (Calabria). A massive infestation with larvae and adult beetles was found in three nucleus colonies near the port of Giauro Tauro. A restriction zone with a radius of 20 km and a monitoring zone with a radius of 100 km were set up and bee hives and colonies were checked both visually and using traps. By the end of December 2014, small hive beetle had been found in 61 apiaries, including one in Sicily. In 2015, beetles were found again in apiaries within the 20 km restriction zone. As of 31.12.2015, small hive beetle had been found in 29 apiaries. No new findings were reported from Sicily in 2015.
The Italian "Istituto Zooprofilattico Sperimentale delle Venezie" has published an updated version of the distribution map for small hive beetle in southern Italy on its website: http://www.izsvenezie.it/aethina-tumida-in-italia/

The colonies affected were destroyed with sulphur dioxide spray and burned together with the hives. The soil in the immediate vicinity was soaked twice with insecticide solution and ploughed over.
This is the second case of introduction into Europe. The first occurrence was in 2004 when a small hive beetle was imported in the form of larvae with imported queens from the USA. They were wiped out by immediate measures taken at the time.

In 2015, an official order was issued for the investigation of 12 bee and 25 brood samples for small hive beetle infestation. All the samples were negative.

As can be seen from current reports of the introduction and distribution in various countries, the beetles are even able to reach remote areas. Possible distribution routes are the global trade in queens, package bees, bee colonies, swarms, honeycombs, beeswax and beekeeping equipment. But other routes can equally well be considered (worldwide ship and container transport, earth, fruit). The extent to which alternative hosts (e.g. bumble bees) are also actively infested under natural conditions and might contribute to the spread is not clear.

Its distribution in North America extends to the border with Canada. This illustrates the risk that it might also become indigenous in Europe in areas with similar climatic conditions. According to estimates in the EFSA study (EFSA Journal 2015;13(12):4328) two-generation cycles are likely to be possible in temperate latitudes in Europe.

Varroacides (Checkmite™) and soil insecticides are in use in the USA to combat small hive beetle.

Figure 17:
Adult Small hive beetle (© AGES, Photo: Ernst Hüttinger)

Figure 18:
Size comparison, small hive beetles – bees (© AGES, Photo: Ernst Hüttinger)

Figure 19:
Small hive beetle larvae (© AGES, Photo: Ernst Hüttinger)

VARROATOSIS (PARASITOSIS BY *VARROA DESTRUCTOR*)

The symptoms of varroatosis are caused by a mass infestation of bee colonies by *Varroa destructor*. Varroatosis outbreaks are notifiable under the Austrian Bee Diseases Act (BGBl. No. 290/1988, as amended).

V. destructor is a horizontal oval shape and 1.1 x 1.6 mm in size (Figure 20). Laying, development and mating all take place in the sealed brood cell. When the bees hatch, the mother mite with several daughters leaves the cell and infests adult bees.

The mite parasitizes both adult bees and brood and sucks haemolymph. Pathogens may be transmitted at the same time, resulting in secondary diseases (e.g. viral diseases). Thus, for instance, deformed wing virus (DWV) cripples the bee brood or adult bees (wings are undeveloped or not fully developed, Figure 21). Additional harmful effects of the varroa mite are a shortening of the lifespan of individual bees, a reduction in the performance of the colony and the creation of infertile drones. The varroa infestation may increase by a factor of more than 100 in a single season as a result of proliferation in the colony and the introduction of mites from other colonies.

Successful combating of varroa infestation can only be achieved using a multi-stage design, which should be implemented comprehensively and simultaneously. This design includes biotechnical measures during the nectar-foraging period, primary mite elimination after the last honey extraction process and residual mite elimination in the winter when there is no brood. Infestation monitoring using mesh-protected bottom boards provides information about natural mite decline and the success of the control measures. Varroa was detected for the first time in Austria in 1983 and today it can be expected to occur in every apiary in the country.

With the amendment of the Austrian Medicinal Products Act, pharmacologically active substances used to combat varroa have to be authorised as veterinary medicines (Tierarzneimittel – TAM) from 01.01.2014 onwards. A number of TAMs that are not subject to veterinary prescription are currently available in Austria to combat the mites.

However, a veterinarian may import products licensed as veterinary drugs for bees in other EU states if no suitable licensed product is available in Austria ("treatment emergency"). It is also possible to use a magistral preparation made up by a pharmacy to a prescription by a veterinarian. Only those substances may be used in this instance that are listed in Commission Regulation (EU) No. 37/2010 of 22 December 2012 on pharmacologically active substances and their classification regarding maximum residue limits in foodstuffs of animal origin for all food-producing species (formic acid, lactic acid, thymol) and for bees (oxalic acid).

It is essential to bear in mind when selecting a product and prior to purchase that, in certain areas, the varroa mite has acquired resistance to some active substances.

Figure 20:
Varroa mite (horizontal oval) in comparison with Tropilaelaps mite (longitudinal oval)

Figure 21:
Bee with the typical wing changes of varroa infestation

TROPILAELAPS MITE INFESTATION (PARASITOSIS BY *TROPILAELAPS SPP.*)

There are various species of tropilaelaps mites. Any infestation with one of these species is notifiable under the Austrian Bee Diseases Act (BGBl. No. 290/1988, as amended).
No infestation with tropilaelaps mites has yet taken place in Europe. However, there is a serious risk that they will be introduced as a result of the international bee trade.

The EU Reference Laboratory for Bee Health has drawn up guidelines which are available on the AGES website:
http://www.ages.at/fileadmin/AGES2015/Themen/Bienen/Tropilaelaps_fuer_Imker_Feb_2013.pdf

Clinical symptoms are malformations, such as stunted abdomens and wings, deformed or missing limbs, crawling bees that are incapable of flight at the hive entrance, incomplete brood nest and dead brood. An *Apis mellifera* colony may die out after just one year of infestation.

If it is suspected that tropilaelaps mites are present, the suspect material should be sent, after killing of the animals, to the test centres named in the Bee Diseases Act. At present, these tests are carried out at the AGES Institute for Seeds and Plants, Plant Protection Services and Bees, Apiculture and Bee Protection Department (= National Reference Laboratory).
Adult tropilaelaps mites (Figure 20) are 1 x 0.5 mm in size, reddish brown in colour and move quickly in the hive. Four species are known to date: *T. thaii*, *T. koenigerum*, *T. clareae* and *T. mercedesae*.

Originally they were only found in tropical and subtropical regions of Asia in colonies of *Apis dorsata* *Apis laboriosa* and *Apis cerana*. Today colonies of *Apis mellifera* brought to Asia have also been infested with Tropilaelaps mites (*T. koenigerum*, *T. clareae* and *T. mercedesae*).

Their westernmost location is Iran.
Tropilaelaps mites feed only on bee brood by sucking the haemolymph and not on adult bees. Reproduction takes place in the bee brood cells as for the varroa mite. They can survive for a maximum of 9 days without brood. This means that a brood-free period stops their numbers rising. If increasing climate change results in the loss of the current brood-free period in the winter months in our bee colonies, the risk is very much present that this mite could settle permanently here if it is introduced.

The test methods for varroa can also be used for tropilaelaps (checking the brood and screened bottom boards for mites that look suspicious).
Biotechnical methods, such as interrupting the brood, are available as potential measures to combat the mites. Varroacides are also used in Asia.
The most effective method of preventing tropilaelaps infestation is to avoid importing any bees from the natural distribution regions or from areas in which they have been introduced.

In 2015, official submissions ordered the testing of 12 bee and 25 brood samples for tropilaelaps mites. All the samples were negative.

SPORADICALLY OCCURRING ANIMAL DISEASES

Isolated cases of the following animal diseases were detected during the reporting year:

2 outbreaks of herpes in horses
16 outbreaks of blackleg
4 outbreaks of mange in sheep

CONTENT OF FIGURES

CONTENT OF TABLES

EDITORS

Federal Ministry of Health and Women´s Affairs
Veterinary Services
Radetzkystr. 2, A-1031 Vienna
www.bmgf.gv.at

Dr. Ulrich Herzog
Dr. Johann Damoser
Dr. Elisabeth Marsch
Dr. Andrea Höflechner - Pöltl
Dr. Renate Kraßnig
Dr. Elfriede Österreicher
Mag. Verena Rücker
Dr. Christine Seeber
Mag. Simon Stockreiter

AGES – Austrian Agency for Health and Food Safety
Spargelfeldstr. 191, 1220 Wien
www.ages.at

Univ.-Prof. Dr. Friedrich Schmoll
Dr. Peter Schiefer
Dr. Michael Dünser

CONTACT ADDRESSES

AGES

Institute for Veterinary Disease Control Mödling
Robert-Koch-Gasse 17
2340 Mödling
Tel. +43 (0) 505 55 - 38112
Fax. +43 (0) 505 55 - 38108
E - Mail: vetmed.moedling@ages.at

Institute for Veterinary Disease Control Linz
Wieningerstraße 8
4020 Linz
Tel. +43 (0) 505 55 - 45111
Fax. +43 (0) 505 55 - 45109
E - Mail: vetmed.linz@ages.at

Department of Veterinary Microbiology

Beethovenstraße 6
8010 Graz
Tel. +43 (0) 505 55 - 62110
Fax. +43 (0) 505 55 - 62119
E - Mail: vetmed.graz@ages.at

Institute for Veterinary Disease Control Innsbruck
Technikerstraße 70
6020 Innsbruck
Tel. +43 (0) 505 55 - 71111
Fax. +43 (0) 505 55 - 71333
E - Mail: vetmed.innsbruck@ages.at

BMGF

Federal Ministry of Health and Women´s Affairs
Radetzkystraße 2
1031 Wien
Tel. +43 (1) 711 00 - 64 - 0
Fax. +43 (1) 711 00 - 14300

Imprint

Owner, Publisher and Editor:

Federal Ministry of Health and Women´s Affairs
Veterinary Services
Radetzkystr. 2 | 1031 Wien
www.bmgf.gv.at

AGES – Österreichische Agentur für Gesundheit und Ernährungssicherheit GmbH
Spargelfeldstraße 191 | 1220 Wien

Telefon: +43 50 555-0
www.ages.at

Graphic design: strategy-design
Fotos: BMGF, AGES, Fotolia, Shutterstock, Ingimage, Hüttinger

HEALTH FOR HUMANS, ANIMALS AND PLANTS

Contact

AGES – Austrian Agency for Health and Food Safety
Spargelfeldstraße 191 | 1220 Vienna

Phone.: +43 50 555-0
www.ages.at