The trivalent flu protection
# Profile – Influenza

| Pathogen          | Influenza virus A  
<table>
<thead>
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<tbody>
<tr>
<td></td>
<td>Common viral pathogen that strikes the respiratory tract</td>
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<tr>
<td></td>
<td>Subtypes classified according to surface proteins (hemagglutinin and neuraminidase)</td>
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<td></td>
<td>Currently three subtypes (H1N1, H1N2, H3N2) are circulating among European swine populations</td>
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<tr>
<th>Special traits</th>
<th>Genetic variability of the virus</th>
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<tr>
<td></td>
<td>Risk of new combinations of the genetic material of two or more influenza subtypes when they infect one host cell at the same time</td>
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<td></td>
<td>Development of new subtypes possible (reassortment)</td>
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<thead>
<tr>
<th>Diagnosis</th>
<th>Impossible based on clinical signs!</th>
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<tbody>
<tr>
<td></td>
<td><strong>Samples</strong> (nasal swabs, blood samples) have to be taken by the veterinarian to detect influenza virus or antibodies against influenza</td>
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<table>
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<tr>
<th>Therapy</th>
<th>None as it is a virus infection</th>
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<tbody>
<tr>
<td></td>
<td>Focus on <strong>prophylaxis</strong></td>
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<table>
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<tr>
<th>Prophylaxis</th>
<th>Regular vaccination with the <strong>trivalent vaccine against influenza</strong></th>
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<tbody>
<tr>
<td></td>
<td>Without prophylactic measures: <strong>substantial economic losses</strong> due to reduced performance in pig production and fattening</td>
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You can find background information and the latest news on influenza at:

[www.swine-influenza.com](http://www.swine-influenza.com)
Infection of the respiratory tract with influenza virus will destroy the cells causing a severe infection reaction of lung tissue.

Vaccination with the trivalent vaccine protects the lung tissue against the impact of an influenza infection.

The triple firewall protects against influenza!
Influenza – an underestimated threat!

- In recent years, the impact of influenza has changed: while it used to be characterized by an acute course of disease, it is now a chronic problem with unspecific clinical signs.
- Pigs of any age can get infected.
- The infection is transmitted via droplets.

**Acute form in all age groups:**

- Fever $> 40^\circ\text{C}$
- dry cough
- difficulty breathing
- Reduced food intake
- Complications caused by secondary pathogens

**IN SOWS:**

- Higher return to oestrus rate
- miscarriages
- weak or stillborn piglets
- insufficient milk production

**Chronic form:**

- Virus is dormantly present in the herd
- Infection slowly spreads within the herd
- Unspecific symptoms: reduced vitality, latent respiratory illnesses, reproductive problems
Influenza? Don't hesitate... vaccinate!

Influenza prevalence in selected EU countries

The map shows the share of animals that tested positive for antibodies of the influenza subtypes circulating in Europe.

Share of animals that tested positive for antibodies (in %)

- **H1N1**
- **H1N2**
- **H3N2**

Intensity

- High
- Medium
- Low

The influenza situation among European swine populations is a problem that transcends borders.

4) Dürrwald, R. and Schlegel, M. (personal communication)
6) Harve et al. (2011), RESAVIP (2014)
The efficacy of the trivalent vaccine has been proven in scientific studies.

The study was conducted in accordance with the guidelines set forth in §11 (5) of the EU Animal Health Law. 113 swine herds with 29,427 sows took part in the study. Graphics show the average performance parameters for participating farms six months before and six months after vaccination. All results are statistically significant.

**REDUCES THE VIRUS LOAD IN THE LUNGS**

**Figure 1** shows the results of viral load tests for vaccinated and non-vaccinated pigs (n=84) where the average virus load in the lung (EID50/10 mg) was determined for H1N1, H1N2 and H3N2.

For vaccinated pigs, the virus load of all subtypes in the lungs was significantly reduced.\(^8\)

**PREVENTION OF INFECTION-RELATED FEVER**

**Figure 2** shows the average body temperature of pigs after aerobic challenge with subtypes H1N1, H1N2 and H3N2 (n=84).

The body temperature of vaccinated pigs was significantly lower compared to the unvaccinated control group.\(^9\)

**REDUCES RETURN TO OESTRUS RATE**

**Figure 3** shows the percentage of animals returning to oestrus before and after vaccination with the trivalent vaccine.

The return to oestrus rate was reduced significantly for vaccinated sows.\(^10\)

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8) Mann-Whitney-U Test, p<0.005
9) Mann-Whitney-U Test, p<0.005 Significant results were obtained 24 hours post infectionem (p.i.) for infections with H1N2 and H3N2, respectively, and 28 hours p.i. for infection with H1N1.
10) T-Test, p=0.05
11) Data on file
The trivalent vaccine against influenza

- Updated strains of influenza virus circulating in Europe
- Excellent tolerability thanks to new adjuvant (Carbomer)

Vaccination schedule for the trivalent vaccine

<table>
<thead>
<tr>
<th>Weeks</th>
<th>0</th>
<th>3</th>
<th>4</th>
<th>AT LEAST 4 MONTHS OF PROTECTION against subtypes H1N1, H1N2, H3N2</th>
<th>20</th>
</tr>
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<tbody>
<tr>
<td>1st shot</td>
<td></td>
<td></td>
<td></td>
<td>Immunity developed</td>
<td></td>
</tr>
<tr>
<td>2nd shot</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>booster shot</td>
<td></td>
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For sows: Vaccination and booster can be conducted at any gestation period and also through lactation. Vaccination of the sow two weeks before farrowing will protect the piglets until 33rd day of life.

For piglets: Vaccination possible from the 56th day of age.

We support animals and people with bold, sustainable and novel animal health concepts founded on more than 90 years of experience.
IDT Biologika GmbH: 90 years of expertise in vaccines

**1921**
The beginnings of IDT Biologika
Founding of the Bacteriological Institute of Anhalt, Dessau, Germany.
Focus: veterinary and bacteriological analysis to fight tuberculosis.

**1945**
After World War II
Manufacturing of vaccines and diagnostics for the prevention of epidemics in the newly named Research Institute for Vaccines. These include a swine erysipelas serum, tuberculin and hormone products.

**1988**
Focus on research and manufacturing
Vaccines and sera for livestock, e.g. live vaccine against duck plague and goose influenza, vaccines against virus infections in fur-bearing animals, canines and felines. Development of a rabies vaccine which significantly contributes to eradication of rabies in Germany and neighbouring countries.

**1993**
Privatisation of company
Integration into Klocke Group.

**2007**
Expansion of research and manufacture
Company is renamed to IDT Biologika.

**2010**
The trivalent vaccine.
Marketing authorisation for Europe (granted under the centralised procedure)

**2012**
Internationalization of animal health business
Following the company’s successful establishment of its animal vaccines in Germany, plans for the internationalization of the animal health business are launched. Focus markets include neighboring Western and Eastern European countries as well as USA, China, and Southeast Asia.

**2013/14**
Expertise and expansion for animal health
Growing product portfolio. Approval gained for the world’s first vaccine against edema disease in swine; acquisition of Riemser Pharma GmbH’s research section for animal health.

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