

Safety. Purity. Proven Protection.

# PUREVAX<sup>®</sup> Vaccines



The only complete line of nonadjuvanted feline vaccines. **NOW** available in both 1-mL and half-mL presentations.





# PUREVAX® Feline Vaccines

SAFE, EFFECTIVE, AND PURE VACCINES WITHOUT ADJUVANTS

**PUREVAX vaccines provide the only complete line of half-mL and 1-mL nonadjuvanted feline vaccines.**

- All PUREVAX® feline vaccines utilize either modified live (ML) or recombinant canarypox-vectored technology, which stimulate both humoral and cell-mediated immune responses.<sup>1,2</sup>
- Both half-mL and 1-mL PUREVAX Feline 3 and Feline 4 are available as standalone vaccines or in combination with PUREVAX Rabies.
- PUREVAX Feline 3 (half-mL and 1-mL) and Feline 4 (half-mL and 1-mL) are the only vaccines that provide proven protection from feline rhinotracheitis, panleukopenia, calicivirus, and chlamydia for healthy cats as early as 6 weeks of age.<sup>3,4</sup>
- PUREVAX brand offers the only recombinant feline rabies (1- and 3-year duration of immunity products) and Feline Leukemia Virus (FeLV) vaccines.
- PUREVAX brand offers the first and only half-mL Feline Rabies vaccine.
- Recombinant canarypox-vectored vaccines contain only a portion of the genetic material of a pathogen, not the complete pathogenic organism. Therefore there is no potential for reversion to virulence.
- With half-mL doses, PUREVAX brand continues to innovate for the evolving needs of veterinarians and their patients.

**Adjuvants can present potential risks to feline patients.<sup>1,5</sup>**

- ✓ Injection site reaction
- ✓ Injection site granuloma
- ✓ Chronic inflammation

**PUREVAX feline vaccines have been designed to elicit a protective immune response without the addition of adjuvants.**

# INTRODUCING **PUREVAX® HALF-mL DOSES**

The PUREVAX® vaccines portfolio now offers a half-mL dose of our nonadjuvanted feline vaccines.



You asked for it. PUREVAX vaccines delivered.

It's the same safety, purity, and proven protection that you trust from the leading portfolio of feline vaccines. Boehringer Ingelheim, the maker of PUREVAX, is regularly innovating in the feline vaccination space to improve the overall vaccination experience for cats, vets, and pet owners.

It's the same leading line of vaccines you know and love in a half-mL presentation—which may help further enhance compliance with vaccination site recommendations from feline vaccination guidelines.

## **PUREVAX vaccines available in half-mL doses:**

PUREVAX Recombinant FeLV

PUREVAX Feline 3 (RCP)

PUREVAX Feline 4 (RCCP)

PUREVAX Feline Rabies

(rRabies-1YR)

PUREVAX Feline Rabies 3YR

(rRabies)

PUREVAX Feline 3/Rabies

(RCP + rRabies-1YR)

PUREVAX Feline 4/Rabies

(RCCP + rRabies-1YR)

# UNIQUE TECHNOLOGY MAKES THE DIFFERENCE

## PUREVAX Recombinant FeLV

- The first and only recombinant canarypox-vectored nonadjuvanted Feline Leukemia Virus (FeLV) vaccine.
- Now available in both half-mL and 1-mL offerings.

### FeLV:

- Oronasal contact with saliva or urine from infected cats represents the most common mode of transmission, yet transmission *in utero* or through nursing is also common.
- Often, only “outdoor” cats are deemed at-risk for FeLV.
- However, are “indoor” cats truly indoors?
  - In a study, 41% of lost cats were identified by their owners as strictly indoors and not typically allowed outside.<sup>6</sup>
  - In multi-cat households, some are indoor-only, while others may be indoor/outdoor.<sup>7</sup>

### Assessing the Efficacy of FeLV Vaccines:

Various vaccines have been granted licensure by the USDA as effective against feline leukemia virus, and include adjuvanted, inactivated, whole virus preparations, and a nonadjuvanted canarypox-vectored vaccine.<sup>8-12</sup>

Vaccine efficacy is demonstrated by comparing protection afforded by a given vaccine following a virulent challenge to a group of vaccinated cats and a group of unvaccinated control cats. FeLV vaccine efficacy is usually demonstrated in cats vaccinated twice 2 to 4 weeks apart, with the initial vaccine typically being administered at 8-9 weeks of age.<sup>8-12</sup>

Veterinary vaccinologists strive to create challenge models that capture the variation that occurs in natural infection under field conditions. Numerous studies have shown that persistent infection can be achieved in unvaccinated immunocompetent cats via oronasal challenge using a virulent FeLV challenge strain or by contact challenge, without concurrent immunosuppressive treatment.<sup>13-17</sup>

**The Task Force of experts convened by the AAHA and AAFP recommends FeLV vaccination as core for all kittens and young adult cats younger than 1 year of age.**

— 2020 AAHA/AAFP Feline Vaccination Guidelines<sup>7</sup>

**“Nonadjuvanted vaccines should be administered to cats wherever possible”**

—2016 WSAVA Guidelines for the Vaccination of Dogs and Cats<sup>18</sup>

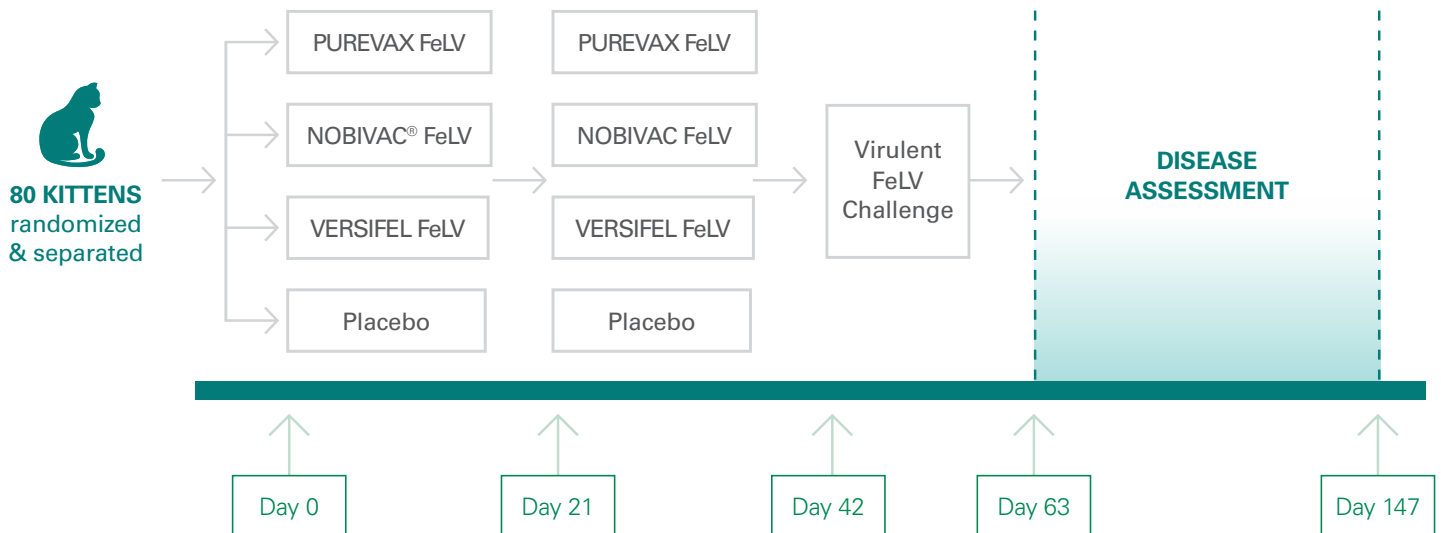


## PUREVAX® FeLV provides efficacy equivalent to killed, adjuvanted FeLV vaccines<sup>13</sup>

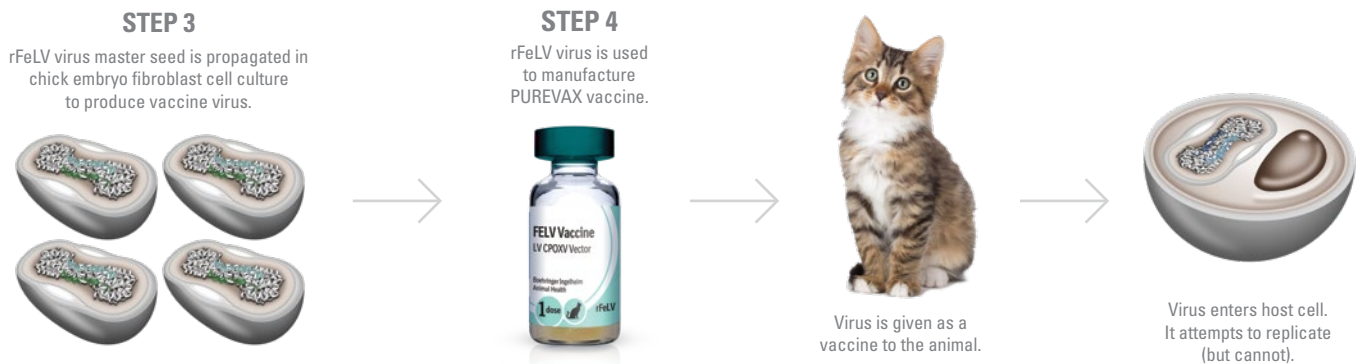
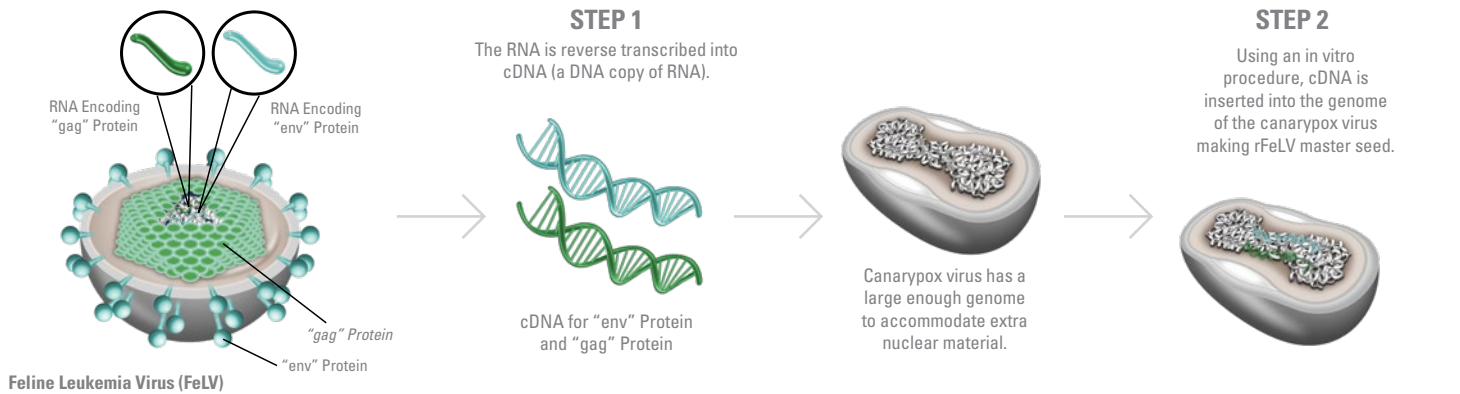
- Eighty kittens aged 9-10 weeks of age were randomly assigned to 4 treatment groups, and received two 1-mL subcutaneous injections of the following vaccines or placebo at a 21-day interval: PUREVAX® FeLV, NOBIVAC® FeLV, VERSIFEL FeLV, or placebo.
- Three weeks after the second vaccination, all cats were challenged with FeLV heterologous challenge material via the oronasal route on two consecutive days.
- Blood was collected prior to the first vaccination, prior to challenge, and weekly from 3 to 15 consecutive weeks post-challenge. Serum samples were tested for FeLV antigenemia to detect free, soluble p27 protein. In addition, proviral FeLV DNA loads in circulating PBMCs were determined on terminal blood samples at 15-17 weeks post-challenge.
- Based on weekly serological assessments from Days 63 to 147, the recombinant nonadjuvanted PUREVAX FeLV vaccine provided an equivalent degree of protection from persistent antigenemia and integration of proviral DNA as the two killed adjuvanted FeLV vaccines.



### PUREVAX FeLV: Adjuvant-Free Protection

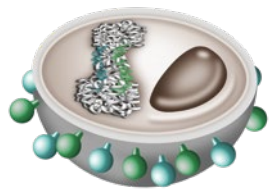


# PUREVAX FeLV: The Manufacturing Process and Mode of Action

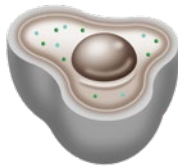


As the virus attempts to replicate in the cell, the viral DNA is transcribed, causing the production of "env" and "gag" proteins.

Macrophage takes up "gag" and "env" proteins, and presents to lymphocytes.



"gag" and "env" proteins are expressed on the host cell surface.



Animal develops both cell-mediated and humoral immune responses and is now immunized against FeLV infection.



# UNIQUE TECHNOLOGY MAKES THE DIFFERENCE

## PUREVAX® Feline Rabies

- The first and only recombinant canarypox-vectored nonadjuvanted feline rabies vaccine
- The first and only half-mL feline rabies vaccine
- PUREVAX half-mL and 1-mL feline rabies vaccines available in both 1-year and 3-year duration of immunity preparations
- PUREVAX Feline Rabies 1-year available in combination with PUREVAX Feline 3 (half-mL and 1-mL doses) or PUREVAX Feline 4 (half-mL and 1-mL doses)

### Every year in the US there are more cats diagnosed with rabies than dogs

- While the number of cases of rabies diagnosed in dogs has declined from over 1,600 per year in 1958 to 63 in 2018, the number of cases of cats has remained relatively unchanged over that same period, and in 2018 was 241.<sup>19</sup>
- According to a survey in 2017, only 31% of cats were vaccinated compared with 48% of dogs.<sup>20</sup>

**The primary goal of vaccinating cats against rabies is to protect them against disease.** In some states, vaccination is mandatory.

**Even though rabies laws differ considerably between states, there can be serious consequences for an unvaccinated pet.**

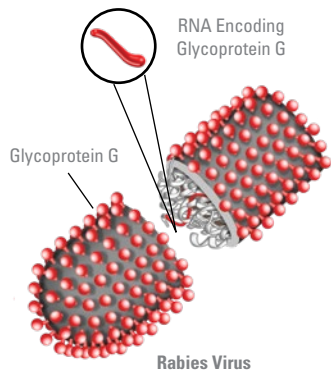
- ✓ If it is exposed to a rabid or suspected rabid animal (domestic dog or cat, or wildlife)
- ✓ If it bites another pet
- ✓ If it bites a human

For information on rabies laws and vaccination in the US, visit [rabiesaware.org](http://rabiesaware.org)

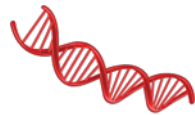




# PUREVAX Rabies: The Manufacturing Process and Mode of Action



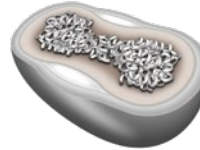
**STEP 1**  
The RNA is reverse transcribed into cDNA (a DNA copy of RNA).



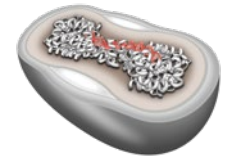
cDNA for Glycoprotein G

**STEP 2**

Using an in vitro procedure, cDNA is inserted into the genome of the canarypox virus making rRabies virus master seed.

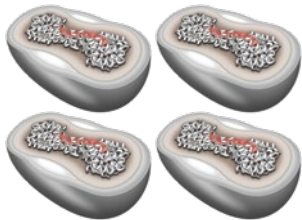


Canarypox virus has a large enough genome to accommodate extra nuclear material.



**STEP 3**

rRabies virus master seed is propagated in chick embryo fibroblast cell culture to produce vaccine virus.

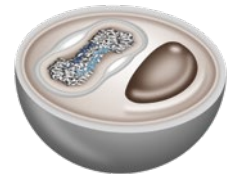


**STEP 4**

rRabies vaccine virus is used to manufacture PUREVAX vaccine.

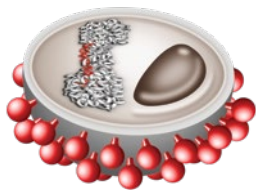


Virus is given as a vaccine to the animal.



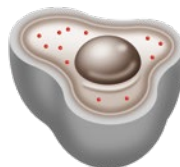
Virus enters host cell. It attempts to replicate (but cannot).

As the virus attempts to replicate in the cell, the viral DNA is transcribed, causing the production of Glycoprotein G.



Glycoprotein G is expressed on the host cell surface.

Macrophage takes up Glycoprotein G, and presents to lymphocytes.



Animal develops both cell-mediated and humoral immune responses and is now immunized against rabies infection.



# PUREVAX® Vaccines

PROVIDE THE ONLY COMPLETE  
LINE OF HALF-mL AND 1-mL  
NONADJUVANTED FELINE VACCINES



VACCINES	HALF-mL DOSE	1-mL DOSE	DISEASE/ PATHOGEN	VACCINE TYPE
<b>PUREVAX® Recombinant FeLV</b> <ul style="list-style-type: none"> <li>• 25 x 1 dose/tray</li> </ul>			Feline Leukemia Virus	Recombinant
<b>PUREVAX Feline 3 (RCP)</b> <ul style="list-style-type: none"> <li>• 25 x 1 dose/tray</li> </ul>			Rhinotracheitis Calicivirus Panleukopenia	Modified Live Virus Modified Live Virus Modified Live Virus
<b>PUREVAX Feline 4 (RCCP)</b> <ul style="list-style-type: none"> <li>• 25 x 1 dose/tray</li> </ul>			Rhinotracheitis Calicivirus <i>Chlamydia psittaci</i> Panleukopenia	Modified Live Virus Modified Live Virus Modified Live Modified Live Virus
<b>PUREVAX Feline Rabies (rRabies-1YR)</b> <ul style="list-style-type: none"> <li>• 25 x 1 dose/tray</li> </ul>			Rabies	Recombinant
<b>PUREVAX Feline Rabies 3YR (rRabies)</b> <ul style="list-style-type: none"> <li>• 25 x 1 dose/tray</li> <li>• 10 x 1 dose/tray</li> </ul>			Rabies	Recombinant
<b>PUREVAX Feline 3/Rabies (RCP + rRabies-1YR)</b> <ul style="list-style-type: none"> <li>• 25 x 1 dose/tray</li> </ul>			Rabies Rhinotracheitis Calicivirus Panleukopenia	Recombinant Modified Live Virus Modified Live Virus Modified Live Virus
<b>PUREVAX Feline 4/Rabies (RCCP + rRabies-1YR)</b> <ul style="list-style-type: none"> <li>• 25 x 1 dose/tray</li> </ul>			Rabies Rhinotracheitis Calicivirus <i>Chlamydia psittaci</i> Panleukopenia	Recombinant Modified Live Virus Modified Live Virus Modified Live Modified Live Virus

## Feline Satisfaction Guarantee

Boehringer Ingelheim Animal Health USA is committed to supporting the use of nonadjuvanted vaccines in feline patients throughout their life. We understand, however, that patients sometimes move, or are otherwise lost to observation, making it impossible to verify their complete vaccination history. Our PUREVAX® Satisfaction Guarantee therefore falls into three tiers:

DIAGNOSIS	In the event that a cat is definitively diagnosed with an injection-site sarcoma:		
GUARANTEE TIER	Tier 1	Tier 2	Tier 3
CRITERIA	AND if that feline patient has been exclusively vaccinated with PUREVAX nonadjuvanted feline vaccines over its entire lifetime,	AND if that feline patient has been exclusively vaccinated with PUREVAX nonadjuvanted feline vaccines during the most recent 5 years of their life,	AND if that feline patient's LAST vaccination was with a PUREVAX nonadjuvanted feline vaccine but the patient does not otherwise have a documented history of PUREVAX-only vaccination,
SUPPORT	Boehringer Ingelheim Animal Health USA will support standard and reasonable diagnostic and treatment costs up to \$5,000.	Boehringer Ingelheim Animal Health USA will support standard and reasonable diagnostic and treatment costs up to \$3,000.	Boehringer Ingelheim Animal Health USA will support standard and reasonable diagnostic and treatment costs up to \$1,500.

## Other Adverse Events and Lack of Efficacy

Boehringer Ingelheim Animal Health USA may also provide customer support in the event that feline patients experience other types of adverse events or contract the disease for which they are vaccinated. Please contact our Veterinary Technical Solutions team (VeTS) at 1-888-637-4251 (Option 1) for assistance in determining support eligibility in these instances.



To learn more about PUREVAX vaccines and how they can benefit your patients, contact your Sales Representative or call Customer Care: **1-888-637-4251** or visit **BI-CONNECT.com**

**Ask your Representative about our Satisfaction Guarantee for PUREVAX vaccines or call our VeTS team: 1-888-637-4251 (opt.1)**



Part of the Boehringer Ingelheim Pet Vaccines Portfolio  
[PetVaccinesClinic.com](https://www.PetVaccinesClinic.com)



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- PUREVAX<sup>®</sup> Feline 3 Product Label.
- PUREVAX<sup>®</sup> Feline 4 Product Label.
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- PUREVAX<sup>®</sup> Recombinant FeLV (Merial) Product Label.
- ULTRA<sup>™</sup> Fel-O-Vax<sup>®</sup> FeLV (Elanco) Product Label.
- Fel-O-Vax Lv-K<sup>®</sup> (Elanco) Product Label.
- NOBIVAC<sup>®</sup> Feline 2-FeLV (Merck) Product Label.
- LEUKOCELL<sup>®</sup> 2 (Zoetis) Product Label.
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