
Control of Raccoon Rabies Using Merial's RABORAL V-RG[®] Vaccine

A Proud History

Merial's company roots reach back to the time when 19th century pioneers in microbiology discovered vaccination — a radical new way to prevent infectious disease by inoculating a person or animal with a less virulent form of the infective agent. One of these pioneers was French chemist Marcel Merieux, who had developed special dyes to color silk. Louis Pasteur and Merieux formed a bond of friendship as they devised ways to use these silk dyes to identify bacteria.

Merieux founded Institute Merieux in Lyon, France in 1897. The company became a world leader in human and animal health, creating the French Institute of Foot and Mouth Disease, which produced early vaccines to prevent the disease, and developed rabies and polio vaccines.

As it grew, Institute Merieux formed two operating companies: Pasteur Merieux to manufacture and market products for human health and Rhone Merieux for research, development and manufacturing of animal health products. Both of these companies continued to grow as well. In 1997, Rhone Merieux joined Merck AgVet and became Merial.

Merial is proud to continue research with the dedication that drove Marcel Merieux to excellence in France nearly a century ago. It is reflected in our outstanding technology, state of the art facilities, research leadership, committed professionals, a strong sense of responsibility, service to the veterinarian, and an innovative spirit expanded now into the wild life. These have combined to form a powerful force in the animal health industry — Merial, dedicated to the improvement of animal health and well-being, worldwide.

Merial - World Leader in Rabies Vaccines

Ever since they began developing their first rabies vaccine, Merial scientists have dedicated time and talent to rabies research, with the goal of developing a worldwide specialty in rabies vaccine expertise. Today, Merial offers three of the world's best rabies control products for unexcelled support of your battle against rabies in companion animals, livestock, or wildlife.

- IMRAB® and its overseas counterpart, RABISIN®, is the world's leading rabies vaccine, with millions of successful doses administered across the globe. No other rabies vaccine offers six-species licensure, the flexibility inherent in a wide range of convenient combinations, and the ease of subcutaneous injection. IMRAB 3 provides three years duration of immunity against rabies in dogs, cats and sheep, and one year for cattle, horses and ferrets. It also is the only rabies vaccine proven effective in the face of actual field epizootic situations.
- PUREVAX™— the first viral-vectored rabies vaccine for cats. This genetically engineered vaccine, which eliminates the need for chemical adjuvants, is available as a monovalent and in multivalent combinations that may reduce the number of injections needed for comprehensive protection.
- RABORAL V-RG — the world's first oral, vaccinia-vectored rabies vaccine. Since its development, it has become one of the most extensively tested animal vaccines ever developed, and has shown extraordinary success against

wildlife rabies under actual field conditions.

Merial, the world's largest research, development, and manufacturer of vaccines for animal health, has a unique combination of outstanding products, unparalleled expertise, and a history of comprehensive, individualized attention which is now being offered to you in the field of wildlife rabies vaccination.



The Spread of Raccoon Rabies: A Case History

Wildlife rabies is a serious concern, responsible for nearly 93% of the reported rabies cases in the United States.

Raccoons account for more than 50% of this total. Thus it is particularly instructive to review the history of raccoon rabies along the eastern coast of the United States.

Raccoons (*Procyon lotor*) have been recognized as a reservoir for rabies in the southeastern states since the 1950s.¹ For many years, it was a wildlife disease in a rural population, posing little threat to the human population. Its progress was monitored, but little else was — or realistically could be — done. No practical means of effective wildlife rabies control was available.

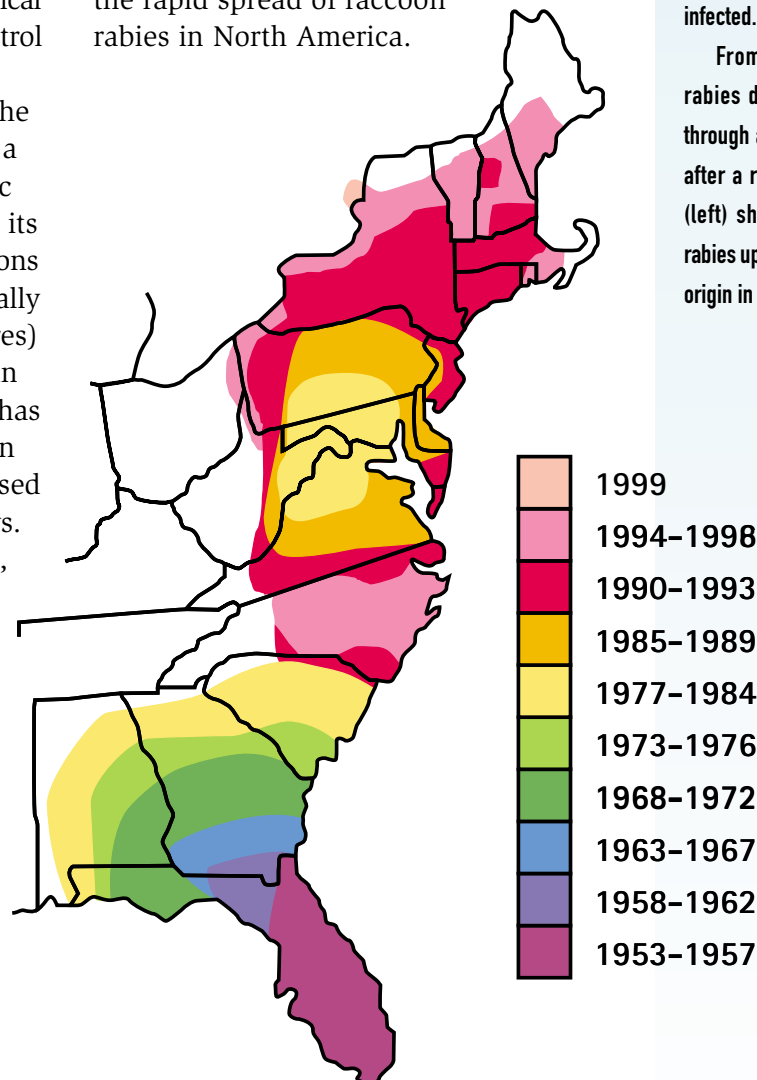
Looking back, it's apparent that the stage was set for trouble. Florida is a popular tourist destination. Domestic animals are often transported across its boundaries. Humans often help raccoons travel from the South, both intentionally (often to release in hunting enclosures) and unintentionally (as hitchhikers in vehicles such as garbage trucks). As has been true across the country, human behavior has set the stage for increased wildlife rabies problems in other ways. Reversing previous population trends, people have been moving back into once-rural areas. Raccoons adapt easily to their presence, and are often treated more as semi-wild pets than as true wildlife.

Suddenly, the burgeoning rabies epizootic began a relentless march northward through the coastal states. As raccoon rabies invaded the mid-Atlantic region, it began to move through areas of high

density human population, and human exposure to rabies increased.

In 1989, a new orally active recombinant rabies vaccine, RABORAL V-RG, was introduced into the United States. After successful large-scale use in Europe and extensive testing in various states in the United States, it was approved for use in New Jersey. Soon, other states began to follow suit.

As a powerful component of a total rabies control program that includes the veterinary vaccination of domestic animals, RABORAL V-RG offers the best promise yet of a way to stop the rapid spread of raccoon rabies in North America.



How Rabies Spreads

Rabies virus is present in the form of many strains or variants, which tend to be host specific. Raccoons, for example, are the reservoir for the raccoon rabies strain, while skunks and coyotes each harbor slightly different strains. Thus, rabies is often compartmentalized within a species, spreading mainly among members of a single wildlife population.

Cross infection, or spillover, to other animal species is common, however, particularly as more and more host animals become infected. Spillover increases both the speed of rabies spread and its threat to human health, as other wildlife and domestic animals like dogs, cats, cattle, or horses become infected.

From its original host infection, rabies disease continues to expand through an area like ripples in a pond after a rock hits the water. This map (left) shows the spread of raccoon rabies up the eastern U.S. coast from its origin in Florida in the early 1950's.

Safety Tested
In More Than

60
SPECIES

RABORAL V-RG is one of the most extensively tested animal vaccines ever developed. Studies at the Wistar Institute and Thomas Jefferson University, two of the world's premier rabies research centers, have confirmed its safety and effectiveness. Tests with more than sixty species of animals demonstrate its safety when used in wildlife.²⁻⁵

American porcupine	Laboratory rabbit
Arctic fox	Magpie
Bank vole	Marsh rice rat
Black bear	Meadow vole
Bobcat	Mink
Carriion crow	Nude mouse
Cattle	Polecat
Chimpanzee	Porcupine
Common buzzard	Raccoon
Common vole	Raccoon dog
Cotton rat	Red fox
Coyote	Red-backed vole
Daubenton bat	Red-tailed hawk
Deer mouse	Ring-billed gull
Domestic cat	River otter
Domestic dog	Sea gull
Domestic pig	Sheep
European badger	Short-tailed shrew
Ferret	Squirrel monkey
Field vole	Striped skunk
Flying squirrel	Syrian hamster
Gapper's vole	Vampire bat
Gray squirrel	Virginia opossum
Great horned owl	Water vole
Grey fox	White-tailed deer
Groundhog	Wild boar
Hispid cotton rat	Wood mouse
Horse	Woodchuck
Jay	Woodland jumping mouse
Kestrel	Yellow-necked mouse
Laboratory mouse	

The Evolution of Orally Active

More than a decade ago, new ground was broken in the field of veterinary medicine with the development of a different sort of rabies vaccine — a vaccine designed specifically to orally vaccinate wildlife in their natural habitat.

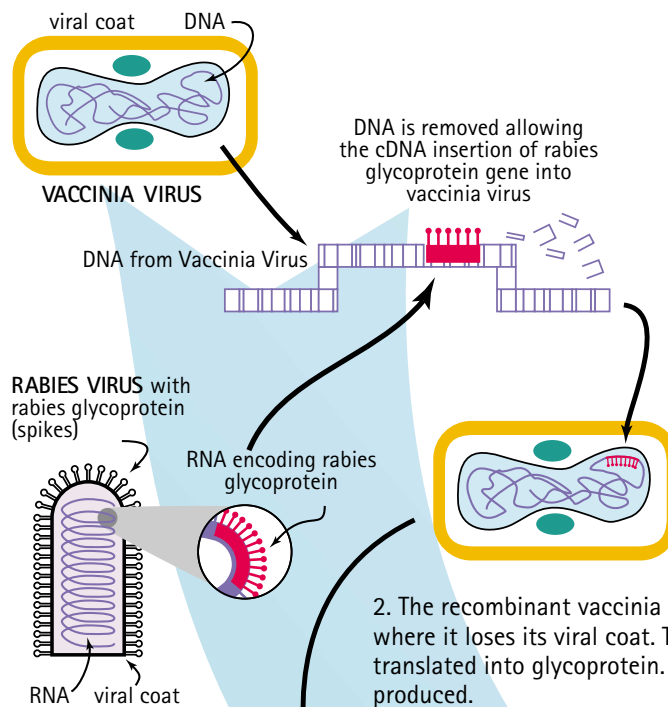
It began with a most appropriate step. Looking back for inspiration to

pioneering studies in immunization, researchers started with the same carrier virus (vector) that had been used successfully in the worldwide campaign to eradicate smallpox.

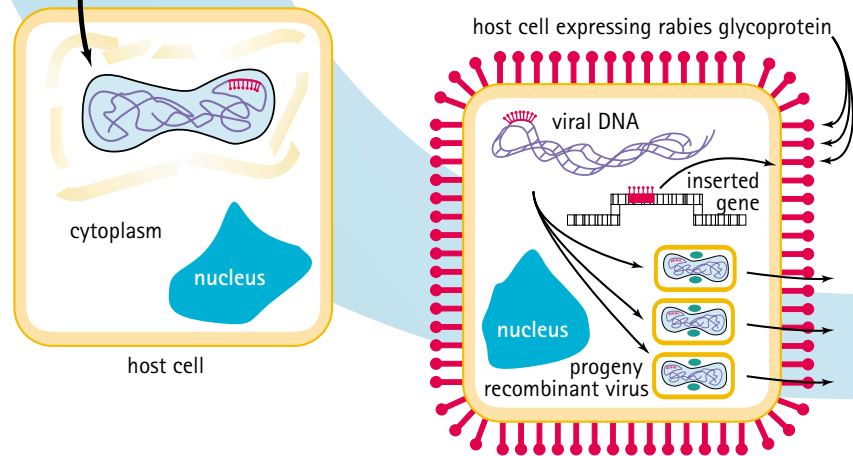
Employing the latest genetic engineering techniques, scientists combined this vector with a single very important part of the rabies virus — the glycoprotein gene that elicits immunity to rabies disease. Because only a part of the rabies virus was included, the vaccine could not cause rabies disease.

The new vaccine was effective when given orally. It also proved very stable, even under wide temperature fluctuations such as would be found in the field. Even before development of the new vaccine was complete, wildlife biologists and other researchers began looking for an attractive, stable, cost-effective bait with which

1. A section of DNA is removed from the vaccinia virus allowing the insertion of a cDNA copy of the rabies glycoprotein gene by recombination. The new recombinant vaccinia virus expressing the rabies glycoprotein becomes the rabies vaccine RABORAL V-RG.



2. The recombinant vaccinia rabies virus infects the host cell where it loses its viral coat. The inserted gene is transcribed and translated into glycoprotein. Progeny recombinant virus is also produced.



Recombinant Rabies Vaccines

to deliver the vaccine. Several edible substances were found to work well. For raccoons, researchers chose fish meal. Wild raccoons seem to find it very tasty. This fish meal and a special polymer were mixed to form a hardy bait into which a sealed vaccine-filled package, called a sachet, could be inserted. A raccoon eagerly biting down on the bait would puncture the sachet and immunize itself as the vaccine was released into its mouth and throat.

Trials demonstrated up to 85% raccoon bait acceptance. Bait contact has been reported as high as 99% on day-two post-deployment.⁶ Tests in Virginia and Pennsylvania, under the direction of the United States Department of Agriculture-Animal and Plant Health Inspection Service (USDA-APHIS), demonstrated the vaccine to be environmentally safe.

RABORAL V-RG has been successfully used in Florida, Massachusetts, Maryland, New Jersey, New York, Ohio, Pennsylvania, Texas, and Vermont.

In April 1997, the USDA granted license to RABORAL V-RG for use in raccoons. Its utility for controlling rabies in European red foxes was well established. Recently, in the American Southwest, under experimental use, the oral vaccine has been extremely effective against canine variant rabies in coyotes and gray foxes.

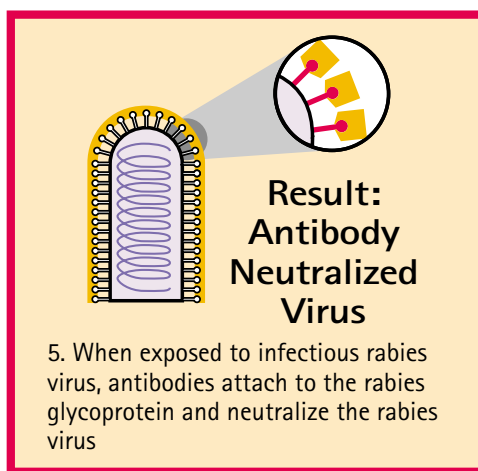
European Field Experiences

Extensive field use in Europe has confirmed that RABORAL V-RG provides a safe, effective, humane, and efficient way to control wildlife rabies. European rabies campaigns also have been instructional for conducting North American programs.

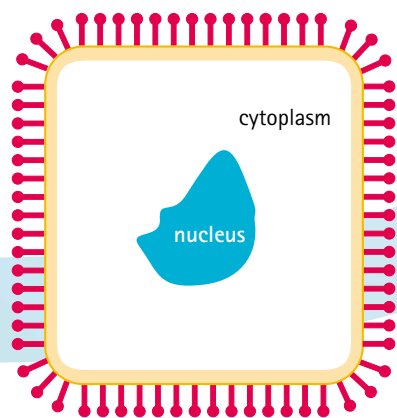
Between 1989 and 1995 in France, Luxembourg and Belgium, millions of vaccine doses were dispersed to successfully control rabies in red foxes. In 1986, when France began vaccination, rabies was rampant in much of the country. For several years, vaccines were dropped over large areas. Baits with RABORAL V-RG were efficacious, attractive to red foxes, and stable under field conditions. Across the treated areas, fox rabies decreased dramatically. The continuing absence of rabies in these areas provides evidence that rabies virus has been eliminated from that fox population.

In Belgium and Luxembourg, however, fox rabies reappeared after campaigns had eliminated it from large areas. Some reinfections were due to difficulties in coordinating vaccination plans among neighboring countries, while others were caused when programs were prematurely stopped due to excessive confidence in the positive preliminary results.

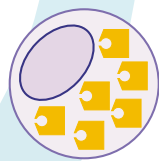
These experiences underscore the importance of maintaining an effective rabies barrier, a concept detailed in this brochure. Experts have advised these countries that if neighboring countries are still infected, their own vaccination campaigns should not be interrupted until at least 24 months have elapsed since the last recorded case of rabies.^{3,4,7}



3. The rabies glycoprotein is expressed on the cell surfaces.



4. Lymphocytes recognize the rabies glycoprotein as foreign and respond by producing antibodies and cellular immune responses.



Terms and Definitions

Barrier — Anything that bars passage or access; in wildlife rabies control programs, an area in which animals are rabies-negative.

Enzootic (en-zo-ot'ik) — A disease that is entrenched in an animal population, existing with predictable regularity and with only relatively minor fluctuations in its frequency over time.

Epizootic (ep'i-zo-ot'ik) — A disease that affects a larger than expected number of animals in the same geographical area at the same time. The spread of the disease in an animal population, often with the implication that it may also affect human populations.

Glycoprotein — A class of compounds in which a protein is combined with a carbohydrate group. The compound's synthesis is directed by the single rabies gene incorporated in RABORAL V-RG which triggers development of an immune response to rabies.

Recombinant vectored vaccine — A vaccine made of low or nonpathogenic microorganisms that have been genetically altered to contain the part of a virus or bacterium responsible for stimulating immunity to a disease.

Reservoir — An animal species in which a disease is enzootic, being maintained naturally in the population through spread from one animal to another.

Spillover — Infection of any species other than the natural host for the disease.

Sylvatic rabies — Another name for rabies in various species of wildlife.

Vaccinia — The virus used to vaccinate humans against smallpox and now commonly manipulated for use as a vector in recombinant vaccines.

Variant — A subtype or strain of rabies virus that can be distinguished from others by laboratory methods and that has one or more specific natural hosts.

Vaccine Vector — A safe carrier organism used to transmit genes encoding the immunogenetic part(s) of a virus or bacterium in a recombinant vaccine.

Baiting Patterns: Stopping Rabies

While an effective raccoon rabies population immunization program begins with the availability of an efficient, efficacious vaccine, it doesn't end there. Success depends on decisions about area of coverage, time and methodology of vaccination, and a host of epidemiological, geographic, climatic, biologic, and economic factors. Timing and spacing of bait deliveries are particularly important, because they often determine what proportion of the population will be successfully vaccinated.

The cycle of disease in a rabies-infected population will be broken if enough of its animals are immunized so that a rabid animal does not come into contact with susceptible animals to pass along the disease. Ideally, the disease dies out in the population. Disease can be kept from penetrating into a new area in the same way. In either case, the immunized proportion of the population presents a barrier against rabies that is as real and effective as a physical barrier would be.

The barrier concept for raccoon is similar to — and complementary to — the current philosophy of rabies control in domestic animals. This is based on producing a buffer of immunized animals around humans. Since pets are the animals with the greatest day-to-day-contact with people, such programs usually focus on canine and feline rabies vaccination. For effective raccoon rabies control, concurrent domestic animal vaccination programs must be continued. Additional measures which help to increase the effectiveness of pet vaccination include reduced contact between pets, reduced population of free-ranging pets, and reduced pet contact with raccoons.

RABORAL V-RG is a very efficient system for raccoon population immuni-

zation when combined with effective timing and vaccine spacing strategies. These decisions, in turn, are based on the status of raccoon rabies in the targeted area. Is rabies already entrenched at a low enzootic level? Has it exploded onto the scene as a major animal epizootic? Or is it absent now but threatening to move into the area?

The next page contains some sample scenarios. But note that whichever pattern is chosen, the program must include a way to assess the success of the baiting. Usually this is achieved by an active surveillance program that involves laboratory analysis of brains of diseased or dead raccoons or other target species, as well as collection of serum from a sampling of the target population to check for the presence of antibodies against the rabies virus.

Barrier programs: Keeping rabies out

Usually, an immunized population of animals against rabies is effective in preventing the spread of the disease. Immune barriers may be created in multidirectional fashions depending upon the area threatened with rabies (see opposite page for some examples). Scientific experiences and field use of the product suggest that successful barrier programs depend on:

1. Designating the area of the barrier - must include sufficient area to impede rabies
2. Achieving vaccination of greater than 50% of the target species within the barrier
3. Using vaccine densities of greater than 75 baits per square kilometer
4. Continued vaccine delivery as long as the threat of rabies is in the region
5. Contingency plans for additional vaccination in case the barrier is breached

In Its Tracks

Confronting an epizootic in raccoons

Dealing with an epizootic front of rabies requires a campaign including several phases. Short term and long term planning includes:

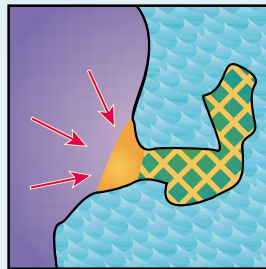
1. Vaccinating the target species ahead of and within the advancing of the epizootic front
2. Creating a barrier of immunity to prevent the advancement of the front.
3. Vaccinating behind the barrier to eliminate the establishment of enzootic rabies
4. Determining if vaccine should be administered once or twice per year to gain control
5. Vaccine densities must be established to vaccinate greater than 50% of the target species. Densities of 75 to 200 baits per square kilometer have been successful⁸⁻¹⁰
6. Surveillance to ensure that the outbreak has been stopped
7. Developing an exit strategy after the epizootic has been wiped out

Baiting in a rabies enzootic area

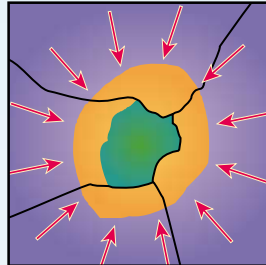
Enzootic rabies may be established following the progression of an epizootic front if no other control measures are taken. Whether the disease becomes enzootic is dependent on the residual population of the target species which may be extremely low or rising. This allows for an entire area to be designated for vaccination. The following aspects must be considered in developing such a program:

1. The area to be covered must be clearly designated and defined.
2. A surveillance program for the target species should be established.
3. Vaccine densities, frequencies, and targeted habitats must be determined.

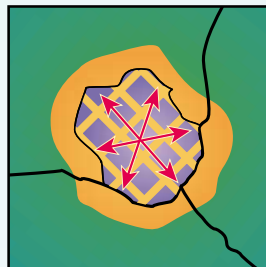
Options for Vaccine Treatments



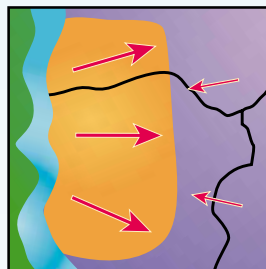
A linear barrier is used for a unidirectional progression of rabies when the geographical situation of the rabies-free area helps to isolate the territory. No "internal vaccine treatment" should be necessary unless the barrier is broken. In that case, complete vaccine treatment becomes advisable.



A circular barrier may be used where no geographical barriers are present and the direction of movement of the rabies epizootic is well known. This protection should include vaccine treatment of the rabies-free area and its perimeter.



When rabies is already present in an area facing epizootic conditions, control must include both complete coverage with vaccine and construction of a rabies-free barrier.



If facing epizootic conditions, complete vaccine coverage of the area is advised, with emphasis in raccoon habitats.

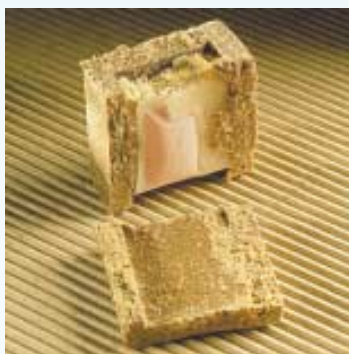
4. Designate a barrier surrounding the area in which rabies will be controlled.
5. Maintain or expand the barrier to meet the original objectives.

RABORAL V-RG Baits

RABORAL V-RG consists of a fishmeal polymer bait that is hollowed out through the center. This not only provides a strong attractant to raccoons, but also is strong enough to withstand being dropped from airplanes. A toll-free number is imprinted on each bait allowing anyone who comes in contact with the bait to call for expert advice.



A sachet containing rabies vaccine is inserted into the baits and sealed in with wax (bait shown cut open below). When the raccoon bites into the bait, the sachet is ruptured allowing the vaccine to flow into the raccoon's mouth and throat.



RABORAL V-RG

INTRODUCTION

RABORAL V-RG is a product developed and manufactured using state-of-the-art biotechnology. The product is specifically designed to impede or prevent the spread of lethal rabies disease in raccoons. Since rabies is spread by animal-to-animal contact, vaccination of a significant number of raccoons may effectively establish a barrier between rabies enzootic and uninfected areas. Over time, repeat vaccination campaigns may reduce the reservoir of susceptible raccoons.

While a program to vaccinate raccoons against rabies may reduce the rate of infection in wild animals, the main objective of any rabies vaccination program is to limit the exposure of domestic animals to rabid wild animals. Because people are more likely to contact domestic animals, the ultimate goal is to protect the human population from rabies.

A raccoon vaccination program does not and is not intended, in any way, to eliminate the need for vaccination of pets or other domestic animals. All animal owners are encouraged to have their animals vaccinated in accordance with local, state, or federal regulations by qualified veterinarians.

INDICATIONS

RABORAL V-RG is recommended for the oral vaccination of raccoons against disease caused by pathogenic rabies virus. The vaccine is restricted for use in rabies control programs approved and directed by an appropriate federal or state agency. Control of the use of the vaccine rests with the sponsoring agency which has the responsibility to define conditions for proper use in its program. Assessment of such factors as raccoon population, baiting densities, competitive species, habitat, methods and frequency of distribution, public awareness, safety procedures, and any appropriate parameters is the responsibility of the sponsoring state or federal agency.

COMPOSITION

RABORAL V-RG is composed of vaccine-filled plastic sachets contained in fishmeal polymer baits. The vaccine is a Category III recombinant virus which means it contains a live virus vector which carries and expresses a foreign gene. In this case, the viral vector is vaccinia virus and the expressed gene product is rabies virus glycoprotein. This vaccine cannot cause rabies because it expresses only the antigen which is important in inducing immunity. It has been demonstrated safe in more than 60 species of animals including primates. It has been shown to be effective in protecting raccoons against virulent rabies challenge in controlled studies in the United States. The vaccine contains gentamicin as a preservative.

ROUTE OF ADMINISTRATION

This vaccine is effective when administered by the oral route.

PACKAGING AND STORAGE

Shipped refrigerated. Store refrigerated 2-7°C (35-45°F). Do not freeze. Each bait contains one single-dose sachet ready for field use.

QUALITY CONTROL

The quality of RABORAL V-RG is confirmed by testing for:

PURITY - Tested for bacteria, fungi, and mycoplasma to assure no detectable contaminants in accordance with USDA requirements.

POTENCY - Tested to assure each lot meets or exceeds the viral content required in accordance with Production Outline specifications approved by USDA.

SAFETY - Tested for safety to assure no adverse effects are attributable to the vaccine in accordance with USDA requirements.

IDENTITY - Tested to ensure the vaccinia virus identity and to confirm the expression of rabies in accordance with USDA requirements.

PRECAUTIONARY MEASURES

Labels are printed on each bait, clearly identifying the recombinant vaccine and listing a toll-free phone number to contact for the phone number for the appropriate public health authorities. It is recommended that public education should be conducted prior to distribution of the baits to inform local communities as to the purpose of distribution, the type of vaccine, times and areas of distribution, public health concerns, and reasons for not disturbing the baits. This education may include newspaper articles, local television and radio reports, public meetings, and the distribution of brochures and posters. In certain areas, signs may be posted at the periphery and at strategic points within the distribution area notifying visitors of rabies control efforts and warning them not to disturb the vaccine-filled baits.

The local public health authorities in the areas where the recombinant rabies vaccine is used should be notified prior to the distribution of the baits. This notification should include instructions for addressing animal and human exposure to the vaccine.

The key personnel conducting the rabies control programs should be trained in the appropriate precautions and techniques for handling and distributing the vaccine-filled baits. All personnel who will be handling the vaccine should be nonpregnant adults at least 18 years of age, who are free of any known immunosuppressive conditions.

Any adverse reactions observed in the areas where the recombinant rabies vaccine is used should be reported to the licensed manufacturer, who will forward this information to the USDA-APHIS, Center for Veterinary Biologics.

Mail or fax the reports to: MERIAL
Rabies Vaccine - Program Director
115 Transtech Drive
Athens, GA 30601

Telephone: (706) 548-9292 or 1-800-765-7724
Fax: (706) 548-0608

E-mail: raboral@merial.com
Web site: www.merial.com

MERIAL, INC. USDA License No. 298
MERIAL Product Code 3214R-01 RABR-VRG Raccoon

Planning · Planning · Planning

10 Steps to a Successful Vaccination Program

Merial can assist you in developing a specific program tailored to control raccoon rabies in your area. What follows is a brief overview of the steps in a typical vaccination program, using the various resources that might be available to the sponsoring organization within your state.

1. Gather pertinent background information

Detailed information on the target species and the rabies problem in your area is vital to the design and implementation of a successful vaccination program to control rabies in raccoons or other wildlife species.

- Status of rabies in the proposed control area — Number of rabies cases reported in the targeted area; species in which these cases have occurred; when the first cases were reported or whether the disease is enzootic; methods currently used to report rabies cases. Similar data for adjacent areas also will be useful.
- Population information — Estimates of the human population and populations of both domestic and wild animals; concentration or dispersal of the targeted wildlife population; local laws concerning confinement or movement of domestic animals.
- Habitat information — Physical and demographic maps of the targeted geographical area; necessary to determine how and where the rabies control materials may be distributed.
- Activities of target species — Local biological data on behavioral seasonality of the target species, including such factors as breeding cycles and animal movement associated with seasonal variations in food supply, will help determine the timing of the campaign.

2. Determine what you want to accomplish and who may be able to help

The objectives and rationale of your Rabies Control Program must be clearly stated at the outset. Include a description of methods for assessing the outcome of the program.

Identify the types of civic, service, educational, medical, and governmental organizations that might be supportive and useful in helping carry out your program. Contact the leaders of these organizations to solicit their assistance and support.

3. Learn about orally active rabies vaccine and baits

Those administering the rabies control program must know the properties of the vaccine and the baits.

- **The vaccine** — RABORAL V-RG is a recombinant vaccine. A single gene from the rabies virus (the gene that tells the virus to make rabies glycoprotein) has been replicated and inserted into a carrier virus (vector).

Because the recombinant vaccine contains only a small, non-infective portion of the rabies virus, it cannot cause rabies disease. However, when an animal such as a raccoon takes the recombinant virus into its mouth, its cells begin to produce the rabies glycoprotein, to which its immune system manufactures an antibody protective against rabies.

- **The vaccine container** (See pictures on previous page)— Nestled in the center of the attractive bait, the vaccine is enclosed in a sealed plastic package with approximately 2ml volume capacity, also known as “sachet”. This sachet is tough, but a raccoon can easily bite through it, releasing the vaccine into its mouth. While in the sachet the recombinant virus remains viable through a range of ambient temperatures, but once the vaccine container has been punctured, the vaccine becomes inactive within a short time after exposure to the surrounding environment.
- **The bait** — The bait is composed of fish meal, fish oils, a binder and a polymer. Fish meal is a very strong attractant for wild animals. This is necessary in order to attract raccoons to the bait. It is digestible and causes the animal no harm.
- **The RABORAL V-RG bait and vaccine sachet** — The sachet containing the rabies vaccine is inserted into a hollow cavity in the square bait, and both ends of the bait are sealed with a harmless wax. The completed bait package is sufficiently durable to withstand being tossed from a moving vehicle or dropped from the air.

The bait’s surface carries a printed warning “Rabies Vaccine - Do not disturb” and a toll-free telephone number that people may call if they want to find out more about the program or the vaccine. If a bait is handled without gloves, its fishy smell will be transferred to one’s skin. As a matter of course, human exposure to the liquid vaccine contained in the internal sachet should be reported to public health officials associated with the rabies control program.

4. Begin program development

Depending upon the status of wildlife rabies in the targeted area, your program will be a customized version of one of three basic approaches: 1. Vaccination to develop a barrier against the intrusion of the rabies virus; 2. Vaccination in the face of an epizootic; 3. Vaccination of a target species potentially already exposed to rabies virus because the disease is enzootic within the targeted area. Sample scenarios appear under “Baiting Patterns” in this brochure.

5. Establish cooperation with appropriate agencies

A raccoon rabies control program must be approved and sponsored by a State Agency, but this is just a beginning. The most successful programs have been widely cooperative in nature.

The Wildlife Services of the USDA are charged with the responsibility of dealing with rabies in wildlife; protecting the public against transmissible diseases is the responsibility of the U.S. Centers for Disease Control and Prevention (CDC). You may also want to contact organizations such as: your State Veterinarian's Office, your state departments of Health, Agriculture, and Fish and Wildlife; state veterinary schools or veterinary science departments; state and local medical and veterinary medical associations; state and local animal control officials; wildlife rehabilitators; law enforcement officials.

6. Make general staffing decisions

To be successful, your raccoon rabies control program will require cooperative, reliable, and dependable individuals and organizations, properly educated, trained, and supervised as to the purposes of the program. Everyone should be familiar with the objectives of the program, and each should understand their specific tasks. Critical areas for staffing include, but may not be limited to: administration; operations; public awareness; communications; purchasing, delivery, storage of baits; distribution of baits; telephone operators to answer public enquiries; surveillance; reporting and assessment.

7. Estimate the budget and identify funding sources

After the scope of the program has been determined, the cost estimates of conducting such a program will have to be developed. Vaccine and bait costs can be obtained directly from Merial. Other budget items will have to be derived according to local costs and available personnel.

Some funding sources identified to date have included USDA contingency funds; Wildlife Service budgetary funds; the US Centers for Disease Control and Prevention (CDC); State Public Health; Department of Agriculture; State Wildlife Services; Governor's Contingency Funds; special legislative appropriations; federal, state and local county government; foundations; corporations; service organizations; and individuals.

In most instances, agencies providing funding will require a multiple-year budget projection, since no rabies control program will be successful with a single baiting. Depending on the scope of the program, useful guidance might be obtained from data on costs incurred in the implementation of other on-going programs.

8. Cultivate positive public relations

This step belongs everywhere in the list. It's vitally important — and never too early — to set up a framework for distributing information regarding planned rabies control program. All successful programs have included a variety of communications to organizations, groups, and the general public. An informed public is usually a supportive public.

Much of the information to be disseminated will involve potential benefits from baiting, but possible safety issues that may be raised by various individuals and groups should also be addressed.

- **The medical community** — Letters should be sent to the physicians, hospitals, and veterinarians in the community,

informing them of the public health significance of the program. Include answers for common questions they may be asked.

- **Public officials** — Letters, brochures, and news clippings should be sent to public officials so that they can appear knowledgeable on the vaccination program when interacting with their constituents.
- **Organizations identified in your historical data base** — Members of these groups will help spread your message to others.
- **Newspapers** — Plan an orchestrated release of information, including program planning, targeted areas, supporting organizations, interviews with personnel, vaccine information, pictures of baits, method of distribution, etc. Most newspapers will be willing to print several preliminary informational articles, cover the distribution of the vaccine, and communicate the results of the program.
- **Radio** — Many programs interview people with various public concerns. Control of rabies is a popular topic when a community is threatened. Areas targeted for control, extent of the disease, number of baits to be dropped, precautions to be taken, and timing of events are pertinent topics.
- **Television** — Stations want visually graphic news. Some stations have presented special news features on the problem of raccoon rabies and the dangers it presents to the human community, pets, and livestock. Invite local television stations to film the distribution of the baits and interview the personnel associated with the distribution, along with the program administrators, and public health officials.
- **Schools** — Give special presentations; develop video clips telling of the program; distribute informative brochures. Children tell their parents what happened in school.

9. Distribute baits according to a well-designed plan, with continuous evaluation and fine-tuning

This step, which everyone generally thinks of first, actually comes quite late in the overall campaign, after much detailed pre-planning. The actual distribution requires a surprisingly large amount of careful coordination.

The comprehensive raccoon rabies control program being contemplated is complex, but its potential benefits are correspondingly great. Armed with a superior new oral rabies vaccine and guided by experience with other successful programs, Merial stands ready to help you in this endeavor. Working together we can conquer the raccoon rabies which is threatening your area.

10. Oral Rabies Control Programs Network

Becoming an expert in oral rabies control programs is a matter of time, study, patience, setting achievable and meaningful goals and, most importantly, the adaptability of working as part of a team, not only in your geographical area but working in conjunction with other states. Taking advantage of the experience already gained by other states, regions, counties and entities using RABORAL V-RG, is a key factor for the success of a new program.

Related Web Sites

The following links are provided to our customers only as a means of learning more about rabies or communicating with State Health Organizations about rabies. Note that these sites are current as of the date of publication, and their content may not be devoted entirely to rabies. Merial does not endorse nor is it affiliated with any of the links or their sponsors.

<http://web.vet.cornell.edu/Public/DL/rabies/rabies.htm>
<http://www.alapubhealth.org/vital/frames3.htm>
<http://www.avma.org/default.htm>
<http://www.cdc.gov/ncidod/dvrd/rabies/>
<http://www.dchealth.com/message.stm>
<http://www.dhh.state.la.us/>
<http://www.dhhs.state.sc.us/>
<http://www.dhmh.state.md.us/>
<http://www.doh.state.fl.us/>
<http://www.gis.queensu.ca/mnrgallery.html>
<http://www.health.state.mo.us/>
<http://www.health.state.ny.us/>
<http://www.health.state.pa.us/>
<http://www.health.state.ri.us/>
<http://www.msdh.state.ms.us/>
<http://www.nih.gov/>
<http://www.odh.state.oh.us/directory/directory-f.htm>
<http://www.paho.org/>
<http://www.pasteur.fr/Bio/rage/rageanglais.html>
<http://www.ph.dhr.state.ga.us/>
<http://www.rabies.com>
<http://www.schs.state.nc.us/epi/rabies/>
<http://www.state.ct.us/dph/OPPE/ch1994.html#rabies>
<http://www.state.de.us/govern/agencies/dhss/irm/dph/dphhome.htm>
<http://www.state.ky.us/>
<http://www.state.ma.us/dph/dphhome.htm>
<http://www.state.me.us/dhs/etl/rabies/rab99.htm>
<http://www.state.nh.us/>
<http://www.state.nj.us/health/>
<http://www.state.tn.us/health/>
<http://www.state.vt.us/health/>
<http://www.tdh.state.tx.us/zoonosis/orvp/>
<http://www.vdh.state.va.us/epi/rabies.htm>
<http://www.wadsworth.org/rabies/index.htm>
<http://www.who.org>
<http://www.wvdhhr.org/>

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VAC-9-1003.1.00-FDP
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