RABID BYTES

The newsletter of The Global Alliance for Rabies Control

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EDITORIAL

Hello, and welcome to the Global Alliance for Rabies Control's September newsletter. For us, September means just one thing: **World Rabies Day, September 28**.

This year's theme *#TogetherAgainstRabies* embodies the One Health principle that human, animal and environmental health are interdependent. We all need to work together to help people and animals live safely and happily together. This World Rabies Day we'll be promoting this message as part of different collaborations with the AVMA, PAHO, WVA, WMA, IVSA and IFMSA, among others.

At the time of writings there are a healthy 73 events registered which all appear as pins on the global map of activities. It's very exciting. There's so much fantastic work going on. Please take a moment to look at it and explore some of the events taking place.

If you're planning something, please take a moment to register it. Each event inspires and strengthens the rabies prevention community and helps persuade decision makers that rabies is a problem with a solution. And we've renewed all the documentation for organizers, including tips on how to choose, organize and maximize the impact of your activity.

GARC has teamed up with the IFMSA and IVSA to issue the Global One Health Challenge to medical and veterinary students. Teams compete by designing and conducting rabies prevention events in their community. The winning team will have the chance to travel to the WMA/WVA One Health conference in Madrid, Spain next May. It's an amazing opportunity to promote intersectoral collaboration among the future generation and we hope it will prompt lots of entries. Please share it with your university contacts for them to share with their students.

Also in this issue, you'll read about the Me and my dog photo campaign which aims to raise awareness that vaccinating dogs stop canine rabies at source; #TogetherAgainstRabies, people and dogs are safer. We're hoping for thousands of photos from around the world all celebrating the companionship between people and dogs. We've had a good early response including pictures from some people you may recognize. Please take part by sharing an image and share on your networks to encourage others to do the same.

The daily tragedies of rabies and the current outbreak of Ebola are examples of the devastating threat zoonoses pose. But global rabies elimination is possible and the rabies prevention community is ideally placed to lead the way in establishing One Health working practices. Please use World Rabies Day as a reason to reach out to others and form partnerships that help make elimination a reality.

As always, thank you for taking the time to look through our newsletter. We hope you'll find it informative. If you have any comments or potential stories, please get in touch.

News from GARC and WRD

Inviting all students to take on the Global One Health Challenge

Inviting all students to take on the Global One Health Challenge
This World Rabies Day, the International Veterinary Students' Association, the International Federation of Medical Students' Associations (IFMSA) and the Global Alliance for Rabies Control (GARC) have set up the Global One Health Challenge for veterinary and medical students – it's your chance to do something for your community, learn about a deadly disease and how to prevent it, and win a fabulous prize – a trip to an international conference in Spain!

Students and World Rabies Day
Every year on World Rabies Day, September 28, thousands of individuals and organizations conduct events to raise awareness about rabies and the need for pre-exposure canine vaccination and post-exposure human vaccination. Students have always been an active part of World Rabies Day, with past activities including veterinary schools across the US competing to host a rabies symposium at their universities, and individual students raising funds and awareness through sponsored activities such as marathons and mountain climbing. The themes over the last seven years all emphasized the need to work together in order to end this disease, and this year's theme is no exception - ***#TogetherAgainstRabies***.

The competition
Here are a few reasons why you should be part of the One Health Challenge:

- Increase your knowledge of rabies prevention and learn valuable communication skills
- Save human and animal lives through collaboration with other professions
- Build relationships with others who want to make a difference
- Teach your community to prevent rabies to save both human and animal lives
- Advance global rabies awareness and prevention, by getting involved with international organizations
- Gain a better understanding of the community in which you will work after graduating
- Help to fund an ongoing rabies field project
- Win a trip for all team members to the WVA/WMA Global Conference on the One Health Concept in May 2015 in Madrid – with your expenses paid!

What do I need to do?
First of all, get a team together – your team should have at least one veterinary or medical student, and it needs to have people from more than one field, such as (but not limited to) public health, education and environmentally related disciplines. A team can have a minimum of 2 members and a maximum of 5 members. *Above all, we encourage cooperation between medical and veterinary students*.

Register your team online here, and then organise an event in your community. It could be part of a broader rabies project that you're involved in, or a standalone event.

We're looking in particular for events that show:

- strong partnerships that demonstrate the One Health approach, particularly those that show partnerships between medical and veterinary students, although other partnerships will also be considered.
- effective outreach activities in the community – this can be measured by the number of people reached by the event

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Me and My Dog

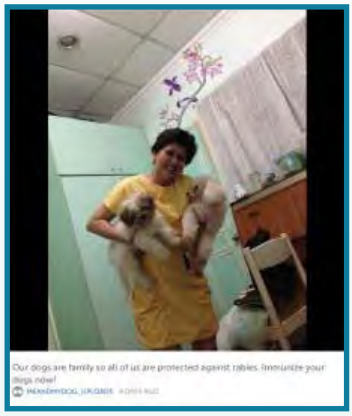
This World Rabies Day, GARC wanted to send a simple message that vaccinating dogs prevents rabies.

Morbid fear of rabies often pitches people against dogs leading to exclusion, cruelty and culling. The tragedy is that this approach is ineffective at preventing the disease, not to mention expensive. Dog vaccination stops canine rabies at source and saves people's lives.

Me and my dog is a photo campaign in which we're asking people to share a photo of themselves with their dogs. The photos stand as a testament to people's love for their dogs. And the campaign uses this positive feeling to raise awareness of the benefits of living with companion animals and to symbolise that #TogetherAgainstRabies, people and dogs are healthier.

The process to take part is simple. People can share a photo in one of three ways:

- our website meandmydog.rabiesalliance.org
- our Facebook page facebook.com/GlobalAllianceforRabiesControl or
- on Twitter, using the hashtag #TogetherAgainstRabies



They can also sign a pledge to support rabies prevention on the website and donate towards canine vaccines.
This is a campaign that anyone can be part of as long as they have access to the internet. So, even people who are not able to attend a World Rabies Day event can contribute to #TogetherAgainstRabies and raise awareness. We hope, in this way, to reach new audiences with the message that vaccinating dogs saves lives.

That said, we hope that our existing community will also take part in the campaign with gusto. To help you get others involved you can download the campaign logo, leaflets and posters here.

All the pictures are being collected together here - https://storify.com/RabiesAlliance/me-and-my-dog-togetheragainstrabies-1 - take a look, there are already some lovely images.

We hope to collect 1000s but that will only be achieved one photo at a time. Please take part and spread the word!

...**One Health Challenge** *continued from page 2.*

Share your event with others around the world – invite the media to your event, create and post videos online, spread the message through Facebook and other social media, or any other way you like, using the hashtags ***#TogetherAgainstRabies #OneHealthChallenge***

One Health

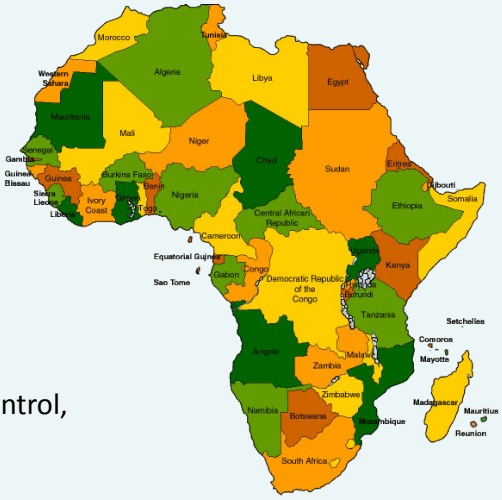
One Health embraces both human and animal public health, inclusive of scientific method and research, community and governmental roles, communication and education. The One Health Challenge puts this approach into practice, giving veterinary and medical students the opportunity to see the benefits of working with other sectors to tackle complex diseases, by designing and implementing rabies prevention events in their communities.

For more details, posters, leaflets, a guidance manual, and the registration form, please visit our webpage, or email for further details. We're very excited about receiving entries from all over the world – thank you for your interest in helping to end rabies.

The Global One Health Challenge Team, GARC

The Pan-African Rabies Control Network, PARaCoN

GARC is pleased to announce the formation of the Pan-African Rabies Control Network, a new venture to support rabies control efforts across the entire African continent. This network will be a merger of the Southern and Eastern African Rabies Group (SEARG) and the Northern and Western focused African Rabies Expert Bureau (AfroREB) and will also include African Countries that have not formerly belonged to either SEARG or AfroREB.



PARaCoN will build upon the objectives and initiatives of previous regional networks to:

(i) Find solutions to rabies in Africa , focused on rabies elimination
(ii) Disseminate and share information and experience relevant to rabies control,
(iii) Improve rabies data reporting
(iv) Improve medical diagnosis and knowledge
(v) Promote governmental support of rabies elimination programmes

GARC will act as the secretariat, and PARaCoN will adopt a “One Health” approach to rabies prevention and elimination in Africa, incorporating medical and veterinary sectors.

A first meeting of the new network will be held on 11th-13th February 2015 in Durban, South Africa. The main topics for discussion will be data sharing and dissemination, improving governmental support, optimal rabies control strategies and their roll-out and planning the way forward for PARaCoN .

Contributed by Terence Scott of GARC. You can contact him for further details about the network and the first meeting at: terence.scott@rabiesalliance.org

Rabies Prevention Puppet Show Educates More School Children

In Marikina City and Cainta, two of GARC’s project sites in the Philippines, puppet shows are being used as a novel way to educate children about rabies prevention. Initially held in public elementary schools, the shows reach out to school kids from ages 4 to 12 years old (Kinder to 6th Grade).

Through the initiative of the City Veterinary Office of Marikina City, a local artist group *Pinoy Malikhain* (Creative Filipino) was tapped to create the puppets as well as the story for the show. Mr. Mark David Cerezo, the head of *Pinoy Malikhain*, is the story narrator and facilitates lively exchanges with the children after each show to reinforce the messages on rabies prevention and responsible pet ownership.

The children learn about rabies in a fun and interactive way as they are engaged in a story about a pet dog (*Bantay*) that roamed in the streets to look for his friend dog (*Tagpi*) who escaped from their owner’s house. The story then evolves in *Tagpi* being suspected for rabies because he encountered a rabies-infected dog (*Bogart*) while roaming in the streets.

Information about how humans and animals can be infected with rabies was integrated in the story. Key messages on animal bite management (what animal bite victims should do and what to do with the biting animal), vaccination and responsible pet ownership were emphasized in the story of the puppet show.

After the puppet show the children were asked questions to reinforce the messages on responsible pet ownership and rabies prevention. Prizes, such as school supplies like pencils and notebooks, are given to children who participated in the ‘question and answer’ part of the program.

The first puppet show was held at Industrial Valley Elementary School in Marikina City last March 10. Since then 2-3 schools are targeted each week and have been expanded to private elementary schools. From March to mid-September around 20,300 school children (about 20,000 in Marikina City and 300 in Cainta) watched the show. The puppet shows are ongoing until March 2015.

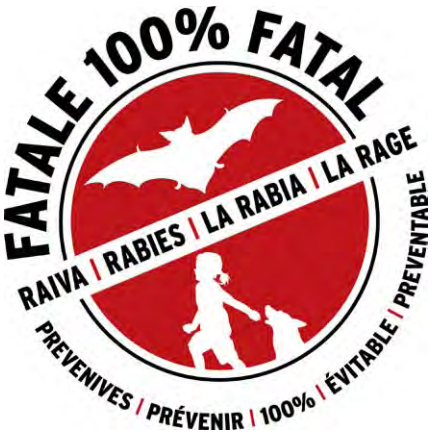
By: Elaine Llarena (with reports from Dr. Rosebelle Gamal)

A Panamerican Initiative for World Rabies Day

Elimination of dog-transmitted human rabies is a 30-year old goal of the Americas. Regional efforts started in 1983 coordinated by the Pan American Health Organization (PAHO) and have led to the elimination of the disease in a number of countries and territories (see Vigilato et al., 2013). The current goal is regional elimination by 2015, as it was reiterated by the countries at the 19th Session of PAHO Directing Council through CD49.R19 Resolution referring to the elimination of neglected diseases and other poverty related infections.

The concept of One Health is epitomized in the control of dog mediated rabies. Mass dog vaccination has been, and still is, the flagship intervention chosen by the countries in the Americas to reduce human fatalities, from over 300 human cases in 1980´s to fewer than 10 in 2013. The region has a unique approach to dog mediated rabies control. For starters, there is a regional drive behind the elimination goal. This drive, supported by PAHO through the coordination of regular regional meetings (the REDIPRA series that will hold its 14th meeting in 2015), feeds the traditional solidarity between countries manifested in different ways, e.g. supporting neighboring countries with diagnostic capacity, vaccine loans, exchange of experience and best practices etc. The region also benefits from PAHO´s revolving fund to support human vaccine stocks, and since 2014, canine vaccine too. The region is also unique in that all rabies control activities fall within the countries' Ministries of Health, from dog vaccination to post-exposure prophylaxis measures. This is true except for Haiti where the Ministry of Agriculture, in particular its veterinary services, are responsible for dog vaccination.

The Panamerican World Rabies Day Initiative for 2014 was organized in February to bring renewed and continuing attention to the issue of Rabies in Panamerica for World Rabies Day in September. This coalition has representatives from eight organizations: the American Veterinary Medical Association (AVMA), the Canadian Veterinary Medical Association (CVMA), the Federación Iberoamericana de Asociaciones Veterinarias de Animales de Compañía (FIAVAC), the Global Alliance for Rabies Control (GARC), the Panamerican Association of Veterinary Sciences (PANVET), the Pan American Health Organization/World Health Organization (PAHO/WHO), World Animal Protection and the World Small Animal Veterinary Association (WSAVA)



Three significant groups in the countries and island nations of North America, Central America, South America, and the Caribbean were identfied. These were the Chief Veterinary Officers within the Ministries of Agriculture, the Rabies Program Managers within the Ministries of Health, and the offices and leadership of the national Veterinary Medical Associations. Letters of introduction were sent to these three groups about the initiative, to develop an expanded and stronger One Health network with them, and their responses used to determine a focused and unified message for World Rabies Day.

The Panamerican World Rabies Day Initiative message focuses on three areas:

1. For GOVERNMENT AGENCIES - Initiate, continue, and enforce effective canine vaccination programs. If a core population of 70% of dogs are vaccinated, that will essentially eliminate the risk of humans rabies transmitted from dogs! The initial success of the rabies control efforts can lead to complacency in continued support and enforcement for the vaccination programs. It is important not to lose what has been gained in recent years! See the canine rabies blueprint.

2. For the PUBLIC - In some countries, wildlife (especially bats) is a major risk for rabies exposure to humans. Bats and other wild animals, such as skunks, foxes, and mongoose, are important animals for a healthy ecosystem but people need to be aware of the health risks of direct contact. Respect wildlife from a distance. See these resources.

3. For ANYONE - If bitten by a dog or bat, or other wild animal, clean the wound thoroughly with soap and water, and seek immediate attention by a physician and for possible post-exposure rabies prophylaxis (PEP) if indicated. See guidance here.

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...**Panamerican Initiative** *continued from page 5.*

We have started a Facebook Page called the **Panamerican World Rabies Day Initiative** at www.facebook.com/panamerican2014worldrabiesdayinitiative. Please visit this page, Like it, Follow it, Share it, and Post on it.

Rabies is 100% fatal without treatment, yet 100% preventable with vaccination and knowledge about the disease and its reservoirs. Mass canine vaccination programs work to prevent needless suffering due to rabies in humans and dogs. We hope to further encourage government agency support for canine vaccination programs, public education about rabies and its risks for exposure, and increased knowledge and availability for post-exposure prophylaxis treatment.

It is possible to eliminate dog mediated human rabies from the Americas.

Contributed by Dr Victor J Del Rio Vilas of PAHO, and Dr René Carlson of the AVMA,on behalf of the coalition.

News from the Community

International Cooperation Boosts Rabies Surveillance

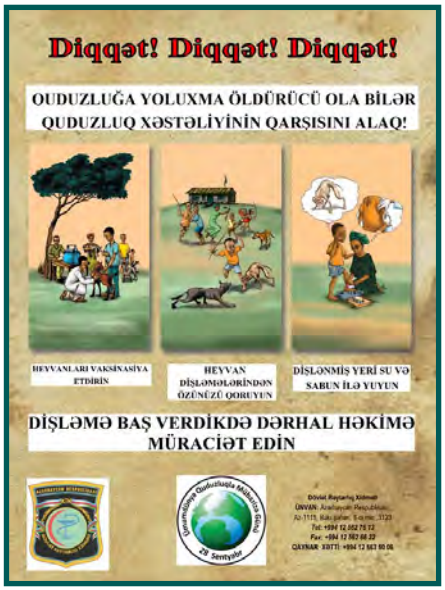
Recent research by scientists from Azerbaijan and the UK has demonstrated how international technical collaboration can help the global effort to control rabies. It is well known that surveillance in endemic regions is crucial to controlling the disease but is often inadequate due to low public awareness or lack of resources. In the new study, led by the OIE Reference Laboratory for Rabies at AHVLA, scientists from the UK have engaged with scientists from Azerbaijan to study the incidence of disease in humans and animals, and characterize rabies strains in the region. The study demonstrated an increase in officially reported rabies cases in both humans and animals since 2006, and found evidence that more than one strain of rabies is circulating at the same time in the country.

The UK-Azerbaijan collaboration has included laboratory training workshops on rabies diagnosis, an important component of rabies control

Azerbaijan is a large country in the geopolitically important Caucasus region, where rabies is endemic but under-reported. Addressing under-reporting of rabies is the first important step in the control of the disease and this cross-government department project, funded by the UK Biological Engagement Programme, is aimed at just that. Alongside laboratory training and public awareness campaigns, the collaboration involved sequencing rabies strains detected in the region for comparison with strains from surrounding countries. This characterization has demonstrated genetically different strains of rabies in different parts of Azerbaijan, which suggests rabies may have recently spread across national borders and that there is a need for a regional approach to control.

The majority of rabies cases reported in the study were in dogs and domestic animals, but rabies is also reported in some wildlife species in Azerbaijan and surrounding countries. Ongoing surveillance and characterization of viruses will help elucidate the role of wildlife in the spread and maintenance of disease.

The OIE Reference Laboratory for Rabies, within the Wildlife Zoonoses and Vector Borne Diseases Research Group at AHVLA, led by Dr Tony Fooks, has a remit to provide world class scientific and technical assistance, training and expert advice on the surveillance and control of rabies. Dr Fooks said: "A key feature of this collaboration is the engagement and capacity building in Azerbaijan, which is aimed at providing lasting benefits for disease surveillance in the region". A further project is now also underway in neighbouring Georgia facilitating regional cooperation.

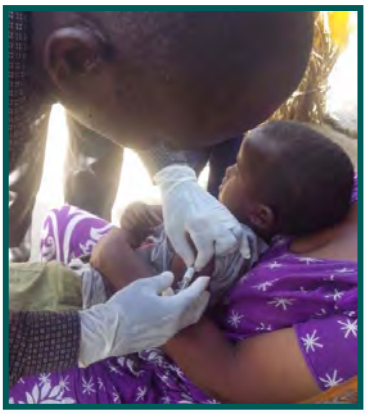


GARC information materials were translated and used in a public awareness campaign

Article contributed by Dr Dan Horton a lecturer in Veterinary Virology at the University of Surrey. The research paper, "Epidemiological Characteristics of Human and Animal Rabies in Azerbaijan" was published in Zoonoses Public Health .

A National Rabies Elimination Strategy for Kenya

It is estimated that up to 2,000 human deaths due to rabies occur annually in Kenya and rabies has been ranked as one of the top five priority zoonotic diseases. Now a strategy has been developed with the goal of eliminating dog-associated human rabies in the country.



A child is given PEP after a bite, during a rabies outbreak investigation and response in Lamu county.

Success in rabies elimination has been demonstrated in developing countries including Latin Americas and Asia, where sustained mass vaccination of dogs has been shown to be the single most cost effective intervention to control and eliminate canine rabies and consequently human rabies. Studies conducted in sub-Saharan Africa show that most of the rabies cases in animals and humans are caused by canine rabies virus, transmitted by domestic dogs. Wildlife including wild carnivores and stray dogs play an insignificant role in maintenance of the virus. Consequently, comprehensive and sustained dog vaccination is sufficient intervention in reduction and eventual elimination of human rabies in a region.

The strategy aims at eliminating dog mediated human rabies by the year 2030 in Kenya. The strategy provides a guide for systematic reduction of rabies risk through sustained mass dog vaccinations, pre and post-exposure prophylaxis and public education until the country is completely free of dog-mediated human rabies.

The strategy has been developed by the Ministry of Agriculture, Livestock and Fisheries and Ministry of Health through the Zoonotic Disease Unit in collaboration with stakeholders from early 2013. A series of stakeholder's meetings were held in which the structure and contents of the strategy were discussed incorporated.

The National Rabies Elimination Strategy was developed using information form the Canine Rabies Blueprint, and a complementary evaluation tool which will soon be integrated into it. The evaluation tool helps countries plan and assess progress towards becoming a rabies-free country.It describes six stages (Stage 0 to 5), each with a set of activities that build on each other to continuously reduce the risk of disease, with the country being declared completely free of dog-mediated human rabies when it reaches Stage 5.

The critical steps in the various stages include developing and adopting a national rabies elimination strategy; starting implementation of elimination plan in pilot areas, implementation of the elimination strategy throughout the country; and maintaining freedom from dog mediated human rabies and canine rabies while preventing re-entry. To move from one stage to the one above it, a set of targets must be reached and confirmed. The implementation of the strategy will begin with selected pilot areas to gain valuable lessons in creating and maintaining a rabies-free zone that will be used during the roll-out of the elimination campaign in the rest of the country

Implementations of the National Rabies Elimination Strategy will require resources over an extended period of time including human resources, infrastructure and finances. The major areas of spending will be procurement of vaccines, diagnostics, vaccines, immunoglobulins, vaccine delivery, operational research, coordination and surveillance. The strategy envisions a collaborative effort between government and no state actors in availing the resources and motivation necessary to achieve elimination.

The strategy is planned for launch during the World Rabies Day celebrations on **28th September 2014 in Makueni County**. A copy of the strategy is available at www.zdukenya.org.

Submitted by Dr. Austine Bitek Orinde on behalf of the Republic of Kenya Zoonotic Disease Unit, a collaboration between the Ministry of Agriculture, Livestock and Fisheries and the Ministry of Health in Kenya.

Recent Research Papers

Here we aim to list recent research papers most relevant to GARC's mission.

- ***Human rabies treatment***

Antiviral therapy for human rabies.

A review of past strategies of antiviral therapy, current understanding and potential new approaches. Antiviral therapy, immunotherapy and neuroprotective therapy should all be strongly considered.

- ***Human and economic burden***

Factors influencing the number of rabies cases in children in China.

Rabies cases in children accounted for 21.3% of cases in China, with 97.0% in rural areas, mainly caused by dogs (81.5%), and mostly level III exposures (47.7%). Over 50% were not treated with wound care, vaccination rate was extremely low (15.7%),

Continued on page 8...

...**Research** *continued from page 7.*

only 5.9% of cases were injected with antibodies, and 25.4% of cases adopted incorrect treatments.

Bovine rabies in Turkey: patterns of infection and implications for costs and control.

The incidence of rabies in livestock is an important factor for estimating the economic impact of the disease, but obtaining reliable data is hindered by inadequate surveillance. Livestock losses were conservatively estimated at around $250,000 international dollars per annum, although in areas where compensation schemes are not operating this could be an underestimate of the economic burden.

• ***Historical***

Inner Workings: 1885, the first rabies vaccination in humans.

An account of Pasteur's pioneering work, including images of his handwritten notes

• ***Diagnostics***

Diagnosis and molecular typing of rabies virus in samples stored in inadequate conditions.

RT-PCR can be useful for rabies diagnosis and typing of putrefying samples or rabies isolates stored in inadequate conditions.

Evaluation of a rapid immunodiagnostic rabies field surveillance test on samples collected from military operations in Africa, Europe, and the Middle East.

The Anigen Rapid Rabies Antigen Test Kit (Bionote, Inc, Hwaseong, Korea) was evaluated using 80 clinical samples, and showed an overall sensitivity of 96.9% and specificity of 100% when compared to the direct fluorescent antibody test. The test is a quick, inexpensive, and easy to use surveillance tool.

Effects of carcase decomposition on rabies virus infectivity and detection.

Positive diagnostic results from decomposed samples are reliable but negative results may be invalid. These findings suggest the persistence of infectious rabies virus in carcases left for 18 days at cold temperatures (4°C) and up to 3 days in temperatures reaching 35°C and supports the use of molecular assays to accompany OIE-prescribed rabies diagnostic tests.

• ***Viral Genomics***

Molecular epidemiology of reemergent rabies in Yunnan province, southwestern China.

Fifty two rabies virus strains were analyzed phylogenetically. Diversity might be attributed to dog movements among counties, provinces, and neighboring countries, suggesting that Yunnan Province is a focal point for spread of rabies between Southeast Asia and China.

• ***Travel and Trade***

Prevention and control of rabies in an age of global travel: a review of travel- and trade-associated rabies events--United States, 1986-2012.

Review of how increased international travel and trade can pose risks for rapid, long-distance movements of ill or infected persons or animals. Such travel and trade can result in human exposures to rabies virus during travel or transit and could contribute to the re-introduction of canine rabies variant or transmission of other viral variants among animal host populations.

• ***Oral Vaccination***

Twenty year experience of the oral rabies vaccine SAG2 in wildlife: a global review.

The excellent tolerance of the SAG2 vaccine has been confirmed in the field since its first use in 1993. No safety issues have been reported, and in particular no vaccine-induced rabies cases were diagnosed, after the distribution of more than 20 million SAG2 baits in Europe.

First trials of oral vaccination with rabies SAG2 dog baits in Morocco.

Baits have a good palatability and that oral vaccination of both owned and stray dogs is feasible with baits specifically developed for dogs and with an adapted strategy of distribution.

Upcoming Conferences

• The 25th Rabies In the America (RITA) conference will be held in Cancun, Quintana Roo, Mexico from 26-30 October 2014, and the website is www.cc-eventos.com.mx/rita/2014/

• The 5th International Meeting on Emerging Diseases and Surveillance (IMED 2014) is scheduled for October 31 - November 3, 2014 in Vienna, Austria, organized by ISID and ProMED.
See http://imed.isid.org

• The 2014 International Society for Disease Surveillance Conference will be held 9-11th December in Philadelphia, USA. Further details are available here.

• The 3rd International One Health Congress, to be held 15-18 March 2015 in Amsterdam, The Netherlands, will have the theme PREVENTION AT THE SOURCE. The deadline for abstract submission is October 1, 2014, and further details are at: www.iohc2015.com

The editor of the GARC newsletter is Louise Taylor, and typesetting is by Pete Else. You can contact Louise at : louise.taylor@rabiesalliance.org. For further information on the Alliance's work see www.rabiesalliance.org.