



RABID BYTES

The Newsletter of
The Alliance for Rabies Control

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Editorial

In this issue of the Rabid Bytes Newsletter, we would like to especially honor the life of Dr Magai Kaare who died in a tragic car accident on the 6th of October. Dr Kaare was one of the founding members of the Alliance for Rabies Control and had dedicated much of his career to helping his country find solutions to reduce the burden of many diseases including rabies. He will be greatly missed by all of his friends and colleagues who enjoyed working alongside of him and his dedicated efforts helped to make the world a better place to live.

This issue will inform you about just a few of the many, many activities that were conducted to mark the second annual World Rabies Day – we would like to thank each and every one of you who helped to make this event another huge success.

Other news discussed in this issue includes the announcement of the confirmation of Dr Abdul Rahman as a

new Board Member of the Alliance for Rabies Control. Dr Rahman has already been very active in engaging students and medical professionals across Asia to help support rabies educational awareness efforts. We would also like to thank our longtime friend and colleague Dr. David Dreesen for his delightful contribution describing a few of his professional experiences in the diverse world of rabies. Dr Dreesen's article is a clear reminder that we are indeed a big global family and we invite you, or extended family members to contact us about the latest 'rabies' news in your life.

When we first published Rabid Bytes, it was with the specific objective of providing a platform by which all of us working in the field of rabies could remain in close association with one another and it has also allowed us to inform one another of the latest exciting news. So indeed, let us hear from you!

Dr Deborah Briggs, Executive Director of The Alliance

WRD round-up and feedback form information

The second annual World Rabies Day on September 28, 2008 has proven to be another success! Thanks to the tireless efforts of our partners and local event coordinators around the world, preliminary survey results indicate that hundreds of events, based largely on promoting rabies awareness and education, were held in at least 80 countries with participation by various agencies such as local/state/national governments, private industry and non-governmental and community based organizations.

In addition to countless educational conferences and seminars, there were numerous vaccination clinics, commemorations, parades, runs and walks. Just some of the many novel events being reported this year include a dog fashion show in Zamboanga, Philippines, the development of a radio show held weekly for people to call in and ask questions about rabies in Nigeria, and an on-stage discussion about rabies prevention with movie stars, held in Thailand.

Early data shows that once again Colleges of Veterinary Medicine around the world took the lead and energized the veterinary community with participation from 35 Veterinary schools in the US, Canada and the Caribbean, at least 15 in India and countless schools throughout Asia, Africa and Latin America. Medical Colleges also joined the One Health movement this year and in some locations even partnered with their Veterinary colleagues to provide simultaneous human health and veterinary care at their World Rabies Day event.



WRD logos adorn the shirts of dragon boat racers at a city festival in Wusterhausen, Germany. Photo: Thomas Müller

Major announcements and accomplishments, such as the signing of the North American Rabies Management Plan between the US, Canada and Mexico took center stage at the 19th annual Rabies in the Americas (RITA) meeting at the US Centers for Disease Control and Prevention. Numerous international leaders in the field of rabies and hundreds of participants convened at the week-long meeting which was kicked-off by a Run for Rabies and numerous presentations on the global perspective of rabies, presented by regional experts.

As events come to a close for 2008 and survey results become finalized we look forward to sharing additional findings, stories and pictures through the World Rabies Day website, future newsletter articles and 2008 Outcomes Brochure. We would like to thank all of our partners and friends throughout the world who continue to support and contribute to the success of World Rabies Day!

Please help us evaluate the 2008 campaign by providing information about your event on the feedback form, available in English, French, Portuguese and Spanish, on the World Rabies Day homepage (www.worldrabiesday.org). The information gathered here will also help guide the campaign for 2009 and for future years.

Please send photos and credit information to the WRD campaign coordinator, peter.costa@worldrabiesday.org



Educational materials for World Rabies Day 2008

Here are just a small selection of the enormous range of educational materials distributed to mark WRD 2008. A full listing of event details and participating organizations will be available shortly at www.worldrabiesday.org



▲ Leaflet on preventing bat rabies distributed in Chile

A postcard on how to avoid dog bites distributed by Doggone Safe, a non-profit based in Canada ▼



▲ 'The adventures of Pancho & Zepelín' a play script about responsible dog ownership distributed to school libraries in Puerto Rico.



▲ A poster distributed to French-speaking African Countries

Children of the staff of Kathmandu Animal Treatment Centre, Nepal gave out comics and pamphlets about rabies and animal welfare to people passing by the centre ▼



▲ Public information leaflet published by WSPA and distributed in Sri Lanka



One of 34 national & regional newspaper articles in English, Urdu, Sindhi and Pushto based on a Sanofi Pasteur WRD press release for Pakistan.



WorldRabiesDay.Org
Working together to.....
Make Rabies History!

▲ Dr Ralph Goldman in New York, USA got this poster seen on NBC and CBS television networks

A poster distributed to several African Countries by OIE, Botswana ▼



▲ Bat Rabies Prevention poster from Peru



◀ WRD poster from Iran

Poster distributed in Philippines ▶



▼ Educational Posters being viewed at the Indira Gandhi Medical Centre, Shimla. India.



Crucell's Rabies Monoclonal Antibody Program

Anti-rabies immunoglobulin (RIG) is currently used in combination with rabies vaccine to protect humans from lethal rabies. Currently, a single dose of polyclonal immunoglobulin derived from human or equine plasma (HRIG and ERIG, respectively) is given to provide this initial, short-term protection. HRIG and ERIG have their drawbacks. In Asia and Africa, where an estimated 55,000 people die from rabies each year, there is a very significant unmet medical need for a safe, effective and accessible treatment. These concerns about the availability of HRIG and ERIG have prompted the search for alternative antibody preparations.



Injecting RIG into a facial bite

To provide a solution to the current unmet need for RIG, Crucell is currently developing, in collaboration with Sanofi Pasteur, a monoclonal antibody (mAb) combination for use in post-exposure disease prevention. CL184 consists of two fully human mAbs—CR57 and CR4098—each of which is directed against a distinct, non-overlapping, rabies virus epitope. The use of two, rather than one, rabies virus-specific mAbs is fundamental to ensure protection against the global range of natural rabies viruses carried by canines and bats. Dr. Charles E. Rupprecht, head of the Rabies Program in the Division of Viral and Rickettsial Diseases of the CDC welcomes this novel initiative: "The development of a human monoclonal antibody product opens up a novel era in the global fight against rabies. After several decades of pioneering activities in the rabies scientific community, this potential product offers the opportunity to replace RIG derived from human or horse blood."

Phase I clinical evaluation of the rabies mAb cocktail was performed in the US and India in studies that tested the antibody product alone as well as in combination with rabies vaccine in healthy volunteers. The results of these clinical trials revealed no safety concerns and suggested that the CL184 antibody product can be safely administered in combination with a rabies vaccine without interfering with the vaccine's ability to induce an anti-rabies immune response. The CL184 program has been granted a Fast Track designation by the US Food and Drug Administration's (FDA) Department of Health and Human Services.

The first results of a Phase II study conducted in the US were recently presented at the XIX Rabies in the Americas conference in Atlanta. Compared with HRIG, CL184 administration in combination with rabies vaccine resulted in equal levels of rabies neutralizing activity. These encouraging preliminary results are paving the way for the further development of the antibody combination. On the very first days of this year, Crucell and Sanofi Pasteur entered into a development and commercialization partnership that will further facilitate the route towards a global availability of this next-generation life-saving rabies biological.

Contributed by Dr Lex Bakker, Program Director Antibody Development, Crucell, the Netherlands. The phase I clinical trial was published in the journal *Vaccine* (2008) vol. 26, p5922-5927, and further information is available at:

www.crucell.com/News_-_Virtual_Media_Kit_-_Rabies

SEARG and AfroREB join forces

The Southern and Eastern African Rabies Group (SEARG), with rabies experts from 19 anglophone African countries, and the Africa Rabies Expert Bureau (AfroREB), with rabies experts from 14 francophone African countries, have decided to unite their efforts to fight against rabies in Africa.

Each group will maintain its own identity, initiatives and meetings, but information and projects will be shared regularly, and common initiatives may be decided upon in future meetings. Linguistic differences are at the heart of the creation of these two groups of experts. "It is easier for us to work in a language we feel comfortable with", recognises Prof. Bernard Diop (AfroREB, Senegal). "However, rabies has no barriers, and we want to fight it alongside our anglophone colleagues, across the entire African continent."

AfroREB's first mission is to make rabies a notifiable disease in francophone African countries, collect solid epidemiological data on the disease, assure that the health authorities recognise the importance of this problem, and make sure that patients with animal bites are managed under optimal and affordable conditions.

"In Africa, 95% of cases of human rabies are not reported to the health authorities," adds SEARG coordinator Prof Louis Nel of the University of Pretoria: "By establishing a community for reflection and collaboration across the entire African continent, integrating anglophones and francophones, we hope to reinforce the mobilisation of the public powers and health authorities to find solutions adapted to the context and situation of the African continent. We endeavour to provide a platform that can elevate the profile of the disease in the face of competing public and veterinary health priorities dictated by logistical/infrastructural and financial constraints in African nations."

Edited from an AfroREB press release. Further information at www.searg.info and www.afroreb.info.



A custom-baked cake for World Rabies Day 2008 is cut by José Gomes Temporão (Minister of Health of Brazil, center), Margaret Chan (WHO Director-General, center right), Mirta Roses (Pan American Health Organization Director, center left), Jarbas Barbosa (PAHO Area Manager for Health Surveillance and Disease Prevention and Control, right) and Cristina Schneider, (PAHO Advisor in Animal/Human Health Interface, left), at a special gathering during PAHO's 48th Directing Council meeting in Washington, D.C., USA.



North American Rabies Management Plan

Officials from Canada, Mexico, and the United States signed the first *North American Rabies Management Plan* on October 3rd 2008 at the 19th International Conference on Rabies in the Americas in Atlanta, Georgia (pictured). The plan is a collaborative effort involving representatives from each country in the fields of agriculture, public health and wildlife management, and aims to strengthen cooperation and communication among the three countries.

"This plan is a crucial step to controlling rabies not only in the United States, but throughout North America," said Cindy Smith, APHIS administrator, whose agency lead the drafting of the document. "It solidifies our strong relationships with Canada and Mexico, as well as our federal and state partners, in addressing this potentially deadly virus in wildlife populations through information sharing and strategic planning."

The plan is the culmination of more than three years of work, establishing a framework for cooperation among the countries to build long-term wildlife rabies management goals, and annual meetings to share information about vaccine research, wildlife management, population control and surveillance techniques.

Because human cases of rabies in North America are often the result of exposure to wildlife with the virus, each country works to eliminate the virus in its wildlife populations. In the United States, oral rabies vaccination programs aim to prevent the spread of rabies in gray foxes, coyotes and raccoons. Rabies results in the death of one to three people each year in the US, yet approximately 45,000 individuals get rabies post-exposure prophylaxis after potential exposure.

Collaboration between the three countries has recently resulted in the elimination of canine rabies from coyotes in south Texas. This led to the 2007 announcement that canine rabies (the strain which circulates from dog-to-dog globally) had been eliminated in the United States (www.cdc.gov/news/2007/09/canine_rabies.html).

"We've made tremendous strides in our efforts to combat rabies, particularly canine rabies. However, people are at risk from this terrible disease because it is still present in other types of wildlife," said CDC Director Dr. Julie Gerberding. "We must remain vigilant and this unprecedented agreement will enable us to continue to protect people from rabies."

Edited from USDA and CDC postings available at: www.aphis.usda.gov/newsroom/content/2008/10/rabiapl.html and www.cdc.gov/news/2008/10/rabies.html



Human Rabies Vaccine Production in Asia – part 2 of 2

In our last issue, Dr Noel Miranda, a public health and veterinary specialist / consultant, and a One Health Approach advocate from the Philippines, reviewed changes in rabies vaccine production in Asia. Here, he addresses issues of quality, cost and potential improvements to regulations.



Quality: The Asian vaccine manufacturers generally apply in-process control measures that include sterility tests, ELISA, SRD and NIH potency testing. National Regulatory Authorities only issue marketing licenses if complete testing of vaccines, including pre-clinical and clinical studies, has been conducted. Laboratory testing regimens applied essentially follow WHO requirements, and Lot release systems are being constantly reviewed and modified. There is admission, in China, that it is virtually impossible to lab test all production lots, and instead a system of random testing and post-market surveillance/testing and product recall are being strictly put in place. Random lot testing generally includes tests for sterility, safety, and potency (NIH method). Most rabies vaccine manufacturers (public and private) seek to be WHO pre-qualified as they consider it advantageous to the marketing and worldwide distribution of their products.

Costs: Nerve tissues origin (NTO) vaccines are still the least expensive, so it is hard to stop their production immediately. Myanmar sells their NTO vaccine at 0.70 US\$ per dose. In China and India, the cost of modern locally produced vaccines ranges from 3-7 US\$ per dose. In China, imported vaccines are 10-14 US\$ per dose.

Hold Backs and the Way Forward: Some countries that have not started their local modern rabies vaccine production or are still using the NTO vaccines need support to establish cell line-based vaccine production, such as seed virus, cells, technology transfer and funding for equipment or facilities. As WHO prequalification is becoming popularly sought for rabies vaccines, manufacturers observe that the process takes too long. As more new manufacturers join in, the demand for training of personnel on Good Manufacturing and Laboratory Practice must be addressed by all stakeholders. The reliability of the currently prescribed NIH potency test is a major problem that manufacturers face in the production and control of rabies vaccines. Essentially the NIH test gives varying results depending on the laboratory and the status of the mice which the test utilizes. Manufacturers have also questioned the need to conduct the stability testing of vaccines on a per batch basis.

In general, countries are able to follow the WHO requirements for human rabies vaccine production. The complete replacement of NTO vaccine with cell-line-based rabies vaccines has been accelerated in recent years, as India and China have demonstrated the feasibility of domestic commercial vaccine production. Countries generally have the desire to produce better quality vaccines but are concerned about the effect on supply, and how to get the production of cell-line based vaccines started. Regional supplies of relatively inexpensive vaccines will surely influence decisions of countries to produce their own cell-line based vaccines. It would be advantageous to countries if WHO introduced a system of recognizing (qualifying) domestically-produced vaccines using various types of cell substrate, and encourage exports where appropriate, principally to lower the world price of human rabies vaccines.

The HIV/AIDS Epidemic and Rabies in KwaZulu-Natal

Southern Africa remains the epicenter for the world HIV/AIDS pandemic. KwaZulu-Natal (KZN), a province of SA, has one of the highest prevalences of the disease (39.2%) in the region. In certain parts of KZN, especially high density areas, the prevalence can reach as high as 70%, and the human tragedy that plays out in these communities is staggering.

Over the last ten years, death rates have risen by almost 200% among the key economically active sector of the population and the consequences of this affect every aspect of society. Households now must deal with increases in migrancy, orphans, child-run homes, poverty, lack of parental guidance, lawlessness and a massive psychological burden.

A frightening spin off of the AIDS epidemic in the human population seems to be the emergence of packs of feral dogs. This situation is postulated to be the result of a combination of dogs being abandoned (death of owners) and/ or the owners no longer being able to feed the dogs, either as a result of poverty or illness. These dogs become a law unto themselves and are no longer available for rabies immunization. The questions now arising are: "Who is caring for the dogs?" and "How do we promote pet care, when there is little Child Care?"

Previously, KZN has boasted of the lack of a significant stray dog population. However, this is no longer the situation! There have been dramatic increases in the number of problem dogs being reported in KZN, as well as reports of packs of dogs killing people, livestock or terrorizing villages. Unless dealt with quickly and decisively, this situation promises to undermine current rabies control strategies. 2007 saw the highest number of cases in the history of rabies in KZN, and although there are a number of factors contributing to this rise, HIV/AIDS is one of the new contributing factors that is making the control of the disease more and more difficult. This has led to the adoption of a holistic approach to rabies control, and voluntary sterilization, contraception and euthanasia are part of the greater rabies plan. A multi organizational collaborative effort by State Vet services (the Primary sponsor), the Society for the Prevention for Cruelty to Animals (Management), Private Veterinarians and Local municipalities has started a series of primary health care clinics (pictured). These very successful clinics are conducted in problem areas, quickly raising awareness through the offering of free primary health care services. This leaves a significant proportion of the dogs sterilized but more importantly a greater proportion vaccinated, and can quickly stop a rabies outbreak. Although not the solution to the greater problem, they have offered us insight into the needs of the people that have initiated creative solutions to the rabies problem. The people of KZN want happy healthy pets, who play an important role in their lives.

Contributed by Mr. Kevin le Roux, Rabies Project Manager (Veterinary Services), KwaZulu-Natal Department of Agriculture and Environmental Affairs. For further information please contact him at kleroux@allerton.kzntl.gov.za



'Día mundial contra la Rabia' en Puerto Rico: WRD in Puerto Rico.

In 2007, the Puerto Rico Field Epidemiology Training Program (PRFETP), a joint venture of the Puerto Rico Department of Health and the University of Puerto Rico's School of Medicine, and the Colegio de Médicos Veterinarios de Puerto Rico (CMVPR), the equivalent of a state veterinary medical association, partnered for local sponsorship of the First World Rabies Day. Activities were designed to: promote education, provide public service, and help develop public policy towards rabies control and prevention. A task force, comprised of PRFETP and CMVPR members, identified short and long term needs and goals, and developed strategies towards their attainment. Potential partners from public and private sectors, and academia were engaged. Key messages identified were: rabies is endemic in Puerto Rico (PR); the ubiquitous small Indian mongoose is the main rabies reservoir on the island and rabies vaccination of companion animals could help reduce rabies post exposure prophylaxis (PEP) and most importantly, human and animal suffering.



Photo: Ms. Neysha Reyes

One of the most promising and interesting projects from 2007 was the production of an educational DVD for use by schoolteachers and healthcare professionals. The DVD contained the WRD power point presentation 'Learning to Make Rabies History! Connecting Classrooms Globally through World Rabies Day!', which the PRFETP translated and culturally adapted for PR. The presentation was accompanied by a fact sheet on rabies worldwide and local rabies data for educators/facilitators. The DVD also included two, 60 second video clips previously prepared by the CMVPR about basic veterinary pet care and pet emergency preparedness. Additionally, the CMVPR approached two very well-know local TV children's personalities who agreed to write and donate a short script discussing issues of responsible pet ownership, cruelty to animals, rabies vaccination and pet identification. The short script, included in the DVD, is suitable for role playing, and narrates 'The adventures of Pancho & Zepelín', two dogs who meet on the street one day and compare notes on their lives, one a stray dog (Zepelín), the other an escaped, yet owned dog (Pancho).

For 2008, as part of the Second WRD activities, the CMVPR expanded the DVD to include a presentation on basic pet care, and partnered with the PR Department of Education to distribute it to over 600 school libraries within the public educational system. Schools were encouraged to participate in a CMVPR contest for the best artistic representation of the information and messages contained in the DVD (see picture from special education class at Sánchez Hidalgo School).

All involved in these educational and outreach activities are hopeful that these DVDs will leave lasting impressions among our population, particularly young minds who can help us awaken the collective consciousness of all Puerto Ricans, in our quest to make rabies history.

Contributed by: Brenda Rivera-García, DVM, Fellow of Puerto Rico Field Epidemiology Program & member Colegio de Médicos Veterinarios de Puerto Rico. For copies of the educational DVD (available in Spanish only) contact the Colegio at cmvpr@cmvpr.org.

Bouncing Along With The Rabies Virus

Prof David W. Dreesen, of the University of Georgia, USA, shares some of the highlights of his varied, if not always comfortable, career in rabies control.

Having been bitten by a rabid dog in 1945 as an eleven year old farm boy in Indiana, USA, and suffering through 21 post-exposure injections, I guess I always wanted revenge, in some way, on the rabies virus. Starting in 1967, I spent a rather varied and rather low profile 35+ years involved, in one way or another, with rabies control and prevention. A few of the highlights follow.

The ball started bouncing when I was Georgia State Public Health Veterinarian with early studies on cattle pre-exposure rabies vaccine trials along with the onslaught of raccoon rabies into Georgia – an unwanted present from the state of Florida (I think alligators would have been preferred). After wrestling raccoons for several years with multiple other rabies issues, I bounced to sunny California to do graduate work at UC Davis. There, Dr. Denny Constantine suggested I conduct a study involving intra-nasal inoculation of insectivorous bats with MLV rabies vaccine. The idea was that caves used as roosts could be aerosolized with the vaccine to immunize the resident bats. The “sunny” part of California ended; the next months were spent in attics of old buildings and down in abandoned silver mines collecting bats, followed by hand feeding the little creatures meal worms and stuffing vaccine up their nostrils as well as collecting blood samples from wing veins. After writing up the results of the year long project, my good friend and mentor, Dr. George Baer reviewed the paper and, in his marvelous way, said: “David, you must publish this so no one will ever do this again.” Enough said.

With stops in-between to direct large scale canine and feline population control projects, my bouncing life-style led me to the Caribbean vaccinating dogs, goats, sheep, and cattle in Grenada against mongoose rabies, working at the Caribbean Epidemiology Centre, while capturing vampire bats in the jungles of Trinidad. We used Dr. Rex Lord's method of reducing vampires, the vectors of rabies for cattle on the island, by placing a petrolatum/anticoagulant mixture on their backs and releasing them to spread the anticoagulant throughout the roosting colonies. Oh the joy of sitting in the dark with bugs and flying insects, while picking vampire bats out of mist nets. Great fun! Then we bounced on to the University of Georgia to work with the human species (more fun) conducting vaccine trials for pre-exposure use of various rabies vaccines by different routes in cooperation with the Centres for Disease Control and Dr. Deborah Briggs. These latter studies have allowed me the opportunity to bounce around the world meeting friends and colleagues in many countries. It's been fun.

The RITA 2008 meeting

The International Conference on Rabies in the Americas (RITA) has been held annually since 1990 and is a forum for the presentation and discussion of developments in rabies research, surveillance, control and prevention. RITA 2008 was hosted by the Centers for Disease Control and Prevention, USDA-APHIS and the Task Force for Child Development, and was held at the CDC campus in Atlanta, Georgia. For six days, beginning with World Rabies Day on September 28th, 425 participants from North and South America, Europe, Asia, Africa and Australia were treated to the famous Southern hospitality of the “Peach State”.



The opening session reflected the international flavour of the conference. Entitled “Rabies: A Global Perspective”, it featured regional presentations on the status of rabies around the world. World Rabies Day was also celebrated with a “Run for Rabies” (pictured) in the beautiful and historic Piedmont Park, with over 70 people participating. The funds raised will go towards the production of an educational video about bats and rabies to be distributed to state health departments and public libraries.

The conference had a packed schedule, with two plenary sessions each day, poster presentations, workshops on GIS mapping and communications, and a roundtable discussion on strategies for global eradication of rabies. Topics addressed included: Epidemiology and Modeling; Scientific Advances; Diagnostics; Rabies in Latin America; Lyssavirus Pathogenesis and Host Immune Responses; Human Rabies – Prevention and Intervention; Bat Rabies; Wildlife Control Strategies; Domestic Rabies Prevention and Control; and Communication and Outreach. The sessions on September 29th were opened with a keynote address from Ms. Jeanna Giese, who delivered a very personal and heartfelt account of her experience with contracting and recovering from rabies.

As is the custom, Wednesday evening featured the Gala Dinner and Auction. Under the dinosaurs in the rotunda of the Fernbank Museum of Natural History, participants dined and danced and had the opportunity to bid on numerous items donated for the fundraising auction to support the Latin American Investigator Award. This year's winner was Dr. Emiliano Tesoro Cruz, from the National Medical Center, Mexico, who presented his very interesting work on a candidate DNA vaccine. The final day began with a signing ceremony for the North American Rabies Management Plan by representatives from the American, Canadian and Mexican governments.

Judging from the tired, but happy faces at the closing reception, RITA 2008 provided a challenging, informative program and presented many opportunities for the participants to meet, discuss, learn and socialize. The 20th RITA conference will be held in October 2009, in beautiful Quebec City, Canada and promises to continue the tradition of excellence exemplified by RITA 2008 in Atlanta.



Jeanna Giese

Contributed by Christine Fehlner-Gardiner of the Centre of Expertise for Rabies, Canadian Food Inspection Agency.

Dr Magai Kaare

The death of Dr. Magai Kaare on October 6th 2008, following a car accident in Tanzania is a tragic loss for all of us who worked with him in Scotland and East Africa, and to the veterinary profession, not only in Africa, but worldwide. His scientific achievements were substantial, but he was also an outstanding role model for veterinary researchers, and an enthusiastic advocate for rabies control. He was a founding member of the Alliance, and we miss a strong advocate and friend, and our thoughts are with his family.

Magai Kaare grew up in Musoma, Tanzania, and gained a Bachelor of Veterinary Medicine from Sokoine University of Agriculture, Tanzania in 1990. His first post was as District Veterinary Officer in Serengeti District, where he quickly made valuable contributions to several programmes including the Mara Farmers' Project, and the Serengeti Rabies Project.

He pursued his interest in veterinary epidemiology and public health with a MSc in Veterinary Public Health at Sokoine University of Agriculture in 2002, including a study of trypanosomiasis in wildlife and livestock in the Serengeti. In 2006, he completed a PhD on rabies epidemiology, based at the University of Edinburgh, UK, investigating the feasibility, cost-effectiveness and impact of dog rabies vaccination strategies. This work was his passion. He said it was the hardest thing he'd ever done, but saw it through with quiet determination. Most recently, Magai was employed as a post-doctoral research fellow at the University of Edinburgh, with responsibility for coordinating a large livestock disease research programme in western Kenya, setting up field studies, running a laboratory diagnostic facility and training a cadre of veterinary field assistants. Unimpressed by the prevailing wisdom that controlling dog rabies in Africa would be impossible, he set out to demonstrate how controlling, and ultimately eliminating, dog rabies in Africa might be achieved with typically understated diligence and persistence. His work not only resulted in tangible benefits for the lives of people in the Serengeti, but the data that he generated has been critical for influencing attitudes at a global level, with international agencies and organisations now committed to an objective of canine rabies elimination.

Magai was a rare individual who combined a keen intelligence with exceptional kindness and generosity. He was hugely respected by his peers, but also gave so much to a cohort of vets and scientists, from both Africa and Europe. He had an extraordinary gift to work with people, and although he was young at the time of his death, he was always the 'mzee' to whom many of us turned for advice. I personally benefited enormously from his wisdom and insights, and he set me right on numerous occasions in Tanzania. He invariably achieved this with gentle good humour, kindness and tolerance. Magai's legacy will live on in the next generation of vets and scientists who have been instilled with the enthusiasm and confidence that changes can be made and that individuals do make a difference.

Contributed by Dr Sarah Cleaveland of the Alliance and Magai's PhD supervisor, now at the University of Glasgow.



Dr. S. Abdul Rahman

The Alliance for Rabies Control is delighted to announce that Dr S. Abdul Rahman has joined its board of directors.



Dr Rahman has a bachelor's degree in Veterinary Science from Mysore Veterinary College, India, a Masters from the University of Madras, India, and a PhD in Veterinary Parasitology from University of Queensland, Australia. He is a retired Professor of Veterinary Parasitology and Dean of Bangalore Veterinary College, India and has published more than 100 scientific papers and a book on Veterinary Parasitology. His current interests include animal welfare, epidemiology and control of emerging diseases, food security and adaptation to climate change and zoonoses, including control programmes for Rabies and Cysticercosis.

In the rabies field, he was the founder Trustee of Rabies In Asia (RIA), an international organisation supported by WHO for the control of Rabies in Asia and a Founder Life Member of the Association for Prevention and Control of Rabies in India (APCRI). He has closely worked with WHO-SEARO India in programming Rabies Control Programmes in India and is associated with the National Institute of Communicable Diseases (NICD) in the pilot project on "Prevention

and Control of Human Rabies in India".

Over his career he has served as Secretary and Vice President of the Indian Veterinary Association for 16 years, as a Member of the Commonwealth Veterinary Association, the World Veterinary Association and the Federation of Association of Veterinarians of Asia, representing India. He is currently the Secretary of the Commonwealth Veterinary Association which has a membership of 53 countries worldwide and is the editor of their journal. He is also a consultant to WHO on the Strategic Framework for Prevention and Control of Zoonoses in South-East Asia. His interest in animal welfare lead him to be a member of the World Organisation for Animal Health (OIE) Working Group on Animal Welfare, the OIE Ad hoc Group on Stray Dog Control and a Consultant to the World Society for the Protection of Animals. He is a former member of Animal Welfare Board of India and is actively engaged in Animal Welfare activities and education in India and elsewhere. Somehow, he also finds time to enjoy football, and is a National Soccer Referee.

The Alliance feels that his distinguished career and experience in rabies control, veterinary disease and animal welfare make him an excellent addition to our leadership and advisory team. We are very grateful for his support and look forward to benefiting from his advice.

The editor of the Alliance newsletter is Louise Taylor. If you have news items or information of interest to those working to defeat rabies, please contact her at louise.taylor@rabiescontrol.net. For further information on the Alliance's work see www.rabiescontrol.net.