Workshop on Surveillance and Control of Rabies
Pasteur Institute – Dakar
December 03-14, 2013

20 December 2013

Aim and objectives

This 12-day residential course was organised by the Pasteur Institute of Dakar with the support of the Pasteur Institute in Paris, the Biochemistry department of University of Lausanne, The Health Sciences eTraining Foundation (HSeT), the World Health Organization and the PREDEMICS consortium (a FP7 grant number 278433).

The purpose of this course was to provide a practical training on rabies with a special focus on Africa for students and professionals of animal and human public health sectors. The course emphasized the need of multidisciplinary approach and intersectorial cooperation. Several major objectives addressing critical issues of the present rabies situation in developing countries and in particular in Africa were targeted during this training session:

- To fill the knowledge and information gaps on emerging and re-emerging zoonoses such as rabies.
- To improve the knowledge on rabies epidemiological data in particular rabies incidence.
- To improve the prophylaxis against rabies in Africa and to emphasize on practical solutions to increase access to post-exposure prophylaxis of the population.
- To disseminate validated protocols for dog population control.
- To discuss implementation of rabies control strategies in Africa.
- To increase awareness about rabies in Africa.

The successful trainees benefited from 5 ECTS (European Credits Transfer System) of the University of Lausanne, Switzerland.

Interest of the course for the region

Rabies is a lethal encephalitis due to a lyssavirus mainly transmitted by the bite or scratches of infected animals (principally dogs in developing countries). An estimated 24,000 human rabies deaths occur in Africa each year due to a lack of awareness, inaccessibility of exposed people to rabies post exposure prophylaxis, inadequate or absence dog rabies control programs and a lack of governmental financial support.
All rabies experts and relevant international organizations have recognized the urgent need to provide training on rabies control and diagnosis methods to medical and veterinary staff. This training should also benefit from the lessons of the past showing retrospectively that conventional training sessions had little impact on the rabies epidemiological situation.

This issue was raised by the WHO/FAO/OIE joint Consultation on Emerging Zoonoses, 3-5 May 2004, WHO-Geneva (www.who.int/zoonoses) which proposed to use new approaches to control zoonoses by strengthening inter-institutional global frameworks for detection and control, to refine existing and developing new tools for control strategy selection, and to promote new concepts for zoonoses prevention and control. During, the 2nd meeting of the Africa Rabies Expert Bureau (AfroREB) held in Dakar, Senegal, 16-19 March 2009 (Dodet et al., Vaccine 2009), it was agreed that the priority was to break the vicious cycle of indifference and lack of information which is the main barrier to human rabies prevention. In 2011, the Partners for Rabies Prevention have developed evidence-based knowledge on dog rabies control into user-friendly guidelines (http://www.rabiesblueprint.com) now accessible on the web as a practical toolbox. In July 2011, rabies was ranked as the first priority of the Interagency (FAO/OIE/WHO) plan for prevention and control of Neglected Zoonotic Diseases. In that plan, the objective for Africa is to strengthen dog rabies control and more widely use of cost-effective intra-dermal post-exposure prophylaxis regimens, to achieve the final goal of reducing the burden of human dog-mediated rabies by 50% in sub-Saharan Africa and its elimination in North Africa by year 2020. The present training program proposal fits under the road map for dog and human rabies elimination.

Organizers

This workshop received support from several international organizations and consortia. In 2010, the European Commission framework program 7 included a call for research programmes with a strong training component on emerging and re-emerging zoonosis. Sylvie van deer Werf leads, with Hervé Bourhy as a co-leader, the successful PREDEMICS application. The training therefore benefited from the financial contribution and from the expertise of PREDEMICS in the domain of emerging and re-emerging zoonoses and rabies in particular. The huge experience of Jean-Pierre Kraehenbuhl from HSeT Foundation, a PREDEMICS partner, also largely contributed to the organization of this workshop and in particular to the building of all the e-learning support and web site management. Jean-Pierre Kraehenbuhl, the HSeT Team (http://hset.bio-med.ch) and contributors all around the world have developed over the last 10 years, eLearning and eTraining content related to many topics in Immunology & Vaccinology, Microbiology, Hematology, Pharmacology, Nephrology, Bioinformatics, Statistics, Laboratory methodology and Clinical trial design and management. Presently HSeT collaborates with more than 40 Swiss, European, US and African organizations and institutions.

This workshop is also supported by WHO and in particular by Dr François-Xavier Meslin, former (acting at the time the project was conceived) Team leader NZDs in WHO headquarters, who has a wide experience of training in rabies surveillance and control programs and by Bernadette Abela-Ridder the present Team leader, NZDs in WHO headquarters. Both F-X Meslin and H. Bourhy have a large experience in organizing such courses on rabies (Chinese CDC, Beijing in 1998; IP of Shanghai in 2005; and IP of Ho Chi Minh City in 2007).

The International network of Pasteur Institutes supported this workshop through the selection of the corresponding grant submitted by Hervé Bourhy. The Institut Pasteur of Dakar and in particular Amadou Sall participate to the general organization and Ousmane Faye took in charge the local organization.

Details of the organizing committee:

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Overall strategy

This course took advantage of the new possibilities offered by e-Learning and already existing documents from WHO and other international organizations.
A pre-training assessment tool was provided to first select motivated applicants and then to prepare the selected trainees to participate actively in discussions and practical activities during the workshop. To complete this pre-training session, applicants required approximately 70 hours of individual work. The

trainees had access to these functionalities through a dedicated web-page (http://predemics.biomedtrain.eu).

The on site course (12 days) focused on practical sessions, as bench work, demonstrations and hands-on sessions, which complemented the theoretical part (pre-training session and lectures). The on site course was mostly given in French but some conferences, discussions and bench works were given in English (a translation to French was provided in these cases).

Selection of the trainees

This workshop was conceived for physicians, veterinarians, and specialists in infectious diseases, virology and/or epidemiology with at least a bachelor degree and preferentially a master degree. Public health officers involved in the control of zoonotic diseases were welcomed. Applications from Africa and developing countries were encouraged. Applications from other regions of the world were also considered.
Pre-selection of the students was performed on the basis of the quality of the applications received (106 in total) including CV, letter of motivation and 3 letters of recommendations (**Annex 1**).
A basic knowledge of French was a prerequisite for the first edition of this course organized in Senegal, a French speaking country. Preference was also given to African natives. Therefore, a majority of applications from French speaking African countries (North, West and Central Africa together with Madagascar) were selected.
Then, a pre-training assessment tool was provided to pre-selected trainees to prepare them and help them achieving a sufficient and homogeneous level stimulating more fruitful discussions. The trainees had access to these functionalities through a dedicated web-page. This pre-training session had duration approximately equivalent to 30 hours of lecture and corresponding approximately to 70 hours of individual work. It was followed by a final evaluation performed through the dedicated web-page.
By this way all the pre-selected trainees had the opportunity to improve and test their knowledge at distance. This also allowed the board of applicants to select among pre-selected trainees those that exhibited an appropriate knowledge and motivation to follow the onsite course in order not to slow down the progress of the rest of the group.

Registration was free of charge and local expenses (accommodation, food) were covered by the organizers. The organizing committee was able to provide travel grants for 20 trainees.

Pre-workshop activities

- Reading seminal rabies-related annotated articles
- Writing a national plan for the control and surveillance of rabies in Senegal as a team work using a forum
- Writing a manuscript following online guidance with an application “How to write a manuscript”

Workshop achievements

Thirty teachers (three could not finally attend) participated to the 12 days residency course in Dakar, Senegal. They originated from 3 continents and from 7 countries (from Senegal, South Africa, Cambodia, Switzerland, England, Italy and France) (**Annex 2**).

The workshop activities were given mainly in French and when necessary a translation of english to french was provided. The duration for lectures and bench work, demonstrations and hands-on sessions are given in **Annex 3**. The organization of the workshop activities favoured debates, discussions and analysis of local contingencies to find practical, economical and reliable solutions to the present situation of rabies .

The workshop was held in the Ecole Inter-Etats des Sciences et Médecine Vétérinaire in Dakar during 8 days. However some practical training activities were given at the Institut Pasteur of Dakar, the Hospital of Fann in Dakar. Practical training activities related to knowledge attitude and practice surveys, dog population surveys and dog vaccination campaigns were performed in the municipality of M'bour (approximately 200,000 inhabitants; 80 km South from Dakar).

To assess the effectiveness of the workshop process, one intermediate quiz and a final evaluation examination including another written quiz were conducted.
Thirty one students attended the workshop activities (**Annex 4; Annex 5**), including veterinarians, physicians, microbiologists and laboratory technicians working in national and regional veterinary stations, hospitals and research institutions involved in public health in 14 different countries in Africa.

Evaluation

Evaluation of the students: All the students succeeded with the final examination and for those attending the whole course (including the pre-workshop activities) their scores were all above 74 % (range: 74-88%). For the five participants attending only the workshop activities, the scores ranged from 66 to 78%, illustrating the benefit of the pre-workshop activities.

Evaluation of the course by the students: at the end of the course, the students were asked to evaluate the training course. It received in average the best score for 74% of them and better scores for 94% of them.

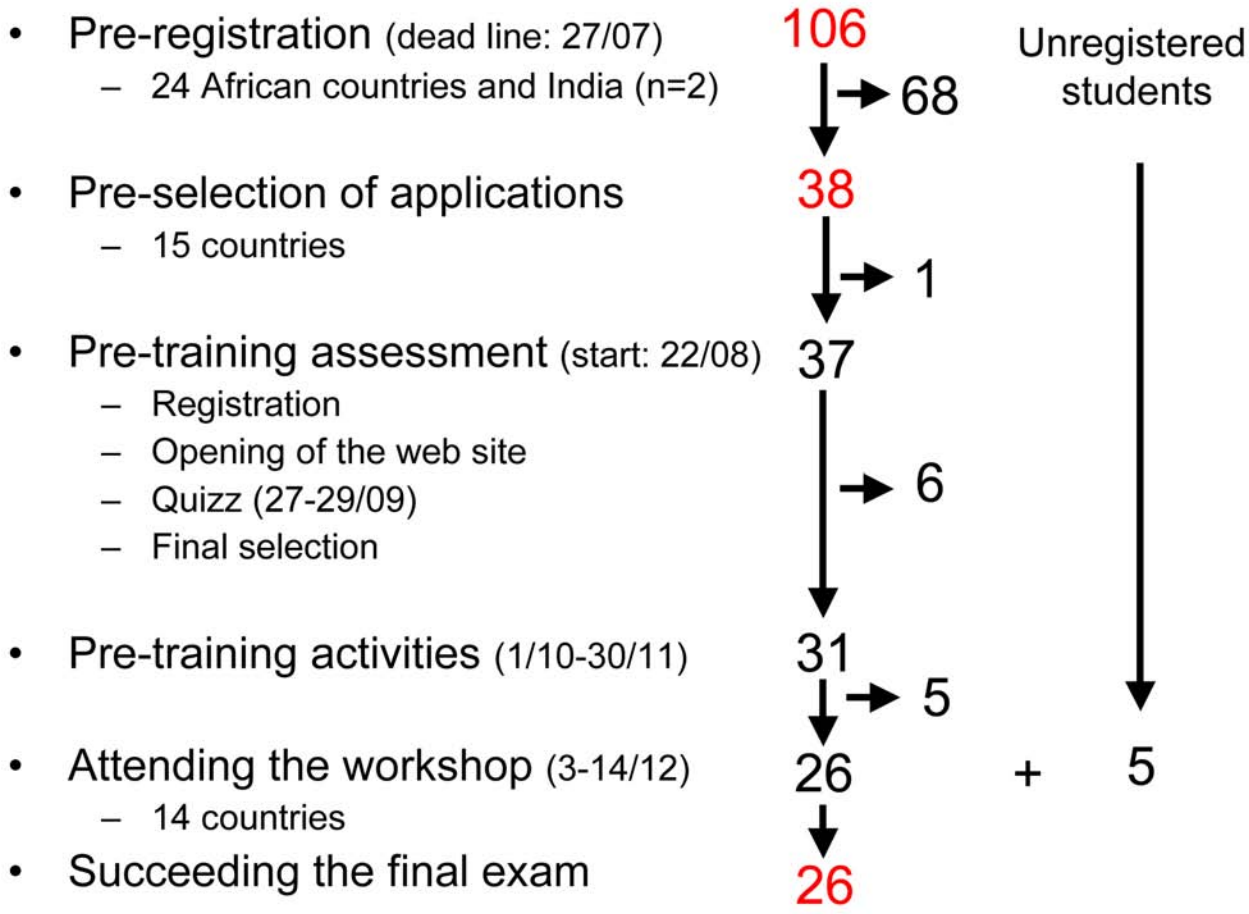
Conclusions

This course was a unique opportunity for mixing experience and knowledge between international, experts on rabies and a very motivated group of students involved nationally or regionally in health departments, hospitals, veterinary stations and research institutes in the control of rabies in Africa. The organization of the workshop (pre-training activities performed by e-learning and corresponding to approximately 70 hours of personal work) and the duration of workshop activities in Dakar (12 days) allowed the presentation of data and knowledge necessary for a better understanding of the guidelines and technical protocols approved by international organization (WHO, OIE and FAO). The associated lectures, technical bench work and field demonstrations allowed the participants to practice the knowledge dispensed during the lectures and discuss more practical points. The motivation all along the training (pre-workshop and workshop activities), the satisfactory scores obtained by the students as well as the evaluation of the course by the trainees clearly indicates that the workshop met its objectives. It is expected that the course will boost the training outcome with the transfer of the techniques and knowledge acquired by the participants to other members of the staff of their national and regional institutions.
Considering the epidemiological situation of rabies in Africa and in Asia, the organization of similar courses in these two continents is advisable.

List of annexes:

Annex 1: Process of selection of the trainees
Annex 2: List of teachers involved
Annex 3: Program of the workshop activities
Annex 4: Photo of the participants to the opening ceremony
Annex 5: Photo and name of the participants to the course

Annex 1: Process of selection of the trainees



Annex 2: List of teachers involved

Name	Institution	e-mail
Bernadette ABELA-RIDDER *	WHO - Switzerland	abelab@who.int
Fatou BADIANE	Ministère de la santé - Senegal	badianefifi@yahoo.fr
Jacques BARRAT	ANSES Nancy - France	jacques.barrat@anses.fr
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Ousmane FAYE	IP Dakar - Senegal	ofaye@pasteur.sn
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François-Xavier MESLIN	WHO – Switzerland (retired)	meslinfx@gmail.com
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Fatoumata Diene SAR	IP Dakar - Senegal	fdsarr@pasteur.sn
Ismaïla SECK	Ministère de l'élevage - Senegal	ismailseck@yahoo.com
Daniel STEWART	Animal Behavior – South Africa	fotobydaniel@telkomsa.net
Arnaud TARANTOLA	IP Phnom-Penh - Cambodia	atarantola@pasteur-kh.org
Cécile TROUPIN	IP Paris - France	cecile.troupin@pasteur.fr

* : were unable to attend

Annex 3: Program of the workshop activities

Mardi 03 Décembre 2013

Lieu : EISMV

08:30	Cérémonie d'ouverture informelle	Hervé BOURHY Amadou A SALL
	Introduction générale et présentation du cours	Hervé BOURHY Amadou A SALL
	Présentation des participants et attentes des étudiants	Tous
09:30	***Coffee Break***	
	Cérémonie d'ouverture officielle	Présidence : Ministre de l'élevage
	Evaluation pré Workshop	Etudiant
12:30	***Lunch***	
14:00	La surveillance en santé, un outil d'aide à la décision	Vincent Richard
14:30	De l'épidémiologie de la Rage à la surveillance	Léa Knopf
14:50	Les outils de surveillance de la rage au Cambodge	Arnaud Tarantola
15:10	Le système de surveillance de la rage au Sénégal	Fatou N Badiane Ismaila Seck
15:45	***Coffee break***	
16:00	Assurance-qualité des données d'un système de surveillance	Vincent Richard
16:30	Discussion ; Thème : la surveillance de la Rage à partir d'un cas pratique. Animateurs : Emmanuelle Espié, Arnaud Tarantola, Léa Knopf, Ousmane Faye	FX Meslin
18:00	***Fin de la journée***	
20:30	Diner	Tous participants

Mercredi 04 Décembre 2013

Lieu : EISMV

08:30	Surveillance de la rage : Cas pratiques	Vincent Richard /Emmanuelle Espié
10:30	***Coffee Break***	
11:00	Surveillance de la rage : Cas pratiques	Vincent Richard /Emmanuelle Espié
13:00	***Lunch***	
14:00	Présentation sujet 1	Modérateur : Léa Knopf
14:15	Présentation sujet 2	
14:30	Présentation sujet 3	
14:45	Présentation sujet 4	
15:00	Table ronde	Hervé Bourhy, FX Meslin, Vincent Richard Lea Knopf
15:30	***Coffee break***	
16 :00	Rappels cliniques de la rage animale et intérêt dans le processus de surveillance vétérinaire de la rage	Hervé Bourhy
	Les prélèvements nécessaires pour le diagnostic biologique de la rage animale	Laurent Dacheux
	Rappels cliniques de la rage humaine Le diagnostic biologique de la rage (les différents prélèvements et techniques) et suivi sérologique des patients vaccinés	Laurent Dacheux
	Les mesures d'hygiène et de sécurité pour le diagnostic	Modou M. Lo
	Discussion : le diagnostic de la rage en contexte africain: quel(s) prélèvement (s) et quelle (s) technique (s)	Ousmane Faye
	Démonstration d'une autopsie de chien pour le diagnostic de la rage (film ou pratique)	
18:00	***Fin de la journée***	

Jeudi 05 Décembre 2013

Lieu : Institut Pasteur de Dakar

09:00	Répartition des étudiants en 3 groupes et chaque groupe testera des échantillons au niveau des 3 plateaux relatifs aux techniques de diagnostic et de suivie sérologique des patients vaccinés (IF, RT-PCR et Sérologie)	Ousmane FAYE, Laurent DACHEUX Modou M.LO
10:30	***Coffee Break***	
10.45	Diagnostic : Travaux Pratiques	OF, LD, MML
12:30	***Lunch***	
14:00	Diagnostic : Travaux Pratiques	OF, LD, MML
16:00	***Coffee break***	
16:30	Diagnostic : Travaux Pratiques	OF, LD, MML
18:00	***Fin de la journée***	

Vendredi 06 Décembre 2013
Lieu : EISMV/Institut Pasteur

08:30	Prophylaxie Post Exposition de la rage	Mamadou K DIALLO François X. MESLIN Sylvie D.NIAFOUNA
	Prophylaxie Pré Exposition de la rage	Mamadou K DIALLO François X. MESLIN Sylvie D.NIAFOUNA
09:15	Aspects vétérinaires de la prophylaxie post exposition de la rage (Mise en observation ….)	Philipe KONE
09.35	Discussion sur prophylaxie PPE et utilisation Immuno, vaccination intra dermique, législation	Tous
10:30	***Coffee Break***	
10.45	Prise en charge diagnostique d'un cas suspect de rage	Sylvie D.NIAFOUNA Bernard M. Diop
11:00	Différentes présentations cliniques- diagnostic différentiel-méthodes diagnostiques	Sylvie D.NIAFOUNA Bernard M. Diop
	Prise en charge thérapeutique d'un cas de rage	Sylvie D. NIAFOUNA Bernard M. Diop François X MESLIN
	Annonce du diagnostic- Gestion des risques (famille-personnels de sante-gestion des cadavres)	Sylvie D.NIAFOUNA Bernard M. Diop
	Protocoles thérapeutiques	Herve Bourhy
12.30	Discussions	Tous
13:00	***Lunch/transport vers IPD***	
15:00	Visite centre de traitement antirabique IPD (Groupe 1)	K Diallo
15:30	Visite centre de traitement antirabique IPD (Groupe 2)	K Diallo
16:00	***Coffee break***	
16:30	Visite centre de traitement antirabique IPD (Groupe 3)	K Diallo
17:00	Visite centre de traitement antirabique IPD (Groupe 4)	K Diallo
18:00	***Fin de la journée***	

Samedi 07 Décembre 2013

Lieu : CHU de FANN

08:30	Visite clinique des maladies infectieuses CHU de Fann Thème : Aspects pratiques de la prise en charge d'un patient suspect de rage (cas pratiques). Les étudiants seront répartis en 4 groupes et 30 mn de visite par groupe	Sylvie D.NIAFOUNA Bernard M. DIOP
	Visite service des maladies infectieuses	Sylvie D.NIAFOUNA Bernard M. DIOP
10:30	***Coffee Break***	
10.45	Visite service des maladies infectieuses	Sylvie D.NIAFOUNA Bernard M. DIOP
	Visite service des maladies infectieuses	Sylvie D.NIAFOUNA Bernard M. DIOP
12:30	***Lunch***	
14:30	Table ronde et restitution des travaux de groupe	
15:45	***Coffee break***	
16:00	Départ pour Mbour	
17 :30	Présentation des activités de terrain	
19:00	***Fin de la journée***	

Dimanche 08 Décembre 2013

Lieu : Mbour

09:30	Repos ou Sport	
	Repos ou Sport	
12:30	***Lunch***	
15 :00	Activité sociale : Acrobaobab	
16:00	***Coffee break***	
16:30	Activité sociale : Acrobaobab	
18:00	***Fin de la journée***	

Lundi 09 Décembre 2013

Lieu : Mbour

08:30	Activité en deux groupes parallèles pour réfléchir à un protocole d'étude: groupe 1= Population canine et CAP groupe 2 = Campagne de vaccination	
10:30	***Coffee Break***	
10 :45	Restitution par chacun des groupes.	
12:15	Présentation des activités terrain Population canine et CAP	Espié Emmanuelle / Fatoumata Diene Sarr
12 :30	Présentation des activités terrain Campagne de vaccination	Ismaila Seck
12:45	***Lunch***	
13:30	Activités en 4 groupes en alternance G1 : Enquête CAP/population canine G2 : Campagne de vaccination, stratégie fixe G3 : Campagne de vaccination, stratégie mobile G4 : Plan d'analyses des données	
17:30	Debriefing pour chacun des groupes	
18:30	***Fin de la journée***	
21 :00	***Retour d'expérience – Monique Lechênne***	

Mardi 10 Décembre 2013

Lieu : Mbour

8:00	Activités en 4 groupes en alternance G1 : Enquête CAP/population canine G2 : Campagne de vaccination, stratégie fixe G3 : Campagne de vaccination, stratégie mobile G4 : Plan d'analyses des données	
12:00	Débriefing pour chacun des groupes	
12:30	***Lunch***	
13:30	Activités en 4 groupes en alternance G1 : Enquête CAP/population canine G2 : Campagne de vaccination, stratégie fixe G3 : Campagne de vaccination, stratégie mobile G4 : Plan d'analyses des données	
17:30	Débriefing pour chacun des groupes	
18:30	***Fin de la journée***	
21:00	***Retour d'expérience – Daniel Steward***	

Mercredi 11 Décembre 2013

Lieu : Mbour

08:00	Activités en 4 groupes en alternance G1 : Enquête CAP/population canine G2 : Campagne de vaccination, stratégie fixe G3 : Campagne de vaccination, stratégie mobile G4 : Plan d'analyses des données	
12 :00	Débriefing pour chacun des groupes (1h)	
12:30	***Lunch***	
14 :00	Présentation CAP	Jacques Barrat
	Présentation écologie canine	Monique Léchenne
	Présentation Stratégies vaccinales des chiens	Daniel Steward
	Présentation Evaluation vaccination des chiens	Philippe Koné
	Discussion générale	Chairman : FX Meslin
16:30	***Coffee break***	
16:30	Départ pour Dakar	
18:00	***Fin de la journée***	

Jeudi 12 Décembre 2013

Lieu : EISMV

08:30	Théorie : Phylogénie (vidéoconférence)	Matthew Hall
10:00	***Coffee***	
10:30	Pratique : Phylogénie	Matthew Hall Cécile Troupin
13:00	***Lunch***	
14 :00	Théorie : Modélisation	Pierre Nouvellet
15:30	***Coffee break***	
16:00	Pratique : Modélisation	Pierre Nouvellet, Cheikh Loucoubar
18:00	***Fin de la journée***	

Vendredi 13 Décembre 2013

Lieu : EISMV

08:30	Présentation des résultats-bilan par les étudiants	
10:00	***Coffee***	
10:30	Présentation des résultats-bilan par les étudiants	
13:00	***Lunch***	
14:00	Table ronde	
16:00	***Coffee break***	
16:30	Examen	
18:00	***Fin de la journée***	

Samedi 14 Décembre 2013

Lieu : EISMV

08:30	Conférence sur la rage/table ronde	Modérateur : Amadou Sall
10:00	***Coffee***	
	Remise des diplômes	Présidence : Ministre de la Santé
	Cérémonie de clôture	Présidence : Ministre de la Santé
13:00	***Lunch et fin du cours***	

Annex 4: Photo of the participants to the opening ceremony

Annex 5: Photo and name of the participants to the course

Atelier sur la surveillance et le contrôle de la rage
Dakar, 3-14 décembre 2013

1. Badian KAMISSOKO
2. Jean François ADJE KOFFI
3. Eugène KOFFI KOUASSI
4. Philippe KONE
5. Yao Pataname AKPELI
6. Kan Stephane KOUASSI
7. Abdourhamane SOW
8. Soa Fy ANDRIAMANDIMBY
9. Mamadou Korka DIALLO
10. Serge Alain SADEUH MBA
11. Mélanie Léocadie EKEDI
12. Morou MOUNKAILA
13. Albert Zé TRAORE
14. Mathilde Sopi TETCHI
15. Maliki ANKAVAY
16. Viviane M.P. CISSE DIALLO
17. Fernand Dieudonné BIBALOUD
18. Abiboulaye SALL
19. Simon Dickmu JUMBO
20. Ravoniaina RAMIANDRASOA
21. Mamadou Moustapha LO
22. Pidemnewe PATO
23. Fatima ABDELRAZAK
24. Alain Marc YAO KOUADIO
25. Souleyman HACHIM
26. Martin FAYE
27. Samira BENBEKHTI
28. Jacques BARRAT
29. Johann KOTZE
30. Monique LECHENNE
31. Jean-Pierre Kraehenbuhl
32. Cheikh LOUCOUBAR
33. Daniel STEWART
34. Richard KABONGO NGANDU
35. Hervé BOURHY
36. Modou SOW
37. Augustin TWABELA TSHIBWABWA
38. Miandrisoa Z.J. RANDRIAMORASOA
39. Assanvo Lambert N'GUESSAN
40. Marcel BOKA OHOUKOU
41. Trésor MAKUMBU LUBAMBA
42. Cécile TROUPIN (derrière l'appareil photo)

PREDEMICS Institut Pasteur COOPERATION