



FMD and CSF Coordination Action



Inventory of CSF Research Programmes/Projects/Orientations and Timetable of Expected Outputs of identified Projects, Constraints to Uptake

FMD and CSF Coordination Action - Workpackage 1, Research
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Inventory of Classical Swine Fever (CSF) research programmes/projects/orientations and time-table of expected outputs of identified projects, constraints to uptake

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Abstract

An inventory of researchers and research effort in the field of CSF was compiled. To this means at first a list of laboratories, institutions and companies dealing with Classical Swine Fever virus (CSFV) was generated through survey of the project associates, of international organisations and also in cooperation with WP2 “Global disease surveillance” (Partner: World Organisation for Animal Health (OIE)) at a global level. In addition, an intensive web-based research was performed. Afterwards each of the identified contact addresses was contacted either by email or fax and informed about the work of the Coordination Action (CA). A questionnaire was added to this letter asking for information on current research projects, co-operations and funding. The inventory will be updated on an ongoing basis, with formal review at month 36.

Introduction

Classical Swine Fever is a highly contagious viral disease of domestic pigs and wild boar and more than 60 countries world-wide have notified the OIE of at least one outbreak of CSF on their territory within the last 15 years. CSF was considered an infection at the brink of eradication in the EU at the end of the 1980s. Although most Member States of the European Union have successfully managed to eradicate the disease from the domestic pig population, there is the constant threat of (re-) introduction into a country or spread to domestic livestock from infected wild boar populations. The difficulty of keeping diseases such as CSF out of our borders and of controlling their spread amongst our fully susceptible, densely populated and highly mobile livestock populations necessitates considerable research efforts to improve the current situation.

In its recent report “Diagnostic Techniques and Vaccines for Foot-and-Mouth Disease, Classical Swine Fever, Avian Influenza and some other important OIE List A Diseases” the Scientific Committee on Animal Health and Animal Welfare (SCAHAW) identified a large number of research gaps concerning innovative diagnostic techniques and vaccines suitable to accelerate the diagnosis of an outbreak and to develop more efficacious marker vaccines for CSF and FMD. In addition, there is a demand for developing new methods to optimise disease surveillance and to develop improved mathematical, epidemiological and economic models for studying disease outbreaks. The report emphasised that more research in these areas could possibly prevent, or help to more efficiently handle outbreaks of e.g., FMD and CSF among other list A diseases. The SCAHAW highlighted the need to promote the more effective use of available resources within the EU concerning research on OIE List A diseases and relevant vaccines and diagnostic tests.

The number of scientists worldwide working on CSF and FMD is limited. This is partly due to the fact that strict biosecurity measures are needed when working with these agents. In general, there is little or no international cooperation. However, on a limited scale collaboration occurs in the context of EU funded Concerted Actions, FAIR projects, COST activities, coordination of work in EU Joint Research Centres. However, such collaborations are often of a transient and limited nature in relation to specific projects, with collaborations being lost upon completion of the project in question. The lack of systematic communication and the increased research investment of European governments since the last outbreaks of CSF and FMD raise the possibility that efforts could be duplicated in separate countries, with closely-comparable research, tests, procedures, etc. being performed in parallel, often in expensive high-containment laboratories.

The objective of this work package is to establish an inventory of research gaps relevant for the efficient control of CSF and FMD. Following analysis of the options for long term development of European and global FMD and CSF expertise, best practise options for effective collaborative research projects, policy options to improve Government and Universities and private sector involvement, and best practise options for member states to establish joint R&D programmes will be developed.

Methods

At first, in order to track as many scientists as possible working in the field of CSF, an intensive literature review and web search was performed. More than 420 publications listed in PubMed, which were published during the period from January 2000 until March 2006, were looked at in detail. Authors and their institutes/institutions/companies were added to a CSF contact list. In addition, addresses of further CSF laboratories known to the Community and OIE Reference Laboratory for CSF in Hannover, Germany and the OIE reference laboratory in Weybridge, UK were added to the list. Furthermore, data obtained from a questionnaire circulated by the OIE for WP2 of this CA were also used to complete the list, which now comprises 214 different institutions from 58 countries working in the field of CSF.

It was decided to pass on the questionnaire to as many people as possible. Thus, although not always all authors of each article were contacted individually (due to e.g. lacking email addresses or fax numbers), it was tried to reach at least one representative of each institute. Contact persons received either an email or a fax with information on the Coordination Action and in particular on its workpackage concerning research, gaps and duplications. They were then asked to provide information on current research programmes. To this means a questionnaire was designed and circulated which asked for a) author's name, institution, address, phone number and email-address, b) project title, c) start date and presumable date of termination d) number of persons working on the project and total number of person months, e) funding body, f) partners and g) publications. Furthermore, scientists were asked to provide a short description of the project and to sum up the aims. They were also asked to pass on names and addresses of other experts.

Results / Summary

An intensive literature review was performed and a list of contact persons was compiled (Annex I; Excel-File: List-CSF.xls).

Scientists exclusively working on CSF in wild boar were not added to this list as they had already received a similar questionnaire in summer 2005 (see D-WP7-1).

Afterwards more than 170 individuals from 55 countries were contacted either by email or by fax. In total, 56 answers were obtained and 34 completed questionnaires were retrieved. However, 9 of these questionnaires dealt with projects on CSF in wild boar only and were therefore added to WP7 and not included here.

Fifteen (15) institutions stated that they are currently not involved in CSF research.

Retrospective literature analysis

As information on ongoing research projects was rather scarce, it was decided to also perform a retrospective analysis of 408 articles listed in PubMed between January 2000 and March 2006. The aim was to get an overview of the main research topics in the past and the distribution of the most active research groups world-wide.

The analyses showed the following distribution of topics:

- vaccinology (15.2%)
- viral proteins and their functions (9.8%)
- immunology (9.6%),
- genetic typing and phylogenetic analyses (8.3%)
- RT-PCR (7.4%)
- other diagnostic techniques (including clinical and pathological diagnosis) (5.6%)
- transmission of disease (5.6%)
- control and eradication (3.4%)
- modelling (2.7%)
- outbreak description and analyses (2.5%)
- monitoring and surveillance (2.5%)

23% of published articles did not fall into one of the categories described above and included e.g. review articles, virulence, pathogenesis and morphological studies, description of clinical symptoms, data regarding inactivation of CSFV or the development of infectious clones and vectors carrying CSFV genes amongst others.

It should be noted that classification of the articles was subjective as several topics could be mentioned within one article, e.g. articles mainly dealing with vaccinology could also include information about the transmission of virus, but each article was counted only once.

To identify those countries where most research activities are located, publications were sorted according to the origin of the first author.

It was striking that approximately 50% of all articles were written by either Dutch, German or Chinese authors (with 50 to 60 articles for each of these countries). A significant increase in the number of articles published by Chinese authors within the last three years was observed.

The most active countries concerning publications in the field of CSF are: Netherlands, Germany, China, Switzerland, Spain, United Kingdom, Belgium, Russia, France, Japan, Canada, South Korea, Thailand, USA, Denmark, Italy, others

More than 70% of all articles were published by European authors.

Cooperation

Based on the answers obtained from the questionnaire and on the results of the retrospective literature analysis, a gross evaluation of the cooperation and interaction between scientists was done. In general, a tendency to cooperate with other scientists within the same country was observed. The most active institutions regarding cooperation were located in Germany, The Netherlands, Switzerland, Denmark, Belgium, France, The United Kingdom and Croatia.

However, it has to be kept in mind that this picture might not be accurate. Some scientists did not respond to the questionnaire and from the literature review only already published publications on joint projects could be taken into consideration. Co-operations such as training of experts from other countries or research projects that did not lead to a publication were not considered.

There are already many links established between those CSF laboratories in Europe, where a lot of research activities are ongoing. This is partly due to various EU-funded projects.

Co-operations between different continents are scarce, but present.

It was noticed that with few exceptions only members working at the same institute were mentioned as authors on publications originating from China.

Conclusions

- Research is concentrated in countries that currently have had or still have to cope with CSF in either the domestic pig population or in the wild boar population (The Netherlands, Germany, China, Switzerland, Spain, UK, Belgium, Russia and France).
- Main funding bodies are the European Union (for Europe) or the national governments of the affected countries. Funding by industrial companies is extremely scarce.
- Many research articles are published by Chinese scientists. However, it proved difficult to establish a contact. From the 15 Chinese research groups which received the questionnaire, a general answer was obtained from three scientists only and only one of them responded to the question on ongoing research programmes. There seems to be a large research potential in this country, but hardly no information is available prior to publication of results. In future it would be very interesting to improve the contacts to China!

Outlook

Communication between CSF laboratories shall be improved. Whereas communication and contacts between European scientists works well already, there is need for improvement regarding contacts in South America, but especially in the Far East.

A working group is now to be established, which takes a thorough look at the constraints which reduce long term planning in CSF research and reduce trans-national

collaboration. Options for long-term development shall be evolved, which help in offering best practise options for effective collaborative research projects.

Policy objectives and orientations need to be discussed with the major national/international funding bodies.

Annex 1 List of institutions and scientists working on Classical Swine Fever

OUNTRY	INSTITUTION	NAME	ADDRESS	
Albania	Laboratory of viral animal diseases, Institute of Veterinary Research	Aldin Lika	Tirana 10, Albania	
Argentina	Instituto de Biotecnología, CICVyA, Instituto Nacional de Tecnología Agropecuaria	Oswaldo Rossetti	CC25, Castelar 1712, Buenos Aires, Argentina	
		H. Sanguinetti		
		Ariel Pereda		
	Servicio Nacional de Sanidad y Calidad Agroalimentaria (SENASA)	M.E. Piccone		
		B. Cane	Av. Paseo Colon 367, 9th piso Buenos Aires, Argentina	
		L.O. Mascitelli		
Genética, Departamento de Producción Animal, Facultad de Agronomía e Veterinaria Universidad Nacional de Río Cuarto	Dr. Eduardo Palma			
	R. Genghini	5800 Río Cuarto		
Australia	CSIRO, Livestock Industries, Australian Animal Health Laboratory	P. Wittouck		
		S. Romanini		
		Jef Hammond	Private Mail Bag 24, Geelong, Vic. 3220, Australia	
		Stuart Blacksell		
	Department of Biological Sciences, University of Western Sydney	L. M. Brown	Macarthur, P.O. Box 555, Campbelltown, NSW	

			2560
	Virology Section, Elizabeth Macarthur Agricultural Institute	M. J. Frost	PMB 8, Camden, NSW 2570
		R. J. Dixon	PMB 3, Camden, NSW 2570
	Sir Albert Sakzewski Virus Research Centre	Dongsheng Li	Brisbane, QLD 4029, Australia
	Royal Children's Hospital		
	Clinical Medical Virology Research Centre	Seyed Taghi Takyar	St Lucia, QLD 4067, Australia
	University of Queensland	Dongsheng Li	
	Macfarlane Burnet Institute for Medical Research and Public Health	Li D	GPO Box 2284, Melbourne, VIC 3001, Australia
Austria	Österreichische Agentur für Gesundheit und Ernährungssicherheit	Hermann Schildorfer	Robert Koch Gasse, 17
	Institut für Vet.-Med. Untersuchungen	Sandra Revilla-Fernandez	A-2340 Mödling
	Klinische Immunologie, VUW	Armin Saalmüller	Veterinärplatz 1, A-1210 Wien, Österreich
Belgium	National Veterinary Research Institute	Frank Koenen	Groeselenberg, 99, 1180 Brussels
		Marylene Tignon	
	Coordination Centre for Veterinary Diagnostics, Veterinary and Agrochemical Research Centre	Koen Mintiens	
	Department of Virology, Veterinary and Agrochemical Research Centre	Kris De Clercq	Ukkel, Belgium
	Department of Reproduction, Faculty of Veterinary Medicine, Ghent University	Jeroen DeWulf	Salisburylaan 133, B-9820 Merelbeke, Belgium
		Stefaan Ribbens	
		W. G. Holland	
	Department of Veterinary and Zootechnical Legislation	Jorgen Westergaard	Brussels, Belgium

	European Commission		
	Pharmacia and Upjohn Coordination Center	H. Deluyker	Rijksweg 12, B-2870 Puurs, Belgium
	Faculty of Agriculture and Applied Biological Sciences, Department of Animal Sciences K.U. Leuven	B. M. Goddeeris	Kasteelpark Arenberg 30, 3001, Leuven, Belgium
	Federal Agency for the Safety of the Food Chain, General Directorate Control	J. Dufey	S. Bolivarlaan 30, 1000 Brussels, Belgium
	Flanders Interuniversity, Institute for Biotechnology, Department of Molecular and Cellular Interactions Vrije Universiteit Brussel	Hilde Revets	Brussels, Belgium
Brazil	Fundação Estadual de Pesquisa Agropecuária	Paulo Michel Roche	PO Box 47, Estrada do Conde 6000, 92990-000, Eldorado do Sul , RS
	Departamento de Viologia, Instituto de Microbiologia Professor Paulo de Goes Universidade Federal do Rio de Janeiro	M. A. Rebello T. Freitas	21941-590, Rio de Janeiro, RJ, Brazil
	Centro Nacional de Pesquisas de Cerdos y Aves/EMBRAPA. CNPQA/EMBRAPA.	Carlos Romero	Independencia 283, CEP 89.700, Concordia-SD, Brasil
	National Laboratory of Ministry of Agriculture of Brazil	Marcelo Camargos	
Bulgaria	National Veterinary Institute	Emiliya Radeva Ivanova Darina Bogdanova	15 a Pencho Slaveikov
Botswana	Botswana National Veterinary Laboratory (BNVL)	E. K. Baipoledi	Private Bag 0035 Gaborone
Canada	Canadian Food Inspection Agency	John Pasick	1015 Arlington Street, Winnipeg, Manitoba R3E

			3M4
	Classical Swine Fever & Avian Diseases Section, National Centre for Foreign Animal Disease (NCFAD)	H. M. Weingartl	
		Handel K	
	Canadian Food Inspection Agency, Animal Diseases Research Institute	M. Lin	3851 Fallowfield Road, Ottawa, Ontario, Canada
	VIDO, University of Saskatchewan	E. van Moorlehem	120 Veterinary Rd., Saskatoon, SK, Canada S7N 5E3
Chile	Escuela de Medicina Veterinaria, Universidad Santo Tomas de Aquino	C. Pinto Julio	Avenida Ejercito 146, Santiago, Chile
	Departamento de Patología y Medicina Preventiva Universidad de Concepción	M. Quezada	Chillán, Chile
	Escuela de Ciencias Veterinarias, Facultad de Ciencias Veterinarias y Pecuarias Universidad de Chile	V. Santiago Urcelay	Santa Rosa 11735, Chile
China	Animal Virus Division, Institute of Virology, Wuhan University	Sheng Cao	Wuhan 430072, China
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		Xiao M	
	Lanzhou Veterinary Research Institute, CAS	X.Q. Han	Lanzhou 730046, China
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		Xiangtao Liu	
	Military Veterinary Research Institute of the Academy of Military Medical Sciences	C. S. Cheng	Changchun 130062, China
	Laboratory of Immunology, Department of Biology, Tsinghua University	X. N. Dong	Beijing 100084, PR China
The 211 Key Laboratory of Veterinary Molecular Biology	Chun Xia	College of Veterinary Medicine, China Agricultural University, Beijing 100094	

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	H. Yang	
Department of Cell Biology and Genetics	Z. Wang	College of Life Sciences, Peking University, Beijing 100871, P.R. China
	H. Deng	
	Zhou	
Yunnan Tropical and Subtropical Animal Virus Diseases Laboratory	F. Q. Zhang	Kumming 650224, China
Institute of Virology, College of Life Sciences, Wuhan University	P. Zhang	Wuhan, Hubei 430072, PR China
	H. X. Wu	
	Xiao M	
Ministry of Education Key Laboratory for Biodiversity Science and Ecological Engineering	M. Xiao	Shanghai
Institute of Biodiversity Science	B. Li	
Fudan University, College of Life and Environment Sciences		
Shanghai Teacher's University		
Animal Virus Section at the Veterinary Institute, CUAAS	Tu Changchun	5333 Xian Road, Changchun, Jilin Province, China 130062
Department of Virology	Yu Xinglong	175 Xian Road, Changchun 130062
Changchun University of Agricultural and Animal Sciences (CUAAS)	Changchun Tu	
National Control Institute of Veterinary Bioproducts and Pharmaceuticals	Q. Wang	Beijing 100081
College of Life Sciences, Peking University	Y. Nie	Beijing 100871
National Lab of Biocontrol Engineering of Grassland Pests, Life Science College	M. Wu	Chendu, Sichuan 610064, PR China
Sichuan University		
Harbin Veterinary Research Institute, Chinese Academy of Agricultural Sciences	Siguo Liu	Harbin 150001, PR China

Colombia	Instituto Colombiano Agropecuario	Z. Y. Sabogal	Av. El Dorado No. 42-42, Bogota, Colombia
Croatia	Croatian Vet. Institute	Lorena Jemersic	Savska Cesta 143
		Svjetlana Terzic	10000 Zagreb
	Veterina Ltd.	Ljiljana Cizelj	
	Veterinary Faculty	Josip Madi	Heinzelova 53, Zagreb, Croatia
	University of Zagreb	Z. Zupancic	
Cuba	Centro Nacional de Sanidad Agropecuaria (CENSA)	Dr. Maritza Barrera Valle	Apdo 10, San Jose de las Lajas, La Habana, Cuba
	Carretera Tapaste y Autopista Nacional	Heidy Diaz de Arce	
		Ruano M. Perez	
		Maria Teresa Frias	
		Leporeau	
		Maria Irian	
		Percedo Abreu	
		N. M de Oca	
Cyprus	Ministry of Agriculture, Natural Resources and Environment	Phedias Loucaides	1417 Nicosia
	Veterinary Services		
	Virology Laboratory, State Veterinary Laboratories, Veterinary Services, Ministry of Agriculture, Natural Resources and Environment,	Apostolos Mazeris	1417, Lefkosia (Nicosia), Cyprus
Czech Republic	State Veterinary Institute Jihlava	Pavel Bartak	SVI, Rantirovska 93, 58605 Jihlava

		Bonislav Simek	
Denmark	Danish Institute for Food and Veterinary Research	Åse Uttenthal	Lindholm, DK-4771 Kalvehave
		M. B. Oleksiewicz	
	Laboratory for Virology and Immunology	B. Kristensen	Stigbøjlen 7, 1870 Frederiksberg
	The Royal Veterinary and Agricultural University		
	The National Committee for Pig Production, Danish Bacon and Meat Council	K. S. Madsen	Drejervej 7, DK-6600 Vejen, Denmark
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Dominican Republic	Secretaria de Estado de Agricultura	Angelo Ventura	Av. Monumental Los Girasoles, Santo Domingo
	Direccion General de Ganaderia		
	Laboratorio Veterinario Central		
	LAVECEN	Dr. Felix del Orbe	Av. Monumental Los Girasoles, Santo Domingo
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			San Salvador, El Salvador
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	Directorate-General for Health and Consumer Protection		1049, Brussels, Belgium
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Finnland	National Veterinary and Food Research Institute (EELA)	Pirjo Veijalainen Tuija Vehmas	P.B.45 , FIN-00581 Helsinki
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	Heimann M	
	Andreas Gallei	
	Yvonne Hausmann	
	Joachim Krieter	
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	Ilona Reimann	
	Jens Teifke	

	Bernd Hoffmann	
	Horst Schirrmeier	
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Bundesinstitut für Tiergesundheit	Mathias Kramer	
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Landesuntersuchungsamt Rheinland-Pfalz	G. Hergarten	Koblenz
Fachbereich Tiermedizin, Institut für Tierseuchendiagnostik		
Abteilung Molekulare Genetik und Präparative Molekularbiologie	Andreas Christmann	Grisebachstraße 8, D-37077 Göttingen
Georg-August-Universität Göttingen		
Institute for Zoo Biology and Wildlife Research	Kai Frolich	Berlin
Bayer CropScience AG—Bayer Environmental Science	S. Endepols	Alfred-Nobel-Strasse 50, Building 6220, D-40789, Monheim
Bayer AG Animal Health	K. -L. Ziebell	

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	Institut für Virologie und Antivirale Therapie	Andi Krumbholz	Winzerlaer Str. 10, Jena 07745
	Klinikum der Friedrich-Schiller-Universität		
	Staatliches Veterinäruntersuchungsamt	Rüdiger Wurm	Zur Taubeneiche 10-12, Arnshausen 99821
	Landesamt für Verbraucherschutz und Landwirtschaft, Laborbereich Frankfurt (Oder)-Markendorf	C. Schulze	
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Greece	Veterinary Institute of Infectious and Parasitic Disease	Maria Kotsaki	25 Neapoleos Str., 15310 Ag. Paraskevi
	Vet. Institute of Infectious and Parasitic Diseases	Dimitra Papakostaki	80, 26th October St. ,546 27 Thessaloniki
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	Laboratoire de diagnostic vétérinaire de Tamarinier	Alain Louis Marie Gabrielle LaFortune	Route Nationale # 1, Km15, Bon Repos
Hungary	Central Veterinary Institute, Virol. Dept.	Szeredi Levente	Tabornok utca 2, 1149 Budapest
	Central Veterinary Institute, Virol. Dept.	Vilmos Palfi	Tabornok utca 2, 1149 Budapest
	Department of Microbiology and Infectious Diseases and Infectious Diseases	P. Soos	University of Veterinary Science H-1581 Budapest, P.O. Box 22
	State Control Institute for Veterinary Biologicals, Drugs and Feeds	Kulcsar G	H-1415 Budapest 10, P.O. Box 318, Hungary
	Department of Biochemistry and Medical Chemistry, Faculty of Medicine	G. Kulcsar	Pecs, Hungary
	University of Pecs		

India	Division of Pathology, Indian Veterinary Research Institute (I.V.R.I.)	G. Kumar Sai	Izatnagar 243 122, Uttar Pradesh, India
		V. K. Singh	
	Directorate of Animal Health & Veterinary Services	Sandeep Ghatak	3rd Floor, New Secretariat Building
			1, K.S.Roy Road, Kolkata 700001
Ireland	Department of Agriculture Central Veterinary Research Laboratory	Patrick Lenihan	Abbotstown, Castleknock
		Michael O Connor	
Italy	Istituto Nazionale Fauna Selvatica	Vittorio Guberti	Via Ca' Fornacetta, 9, 40064 Ozzano Emilia
	Instituto Zooprofilattico Sperimentale	Gian Mario DeMia	Via G. Salvemini, 1, 06 100.Perugia
		Francesco Feliziani	
		Domenico Rutili	
		M. Biagetti	
	c/o Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia Romagna	G. Zanardi	Via Bianchi 9, Brescia, Italy
	Istituto Zooprofilattico Sperimentale della Sardegna	Christiana Patta	Via Duca Degli Abruzzi 8, I-07100 Sassari
	Istituto Superiore di Sanita Laboratorio di Medicina Veterinaria	Ballerini A	Viale Regina Elena, 299 I 00161 Rome, Italy
Japan	Hokkaido University, Sapporo	Yoshi Sakoda	
	Laboratory of Food and Environmental Hygiene, Faculty of Applied Biological Sciences, Gifu University	N. Ishiguro	Japan
	Assay Division I, National Veterinary Assay Laboratory, Kokobunji, Tokyo, Japan	H. Aoki	
	National Institute of Animal Health	Shunji Yamada	6-20-1 Josui-honcho, Kodaira, Tokyo, 187-0022
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