

The Role of Animals in the Transmission of SARS

Global Conference on SARS
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Presented by Dr. Hume Field




**What we know,
what we don't know and,
what studies are needed.**



Epidemiologic Clues to the Origin of SARS in China

Rui-Heng Xu, Jian-Feng He, Meirion
Evans, Guo-Wen Peng, Hume E. Field,
De-Wen Yu, Chin-Kei Lee, Hui-Ming Luo,
Wei-Sheng Lin, Peng Lin, Ling-Hui, Wen-
Jai Laing, Juin-Yan Lin

Results

- Temporal and spatial clustering of the index cities.
 - 'Food handlers' with likely animal contact were over-represented in early cases (9/23, 39%).
 - People living near markets were over-represented in early cases.
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Conclusion

A wildlife origin is the most probable..

- ❑ Novel nature of the virus.
- ❑ Clustered Guangdong outbreak pattern.
- ❑ Occupational and spatial association with early cases.
- ❑ Range of wild-caught mammals, birds and reptiles in markets.
- ❑ Use of wild animals for food and medicine offers an effective bridge to humans.
- ❑ 75% of human EIDs are zoonotic.

Isolation and characterization of viruses related to the SARS coronavirus from animal in southern China

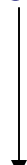
Y. Guan, B.J. Zheng, K.F. Shortridge, K.Y. Yuen, J.S.M. Peiris
L.L.M. Poon (Dept. of Microbiology, The Univ. of Hong Kong)

Y.Q. He, X.L. Liu, Z.X. Zhuang (Shenzhen CDC, Guangdong)

NIAID (USA), Grant A195357
SARS FUNDS, Univ. of Hong Kong

Animals

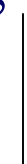
Sampling: nasal, rectal swabs, blood
of 8 species (25)



RT-PCR diagnostic test
Virus isolation



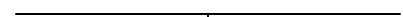
Sequencing viral genome



Sequence comparison
Phylogenetic analysis

Human

Blood



Neutralizing antibody
detection

Himalayan palm civet



6, PCR 4+
isolation 4

Raccoon-dog



1, PCR +,
isolation 1



Susceptibility of Pigs and Chickens to SARS Coronavirus



Hana Weingartl
John Copps
Michael Drebot
Peter Marszal
Greg Smith
Jason Gren


Maya Andonova
John Pasick
Paul Kitching
Markus Czub

National Center for
Foreign Animal
Disease,
Canadian Food
Inspection Agency

National Microbiology
Laboratories,
Health Canada

CSCHAH, Winnipeg,
Canada

Results/Conclusions

- No clinical disease or gross pathology in pigs or chickens.
 - No virus isolated.
 - Limited virus replication (RT-PCR).
 - Induction of virus neutralizing antibodies.
 - Lack of virus shedding indicated that pigs and chickens were not an amplifying hosts.
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Experimental Assessment of Domestic Poultry as Potential Biological Vectors and Reservoirs for SARS-Coronavirus



**U.S. Department of Agriculture, Agricultural Research Service, Southeast Poultry
Research Laboratory, Athens, GA**

- David E. Swayne
- David L. Suarez
- Erica Spackman
- Terry Tumpey
- Joan Beck
- Suzanne DuBlois

Results

- ❑ **No deaths over 10 day observation period in geese, ducks, chickens, turkeys and Japanese quail.**
 - ❑ **No clinical signs over 10 day observation period.**
 - ❑ **RRT-PCR, virus isolation, serology and histopathology investigations are on-going.**
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Need for further animal research

- ❑ Valid serologic tests for animals.
 - ❑ Field studies - structured sero-surveillance of source populations, longitudinal studies.
 - ❑ Laboratory studies to determine the range and significance of animal hosts.
 - ❑ Factors associated with emergence.
 - ❑ A need to understand the ecology of infection in the reservoir host.
 - ❑ Need to focus on human *and* animal populations.
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