



Peter Daszak [REDACTED]

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**FW: PRO/AH/EDR> COVID-19 update (312): China, SARS-CoV2 origin, animal reservoir, WHO mission**

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Peter Daszak <[REDACTED]> Mon, Jul 13, 2020 at 4:17 PM  
To: "Morens, David (NIH/NIAID) [E]" <[REDACTED]>, "Keusch, Gerald T" <[REDACTED]>

From the WHO press conference today: "WHO generally does not announce names of staff who go on mission in the field". Mike Ryan then said one is a leading expert on animal-human interface, other is UK academic epidemiologist who led analytics effort on Ebola N. Kivu DRC.

I wonder if one is Pierre Formenty - he's a veterinarian who worked on Ebola, Lassa fever etc. and is senior. The epidemiologist could be any one of a number of people.

Cheers,

Peter

Peter Daszak  
President

EcoHealth Alliance  
520 Eighth Avenue, Suite 1200  
New York, NY 10018-6507  
USA

Tel.: [REDACTED]  
Website: [www.ecohealthalliance.org](http://www.ecohealthalliance.org) Twitter: @PeterDaszak  
EcoHealth Alliance develops science-based solutions to prevent pandemics and promote conservation

[Quoted text hidden]



Peter Daszak [REDACTED]

## FW: PRO/AH/EDR> COVID-19 update (312): China, SARS-CoV2 origin, animal reservoir, WHO mission

Morens, David (NIH/NIAID) [E] <[REDACTED]>  
 To: "Keusch, Gerald T" <[REDACTED]>, "Peter Daszak ([REDACTED]g)" <[REDACTED]> Sun, Jul 12, 2020 at 4:51 PM

Yes, I meant the team members. No word here at NIH....  
 david

David M. Morens, M.D.  
 CAPT, United States Public Health Service  
 Senior Advisor to the Director Office of the Director National Institute of Allergy and Infectious Diseases  
 National Institutes of Health  
 Building 31, Room 7A-03  
[31 Center Drive](#), MSC 2520  
 Bethesda, MD 20892-2520  
 B 301 496 2263 (assistants: Kimberly Barasch; Whitney Robinson) ([REDACTED])

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-----Original Message-----

From: Keusch, Gerald T <[REDACTED]> Sent: Sunday, July 12, 2020 1:25 PM  
 To: Morens, David (NIH/NIAID) [E] <[REDACTED]>; Peter Daszak ([REDACTED]) <[REDACTED]>  
 Subject: RE: PRO/AH/EDR> COVID-19 update (312): China, SARS-CoV2 origin, animal reservoir, WHO mission

If you mean the two members of the team then no, have not heard anything about who they are. I have been wondering about it.

Jerry

-----Original Message-----

From: Morens, David (NIH/NIAID) [E] <[REDACTED]> Sent: Sunday, July 12, 2020 12:17 PM  
 To: Peter Daszak ([REDACTED]) <[REDACTED]>; Keusch, Gerald T <[REDACTED]>  
 Subject: FW: PRO/AH/EDR> COVID-19 update (312): China, SARS-CoV2 origin, animal reservoir, WHO mission

Do you know who these people are? d

David M. Morens, M.D.  
 CAPT, United States Public Health Service Senior Advisor to the Director Office of the Director National Institute of Allergy and Infectious Diseases National Institutes of Health Building 31, Room 7A-03  
[31 Center Drive](#), MSC 2520  
 Bethesda, MD 20892-2520  
 B 301 496 2263 (assistants: Kimberly Barasch; Whitney Robinson) ([REDACTED])

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-----Original Message-----

From: [promed-edr@promedmail.org](mailto:promed-edr@promedmail.org) <[promed-edr@promedmail.org](mailto:promed-edr@promedmail.org)>

Sent: Saturday, July 11, 2020 9:35 PM

To: [promed-post@promedmail.org](mailto:promed-post@promedmail.org); [promed-edr-post@promedmail.org](mailto:promed-edr-post@promedmail.org); [promed-ahead-post@promedmail.org](mailto:promed-ahead-post@promedmail.org)

Subject: PRO/AH/EDR> COVID-19 update (312): China, SARS-CoV2 origin, animal reservoir, WHO mission

CORONAVIRUS DISEASE 2019 UPDATE (312): CHINA, SARS-COV-2 ORIGIN, ANIMAL RESERVOIR, WHO MISSION  
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A ProMED-mail post

<<http://www.promedmail.org>>

ProMED-mail is a program of the

International Society for Infectious Diseases <<http://www.isid.org>>

Date: Fri 10 Jul 2020

Source: Science Magazine - News [edited] <<https://www.sciencemag.org/news/2020/07/who-led-mission-may-investigate-pandemic-s-origin-here-are-key-questions-ask>>

The 2-person team from the World Health Organization (WHO) traveling to China today [10 Jul 2020] to address the origin of the COVID-19 pandemic is unlikely to come home with answers. Rather, the duo -- an epidemiologist and an animal health expert whose names have not been released -- will discuss with Chinese officials the scope of a larger international mission later, according to a WHO statement.

But this initial trip offers real hope that the mystery of the virus' origins, which has become a political powder keg and the subject of countless conspiracy theories, will finally be investigated more thoroughly and transparently. (A similar WHO-led mission to examine how China was handling its fight against the virus, launched after weeks of diplomatic wrangling, returned in February [2020] with a surprising wealth of information) [comment 1].

"Science must stay open to all possibilities" about the pandemic's origins, Mike Ryan, executive director of WHO's Health Emergencies Programme, said at a press conference on 7 Jul [2020]. "We need to lay out a series of investigations that will get the answers that I'm sure the Chinese government, governments around the world, and ourselves really need in order to manage the risk going forward into the future."

Questions range from hunting for animals that might harbor the virus to examining the possibility that it came from a laboratory. There are plenty of details to investigate, and it could be a long road. Origin riddles for other new infectious diseases often took years to solve, and the route to answers has involved wrong turns, surprising twists, technological advances, lawsuits, allegations of cover-ups, and high-level politics. Determining how a pathogen suddenly emerges in people requires a lot of sleuthing, but past successes offer clues of where to look for new insights, as do the few data points that now exist for SARS-CoV-2, the virus that causes COVID-19.

The initial, tidy origin story told by health officials in Wuhan during the 1st few weeks of January [2020] was that a cluster of people connected to a seafood market developed an unusual pneumonia, and that the outbreak stopped after the market was closed and disinfected. But confusion about the origin of the novel coronavirus identified in Wuhan patients arose when researchers published the 1st epidemiologic studies of the city's outbreak: 4 of the 1st 5 cases confirmed to have SARS-CoV-2 infections had no link to the market.

Soon, other theories emerged. Some believe it's no coincidence that the city is host to the Wuhan Institute of Virology (WIV), home to leading bat coronavirus researcher Shi Zheng-Li. Her group, one of the 1st to isolate and sequence SARS-CoV-2, has trapped bats in the wild for 15 years, hunting for coronaviruses to help identify pandemic threats. In their 1st report about the new virus, the scientists described a bat coronavirus in their collection that was 96.2% similar to SARS-CoV-2 [comment 2].

U.S. President Donald Trump early on endorsed speculation that the virus entered humans because of an accident at WIV. A more contentious theory is that the lab created the virus. (Researchers at the lab insist neither scenario has any merit, and evolutionary biologists elsewhere have argued the virus shows no evidence of having been engineered.)

The most popular hypothesis is that SARS-CoV-2 spread into humans from an intermediate host, an animal species susceptible to the virus that acted as a bridge between bats and humans. In the case of severe acute respiratory syndrome (SARS), civets turned out to play that role for the responsible coronavirus. For Middle East respiratory syndrome (MERS), also a coronavirus disease, it quickly became clear camels were the culprit because highly similar viruses were found in the animals and people caring for them.

Chinese officials have reported conducting tests for SARS-CoV-2 at the Wuhan seafood market, but what they found remains sketchy. China's state-run news agency, Xinhua, said "environmental samples" tested positive for the virus in a zone of the market that sold wildlife, but the report had no details about the results or even a list of the species for sale. Other studies have discovered similarities between SARS-CoV-2 and a coronavirus found in pangolins, an endangered species that eats ants, but the pangolin virus is more divergent genetically from SARS-CoV-2 than the closest bat virus, and there's no evidence pangolins or their scales -- used in traditional Chinese medicine -- were sold at the market.

So, assuming WHO's team and the Chinese government work out a deal for an international mission to study the pandemic's origins, where would it start? Here are some key questions that need answers.

- What, exactly, did the studies of the Wuhan seafood market sample, and what did the researchers find? With SARS, which emerged in a person in China's Guangdong province in November 2002 -- but was not reported to WHO for 3 months -- extensive sampling of animals at marketplaces in the province found its virus in palm civets by October 2003.

- Does more epidemiological data exist about the earliest cases than have been made public so far here and here? Where had they traveled?

Were they in contact with any animals? What interactions did they have with each other? Have antibody tests been done on any of their contacts? Do stored blood or tissue samples for any of their contacts exist that could show earlier infections?

For SARS, by June 2004, 14 months after the discovery of that virus, researchers had reported detailed epidemiological analyses of humans and animals: 39% of the earliest cases were food handlers, traders of live animals were 13 times more likely to have antibodies to the virus, and in that group, 72% handled civets. New interviews with the earliest COVID-19 cases could reveal surprising links between them.

COVID-19 clusters, for example, have occurred among people who were dining and drinking together, gathering at religious services, and even playing mahjong.

- How aggressively have Chinese researchers looked for SARS-CoV-2 in samples collected before the 1st known cases in Wuhan? Have they looked outside of Wuhan? How far back in time have they probed?

Hospitals and diagnostic labs sometimes store blood, nasal swabs, and tissue samples from patients, especially if they die from unexplained illnesses. Just such samples led to the realization that MERS, 1st recognized in Saudi Arabia in June 2012, had killed 2 people in Jordan in April of that year [2012]. Analyses of stored samples from those 2 people and blood sampling of others who became ill but survived that outbreak confirmed that they all had MERS. Scientists realized camels were the source of Middle East respiratory syndrome when highly similar viruses were found in the animals and people caring for them.

- Can widespread screens be done of bats and other wild animal species thought to be susceptible to SARS-CoV-2 and common in China, including primates, deer, and rodents? Animal feces or urine often contain genetic evidence of viruses. Shi's group at WIV has routinely found coronaviruses in fecal samples and nasal swabs of bats. The sampling of feces from chimpanzees in sub-Saharan Africa has greatly contributed to understandings of the origins of the HIV-1 epidemic, and the Nipah virus, which surfaced in Malaysian pig farmers in 1998, was found in flying bats 2 years later by sampling their urine and fruit that they had partially eaten.

- Can widespread screening of susceptible domesticated animals provide clues to COVID-19's origin? AIDS researchers discovered that pet monkeys harbored a simian immunodeficiency virus that is closely linked to HIV-2, a less common variant that also infects people. Shi's group did a study of domesticated and feral cats in Wuhan and found SARS-CoV-2 antibodies in 15% of the 141 samples tested. No antibodies were found in samples taken before the Wuhan outbreak surfaced, but do veterinarians possibly have additional stored samples? Can more feral cats be tested? Cats, notably, have a thing for seafood, and the Wuhan market at least played a role in amplifying early spread.

- Do stored samples from farmed animals exist? The genetic signature of the influenza virus that caused a pandemic in 2009 showed it clearly had a pig origin, but it wasn't until 2016 that researchers reported the likely location of farms in Mexico that raised the infected pigs. Their study found 58 influenza viruses in respiratory samples stored by a central lab that diagnosed sick pigs. In all, the samples came from 22 farms in 6 Mexican states taken between 2010 and 2014. Phylogenetic analyses allowed the researchers to work backward from the genetic sequences of the viruses they found and pinpoint 2 states that likely were the origin of the pandemic. The data further suggest the virus initially came to Mexico

from pigs imported from Europe.

- Can widespread screening take place of people in China who might come in contact with bats or other wildlife that harbor SARS-CoV-2?

Peter Daszak of EcoHealth Alliance and Shi -- who had their funding from the National Institutes of Health cut in April [2020] after pressure from the White House -- published a study last year [2019] of blood taken from nearly 1500 people in Chinese provinces where bats carry SARS-related coronaviruses. They also interviewed people about their histories of illnesses and contact with animals. Only 9 people had evidence of being infected with a bat coronavirus, but as they noted, antibodies quickly wane. The team showed that spillovers from bats to humans occur routinely.

- Do government health reports contain any information about possible

COVID-19 cases that predate 1 Dec 2019, the 1st confirmed case of SARS-CoV-2 in the scientific literature? The South China Morning Post reported having seen "government data" that a 55-year-old person from Hubei province had COVID-19 on 17 Nov [2019]. The article says 8 other cases of the disease occurred that month [November 2019]. Wuhan is Hubei's capital, but the government records did not specify where these people lived, the newspaper noted. It's possible the virus was first isolated from patients in Wuhan but emerged outside the city.

The influenza virus that caused the pandemic in 2009 first was isolated in San Diego, California, not in Mexico, where it originated.

- Are there stored samples from sewage plants in China that can be probed? Studies of stored sewage samples in Italy described in a press release from that country's National Institute of Health suggest

SARS-CoV-2 was circulating there in December 2019, even before doctors noticed the 1st case in Wuhan. A study from Barcelona, Spain, posted on medRxiv and not peer reviewed, claims to have found SARS-CoV-2 in sewage samples from March 2019. These reports have not been independently confirmed and have been subject to much criticism, but that does not undermine the potential value of studying archival sewage samples for SARS-CoV-2.

- What experiments with bat coronaviruses took place at WIV? This is the mother of all questions for those who suspect SARS-CoV-2 came out of the facility. Accidental lab releases do happen, and one even triggered a pandemic: An influenza strain that surfaced in 1977 was linked to strains in Russian labs collected 2 decades earlier.

- Is it possible that somebody at WIV became infected with the virus and then passed it on to others outside the lab? It's unknown which bat viruses WIV has in its collection of samples and whether any of them infect humans. And a controversy surrounds the closest bat virus to SARS-CoV-2, which is called RaTG13. As Shi and co-workers reported, they only fully sequenced this virus after SARS-CoV-2 surfaced, and they looked through their database for potential relatives. (The group often sequences only one small region of bat coronaviruses genomes that mutates infrequently, so changes indicate distinct viruses.) A great deal of speculation has circled around the naming of the partial sequence: Shi's group earlier had reported a virus named BtCoV/4991 that exactly matches RaTG13 in that small region, but are they one and the same? Or could it be, as some assert, that BtCoV/4991 is SARS-CoV-2 itself? What other bat coronaviruses has the lab yet to fully sequence? Could any of them offer clues?

Another outstanding question is whether Shi's team or other researchers in Wuhan manipulated bat viruses in "gain-of-function"

experiments that can make a virus more transmissible between humans.

In 2015, Shi co-authored a paper that made a chimeric SARS virus by combining one from bats with a strain that had been adapted to mice.

But that work was done at the University of North Carolina, not in Wuhan, and in collaboration with Ralph Baric. Did Shi's group later carry out other gain-of-function studies in Wuhan, and if so, what did they find?

Finally, diplomatic cables from the U.S. Embassy in Beijing in 2018 warned that a new, ultra-high-security lab at WIV had "a serious shortage of appropriately trained technicians and investigators." Did Shi's team ever work with coronaviruses in that lab, and, if so, why?

If history repeats itself, it might take years -- or even decades -- to crack this case. Scientists haven't unequivocally identified Ebola's source 45 years after its discovery. But the key, time and again, to clarifying the origins of emerging infectious diseases is unearthing new data. WHO's push to organize the probe promises to, at the very least, accelerate what has been a plodding pursuit for answers.

[Byline: Jon Cohen]

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Communicated by  
Mary Marshall

<[REDACTED]>

[1. The report of the 1st WHO-China Joint Experts Mission on Coronavirus Disease 2019 (COVID-19), 16-24 Feb 2020, was published on 28 Feb 2020. It included (p 8) the following segment, titled "Zoonotic origins": "COVID-19 is a zoonotic virus. From phylogenetics analyses undertaken with available full genome sequences, bats appear to be the reservoir of COVID-19 virus, but the intermediate host(s) has not yet been identified. However, 3 important areas of work are already underway in China to inform our understanding of the zoonotic origin of this outbreak. These include early investigations of cases with symptom onset in Wuhan throughout December 2019, environmental sampling from the Huanan Wholesale Seafood Market and other area markets, and the collection of detailed records on the source and type of wildlife species sold at the Huanan market and the destination of those animals after the market was closed." A link to the report and the said text were reproduced in posting <http://promedmail.org/post/20200312.7081842>, with the following commentary: "Wishfully, animal-health specialists were included among the members of the WHO Joint Mission." It is relieving to note this comment may have been acknowledged.

2. Zheng-Li Shi team's pre-print paper, "Discovery of a novel coronavirus associated with the recent pneumonia outbreak in humans and its potential bat origin," in which the virus strain RaTG13 was addressed publicly for the 1st time, was published on 23 Jan 2020 at <<https://doi.org/10.1101/2020.01.22.914952>> and reviewed in the commentary of <http://promedmail.org/post/20200201.6943858>. The paper's final version was published later in Nature (doi: 10.1038/s41586-020-2012-7).

Hopefully, the current visit of the 2 experts will pave the road to a thorough, science-based, fully transparent investigation into the origin of the pandemic, in the spirit of One Health and One World. In view of the Dutch experience, China's mink farms should be included in the investigation. Industries of other farmed animal species deserve consideration as well (e.g., rabbits, boars). - Mod.AS

HealthMap/ProMED-mail map:

China: <<http://healthmap.org/promed/p/155>>

[See Also:

COVID -19 update (308): USA (TX) animal, dog conf. <http://promedmail.org/post/20200708.7554832>

COVID-19 update (299): USA (GA) animal, dog conf

<http://promedmail.org/post/20200703.7535112>

COVID-19 update (284): Denmark (ND) animal, farmed mink, spread, dog

<http://promedmail.org/post/20200624.7506728>

COVID-19 update (281): Netherlands (NB, LI) farmed mink, spread, animal, global <http://promedmail.org/post/20200623.7502849>

COVID-19 update (280): animal, pangolin, research

<http://promedmail.org/post/20200623.7502805>

COVID-19 update (267): animal, domestic, wild, cat, research

<http://promedmail.org/post/20200617.7480013>

COVID-19 update (266): Denmark (ND) animal, farmed mink, 1st rep

<http://promedmail.org/post/20200617.7479510>

COVID-19 update (251): Netherlands (NB, LI) animal, farmed mink, spread, culling <http://promedmail.org/post/20200610.7453845>

COVID-19 update (248): Netherlands (NB, LI) animal, mink, spread, culling, cat <http://promedmail.org/post/20200609.7446478>

COVID-19 update (238): USA (MN) animal, cat

<http://promedmail.org/post/20200605.7429133>

COVID-19 update (236): Netherlands (NB, LI) animal, farmed mink, spread, culling <http://promedmail.org/post/20200604.7427849>

COVID-19 update (231): USA (NY) animal, dog conf.

<http://promedmail.org/post/20200602.7420541>

COVID-19 update (230): Netherlands (NB, LI) animal, farmed mink, spread, control <http://promedmail.org/post/20200602.7420433>

COVID-19 update (227): animal, cat, dog, research, experimental infection <http://promedmail.org/post/20200601.7416648>

COVID-19 update (215): Netherlands (NB) animal, mink-to-human, epidem., control <http://promedmail.org/post/20200527.7385049>

COVID-19 update (212): Russia (Moskva) animal, cat, OIE

<http://promedmail.org/post/20200526.7379578>

COVID-19 update (209): Netherlands (NB) farmed mink, animal-to-human, cat, epid <http://promedmail.org/post/20200525.7375359>

COVID-19 update (198): Netherlands (NB) farmed mink, animal-to-human infect susp <http://promedmail.org/post/20200520.7359976>

COVID-19 update (189): Netherlands (NB) animal, farmed mink, research, cat, dog <http://promedmail.org/post/20200517.7344274>

COVID-19 update (183): Japan/USA, animal, research, cat, experimental infection <http://promedmail.org/post/20200514.7337185>

COVID-19 update (181): Germany (BY), France (AC), cat, OIE animal case definition <http://promedmail.org/post/20200513.7332909>

COVID-19 update (177): Netherlands (NB) animal, farmed mink, Spain (CT) cat susp <http://promedmail.org/post/20200512.732858>

COVID-19 update (174): Netherlands (NB) animal, farmed mink, comment <http://promedmail.org/post/20200511.7323845>

COVID-19 update (169): Netherlands (NB) animal, farmed mink, spread, rabbit susp <http://promedmail.org/post/20200509.7316646>

COVID-19 update (154): Netherlands (NB) animal, farmed mink, research <http://promedmail.org/post/20200503.7294846>

COVID-19 update (146): Netherlands (NB) animal, farmed mink, epidemiology <http://promedmail.org/post/20200501.7286113>

COVID-19 update (143): USA (NY) animal, zoo, tiger, lion, tests <http://promedmail.org/post/20200430.7284183>

COVID-19 update (141): India, animal, wild tiger, susp, clarification, RFI <http://promedmail.org/post/20200430.7281768>

COVID-19 update (138): India, animal, wild tiger, fatal <http://promedmail.org/post/20200428.7275765>

COVID-19 update (135): Netherlands (NB) animal, farmed mink <http://promedmail.org/post/20200427.7272289>

COVID-19 update (130): USA (NY) animal, zoo, tiger, lion, new cases <http://promedmail.org/post/20200425.7266556>

COVID-19 update (124): USA (NY) animal, cat, lion, OIE <http://promedmail.org/post/20200423.7259119>

COVID-19 update (123): USA (NY) animal, cat, conf <http://promedmail.org/post/20200422.7256272>

COVID-19 update (113): USA (NY) cat, animal, susp, RFI <http://promedmail.org/post/20200418.7240811>

COVID-19 update (88): Germany, animal, research, pig, chicken, bat, ferret <http://promedmail.org/post/20200407.7196506>

COVID-19 update (85): USA (NY) animal, tiger, OIE <http://promedmail.org/post/20200406.7191480>

COVID-19 update (84): USA animal, tiger <http://promedmail.org/post/20200406.7191352>

COVID-19 update (76): China (HU) animal, cat, owned, stray, seropositive <http://promedmail.org/post/20200403.7179946>

COVID-19 update (75): China (Hong Kong) animal, cat, OIE <http://promedmail.org/post/20200403.7179945>

COVID-19 update (70): China (Hong Kong) animal, cat, pets & stock <http://promedmail.org/post/20200402.7173286>

COVID-19 update (58): Belgium, animal, cat, clinical case, RFI <http://promedmail.org/post/20200327.7151215>

COVID-19 update (56): China (Hong Kong) animal, dog, final serology positive <http://promedmail.org/post/20200326.7146438>

COVID-19 update (50): China (Hong Kong) animal, dog, 2nd case PCR positive, OIE <http://promedmail.org/post/20200323.7129951>

COVID-19 update (45): China (Hong Kong) animal, dog, 2nd case PCR positive <http://promedmail.org/post/20200319.7112693>

COVID-19 update (37): China (Hong Kong) animal, dog, prelim. serology negative <http://promedmail.org/post/20200312.7081842>

COVID-19 update (30): China (Hong Kong) animal, dog, susp, serology pending <http://promedmail.org/post/20200306.7057595>

COVID-19 update (25): China (Hong Kong) animal, dog, susp, OIE <http://promedmail.org/post/20200302.7040373>

COVID-19 update (22): companion animal, dog susp, RFI <http://promedmail.org/post/20200229.7036661>

COVID-19 update (17): China, animal reservoir, wildlife trade & consumption <http://promedmail.org/post/20200225.7024245>

COVID-19 update (11): animal reservoir, intermediate hosts, pangolin susp <http://promedmail.org/post/20200220.7009213>

COVID-19 update (08): companion animal, RFI <http://promedmail.org/post/20200218.7002276>

COVID-19 update (06): animal reservoir, intermediate hosts <http://promedmail.org/post/20200217.6997782>

Novel coronavirus (40): animal reservoir, pangolin poss intermediate host, RFI <http://promedmail.org/post/20200210.6972104>

Novel coronavirus (28): China (HU) animal reservoir

<http://promedmail.org/post/20200201.6943858>

Novel coronavirus (22): reservoir suggested, bats

<http://promedmail.org/post/20200129.6930718>

Novel coronavirus (20): China, wildlife trade ban

<http://promedmail.org/post/20200127.6922060>

Novel coronavirus (18): China (HU) animal reservoir

<http://promedmail.org/post/20200125.6915411>

Novel coronavirus (15): China (HU) wild animal sources

<http://promedmail.org/post/20200123.6909913>

Novel coronavirus (03): China (HU) animal reservoir suggested, RFI

<http://promedmail.org/post/20200114.6887480>

Novel coronavirus (01): China (HU) WHO, phylogenetic tree <http://promedmail.org/post/20200112.6885385>

Undiagnosed pneumonia - China (HU) (07): official confirmation of novel coronavirus <http://promedmail.org/post/20200108.6878869>

Undiagnosed pneumonia - China (05): (HU) novel coronavirus identified

<http://promedmail.org/post/20200108.6877694>

Undiagnosed pneumonia - China (03): (HU) updates, SARS, MERS ruled out, WHO, RFI <http://promedmail.org/post/20200105.6872267>

Undiagnosed pneumonia - China (01): (HU) wildlife sales, market closed, RFI <http://promedmail.org/post/20200102.6866757>

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