

# **Solders Returning from the Wuhan Military Games in Oct 2019 Seeded the World with COVID-19 Without Which a Pandemic Might Have Been Averted**

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**Abstract.** The Wuhan Military Games (WMG) were conducted from October 18-27, 2019, in Wuhan, China. Officially known as the 7th CISM Military World Games, 第七届世界军人运动会, this was the first international military multisport event to be held in China. The event was also the nation's largest military sports event ever with 9,308 athletes from 109 countries competing in 329 events and 27 sporting disciplines. The multisport event included 25 official and two demonstrative sports. Six sport disciplines such as badminton, tennis, table tennis, women's boxing, and men's gymnastics made their debuts in the event. Around 230,000 volunteers were recruited for the event.

If SARS-CoV-2 was circulating in Wuhan at that time, athletes would become infected and upon return to their native countries, would begin to infect local residents. This would begin to trigger the natural “molecular clock” that produces mutations at a rate of about 25.5 per year. Countries that did not send athletes to the Games would not experience this early seeding and instead would have a lower mutation incidence in their earliest cases. I thus compared the mutation rate for early cases in countries that sent athletes with those countries that did not send athletes.

**Null hypothesis: there is no difference in mutation rates in early cases from countries that sent athletes to the WMG from countries that did not send athletes.**

Twenty-nine countries that sent athletes to the games and had residents with the earliest genome sequences in the GISAID database were examined. They had a range of 2-30 mutations, an average of 10.1 mutations (95% CI: 8.3-12.0) compared to the SARS-CoV-2 reference sequence (NC\_045512.2). Twelve countries that did not send athletes to the games had residents with early cases that had a range of 1-5, and an average of only 2.9 mutations (95% CI: 2.1-3.7). The p-value for these two sets of data is  $3.32 \times 10^{-8}$ , a highly significant difference.

**The null hypothesis is thus strongly rejected.**

The alternative hypothesis is thus established, with an average of 7.2 more mutations in the countries with WMG participants than those countries without athletes. Using a molecular clock speed of 25.5 mutations per year<sup>2</sup> this places the beginning of the non-WMG countries spread about 103 days after the games or around February 7, 2020. Feb 6, 2020 WHO announced 28,276 cases in 25 countries.<sup>3</sup>

**Had China informed the world SARS-Co-2 was circulating during the military games a pandemic probably would have been averted.**

**The December 2019 Hunan Seafood Market cases did not seed the pandemic.**

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<sup>1</sup> [ORCID](#)

<sup>2</sup> <https://nextstrain.org/ncov/gisaid/global/6m?dmax=2020-06-07&l=clock> Taken from the molecular clock between December 14, 2019 and June 7, 2020.

<sup>3</sup> Wu YC, Chen CS, Chan YJ. The outbreak of COVID-19: An overview. J Chin Med Assoc. 2020 Mar;83(3):217-220. doi: 10.1097/JCMA.000000000000270. PMID: 32134861; PMCID: PMC7153464.

The first case in each country with a high-quality genome sequence was identified in GISAID and the number of mutations compared to the reference sequence was determined. Interestingly, two countries that did not participate in the military games, Sierra Leone and Georgia, had large December 2019 joint military events with large numbers of participants. I have made the decision to include them in the countries that were exposed to participants in the WMG for that reason.

Despite China hosting the games, the number of mutations found in non-Wuhan provinces was surprisingly low. This is consistent with other evidence that China may have been suppressing the publication of SARS-CoV-2 sequence data.

In 2020, it had been rumored that the State Department requested the Department of Defense test retained blood from our soldier-athletes to SARS-CoV-2 by PCR or convalescent antibodies. Blood is always taken to examine for doping. There is no evidence this request was honored.

The US government may have decided that the full understanding by the public that the Wuhan Military Games was the proximal source for the pandemic in at least the 109 countries, including the US, attending the games would spotlight the culpability China had for causing the pandemic.

First Case in GISAID by Country and Collection Date				Wuhan Military	Comments
Assession Number	Country	Collection Date	Total Mutations	Games?	
EPI_ISL_1603195	Spain	Feb 7 2020	30	yes	
EPI_ISL_2716636	Sierra Leone	Jan 14 2020	15	no	<a href="#">Dec 30, 2019 Joint PRC and Sierra Leone Military Ceremonv for Base Construction Project</a>
EPI_ISL_2835566	United States	21-Jan-20	15	yes	Kristian Andersen's lab
EPI_ISL_1263332	Belgium	Feb 6 2020	14	yes	
EPI_ISL_2631277	Poland	Jan 14 2020	13	yes	No longer available on GISAID
EPI_ISL_2426018	Norway	Jan 29 2020	13	yes	
EPI_ISL_2467531	France	Jan 10 2020	12	yes	20 y male; long stretches of bad sequences
EPI_ISL_3804266	Niger	Jan 1 2020	12	yes	36 y male; no longer available on GISAID
EPI_ISL_3098698	Georgia	Feb 24 2020	12	no	<a href="#">Dec 10, 2019 Joint US-Georgia Military Exercise Planning Meeting</a>
EPI_ISL_1347897	Angolia	Jun 26 2020	12	yes	
EPI_ISL_9879582	Mongolia	Feb 12 2020	11	yes	34 y female
EPI_ISL_1167830	Chile	Feb 16 2020	11	yes	
EPI_ISL_512639	Ukraine	Apr 24 2020	11	yes	
EPI_ISL_4899917	Morocco	Feb 2 2020	10	yes	
EPI_ISL_9214481	Azerbaijan	Mar 23 2020	10	yes	
EPI_ISL_1713439	Qatar	Jan-20	10	yes	
EPI_ISL_4405694	Argentina	Jan 1 2020	9	yes	
EPI_ISL_3537062	California	Jan 3 2020	9	yes	No longer available on GISAID
EPI_ISL_1311681	Netherlands	Feb 9 2020	9	yes	
EPI_ISL_596540	Palestine	Mar-20	9	yes	
EPI_ISL_815257	Albania	Sep 5 2020	8	yes	
EPI_ISL_418241	Algeria	Mar 3 2020	7	yes	
EPI_ISL_8311756	Lebanon	Jan 10 2020	6	yes	
EPI_ISL_489996	Saudia Arabia	Feb 3 2020	6	yes	
EPI_ISL_8907761	Russia	Feb 3 2020	6	yes	Patient said to be infected in Italy
EPI_ISL_527873	Nigeria	Feb 21 2020	5	yes	
EPI_ISL_3838266	Germany	Jan 28 2020	4	yes	Acquired via a lab exchange
EPI_ISL_447919	Thailand	Feb 4 2020	3	yes	
EPI_ISL_412973	Italy	Feb 20 2020	2	yes	
EPI_ISL_2671842	Japan	Jan 9 2020	5	no	
EPI_ISL_649094	Israel	Feb 27 2020	5	no	
EPI_ISL_3568416	Australia	Jan 8 2020	4	no	
EPI_ISL_412972	Mexico	Feb 27 2020	4	no	
EPI_ISL_5248212	Ireland	Feb 20 2020	4	no	
EPI_ISL_464303	England	Feb 3 2020	3	no	
EPI_ISL_412964	Brazil	Feb 25 2020	2	no	Travel history: Italy
EPI_ISL_414949	Northern Ireland	Feb 26 2020	2	no	
EPI_ISL_417186	South Africa	Mar 7 2020	2	no	
EPI_ISL_414025	Scotland	Mar 1 2020	2	no	
EPI_ISL_416327	Shanghai	Jan 28 2020	1	no	
EPI_ISL_419211	Israel	Feb 23 2020	1	no	
EPI_ISL_430732	Beijing, China	Jan 29 2020	6	yes	
EPI_ISL_412982	Wuhan, China	Feb 7 2020	3	yes	
EPI_ISL_422425	Zhejiang, China	Jan 24 2020	2	yes	
EPI_ISL_451345	Sichuan, China	Jan 24 2020	1	yes	
EPI_ISL_429080	Guangzhou, China	Feb 5 2020	1	yes	
EPI_ISL_429089	Guangzhou, China	Feb 8 2020	1	yes	