# After the Ishkhanasar flood, Noah

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A B S T R A C T

Thanks to a pluri-disciplinary approach using archaeogenetics, archaeology and linguistics, this paper proposes the Ishkhanasar Mountain and Aghitu to be the place of the mythic flood at the origin of the Noah's history. It also proposes the hypothesis according to which the flood was followed by a *Yersinia Pestis* outbreak leading to the development of a new cultural entity focused on medicine.

A R T I C L E  I N F O

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## 1. Flood

8, 2 Kya, a humid climatic phase[1] had a major impact on environments of the Black Sea and Caspian Sea regions[2] leading to changes in food productions and trades[3]. In Northern Lesser Caucasus, the agricultural tradition of Aratashen Shulaveri-Shomutepe[4] (6th millennium BC), based on domestic species such as wheat, barley, legumes, sheep, goats and cattle[5], was sustained by rivers' management and hydraulic infrastructures[6].

In the Syunik upland, the humid climate associated to volcanic lakes could have played a major role in the development of a local agriculture and breeding as suggested by the scenes engraved on petroglyphs in Ughtasar Lake[7] (circa 4th millennium BC[8], Tsghuk Mountain). One of them is particularly important because it depicts humans and dogs ousting goats out of fields represented by rectangles close to small circles (dwellings?), a river system descending the Ishkhanasar (3549 m), well recognizable by its three summits. If the stream overlaps Holocene alluvial-diluvial deposits[9], the composition is rather suggesting that it is in the way to submerge the whole land. In other words, the artist depicts humans in their day to day activities when a flood arrived from the mountain, like a snapshot. (Figure 1).

Despite the distance, the red and blue "fresco"[10] painted at the entrance of the Kakavadzor Rock-shelter[11] (Aragats mount, Kakavadzor river, c. late Chalcolithic – second half of the 4th millennium BC) suggests that the flood from the Ishkhanasar became an artistic thematic in the region. Indeed, the fresco represents the caldera of the Ishkhanasar Mountain before the collapse, connected to cones by a channel, red dots representing chingils[12]. The empty caldera and red streams reaching a blue colored line below, probably representing the *Vorotan River*, suggest that the water and landslide covered the Syunik upland. (Figure1).

The river's name of *Vorotan* built on *որոտ [vorot] (Armenian) for "thunder" and the city name of *Aghitu* (former *Aghudi*, Vorotan river, Syunik, Armenia) built on *Աղիտ [aghit] (Armenian) for "disaster" could have been called after this dramatic event probably caused by intense precipitations which have filled the caldera and cones.

## 2. Fighting against Yersinia Pestis

If rice and millet remains from Areni-1 cave[13] (Արենի, Vayots Dzor, Arpa River, Chalcolithic, 7 Kya) suggest that the humid climate allowed the Asian Neolithic model[14] to reach the Southern Lesser Caucasus, the distribution of the *Yersinia Pestis* strains[15] compared to archaeogenetics suggests that the disease was already present during the expansion of the Shulaveri-Shomu culture. Indeed, the dispersion's road of *Yersinia Pestis*[16], from Caucasus to southern Europe by Anatolia, overlaps the dispersion of individuals sharing the same MtDNA H2a hp[17] as the individual buried in Aknashen (5900 - 5600 BC, Aratashen Shulaveri-Shomutepe tradition, Armenia)[18]. (Figure 2, 3, 4).

Their distribution, following toponyms in **gom* for *գոմ [gom]/ *գոմերը [gomery] (Armenian) for "barn/ barns", suggests that Anatolian farmers assigned to livestock entered southern Europe accompanied by the bacteria. (Figure 2, 3). From a linguistic point of view, this hypothesis is illustrated by *Ağrı Dağı* (Turkic) for "the pain or ache mountain" or *Çiyayê Agirî* (Kurdish) for 'the fever mountain" used to call the *Ararat* Mountain, which remained in the Italian Peninsula under the form of **aegrum* (Latin) for "pain" and **agri* (Latin) for "field".

Mainly installed in Greater Caucasus[19], MtDNA H2a hp and *Yersinia Pestis 0.PE2*[20] (Figure 2) suggest that the endemic disease reached the Pontic steppe at least during the 6th millennium BC and had major cultural impact on Eastern European populations. Indeed, if copper ores were already used in Neolithic cultures[21], steppic elite based their development on its intrinsic capacity to impeach and stop the proliferation of bacteria[22] by generalizing the wearing of copper jewels to stop *Yersinia pestis*. (Figure 3).

The rush towards native copper to sustain the "copper protection" was parallel to the political emergence of the MtDNA

[1] See Alley, R. & Ágústsdóttir, A. (2005)
[2] Ollivier et al (2015; 2016)
[3] Clare, L., Rohling, E. J., Weninger, B., Hilpert J. (2008)
[4] Badalyan, R., et al. (2007); Bobokhyan et al. (2014) ; Lyonnet et al (2015)
[5] Badalyan et al. (2010). Lyonnet et al. (2012)
[6] Neolithic sites of Shulaveri, Gadachrili Gora, and Imiris Gora in Georgia. in Ollivier, V. et al. (2018)
[7] About Ughtasar petroglyphs see Meller, H. et al. (2011) and the
[8] Probably in the context of close chalcolithic settlement of Godedzor, Chataigner, C. et al. (2010)
[9] Upper Pleistocene-Holocene alluvial-diluvial drift, fluvioglacial drifts, figure 2 in Ollivier, V. et al. (2010); figure 5 in Meliksetian, K. (2013).
[10] "a bichrome or two-colored drawings was performed with pigments of reddish and bluish color shades applied onto a coating base; that is, it represents a fresco", Khechoyan, A. & Gasparyan, B., (2014)
[11] See figure 11 in Khechoyan, A. & Gasparyan, B., (2014)
[12] "accumulations of rocks on Syunik volcanic upland as a result of glacial erosion and transport. Big stone blocks polished due to glacial transport usually contain a big number of prehistoric carvings or petroglyphs", definition by Khachatur Meliksetian
[13] See rice and millet in Areni-1 in Smith, A. et al. (2014)
[14] Mixed farming of rice and millet is one of the basic agricultural modes in the upper and middle Huai River Valley. This agricultural mode appeared during the middle and late Peiligang Culture (7.8–7.0 ka BP) and then became a common subsistence economy in the end of the Neolithic (5.0–4.0 ka BP). about see Deng Z, Qin L, Gao Y, Weisskopf AR, Zhang C, Fuller DQ (2015)
[15] About the phylogeny and classification of Yersinia Pestis in the Caucasus and Central Asian areas see Kutyrev, V.V. et al. (2018).
[16] About the phylogeny and classification of Yersinia Pestis in the Caucasus and Central Asian areas see Kutyrev, V.V. et al. (2018).
[17] 6700 BP: Female H2a MtDNA (Kumtepe, Kum6), Omrak, A. et al. (2015); 5465 - 5232 cal BCE: Femal H2a, Ripa Biance; Monterolo (Ripabianca di Monterado), Antonio, M. L. et al. (2019); 4043 - 3947 cal BCE: Franchti cave, Greece, subadult Female (I2318/ FR115) Late Neolithic, MtDNA H2; Mathieson et al. (2018). 3483-3107 cal BCE: Male YDNA I hp, MtDNA H2a hp, Remedello di Sotto, Allentoft (2015); Mathieson 2015; Vladimir Tagankin;
[18] Margaryan, A. et al. (2017).
[19] Daghestan (H2a 29%), Roostalu, U. et al (2007)
[20] Kutyrev, V. V. et al. (2018)
[21] For instance the Samarra culture, which 'society is characterized by a sedentary economy, the full establishment of a food producing life style, a more-or-less uniform cultural complex, the beginning of pottery production, and first use of native copper'. Definition by Bobokhyan et al. (2014), p. 284
[22] Ndegwa, S. (2015), Schmidt, M. G. (2012)

H2a1 hp. Indeed, the distribution of the steppic elite carrying MtDNA H2a1 hp installed where copper resources were highly present like in Western Caucasus[23], in Southern Ural (Khvalynsk II, grave 12[24], 4934 - 4780 cal BCE)[25] and in Lesser Caucasus[26], foreshadows the expansion of the Yamna culture. The Zangezur mountain range, rich in native arsenical copper[27], could be the main reason of the presence of MtDNA H2a1 hp in Areni-1 cave (burial 2, 4330-4060 cal BCE)[28]. (Figure 4).

## 3. The group from Aghitu

So far, all individuals retrieved in the Areni-1 cave (Vayots Dzor, Arpa River, Chalcolithic, 7 Kya) were carrying the Asian Y chromosomal DNA (Y-DNA) L1a hp[29], characteristic of the modern India Dravidian speakers[30]. Consequently, the Dravidian language would be part of the local cultural environment as suggested by the *Areni* name itself built on *அரியணை [Ariyaṇai] for "*throne*" (Tamil) and *Aghitu*, built on *Աղիտ [aghit] (Armenian) for "disaster", itself rooted to the Dravidian *கேடு [kēṭu] (Tamil) for "misfortune" or "ruin".

Consequently, the context of successive epidemics and the Dravidian language as work grid allow a new reading of the Biblical episode[31] relating the flood and the story of *Noah*, son of *Lamech*, literally meaning "*son of the land*" (*நில [Nila] for "*land*" and *மகன் [Makaṉ] for "son" giving நிலத்தின் மகன் [Nilattiṉ makaṉ]). Indeed, *Նոյը [Noyy] (Armenian) for "Noah" is homonymous of the Dravidian *நோய் [nōy] (Tamil) for "illness" and suggests that he had to fight an epidemic[32] soon after he reached the Ararat plain as suggested by the toponym Նոյակերտ [Noyaket] (Արարատ, Ararat) and *Kuh-e-Nuh* (ذوح ک وه,) (Persian) to call "the Ararat Mount".

*առողջություն [arroghjut'yun] (Armenian) for "health" built on the Dravidian *ஆரோக்கியத்திற்கு [Ārōkkiyattiṟku] (Tamil) or *ಆರೋಗ್ಯ [Ārōgya] (Kannada) suggests that the group was, from now, on focused on a medical strategy. Indeed, if copper ores were already used as antibacterial material, the wine making facilities[33] found in Chalcolithic levels[34] of Areni-1 Cave suggests that the group used fermentation[35] to transform grape's juice into acetic acid to stop the infection[36]. If this element still follows the *Book of Genesis* by recalling the vineyard of *Noah*, *விஞ்ஞானம் [Viññāṉam] (Tamil) for "science" became *ღვინო [ghvino] (Georgian) or *вино [vino] (Russian) for "wine".

Honouring the surviving group and its medical input was part of the political legitimacy of a new political entity which foreshadowed the Kura-Araxes culture[37]. Then, individuals from the group were later reburied in votive[38] jar-burials[39] in Areni-1 cave while descendants migrated with the new cultural phenomenon.

If the Y-DNA L1a hp remains scarce in Western Eurasia, the dispersion of the MtDNA H2a1 hp associated to the Chalcolithic expansion is well documented except in the Indian Subcontinent. Indeed, if modern populations carrying the MtDNA H2a1 hp suggest that it reached Tamil Nadu[40] by Northern Pakistan and Indus valley[41], the historical context remains blurry. Nevertheless, the Southern Indian megalithic culture, characterized by jar-burials (Tamil Nadu)[42], was followed by a period during which Malayman Chiefs of Tamil Nadu (Sangam Age, 1st century BC) struck copper coins[43] recalling the Aghitu context. On observe, a horse echoing the exceptional representation of the species in faunal remains of the Aghitu-3 cave (Late Upper Palaeolithic)[44], and on the reverse, one or several summits and a flood paced by rocks. (Figure 1).

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[23] The Adygea country is rich in copper resources. See the distribution of H2a1 MtDNA hp in Adygea, in Roostalu, U. et al. (2007). The Adygea country is rich in copper resources.

[24] "The burial was associated to an extraordinary deposit of 293 copper artefacts, amounting to 80% of the copper objects in the combined cemeteries of Khvalynsk I and II, mostly beads and rings, are considered as the oldest copper objects in the Volga-Ural steppes, and trace elements and manufacturing methods in a few objects suggest trade with south-eastern Europe", in Mathieson, I. et al (2015); Lazaridis (2016)

[25] Khvalynsk 2, Grave 12, Y-DNA R1b1 hp/ MtDNA H2a1 hp, 4934 - 4780 cal BCE. Mathieson, I. et al (2015), Lazaridis et al. (2016). MtDNA H2a1 hp remained locally during Bronze Age and Iron Age. About copper during Bronze Age see Artemyev, D.A.& Ankushev, M.N. (2019)

[26] See the distribution of H2a1 MtDNA hp in Caucasus in Roostalu, U. et al. (2007)

[27] Bobokhyan, A. et al. (2014)

[28] Lazaridis et al. (2016)

[29] « The M27 mutation is common in South Asian haplogroup L Y-chromosomes, but was absent in a survey of Y-chromosomes from Anatolia. Haplogroup L occurs at a very low ~2% frequency in present-day Armenians. Our results indicate that it was present in Chalcolithic Armenia, but the fact that all three Chalcolithic Armenians belonged to it should not be necessarily interpreted as evidence that it was common there, as our samples are from a single location (Areni-1 cave) and may represent a local founder population."; Lazaridis et al. (2016)

[30] Sengupta, S. et al. (2006)

[31] *Genesis*, chap. 7, 1-12

[32] About the transportation routes and spread of *Yersinia Pestis* see Xu L et al. (2014).

[33] Barnard, H. N. et al. (2011). Today, Areni is still calling one of the most important grape varieties in Armenia. About the origin of the variety see Hovhannisyan, N. et al. (2015).

[34] Boris Gasparian (1997, prospection), Boris Gasparian & Ron Pinhasi (2004); test excavations commenced in summer (2007)

[35] Angmo, K. et al. (2015); Gomółka-Pawlicka, M. & Uradziński, J. (2003)

[36] "Acetic acid was antibacterial… and was also able to prevent formation of biofilms. Eradication of mature biofilms was observed for all isolates after three hours of exposure." Halstead, F. D. et al. (2015)

[37] Zardaryan, D. (2014).

[38] The place seemed to have played the role of Mausoleum. Indeed, Radiocarbon dates of teeth from the skulls and accompanying charcoal found within the clay ball sealing the pot indicates that the cranium from Burial 1 has been exhumed from its primary burial following full skeletonization. The 14C date on the charcoal from the clay ball associated with Burial 1 suggests that the ritual during which the skulls were plastered into the vessels took place around 3970–3800 CAL B.C. Wilkinson, K. N. et al. (2012).

[39] Three secondary burials composed of crania of young individuals deposited in jar. AR1/43c (I1631): 4250-4050 cal BCE (OxA-19332, 5323±30 bp). Early Late Chalcolithic (Horizon III), Burial 1, age 8±2 years. AR1/44 (I1634): 4330-4060 cal BCE (OxA-19331, 5366±31 bp). Early Late Chalcolithic (Horizon III), Burial 2, age 11±2.5 years. AR1/46 (I1632): 4230-4000 cal BCE (OxA-18599, 5285±29 bp). Early Late Chalcolithic (Horizon III), Burial 3, age 15±2.5 years. Similar jar-burials have been found in Tell Arpachiyah, northern Iraq (5300 Cal B.C.) where four skulls were found buried inside separate pots. These skull burials were associated with high quality painted Halafian pottery and are thought to date to ca. 5300 Cal B.C.' Hijara 1978; Oates 1978; Campbell 2000 in Wilkinson et al. 2012; in Kyul Tepe I Pottery (14C date of 4830–4370 CAL B.C.) in Kushnareva 1997: 22– 24 in Wilkinson et al. 2012 and Areni-1.

[40] Palanichamy, M. G. et al (2015)

[41] MtDNA H2a1 is present in Gujar populations of Mansehra (Khyber Pakhtunkhwa, Pakistan), Sandesar (Gujarat, India), in Nazia (2014)

[42] Megalithic Jar-Burial from Tamil Nadu, in Banerjee 1966, Ancient India, N°22

[43] Mitchiner 205,ff (type)

[44] Kandel, A. et al. (2017)

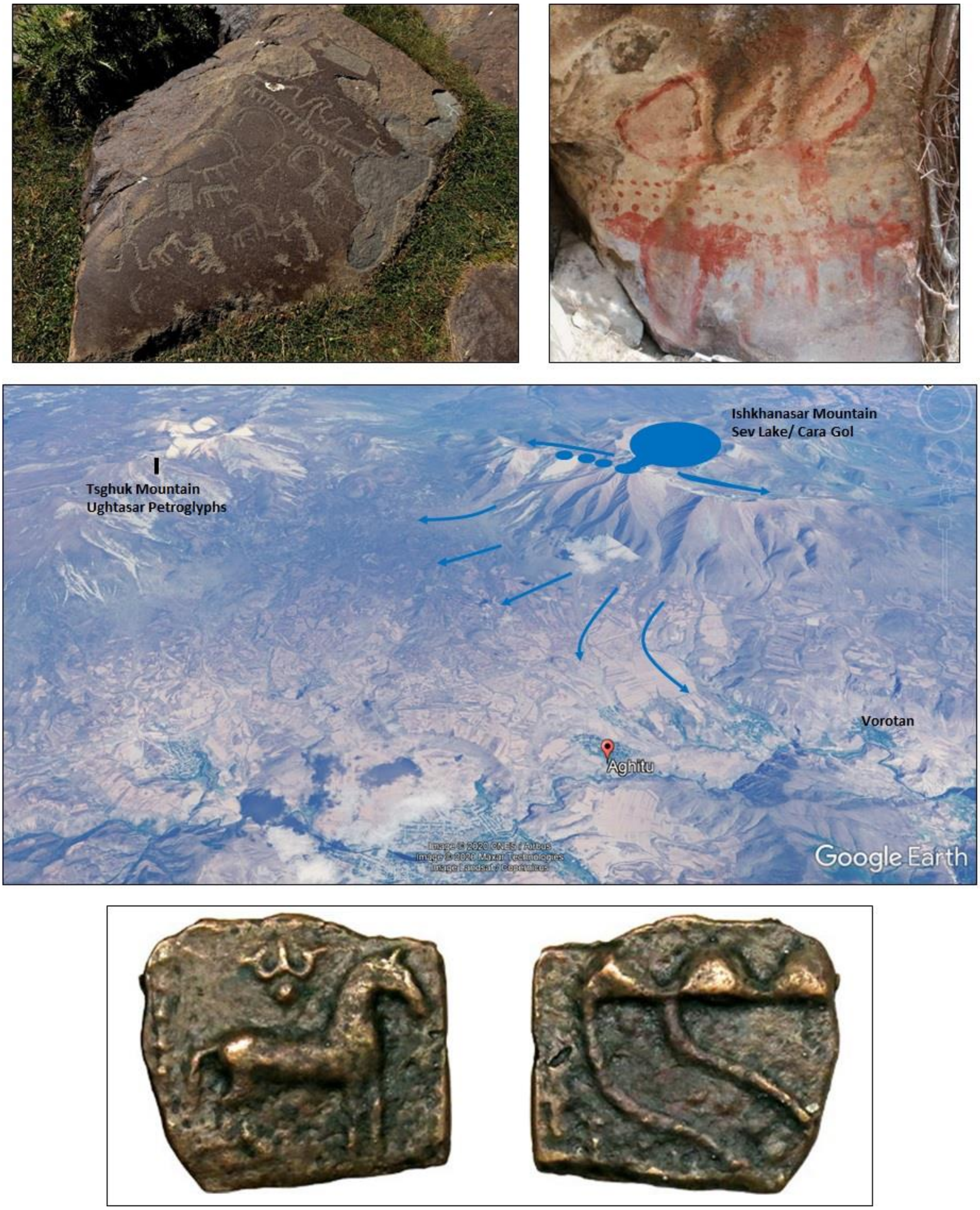


**Figure 1**: From top to bottom, from left to right. The Ughtasar petroglyph mentioned in the text (credit Lusine Avetisyan, Google Earth 2020). The Kakavadzor fresco (credit A. Khechoyan & B. Gasparyan, 2014). A general view of the Syunik area with locations mentioned in the text (credit Google Earth 2020). Malayman Chiefs of Tamil Nadu, Sangam Age, 1st century BC, Copper, 3.04 g, Mitchiner 205,ff (type). On observe: a horse standing to the right, a Shrivatsa symbol on its back. On reverse: three summits and a river flowing from them paced by dots (Credit Rajgor's 2016).

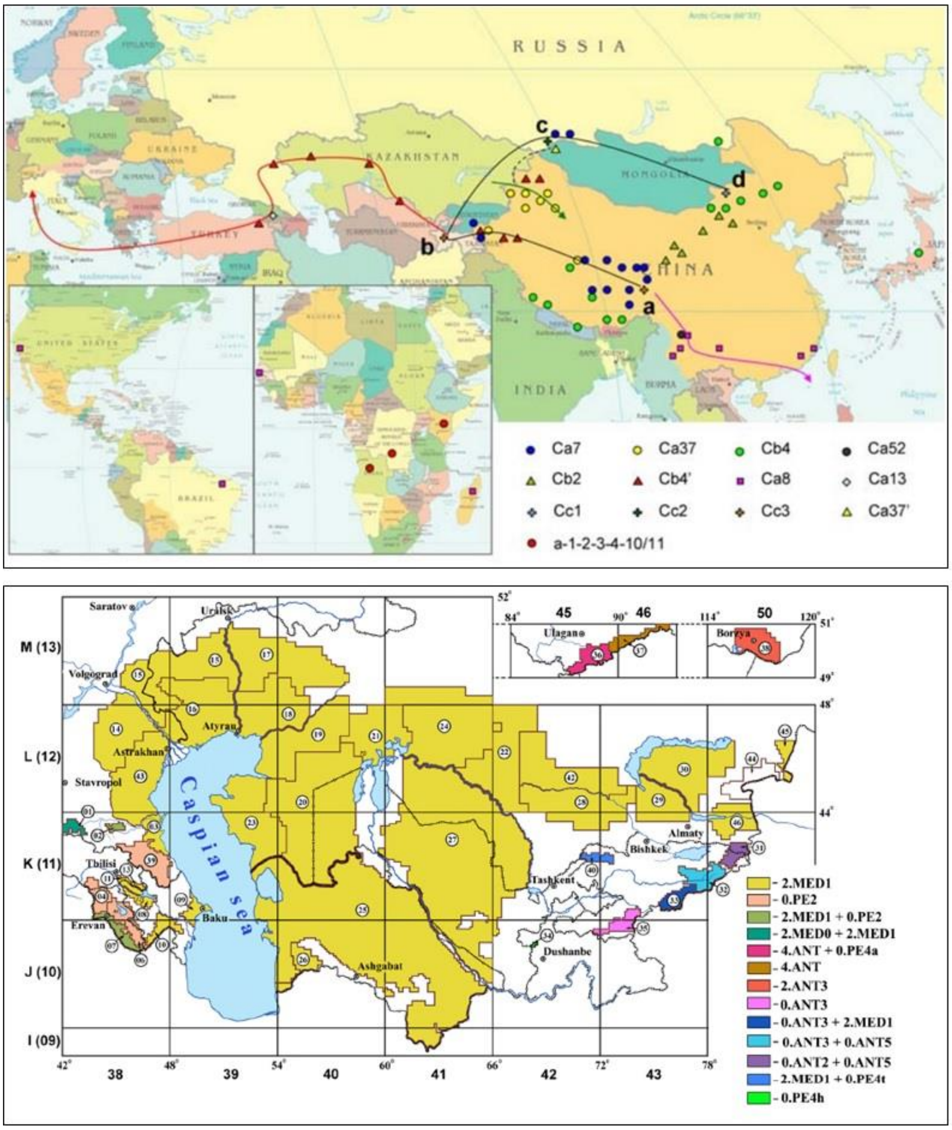


**Figure 2:** from top to bottom, Hypothetic transmission route of Y. pestis (map extracted from Cui, Y. et al. (2008); map of phylogenetic appartenance of Yersinia pestis strains from CIS plague foci, extracted from Kutyrev, V. V. et al. (2018).

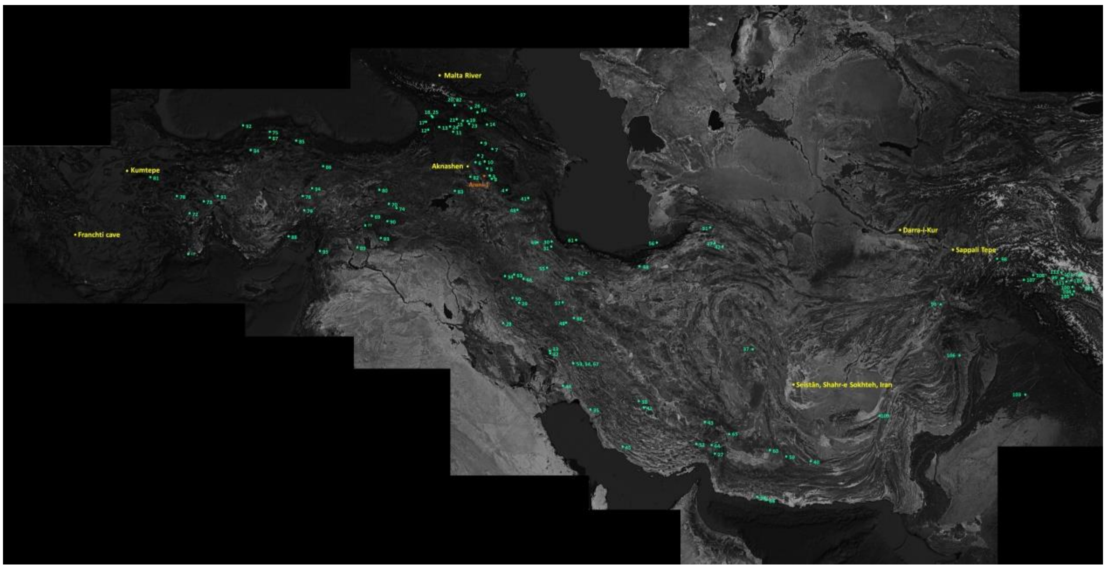


**Figure 3**: MtDNA H2a (yellow dots)/ MtDNA H2a1 (orange dot) compared to the distribution of the distribution of toponyms in *gom for *գոմ [gom] (Armenian) for "barn".

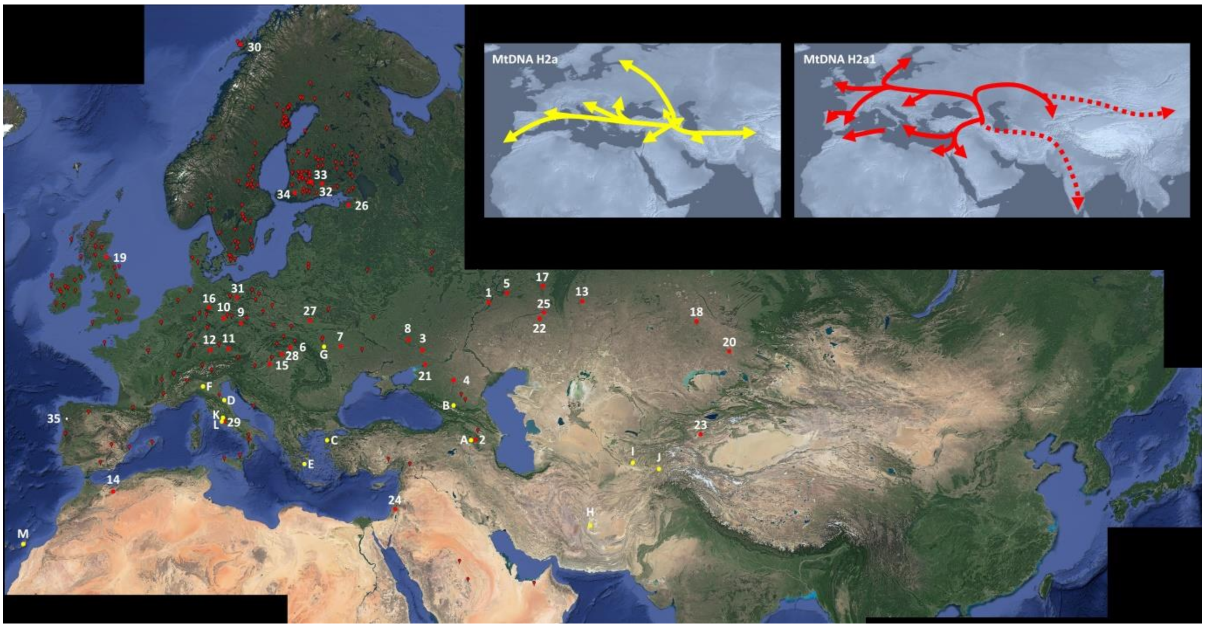


**Figure 4**: Maps of MtDNA H2a hp and MtDNA H2a1 hp distributions according to modern population. Yellow dots (MtDNA H2a)/ red dots (MtDNA H2a1)/ red balloon modern population. Credit Google Earth (2020)/ FamilyTreeDNA (2020)/ Rondu (2020).

<u>MtDNA H2a / H2 hp</u>
A – 5900 - 5600 BC: Individual H2+152, Neolithic, Aknashen, Armenia. Margaryan, A. et al. (2017)
B – 4233 - 4047 cal BCE: Male YDNA R1b1/ MtDNA H2 (PG2004), Eneolithic steppe (Progress, Malka River, Russia), Wang, C. et al. (2019)
C – 6700 BP: Female H2a MtDNA (Kumtepe, Kum6), Omrak, A. et al. (2015)
D – 5465 - 5232 cal BCE: Femal H2a, Ripa Biance; Monterolo (Ripabianca di Monterado), Neolithic, Antonio, M. L. et al. (2019) (R32)
E – 4043 - 3947 cal BCE: Franchti cave, Greece, subadult Female (I2318/ FR115;) Late Neolithic, MtDNA H2; Mathieson et al. (2018)
F – 3483-3107 cal BCE: Male YDNA I hp, MtDNA H2a hp, Remedello di Sotto, Allentoft (2015); Mathieson 2015; Vladimir Tagankin;
G – 5500 cal BP: two individuals MtDNA H2a (VC021; VC015, site 7), Vertebra Cave, Cucuteni-Tripolye Culture,
H – 3200 - 2100 cal BCE: male MtDNA H2a (404, IRQ Grave 31) Seistân, Shahr-i Sokhta (Iran); Krzewińska, M. et al. (2018)
I – 2850 - 2460 cal BCE: H2a MtDNA Darra-i-Kur (Afghanistan) , Douka et al. (2017)/Krzewińska, M. et al. (2018)
J – 1971 - 1782 cal BCE: Female MtDNA H2a (UZ-ST-004, Sappali Tepe (ST), 71, 41, Grave 00-118) Sappali Tepe (Uzbekistan); Krzewińska, M. et al. (2018)
K – 800- 500 BCE: male MtDNA H2a/ YDNA R-P311, *Ardea* (Latini) Iron Age, Antonio, M. L. et al. (2019) (R31) Ardea, antiquity, T26B, R. petrous, 2.5.2018.
L – 27 BCE - 300 CE: male MtDNA H2a/ YDNA R-F1345; Imperial period, Monte Rotondo (Roma), Antonio, M. L. et al. (2019)
M – 895 - 1017 cal CE: Female H2a MtDNA (gun005), Guanche Gran Canaria, Pre-Hispanic, Rodriguez-Varela, R. et al. (2017)

<u>MtDNA H2a1 sequences: red dots in Archaeological sites/ red balloons are modern sequences (FTDNA 2018)</u>
1 – 4934 - 4780 cal BCE: Male R1b1-M415/ MtDNA H2a1 (aged 20-30), Khvalynsk 2, Eneolithic, Samara Culture, Mathieson (2015)/ Lazaridis (2016)
2 – 4330 - 4060 cal BCE: Male Y-L1a/ H2a1 MtDNA, Areni 1, Early Kura-Araxes Culture, Lazaridis (2016)
3 – 4045 - 3974 cal BCE: Male Y-R1a1a1/ MtDNA H2a1a, Alexandria, Sredny Stog II, Mathieson et al. (2018)
4 – 3634 - 3377 cal BCE: Individual MtDNA H2a1, Aygurskiy 2, Kurgan 22, grave 9 (BZNK-289/1), Maikop culture, post Catacomb, Russia, Wang et al. (2018)
5 – 3323 - 2928 cal BCE: Female H2a1e MtDNA, Samara River , Utyevka V (I7489); Narasimhan, V. et al. (2019).
6 – 2875 - 2670 cal BCE: Individual H2a1 MtDNA (grave 523), Koszyce 3, Globular Amphorae culture , Witas, H. W. (2015).
7 – 2863 - 2630 cal BCE: Individual MtDNA H2a1 (poz214), Late Eneolithic, Ukraine, Klembivka, Juras et al. (2018)
8 – 2700 - 2500 BC: Female H2a1 MtDNA, Lisičansk, Catacomb Culture, Wilde (2014)
9 – 2900 - 2350 BC: Male YDNA I2a2/ MtDNA H2a1, Corded Ware, Velké Žernoseky (Czech Rep.) VEZE_27-III, Nicolaus Parthe's quarry, Grave 27, National Museum No. P7A 6589. Narasimhan, V. et al. (2019).
10 – 2568 - 2518 cal BCE: Female H2a1, Eulau, Corded Ware, Brandt (2013)
11 – 2457 - 2205 cal BCE: Bell Beaker: Female H2a1e, Landau an der Isar, Allentoft (2015)
12 – 2400 BC: Bell Beaker: H2a1 MtDNA (21 yo) circa, Unterer Talweg 85, Haunstetten, Bavaria, Germany;
2000 BC: Bell Beaker: H2a1 MtDNA (35-55 yo Female) circa, unterer talweg 58-62; Haunstetten, Bavaria, Germany;
1900 BC: EBA culture: H2a1a MtDNA (child 5 yo) circa, Postillion Straße, Haunstetten, Bavaria, Germany, in Knipper, C. et al. (2017)
13 – Unknown datation: Female H2a1e1a (TafVI-10), Morocco, Iberomaurusian, Rym et al. (2016)
14 – 2050- 1650 BCE: Female MtDNA H2a1a, Kameni Ambar 5 (Russia), Late Bronze Age Sintashta- Petrovka, (939, kurgan 4, burial 1), Narasimhan, V. et al. (2019)
15 – 2000-1500 BCE: Female H2a1 MtDNA, Érd, Vatya Culture, Allentoft 2015/ Lazaridis (2016)
16 – 1981-1878 BCE : Female H2a1a3 MtDNA (BZH8), Benzingerode- Heimburg, Unetice Culture, Brotherton (2013)/ Brandt (2013)
17 – 1890-1750 BCE: Female MtDNA H2a1, Muradym 8, Srubnaya Alakulskaya, Krzewińska, M. et al. (2018)
18 – 1600 - 1400 BCE: Male R1a1a1b2a2b/ MtDNA H2a1a (Tomsk 4379, burial 7), Central Steppe Late Bronze Age, Shoendykol, Baianaul District, Pavlodar Region, Eastern Kazakhstan, Narasimhan, V. et al. (2019)
19 – 1500-1300 BCE: male Y-R1b1a1a2a1a2c1a4b2c1a / H2a1a MtDNA, Evergreen House Longniddry, East Lothian, Olalde et al. (2018)
20 – 900-700 BC: Female H2a1 MtDNA, Ismailovo, Kazakhstan, Zevakino-Chilikta Culture, Unterlander (2017)
21 – 600-200 BC: Female H2a1 MtDNA , Leventsovka (Rostov on Don), Scythian Sarmatian, Der Sarkissian (2011)
22 – 500-200 BC: Female H2a1f MtDNA, Early Sarmatian, Pokrovka, Russia, Unterlander (2017)
23 – 383 - 200 cal BCE: male YDNA R1a1/ MtDNA H2a1,(CGG_2_015977, Kyr 19, Kurgan nr. K53, Keden), Kyrgyzstan, Tian Shan, Saka Culture, Damgaard, P. et al. (2018)
24 – 0-100 AD: Infant 16354T/ H MtDNA (probable H2a1), Tomb of the Shroud, Akeldama, Jerusalem [SC2 T3], Mathieson (2009)
25 – 55 - 140 AD: Female MtDNA H2a1, Cherniy Yar (Russia), Late Sarmatian, Krzewińska, M. et al. (2018)
26 – 75 - 200 AD: Individual H2a1, Kerstovo, Ingria, Russia, Saag, L. et al.(2019)
27 – 100-300 AD: Female H2a1a individual (PCA0103), Masłomęcz, Poland. Stolarek, I et al. (2019)
28 – 300- 500 AD: Female H2a1c (Karos 2/ 53); Female H2a1n (Karos 2/21 & Karos 2/ 22) Karos, Hungria
29 – 300 -700 AD: Male MtDNA H2a1/ YDNA I-CTS616 Mausoleo di Augusto; (US 4018), Late Antiquity/ Early Medieval ; Antonio, M. L. et al. (2019) (R32)
30 – Viking Age Burial: Female H2a1 MtDNA, Nordland, Krzewiska (2015)
31 – 900-1400 AD: Female 16354T MtDNA, Cedynia, Poland, Juras et al. (2012)
32 – 1220- 1290 cal AD: Individual H2a1c; Hollola3 (KM21112:85); Översti, S. et al. (2019)
33 – 1430 cal AD: individual H2a1, Pälkäne3 (Area 10, grave 2); Översti, S. et al. (2019)
34 – 1550-1650 AD: individual H2a1, Turku2 (85/10/305); Översti, S. et al. (2019)
35 – XXth century AD: H2a1, Pandoses (Portugal). FamilyTreeDNA. Sequence 327813/ Rondu 2014.

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