

## Chapter 5

# Coronavirus and Population Genetics: Why Not? Foreword to Á. Gómez Moreno's "Coronavirus and DNA ADN – The R1b Haplogroup"

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### ABSTRACT

*The author affirms that in a moment of unprecedented socio-sanitary crisis where the health of the population and the global economy are at stake, it is extremely important to forget differences and attempt a close collaboration among different disciplines, as that represented by the unusual interaction of population genetics and historical-philological approaches attempted by Gómez Moreno.*

In a moment of unprecedented socio-sanitary crisis where the health of the population and the global economy are at stake, it is extremely important to forget our differences and to attempt a close collaboration among different scientific disciplines. By scientific discipline I am referring not only to Biosanitary and Experimental Sciences, but also to the Humanities and Social Sciences. The RAE Dictionary of the Spanish language defines "science" as "the body of knowledge obtained through observation and reasoning, systematically structured, from which general principles and laws are deduced that have predictive capability and can be tested experimentally". In essence, any scientific discipline, to be considered as such, must follow the so-called "scientific method", common to all sciences and based on observation, formulation of hypothesis, experimentation, theory, and law. It must also have an object of study, different according to each discipline.

This article is a perfect example of collaboration among different scientific disciplines. Ángel Gómez Moreno, professor of Hispanic Philology at the Universidad Complutense (Madrid) and an expert in population genetics, a discipline he has applied in his historic-philological research making an excellent use of the object of study of his discipline (language), is able to masterfully enter the complex world of

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genetics. Through the study of population genetics, he makes us conscious of the potential importance of haplogroups (which are studied by genetics) in the evolution of the current COVID-19 pandemic.

According to Gómez Moreno, “the most affected by the pandemic are countries with enviable indicators in what matters the most: development, per capita income, life expectancy, cultural level, human rights, environmental care, etc. The fact that the UK, Belgium or Spain are failing at the hands of the coronavirus, and Syria, Rwanda or Ethiopia have hardly any (reported) infections or deaths, can be justified in many ways but none of them are convincing”. Prof. Gómez Moreno suggests that the reason could be that those three European countries have something in common, the shared frequency of the male haplogroup R1b, which in the three aforementioned cases represents over 60% of their population and is also predominant in Western Europe and (because of historical immigration) in most of America. Haplogroups are large groups of haplotypes or groups of alleles (several forms of the same gen) that define the DNA variations in an individual and are shared with members of his same human community. Again, according to Gómez Moreno, “if we share the map of COVID-19 and the haplogroup R1b, the formula is validated: *The higher the frequency of R1b, the greater incidence, proven or probable (real or potential), of COVID-19.* Today we know that our DNA makes us brothers of the Irish, the British, the Belgians, the inhabitants of some regions of France and Italy (especially Lombardy and neighboring provinces). The distance is somewhat larger regarding Portuguese, Swiss, Dutch or Germans. Even more, with regard to Scandinavians, Slavic, or Southern Italian. Greece is very far away, for haplogroup R1b is negligible in most of its territory (it appears in just 15% of its population) and E1b1b is hegemonic there (typical of Africa) together with J2 and I2 (typical of the Eastern Mediterranean)”, all of them countries with a lesser incidence of infection. What is extraordinarily curious is that this assertion fits the geographical evolution followed by COVID-19 in its first outbreak and is also being repeated in the second, where once again the disease has a highest incidence in the aforementioned countries.

In human genetics the most studied haplogroups are the chromosome Y (DNA-Y) and those of the mitochondrial DNA (DNAMt), which can be used, among other things, as “biomarkers” to define genetic populations. DNA-Y is transmitted exclusively through patrilineal descent, while DNAMt is exclusively matrilineal. In Biomedicine there is a pressing need to find possible “genetic markers” that will allow us to identify genotypical profiles which will help us predict diseases in time, determine the prognosis of the disease or know which patients will respond or not to specific treatments so that we can administer the best treatment to each patient. That is, we are talking about diagnosis and treatment “à la carte”, the basis of the future medicine. In fact, if we want to practice good medicine, we can never forget individual variation, something that confirms the dictum “there are no diseases, only patients”.

In this context, it is not difficult to suspect that some haplogroups might be more susceptible to SARS-CoV-2, in the same way that there is a connection between some genotypes and the diagnosis, prognosis and treatment of certain diseases. It is not inane to think that this “shared genotype” (by individuals of a given population) could be influential in the geographical evolution of the pandemic. Obviously, we cannot ignore many other factors that could be playing a role in this evolution, not only in the infection itself but also in the prognosis, like the strain of the virus that infects a given individual or population, or the mutations that a strain can experience throughout the pandemic.

Although it is evident that we are still missing much data, it is also clear that initiatives such as Prof. Gómez Moreno’s make science advance in the right direction, which is the altruistic collaboration among different disciplines with the only goal of the common good. Considering the inability of most governments to successfully control the situation, it is evident that only with the help of science we will see the light at the end of the tunnel.

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