

המכון הבינלאומי לגנאלוגיה יהודית ומרכז פאול יעקבי, ירושלים



## INTERNATIONAL INSTITUTE FOR JEWISH GENEALOGY AND PAUL JACOBI CENTER

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Research Proposal

### **Ashkenazi family names: an integrative historical, genealogical and population genetics study ©**

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#### Background:

In most parts of the modern world today, families carry surnames, which are considered a 'paternally inherited trait'. Among Jews, long before the advent of the Diaspora, certain family names were transferred from generation to generation. Thus, Cohen-related family names (such as *Cohen*, *Katz*, *Kagan*, etc.) can, in theory at least, be traced back to the ancient priestly family, the *Cohanim*<sup>1</sup>. Similarly, Levy-related names (i.e. *Levi*, *Levine*, *Levinsky*, *Levinas* etc.) derive from the Levite tribe or "family". Additionally, certain family names can be traced back to, and associated with, families of famous rabbis in the Middle Ages, such as *Shapiro*, *Horowitz*, *Weil*, *Treves* and others.

However, most Ashkenazi Jews carry family surnames that were adopted during the late 18<sup>th</sup> or early 19<sup>th</sup> centuries at the earliest<sup>1</sup>. Their earlier names generally took the form of patronymics (i.e. employing the father's given name as the identifying name, such as *Yitzhak ben [i.e. son of] Avraham*). The transition to modern surnames, with mutations along the way, was a process that continued until the beginning of the 20<sup>th</sup> century and sometimes beyond. The traditional naming system (patronymics) constitutes an obstacle for historians and scientists seeking to trace the early ancestry/genealogy of individual lineages and to study the population inter-relations, sociological structure or geographic migration of most Ashkenazi Jews. Therefore novel approaches are required to shed light on the population dynamics of these Jews during centuries gone by.

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<sup>1</sup> Lawson, E.D. (1997). "Some Jewish Personal Names – an Annotated Bibliography", in: Demsky, A., Reif, J.A. and Tabory, J. (eds.) "These are the Names – Studies in Jewish Onomastics", vol.1, pp: 83-150.

## Hypothesis:

Since the Y chromosome is paternally inherited, it is reasonable to suggest that at least some of the family names in specific Jewish communities will cluster into certain Y-chromosome threads or “lineages”. This proposition may help to shed light on the family networks of Ashkenazi Jews and to decipher the underlying population dynamics.

Our hypothesis is supported by the discovery of a common paternal genealogy among *Cohanim* and a separate paternal ancestor for the Levites from various geographically separated communities worldwide.<sup>2</sup> Recent studies compared genome-wide genetic variation of Jews of Ashkenazi, Sephardi and Middle Eastern descent, with that of the respective non-Jewish host populations. One study found that Diaspora Jews are genetically closer to each other than to the non-Jewish population in their host environment. It also suggested that Jews from the broad area called “Ashkenaz” are inter-related to the degree of 4<sup>th</sup> or 5<sup>th</sup> grade cousins.<sup>3</sup> Therefore, assuming that in most cases family names are considered a paternally inherited trait, we have reason to believe that detailed analysis of the genetic variation in Ashkenazi Jews (starting from the Y chromosome) may shed important light on their population structure and dynamics.

## Justification:

So far, the difficulty for the historical research of this kind lies in reconstructing the extended family networks in any given population. Written documentary sources are frequently fragmentary and sometimes non-existent. Therefore, in order to produce a coherent picture of population dynamics, historians and social scientists usually adopt a micro-historical approach, by focusing on one family or on a single village in order to use to the fullest the documentation found in the relevant archives. While this approach has the potential to decipher the genealogical pattern of discrete families, it cannot shed light on the wider patterns of population dynamics in Ashkenazi Jews in a broad perspective.

To overcome this problem, we have therefore elaborated the following aims for this proposal:

## Aims:

**Aim 1:** To reconstruct clusters of Ashkenazi family names based on the analysis of genome-wide variation genetic data.

- a. In collaboration with Dr. Gil Atzmon of the Albert Einstein Medical School, New York, we have gained access to detailed genome-wide genetic analysis of a unique dataset of 800 samples of Ashkenazi Jewish individuals, whose family names are available. This dataset was originally assembled to study the genetics of aging. It will be expanded to include 2000 samples, to form the basis of our proposed research.
- b. We have already been able to generate a preliminary Y-chromosome lineage tree from 178 male subjects (utilizing genotype data also received from Dr. Atzmon) Revealing, in turn, five distinct clusters and several sub-clusters of families. Our preliminary analysis also indicates that, consistent with earlier studies (Skorecki *et al* (1997) *Nature*, 385:32), one of the clusters harbored all Cohen-related names available in our dataset, thus supporting our working hypothesis.

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2 Skorecki, K., Selig S., Blazer, S. et al. (1997). “Y Chromosomes of Jewish Priests”, *Nature*, 385:32; Behar et al (2003). “Multiple origins of Ashkenazi Levites: Y chromosome evidence for both Near Eastern and European ancestries”, *Am. J. Hum. Genet.*, 73(4):768-79

3 Behar, D.M., Bayazit, Y., Metspalu, M. et al. (2010). “The genome-wide structure of the Jewish people”, *Nature* 466, 238-242;

Atzmon, G., Hao, L., Pe'er, I. et al. (2010). “Abraham’s Children in the Genome Era: Major Jewish Diaspora Populations Comprise Distinct Genetic Clusters with Shared Middle Eastern Ancestry”, *Am J Hum Genet.*, 86, (6):850-859.

- c. In order to decipher the relationships among other family names that clustered together in our Y-chromosome lineage tree, we will utilize archives worldwide and archive reference catalogues (such as the six volumes of *Quellen zur Geschichte der Juden in den Archiven der neuen Bundesländer*, and *Quellen zur Geschichte der Juden in polnischen Archiven*, which also feature name registers, plus important onomastic work on Ashkenazi Jews done by Alexander Beider and others.

**Aim 2:** To establish an integrative dataset encompassing a maximal number of available genealogical-based material from pertinent public archives, privately created family trees available on the web, and cutting-edge genetic data.

**Aim 3:** On the basis of the above, to construct a model seeking to explain the inter-relations among a significant number of Ashkenazi family names.

Importance:

This study will help illustrate (i) to generate a scientific picture of the population structure of Ashkenazi Jews within its historical context; and (ii) to reconstruct various specific dynamics within that population, such as marriage strategies on a trans-regional level. This will contribute greatly to our understanding of various historical, demographic and sociological aspects of European Jews over the last several centuries until modern times.