



Overview

When humans first ventured out of Africa some 60,000 years ago, they left genetic footprints that are still visible today. By mapping the appearance and frequency of genetic markers in modern peoples, it's possible to create a picture of where and when ancient humans moved around the world.

IBM and National Geographic have embarked on a five-year research partnership to do just that. The Genographic Project, launched in April, 2005, is seeking to collect voluntary DNA samples on an unprecedented scale from indigenous and traditional peoples, as well as from the general public.

Led by National Geographic Explorer-in-Residence Dr. Spencer Wells and IBM Computational Biologist Dr. Ajay Royyuru, the Genographic Project is one of the most ambitious population genetics initiatives ever attempted.



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1 field research

Because indigenous and traditional peoples retain the cultural context around their genetic makeup, including languages, oral and written histories, and geographic locus, they are excellent partners in the Genographic effort.

With lead funding from the Waitt Family Foundation, a consortium of ten distinguished researchers from scientific institutions around the world conduct voluntary DNA sampling of hundreds of indigenous populations in places such as Chad, Alaska, and central Asia. An additional researcher focuses on ancient DNA.

Using secure ThinkPad laptops with biometric security to help ensure the results stay private, the researchers then upload their results, including information about the groups, photographs, or any other pertinent information to the DNA Analysis Repository, which is located in Washington, DC, at the National Geographic Society.

2 public participation

For the first time in the 118 year history of the National Geographic Society, the public is also being invited to participate actively in one of its scientific endeavors.

The Genographic Project allows the general public to purchase a Genographic Participation Kit, swab your cheek, and submit an anonymous sample to the Project.

With a simple and painless cheek swab you can sample your own DNA and submit it to the lab. The team can test either your mitochondrial DNA, which is passed down each generation from mother to child and reveals your direct maternal ancestry; or your Y chromosome (males only), which is passed down from father to son and reveals your direct paternal ancestry. You choose which test you would like administered.

Once received, your kit is checked in and sent on to the University of Arizona, which is helping the Project. Your DNA is isolated using a series of tools and is then amplified using a technique called Polymerase Chain Reaction, or PCR. The laboratory staff then review the computer-generated results to produce finalized data, which is then also sent to the DNA Analysis Repository in Washington, DC.

3 analysis

Once the DNA has been isolated and sequenced, complex algorithms are run against the data to find patterns of genetic markers and help coalesce the picture of the human family tree. No health-related analysis or other medical research is performed on any of the samples.

The samples are placed into logical “branches” on the human family tree, called “haplogroups” by population geneticists. The public participants can use a secret, anonymous code that came with the Participation Kit to access their results on nationalgeographic.com. They can see their own ancestral migration patterns and choose to contribute their information to the Genographic DNA Analysis Repository to be part of the scientific research.

Upon completion of the Genographic Project, this DNA Analysis Repository will be turned over to the global academic community in the public domain, who can continue to use the information to further our understanding of how, when, and why humans came to populate the Earth.

4 legacy fund

Part of the proceeds from the sale of the Public Participation Kits goes to fund further field research. The rest of the proceeds generated from the sale of the Public Participation Kits go to the Genographic Legacy Fund.

The Legacy Fund will reciprocate the positive contribution made to the Genographic Project by indigenous and traditional communities around the world. The fund will be directed primarily towards education initiatives, cultural conservation, and linguistic preservation and revitalization efforts. Through the extension of grants, the fund aims to empower indigenous and traditional peoples on a local level while helping to raise awareness on a global level of the challenges and pressures facing these communities.

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