

Researchers develop genetic profile of the Netherlands

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In a large-scale research project under supervision of University Medical Center Groningen (UMCG) researchers have developed a genetic profile of the Netherlands. The researchers have mapped the DNA sequences of 250 family trios, consisting of two parents and one child, across the Netherlands. It is the first time that the genes of healthy persons have been analyzed in this number and with this precision.

The research is published in *Nature Genetics* on 29 June 2014.

"This profile allows for connecting [genetic variation](#) to illnesses," says project leader Cisca Wijmenga (UMCG). "The Genome of the Netherlands can greatly accelerate research into genes that play a key role in the development of chronic and age-related diseases. We can now focus specifically on the disease-causing genes. The Genome of the Netherlands provides a catalogue that shows which amount of DNA variation is tolerable, and which amount eventually causes a disease."

A noticeable result is that every participant in this research on average turned out to have twenty mutations that were thought to cause rare diseases, although the participants were perfectly healthy.

Faster Big Data algorithms developed by Alexander Schönhuth from the Centrum Wiskunde & Informatica (CWI) are the first to be able to analyze and compare full DNA sequences. 'Previous methods were too slow to use all elements in the data set,' says Schönhuth.

"There are good algorithms available to detect small and large variations, but middle-sized DNA differences were harder to find. No less than 98.4% of all variations our techniques found in this bandwidth were new and previously unknown."

More information: Whole-genome sequence variation, population structure and demographic history of the Dutch population, *Nature Genetics*, [dx.doi.org/10.1038/ng.3021](https://doi.org/10.1038/ng.3021)

Provided by Centrum Wiskunde & Informatica

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