KORA-gen: A Resource for Population Genetics and Selection of Controls with a broad Spectrum of Phenotypes

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GSF has established the population-based KORA-gen Biobank (www.gsf.de/kora-gen). It is based on the KORA platform in Augsburg, Southern Germany (Cooperative health research in the Region of Augsburg). In total, four population based health surveys have been conducted during 1984 - 2000 with 4.000-5.000 participants each in the age of 25 to 74 years. Follow up investigations of these study participants are running.
In KORA-gen the following prerequisites for successful genetic-epidemiological research are fulfilled:

- sufficiently large number of participants,
- well characterized disease and intermediate phenotypes,
- well recorded information about environmental factors and exposures,
- availability of biosamples, e.g. genomic DNA, serum, plasma and urine, as well as EBV immortalized cell lines.

Within the NGFN and with other partners, the resource has been successfully used for population genetics, as pool for controls and for disease related association studies. Some examples are listed.

(1) Genetic studies have been performed comparing KORA with other populations from Germany and Europe.
(2) KORA was used as control group in more than 40 case control studies in different fields.
(3) A gene variant in the *MC4R* gene showed a mild negative association with obesity in 7937 participants of the KORA studies.
(4) Significant associations have been found for genes regulating the QT-interval including the identification of novel genes previously not known to be involved in cardiac repolarization.
(5) In atopy studies several genes have been found to be associated with atopic diseases (*NOD1, NOD2, STAT6, Chymase*).

These examples show that KORA-gen has sufficient power to detect and replicate weak genetic effects for quantitative as well as qualitative phenotypes. Since mid 2005 KORA-gen is member of the P3G Consortium, the Public Population Project in Genomics (www.p3gconsortium.org).

References:

Wichmann, H.E., Gieger, C., Illig, T. for the KORA Study Group: KORA-gen. Resource for population genetics, controls and a broad spectrum of disease phenotypes. Das Gesundheitswesen, (2005) special issue 1, 26-30