

BIORESOURCE PAPER

Bioresource from the French Gazel Cohort Study

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The GAZEL Cohort Study set up in 1989 is a general-purpose epidemiologic cohort. At inception in 1989, the cohort included 20,625 volunteers then aged from 35-50 (women; n= 5,614) or 40-50 (men; n= 15,011). The data collected routinely come from different sources, mainly annual self-administered questionnaires, socioeconomic and health administrative data, health examinations, and causes of death. The epidemiologic database is maintained and stored by our group in our own facilities; the biobank is stored in the "Centre de ressources biologiques", in Dijon, France. Today, more than 50 epidemiological projects on diversified themes have been set up in the GAZEL Cohort Study by some 30 French and foreign teams.

Keywords: epidemiology; population-based cohort; biobank; research infrastructure

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(1) Overview**Project description**

The GAZEL Cohort Study was set up in 1989 among Électricité de France-Gaz de France (EDF-GDF) workers [1-3]. It is an open resource characterized by a broad coverage of health problems and determinants. At inception in 1989, the GAZEL Cohort Study included 20,625 volunteers then aged from 35-50 (women; n= 5,614) or 40-50 (men; n= 15,011). The cohort is diverse in terms of social, economic, and occupational status. The data collected come from different sources: annual self-administered questionnaire (morbidity, lifestyles, life events, etc.); personnel department of EDF-GDF for social, demographic, and occupational characteristics; EDF-GDF special social insurance fund (sickness absences, cancer and ischemic heart disease registries), occupational medicine (occupational exposure and working conditions), Social Action Fund (healthcare utilization), Health Screening Centers for standardized health examination and the constitution of a biobank, and the National Death Register (causes of death).

The GAZEL Cohort Study is open to research teams. Today, more than 50 projects have been set up by some 30 French and foreign teams. Research themes are diversified. Health problems as different as migraine,

postmenopausal osteoporosis, ischemic heart disease, depression, musculoskeletal diseases, and traffic accidents have been the object of research projects in the cohort. They take into account risk factors that are behavioural (alcohol, smoking, and nutrition), social (social support, family and professional support for patients with chronic diseases), psychological, occupational (organization of work, psychosocial and biomechanical factors at work), and medical (consumption of medication and treatments). A substantial proportion of the research work has focused on the problem of social inequalities in health and their occupational, personal, and social determinants [1,3].

Classification (1)

Human

Species

Human data

Classification (2)

Epidemiological data biological samples.

Context**Spatial coverage**

Whole metropolitan France.

Temporal coverage

Start date: January 1989. End date: not applicable (the cohort will be followed-up as long as possible, and thus there is no temporal limit); this implies that data and samples will be stored without any time limitation.

Temporal coverage for accessibility

N/A

(2) Methods**Steps**

Participants were invited in 1999-2000 to health clinics scattered over all France where medical data, serum and plasma were collected. Venous blood samples (55 ml) were collected from 4,656 GAZEL participants by venipuncture into Vacutainer tubes after an overnight fast.

Stabilization/preservation

All the samples were divided into two replicates, each composed of 8 aliquots of serum; 4 aliquots of lithium heparin plasma; 4 aliquots of EDTA K3 plasma; 3 aliquots of sodium citrate plasma; and 5 aliquots of buffy coat. Within 2 hours the samples were centrifuged (1000 g during 10 mn; 3000 g during 30 mn: citrate plasma), and stored after centrifugation at 4-8°C in the dark.

Type of long-term preservation

Liquid nitrogen

Storage temperature

- Samples were stored at -196°C
- Storage duration is not defined (almost 15 years now)

Shipping temperature from patient/source to preservation or research use

Transportation from each collection sites to the central biobank within 24 hours at 4-8°C ("Carboglance").

Shipping temperature from storage to research use

Transportation from the central biobank within 24 hours at 4-8°C ("Carboglance").

Quality assurance measures

Standard Operating procedures (SOPs) for all the processes; traceability of all the operations.

Source of associated data

Health examination, questionnaires, company data (personal files, sickness absence, cancer and coronary heart diseases registers), national death registry.

Ethics statement

Inserm IRB #01-017 (20/05/2009) « *Comité consultatif de protection des personnes dans la recherche biomédicale de Lorraine* » (4/08/2000).

Constraints

None, except the French regulation on personal data and biological material.

(3) Bioresource description**Object name**

Cohorte Gazel

Bioresource name

Biobanque de la cohorte Gazel

Bioresource location

- UMS 011 Inserm-UVSQ, 16 avenue Paul Vaillant Couturier 94800 Villejuif, France
- Epidemiological database: same address
- Biobank: Centre de Ressources Biologiques « Ferdinand Cabanne », Centre Hospitalier Universitaire de Dijon, 1 Boulevard Jeanne d'Arc, BP 77908, 21079 DIJON CEDEX, France

Bioresource contact

- marcel.goldberg@inserm.fr
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Bioresource URL

www.gazel.inserm.fr

Identifier used

N/A

Bioresource type

General population sample

Type of sampling

Longitudinal population-based cohort. Participants are volunteers who used to be workers of the Electricité de France-Gaz de France. The only inclusion criteria was being a worker of that company aged 35 to 50 years (women) or 40 to 50 (men) at inception in 1989.

Anatomical site

N/A

Disease status of patients/source

All diseases occurring during the follow-up of the cohort.

Clinical characteristics of patients/source

General population sample aged 35-50 at inception in 1989; numerous personal and health data prospectively collected.

Vital state of patients/source

National Death Index

Clinical diagnosis of patients/source

Self-reported diseases, diagnoses from hospital discharges, "serious chronic disease" ("*Affections de longue durée*") taken in charge by the social security; for cancer and ischemic heart diseases, confirmation through medical records.

Pathology diagnosis

All incident diseases during follow-up are recorded according to the ICD-10 classification.

Control samples

Most of the cohort participants are healthy women and men.

Biospecimen type

DNA, serum, plasma

Size of the bioresource

20,625 participants at inception in 1989, followed-up since that time.

Release date

Data and biospecimen are currently available.

Access criteria

According to Gazel's Charter, every research group (public or private) in France or in other countries is entitled to apply for a research project, through a formal application (objectives, description of sample, methods, data needed, timetable); the PI must have a permanent position in his/her organization, all legal and ethical authorizations must be provided. A financial contribution is asked depending on the number and nature of data needed.

(4) Reuse potential

The Gazel cohort is an open and general-purpose epidemiological infrastructure and data are available to investigators conducting research on the cohort; they also have the possibility of collecting additional data to suit their research needs. Once a project is accepted (along with the legal authorizations), the investigators receive a file with the needed data and biospecimen are shipped if needed. Up to now, about 50 research projects were conducted within the Gazel Cohort Study by about 30 different

teams from France and other countries; about 200 peer-reviewed papers were published.

Author roles

- Marcel Goldberg, Marie Zins: Creator, Director, Collector of Data and Samples
- Annette Leclerc: Co-creator
- Joseph Henny: Bioresource manager

Acknowledgements

Epidemiological cohort: Annette Leclerc, co-PI at the start of the project (affiliation: Population-based Epidemiological Cohorts Unit, Inserm UMS 011, Villejuif, France) and Versailles St-Quentin University.

Biobank: Joseph Henny (affiliation: Population-based Epidemiological Cohorts Unit, Inserm UMS 011, Villejuif, France and Centre de médecine préventive, Vandœuvre-lès-Nancy, France).

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