NEWS FROM CARTaGENE

The CARTaGENE voice

AIMS TO ACCELERATE HEALTH RESEARCH

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www.cartagene.qc.ca

CARTaGENE wishes you Happy Holidays!

The year 2022 represents **CARTaGENE**'s **13th year** of activities! 13 years of health research that would not have been possible without you.

Thanks to your data, health research progresses rapidly. Researchers from all over are analyzing them to **understand the mechanisms responsible for diseases** (chronic diseases, cancers, COVID-19, etc.) and to identify targets for treatments. You also help provide evidence to decision makers to **guide public health policies.** In the context of the current pandemic, this role is all the more important. Your continued commitment is essential for the future of **CARTaGENE**.

CARTaGENE thanks you for your involvement and your trust. **CARTaGENE** is you!

THANK YOU !

CARTaGENE for the health of Quebec

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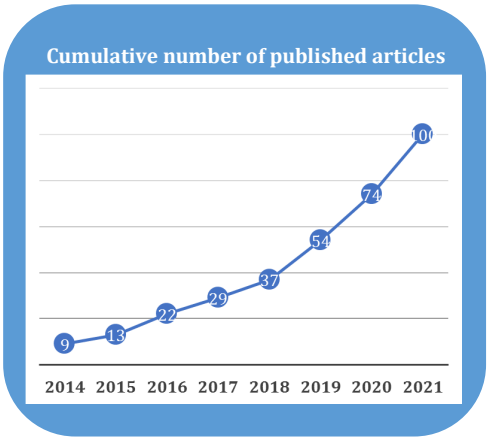
CARTaGENE in numbers!

92 health research projects approved,
72 of which are still in progress!

13 years of advances in research that will have major impacts on our health.

100 articles published in scientific journals!



2021, another year marked by COVID-19

CARTaGENE continues to contribute to the fight through our study on COVID-19

CARTaGENE launched the second part of the study at the beginning of 2021. In addition to responding to a questionnaire, participants had the opportunity to donate a blood spot sample to detect the presence of antibodies specific to COVID-19, especially in certain populations at higher risk of infection (seniors living in nursing homes and those born outside of Canada).

This study is funded by the Government of Canada, through the COVID-19 Immunity Task Force, and the Canadian Institutes of Health Research (CIHR). These two funds were awarded to the Canadian Partnership for Tomorrow's Health (CanPath), of which CARTaGENE is part of.

Of the 8,000 participants who completed the questionnaire in the summer of 2020, over 4,500 participants agreed to respond to a new questionnaire and donate a blood spot sample. The results showed that in April 2021 more than 1,400 participants already had antibodies to COVID-19, which was explained by vaccination.

Real results to inform decision-makers and guide public health policies

Impact of COVID-19 on mental health, physical activity and nutrition

By comparing the results of the summer 2020 questionnaire with those of the winter 2021 questionnaire, we gathered relevant information on mental health, physical activity and nutrition.

Compared to 2020:

- Participants feel less worried, but seem to have more difficulty relaxing and are more easily irritable.
- A slight decrease in alcohol consumption has been observed.
- The level of physical activity increased slightly.
- The amount of food the participants consumed decreased slightly, but the quality did not change.
- The duration and quality of sleep have decreased.

Real results to inform decision-makers and guide public health policies

A single dose of vaccine is not enough to be protected

This is the main finding of the first phase of CanPath's COVID-19 antibody study (of which CARTaGENE is part of).

Sample collection took place in the spring of 2021. Preliminary analyses of approximately 6,000 samples from participants recruited across Canada have allowed to quantify levels of antibodies against the SARS-CoV2 virus. Researchers compared antibody levels in participants of various vaccine statuses. They reported widely different levels after a single dose of vaccine. The antibody levels measured after two doses of the vaccine were found to be much higher.

Also :

- The levels of antibodies detected after a single dose in people aged 60 and over were much lower than those detected in young people.
- The antibody levels detected after a single dose of mRNA vaccine (Pfizer-BioNTech and Moderna) were approximately one and a half times higher than those detected after a dose of viral vector vaccine (Oxford-AstraZeneca).
- The antibody levels detected appeared to be more stable after two doses.

These preliminary results confirm the importance of the two vaccine doses. In the future, the research team will be able to analyse the modulation over time of antibody levels to the SARS-CoV2 virus and continue to inform decision-makers, in particular about the number and recommended frequency of booster doses.

Details of the CanPath study can be found here.

Also, a scientific article on this project, including all CanPath participants who participated in the COVID-19 study (some **25,000 Canadians**), will be published shortly.

The COVID-19 study continues

The COVID-19 study is a longitudinal study that aims to collect information and samples over a period of one year for a sub-cohort. Thus, some of you will be contacted again in order to continue to collect information on immunity against COVID-19. We are counting on your invaluable commitment to contribute to the fight against this pandemic.

Stay tuned!

Your contributions to research

In the field of genetics

Genetic data is a gold mine for health research. The production of genetic data from CARTaGENE's biological samples has encouraged the proliferation of research projects on the genetic causes of diseases. This year alone, 6 new genetic research projects were approved. This brings the total of ongoing projects in this field to 36. Interestingly, more than half of the ongoing projects have a genetic component!

Follow-up studies

This year more than ever, your participation in CARTaGENE's follow-up studies has had an impact both at the scientific level (scientific publications, conferences, etc.), and on public health (Institut national de la santé publique du Québec, Public Health Agency of Canada). Here are a few examples:

1. COVID-19 study: The COVID-19 Immunity Task Force, established by the Government of Canada, funded CanPath's COVID-19 study. The data collected during this study helps guide public health decisions in the fight against COVID-19.

2. Zoonoses study: The data collected was analyzed by a team of researchers from the INSPQ and CARTaGENE. The aim of the study is to identify the most common zoonoses and the most present risk factors (professional history, lifestyle and health status). To learn more, click here (in French only).

3. Biomonitoring study: a partnership was developed with the Canadian Health Measures Survey (CHMS) of Health Canada and the biomonitoring unit for a feasibility study of repeated collections of biological samples by CARTaGENE for Health Canada. This partnership stems from a previous study on radon exposure.

A few examples of your contribution to research

Norbert Schmitz
McGill University
Project : Inflammation and the risk of depression in people with type 2 diabetes

Type 2 diabetes is one of the most common chronic diseases that continues to increase in numbers and significance. Metabolic abnormalities, such as central obesity, elevated blood pressure, uncontrolled sugar levels, systemic inflammation, high levels of high-density lipoprotein cholesterol (HDL) and triglycerides are important risk factors for type 2 diabetes. Recent research suggests that depression combined with metabolic abnormalities might increase the risk of developing type 2 diabetes. This project will evaluate the interaction between depression and metabolic abnormalities on type 2 diabetes incidence in the CARTaGENE cohort. The results generated from this study may have an important impact on the development of effective diabetes prevention and intervention strategies.

Jean-Philippe Drouin-Chartier
Université Laval
Project : Lifestyle habits, plasma metabolites and cardiovascular health in a cohort of individuals with heterozygous familial hypercholesterolaemia

In people at high risk of heart disease, the best prevention strategy is based on improving lifestyle habits combined with the use of medication. Depending on the health of these individuals, the drugs will target cholesterol, blood pressure, or blood sugar levels. However, several studies suggest that starting the medication discourages people from making lifestyle changes. The effectiveness of the drugs is then reduced, which often leads to increased doses. This research project aims to study the relationship between lifestyle habits and medication in the prevention of heart disease in the Quebec population. This project will help develop knowledge transfer approaches for both patients and healthcare professionals aimed at promoting healthy lifestyles and adherence to pharmacological treatment in the prevention of heart disease.

Daiva Nielsen
McGill University
Project : An investigation of gene-environment interaction on eating behaviour and adiposity in a cohort of Quebec adults

Both genetics and the environment play an important role in health and disease. However, studies that have investigated the relationship between genes and diet-related chronic diseases often report low effects of genetics. This research will evaluate the interaction between environmental food cues and genes involved in human behavior, taste perception, and obesity risk on nutrition and health outcomes. Statistical analyses will be conducted to determine whether gene variants interact with environmental food cues to influence dietary patterns and indicators of cardiometabolic health (e.g. body mass index, waist circumference, LDL cholesterol). Findings from this investigation will assist in better understanding genetic and environmental risk factors for chronic diseases and will lead to the development of more targeted prevention strategies.

For the complete list of projects, visit : www.cartagene.qc.ca/en/participants/projects .

Do you want to know more about the research projects using CARTaGENE and CanPath data?

CanPath will invite cohort participants to a meeting in February 2022. The purpose of this virtual meeting will be to explain the impact of your participation on health research. An invitation email will be sent shortly.

Did you know...

Sleep is a basic need for our body, but 1/3 of Canadians sleep fewer hours per night than the Canadian Sleep Society's recommendations. Sleep is an important ally for physical and psychological health and plays a role in the prevention of health problems. A decrease in the time spent sleeping can lead to drowsiness and irritability. This sleep "debt" impacts the brain, increases pain perception and makes you inattentive. CARTaGENE collected data on participants' sleeping habits during its two recruitment phases.

- On average, CARTaGENE participants sleep about 7.5 hours per day (including naps).
- 20% of the cohort sleeps less than 7 hours per day.
- 7,500 participants in the cohort often have difficulty falling asleep or staying asleep.

Tips for a better sleep

- Stick to a regular sleep schedule, this will regulate your biological body clock.
- Prioritize better quality sleep, in sufficient quantity and in a single session (adults: 7 to 9 hours per night, adults aged 65 and over: 7 to 8 hours per night).
- Turn off your electronic devices so as not to interrupt your sleep!

For more information on sleeping habits, please visit the Canadian Public Health Sleep Campaign website: https://sleeponitcanada.ca/.

Thank you for keeping your information updated

Have you moved, retired, changed your email address or phone number? Take a moment to send us your new contact information. Even if you move away from Québec or Canada, you can still stay involved! Keeping in touch with you is essential for the success of this project!

Contact us

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