



indeklima og sundhed på Bellahøj

# Participant information sheet –

## Indoor Climate and Health in Bellahøj (Danish: *ISB*)

*Title: Indoor Climate and Health in Bellahøj – a natural experiment examining the role of the home in respiratory tract infections and respiratory symptoms*

English?

اردو؟

Türkçe?

Soomaali?

عربي؟



We would like to invite you to participate in a scientific research project, led by senior research Jonathan Groot at Herlev and Gentofte Hospital (COPSAC/the Danish Pediatric Asthma Center). In this participant information document, you will be able to read about the project's background.

Before you decide whether you would like to participate, you should understand what the project entails, and why we are conducting this project. We would therefore ask you to read the participation information document carefully. If you decide to participate, we will ask you to sign a written consent form. Remember that you have the right to take time to consider whether you would like to sign the consent form, before you make a final decision.

Participation in the project is voluntary. You can withdraw your consent at any time and without having to justify your motivation for withdrawal. Your responses are used alongside other participants' responses to give an impression of the overall impact of the remodeling on the apartments' indoor air quality and your health as residents. Responses are only shared with researchers and research staff with a direct tie to the project.

### **In short**

These years the Bellahøj high-rises are being remodeled in an ongoing process, and this can bring with it many worries, joys, and very likely, a changed indoor climate and indoor air quality.

We would like to examine how the indoor climate and indoor air quality (especially mold and damp) influences your airways and immunity. We will primarily use interviews in your home, but if you prefer you will be given the choice to complete most questionnaires online or by telephone interview. A small dust collector will be placed in your home. The dust collector is typically placed in the living room and will later show whether there has been any presence of mold in the home. In some apartments, we will also measure temperature, air humidity, and CO2 levels. If you would like to know if you have allergies, we will offer you a skin prick test for common airborne allergens. Additionally, we will offer two lung tests: one to measure your lung function and another to detect possible signs of inflammation. The whole project takes place in your home, unless you prefer to conduct interviews elsewhere, or opt to respond to the questionnaires online or by telephone interviews.

Most people get sick during the late fall and winter season, with one or more infections (e.g. common colds, influenza, or COVID-19). For many, the illness resolves on its own, while for others, the illness can develop into something more serious.

Your indoor climate and indoor air quality might play a role in how often you get sick and how poorly you feel when you get sick. Therefore, you will receive some rapid antigen tests that you can use to test yourself throughout the project, if you happen to get symptoms compatible with an infection. The rapid antigen tests can tell you if you have one of the most common viral infections during the winter months (influenza A and B, RSV, and COVID-19). If you test positive for any of these, you can report this when we interview you about how often you have had symptoms within the last two (potentially up to four) months. Besides asking about infections, we will also ask you about any symptoms of asthma or allergies you may have had.

Your responses will be treated confidentially and will not in any way impact your housing situation or change whether you should contact your general practitioner or other healthcare services. Your responses will not be shared with the authorities, municipality, or anyone not involved in the project, and will only be used for research purposes. You can withdraw your consent at any time.

If you stay with the project, we will visit you again in 2026. The last planned visit is in 2027/2028. We expect to be done with the project in 2028. We hope to have enough participants to say something conclusive about how much the indoor climate and indoor air quality in Bellahøj impacts your health as residents, in terms of respiratory health and symptoms. We therefore greatly appreciate if you along with many others in Bellahøj, participate in this project. We will have increased confidence in our conclusions, the more participants we have.

## Contact information

Project leader and responsible for the research project

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# The aim of ISB

Previous research has shown that indoor climate and indoor air quality can impact risks of asthma, allergies and infections. If there is mold and damp in the home, you might experience symptoms of the nose, throat and lungs, and it can be difficult to distinguish between illnesses. It can also be difficult to know which factor in the indoor environment is impacting these illnesses. Mold and damp can occur in all buildings and homes but are more often found in older and poorly insulated buildings. That is why we would like to examine what happens when buildings are remodeled and the indoor climate and indoor air quality are likely to improve. We are especially interested in mold and damp and differences between remodeled and not-yet-remodeled apartments.

We would like to draw increased attention to indoor climate and indoor air quality and health among residents of non-profit housing – in this case, in Bellahøj. We will do that by studying what the ongoing building remodeling does to the indoor climate and indoor air quality of the apartments. We count on an improved indoor climate and indoor air quality. But we would also like to document if you experience symptoms that occur even after an apartment has been fully remodeled. We are a team of experts in housing, indoor climate and indoor air quality, asthma, allergies and infections. That is why these topics are of special interest to us. But it is also important to us that you also find the project meaningful.

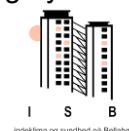
The aim is to be able to answer the question of whether remodeling and a potentially improved indoor climate and indoor air quality leads to fewer respiratory infections and other respiratory symptoms. We will investigate this both in adults and children in the age range 0-10 years old. In addition to the primary aim of the project, we would like to use the data from this project in the future, to answer other relevant scientific questions that can be addressed with this data.

## Project plan

### Languages and communication: Danish, English, Urdu, Arabic, Somali, and Turkish

It is important to us that you can participate even if you don't speak fluent Danish. Throughout the project, we will primarily interview you face-to-face with the help of questionnaires, but there will also be the option to be interviewed over the phone or respond to self-administered questionnaires online.

We will take the time and resources needed to make sure that you feel that you have received and understood all relevant information. We will as a point of departure conduct most interviews in Danish or English, but if you prefer to be interviewed in Urdu, Arabic, Somali or Turkish, we will conduct the interview in the language you are



most comfortable with language. If either you or we believe that it is not possible to complete the interview without a risk of communication problems, we will cut off or choose not to start the interview, as it is important to us that your responses are recorded accurately. We will instead thank you for your interest in participating and apologize that we are unable to offer the interview or translated questionnaire in the language you feel most comfortable with.

If in the future, we are able to include you in the project in the language you feel most comfortable with, we will once again contact you. The interview will be registered in a database in Danish, even if you answer the questions in English, Danish, Urdu, Arabic, Somali or Turkish. We do this to ensure that the data collection is conducted securely and confidentially, without the risk of physical copies with responses being stored in reach of people with no connection to the project.

## Interview with questionnaire

The information meeting, initial participation, and first interview will be conducted between August and December. We will try to include and interview as many as possible within a shorter period (September to November). But the first participants in each data collection period will be interviewed for the first time in August, while the last participants will be interviewed for the first time in December.

The first interview will generally be held within your home. You can also opt to be interviewed elsewhere, over the phone, or answer questionnaires online. If there are several adults in the household, you should plan a bit of time for each interview. We will gladly visit you again, if not everyone is available during the same visit.

The first interview takes approximately 20-30 minutes. Subsequent interviews of other adults in the same household will take less time. If the interview is conducted in Urdu, Arabic, Somali or Turkish, it will probably take a bit more time, as we continuously translate your responses into the Danish electronic database.

We will enter and store your responses in a secure database. At the start of the interview, you will receive a copy of an empty questionnaire in the language the interview will be conducted in (Danish, English, Urdu, Arabic, Somali, Turkish). The empty questionnaire has the same order and response categories as those we enter into the database. We will, among other things, ask about general information about yourself, your health, and how you use your apartment, etc. The empty questionnaire is available online on our website in Danish, English, Urdu, Arabic, Somali and Turkish (<https://bornogastma.dk/indeklimaogsundhedpaabellahoej/>), so that you can take a look at it beforehand to see what it entails.

If we experience technical problems with the electronic database, the interview will continue with a physical copy of the questionnaire. The same applies if you or we prefer

to conduct the interview using a physical copy of the questionnaire. The physical copy of the questionnaire will then be entered into the database, and the physical copy will subsequently be shredded.

We will interview you throughout the late fall/winter season and April. In these interviews, we will ask whether you have experienced any illnesses or symptoms within the past two months. We will do this twice, with a gap of approximately 2 months (e.g. in January and March). If this is not possible, we will try to interview you once after 4 months. You will receive rapid antigen tests and a calendar/diary to record any symptoms throughout the fall/winter season and April. When we ask you about illnesses and symptoms, we will also ask if you have used one or several of the rapid antigen tests, and what it/they showed. By default, we will visit you again in your own home, but you will also have the option to let us know if you prefer to be interviewed by phone or alternatively answer a questionnaire online through an e-mail or SMS link. If you move within the project period from a not-yet-remodeled apartment into a remodeled apartment, we will repeat the first interview (regarding housing and indoor climate and indoor air quality). We will repeat the interview about illnesses and symptoms, every late fall/winter season until 2028 – that is, in total, three late fall/winter seasons, including April.

We will get information on your apartment from the housing associations or housing association's local chapters, or through publicly available data, (e.g. size, number of rooms, what kind of remodeling has been done, if there has been any mold remediation or water damage repairs before or while you have lived in the apartment, and dates for moving from and into the apartment). However, we will not collect any personally identifiable information from the housing associations or housing association local chapters (e.g. personal complaints from you or others).

If you have a child (or two) under the age of 11 participating in the project, you will be asked to respond to some questions about your child or children. They will not have to answer themselves. It will be a short questionnaire-based interview about the child's health, which will be completed when you are interviewed the first time. You will also be asked to respond to questions about the child's illnesses and symptoms in the winter season, when you also are interviewed/respond to the questionnaire about illnesses and symptoms. You will not be asked about rapid antigen test results, since the provided rapid antigen tests are intended to be used only by adult project participants.

## Measurements of the indoor climate and indoor air quality

We will use a dust collector to collect dust in your home. Setting up the dust collector requires access to your home, but only to the living area. If you agree to it, it will be placed somewhere in the living area (kitchen, living, or dining room) at a height of 1.5 meters. If it is placed in the bedroom or another place, you will be allowed to take care



of that yourself, after receiving instructions. We will collect the dust collector after 2-4 weeks and, at first, store it in a freezer in COPSAC, Herlev and Gentofte Hospital. Afterwards it will be sent to Aarhus University, where it will be stored until it is analyzed for fungi and bacteria and more. In the future, these dust collectors may also be used to determine the presence of house dust mites (small animals that cannot be seen with the naked eye but may cause allergies and irritation).

Temperature, air humidity, and CO<sub>2</sub> level measurements will be taken with so-called indoor climate loggers that are plugged into a socket in the living or dining room and should remain plugged in for 2-4 weeks. This happens preferably during the same weeks as the dust collectors collect dust. As we currently have a very limited number of indoor climate loggers, it will very likely not be possible to take measurements in all apartments. The indoor climate loggers will subsequently be analyzed and can contribute to a clearer understanding of the indoor climate and indoor air quality in your home.

## Airway (inhalant) allergy test and lung tests

We will offer you an airway allergy test for common inhalant allergens, a lung function test, and a type of lung inflammation test (FeNO).

Together, these tests take about 20 minutes to complete. The allergy test measures whether you get an allergic skin reaction to a few of the most common allergens in the air, after your skin is pricked gently. The lung function test can measure whether you have an adequate lung function relative to what might be expected, or if there are signs of reduced lung function. The lung inflammation test (FeNO) is often used in connection with asthma symptoms and measures indications of inflammation. These tests cannot replace a doctor's diagnosis, and we would therefore encourage you to contact your own general practitioner if the tests indicate allergies or reduced lung function.

If you have a child (or two) who are participating in the project, they will be, as far as it is practically possible, included in the decision about which of the aforementioned tests they wish to take. Only children ages 3 to 10 years old may be offered the skin prick test and children ages 6 to 10 years may be offered the lung function and lung inflammation tests. If your child does not wish to have a skin prick test done, or undergo lung function or lung inflammation testing, this will be considered a valid reason to *not* perform the test, even if you have given your consent to do so. If you, despite your child's wishes, still would like to have the test performed, e.g. because you are concerned that they may have allergies, you will be advised to get in contact with your general practitioner.

## Rapid antigen tests and diary for infections and symptoms

Two months before each time we interview you (through the late fall/winter season and April), we will make sure that you have 3 to 6 rapid antigen tests that can tell you if you have an infection with influenza A and B, RSV, and COVID-19. Before you are meant to use the rapid antigen tests, you will receive instructions on how they should be used and interpreted.

We will ask you to use a single test every time you get sick. That is, if you experience, among other symptoms, any of the following, we hope you will take a rapid antigen test:

- Headache
- Pain and body aches and feel unwell/sick
- Common cold
- Cough
- Sniffles
- Nasal congestion
- Sneezing
- Throat pain
- Allergic symptoms, unless you are certain they are caused by allergies
- Breathing difficulties
- Wheeze
- Feel unwell/sick
- Fever

It is voluntary to use the test, and it is your own responsibility to use the test in accordance with the instructions. We will also provide you with a calendar/diary, in which you can record symptoms and illnesses.

If you have a child (or two) who has been included in the project, we will also ask you to record any symptoms and illnesses that they might have. The rapid antigen tests should not be used on your child, but only on yourself. Even though the test can be performed responsibly on children, the project does not take responsibility for ensuring that children are swabbed correctly and without discomfort.

## Project benefits

The project may give you a little bit of insight into your own health and your home's indoor climate and indoor air quality.

If you participate in the allergy test and lung measurements, you can get an immediate result indicating if you have signs of allergies, reduced lung function, or signs of lung



inflammation. However, this information should not replace a doctor's diagnosis, and you should contact your general practitioner if you need further diagnostic procedures or treatment. Once we have analyzed the project data, we will be able to say whether there are any differences in respiratory symptoms when buildings are remodeled.

Since children in the age range 0-10 years are included, we will have the opportunity to examine whether children are particularly susceptible to getting more infections (or allergy or asthma attacks) because of a poor indoor climate or indoor air quality. This is particularly relevant since many young children are often affected by respiratory tract infections, allergies and asthma attacks.

The project will give us an insight into how indoor climate and indoor air quality are impacted by remodeling and how a resident uses the apartment. It may take anywhere from one to several years before you receive the results of the fungi and bacteria tests, since they need to be analyzed first. If you are among those who are offered to have an indoor climate logger in your home and you agree to this, you will be able to get feedback on the indoor climate loggers once they have been analyzed.

New knowledge about how much the home affects health will benefit many. More specifically, we will be able to conclude precisely how much the home impacts respiratory tract infections and respiratory symptoms, given a sufficient participation rate.

## Worth knowing – 'The fine print'

### No biological samples

We will not collect any biological samples from you as a part of the project.

You yourself will be responsible for responsibly disposing of the rapid antigen tests that you receive. If you have taken a picture of your rapid antigen test result, we would be happy to have you show us the picture while we interview you, but we will not require any photo documentation. The test results will have no bearing on what you can or cannot do within the project or in your daily life.

Materials from the allergy test (skin prick test) will be thrown out immediately by the research staff and will not be stored. It is only the test result itself that will be recorded by the research staff. Materials from the lung function test will also be thrown out and the results will likewise be recorded by research staff.

Only research staff affiliated with the project will have access to both the test results of the dust collectors and identifiable data on where they came from. Researchers who

are not a part of the project will however analyze the cloths, without knowing which apartment they came from.

## Side effects, risks, complications and inconveniences

The rapid antigen test should be used as instructed and out of reach of children. A child should not be swabbed and must not come within reach of the rapid antigen testing fluid. There are no known side effects, risks, or complications associated with using rapid antigen tests, if the specified instructions provided are followed.

The entire test kit should be kept away from small children (and pets) in the household, since they might use the swabs and fluids incorrectly. It is therefore your responsibility to use the rapid antigen tests in full compliance with the instructions and only on yourself. We will gladly guide you in the use of the rapid antigen tests when we visit you, if you are in doubt about what the instructions show or how they should be used. If you get fluid in your eyes, follow the instructions. We do not take responsibility for incorrect use of the rapid antigen tests. For example, the nose should be swabbed carefully and not further back in the nostrils than instructed. If you are in doubt about how to use them, you can contact us for more information and a demonstration. If you are still in doubt about how rapid antigen tests should be used, you should not use them before you feel confident. We will encourage you to use the rapid antigen tests if you get sick, if you feel comfortable with it and can perform the test in accordance with the instructions. Use of the rapid antigen tests throughout the project is voluntary.

The dust collectors and indoor climate loggers do not take up much space in the home, but it might be irritating to keep them in the home. The skin prick test can cause minor discomfort on the arm and, in exceptionally rare cases, may lead to a severe allergic reaction. We are affiliated with Herlev and Gentofte Hospital and all staff performing the skin prick tests have received thorough training. The lung tests are performed with new and sterile plastic tubes for each participant and there is therefore no risk of infection with illnesses from others.

The project will require access to your apartment if we are to perform the indoor climate measurements. The project may be an inconvenience and take some of your time. Additionally, there might be unforeseen risks and burdens associated with the project.

## The project should not replace contact with your general practitioner

We will encourage you to contact your general practitioner if you experience symptoms or illnesses that may require diagnostic procedures or treatment. We do not take

responsibility for treatment or diagnoses in the project. Results from the rapid antigen tests, skin prick tests, or lung testing should be considered indicative only. If you are unsure what you should do, we would recommend that you consult your general practitioner or refer to publicly available information from the health authorities. Positive rapid antigen test results are not always as reliable as with some other tests, so these should not be used in decisions to seek medical help or care. Please follow the recommendations that are applicable to being sick, regardless of the test results.

## Registry data

If you provide your CPR number, we would like to have the opportunity to link the ISB data with a so-called register project, which uses data that are documented in register in Denmark when you, for example, are hospitalized with influenza at a hospital. Registry data is anonymized data, and results are only allowed to be shown at a group level, so that individuals cannot be identified in any analysis result. In the register project, we can conduct analyses such as whether there are changes in healthcare contacts or healthcare services during remodeling. Registers like the Danish National Prescription Register, Danish National Patient Register, the Danish Population Register, the Danish Education Register, the CPR register, and the Danish Microbiology Database will potentially be included in these analyses. The register project is a separate project which will be created at the University of Copenhagen, and you can ask us to refrain from linking your data to the register project, even if you participate in ISB.

## Data processing

All data will be processed and handled confidentially and securely, and you will not be able to identify yourself in the study's results. The project complies with applicable laws regarding the processing of personal data, as per the data protection regulations and data protection laws (see in Danish, "Lov om behandling af sundhedsoplysninger", "Databeskyttelsesloven" and "Databeskyttelsesforordningen").

## Exclusion and withdrawal from the study

You can participate if you have turned 18 years and have a place of residence in Bellahøj, in one of the fsb, AAB, AKB or SAB I and II apartments. You can also participate, even if you are planning to move. If you have a child (or children) between 0 and 10 years old, up to two of the children in this age range can participate. This requires written consent from one of the child's legal guardians/parents, as the project is considered a minimally invasive intervention involving the child. However, the child should *not* be swabbed, and we will only ask about their age, sex, health, CPR number, symptoms and respiratory illnesses, and previous illnesses.

You can withdraw your consent at any time, both for yourself and on behalf of your child, and request that you or your child's data be deleted. Each time you participate

in an interview or data collection, you also have the option to state your wish to not participate at a later time without your data being deleted. If you choose this option, it means that going forwards, we will *not contact you again* regarding participation in new interviews and data collections, but we *will keep* your data for analyses. We will still contact you if we are unsure if you want to withdraw from the project completely or just do not want to participate in future parts of the project. You should write to [jonathan.groot@regionh.dk](mailto:jonathan.groot@regionh.dk) if you would like to withdraw, or if you wish to not be contacted for future participation in the project. You do not need to provide a reason for your decision, but we would like to record a reason if you wish to report it. For example, it would be relevant to us if you did not feel comfortable with the language options we offered to interview you in. We will keep a few data ((potentially a CPR number if provided it), project participant ID, address information, and updated status on participation) to ensure that we do not contact you again if you have asked not to be. If you provide a reason for wanting to withdraw from the project, we will also keep this data to be able to say something about why previous participants no longer wish to participate. Any potentially reported reasons for withdrawal will be processed confidentially, just like all other collected data on you. This information will not be used for any purpose other than to potentially shed light on help self-reported reasons for withdrawal from the project.

## Time to consider and right to a counselor

You have the right to at least 24 hours to consider whether you would like to participate in the study before providing your consent. Additionally, you have the right to bring a counselor with you to an oral information talk, which is offered when you meet us in-person. We will ask whether you would like to sign a written consent form after we have held the information talk. The same applies if you participate in a group information meeting. In both cases, we will confirm that you have understood the written and oral information. If you prefer to start the first interview right after the information meeting, that is an offer. If you wish to make use of your right to time to consider, we will return after at least 24 hours have passed, to hear if you are interested in participating.

## Information regarding financial ties and conditions

The project is supported by grants of (up to) 3 380 000, 999 843 and 450 000 dkk from Realdania, Landsbyggefonden and Helsefonden, respectively (with senior researcher Jonathan Groot as the grant recipient). He is employed at COPSASC/the Danish Pediatric Asthma Center, Herlev and Gentofte Hospital. Additional economic support for the project will on an ongoing basis be updated on our website (<https://bornogastma.dk/indeklimaogsundhedpaabellahoej/>). If additional support for the study is achieved, the Research Ethics Committee (VEK) will be informed, and the participation information document will be updated. The research and publication of research results is researcher-initiated (that is, Jonathan Groot himself has taken the initiative behind the study).

## Other collaborators

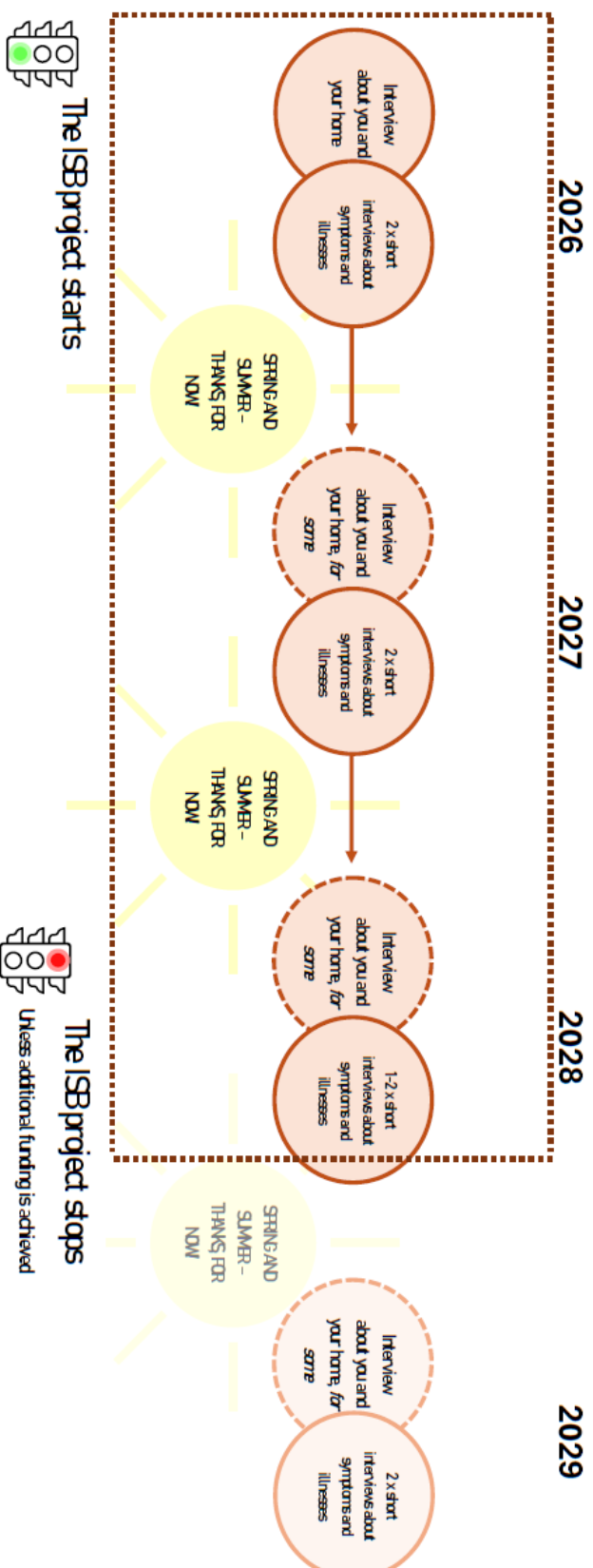
The project is a collaboration between researchers from Herlev and Gentofte Hospital, University of Copenhagen, Aarhus University, and Statens Serum Institut. The data owner for the project is Herlev and Gentofte Hospital. Linking external data (the project's data) with the register project will be carried out in accordance with applicable data processing agreements with the parties involved (parties attached to the project at Herlev and Gentofte Hospital and University of Copenhagen). Analyses of fungal samples will be conducted at Aarhus University. Researchers from Statens Serum Institut, as well as researchers from University of Copenhagen and Aarhus University contribute to the project with their expertise in epidemiology, housing research, population studies, infectious disease epidemiology and more.

## Access to the results

The project's results will primarily be published in scientific journals. Additionally, preliminary results will be presented at research meetings and conferences. Once we have the final results, these will be shared with you as residents through the channels perceived as most appropriate. For example, it could be through the local chapter meetings, a local exhibition, newsletter with a link to a resumé of the results, social media and more. We will also share links to the scientific articles on our homepage, which can always be accessed when it is updated : <https://bornogastma.dk/indeklimaog sundhedpaabellahoej/>.

The data collection in the project will end in 2028. However, there is a possibility that this may be extended, if the project secures additional funding for additional data collections (when more apartments are remodeled). Depending on the progress of the project, we expect the first results of the project to be publicized at some point in 2027 or 2028. The project will officially end 29 December 2032.

Here you can see the current point of departure for the whole project, with changes in timing to be expected.



# Lastly

With this information, we hope that you have received enough insight into what participation in the project entails, so that you feel adequately prepared to decide whether you would like to participate. We ask you to also read the attached material, "Participant rights in a health science project".

If you would like to know more about the project, you are welcome to contact Jonathan Groot by e-mail ([jonathan.groot@regionh.dk](mailto:jonathan.groot@regionh.dk)) or contact the Danish Pediatric Asthma Center by phone at 38 67 41 39.

Kind regards,

Jonathan Groot

PhD, senior researcher at COPSAC/the Danish Pediatric Asthma Center and ISB project leader



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### Primary institutions



**Herlev og Gentofte  
Hospital**



**UNIVERSITY OF  
COPENHAGEN**

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### Other collaborators



**AARHUS UNIVERSITET**



**STATENS  
SERUM  
INSTITUT**

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