

Biomedische kennishiaten post-COVID PI 2024

Project Idea

1. General information

1.1 General information	
Record ID:	5.1.2e
File number: (added after submission)	
Programme:	Post-COVID: onderzoeksprogramma, kennisinfrastructuur en expertisenetwerk
Funding round:	Biomedische kennishiaten post-COVID
Main applicant:	5.1.2e

1.2 General project details	
Project title: Provide a descriptive title that identifies the type of research, project, and/or topic. The title contains, if applicable: research design/project setup, objects/elements of the research/project, intervention(s), diversity/gender. Project type: Which phase of the knowledge chain does your project focus on? More information and examples about the ZonMw knowledge chain can be found in the document ZonMw knowledge chain. • Fundamental research: Research designed to expand knowledge of basic mechanisms and principles of health and care problems. This is generally longer-term research with broad applicability. • Strategic research: Research geared to practical application. This can also involve more generally formulated practical problems derived from everyday clinical or social practice. This is generally medium-term research. • One important type of strategic research is translational research, i.e. research on the borderline between basic and clinical research. Research questions can derive from both clinical practice and laboratory work. • Applied research: Research focused on a question arising from a specific, tangible problem, with the aim of applying the resulting knowledge products in the particular practice. Applied research generally takes place in the shorter term. • Development projects: Development projects aim to provide practical action perspectives. They focus primarily on developing improvements in the particular practice and disseminating and implementing innovations or changes that are of proven value in everyday practice. • Implementation projects: Implementation projects focus on facilitating the use of knowledge products with a view to the legitimate and effective solution of social problems and issues. Implementation research projects are designed to demonstrate the effectiveness of implementation projects or to contribute to knowledge of effective implementation in some other way. • Other: Projects that do not fit into any of the above categories.	
Project title in Dutch:	Identificatie van biomarkers voor PCC in gepaarde pre/post-infectie samples en symptoomdata
Project title in English:	Identification of Biomarkers for PCC in paired pre/post infection samples and symptoms data
Planned start date:	01 December 2024
Planned duration (in months):	24
Project type:	Applied research
Is this a continuation of a project previously funded by ZonMw?	No
Has this or a comparable grant application previously been submitted to ZonMw?	No
Was this application also submitted to an organization other than ZonMw?	No

1.3 Compulsory Project Members

You are required to add the following three project members:

- **Main applicant:** this is the person who has final responsibility for the grant application. During the grant awarding process, the main applicant is the contact person with whom ZonMw communicates about the application.
- **Project leader and secretary:** this is the person responsible for the content and day-to-day management of the project. If the application is granted, the project leader and secretary is the contact person with whom ZonMw corresponds regarding the progress of the project.
- **Administrative representative:** this is the person authorised to represent the organisation on the basis of its articles of association.

Please note:

- For ZonMw, the person submitting the application is, by definition, the main applicant. You cannot submit an application on behalf of a colleague. If someone other than yourself is the main applicant for this application, that person must create their own account at Mijn ZonMw and submit the application from that account.
- An account is created with a personal (work)email address. General email addresses to which people other than yourself have access to, such as an info account, are not allowed.
- the main applicant and the administrative representative must be employed by the same organisation. If this is not the case, a collaboration agreement with respect to the implementation of the application for the grant in question must be concluded.
- Please enter the address of the organisation where the project group members are employed, never their private addresses.

Main Applicant

Complete or update your personal data. Please add a '.' (dot) after your initials.

Title (academic):	5.1.2e	Initials:	5.1.2e
First name:		Prefix to the last name (e.g. de, van der):	
Last name:		Suffix:	
Telephone number:		Mobile phone number:	
Email:	5.1.2e @rivm.nl	Gender:	5.1.2e
		Preferred language: Further communication will be in Dutch. If you have difficulty understanding the Dutch language please select 'English'.	

Name, department and address of the organisation:

Organisation:	National Institute for Public Health and the Environment	Department:	Immunology of Infectious Diseases and Vaccines
Street and house number:	Antonie van Leeuwenhoeklaan 9	Post code:	3721MA
City:	Bilthoven		

Project leader/correspondent

Is the main applicant also the project leader?

Yes

Administrative representative

Title (academic):	5.1.2e	Initials:	5.1.2e
First name:		Prefix to the last name (e.g. de, van der):	
Last name:		Suffix:	
Email	5.1.2e @rivm.nl	Gender:	

The name of the department and the correspondence address of the administrative representative.

Organisation:	National Institute for Public Health	Department:	Bureau Directieraad
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	and the Environment		
Street and house number:	Antonie van Leeuwenhoeklaan 9	Post code:	3721MA
City:	Bilthoven		

1.4 Extra Project Members

Does your research require any extra project group members?	Yes
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2. Additional project group members

2.1 Additional project members

Please note! Remember to click +Save after entering a project member. The project member will not be added if you do not use the +Save button.

Please also mention other people who will play a substantial role in the proposed project.

On the financial data tab, you can mention organisations that contribute actively to the project as collaborating parties. You can enter employees of these collaborating parties as project group members.

Title (academic) :	Initials:	First name:	Prefix to the last name (e.g. de, van der):	Last name:	Suffix:	Gender:	Email:	Role in the project:	Organisation:	Department:
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									National Institute for Public Health and the Environment (RI)	Centre for Infectious Diseases, Epidemiology and Surveillance
									National Institute for Public Health and the Environment (RI)	Immunology of Infectious Diseases and Vaccines
									National Institute for Public Health and the Environment	Centre for Infectious Diseases, Epidemiology and Surveillance
									Radboudumc	Internal Medicine
									Radboudumc	Internal Medicine
									National Institute for Public Health and the Environment	Immunology of Infectious Diseases and Vaccines
									National Institute for Public Health and the Environment	Centre for Infectious Diseases, Epidemiology and Surveillance
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2.2 Check

We ask you to check if all project members have been saved correctly.
This is the case if there is a red 'Delete' button next to each project member.
Have all project members been saved correctly?

Yes

3. Summary

3.1 Public summary in Dutch

This summary is intended for a broadly interested audience with different backgrounds. Therefore, please use simple language in your summary.

Answer at least the following questions:

- Why do you want to do this project?
- What results do you hope to achieve with this project?
- Why is this project important for patients/clients and their relatives?
- How will you carry out this project?

(max 1,000 characters)

5.1.2i Wetenschappelijk beraad

3.2 Public summary in English

This summary is intended for a broadly interested audience with different backgrounds. Therefore, please use simple language in your summary.

Answer at least the following questions:

- Why do you want to do this project?
- What results do you hope to achieve with this project?
- Why is this project important for patients/clients and their relatives?
- How will you carry out this project?

(max 1,000 characters)

Public summary in English:

5.1.2i Wetenschappelijk beraad

3.3 Comprehensive summary in English

If applicable, please use the following headings:

- Background and relevance
- Problem definition and objective(s)
- Plan of approach / research design
- Objects/units of the project (incl. inclusion/exclusion criteria, data sources). For example participants/participants, (test) animals, biological samples, documents, problems, events, studies, populations, subgroups, target locations (eg sports fields), etc. included in the research/project.
- Intervention(s) An intervention can be: an approach, facility, method of treatment, methodology, protocol, measure, instrument, strategy, etc. in practice and/or policy.
- Intended results
- Impact: How will the project contribute to knowledge utilisation: the use of the results of projects and programs in practice, policy, education and/or research?

Also indicate whether the project focuses on one or more diversity aspects such as: sex, gender, age, ethnicity, socio-economic background, sexual orientation, (in)ability.

Comprehensive summary in English:

5.1.2i Wetenschappelijk beraad

5.1.2i Wetenschappelijk beraad

3.4 Keywords

Please specify no more than five key words for the project.

Keyword 1:	5.1.2i Wetenschappelijk beraad	
Keyword 2:		
Keyword 3:		
Keyword 4:		
Keyword 5:		

4. Project information

4.1 Biomedical knowledge gaps

Please indicate which of the identified post-COVID knowledge gaps your project will address. (Choose one or more options)

- ☐ 1. Identify methods that can be used to obtain an objectifiable diagnosis, which might include the use of biomarkers, imaging techniques or physiological tests.
- ☐ 2. Identify patient subtypes by means of clinical phenotyping of symptoms and syndromes, combined with the results of question 1.
- ☐ 3. Relate the diagnostic testing of question 1 and the subtyping of question 2 to severity and prognosis.
- ☐ 4. Research into the pathophysiological mechanisms of post-COVID syndrome in order to identify subtypes, with the aim of finding new starting points for treatment.

4.2 Relevance

Please describe and substantiate:

- societal and scientific relevance;
- significance in relation to the problem definition;
- expected results or output;
- innovative or pioneering character in terms of content or approach;
- the research is not taking place elsewhere; or has added value/aligns to that what is already in progress;
- relevance for the programme and the grant call: Please refer to the grant call for the grant specific relevance criteria that apply.

Relevance:

5.1.2i Wetenschappelijk beraad

4.3 Patient engagement

Please describe and substantiate:

- Relevance of the project for post-COVID patients
 - Consider: fulfilling patients' wishes and needs, relevance of the results for patients, improvement of patient health; quality of life; (health) care in general
- Feasibility of the project from the patient perspective
 - Consider: burden on patients, duration of study, possible objections from patients to participate
- Patient participation
 - Consider: the extent of patient engagement within the project (such as advisory/collaborative role), the phase(s) of the project in which patients will be involved (such as design/execution of project plan, implementation)

Patient engagement:

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4.4 Problem definition and Objective

Please describe what the project aims to achieve in a clear, concrete and concise manner.

Depending on the type of application involved (research, development or implementation), the objective is followed by a research question or hypothesis:

- In research projects, the objective should result in a specific and testable research question.
- In a development or implementation project, the objective should lead to a specific and practically achievable result.

Problem definition and Objective:

5.1.2i Wetenschappelijk beraad

4.5 Approach

In case of a research project, please describe the chosen approach (methods and analyses) with which the relevant research question can be answered or hypothesis tested. Please specify, where applicable:

- research design;
- research population or data sources;
- description of the intervention or interventions;
- primary and secondary outcome measures;
- calculations of sample size;
- analysis of the data obtained.

In case of a development or implementation project, please provide the following details where applicable:

- the end product or result which the development targets;
- the chosen development method or intervention strategy;
- the theoretical or empirical substantiation of this choice;
- planned or previously conducted pre-test of the intervention or parts thereof;
- type of collaboration and partners;
- stakeholder/end-user involvement in design and implementation;
- process evaluation and impact evaluation.

Important for all project types: please elaborate on the implementation/dissemination strategy that the project will employ.

Approach:

5.1.2i Wetenschappelijk beraad

4.6 Research and expertise network post-COVID

Please specify how the proposed project will establish connections and integration within the Research and Expertise Network post-COVID.

Research and expertise network post-COVID

5.1.2i Wetenschappelijk beraad

4.7 Feasibility

- Please elaborate on the opportunities and challenges in carrying out the project. Include mitigation strategies where applicable.
- Please provide a timeline and explain why the project is feasible within the timeline.

Feasibility:

5.1.2i Wetenschappelijk beraad

4.8 Expertise and experience

This question is relevant to the assessment of the project group or consortium. The term 'expertise' refers to the expertise gained from substantive, practical or methodological experience that is essential to completing the project successfully. Familiarity with the specific field is also important.

- Describe all project/consortium partners and their role within the project group/consortium.
- Describe how the composition of the project group/consortium contributes to the quality of the project.
- Describe the interdisciplinary collaboration within the project group/consortium.

Expertise and experience:

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4.9 General Block Exemption Regulation (GBER)

The General Block Exemption Regulation (GBER) will be used in this funding round, by which grants allocated to organisations other than Dutch research organisations (as defined in EU state aid legislation) are designated as a permissible form of state aid. This means that there are conditions for funding and rules for budgets. In addition, applicants are required to make declarations about certain data.

Please refer to the grant call for more information and the GBER conditions that apply.

Are there organisations in the project group/consortium, other than Dutch research organisations, applying for (a part of) the grant? If yes, which research phase applies to the proposed project?

General Block Exemption Regulation (GBER):
☐ Yes, fundamental research

☐ Yes, industrial research

☐ No
4.10 (Literature) references

- Please list the references that substantiate your application. Avoid publication listings of your project group (members).
- If the reference concerns literature references, please note the author(s), title and year of publication.
- If the reference concerns other forms of references, please be as specific as possible.

(Literature) references:

1. Chen C, Haupt SR, Zimmermann L, Shi X, Fritsche LG, Mukherjee B. Global Prevalence of Post-Coronavirus Disease 2019 (COVID-19) Condition or Long COVID: A Meta-Analysis and Systematic Review The Journal of Infectious Diseases 2022; 226(9): 1593-1607.
2. Ballering AV, van Zon SKR, oude Hartman TC, Rosmalen JGM. Persistence of somatic symptoms after COVID-19 in the Netherlands: an observational cohort study. The Lancet 2022; 400(10350): 452-461.
3. Espin E, Yang C, Shannon CP, Assadian S, He D, Tebbutt SJ. Cellular and molecular biomarkers of long COVID: a scoping review. eBioMedicine 2023; 91.
4. Ozonoff A, Jayavelu ND, Liu S, Melamed E, Milliren CE, Qi J et al. Features of acute COVID-19 associated with post-acute sequelae of SARS-CoV-2 phenotypes: results from the IMPACC study. Nature Communications 2024; 15(1): 216.
5. Vos ERA, van Boven M, den Hartog G, Backer JA, Klippenberg D, van Hagen CCE et al. Associations Between Measures of Social Distancing and Severe Acute Respiratory Syndrome Coronavirus 2 Seropositivity: A Nationwide Population-based Study in the Netherlands. Clinical Infectious Diseases 2021; 73(12): 2318-2321.
6. Huiberts AJ, Hoeve CE, Kooijman MN, Melker HED, Hahne SJ, Grobbee DE et al. Cohort profile: an observational population-based cohort study on COVID-19 vaccine effectiveness in the Netherlands – The VAccine Study COvid-19 (VASCO). Research Square 2024.
7. Vos ERA, den Hartog G, Schepp RM, Kaaijk P, van Vliet J, Helm K et al. Nationwide seroprevalence of SARS-CoV-2 and identification of risk factors in the general population of the Netherlands during the first epidemic wave. Journal of Epidemiology and Community Health 2020; jech-2020-

215678.

4.11 International reviewers suggestion

Please suggest five independent international reviewers.

- Name:
- Institution:
- E-mail address (if possible):

International reviewers suggestion:

Name: 5.1.2e

Institution: University of Oslo

E-mail: 5.1.2e@medisin.uio.no

Name: 5.1.2e

Institution: The Kirby Institute

E-mail: 5.1.2e@unsw.edu.au

Name: 5.1.2e

Institution: The University of British Columbia

E-mail: 5.1.2e@hli.ubc.ca

Name: 5.1.2e

Institution: Yale University

E-mail: 5.1.2e@yale.edu

Name: 5.1.2e

Institution: University of Birmingham

E-mail: 5.1.2e@bham.ac.uk

5. Financial data

Please enter the financial details of the project budget below; recipient's contribution, cofinancing and requested grant amount. A sum of the amounts entered is shown under 5.5 total budget. You will be asked to submit a specified budget if you are invited to submit a detailed grant application. In this phase of submitting a project idea, filling in the fields below is sufficient. You can also provide an explanation.

5.1 Grant requested from ZonMw

Grant requested from ZonMw:	EUR Wetenschappelijk b
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5.2 Grant recipient's contribution

The grant recipient's contribution is a contribution by the organisation of the administrative representative and main applicant. This can be in cash, in kind or a combination of both.

Grant recipient's contribution	EUR Wetenschappelijke
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5.3 Cofinancing

Cofinancing is a contribution from an organisation other than the organisation of the administrative representative, e.g. the organisation of a co-applicant.

Cofinancing:	EUR Wetenschappelijke
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5.4 Notes

- Briefly indicate the reasons for each of the cost items in the contribution being requested from ZonMw.

5.1.2i Wetenschappelijk beraad

5.5 Total budget

Below is the total budget that is the sum of the specified amounts. If the result of this sum is not correct, adjust one of the amounts in the fields above.

Total budget	EUR Wetenschappelijk b
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6. Annexes

6.1 Annexes

We kindly ask that you attach the requested documents below. Please bear in mind the permitted file size (max. 5 MB). The documents must not be password protected.

Please note: You can only add 1 attachment per requested document. Do you have multiple documents? Please merge them into 1 document first.

Figures and tables (max 1 A4):	Figures_post-COVID_final.pdf
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7. Statements applicant

7.1 Statements	
I have completed this form truthfully.	☒ Yes
I agree that ZonMw will process my application and if applicable will make my data visible to committee members, reviewers and other parties for the purpose of assessing my application. See https://www.zonmw.nl/en/privacy .	☒ Yes