

Details of the Collaborative Activity

2020-21

Name of the Collaborating Institute: Centre of Molecular Inflammation Research (CEMIR), and Department of Clinical and Molecular Medicine (IKOM), Norwegian University of Science and Technology, N-74919 Trondheim.

Name of the Collaborating Department from YDU: Yenepoya Research Center

Activities:

- MoU was signed between NTNU, Norway in the year 2018 for the purpose of joint research project.

Joint Research Project Ongoing

Title of the Project: “Discovering new therapeutic targets and drugs to combat AMR tuberculosis: Proteomic characterization and drug screening of Mycobacterium-infected macrophages”

Collaborators: Prof. Trude Helen Flo, CEMIR, Prof. Dr. Norbert Reiling, and Dr. Keshava Prasad, Professor YDU. Dr. Sneha Pinto, Dr. Yashwant Subbannayya, Mr Chinmay Narayan, and Ms. Kriti Avasti are participating in the project.

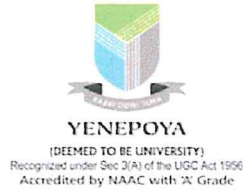
Funding Support: Olav Thon Foundation, Norway.

Joint research publication:

1. Subbannayya Y, Haug M, Pinto SM, Mohanty V, Meas HZ, Flo TH, Prasad TSK, Kandasamy RK. The proteomic landscape of resting and activated CD4+ T cells reveal insights into cell differentiation and function. *International Journal of Molecular Sciences*. 2020; 22, 275.
2. Pinto SM, Kim H, Subbannayya Y, Giambelluca M, Bösl K, Kandasamy, RK. Dose-dependent phorbol 12-myristate-13-acetate-mediated monocyte-to-macrophage differentiation induces unique proteomic signatures in THP-1 cells. *bioRxiv*. 2021. 10.1101/2020.02.27.968016.

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Dr. Langadhara Somayaji K S
Registrar
Yenepoya (Deemed to be University)
University Road, Deralakatte
Mangalore 575 018, Karnataka.



Details of the Collaborative Activity

2019-20

Name of the Collaborating Institute: Centre of Molecular Inflammation Research (CEMIR), and Department of Clinical and Molecular Medicine (IKOM), Norwegian University of Science and Technology, N-74919 Trondheim.

Name of the Collaborating Department from YDU: Yenepoya Research Center

Activities:

Joint Research Project

Title of the Project: “Discovering new therapeutic targets and drugs to combat AMR tuberculosis: Proteomic characterization and drug screening of Mycobacterium-infected macrophages”

Collaborators: Prof. Trude Helen Flo, CEMIR, Prof. Dr. Norbert Reiling, and Dr. Keshava Prasad, Professor YDU. Dr. Sneha Pinto, Dr. Yashwant Subbannayya, Mr Chinmay Narayan, and Ms. Kriti Avasti are participating in the project.

Funding Support: Olav Thon Foundation, Norway.

Faculty Exchange:

1. Professor Trude Helen Flo, Centre of Molecular inflammation Research (CEMIR) visited YDU for the Progress Review Meeting of the Collaborative Joint Research Project during 26th to 28th November, 2019. The meeting was attended by other investigators namely, Professor Dr. Norbert Reiling, Head, RG Microbial Interface, Biology Germany, and Professor Dr. Maria Lerm, Faculty of Medicine and Health Sciences, Linkoping University, Sweden.
2. Dr. Sneha M. Pinto, Assistant Professor and DST Inspire Faculty, CSBMM-YRC visited Centre of Molecular Inflammation Research (CEMIR), and Department of Clinical and Molecular Medicine (IKOM), Norwegian University of Science and Technology, N-74919 Trondheim, Norway for collaborative research.
3. Dr. Yashwanth Subbannayya, Assistant Professor, CSBMM-YRC visited Centre of Molecular Inflammation Research (CEMIR), and Department of Clinical and Molecular Medicine (IKOM), Norwegian University of Science and Technology, N-74919 Trondheim, Norway for collaborative research.

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Details of the Collaborative Activity

2017-18

Name of the Collaborating Institute: Centre of Molecular Inflammation Research (CEMIR), and Department of Clinical and Molecular Medicine (IKOM), Norwegian University of Science and Technology, N-74919 Trondheim.

Name of the Collaborating Department from YDU: Yenepoya Research Center

Activities:

- MoU was signed between NTNU, Norway in the year 2018 for the purpose of joint research project.

Joint Research Project developed for funding.

Title of the Project: “Discovering new therapeutic targets and drugs to combat AMR tuberculosis: Proteomic characterization and drug screening of Mycobacterium-infected macrophages”

Collaborators: Prof. Trude Helen Flo, CEMIR, Prof. Dr. Norbert Reiling, and Dr. Keshava Prasad, Professor YDU. Dr. Sneha Pinto, Dr. Yashwant Subbahnayya, Mr Chinmay Narayan, and Ms. Kriti Avasti are participating in the project.

- **Faculty Exchange:**

Dr. T.S. Keshava Prasad, Professor, YRC visited Norwegian University of Science and Technology, N-74919 Trondheim, Norway for collaborative research meeting in September 2017.

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Dr. Gangadhar Jayaji K.S.
Yenepoya (Deemed to be University)
University
Mangalore, Karnataka



YRC NAAC 2020 <ycrnaac2020@yenepoya.edu.in>

Fwd: Letter of invitation

1 message

Keshava Prasad <tskprasad@gmail.com>
To: YRC NAAC 2020 <ycrnaac2020@yenepoya.edu.in>

Mon, Jan 11, 2021 at 11:21 AM

----- Forwarded message -----

From: Richard Kumaran Kandasamy <richard.k.kandasamy@ntnu.no>
Date: Fri, Aug 25, 2017 at 12:36 PM
Subject: Letter of invitation
To: keshav@yenepoya.edu.in <keshav@yenepoya.edu.in>, Keshava Prasad <tskprasad@gmail.com>

Dear Keshava,

We would like to invite you to visit CEMIR, NTNU for giving a guest lecture and to further discuss the details of our collaborative projects. Please find the invitation letter attached.

Please let me know if you need any other details from our side regarding your visit.

Looking forward to seeing you here.

Best regards,

Richard

Richard Kumaran Kandasamy, Ph.D.
Associate Professor (Onsager Fellow)
Centre of Molecular Inflammation Research (SFF-CEMIR)
Department of Clinical and Molecular Medicine
Faculty of Medicine and Health Sciences
Norwegian University of Science and Technology (NTNU)
Trondheim, Norway

Phone (Office) : +47 728 24511

Phone (Mobile): +47 93642960

A handwritten signature in green ink and a purple stamp that says 'ATTESTED'.

Dr. Gangadhara Somayaji K.S.
Registrar
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University Road, Deralakatte
Mangalore- 575 010, Karnataka



YRC NAAC 2020 <yrcnaac2020@yenepoya.edu.in>

Fwd: Thon kick-off meeting

1 message

Keshava Prasad <tskprasad@gmail.com>
 To: YRC NAAC 2020 <yrcnaac2020@yenepoya.edu.in>

Mon, Jan 11, 2021 at 11:23 AM

----- Forwarded message -----

From: **Trude Helen Flo** <trude.flo@ntnu.no>

Date: Tue, May 8, 2018 at 7:30 PM

Subject: Thon kick-off meeting

To: Keshava Prasad <tskprasad@gmail.com>, Maria Lerm <maria.lerm@liu.se>, Norbert Reiling <nreiling@fz-borstel.de>

Cc: Richard Kumaran Kandasamy <richard.k.kandasamy@ntnu.no>, Alexandre Gidon <alexandre.gidon@ntnu.no>

Dear all,

soon we will meet here in Trondheim and kick off the Thon project, I am very much looking forward to that! Alex will be working on the project from here, and Richard may be involved on the proteomic/bioinformatics part - he is friends of Keshav from earlier days, so they will join.

I have attached a tentative schedule based on your travel itineraries, which are also listed.

The airport bus shuttle is very convenient and even bring you all the way to the Student Society (Studentersamfundet) building that is right next to the hospital campus (you just tell the bus driver). The bus is right outside arrivals.

Alternatively, there is a train at the airport that bring you even closer to campus, but is less frequent - choose the station Marienborg and cross the bridge - you easily see the hospital. In either case, if you come directly to the meeting - notify me by email or sms (+4791897796) so that I can guide you.

For the dinner : I need feedback from you on food issues /preferences as soon as possible so that I can inform the restaurant up front.

Wellcome to Trondheim,

Trude

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Dr.Gangadhara Somayaji K.S.
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 University Road, Deratakatte
 Mangalore- 575 018, Karnataka

*Trude Helen Flo, PhD, Professor in Cell Biology and Co-Director of CEMIR
 NTNU, Centre of Molecular Inflammation Research,
 Department of Clinical and Molecular Medicine*



YRC NAAC 2020 <yrcnaac2020@yenepoya.edu.in>

Fwd: Olav Thon Foundation - AMR

1 message

Keshava Prasad <tskprasad@gmail.com>
To: YRC NAAC 2020 <yrcnaac2020@yenepoya.edu.in>

Mon, Jan 11, 2021 at 11:22 AM

----- Forwarded message -----

From: **Trude Helen Flo** <trude.flo@ntnu.no>
Date: Thu, Jan 11, 2018 at 1:17 PM
Subject: Olav Thon Foundation - AMR
To: Norbert Reiling <nreiling@fz-borstel.de>, Maria Lerm <maria.lerm@liu.se>, Keshava Prasad <tskprasad@gmail.com>
Cc: keshav@ibioinformatics.org <keshav@ibioinformatics.org>, Richard Kumaran Kandasamy <richard.k.kandasamy@ntnu.no>, Espen Murvold <espen.murvold@ntnu.no>, Terje Espevik <terje.espevik@ntnu.no>, Janne Østvang <janne.ostvang@ntnu.no>

Dear all,

I got great news this morning, they called from the Olav Thon Foundation and our grant gets funded! We won one of the two grants, and we should be really proud:) They will announce it at 10 am this morning, so pay attention (perhaps this will be in Norwegian only, then I can send you links). A grant seremoni will be held in early March, so I guess we can start the project very soon. And I think we should plan on meeting physically some time this spring/summer/early fall for a kick off. Until then we communicate per skype and emails.

Congratulations to all, and thanks for all contributions this far. I am really looking forward to start this project and to finally collaborate with all of you. I am sure this will be a very exciting and fruitful international collaboration!

Trude

*Trude Helen Flo, PhD, Professor in Cell Biology and Co-Director of CEMIR
NTNU, Centre of Molecular Inflammation Research,
Department of Clinical and Molecular Medicine*

Mobile: (+47) 91897796

<http://www.ntnu.edu/employees/trude.flo> ; <http://www.ntnu.edu/cemir>

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YRC NAAC 2020 <yrznaac2020@yenepoya.edu.in>

Fwd: Fw: Schedule for September 20 - Prof. Keshava Prasad

1 message

Keshava Prasad <tskprasad@gmail.com>
To: YRC NAAC 2020 <yrznaac2020@yenepoya.edu.in>

Mon, Jan 11, 2021 at 11:21 AM

----- Forwarded message -----

From: Richard Kumaran Kandasamy <richard.k.kandasamy@ntnu.no>
Date: Mon, Sep 18, 2017 at 7:42 PM
Subject: Fw: Schedule for September 20 - Prof. Keshava Prasad
To: Keshava Prasad <tskprasad@gmail.com>

FYI 😄 😄 😄

Sent from my LG Mobile

----- Original message-----

From: Richard Kumaran Kandasamy
Date: Mon, Sep 18, 2017 16:05
To: Geir Slupphaug;Magnar Bjørås;Pål Sætrum;Geir Bjørkøy;Marit Otterlei;Trude Helen Flo;Terje Espevik;Per Bruheim;
Cc:
Subject:Schedule for September 20 - Prof. Keshava Prasad

Dear All,

Here is the schedule for Keshava Prasad's visit:

09:00 - 09:45 Seminar at KM42
10:00 - 10:45 Geir Slupphaug
10:45 - 11:15 Magnar Bjørås
11:15 - 11:45 Pål Sætrum
11:45 - 12:15 Lunch with Geir Bjørkøy
12:15 - 12:45 Marit Otterlei
13:00 - 13:30 Trude Helen Flo
13:30 - 14:00 Terje Espevik
14:15 - 15:00 Per Bruheim

Please let me know if you need any changes to the schedule.

Many thanks for your time!!!

Best regards,

Richard

Sent from my LG Mobile

----- Original message-----

From: Richard Kumaran Kandasamy
Date: Mon, Sep 18, 2017 13:28
To: IKOM Liste ansatte-cemir;
Cc: Pål Sætrum;Marit Otterlei;Magnar Bjørås;Finn Drabløs;Marit Walbye Anthonsen;Barbara van Loon;Per Arne Aas;
Subject:Guest lecture on September 20 - Prof. Keshava Prasad

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Collaboration Agreement

for execution of the Project

**Discovering new therapeutic targets and
drugs to combat AMR tuberculosis**

**Funded by
The Olav Thon foundation**

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University Road, Deralakatte
Mangalore- 575 018, Karnataka

Contracting parties

Norges teknisk-naturvitenskapelige universitet (NTNU), hereinafter referred to as **NTNU** or **Project owner**, established in Høgskoleringen 1, 7491 Trondheim, Norway, represented by Department head, Professor Torstein Baade Røe or another authorised representative, and

Linköping University, hereinafter referred to as **LiU**, established in Linköping, Sweden, represented by the Department of clinical and experimental medicine and Prof. Maria Lerm, or another authorised representative, and

Research Center Borstel - Leibniz Center for Medicine and Biosciences, hereinafter referred to as **FZB**, established in Borstel, Germany, represented by Prof. Norbert Reiling, or another authorised representative, and

Yenepoya (Deemed to be University) Mangalore, hereinafter referred to as **YP**, established in 2008, represented by Dr. Shrikumar Menon, the Registrar, Yenepoya (Deemed to be University) and

hereinafter jointly referred to as the "parties" or individually as "party".

1 Definitions

Background means: the IPR stated in Appendix 3.

Commercial utilisation means: Direct or indirect use of project results in the development and/or marketing of products, services or processes, or the transfer and/or licensing of use of project results to third parties. Publication through publishing houses is not defined as commercial utilisation.

Needed - means:

For the implementation of the Project:

User rights are Needed if, without the grant of such user rights, carrying out the tasks assigned to the recipient party would be impossible, significantly delayed, or require significant additional financial or human resources.

For use of own Project results:

User rights are Needed if, without the grant of such user rights, the use of own Project results would be technically or legally impossible.

Project means: the project described in Appendix 1.

Project result means: any IPR, inventions, discoveries, reports or other information that has been developed during the performance of the Project.

R&D activity means: The activity (ies) that a party is going to conduct as a part of the implementation of the Project.

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2 The Scope of work, purpose and appendices

- 2.1 The parameters of the Project, including the terms and conditions for support from the Olav Thon Foundation, the scope of the support, the Project's objective, the Project description, Funding plan and reporting requirements are stated in Appendix 1;

Appendix 1: Granting letter from the Olav Thon Foundation including the Project description.

In the event of any contradiction between Appendix 1 and this Collaboration agreement, Appendix 1 shall have priority. The following attached documents shall also be part of this Collaboration agreement:

Appendix 2: The individual party's Key responsible persons.

Appendix 3: Background.

Appendix 4: Annual cost and funding plan for the parties, involving distribution of funds from the Project owner.

- 2.2 Each party is required to contribute resources to the implementation of the Project and the fulfilment of the Granting letter pursuant to the duties and obligations specified in this Collaboration agreement, the Project description and the Funding plan. The parties bear mutual responsibility for implementation of the Project and for achieving the results outlined in the Project description.
- 2.3 The parties shall take reasonable measures to ensure the accuracy of any information or materials it supplies to the other party.

3 Project management

- 3.1 Each party should at any time have identified a legal/administrative responsible, financial officer and a scientific responsible (Appendix 2), hereafter referred to as Key responsible persons. The scientific responsible of the Project owner is the Project manager.
- 3.2 The Key responsible persons shall ensure that the intentions and plans underlying the Granting letter for the Project are fulfilled, and that the activities set out in the Project description and the Funding plan are completed within the approved time frame.
- 3.3 The Project manager is Professor Trude Helen Flo, being responsible for the day-to-day activities of the Project, facilitate communication between project parties and set up a secure domain for sharing of project matters (results, protocols).
- 3.4 Annual project meetings will be held at one of the parties' institutions; virtual skype meetings will be held bi-monthly for project updates.
- 3.5 Reporting. Project manager will write the annual report for the Thon Foundation based on scientific progress, personnel and economy reports from all parties sent to the Project manager at the end of January each year.

4 Changes to the consortium, subcontracting and dispute resolution

- 4.1 Each party shall perform the R&D activity, if any, that the party in question has undertaken pursuant to the

Project description. A party undertakes to notify the other party promptly about any significant information, facts, problems or delays likely to affect the Project.

- 4.2 If a party does not perform the agreed R&D activity in a satisfactory manner, this should be discussed between the Key responsible persons in order to find a solution.
- 4.3 Disputes that may arise between the parties shall be settled by amicable negotiations in good faith between the parties. If the Key responsible persons are not able to agree, negotiations between the Principals of the parties shall take place to find a solution. See also paragraph 12.2.
- 4.4 A party that enters into a subcontract remains responsible for carrying out its relevant part of the Project and for such subcontractor's compliance with the provisions of this Collaboration agreement and the Granting letter. It has to ensure that the involvement of a subcontractor does not affect the rights and obligations of the other parties under this Collaboration agreement and the Granting letter.

5 Project plan, reporting and payment

- 5.1 The Project owner is responsible for coordinating the scientific and financial reporting to the Olav Thon Foundation. The other parties shall without undue delay submit all Project results, reports, accounting documentation and other documents that the Project owner requires fulfilling its obligations to the Olav Thon Foundation.
- 5.2 The Project owner is responsible for ensuring that funds disbursed by the Olav Thon Foundation are managed in compliance with Appendix 1. The same applies to the disbursement of funds to the other parties.
- 5.3 In accordance with its own usual accounting and management principles and practices, each party shall be solely responsible for justifying its costs with respect to the Project towards the Olav Thon Foundation.
- 5.4 The distribution of funds to the parties and any following requirements thereto, is defined in Appendix 4.
- 5.5 If a party spends less than its allocated share of the annual budget as defined in Appendix 4 to this agreement, said party will be funded in accordance with its actual duly justified eligible costs only.
- 5.6 If a party spends more than its allocated share of the annual budget as defined in Appendix 4, said party will be funded only in respect of duly justified eligible costs up to an amount not exceeding that share, if not agreed in writing between the parties in advance.

6 Background

- 6.1 The Background of the Project is described in Appendix 3. The ownership of the Background will be maintained by the party that brought it into the Project.
- 6.2 Any party wishing to contribute further Background during the Project shall notify the other parties of this. Any request put forward for Background to the Project shall be approved by the other parties, and Appendix 3 shall be updated accordingly.
- 6.3 Any results from the Project that do not comprise Background pursuant to Appendix 3 and are not approved by the parties as Background pursuant to Section 6.2 will automatically be assigned the status

of Project results. For the sake of clarity, this shall not limit a party's Intellectual property rights to technology or knowledge that said party can document was developed independently from the Project.

- 6.4 For the duration of the Project, a party shall have access at no charge to the other party's Background that is Needed for the implementation of their own work in the Project.
- 6.5 User rights to Background if Needed for Commercial utilisation of a party's own Project results shall be granted on fair and reasonable conditions. Any Commercial utilisation of Background owned by the other party must be regulated by specific written agreements.

7 Ownership rights to Project results

- 7.1 Each party has the right of ownership to Project results that the party generates on its own.
- 7.2 If a Project result has been jointly generated by the parties and if their respective share of the Project results cannot be ascertained, they shall have joint ownership of such Project results in shares corresponding to the intellectual contribution.

Said parties shall, if the nature of the Project result(s) requires so, and/or if requested by one of the parties conclude a joint ownership agreement for the use of the jointly owned Project results, including possible protection and cost allocation for the Project results. The joint ownership agreement shall as a minimum include:

- A definition of relevant Project results having joint ownership.
- A description of which of the joint owners that shall have the operative responsibility for protecting (through registration of Intellectual property rights and otherwise), and managing the jointly owned Project results (hereinafter named IP Manager), including a clear description of the IP Manager's Power of Attorney.

- 7.3 The owner(s) of a Project result that might have potential for Commercial utilisation, hereunder patent protection, are obliged to evaluate the need for protection of said Project results, and if relevant, secure protection by means and to the extent considered reasonable.

8. User rights to Project results and software

- 8.1 User rights to Project results for the execution of own work of a party under the Project shall be granted on a royalty-free basis.
- 8.2 The parties shall have free access to use Project results for internal non-commercial research and education purposes. The parties shall have free access to use all general experience and professional knowledge that has been acquired during execution of the Project.
- 8.3 User rights to Project results if Needed for Commercial utilisation of a party's own Project results, including third party research, shall be granted on fair and reasonable conditions.
- 8.4 For the avoidance of doubt, the general provisions for user rights provided for in this Section 8 are applicable also to software. The parties' user rights to software do not include any right to receive source code or object code ported to a certain hardware platform or any right to receive respective software documentation in any particular form or detail, but only as available from the party granting the user rights.

9. Confidentiality

- 9.1 All information in whatever form or mode of transmission, which is disclosed by a party (the "disclosing party") to the other party (the "recipient party") in connection with the Project during its implementation, and which has been explicitly marked as "confidential", or when disclosed orally, has been identified as confidential at the time of disclosure and has been confirmed and designated in writing within 15 (fifteen) days at the latest as confidential information by the disclosing party, shall be treated as "Confidential information".
- 9.2 The recipient party hereby undertakes in addition, for a period of 3 (three) years after the termination of the Project:
- not to use Confidential information otherwise and without prejudice to any commitment of non-disclosure;
 - not to disclose Confidential information to any third party without the prior written consent by the disclosing party;
 - to ensure that internal distribution of Confidential information by a recipient party shall take place on a strict need-to-know basis; and
 - to return to the disclosing party on demand all Confidential information which has been supplied to or acquired by the recipient parties including all copies thereof and to delete all information stored in a machine-readable form. However, if required by national applicable law, a copy of such information may be retained.
- 9.3 The recipient party shall be responsible for the fulfilment of the above obligations on the part of their employees and shall ensure that their employees remain so obliged, as far as legally possible, during and after the termination of the Project and/or after the termination of employment.
- 9.4 The above shall not apply for disclosure or use of Confidential information, if and in so far as the recipient party can show that:
- the Confidential information becomes publicly available by means other than a breach of the recipient party's confidentiality obligations;
 - the disclosing party subsequently informs the recipient party that the Confidential information is no longer confidential;
 - the Confidential information is communicated to the recipient party without any obligation of confidentiality by a third party who is in lawful possession thereof and under no obligation of confidence to the disclosing party;
 - the Confidential information, at any time, was developed by the recipient party completely independently of any such disclosure by the disclosing party; or
 - the Confidential information was already known to the recipient party prior to disclosure.
- 9.5 The recipient party shall apply the same degree of care with regard to the Confidential information disclosed within the scope of the Project as with its own confidential and/or proprietary information, but in no case less than reasonable care.
- 9.6 Each party shall promptly advise the other party in writing of any unauthorized disclosure, misappropriation or misuse by any person, of Confidential information as soon as said party becomes aware of such unauthorized disclosure, misappropriation or misuse.
- 9.7 If any party becomes aware that it will be required, or is likely to be required, to disclose Confidential information in order to comply with applicable laws or regulations or with a court or administrative order, it shall, to the extent it is lawfully able to do so, prior to any such disclosure:
- notify the disclosing party, and

 ATTESTED

- comply with the disclosing party 's reasonable instructions in order to protect the confidentiality of the information.

9.8 The confidentiality obligations under this Consortium agreement shall not prevent the communication of Confidential information to the Olav Thon Foundation.

10. Dissemination of Project results

10.1 Project results shall be published as rapidly as possible in accordance with the procedure described herein.

10.2 Prior notice of any planned publication shall be distributed between the parties and sent to the Project manager at least 14 calendar days before the submission of the publication. Any objection to the planned publication by any party shall be made in writing to the Project manager and the relevant party within 7 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted.

10.3 An objection is justified if:

- a) the protection of the objecting party's Project results or Background is adversely affected in which case a delay according to 10.5 may be requested; or
- b) the proposed publication includes Confidential information of the objecting party.

10.4 An objection has to include a precise request for necessary modifications.

10.5 If the owner of a Project result wants to protect the Project result, the owner may request that a publication covering that Project result is withheld up to 4 months from receipt of the publication notice. Any such requests and/or objections should be handled according to guidelines at the involved party's institution and national laws.

10.6 For the avoidance of doubt, a party shall not include in any publication another party's Project results or Background without obtaining the owning party's prior written approval, unless they are already published.

10.7 Nothing in this Consortium agreement shall be construed as conferring rights to use in advertising, publicity or otherwise the name of the parties or any of their logos or trademarks without their prior written approval.

11 Liability of the parties in relation to each other

11.1 In respect of any information or materials (incl. Project results and Background) supplied by one party to another under the Project, no warranty or representation of any kind is made, given or implied as to the sufficiency or fitness for purpose nor as to the absence of any infringement of any proprietary rights of third parties.

Therefore,

- the recipient party shall in all cases be entirely and solely liable for the use to which it puts such information and materials, and
- no party granting user rights shall be liable in case of infringement of proprietary rights of a third party resulting from any other party exercising its user rights.

ATTESTED



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- 11.2 No party shall be responsible to any other party for any indirect or consequential loss or similar damage such as, but not limited to, loss of profit, loss of revenue or loss of contracts, provided such damage was not caused by a wilful act or by gross negligence.
- 11.3 For any remaining contractual liability, a party's aggregate liability towards the other parties collectively shall be limited to once the party's share of the total costs of the Project, provided such damage was not caused by a wilful act or gross negligence.
- 11.4 The terms of this Collaboration agreement shall not be construed to amend or limit any party's statutory liability.
- 11.5 Each party shall be solely liable for any loss, damage or injury to third parties resulting from the performance of the said party's obligations by it or on its behalf under this Collaboration agreement or from its use of Project results or Background.
- 11.6 No party shall be considered to be in breach of this Collaboration agreement if it is prevented from fulfilling its obligations under the Collaboration agreement by Force majeure. Each party will notify the Project manager without undue delay. If the consequences of Force majeure for the Project are not overcome within 6 weeks after such notification, the transfer of tasks - if any - shall be decided by the involved Key responsible persons.


12 The Consortium agreement's validity, dissolution of a consortium, interpretation, etc.

- 12.1 This agreement will enter into force upon being signed and will continue to apply in its entirety until the conclusion of the Project period pursuant to Appendix 1, unless the parties decides otherwise.
- 12.2 This agreement is subject to Norwegian law. Attempts shall be made to resolve any disputes by negotiation or voluntary mediation. In the event such attempts do not succeed within one month after negotiations have been requested, the dispute may be brought before the district court of Sør-Trøndelag.

13 Signatures

- 13.1 The Parties have caused this Collaboration agreement to be duly signed by the undersigned authorised representatives in separate signature pages.

ATTESTED


Dr.Gangadhara Somayaji K.S.
Registrar
Yenepoya(Deemed to be University)
University Road, Deralakatte,
Mangalore- 575 018, Karnataka

On behalf of Norges teknisk-naturvitenskapelige universitet

Date:

Name and title: Professor Torstein Baade Røe

Position: Department head

Signature: _____

On behalf of Linköping University

Date:

Name and title: Kent Waltersson *Per Danneberg*

Position: University Director *deputy*

Signature:  _____

On behalf of Linköping University

Date: *180911*

Name and title: Professor Anders Fridberger

Position: Head of Department

Signature:  _____

On behalf of Research Center Borstel

Date: *18-09-2018*

Name and title: Professor Dr. Stefan Ehlers

Position: CEO

Signature:  _____

On behalf of Yenepoya University Mangalore


Date:

Name and title: Dr. Shrikumar Menon

Position: The Registrar, Yenepoya (Deemed to be University)

Signature:  _____

ATTESTED


Dr. Gangadhara Somayaji K.S.
Registrar
Yenepoya (Deemed to be University)
University Road, Derlakatte
Mangalore- 575 018, Karnataka

APPENDIX 2: The individual party's Key responsible persons


NTNU

- Scientific responsible:** Professor Trude H. Flo
Norwegian University of Science and Technology
Centre of Molecular inflammation Research (CEMIR)
PO Box 8905 MTF, NO-7491 Trondheim, Norway
trude.flo@ntnu.no
+47 91897796
- Legal responsible:** Professor Torstein Baade Rø, Head of department
Norwegian University of Science and Technology,
Department of clinical and molecular medicine (IKOM)
Høgskoleringen 5, N-7465, Trondheim, Norway
torstein.ro@ntnu.no
+47 72574051
- Financial officer:** Espen Murvold
Norwegian University of Science and Technology,
Department of clinical and molecular medicine (IKOM)
Høgskoleringen 5, N-7465, Trondheim, Norway
Espen.Murvold@ntnu.no
+47 72824682

LIU

- Scientific responsible:** Maria Lerm, PhD, Assoc. Prof.
Div. of Microbiology, Infection and Inflammation
Dept. Of Clinical and Experimental Medicine
Faculty of Medicine and Health Sciences
Linköping University
SE-58185 Linköping
Sweden
Phone: +46-732707786
E-mail: maria.lerm@liu.se
- Legal responsible:** Anders Fridberger, Professor, Department Head
Dept. Of Clinical and Experimental Medicine
Faculty of Medicine and Health Sciences
Linköping University
SE-58185 Linköping
Sweden
Phone: +46-13-281130
E-mail: anders.fridberger@liu.se
- Financial officer:** Lena Törnberg
Dept. Of Clinical and Experimental Medicine
Faculty of Medicine and Health Sciences
Linköping University
SE-58185 Linköping
Sweden
Phone: +46-13-282841
E-mail: lena.tornborg@liu.se

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FZB

Scientific responsible: PD Dr. Norbert Reiling
Head, RG Microbial Interface Biology
Research Center Borstel- Leibniz Lung Center
Parkallee 1-40
23845 Borstel, Germany
nreiling@fz-borstel.de
+49 4537 188-4860

Legal responsible: Professor Dr. Stefan Ehlers
CEO
Research Center Borstel- Leibniz Lung Center
Parkallee 1-40
23845 Borstel, Germany
sehlers@fz-borstel.de
+49 4537 188-4810

Financial officer: Mr. Andreas Grosskopf
Research Center Borstel- Leibniz Lung Center
Parkallee 1-40
23845 Borstel, Germany
agrosskopf@fz-borstel.de
+49 4537 188-3940

YP

Scientific responsible: Dr. Keshava Prasad T. S., Professor and Deputy Director
Center for Systems Biology and Molecular Medicine
Yenepoya Research Centre, Yenepoya (Deemed to be University)
University Road, Mangalore 575018, India
keshav@yenepoya.edu.in; tskprasad@gmail.com; +919972250102

Legal responsible: Dr. Shreekumar Menon, The Registrar, Yenepoya (Deemed to be University), University
Road, Mangalore 575018, India, registrar@yenepoya.edu.in ; +91 9810144308

Financial officer: Mr. Mohammad Bava, Finance Officer, Yenepoya (Deemed to be University), University Road,
Mangalore 575018, India, financeofficer@yenepoya.org; +91 9880570079

ATTESTED


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APPENDIX 3: Background

(pre-existing intellectual property like patents, databases, software etc. made available to the partners in the consortium for use in the project)

To be filled out by the parties

Yenepoya (Deemed to be University)

1. Proteomic facilities including Orbitrap Tribrid Fusion mass spectrometer, QTRAP mass spectrometer and accessories, licensed software such as Proteome Discover Suite, MASCOT search algorithms
2. Routine molecular biology equipment including PCR, Western Blot apparatus, and HPLC
3. Servers for data storage and analysis

 **ATTESTED**

Dr.Gangadhara Somayaji K.S.
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Yenepoya(Deemed to be University)
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APPENDIX 4: Annual cost and funding plan for the parties' involvement in the Project, involving distribution of funds from the Project owner.

The original budget is included with Appendix 1. The budget is revised to include a split in the technical position between NTNU and FZB with allocation of funds equivalent to 975 kNOK over 4 years including running costs (Table 1).

NTNU will transfer the parties' share of the funds, given in Tables 1-2.

YP will receive their share of funding once a year (July). The transfer will be made by direct payment in advance. Accrued costs must be specified and sent to NTNU twice a year (15 January and 15 July) using table 3 below.

LiU and FZB will receive their share of funding one time each year (July) after NTNU has received the funding from the Olav Thon Foundation. The transfer will be carried out by direct payment in arrears based on eligible and documented costs. The accrued costs for every 12 months shall be specified and sent to NTNU (using Table 3 below) before the direct payment is carried out.

The reports from all parties' must contain the following cost categories:

- a) Personell and indirect costs
- b) Procurement of FoU
- c) Equipment (use of lab infrastructure)
- d) Other operating costs

In addition, any own financing from the parties has to be reported to the Project owner.

Table 1: Annual cost plan for the parties in the Project (all numbers in kNOK).

	Total	2018	2019	2020	2021	2022
NTNU	6 821	70	1 741	1781	1806	1423
LiU	1 247	318	413	258	258	
YP	957	162	372	279	144	
FZB	975	130	229	229	229	158
Total	10 000	680	2 755	2 547	2 437	1581

Table 2: Annual funding plan for the parties' costs in the Project (all numbers in kNOK).

	Total	2018	2019	2020	2021	2022
O.T. Foundation	10 000	2 500	2 500	2 500	2 500	
Total	10 000	2 500	2 500	2 500	2 500	

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 Mangalore- 575 016, Karnataka

Table 3: Overview of accrued costs to be sent to the Project owner as basis for distribution of funds.

Accrued costs for the Olav Thon foundation project		
Project number:	651530/ 90305600	
Project title:	Discovering new therapeutic targets and drugs to combat AMR tuberculosis	
Year:		
Project partner (institution)		
Organisation number:		
Address:		
Post number and place:		
Bank account		
Project leader		
Mark the money transfer with:		
Cost specifications		
Actual costs	Periode	Sum
Payroll and indirect expenses		
Procurement of R&D services		
Equipment		
Other operating expenses		
Sum		
Comments to the report if needed:		
Attestation by a administrative responsible		
Name:		
Signature:		

ATTESTED

Dr.Gangadhara Somayaji K.S.
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University Road, Derahalli
Mangalore- 575 016, Karnataka



Article

The Proteomic Landscape of Resting and Activated CD4+ T Cells Reveal Insights into Cell Differentiation and Function

Yashwanth Subbannayya ¹, Markus Haug ¹, Sneha M. Pinto ¹, Varshasnata Mohanty ², Hany Zakaria Meas ¹, Trude Helen Flo ¹, T.S. Keshava Prasad ² and Richard K. Kandasamy ^{1,*}

¹ Centre of Molecular Inflammation Research (CEMIR), Department of Clinical and Molecular Medicine (IKOM), Norwegian University of Science and Technology, 7491 Trondheim, Norway; yashwanth.subbannayya@ntnu.no (Y.S.); markus.haug@ntnu.no (M.H.); sneha.pinto@ntnu.no (S.M.P.); hany.z.meas@ntnu.no (H.Z.M.); trude.flo@ntnu.no (T.H.F.)

² Center for Systems Biology and Molecular Medicine, Yenepoya (Deemed to be University), Mangalore 575018, India; varsham@yenepoya.edu.in (V.M.); keshav@yenepoya.edu.in (T.S.K.P.)

* Correspondence: richard.k.kandasamy@ntnu.no

Abstract: CD4+ T cells (T helper cells) are cytokine-producing adaptive immune cells that activate or regulate the responses of various immune cells. The activation and functional status of CD4+ T cells is important for adequate responses to pathogen infections but has also been associated with auto-immune disorders and survival in several cancers. In the current study, we carried out a label-free high-resolution FTMS-based proteomic profiling of resting and T cell receptor-activated (72 h) primary human CD4+ T cells from peripheral blood of healthy donors as well as SUP-T1 cells. We identified 5237 proteins, of which significant alterations in the levels of 1119 proteins were observed between resting and activated CD4+ T cells. In addition to identifying several known T-cell activation-related processes altered expression of several stimulatory/inhibitory immune checkpoint markers between resting and activated CD4+ T cells were observed. Network analysis further revealed several known and novel regulatory hubs of CD4+ T cell activation, including IFNG, IRF1, FOXP3, AURKA, and RIOK2. Comparison of primary CD4+ T cell proteomic profiles with human lymphoblastic cell lines revealed a substantial overlap, while comparison with mouse CD+ T cell data suggested interspecies proteomic differences. The current dataset will serve as a valuable resource to the scientific community to compare and analyze the CD4+ proteome.

Keywords: adaptive immunity; T-lymphocytes; CD4+ T helper cells; mass spectrometry; proteomics; label-free quantitation; systems biology



Citation: Subbannayya, Y.; Haug, M.; Pinto, S.M.; Mohanty, V.; Meas, H.Z.; Flo, T.H.; Prasad, T.S.K.; Kandasamy, R.K. The Proteomic Landscape of Resting and Activated CD4+ T Cells Reveal Insights into Cell Differentiation and Function. *Int. J. Mol. Sci.* **2020**, *22*, 275. <https://doi.org/10.3390/ijms22010275>

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1. Introduction

CD4+ T cells, also known as CD4+ T helper cells, are a subtype of T-lymphocytes that perform important immunoregulatory roles in adaptive immunity, including activation of B cells, cytotoxic T-cells, and nonimmune cells [1]. Bone marrow-derived hematopoietic progenitors committed of the T-cell lineage, unlike other cells of the hematopoietic cell lineage, enter circulation and migrate to the thymus where they undergo maturation and selection processes to produce a pool of mature resting CD4+ and CD8+ T cell lineages [2]. During maturation, each T cell re-arranges a unique T cell receptor (TCR) that recognizes specific antigenic peptides in complex with major histocompatibility complex (MHC) molecules on APCs. Mature naïve T cells exit the thymus and patrol the blood and lymph system where they screen MHC molecules on antigen-presenting cells (APCs) and are activated if their TCRs detect their cognate antigen on MHC molecules [3]. In addition, subsequent signals, including costimulatory receptor signaling (e.g., CD28) and environmental impacts such as cytokines, are essential for T cell activation [4]. The interactions between APCs and T cells are mediated by regulatory molecules known as immune checkpoints [5]. After activation, CD4+ T cells undergo clonal expansion and differentiation into CD4+ effector

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1 **Dose-dependent phorbol 12-myristate-13-acetate-mediated monocyte-to-macrophage**
2 **differentiation induces unique proteomic signatures in THP-1 cells**

3

4 Sneha M. Pinto † ‡*, Hera Kim †*, Yashwanth Subbannayya †, Miriam Giambelluca †,
5 Korbinian Bösl †° and Richard K. Kandasamy † §#

6

7 †Centre of Molecular Inflammation Research (CEMIR), and Department of Clinical and
8 Molecular Medicine (IKOM), Norwegian University of Science and Technology, N-7491
9 Trondheim, Norway

10 ‡Center for Systems Biology and Molecular Medicine, Yenepoya (Deemed to be University),
11 Mangalore, India

12 °Department of Infectious Diseases, Medical Clinic, St. Olavs Hospital, N-7491 Trondheim,
13 Norway

14 §Centre for Molecular Medicine Norway (NCMM), Nordic EMBL Partnership, University of
15 Oslo and Oslo University Hospital, N-0349 Oslo, Norway

16 ¶Program in Innate Immunity, Division of Infectious Diseases and Immunology, Department
17 of Medicine, University of Massachusetts Medical School, Worcester, MA, United States

18

19 # Correspondence: Richard K. Kandasamy (richard.k.kandasamy@ntnu.no)

20

21 * These authors contributed equally

22

23

24 Running title: Proteomics of PMA-mediated differentiation of THP-1 cells

25


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Registrar
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YENEPOYA

(DEEMED TO BE UNIVERSITY)

Recognised under Sec. 3(A) of the UGC Act 1956
Accredited by NAAC with 'A' Grade

Y/REG/ACA/Letter/2019

28.08.2019

Professor Trude Helen Flo
Norwegian University of Science and Technology
Centre of Molecular inflammation Research (CEMIR)
PO Box 8905 MTFSS, NO-7491 Trondheim, Norway
trude.flo@ntnu.no; +47 91897796

Sub: Invitation for the Progress Review Meeting of a collaborative research project at Yenepoya (Deemed to be University), Mangalore during November 26-28, 2019

Dear Prof. Helen Flo,

I am happy to invite you to Yenepoya (Deemed to be University), Mangalore, India for the progress review meeting of a collaborative research project between our research teams entitled "Discovering new therapeutic targets and drugs to combat AMR tuberculosis: proteomics characterization and drug screening of mycobacterium - infected macrophages" which funded by Olav Thon Foundation, Norway. The progress review meeting will be held on November 26-28, 2019 in the Yenepoya Research Centre in our Institute.

Prof. Norbert Reiling from Research Center Borstel - Leibniz Center for Medicine and Biosciences, Borstel, Germany; Prof. Maria Lerm from Linköping University, Sweden; and Dr. Keshava Prasad (From Yenepoya (Deemed to be University)) will be other members of the project investigator team, who will participate in the meeting.

We are requesting you to book your travel tickets from your place to Mangalore International Airport. We understand that it will be reimbursed by your own component of this research grant.

We will arrange all other local logistics including your accommodation, food and local travel during your stay with us. Your accommodation has been arranged in the Meridyen Guest House from November 25-29 in the University campus.

Looking forward to host you in the University.

Sincerely,

REGISTRAR

Registrar

Yenepoya (Deemed to be University)
University Road, Deralakatte
Mangalore - 575 018

ATTESTED

Dr. Gangadhara Somayaji K.S.
Registrar
Yenepoya (Deemed to be University)
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Mangalore - 575 018, Karnataka

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Y/REG/ACA/Letter/2019

28.08.2019

PD Dr. Norbert Reiling
Head, RG Microbial Interface Biology
Research Center Borstel- Leibniz Lung Center
Parkallee 1-40, 23845 Borstel, Germany
nreiling@fz-borstel.de; +49 4537 188-4860

Sub: Invitation for the Progress Review Meeting of a collaborative research project at Yenepoya (Deemed to be University), Mangalore during November 26-28, 2019

Dear Prof. Reiling,

I am happy to invite you to Yenepoya (Deemed to be University), Mangalore, India for the progress review meeting of a collaborative research project between our research teams entitled "Discovering new therapeutic targets and drugs to combat AMR tuberculosis: proteomics characterization and drug screening of mycobacterium - infected macrophages" which funded by Olav Thon Foundation, Norway. The progress review meeting will be held on November 26-28, 2019 in the Yenepoya Research Centre in our Institute.

Professor Trude Helen Flo from Norwegian University of Science and Technology, Centre of Molecular inflammation Research (CEMIR), Trondheim, Norway;; Prof. Maria Lerm from Linköping University, Sweden; and Dr. Keshava Prasad (From Yenepoya (Deemed to be University)) will be other members of the project investigator team, who will participate in the meeting.

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Looking forward to host you in the University.

Sincerely,

REGISTRAR

Registrar

Yenepoya (Deemed to be University)
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Mangalore 575 018

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YU/REG/ACA/Letter/2019

28.08.2019

Maria Lerm, PhD, Assoc. Prof.
Div. of Microbiology, Infection and Inflammation
Dept. of Clinical and Experimental Medicine
Faculty of Medicine and Health Sciences
Linköping University
SE-58185 Linköping, Sweden
Phone: +46-732707786; E-mail: maria.lerm@liu.se

Sub: Invitation for the Progress Review Meeting of a collaborative research project at Yenepoya (Deemed to be University), Mangalore during November 26-28, 2019

Dear Dr.Lerm,

I am happy to invite you to Yenepoya (Deemed to be University), Mangalore, India for the progress review meeting of a collaborative research project between our research teams entitled "Discovering new therapeutic targets and drugs to combat AMR tuberculosis: proteomics characterization and drug screening of mycobacterium - infected macrophages" which funded by Olav Thon Foundation, Norway. The progress review meeting will be held on November 26-28, 2019 in the Yenepoya Research Centre in our Institute.

Prof. Norbert Reiling from Research Center Borstel - Leibniz Center for Medicine and Biosciences, Borstel, Germany; Professor Trude Helen Flo from Norwegian University of Science and Technology, Centre of Molecular inflammation Research (CEMIR), Trondheim, Norway; and Dr. Keshava Prasad (From Yenepoya (Deemed to be University)) will be other members of the project investigator team, who will participate in the meeting.

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Looking forward to host you in the University.

Sincerely,

REGISTRAR

Registrar

Yenepoya (Deemed to be University)
University Road, Deralakatte
Mangalore 575 018

ATTESTED

Dr.Gangadhara Somayaji K.S.
Registrar
Yenepoya(Deemed to be University)
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Richard Kumaran Kandasamy, Ph.D.
Associate Professor
Department of Clinical and Molecular Medicine

E-mail: richard.k.kandasamy@ntnu.no
Phone: +47 72824511

August 24, 2017

Dr. Prasad Thottethodi Subrahmanya KESHAHA
Professor and Deputy Director
Center for Systems Biology and Molecular Medicine (CSBMM), Yenepoya University, Mangalore
Faculty Scientist
Institute of Bioinformatics, Bangalore
India

Dear Keshava,

Sub: Your visit to NTNU, Trondheim – reg.

Myself and Prof. Trude Helen Flo at the Centre of Molecular Inflammation Research (CEMIR), Norwegian University of Science and Technology, Trondheim, Norway would like to invite you to our research centre for a week during September 15-30, 2017. Given that we have signed a MoU for research cooperation, your visit will help in expediting our collaborative projects on infection and inflammation. Also, please deliver a guest lecture about your ongoing proteomics projects during your visit.

CEMIR will cover your accommodation and travel expenses through my research grants. We will reserve the hotel in Trondheim once your exact travel dates are confirmed. The travel expenses will be reimbursed after your visit. Please feel free to contact myself, Prof. Trude Helen Flo (trude.flo@ntnu.no) or our CEMIR Head of Administration Janne Østvang (janne.ostvang@ntnu.no).

We are really excited about your visit and looking forward to your visit!

Sincerely,



Prof. Richard Kumaran Kandasamy

**ATTESTED**
Dr. Gangadhara Somayaji K.S.
Registrar
Yenepoya Deemed to be University)
University Road, Deralakatte
Mangalore- 575 018, Karnataka



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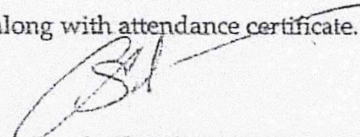
05.06.2018

OFFICIAL MEMORANDUM

Sub: Permission to visit Centre for Molecular Inflammation Research (CEMIR), NTNU
Norway.
Ref: His Letter dated: 16.05.2018.

Dr. Yashwanth Subbarunayya, Senior Scientific Officer, Yenepoya Research Centre, Yenepoya Deemed to be University is permitted to visit Norway as part of collaboration between Centre for Systems Biology and Molecular Medicine (CSBMM) Yenepoya Deemed to be University CSMIR, Norwegian University of Science & Technology, Norway from 12.06.2018 to 11.06.2019 without financial assistance and the period of absence is treated as LOP. He shall apply Loss of Pay in the prescribed format.

He shall submit a report highlighting his active participation along with attendance certificate.


Dr. G. Shreekumar Menon
REGISTRAR


To,
Dr. Yashwanth Subbarunayya
Senior Scientific Officer
Yenepoya Research Centre
Yenepoya Deemed to be University

Cc to:

Finance Officer
Deputy Director – YRC
P.A to Vice Chancellor
HRD
P.F

Shd

ATTESTED


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Richard Kumaran Kandasamy, Ph.D.

Associate Professor

Department of Clinical and Molecular Medicine

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March 19, 2018

Dr. Yashwanth Subbannayya

Assistant Professor-II

Center for Systems Biology and Molecular Medicine

Yenepoya (Deemed to be University), Mangalore, India

Dear Dr. Subbannayya,

Sub: Invitation to work in my research group at Center of Molecular Inflammation Research, NTNU,

Norway

I am happy to invite you to my research laboratory to work on investigating the role of post-translational modifications – specifically phosphorylation and ubiquitination in the activation and regulation of innate immunity. Your work will be focussed mainly on investigating the signaling mechanisms in cell death pathways combining our expertise on innate immunity, genome-editing and other molecular/biochemical techniques along with high-precision mass spectrometry-based proteomics. This project will be done in close collaboration with Dr. Prasad at CSBMM. As the project evolves, you will be able to also transfer these technologies to CSBMM and can also involve Ph.D. students and instrumentation of CSBMM to scale up the process.

We have initiated the necessary paperwork for you to start working in my laboratory at CEMIR, NTNU, as a post-doctoral fellow for a period of 2 years, beginning on or about May 15, 2018. You could periodically transfer the technology to your Ph.D. students at CSBMM, by being here. I would be happy to host your students in my laboratory for short-term visits if they win travel grants that allows such international visit. This will help foster and facilitate exchange of knowledge and personnel between the two universities. You will in turn have an opportunity to gain knowledge and training on CRISPR/Cas9-based targeted high-content genetic screens, utilize our facilities and expertise in advanced imaging and molecular techniques to investigate tropical diseases relevant to coastal Karnataka including Dengue, Chikungunya and Scrub typhus.

I will cover your salary for sustenance as per NTNU standards, pay the laboratory working costs (overhead charges) and the consumables for the entire period related to the project. In addition, you will have access to all NTNU resources like any other scientist here, including the state-of-the-art laboratory space and cutting-edge instrumentations. CEMIR will provide you with workspace and other work-related support as needed.

As planned in the MOU between NTNU – YU, we have already attracted a joint grant to work on collaborative research, which is led by my colleagues and myself from NTNU and Dr. Prasad and Dr. Pinto from CSBMM.

Postal address
NTNU, CEMIR
Postbox 8905
7491 Trondheim, Norway

Org.nr. 974 767 880
Email: cemir@medisin.ntnu.no
Web: <http://www.ntnu.edu/cemir>

Location /visiting address
St. Olavs hospital
Kunnskapssenteret, 3rd floor
Olav Kyrres gate 10

Phone +47 7282 5337
Fax +47 7257 1463

Page 1 of 2

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Registrar
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If you have any questions about your position, please contact myself (richard.k.kandasamy@ntnu.no / +47-93642960) or our head of administration Janne Østvang (janne.ostvang@ntnu.no / +47-41479557).

We are really excited about your visit and looking forward to having you here!

Sincerely,



Prof. Richard Kumaran Kandasamy

ATTESTED



Dr. Gangadhara Somayaji K.S.
Registrar
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Mangalore- 575 018, Karnataka



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YU/REG/EST/0996/APT/2015

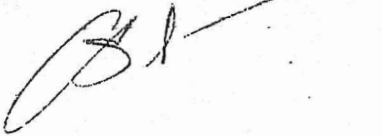
05.06.2018

OFFICIAL MEMORANDUM

Sub: Permission to visit Centre for Molecular Inflammation Research (CEMIR), NTNU
Norway.
Ref: Her Letter dated: 16.05.2018.

Dr. Sneha M Pinto, Assistant Professor & INSPIRE Faculty, Centre for Systems Biology and Molecular Medicine, Yenepoya Deemed to be University is permitted to visit Norway as part of collaboration between Centre for Systems Biology and Molecular Medicine (CSBMM), Yenepoya Deemed to be University CSMIR, Norwegian University of Science & Technology, Norway from 12.06.2018 to 11.06.2019, as per the norms of INSPIRE faculty Scheme. She will avail leave and draw her salary from the INSPIRE funds. There will be no financial assistance from Yenepoya Deemed to be University.

She shall submit a report highlighting her active participation along with attendance certificate.



Dr. G. Shreeekumar Menon
REGISTRAR

To,
Dr. Sneha M Pinto
Assistant Professor & INSPIRE Faculty
Centre for Systems Biology and Molecular Medicine
Yenepoya Deemed to be University

Cc to:

Finance Officer
Deputy Director – YRC
P.A to Vice Chancellor
HRD

ATTESTED


Dr. Gangadhara Somayaji K.S.
Registrar
Yenepoya (Deemed to be University)
University Road, Deralakatte
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University Road, Deralakatte, Mangaluru - 575 018.

T : +91 824 220 6000 E : reachus@yenepoya.edu.in www.yenepoya.edu.in

Richard Kumaran Kandasamy, Ph.D.

Associate Professor

E-mail: richard.k.kandasamy@ntnu.no

Department of Clinical and Molecular Medicine

Phone: +47 72824511

January 12, 2018

Dr. Sneha M. Pinto
DST-INSPIRE Faculty
Center for Systems Biology and Molecular Medicine
Yenepoya, Mangalore, India

Dear Dr. Pinto,

Sub: Invitation for a short-term visit to Center for Molecular Inflammation Research, NTNU, Norway

I would like to invite you to visit my laboratory at CEMIR, NTNU, as a visiting scientist for a period of 24 months, beginning on or about May 1, 2018. This visit will provide an opportunity for you to contribute your expertise to the CEMIR Division's work on studying the signaling pathways regulated by host-pathogen interactions and upon various inflammatory stimuli. You will in turn have an opportunity to gain knowledge and training on CRISPR/Cas9-based targeted high content genetic screens, utilize our facilities and expertise in advanced imaging and molecular techniques to investigate host defense mechanisms involved in immunity.

I will cover your travel cost (1 round trip), pay the laboratory working costs (overhead charges) and the consumables for the entire period related to the project. This is approximately INR 29,11,936.00 (1 NOK = 7.92 INR) for the whole project period of 24 months. In addition, you will have access to all NTNU resources like any other scientist here, including the state-of-the-art laboratory space and cutting-edge instrumentations.

CEMIR will provide you with workspace and other work-related support as needed. We understand that the funding for the remainder of your expenses including salary and stay will be arranged by you and your funding agency.

If you have any questions about the visit, please contact myself (richard.k.kandasamy@ntnu.no / +47-93642960) or our head of administration Janne Østvang (janne.ostvang@ntnu.no / +47-41479557).

We are really excited about your visit and looking forward to having you here!

Sincerely,

Richard K. Kandasamy

Prof. Richard Kumaran Kandasamy

ATTESTED

b
Dr. Gangadhara Somayaji K.S.
Registrar
Yenepoya (Deemed to be University)
University Road, Deralakatte
Mangalore - 575 018, Karnataka

If you have any questions about your position, please contact myself (richard.k.kandasamy@ntnu.no / +47-93642960) or our head of administration Janne Østvang (janne.ostvang@ntnu.no / +47-41479557).

We are really excited about your visit and looking forward to having you here!

Sincerely,



Prof. Richard Kumaran Kandasamy

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Dr. Gangadhara Somayaji K.S.
Registrar

Page 2 of 2
Tanezevan (Tanezevan University)
University Road, Deralakatte
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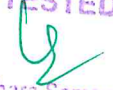
Collaboration Agreement

for execution of the Project

**Discovering new therapeutic targets and
drugs to combat AMR tuberculosis**

**Funded by
The Olav Thon foundation**

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Contracting parties

Norges teknisk-naturvitenskapelige universitet (NTNU), hereinafter referred to as **NTNU** or **Project owner**, established in Høgskoleringen 1, 7491 Trondheim, Norway, represented by Department head, Professor Torstein Baade Røe or another authorised representative, and

Linköping University, hereinafter referred to as **LiU**, established in Linköping, Sweden, represented by the Department of clinical and experimental medicine and Prof. Maria Lerm, or another authorised representative, and

Research Center Borstel - Leibniz Center for Medicine and Biosciences, hereinafter referred to as **FZB**, established in Borstel, Germany, represented by Prof. Norbert Reiling, or another authorised representative, and

Yenepoya (Deemed to be University) Mangalore, hereinafter referred to as **YP**, established in 2008, represented by Dr. Shrikumar Menon, the Registrar, Yenepoya (Deemed to be University) and

hereinafter jointly referred to as the "parties" or individually as "party".

1 Definitions

Background means: the IPR stated in Appendix 3.

Commercial utilisation means: Direct or indirect use of project results in the development and/or marketing of products, services or processes, or the transfer and/or licensing of use of project results to third parties. Publication through publishing houses is not defined as commercial utilisation.

Needed - means:

For the implementation of the Project:

User rights are Needed if, without the grant of such user rights, carrying out the tasks assigned to the recipient party would be impossible, significantly delayed, or require significant additional financial or human resources.

For use of own Project results:

User rights are Needed if, without the grant of such user rights, the use of own Project results would be technically or legally impossible.

Project means: the project described in Appendix 1.

Project result means: any IPR, inventions, discoveries, reports or other information that has been developed during the performance of the Project.

R&D activity means: The activity (ies) that a party is going to conduct as a part of the implementation of the Project.


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2 The Scope of work, purpose and appendices

- 2.1 The parameters of the Project, including the terms and conditions for support from the Olav Thon Foundation, the scope of the support, the Project's objective, the Project description, Funding plan and reporting requirements are stated in Appendix 1;

Appendix 1: Granting letter from the Olav Thon Foundation including the Project description.

In the event of any contradiction between Appendix 1 and this Collaboration agreement, Appendix 1 shall have priority. The following attached documents shall also be part of this Collaboration agreement:

Appendix 2: The individual party's Key responsible persons.

Appendix 3: Background.

Appendix 4: Annual cost and funding plan for the parties, involving distribution of funds from the Project owner.

- 2.2 Each party is required to contribute resources to the implementation of the Project and the fulfilment of the Granting letter pursuant to the duties and obligations specified in this Collaboration agreement, the Project description and the Funding plan. The parties bear mutual responsibility for implementation of the Project and for achieving the results outlined in the Project description.
- 2.3 The parties shall take reasonable measures to ensure the accuracy of any information or materials it supplies to the other party.

3 Project management

- 3.1 Each party should at any time have identified a legal/administrative responsible, financial officer and a scientific responsible (Appendix 2), hereafter referred to as Key responsible persons. The scientific responsible of the Project owner is the Project manager.
- 3.2 The Key responsible persons shall ensure that the intentions and plans underlying the Granting letter for the Project are fulfilled, and that the activities set out in the Project description and the Funding plan are completed within the approved time frame.
- 3.3 The Project manager is Professor Trude Helen Flo, being responsible for the day-to-day activities of the Project, facilitate communication between project parties and set up a secure domain for sharing of project matters (results, protocols).
- 3.4 Annual project meetings will be held at one of the parties' institutions; virtual skype meetings will be held bi-monthly for project updates.
- 3.5 Reporting. Project manager will write the annual report for the Thon Foundation based on scientific progress, personnel and economy reports from all parties sent to the Project manager at the end of January each year.

4 Changes to the consortium, subcontracting and dispute resolution

- 4.1 Each party shall perform the R&D activity, if any, that the party in question has undertaken pursuant to the

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Project description. A party undertakes to notify the other party promptly about any significant information, facts, problems or delays likely to affect the Project.

- 4.2 If a party does not perform the agreed R&D activity in a satisfactory manner, this should be discussed between the Key responsible persons in order to find a solution.
- 4.3 Disputes that may arise between the parties shall be settled by amicable negotiations in good faith between the parties. If the Key responsible persons are not able to agree, negotiations between the Principals of the parties shall take place to find a solution. See also paragraph 12.2.
- 4.4 A party that enters into a subcontract remains responsible for carrying out its relevant part of the Project and for such subcontractor's compliance with the provisions of this Collaboration agreement and the Granting letter. It has to ensure that the involvement of a subcontractor does not affect the rights and obligations of the other parties under this Collaboration agreement and the Granting letter.

5 Project plan, reporting and payment

- 5.1 The Project owner is responsible for coordinating the scientific and financial reporting to the Olav Thon Foundation. The other parties shall without undue delay submit all Project results, reports, accounting documentation and other documents that the Project owner requires fulfilling its obligations to the Olav Thon Foundation.
- 5.2 The Project owner is responsible for ensuring that funds disbursed by the Olav Thon Foundation are managed in compliance with Appendix 1. The same applies to the disbursement of funds to the other parties.
- 5.3 In accordance with its own usual accounting and management principles and practices, each party shall be solely responsible for justifying its costs with respect to the Project towards the Olav Thon Foundation.
- 5.4 The distribution of funds to the parties and any following requirements thereto, is defined in Appendix 4.
- 5.5 If a party spends less than its allocated share of the annual budget as defined in Appendix 4 to this agreement, said party will be funded in accordance with its actual duly justified eligible costs only.
- 5.6 If a party spends more than its allocated share of the annual budget as defined in Appendix 4, said party will be funded only in respect of duly justified eligible costs up to an amount not exceeding that share, if not agreed in writing between the parties in advance.

6 Background

- 6.1 The Background of the Project is described in Appendix 3. The ownership of the Background will be maintained by the party that brought it into the Project.
- 6.2 Any party wishing to contribute further Background during the Project shall notify the other parties of this. Any request put forward for Background to the Project shall be approved by the other parties, and Appendix 3 shall be updated accordingly.
- 6.3 Any results from the Project that do not comprise Background pursuant to Appendix 3 and are not approved by the parties as Background pursuant to Section 6.2 will automatically be assigned the status

of Project results. For the sake of clarity, this shall not limit a party's Intellectual property rights to technology or knowledge that said party can document was developed independently from the Project.

- 6.4 For the duration of the Project, a party shall have access at no charge to the other party's Background that is Needed for the implementation of their own work in the Project.
- 6.5 User rights to Background if Needed for Commercial utilisation of a party's own Project results shall be granted on fair and reasonable conditions. Any Commercial utilisation of Background owned by the other party must be regulated by specific written agreements.

7 Ownership rights to Project results

- 7.1 Each party has the right of ownership to Project results that the party generates on its own.
- 7.2 If a Project result has been jointly generated by the parties and if their respective share of the Project results cannot be ascertained, they shall have joint ownership of such Project results in shares corresponding to the intellectual contribution.

Said parties shall, if the nature of the Project result(s) requires so, and/or if requested by one of the parties conclude a joint ownership agreement for the use of the jointly owned Project results, including possible protection and cost allocation for the Project results. The joint ownership agreement shall as a minimum include:

- A definition of relevant Project results having joint ownership.
- A description of which of the joint owners that shall have the operative responsibility for protecting (through registration of Intellectual property rights and otherwise), and managing the jointly owned Project results (hereinafter named IP Manager), including a clear description of the IP Manager's Power of Attorney.

- 7.3 The owner(s) of a Project result that might have potential for Commercial utilisation, hereunder patent protection, are obliged to evaluate the need for protection of said Project results, and if relevant, secure protection by means and to the extent considered reasonable.

8. User rights to Project results and software

- 8.1 User rights to Project results for the execution of own work of a party under the Project shall be granted on a royalty-free basis.
- 8.2 The parties shall have free access to use Project results for internal non-commercial research and education purposes. The parties shall have free access to use all general experience and professional knowledge that has been acquired during execution of the Project.
- 8.3 User rights to Project results if Needed for Commercial utilisation of a party's own Project results, including third party research, shall be granted on fair and reasonable conditions.
- 8.4 For the avoidance of doubt, the general provisions for user rights provided for in this Section 8 are applicable also to software. The parties' user rights to software do not include any right to receive source code or object code ported to a certain hardware platform or any right to receive respective software documentation in any particular form or detail, but only as available from the party granting the user rights.

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9. Confidentiality

- 9.1 All information in whatever form or mode of transmission, which is disclosed by a party (the "disclosing party ") to the other party (the "recipient party") in connection with the Project during its implementation, and which has been explicitly marked as "confidential", or when disclosed orally, has been identified as confidential at the time of disclosure and has been confirmed and designated in writing within 15 (fifteen) days at the latest as confidential information by the disclosing party, shall be treated as "Confidential information".
- 9.2 The recipient party hereby undertakes in addition, for a period of 3 (three) years after the termination of the Project:
- not to use Confidential information otherwise and without prejudice to any commitment of non-disclosure;
 - not to disclose Confidential information to any third party without the prior written consent by the disclosing party;
 - to ensure that internal distribution of Confidential information by a recipient party shall take place on a strict need-to-know basis; and
 - to return to the disclosing party on demand all Confidential information which has been supplied to or acquired by the recipient parties including all copies thereof and to delete all information stored in a machine-readable form. However, if required by national applicable law, a copy of such information may be retained.
- 9.3 The recipient party shall be responsible for the fulfilment of the above obligations on the part of their employees and shall ensure that their employees remain so obliged, as far as legally possible, during and after the termination of the Project and/or after the termination of employment.
- 9.4 The above shall not apply for disclosure or use of Confidential information, if and in so far as the recipient party can show that:
- the Confidential information becomes publicly available by means other than a breach of the recipient party's confidentiality obligations;
 - the disclosing party subsequently informs the recipient party that the Confidential information is no longer confidential;
 - the Confidential information is communicated to the recipient party without any obligation of confidentiality by a third party who is in lawful possession thereof and under no obligation of confidence to the disclosing party;
 - the Confidential information, at any time, was developed by the recipient party completely independently of any such disclosure by the disclosing party; or
 - the Confidential information was already known to the recipient party prior to disclosure.
- 9.5 The recipient party shall apply the same degree of care with regard to the Confidential information disclosed within the scope of the Project as with its own confidential and/or proprietary information, but in no case less than reasonable care.
- 9.6 Each party shall promptly advise the other party in writing of any unauthorized disclosure, misappropriation or misuse by any person, of Confidential information as soon as said party becomes aware of such unauthorized disclosure, misappropriation or misuse.
- 9.7 If any party becomes aware that it will be required, or is likely to be required, to disclose Confidential information in order to comply with applicable laws or regulations or with a court or administrative order, it shall, to the extent it is lawfully able to do so, prior to any such disclosure:
- notify the disclosing party, and

- comply with the disclosing party's reasonable instructions in order to protect the confidentiality of the information.

9.8 The confidentiality obligations under this Consortium agreement shall not prevent the communication of Confidential information to the Olav Thon Foundation.

10. Dissemination of Project results

10.1 Project results shall be published as rapidly as possible in accordance with the procedure described herein.

10.2 Prior notice of any planned publication shall be distributed between the parties and sent to the Project manager at least 14 calendar days before the submission of the publication. Any objection to the planned publication by any party shall be made in writing to the Project manager and the relevant party within 7 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted.

10.3 An objection is justified if:

- a) the protection of the objecting party's Project results or Background is adversely affected in which case a delay according to 10.5 may be requested; or
- b) the proposed publication includes Confidential information of the objecting party.

10.4 An objection has to include a precise request for necessary modifications.

10.5 If the owner of a Project result wants to protect the Project result, the owner may request that a publication covering that Project result is withheld up to 4 months from receipt of the publication notice. Any such requests and/or objections should be handled according to guidelines at the involved party's institution and national laws.

10.6 For the avoidance of doubt, a party shall not include in any publication another party's Project results or Background without obtaining the owning party's prior written approval, unless they are already published.

10.7 Nothing in this Consortium agreement shall be construed as conferring rights to use in advertising, publicity or otherwise the name of the parties or any of their logos or trademarks without their prior written approval.

11 Liability of the parties in relation to each other

11.1 In respect of any information or materials (incl. Project results and Background) supplied by one party to another under the Project, no warranty or representation of any kind is made, given or implied as to the sufficiency or fitness for purpose nor as to the absence of any infringement of any proprietary rights of third parties.

Therefore,

- the recipient party shall in all cases be entirely and solely liable for the use to which it puts such information and materials, and
- no party granting user rights shall be liable in case of infringement of proprietary rights of a third party resulting from any other party exercising its user rights.

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- 11.2 No party shall be responsible to any other party for any indirect or consequential loss or similar damage such as, but not limited to, loss of profit, loss of revenue or loss of contracts, provided such damage was not caused by a wilful act or by gross negligence.
- 11.3 For any remaining contractual liability, a party's aggregate liability towards the other parties collectively shall be limited to once the party's share of the total costs of the Project, provided such damage was not caused by a wilful act or gross negligence.
- 11.4 The terms of this Collaboration agreement shall not be construed to amend or limit any party's statutory liability.
- 11.5 Each party shall be solely liable for any loss, damage or injury to third parties resulting from the performance of the said party's obligations by it or on its behalf under this Collaboration agreement or from its use of Project results or Background.
- 11.6 No party shall be considered to be in breach of this Collaboration agreement if it is prevented from fulfilling its obligations under the Collaboration agreement by Force majeure. Each party will notify the Project manager without undue delay. If the consequences of Force majeure for the Project are not overcome within 6 weeks after such notification, the transfer of tasks - if any - shall be decided by the involved Key responsible persons.

12 The Consortium agreement's validity, dissolution of a consortium, interpretation, etc.

- 12.1 This agreement will enter into force upon being signed and will continue to apply in its entirety until the conclusion of the Project period pursuant to Appendix 1, unless the parties decides otherwise.
- 12.2 This agreement is subject to Norwegian law. Attempts shall be made to resolve any disputes by negotiation or voluntary mediation. In the event such attempts do not succeed within one month after negotiations have been requested, the dispute may be brought before the district court of Sør-Trøndelag.

13 Signatures

- 13.1 The Parties have caused this Collaboration agreement to be duly signed by the undersigned authorised representatives in separate signature pages.

ATTESTED


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Mangalore- 575 018, Karnataka

On behalf of Norges teknisk-naturvitenskapelige universitet

Date:

Name and title: Professor Torstein Baade Røe

Position: Department head

Signature: _____

On behalf of Linköping University

Date:

Name and title: Professor Anders Fridberger

Position: Department Head

Signature: _____

On behalf of Research Center Borstel

Date:

Name and title: Professor Dr. Stefan Ehlers

Position: CEO

Signature: _____

On behalf of Yenepoya University Mangalore


Date:

Name and title: Dr. Shrikumar Menon

Position: The Registrar, Yenepoya (Deemed to be University)


Signature: _____

ATTESTED


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APPENDIX 1: The granting letter from The Olav Thon Foundation including the Project description, two Granting letters and the original Budget.

ATTESTED


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APPENDIX 2: The individual party's Key responsible persons

NTNU

- Scientific responsible:** Professor Trude H. Flo
Norwegian University of Science and Technology
Centre of Molecular inflammation Research (CEMIR)
PO Box 8905 MTF, NO-7491 Trondheim, Norway
trude.flo@ntnu.no
+47 91897796
- Legal responsible:** Professor Torstein Baade Rø, Head of department
Norwegian University of Science and Technology,
Department of clinical and molecular medicine (IKOM)
Høgskoleringen 5, N-7465, Trondheim, Norway
torstein.ro@ntnu.no
+47 72574051
- Financial officer:** Espen Murvold
Norwegian University of Science and Technology,
Department of clinical and molecular medicine (IKOM)
Høgskoleringen 5, N-7465, Trondheim, Norway
Espen.Murvold@ntnu.no
+47 72824682

LiU

- Scientific responsible:** Maria Lerm, PhD, Assoc. Prof.
Div. of Microbiology, Infection and Inflammation
Dept. Of Clinical and Experimental Medicine
Faculty of Medicine and Health Sciences
Linköping University
SE-58185 Linköping
Sweden
Phone: +46-732707786
E-mail: maria.lerm@liu.se
- Legal responsible:** Anders Fridberger, Professor, Department Head
Dept. Of Clinical and Experimental Medicine
Faculty of Medicine and Health Sciences
Linköping University
SE-58185 Linköping
Sweden
Phone: +46-13-281130
E-mail: anders.fridberger@liu.se
- Financial officer:** Lena Törnberg
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Phone: +46-13-282841
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FZB

Scientific responsible: PD Dr. Norbert Reiling
Head, RG Microbial Interface Biology
Research Center Borstel- Leibniz Lung Center
Parkallee 1-40
23845 Borstel, Germany
nreiling@fz-borstel.de
+49 4537 188-4860

Legal responsible: Professor Dr. Stefan Ehlers
CEO
Research Center Borstel- Leibniz Lung Center
Parkallee 1-40
23845 Borstel, Germany
sehlers@fz-borstel.de
+49 4537 188-4810

Financial officer: Mr. Andreas Grosskopf
Research Center Borstel- Leibniz Lung Center
Parkallee 1-40
23845 Borstel, Germany
agrosskopf@fz-borstel.de
+49 4537 188-3940


YP

Scientific responsible: Dr. Keshava Prasad T. S., Professor and Deputy Director
Center for Systems Biology and Molecular Medicine
Yenepoya Research Centre, Yenepoya (Deemed to be University)
University Road, Mangalore 575018, India
keshav@yenepoya.edu.in; tskprasad@gmail.com; +919972250102

Legal responsible: Dr. Shreekumar Menon, The Registrar, Yenepoya (Deemed to be University), University
Road, Mangalore 575018, India, registrar@yenepoya.edu.in ; +91 9810144308

Financial officer: Mr. Mohammad Bava, Finance Officer, Yenepoya (Deemed to be University), University Road,
Mangalore 575018, India, financeofficer@yenepoya.org; +91 9880570079

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APPENDIX 3: Background

(pre-existing intellectual property like patents, databases, software etc. made available to the partners in the consortium for use in the project)

To be filled out by the parties

Yenepoya (Deemed to be University)

1. Proteomic facilities including Orbitrap Tribrid Fusion mass spectrometer, QTRAP mass spectrometer and accessories, licensed software such as Proteome Discover Suite, MASCOT search algorithms
2. Routine molecular biology equipment including PCR, Western Blot apparatus, and HPLC
3. Servers for data storage and analysis

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APPENDIX 4: Annual cost and funding plan for the parties' involvement in the Project, involving distribution of funds from the Project owner.

The original budget is included with Appendix 1. The budget is revised to include a split in the technical position between NTNU and FZB with allocation of funds equivalent to 975 kNOK over 4 years including running costs (Table 1).

NTNU will transfer the parties' share of the funds, given in Tables 1-2.

YP will receive their share of funding once a year (July). The transfer will be made by direct payment in advance. Accrued costs must be specified and sent to NTNU twice a year (15 January and 15 July) using table 3 below.

LiU and FZB will receive their share of funding one time each year (July) after NTNU has received the funding from the Olav Thon Foundation. The transfer will be carried out by direct payment in arrears based on eligible and documented costs. The accrued costs for every 12 months shall be specified and sent to NTNU (using Table 3 below) before the direct payment is carried out.

The reports from all parties' must contain the following cost categories:

- a) Personell and indirect costs
- b) Procurement of FoU
- c) Equipment (use of lab infrastructure)
- d) Other operating costs

In addition, any own financing from the parties has to be reported to the Project owner.

Table 1: Annual cost plan for the parties in the Project (all numbers in kNOK).

	Total	2018	2019	2020	2021	2022
NTNU	6 821	70	1 741	1781	1806	1423
LiU	1 247	318	413	258	258	
YP	957	162	372	279	144	
FZB	975	130	229	229	229	158
Total	10 000	680	2 755	2 547	2 437	1581

Table 2: Annual funding plan for the parties' costs in the Project (all numbers in kNOK).

	Total	2018	2019	2020	2021	2022
O.T. Foundation	10 000	2 500	2 500	2 500	2 500	
Total	10 000	2 500	2 500	2 500	2 500	

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Table 3: Overview of accrued costs to be sent to the Project owner as basis for distribution of funds.

Accrued costs for the Olav Thon foundation project		
Project number:	651530/ 90305600	
Project title:	Discovering new therapeutic targets and drugs to combat AMR tuberculosis	
Year:		
Project partner (institution)		
Organisation number:		
Address:		
Post number and place:		
Bank account		
Project leader		
Mark the money transfer with:		
Cost specifications		
Actual costs	Periode	Sum
Payroll and indirect expenses		
Procurement of R&D services		
Equipment		
Other operating expenses		
Sum		
Comments to the report if needed:		
Attestation by a administrative responsible		
Name:		
Signature:		

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 Registrar
 Yenepoya(District Institute of
 University Road, Geratkalatte
 Mangalore- 575 018, Karnataka

On behalf of Norges teknisk-naturvitenskapelige universitet

Date:

Name and title: Professor Torstein Baade Røe

Position: Department head

Signature: _____

On behalf of Linköping University

Date:

Name and title: Kent Waltersson *200 Danneberg*

Position: University Director *deputy*

Signature: 

On behalf of Linköping University

Date: *180911*

Name and title: Professor Anders Fridberger

Position: Head of Department

Signature: 

On behalf of Research Center Borstel

Date: *18-09-2018*

Name and title: Professor Dr. Stefan Ehlers

Position: CEO

Signature: 

On behalf of Yenepoya University Mangalore


Date:

Name and title: Dr. Shrikumar Menon

Position: The Registrar, Yenepoya (Deemed to be University)

Signature: 

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Dr. Gangadhara Somayaji K.S.
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