Enabling Drug Discovery

| QUANTUM LEAP PROGRAM<br>Application Form | For internal use<br>File # : |
|---|---|

**IMPORTANT: Please fill all sections for Phase I applications.**
**Applicants should contact CQDM staff before submitting a project (refer to call for proposal)**
**CQDM could ask to modify or revise some sections at the Phase II application.**

**This form must be filled in with "Arial 11" font, typed at 1.15 line spacing**

| | |
|---|---|
| ***Duration of the Project*** | 1 year |
| ***Total Amount of the Project*** | 2000000 |
| **Amount Requested from CQDM** | 2000000 |

| **SECTION 1. TITLE OF THE PROJECT (English)** |
|---|
| Neuromorph, Developing computational and clinical neuroscience tools for detecting alzheimers, mild traumatic brain injury and autism |
| **TITLE OF THE PROJECT (French)** |
| |
| **DELIVERABLES** |
| *The deliverables are the concrete, tangible products/assets resulting from the completion of the project (pre-clinically or clinically validated platform or technology for example, in addition to protocols, data package, etc.), and they are not to be confused with milestones that indicate important steps toward completion of the project.*<br>*Define succinctly in bullet forms the tangible assets that will result from your work and its intended use in the drug R&D process. Please make sure the main deliverable of the project is clear and concise. Explain shortly how and in what form the deliverables may be transferable to the industry for their use in biopharmaceutical research.* |

Add deliverables here.
Pharmaceuticals and drug discovery with Generative AI for neurodegenerative disorders.
AI based drug discovery for every neurodegenerative disorders.
Quantum ML for drug discovery of neurobiological disorders. (biomarkers)
Developing a diagnostic module for diagnosing dementia.
Developing a diagnostic module for diagnosing traumatic brain injury.
Developing a diagnostic module for diagnosing autism.
Developing algorithmic tools for diagnosing neurological disorders.
Developing ML algorithms for diagnoses and rehabilitation.

**SECTION 2. IDENTIFICATION**

*Last name:* Sharma *First name:* Cartik

*Private organization or University/Department* Neuromorph

*Address:*

*City:* *Province:* *Postal Code:*

*Country:* *Phone #:* *Ext:*

*Email:* Cartik.sharma@gmail.com

**IDENTIFICATION OF THE RESEARCH GROUP (PIs and CO-INVESTIGATORS; including those from private organizations)** ***Add lines if necessary***

| Numeration (to be used in section 5) | Name | Affiliation | Email | Contribution to the project (keywords) | % of the budget allocated to this group |
|---|---|---|---|---|---|
| 1 | Shabnam Shirdel | Neuromorph | Shabnam.shirdel@mail.mcgill.ca | Developing AI and machine learning algorithms to detect tbi. | 20.00% |
| 2 | | | | | |
| | | | | | |
| | | | | | |
| 2 | Cartik Sharma | Neuromorph | Cartik.sharma@Gmail.com | Developing mathemtical constructs to diagnose neurological disotders | 40.00% |
| 3 | Dr. Nripen Sharma | Neuromorph | dr.nripensharma@gmail.com | Developing clinical relevant biomarkers to detect neurological disorders | 40.00% |
| 7 | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 8 | | | | | |

**SECTION 3. NON-CONFIDENTIAL SCIENTIFIC SUMMARY (maximum 2 pages)**

*This summary may serve to recruit potential reviewers and/or identify co-funding partners.*
*Define the following aspects of your project: brief rationale, current state of advancement of the technology, preliminary data, objectives, experimental approach and brief research plan including important milestones.*

*Brief rationale*

*Interventional care with biomarkers and bulk drugs for dementia care and autism are one of prime motivators of this seminal grant.*

*We aim to adopt the use of novel diagnostic biomarkers synthesized using Generative AI tools such as Grok2/Gemini for dementia dignosis and interventional care. In lieu of the FDA/CE Marking standards, we plan to perform QSR strategies for approval, mainly Health Canada approval given over 50 years of experience in obtaining the same.*

*We aim to improve computational techniques to improve the sublime state of neurobiological disorders currently in Canada in the light of bureaucracy and clinical defect. Only a set of combinatorics, number theoretic primes and manifold theory could improve heart and stroke interventional care and delivery. Surgically speaking, methods of statistical mechanics to model the cardiac surface and improve on interventional techniques have yielded great benefits especially in the US and Europe. We try to adopt these techniques with the universal goal of improving neurobiological care in Canada to bring  on par with global healthcare needs.*

*We are motivated by current paradigms in computational and clinical neurobiological advances to address continuity in clinical care for major and minor neurological disorders. Our suite of solutions has great bearing on machine learning and quantum theoretical principles to generate advancement in computational algorithms and finite math for diagnosis neurodegenerative disorders.*

*We are currently focussed on dementia, autism and traumatic brain injury and the relations between related neuroses.*

*Current state of advancement of the technology*

*We currently have techniques for diagnosing neurobiological disorders based on cognitive tracing and differential diagnoses. We believe that there is a huge gap in addressing these challenges with innovative algorithms in machine learning and AI. We believe that neuroscience has developed and advanced greatly in the last 50 years but there is still a shortage of tools and techniques to improve cognitive sciences. We believe that we can provide this missing link to contribute towards disease control in neurodegeneration through improved cognitive and evolutionary programming algorithms and software libraries.*

*Preliminary data*

*We have data publicly available on the NITRC website for diseased patients for autism, dementia and PTSD. We also have data from github, kaggle and XNAT for diagnoses and possibly therapeutic intervention.*

*Objectives*

*Developing diagnostic biomarkers with AI  and number theoretic constructs to allieve of neurological discontinuities.*
*Develop algorithms and heuristics for diagnosing autism, dementia and TBI.*
*Developing software libraries for the same.*
*Developing validation experiments for these libraries and algorithms.*
*Developing partnerships and collaborations to study, diagnose and resolve neurobiological discontinuity.*
*Hiring Chemical/Pharmaceutical engineers in the canadian healthcare space.*
*Adopting statistical clinical trial tools and working with CROs such as OncoBio.*

*Experimental approach and brief research plan including important milestones.*

*We propose to develop a algorithmic testbed to develop innovative algorithms and tools for clinical and cognitive neuroscience. Our efforts are focussed on developing computing tools with the help of optimization, quantum machine learning and machine learning paradigms through a vast study and enhancement of existing algorithms and techniques.*

*So far we are focussed on developing techniques such as convolutional neural networks, hidden markov models and recurrent neural networks to diagnose and innovate on neurodiagnostics.*

*Milestones*

*Develop libraries, papers and code for diagnosing autism. (3 months)*
*Develop libraries, papers and code for diagnosing dementia. (6 months)*
*Develop libraries, papers and code for diagnosing mTBI. (6 months)*
*Developing rehabilitation frameworks for addressing the mTBI challenge. (6 months)*
*Developing simulation tools for intervention for autism and dementia. (6 months)*

**SECTION 4. FULL DESCRIPTION OF THE PROJECT (maximum 6 pages, including figures and tables; please include references in Appendix)**

*Describe the project by outlining the following aspects of your research:*

- *Background and preliminary results*
- *Objectives*
- *Experimental approach and Research Plan*
  - *Experimental/Methodological approach (Include appropriate power analysis for animal and human studies. For human studies, define the recruitment process and elaborate on your ability to recruit the necessary number of patients)*
  - *Expected results and readouts*
  - ***Milestones** and go/no go decision points: Milestones are major events or significant steps in a project. Make sure to define your project with a milestone at every 6 months. Each milestone should be accompanied with a specific set of metrics that allows a third party to assess progress. If the project is completely dependent on a specific milestone, address it as a go/no go decision point. This should closely follow the Gantt chart in section 7*
  - ***Deliverables:** Highlight how the various milestones will lead to the final deliverables. Define the deliverables*
  - ***Proposed access to the technology:** Highlight what rights could be granted to the CQDM participating industrial members for funding the project.*

*Background and preliminary results*

We have seen a a need in clinical and computational neuroscience patient care community for a need and requirement for innovative research and product offerings to provide detailed and precise clinical care. We tried to prototype our ideas with 3 clinical disorder which are likely to be mitigated with the develpment of inhouse technologies. We have achieved some early success in developing these products and aim to scale our efforts with population wide efforts for providingi clinical care. This is the primary motivation of our research efforts.

Preliminary results

Our dementia algorithims (proprietary) yield results with hidden markov models to 92%.
The details our this are outlined in an inhouse paper yet in preprint developed by one of our bright interns.

Our efforts in Autism 90% accuracy with convoluted neural networks thanks to the efforts of one of our bright interns.

Our efforts in TBI research have yielded 90% with recurvise neural networks and inception resnet methods which is described in our QBIN paper, Development of a novel deep learning neural network-based classifier for reliable and faster diagnosis of TBI
Ranjani Sabrinathan, Cartik Sharma* cartik.sharma@gmail.com

We plan to simulate our experiments computationally and clinically with patient studies. These have to follow the REB protocol and may require additional REB approval.

Finally, we intend to perform a complete statistical analysis using various sophisticated statistical techniques to get the confidence value of the statistical distributions within certain bounds. An example of this is provided in one of my works, “Investigation of haptics for cognition in a Quantitive design environment”C. Sharma, T. Kesavadas, Virtual Systems and Multimedia, 2001, UC Berkekley.

Milestones
We expect to meet the following milestones.

1. Data acquisition. Currently we use OpenNeuro as the primary source of neuroimaging data but this will be extended to clinical data repositories for noise free healthy and diseased patient states.
   1. Follow HIPAA standards, (check!)
   2. Anonymize clinical patient data.
   3. Sources of neuroimaging data, Nitrc, OpenNeuro
   4. Corporate industry research partners for neuroimaging data
   5. Modalities include, MR, CT, Doppler Ultrasound, Magnetoencaphalography.

2. Noise removal: We attempt to perform denoising to obtain clinically relevant data.
    1. Design of noise filters
    2. Dependency on imaging modality.
    3. Machine learning for improevd noise filters
    4. How clean do we want our data to be?

3. Algorithm development
1.Developemnt of innovatie classical diagnosis algorithms in the neurological space.
2.Development of ML techniques for diagnosis.
3.Research and development of Quantum ML algorithms for diagnosis.
4.Implementation of products for all of the ove in terms of software and algorithms.
5.Building scalable products

4. Verification and Validation
    1. Verification of computational algorthsm with error correction schemese.
    2. Tests, protocols and statistical resutlts.
    3. Design of validation phantom in imaging.
    4. Validation algorithms and ground thruth validation.
    5. Documentation and reporting of results.

Deliverables
Clinical and software products for above mentioned disorders.

An extension grant to solve and treat other neurological disorders like Restless Leg Syndrome.

**SECTION 5. ROLE OF THE ORGANIZATION AND DESCRIPTION OF THE TEAM (maximum 2 pages)**

*1) Provide a global overview of the organization (SME or academic research group):*

! *Discuss how the proposed project is aligned with its overall corporate objectives;*

! *Describe how the organization is qualified to successfully complete the project;*

*2) Discuss the role of the PIs and co-investigators (listed in section 2) in the successful achievement of the project.*

*3) Describe their experience and expertise relevant to the proposed project, emphasizing on how they are essential to the project.*

*4) Discuss the synergies and complementarities of the team members.*

We, at Neuromorph are focussed on providing healthcare technologies and research strategies for neuroscience in the global landscape. We attempt to achieve this with computational biomarkers and advanced ML techniques including but not limited to chatGPT and OpenAi based LLMs. The initial premise of this effort is 3 promising products in ML and may be extended, scaled and deployed to generic efforts in machine learning for diagnosis and therapeutic intervention for neurodegenerative disorders. Also, we attempt to apply quantum theoretic principles using quantum ML techniques for accurate and predictive diagnoses of neurobiological discontinuities.

This grant aligns with health Canada's initiative in achieving harmony in the mental healthcare space. We as Canadians would like society to have benefits of smart aging, healthy recovery from stroke, providing dementia care and psychological help for trauma victims. The premise of this is to use a combination of computational and clinical techniques to achieve the ultimate solution to provide superb clinical prdocuts.

Neuromorph, was conceived in 2018 at the Creative Destruction Lab at Univ of Toronto to achieve and improve the delivery of healthcare products in the neurological space. This perfectly aligns with clinical care and would be a huge benefit to Canadian and American societies.

The Pis in this space are motivated to provide change and advancement in the clinical and computer assisted space with several years of experience in medical physics and computer science iin the medical imaging industry. Hence, aligned!

We bring in experts in the biomedical space for top ranked universites, researchee startups and federal research organizations to provide value in delivering clinical care.

As mentioned above, we have experts in the clinical and computational space with complementary skills to arrive at improved clinical outcomes. We also plan to train and enhance the skills of graduate students so they can contribute towards the medical imaging and medical device industry.

**SECTION 6. TIMELINES (Gantt chart; 1 page)**

*1) Insert a Gantt chart illustrating the principal steps of the project as well as milestones, deliverables and go/no go decision points (as described under section 3).*

*2) Identify in the Gantt chart the specific contribution of each PI and co-investigator* at the different steps of the project and specify the cost of each step.*

**by referring to the numbers associated with the investigators as listed in section 2.*

| | |
|---|---|
| Data acquisition. Currently we use OpenNeuro as the primary source of neuroimaging data but this will be extended to clinical data repositories for noise free healthy and diseased patient states. | 1 month |
| Follow HIPAA standards, (check!) | 2 weeks |
| Anonymize clinical patient data. | 1 week |
| Sources of neuroimaging data, Nitrc, OpenNeuro | 2 weeks |
| Corporate industry research partners for neuroimaging data | 1 weeks |
| Modalities include, MR, CT, Doppler Ultrasound, Magnetoencaphalography. | 2 weeks |
| | |
| Noise removal: We attempt to perform denoising to obtain clinically relevant data. | 3 weeks |
| Design of noise filters | 0.5 weeks |
| Dependency on imaging modality. | 2 weeks |
| Machine learning for improevd noise filters | |
| How clean do we want our data to be? | 1 month |
| | 1 day |
| 3. Algorithm development | |
| 1.Developement of innovative classical diagnosis algorithms in the neurological space. | |
| 2.Development of ML techniques for diagnosis. | 1 month |
| 3.Research and development of Quantum ML algorithms for diagnosis. | 1 month |
| 4.Implementation of products for all of the above in terms of software and algorithms. | 2 months |
| 5.Building scalable products | 6 months |
| Verification and Validation | |
| Verification of computational algorithms with error correction scheme. | |
| Tests, protocols and statistical results. | 2 weeks |
| Design of validation phantom in imaging. | 4 weeks |
| Validation algorithms and ground truth validation. | 2 weeks |
| Documentation and reporting of results. | 2 weeks |
| | 1 month |

| **SECTION 7. BIOPHARMACEUTICAL IMPACT: Impact of the improved platform on drug research and development process (1 page)** |
| --- |
| *Explain how the tangible results/deliverables generated at the end of the project could be transferred, used and implemented in the drug R&D process. Describe how the tangible results/deliverables will address the most important challenges currently faced by the pharmaceutical industry in relation to drug R&D.* |

We aim to partner with bulk drug companies in the dementia space, in order to introduce innovative molecular chemistry tools for Generative AI based drug development and interventional techniques in ML/AI/QML for diagnosis, intervention and clinical trial management.

This will yield improved drug design and deliverables for an auxillary product to improved dementia care and long term healthy aging.

Eg. Aducanumab, Biogen

**SECTION 8. POSITIONING AND COMPETITIVE EDGE (1 page)**

*Describe the innovativeness and the originality of the technical approach and explain how the proposed research represents a major breakthrough or a significant improvement with respect to existing technologies (or in development) worldwide; describe the added value of the technology with regards to international competing technologies used to achieve similar readouts or goals.*

The algorithms for this study are based on machine learning and algorithmic improvements over existing techniques for diagnosis in complex clinical disorders. The major breakthrough is the development of mathematical techniques for improved accuracy in clinical diagnostics for autism, dementia and traumatic brain injuries. We developing computational tools and techniques based on machine learning and AI as well as quantum machine learning heuristics to improve clinical diagnoses. The quantum machine learning techniques provide value in terms of google tensorflow quantum for improved diagnostics with computational elegance. The readouts we obtain are clinical reports development similar to VoxNeuro and WinterLight Labs who are competitive in this space. ProteinCure at the Fields Institute are one of the leading innovators in AI based drug discovery.  The companies developing pharmacare for inteventional cure of dementia are the likes of Biogen for aducunamab.

| SECTION 9. INTELLECTUAL PROPERTY |
| --- |
| **9.1 IS THERE ANY PRE-EXISTING INTELLECTUAL PROPERTY (IP) LINKED TO YOUR PROJECT? *Yes☐No** |
| *If yes, please answer the following questions (maximum 1 page):*<br>1. *Is the background IP absolutely necessary to use the proposed technology?*<br>2. *Is the project an improvement of the existing technology or a completely new technology?*<br>3. *Who are the IP owners?*<br>4. *What is the invention?*<br>5. *Who holds the rights to the IP?*<br>6. *Do the principal investigator and the co-investigators of this project have the legal authorization to use the pre-existing IP?*<br>7. *Are there any commercial relationships or agreements (e.g. licensing agreements) with regards to the pre-existing IP? If so, please describe.* |

*Is the background IP absolutely necessary to use the proposed technology?*

*Yes, the background IP is innovative and is based on efforts of interns for development of innovative techniques for neurodiagnotics.*

*Is the project an improvement of the existing technology or a completely new technology?*

*Current techniques aim at creating computational tools based on machine learning, our ML techniques are further advancements and especially our choice of quantum machine learning gives us an edge into development innovative IP for such diagnostics.*

*Who are the IP owners?*

*Neuromorph, and me, Cartik Sharma*

*What is the invention?*

*Software libraries and algorithms for diagnosis of complex neurological disorders*

*Who holds the rights to the IP?*

*Me*

*Do the principal investigator and the co-investigators of this project have the legal authorization to use the pre-existing IP?*

*Yes*

*Are there any commercial relationships or agreements (e.g. licensing agreements) with regards to the pre-existing IP? If so, please describe.*

*No*

| 9.2 WILL YOUR PROJECT GENERATE NEW INTELLECTUAL PROPERTY (IP)? | *Yes | ☐No |
|---|---|---|

*If yes, please describe (maximum 1 page):*

1) *Will the technology result in the creation of new IP?*
2) *Who will be the inventor(s)?*
3) *Who will hold the IP rights? Is that person/organization aware of the CQDM licensing policy (described in the call for proposals)?*
4) *Describe the overall strategy regarding data and IP sharing.*

*Will the technology result in the creation of new IP?*

*Yes*

*Who will be the inventor(s)?*

*Me*

*Who will hold the IP rights? Is that person/organization aware of the CQDM licensing policy (described in the call for proposals)?*

*Neuromorph and Me.*

*Describe the overall strategy regarding data and IP sharing.*

*The data for these device is obtained from open source data sources and is anonymized. We will share IP with collaborators, investors and partners who will help us to further this technology into the neuroscience space.*

| SECTION 10. COMMERCIALIZATION OPPORTUNITIES (1 page) AND CORPORATE INFORMATION (1 page) |
|---|
| *Outline the opportunities the technology will create for the biopharma R&D sector. Describe the potential commercial value and the market need your technology will fill.*<br>*Describe the various steps of the technical development plan that would be required to deploy and commercialize the technology and/or ensure its usability by the industry or the scientific community (manufacturing, scale-up, regulation, foreground and background IP, etc.), including a brief tentative timeline.*<br>*For corporations (private or public), please provide a brief corporate summary, inculding among other things: the founding date, the numbers off employees, the listing, the list of main investors, a list of partnerships with industries and a short description of the management team.* |

This is a purely academic effort so far till we see our products to fruition. Neuromorph will be setup after we improve and perfect our products and make it available to patient care and the clinical community after obtaining FDA approval.

**SECTION 11. SUMMARIZED BUDGET ***
**Note: Training of HQP is encouraged in CQDM projects, please refer to row 2 below.**

| **ESTIMATED COSTS OF PROJECT** | **Year 1 (in thousands $) 100,000** | | **Year 2 (in thousands $) 100,000** | | **Year 3 (in thousands $) 100,000** | | **TOTAL (in thousands $)** | |
|---|---|---|---|---|---|---|---|---|
| | **CQDM** | **Private** | **CQDM** | **Private** | **CQDM** | **Private** | **CQDM** | **Private** |
| Salaries and benefits (research staff, payment to students) | 75000 | | 75000 | | | 75000 | | |
| *Clearly indicate the number and level of graduate students to be enrolled in the project.* | | 4 | | 4 | | | 4 | |
| Material and supplies | | | | | | | | |
| Travel expenses (conferences, seminars, symposia fieldwork) | | | | | | | | |
| Publication and dissemination costs | | | | | | | | |
| Consulting and subcontracting services | | | | | | | | |
| Other (please specify) | | | | | | | | |
| Intellectual property costs (patent application and maintenance fees); | | | | | | | | |
| **TOTAL PER YEAR** | | | | | | | | |

*Please indicate if there are other sources of funding for this project.*

***Please add one page to justify the main budgetary items.***

**Please note that a detailed budget will be required for applications that CQDM is seriously considering for funding.*

Private industry conglomerates and not for profit organizations.

**SECTION 12. LIST OF POTENTIAL REVIEWERS**

*Please suggest a list of 5 potential reviewers: name, contact info (including email), affiliation(s), and areas of expertise. Note: reviewers should have no conflict of interest.*

**SECTION 13. ADDITIONAL GRANT/PARTNERSHIP DISCLOSURE:**

*Please indicate if you are planning to receive or to apply for another source of funding on a similar project? If yes, please indicate the level of overlap with the current CQDM funded project, and specify which milestones/objectives overlap between them, and clarify the impact the new funding (or the new application) has on the overall CQDM proposed project.*
*Please specify if you have or plan, before or during the project, to enter partnerships with industry relating to the project proposed herewith.*

We are planning to apply for CIHR, MITACS and CRBLM awards. Also we will be working with venture capital firms to generating IP and investment for these efforts. Some overlap is imminent although we will work on keeping our proprietary technology secure.

## SECTION 14. DETAILS FOR MITACS INTERNSHIPS ONLY

*For each MITACS intern or subproject, provide the following mandatory information:*

a.a. ***Name of intern.***

a.b. **Specific objectives of the internship or subproject**. Clearly state your [sub-] objectives so reviewers can assess if they are achievable.

a.c. **Methodologies**. Provide enough detail so reviewers can determine if the proposed methodology is appropriate and sufficient to achieve the [sub-] objectives.

a.d. **Proposed work plan for internship unit(s) (IU)** Please summarize the project work plan by indicating which intern will work on which objective(s), and when. Refer to numbered objectives in your main funding agency/research consortium proposal. Note that TBD intern names are permissible, as long as degree level is indicated. This table is meant to provide a high-level overview of the proposed research project and intern(s) information to the reviewers.

| Years | Year 1 | | | Year 2 | | | Year 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Months | 1-4 | 5-8 | 9-12 | 1-4 | 5-8 | 9-12 | 1-4 | 5-8 | 9-12 |
| Intern Name | Degree Program | IU | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Total Internship Units | | | | | | | | | |
| Total Project Funding | $ | | | | | | | | |

a.e. **Expected deliverables.** *At the end of each project, a completed Mitacs Final Report and Mitacs survey is required. Please provide information on any additional expected deliverables that applies i.e. expected outcomes, results, or documents such as intern's thesis, peer-reviewed journal, conference presentation.*

a.f. ***Benefit to the intern.***

a.g. ***Interaction***. *Indicate the percentage (%) of on-site time spent by the intern; at the partner's location and at the university. Research should be carried out equally (50%) in the premises of the partner and the university. If different, please include a* ***justification****. NOTE: The minimum interaction at either site is 25% with a maximum of 75%.*

*% of partner interaction: ____ % + % of academic interaction: ____ % = 100%*

a.h. ***Justification*** *for an interaction other than 50/50*

***a.i. Partner Interaction.***

*(a.i.1) Please provide a detailed description of the activities that will be performed on-site at the partner's organization, with expected interaction and supervision with their employees.*

*(a.i.2) Finally, indicate the resources to be provided by the partner's organization to support the intern's work at their premises. Make sure to include relevant information regarding space, resources and expertise to be provided*

*by the organization to the intern.*

To be decided as we are hiring for new interns. Will be provided in a revised grant after incorporating feedbck from this grant review.

**SECTION 15.**

**SECTION 15.1.**

**Please note that this form must be signed by the PI**

| | |
|---|---|
| 1. I authorize CQDM to exchange all information relating to this application for analysis or evaluation purposes, provided that all persons granted access to this information treat it in the strictest confidence. | Yes |
| 1. I authorize CQDM to exchange all information relating to the non-confidential summary (section 3) for analysis and evaluation purposes and as a mean to identify co-funding partners. | Yes |
| 2. I understand that the intellectual property resulting from this project will belong to the inventor(s) and their institutions and that a non-exclusive end-user license option will be granted to the CQDM industrial sponsors. The terms of the license option will be negotiated before the beginning of the project no later than 3 months following the confirmation of the funding. | Yes |
| 3. I agree that, if this project is retained for funding, I will facilitate the signing of an agreement with respect to the funding and the option on the IP generated by this project. | Yes |
| 4. I certify that all information provided in this application is complete and accurate to the best of my knowledge. | Yes |

Signature of the principal investigator (PI): _____

Name:

Date:

Signature of the authorized organization representative: Cartik Sharma

Name Cartik Sharma

Date 7/02/2024

**SECTION 15.2.**

**Please note that this form must be signed by the Co-PI**

2. I authorize CQDM to exchange all information relating to this application for analysis or evaluation purposes, provided that all persons granted access to this information treat it in the strictest confidence.

1. I authorize CQDM to exchange all information relating to the non-confidential summary (section 3) for analysis and evaluation purposes and as a mean to identify co-funding partners.
2. I understand that the intellectual property resulting from this project will belong to the inventor(s) and their institutions and that a non-exclusive end-user license option will be granted to the CQDM industrial sponsors. The terms of the license option will be negotiated before the beginning of the project no later than 3 months following the confirmation of the funding.
3. I agree that, if this project is retained for funding, I will facilitate the signing of an agreement with respect to the funding and the option on the IP generated by this project.
4. I certify that all information provided in this application is complete and accurate to the best of my knowledge.

Signature of the co-investigator: _____

Name:

Date: _____

Signature of the co-investigator: _____

Name: _____

Date: _____

Signature of the co-investigator: _____

Name: _____

Date: _____

**SECTION 15.3. SIGNATURE(S) OF**

**Please note that this form must be signed by the Co-PI authorized organization representative**

3. I authorize CQDM to exchange all information relating to this application for analysis or evaluation purposes, provided that all persons granted access to this information treat it in the strictest confidence.

4. I authorize CQDM to exchange all information relating to the non-confidential summary (section 3) for analysis and evaluation purposes and as a mean to identify co-funding partners.

5. I understand that the intellectual property resulting from this project will belong to the inventor(s) and their institutions and that a non-exclusive end-user license option will be granted to the CQDM industrial sponsors. The terms of the license option will be negotiated before the beginning of the project no later than 3 months following the confirmation of the funding.

6. I agree that, if this project is retained for funding, I will facilitate the signing of an agreement with respect to the funding and the option on the IP generated by this project.

7. I certify that all information provided in this application is complete and accurate to the best of my knowledge.

Signature of the authorized organization representative:

Name:

Date:

Signature of the authorized organization representative:

Name:

Date:

Signature of the authorized organization representative:

Name:

Date: