Gmail **Christine Massey <cmssyc@gmail.com>**

Access to Info Request: studies re isolation of SARS-COV-2

Christine Massey <cmssyc@gmail.com> Sat, Jun 13, 2020 at 6:46 PM
To: phac.atip-aiprp.aspc@canada.ca, ATIP-AIPRP@hc-sc.gc.ca
Bcc: "<cetaboy@yahoo.com>" <cetaboy@yahoo.com>

June 13, 2020

To:

Cynthia Richardson
Access to Information and Privacy Coordinator
Access to Information and Privacy Division
Holland Cross, Tower B
7th Floor, Suite 700, Room 741
1600 Scott Street, Address locator: 3107A
Ottawa, Ontario K1A 0K9
phac.atip-aiprp.aspc@canada.ca
ATIP-AIPRP@HC-SC.GC.CA

Dear Ms. Richardson,

This is a formal request made under Canada's *Access to Information Act*.

Description of Requested Records:

All records in the possession, custody or control of the Public Health Agency of Canada (PHAC) describing the isolation of a SARS-COV-2 virus, directly from a sample taken from a diseased patient, where the patient sample was not first combined with any other source of genetic material (i.e. monkey kidney cells aka vero cells; liver cancer cells).

Please note that I am using "isolation" in the every-day sense of the word: *the act of separating a thing(s) from everything else*. I am not requesting records where "isolation of SARS-COV-2" refers instead to:

- the culturing of something, or
- the performance of an amplification test (i.e. a PCR test), or
- the sequencing of something.

Please also note that my request is not limited to records that were authored by the PHAC or that pertain to work done by PHAC. My request includes any sort of record, for example (but not limited to) any published peer-reviewed study that PHAC has downloaded or printed.

If any records match the above description of requested records and are currently available to the public elsewhere, please provide enough information about each record so that I may identify and access each record with certainty (i.e. title, author(s), date, journal, where the public may access it).

[Quoted text hidden]

Gmail

Christine Massey <cmssyc@gmail.com>

your request PHAC A-2020-000110/BH - clarification needed! Your request is on hold until we receive your clarification!

Haase, Barbara (HC/SC) <barbara.haase@canada.ca> Tue, Jun 23, 2020 at 3:55 PM
To: "cmssyc@gmail.com" <cmssyc@gmail.com>

A-2020-000110/BH

All records in the possession, custody or control of the Public Health Agency of Canada (PHAC) describing the isolation of a SARS-COV-2 virus, directly from a sample taken from a diseased patient, where the patient sample was not first combined with any other source of genetic material (i.e. monkey kidney cells aka vero cells; liver cancer cells).

Please note that I am using "isolation" in the every-day sense of the word: the act of separating a thing(s) from everything else. I am not requesting records where "isolation of SARS-COV-2" refers instead to:

- the culturing of something, or
- the performance of an amplification test (i.e. a PCR test), or
- the sequencing of something.

Please also note that my request is not limited to records that were authored by the PHAC or that pertain to work done by PHAC. My request includes any sort of record, for example (but not limited to) any published peer-reviewed study that PHAC has downloaded or printed.

Good afternoon,

We have tasked the responsive OPI with your request, namely the *Infectious Disease Prevention and Control (IDPC)* who requested further clarification:

- Did you want every employee tasked at the IDPC branch as to whether they have ever downloaded and kept, either electronically or in hardcopy, any study on any subject?

- Please note that information that is public is excluded from the *Access to Information Act* under s. 68(a) https://laws-lois.justice.gc.ca/eng/acts/A-1/page-12.html#h-955 and will not be provided. (links to the information would be provided where possible).

- Please also provide a date-range for your request

Note that your request is on hold until we have received your clarification.

Barbara Haase

Senior ATIP Analyst, Access to Information and Privacy

Health Canada / Public Health Agency Canada / Government of Canada

Barbara.haase@canada.ca

Analyste principale, Accès à l'information et de la protection des renseignements personnels
Santé Canada et Agence de la santé publique du Canada / Gouvernement du Canada
barbara.haase@canada.ca

Gmail **Christine Massey <cmssyc@gmail.com>**

your request PHAC A-2020-000110/BH - clarification needed! Your request is on hold until we receive your clarification!

Christine Massey <cmssyc@gmail.com> Tue, Jun 23, 2020 at 5:49 PM
To: "Haase, Barbara (HC/SC)" <barbara.haase@canada.ca>
Cc: phac.atip-aiprp.aspc@canada.ca, ATIP-AIPRP@hc-sc.gc.ca

Dear Ms. Haase,

A screenshot of my request is attached.

The sentence highlighted in yellow in your message was a clarification of my request for records "*describing the isolation of a SARS-COV-2 virus..."* and not an additional request for *"any study on any subject".* This is why the highlighted sentence made reference to *"my request".*

So the answer to the question *"Did you want every employee tasked at the IDPC branch as to whether they have ever downloaded and kept, either electronically or in hardcopy, any study on any subject?"* is **"no"**. I did not request *any* study on *any* subject.

I do not work for PHAC; I have no idea how PHAC or its records are organized. I would hope and expect, as I imagine all Canadians would, that PHAC has an efficient system in place, especially for their records on a topic as critically important as "COVID-19" and the "isolation of SARS-COV-2". I do not know (and am not required to advise on) how PHAC ought to go about identifying the responsive records, if any exist.

I am aware of section 68, and did not ask to be provided any records that are public. I requested: *"If any records match the above description of requested records and are currently available to the public elsewhere, please provide enough information about each record so that I may identify and access each record with certainty (i.e. title, author(s), date, journal, where the public may access it)."*

Links would also be appreciated and in accordance with my understanding of Part 1, section 4 (2.1) of the act (*Responsibility of government institutions*).

Date range for my request: Jan. 1 2020 until the date of my email request.

Thank you and best wishes,

Christine Massey, M.Sc.

[Quoted text hidden]

phac.jpg
111K

Gmail **Christine Massey <cmssyc@gmail.com>**

your request PHAC A-2020-000110/BH - clarification needed! Your request is on hold until we receive your clarification!

Haase, Barbara (HC/SC) <barbara.haase@canada.ca> Wed, Jun 24, 2020 at 8:48 AM
To: Christine Massey <cmssyc@gmail.com>

Good morning:

Thank you for your clarification. I will convey this to our OPIs.

I have added the date range to your request text. Please note that your file is no longer on hold

Kind regards,

Barbara Haase

Senior ATIP Analyst, Access to Information and Privacy

Health Canada / Public Health Agency Canada / Government of Canada

Barbara.haase@canada.ca

Analyste principale, Accès à l'information et de la protection des renseignements personnels
Santé Canada et Agence de la santé publique du Canada / Gouvernement du Canada
barbara.haase@canada.ca

From: Christine Massey <cmssyc@gmail.com>
Sent: 2020-06-23 5:50 PM
To: Haase, Barbara (HC/SC) <barbara.haase@canada.ca>
Cc: atip / aiprp (PHAC/ASPC) <phac.atip-aiprp.aspc@canada.ca>; atip / aiprp (HC/SC) <hc.atip-aiprp.sc@canada.ca>
Subject: Re: your request PHAC A-2020-000110/BH - clarification needed! Your request is on hold until we receive your clarification!

Dear Ms. Haase,

Gmail **Christine Massey <cmssyc@gmail.com>**

Access to Info Request: studies re isolation of SARS-COV-2

Christine Massey <cmssyc@gmail.com> Thu, Oct 1, 2020 at 12:06 PM
To: phac.atip-aiprp.aspc@canada.ca, ATIP-AIPRP@hc-sc.gc.ca

Dear Ms. Richardson,

I see that my $5 cheque has suddenly been cashed. I'm looking forward to PHAC's response, and just wanted to update you with my new address and phone number for your records (although I prefer email communication and don't want anything shipped to me):

21 Keystone Avenue
Toronto ON
M4C 1G9

905 965 6254

Cheers and thank you,
Christine

On Sat, Jun 13, 2020 at 6:46 PM Christine Massey <cmssyc@gmail.com> wrote:
[Quoted text hidden]

Gmail **Christine Massey <cmssyc@gmail.com>**

Access to Info Request: studies re isolation of SARS-COV-2

atip / aiprp (HC/SC) <hc.atip-aiprp.sc@canada.ca> Thu, Oct 1, 2020 at 12:13 PM
To: Christine Massey <cmssyc@gmail.com>
Cc: "atip / aiprp (HC/SC)" <hc.atip-aiprp.sc@canada.ca>

Good Afternoon Christine,

Your new address and phone number has been updated in our system.

Thank you,

Sarah Pullara

Access to Information and Privacy

Health Canada and Public Health Agency of Canada

sarah.pullara@canada.ca / Fax: 613-941-4541

Accès à L'information et Protection des Renseignements Personnels

Santé Canada et Agence de la Santé Publique du Canada / Gouvernement du Canada

sarah.pullara@canada.ca / Télécopieur: 613-941-4541

[Quoted text hidden]

Gmail **Christine Massey <cmssyc@gmail.com>**

PHAC A-2020-000110

Turpin-Loyer, Tammy (HC/SC) <tammy.turpin-loyer@canada.ca> Fri, Nov 13, 2020 at 9:00 AM
To: "cmssyc@gmail.com" <cmssyc@gmail.com>

Hello,

Just wanted to let you know, that I am finalizing your request, and submitting it for approval.

We are happy to be able to offer you a new and fast way to receive answers to your inquiries at no additional cost to you. EPOST Connect is a secure messaging service that protects your documents, files and messages (see attached). As a result, your identity and all information sent to our office will be protected, and your privacy rights will be respected at all times under the *Privacy Act*. Once you have created your EPOST Connect account, we ask that you inform our office by email at: phac.atip-aiprp.aspc@canada.ca

Please let me know how you wish to receive the records,

Thank you

Tammy Turpin-Loyer

Gmail **Christine Massey <cmssyc@gmail.com>**

PHAC A-2020-000110

Christine Massey <cmssyc@gmail.com> Fri, Nov 13, 2020 at 9:54 AM
To: "Turpin-Loyer, Tammy (HC/SC)" <tammy.turpin-loyer@canada.ca>

Dear Tammy,

Thank you for your message.

I am not concerned about having my identity protected. The request that I submitted months ago to PHAC (shown below) was made public long ago and has been shared around the world. PHAC's response will also be made public.

Please note that I made clear in my request that I am **not** interested in records where the word "isolation" has been abused. Should PHAC provide me with irrelevant records (or commentary) that are not responsive to my request, it will reflect poorly on the institution and indicate a lack of competence, and this too will be publicly noted.

Please note that I also made clear in my request that I prefer **pdf documents sent to me via email;** I do not wish for anything to be shipped to me (or to use EPOST).

Thank you and best wishes,
Christine

June 13, 2020

To:

Cynthia Richardson
Access to Information and Privacy Coordinator
Access to Information and Privacy Division
Holland Cross, Tower B
7th Floor, Suite 700, Room 741
1600 Scott Street, Address locator: 3107A
Ottawa, Ontario K1A 0K9
phac.atip-aiprp.aspc@canada.ca
ATIP-AIPRP@HC-SC.GC.CA

Dear Ms. Richardson,

This is a formal request made under Canada's *Access to Information Act*.

Description of Requested Records:

All records in the possession, custody or control of the Public Health Agency of Canada (PHAC) describing the isolation of a SARS-COV-2 virus, directly from a sample taken from a diseased patient, where the patient sample was not first combined with any other source of genetic material (i.e. monkey kidney cells aka vero cells; liver cancer cells).

Please note that I am using "isolation" in the every-day sense of the word: *the act of separating a thing(s) from everything else*. I am not requesting records where "isolation of SARS-COV-2" refers instead to:

- the culturing of something, or
- the performance of an amplification test (i.e. a PCR test), or

Turpin-Loyer, Tammy (HC/SC) <tammy.turpin-loyer@canada.ca> Dec 7, 2020, 12:13 PM

to me

Have to send in parts, here are the records

From: Turpin-Loyer, Tammy (HC/SC)
Sent: 2020-12-07 11:32 AM
To: 'Christine Massey' <cmssyc@gmail.com>
Subject: RE: PHAC A-2020-000110

Good morning
Please find attached the records responsive to your request PHAC A-2020-000110.
Please do not hesitate to contact me should you require any additional information or assistance.
Have a great day,
Tammy Turpin-Loyer
ATIP Consultant
Access to Information and Privacy Division.

Public Health Agency of Canada | Agence de la santé publique du Canada
Access to Information and Privacy Division
7th Floor, Suite 700, Holland Cross - Tower B
1600 Scott Street, (Mail Stop: 3107A)
Ottawa, Ontario K1A 0K9

Our file: PHAC-A-2020-000110 / TTL

Christine Massey
21 Keystone Avenue
Toronto, Ontario
M4C 1G9

Dear Christine Massey:

This is in response to your request made under the *Access to Information Act* (the Act) for the following information:

> **All records in the possession, custody or control of the Public Health Agency of Canada (PHAC) describing the isolation of a SARS-COV-2 virus, directly from a sample taken from a diseased patient, where the patient sample was not first combined with any other source of genetic material (i.e. monkey kidney cells aka vero cells; liver cancer cells).**
>
> **Please note that I am using "isolation" in the every-day sense of the word: the act of separating a thing(s) from everything else. I am not requesting records where "isolation of SARS-COV-2" refers instead to:**
> - **the culturing of something, or**
> - **the performance of an amplification test (i.e. a PCR test), or**
> - **the sequencing of something.**
>
> **Please also note that my request is not limited to records that were authored by the PHAC or that pertain to work done by PHAC. My request includes any sort of record, for example (but not limited to) any published peer-reviewed study that PHAC has downloaded or printed.**
> **Clarification:**
> **Date range of request is January 1, 2020 until June 15, 2020**

Enclosed please find records responsive to your request. You will note that portions of the records are withheld from disclosure pursuant to sections 19 and 20 of the Act. For ease of reference, a copy of the Act may be found at https://laws-lois.justice.gc.ca/eng/acts/a-1/ which provides a description of the redaction(s) applied.

Should you have any questions or concerns about the processing of your request please do not hesitate to contact Tammy Turpin-Loyer, the analyst responsible for this file, by email at tammy.turpin-loyer@canada.ca with reference to our file number cited above.

Please be advised that you are entitled to complain to the Office of the Information Commissioner of Canada concerning the processing of your request within 60 days of the receipt of this notice. In the event you decide to avail yourself of this right, your notice of complaint can be made online at: https://www.oic-ci.gc.ca/en/submitting-complaint or by mail to:

Office of the Information Commissioner of Canada
30 Victoria Street
Gatineau, Quebec K1A 1H3

Yours sincerely,

Digitally signed by Mathews, Curtis
DN: C=CA, O=GC, OU=HC-SC, CN="Mathews, Curtis"
Date: 2020-11-17 07:40:55

Curtis Mathews
Manager, Access to Information and Privacy Division

Enclosure: Release package

Public Health Agency of Canada | Agence de la santé publique du Canada

We are now offering epost Connect™ services

The Public Health Agency of Canada's Access to Information and Privacy (ATIP) Office is now offering requesters an alternative way to receive responses to requests submitted under the *Access to Information Act* and the *Privacy Act.* EPOST Connect is a service that allows you to receive documents digitally in a safe, secure and timely manner. And there is **no cost to you!**

New to epost? Simply:
1) open a free account at www.epost.ca, and then
2) send us an email at phac.atip-aiprp.aspc@canada.ca to let us know that you wish to receive a response to your request through the epost Connect interface. Please include the email address linked to your epost account and reference the request number in your response.

Already have an epost account? Simply send us an email at phac.atip-aiprp.aspc@canada.ca and include the information noted above.

Once you have registered for this service and notified us of your interest in receiving responses via epost, we will send you an email when our response is ready for you to access.

EPOST Connect is a secure messaging service that offers protection for your documents, files and messages under the *Canada Post Corporation Act* and the Criminal Code of Canada. This means you can be sure that any information being shared remains secure and supports compliance with federal privacy regulations.

For more information about how epost Connect works, please visit:
https://www.canadapost.ca/web/en/pages/epost/default.page

Gmail **Christine Massey <cmssyc@gmail.com>**

PHAC A-2020-000110

Christine Massey <cmssyc@gmail.com> Mon, Dec 7, 2020 at 12:18 PM
To: "Turpin-Loyer, Tammy (HC/SC)" <tammy.turpin-loyer@canada.ca>

Hi Tammy,

Thank you. Could you please see that the letter has a date added to it, for the sake of clarity and transparency for the public?

Thanks and best wishes,
Christine
[Quoted text hidden]

Gmail **Christine Massey <cmssyc@gmail.com>**

PHAC A-2020-000110

Turpin-Loyer, Tammy (HC/SC) <tammy.turpin-loyer@canada.ca> Mon, Dec 7, 2020 at 1:51 PM
To: Christine Massey <cmssyc@gmail.com>

Hello,

I have separated the package into two pages.

Please let me know if you receive this one.

Thank you

Tammy

From: Christine Massey <cmssyc@gmail.com>
Sent: 2020-12-07 1:27 PM
To: Turpin-Loyer, Tammy (HC/SC) <tammy.turpin-loyer@canada.ca>
Subject: Re: PHAC A-2020-000110

Hi Tammy,

I've only received 1 email from you today, with a letter attached. I've received no records.

Thanks,

Christine

[Quoted text hidden]

A-2020-000110 Pages 1-13.pdf
11229K

Li, Yan (PHAC/ASPC)

From: [redacted]
Sent: 2020-02-20 1:54 PM
To: Li, Yan (PHAC/ASPC)
Subject: Re: Shipping delayed
Attachments: 20200220 - 145354 Scan.pdf; Fig1.pptx

Hi Yan,

The package has been picked up by FedEx. The tracking number is 808209522519.

For p.2 I don't know. We still have not been able to get to the PCR . I would think it should be either the same titer as p.1 or higher. So 15ul to 30ul in a T75 should be enough.
And we just setup plates today to do the titration.

To make p.2 I had 1ug/ml of TPCK trypsin in the media (DMEM, 2% FBS, P/S) during the virus absorption, removed the inoculum after 1hr and replaced with fresh media containing 2% FBS, penn/strep and 1ug/ml TPCK trypsin (so the same media as the adsorption). You are correct. We did NOT perform centrifugation or high trypsin when we used p.1 to make p.2. Just a normal infection procedure (except with the addition of 1ug/ml TCPK trypsin).

I attached a figure from our grant. The CPE and RT-PCR on p.1 is in there. Obvious differences between the sensitivity of the primers (although, we used one concentration of primer/probes, and not the suggested concentrations that was suggested).

Hope this helps. And I hope everything is fine with the samples we sent. We still need to do some verification but I figured since p.1 looks like SARS-CoV-2 (because of the PCR) and CPE was on-time and as expected for p.2 that we would ship to you now instead of waiting to make sure everything is as expected. Certainly we will let you know if we come across any results that are not consistent with what we expect.

Thanks
[redacted]

From: "Li, Yan (PHAC/ASPC)" <yan.li@canada.ca>
Date: Thursday, February 20, 2020 at 12:53 PM
To: [redacted]
Subject: RE: Shipping delayed

CAUTION: This email originated from outside [redacted] Do not click links or open attachments unless you recognize the sender and know the content is safe. If in doubt, please forward suspicious emails to phishing [redacted]

Hi [redacted]

I forgot to mention that we would need the waybill number in case there is some problem with the delivery.

As you indicated that you will send 2x 1 ml p2 and 100 ul P1. How much of P2 would you recommend to use for infecting a T75 flask? We also like to confirm that concentration of trypsin you are using now when you pass the virus (16 ug/ml or 1ug/ml). As we understand, the centrifugation will not be required to pass the virus. By the way, do you know the CT value for P1 and P2 virus?

Thank you so much for your help,
Yan

From: [redacted]
Sent: 2020-02-19 7:21 PM
To: Li, Yan (PHAC/ASPC) <yan.li@canada.ca>
Subject: Shipping delayed

Hi Yan,

Despite my pleading, FedEx refused to pick up today as we apparently missed their cut-off. I apologise and we have it arranged to be picked up tomorrow.

Thanks,
[redacted]

CONSULT-WITHHELD / CONSULTER-RETENUE

Is(Are) exempted and/or excluded pursuant to section(s)
est(sont) exemptée(s) et/ou exclus en vertu de(s)(l')article(s)

20(1)(b)

Subject to this section, the head of a government institution shall refuse to disclose any record requested under this Act that contains (b) financial, commercial, scientific or technical information that is confidential information supplied to a

Le responsable d'une institution fédérale est tenu, sous réserve des autres dispositions du présent article, de refuser la communication de documents contenant : b) des renseignements financiers, commerciaux, scientifiques ou techniques fournis à

Predicting infectious SARS-CoV-2 from diagnostic samples

Jared Bullard MD[1,2,3], Kerry Dust PhD[1], Duane Funk MD[4,5], James E. Strong MD,PhD[2,3,4], David Alexander PhD[1,3], Lauren Garnett BSc[3,4], Carl Boodman MD[3], Alexander Bello PhD[3,4], Adam Hedley BSc[1], Zachary Schiffman BSc[3,4], Kaylie Doan BSc[4], , Nathalie Bastien PhD[3,4], Yan Li PhD[3,4], Paul G. Van Caeseele MD [1,2,3] and Guillaume Poliquin MD, PhD[2,3,4]

1. Cadham Provincial Laboratory, Manitoba Health, Winnipeg, Manitoba, Canada

2. Department of Pediatrics & Child Health, University of Manitoba, Winnipeg, Manitoba, Canada

3. Department of Medical Microbiology & Infectious Diseases, University of Manitoba, Winnipeg, Manitoba, Canada

4. National Microbiology Laboratory, Public Health Agency of Canada, Winnipeg, Manitoba, Canada

5. Departments of Anaesthesiology and Medicine, Section of Critical Care, University of Manitoba, Winnipeg, Manitoba, Canada

Corresponding Author:

Jared Bullard

750 William Avenue

Winnipeg, Manitoba, Canada

R3C 3Y1

Email: jared.bullard@gov.mb.ca

Phone: (204)945-1306 Fax: (204)786-4770

A2020000110

Summary: Respiratory samples from COVID-19 patients with ≥ 8 days of symptoms and a SARS-CoV-2 E gene RT-PCR Ct value ≥ 24 may predict lack of infectivity of those patients in a clinical and community context.

Abstract

Background: RT-PCR has become the primary method to diagnose viral diseases, including SARS-CoV-2. RT-PCR detects RNA, not infectious virus, thus its ability to determine duration of infectivity of patients is limited. Infectivity is a critical determinant in informing public health guidelines/interventions. Our goal was to determine the relationship between E gene SARS-CoV-2 RT-PCR cycle threshold (Ct) values from respiratory samples, symptom onset to test (STT) and infectivity in cell culture.

Methods: In this retrospective cross-sectional study, we took SARS-CoV-2 RT-PCR confirmed positive samples and determined their ability to infect Vero cell lines.

Results: Ninety RT-PCR SARS-CoV-2 positive samples were incubated on Vero cells. Twenty-six samples (28.9%) demonstrated viral growth. Median TCID50/ml was 1780 (282-8511). There was no growth in samples with a Ct > 24 or STT > 8 days. Multivariate logistic regression using positive viral culture as a binary predictor variable, STT and Ct demonstrated an odds ratio for positive viral culture of 0.64 (95% CI 0.49-0.84, p<0.001) for every one unit increase in Ct. Area under the receiver operating characteristic curve for Ct vs. positive culture was OR 0.91 (95% CI 0.85-0.97, p<0.001), with 97% specificity obtained at a Ct of >24.

Conclusions: SARS-CoV-2 Vero cell infectivity was only observed for RT-PCR Ct < 24 and STT < 8 days. Infectivity of patients with Ct >24 and duration of symptoms >8 days may be low. This information can inform public health policy and guide clinical, infection control and occupational health decisions. Further studies of larger size are needed.

Keywords: SARS-COV-2, COVID-19, RT-PCR, infectivity, public health

Introduction

The emergence of SARS-CoV-2, the causative agent of COVID-19, represents a public health emergency of historic proportion. The global containment efforts have had broad societal and economic impacts. Policy decisions to relax public health measures will require a better understanding of duration of infectivity. This information will also impact infection control practices and occupational health.

To date, the diagnosis of COVID-19 has relied on the detection of SARS-CoV-2 through molecular detection. While this method is both rapid and highly sensitive, there are important limitations. Several studies describe the persistence of SARS-CoV-2 RNA within different body sites (1,2). It is known from other viruses that viral RNA can persist beyond infectivity (3,4). As a result, demonstration of *in vitro* infectiousness on cell lines is a more informative surrogate of viral transmission. The ability of viral culture to inform infectivity is an important aspect of diagnostics but its use is hampered by its difficult and labour-intensive nature. This is further complicated by the need for containment level 3 facilities in the case of SARS-CoV-2. In a recent cohort study of nine patients, no virus could be recovered beyond 7 days post symptom onset (1). This important study is limited by the small number of patients examined and the fact that all nine cases are linked, therefore the data may represent a unique viral subpopulation. Here we add to the existing body of literature by presenting viral culture results on a larger cross-sectional group of patients, compared to PCR data and time of symptom onset.

Methods

SARS-CoV-2 RT PCR cycle threshold values and symptom onset to test

All samples in this study were obtained to support routine care and surveillance of the public health response in the province of Manitoba, Canada. All suspect COVID-19 cases had SARS-CoV-2 RT-PCR performed on nasopharyngeal (NP) or endotracheal (ETT) samples at Cadham Provincial Laboratory (CPL), the public health laboratory.

NP swabs and ETT specimens in viral transport media were stored at 4°C for 24-72 hours until they were tested for the presence of SARS-CoV-2 RNA using real-time RT-PCR targeting a 122nt portion of the Sarbecovirus envelope gene (E gene) (5). Fifty-five microliters of RNA were extracted from 200 µL of a respiratory specimen using the Ambion AM1836 RNA kit (Thermofisher) paired with the Kingfisher Flex instrument (Thermofisher). The 20 µL reactions, comprised of Taqman Fast Virus One-step master mix and 5 µL of RNA, were cycled for 5 min@ 50°C, 20 sec@ 95°C followed by 40 cycles of 5 sec@ 95°C and 30 sec @ 58°C on a Biorad CFX96 thermal cycler. RT-PCR results were analyzed with the CFX manager software (version 3.1).

Through public health and epidemiology/surveillance and laboratory records, date of symptom onset was determined. Time from symptom onset to RT-PCR, or symptoms to test (STT), was calculated based on laboratory records. For all positive samples, the cycle threshold (Ct) was obtained. The study was performed in accordance with protocol HS23906 (H2020:211), approved by the University of Manitoba Research Ethics Board.

Tissue Culture Infectious Dose 50% (TCID50) Assay

Samples were stored at -80°C for between 2 to 4 weeks before being processed for culture. Viral titers of patient samples were determined through TCID50 assays inside a biocontainment level 4 laboratory (BSL4). Briefly, Vero cells (ATCC: CCL-81), maintained in Modified Eagles Medium (MEM) supplemented with 5% Fetal Bovine Serum (FBS), 1% penicillin/ streptomycin (P/S), 0.5 μg/mL Amphotericin B and 1% L-glutamine, were seeded into 96 well plates (Thermo Scientific, 167008) at 70% confluency. Using dilution blocks, patient samples were serially diluted 10-fold from 10^{-1} to 10^{-8} in MEM supplemented with 2% FBS, 1% Penicillin/Streptomycin, 0.5 μg/mL Amphotericin B and 1% L-glutamine. Dilutions were placed onto the Vero cells in triplicate and incubated at 37°C with 5% CO2 for 96 hours. Following incubation of 4 days, cytopathic effect (CPE) was evaluated under a microscope and recorded. TCID50 and TCID50/mL were calculated using the Reed and Muench method previously described (6)

Statistical Methods

Data are presented as mean ± standard deviation for normally distributed data and as median [Interquartile range] for non-normally distributed data. P values are reported as two tailed. All statistical analysis was performed with Stata V14.2 (College Station, Texas, USA). Between group comparisons were performed using a Students t test or Mann-Whitney test. Normality was assessed using the Kolmorgorov-Smirnov test, and logistic regression was performed with robust standard errors.

Results

A total of 90 samples were analyzed. Median age of the patients sampled was 45 (30-59). Forty nine percent of our samples were from males. SARS-CoV-2 was successfully cultivated from 26 (28.9%) of the samples. The samples included in this study included those positive for SARS-CoV-2 by RT-PCR from day of symptom onset (Day 0) up to 21 days post symptom onset. Within this range of samples, positive cultures were only observed up to day 8 post symptom onset (Figure 1). Median Ct count of all samples was 23 (IQR 17-32). The median TCID50/ml was 1780 (282-8511). Positive culture samples had a significantly lower Ct when compared to culture negative samples (17 [16-18] vs 27 [22-33], $p<0.001$, Figure 2). Symptom to test time was also significantly lower in culture positive vs. culture negative samples (3 [2-4] vs. 7 [4-11], $p<0.001$, Figure 2).

Multivariate logistic regression using positive culture as a predictor variable (binary result) and STT, age and gender as independent variables showed Ct as being significant (OR 0.64 95% CI 0.49-0.84, $p<0.001$). This implies that for every one unit increase in Ct, the odds of a positive culture decreased by 32%. Increasing symptom to test time was also significantly associated with a negative culture (OR 0.63, 95% CI 0.42-0.94, $p=0.025$). For every one day increase in STT, the odds ratio of being culture positive was decreased by 37%. Receiver operating characteristic curves constructed using Ct vs. positive culture showed an area of 0.91 (95% CI 0.85-0.97, $p<0.001$) with 97% specificity obtained at a Ct of greater than 24. Similarly, STT vs. positive culture showed an area of 0.81 (95% CI 0.0.73-0.90, p<.001), with 96% specificity at >8 days. The probability of successfully cultivating SARS-CoV-2 on Vero cell culture compared to STT is demonstrated in Figure 3. The probability of obtaining a positive viral culture peaked on day 3 and decreased from that point.

Discussion

PCR and other nucleic amplification (NA) strategies have surpassed viral culture as the gold standard viral diagnostic, because of their wider application, higher sensitivity, rapid performance, and ability for field deployment. A major drawback to PCR and other diagnostic approaches (including other NA, serology, antigen detection) is that they all fail to determine virus infectivity: PCR sensitivity is excellent but specificity for detecting replicative virus is poor (13). Our study utilized a cross-sectional approach to correlate COVID-19 symptom onset to specimen collection with SARS-CoV-2 E gene RT-PCR and virus viability as determined by cell culture.

These results demonstrate that infectivity (as defined by growth in cell culture), is significantly reduced when RT-PCR Ct values are greater than 24. For every 1 unit increase in Ct, the odds ratio for infectivity decreased by 32%. The high specificity of Ct and STT suggests that Ct values greater than 24, along with duration of symptoms greater than 8 days may be used in combination to determine duration of infectivity in patients. Positive cell culture results in our study were most likely between days one and five. This finding is consistent with existing literature (1,2).

This study is the first to report a large enough data set that demonstrates a link between *in vitro* viral growth, Ct value and STT.

These results have implications for clinical care, infection prevention and control and public health. These data can be used to efficiently target case finding efforts by better defining the period of maximal transmission risk. This will be of particular importance in the maintenance phase of the response, where case finding efforts to rapidly interrupt chains of transmission will be essential. Isolation of COVID-19 cases in the community is typically recommended for at least ten days after symptom onset. Our data supports this approach. Jurisdictions across Canada and the US are recommending a variety of strategies to discontinue isolation of hospitalized COVID-19 cases (7-12). Clinical criteria including 14 days from symptom onset or 72 hours symptom free (whichever is

longer) are being used in some while other jurisdictions are using two negative NP RT-PCR results 48 hours apart after 14 days of symptoms. Our data supports the former approach since RT-PCR positivity persists significantly beyond infectivity; the alternative approach may lead to unnecessary isolation, and use of PPE and testing resources. The qualitative reporting of results of SARS-CoV-2 RT-PCR as positive or negative is sufficient for diagnosis but may be supplemented by Ct, a semi-quantitative value, as well as time of symptom onset to guide infection control, public health and occupational health decisions.

Our study has important limitations. First, our study utilized a single SARS-CoV-2 gene target (E gene). Though other gene targets may offer greater specificity, SARS-CoV-2 E-gene is more consistently used in both laboratory-developed tests (LDT) and commercial assays. The testing criteria in Manitoba had sufficient pre-test probability to make the likelihood of a false positive remote. In addition, the first 71 of 90 samples were confirmed using the described protocol with CDC N1-gene target (14). Second target confirmation was discontinued at that time based on being satisfied with testing criteria and assay sensitivity to accurately identify true COVID-19 cases. Reagent supply also played a role. Second, the recall bias of symptom onset is possible, but this likely would have been equally distributed between those who were culture positive and negative. Third, the infectivity of certain individual cases and the accuracy of our culture assay may have unique variations. Though some individuals in our cross-sectional study would be considered immunocompromised, patients with these conditions could have prolonged shedding of infective SARS-CoV-2 and may not be fully represented here. Few children have been diagnosed with COVID-19 in our province (Median age of positive PCR = 45 [30-59]). With other respiratory viruses, children may have prolonged shedding. Finally, our patient numbers remain small and larger studies are needed to establish Ct criteria that reliably correlates with loss of infectivity and that utilize additional SARS-CoV-2 gene targets.

In conclusion, the SARS-CoV-2/COVID-19 pandemic represents a dynamic situation where decisions and policy must be guided by evidence. Our study showed no positive viral cultures with a Ct greater than 24 or STT greater than 8 days. The odds of a positive culture were decreased by 32% for each unit increase in Ct. This data, if confirmed, may help guide isolation, contact tracing, and testing guidelines.

Gmail **Christine Massey <cmssyc@gmail.com>**

PHAC A-2020-000110

Turpin-Loyer, Tammy (HC/SC) <tammy.turpin-loyer@canada.ca> Mon, Dec 7, 2020 at 1:56 PM
To: Christine Massey <cmssyc@gmail.com>

Hello

Please find the second page pages 14-26

Please confirm when you receive

Tammy

From: Turpin-Loyer, Tammy (HC/SC)
Sent: 2020-12-07 1:49 PM
To: 'Christine Massey' <cmssyc@gmail.com>
Subject: RE: PHAC A-2020-000110

Hello,

I have separated the package into two pages. (sorry should have been two packages)

Please let me know if you receive this one.

Thank you

Tammy

From: Christine Massey <cmssyc@gmail.com>
Sent: 2020-12-07 1:27 PM
To: Turpin-Loyer, Tammy (HC/SC) <tammy.turpin-loyer@canada.ca>
Subject: Re: PHAC A-2020-000110

Hi Tammy,

I've only received 1 email from you today, with a letter attached. I've received no records.

Thanks,

Christine

[Quoted text hidden]

Acknowledgments

This work was supported by the collaborative efforts in the public health response to the SARS-CoV-2/COVID-19 pandemic by Manitoba Health and Cadham Provincial Laboratory (CPL) and the Public Health Agency of Canada and the National Microbiology Laboratory. A special acknowledgement to the Medical Laboratory Technologists in the Virus Detection Section of CPL. We would be blind without you.

Potential conflicts of interest: The authors have no conflicts to report.

References:

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Figure Legends:

Figure 1: SARS-CoV-2 viral dynamics as expressed by E gene RT-PCR Cycle threshold (Ct) value and cell culture TCID50/mL, over time (days). Squares represent Ct values while triangles reflect TCID50.

Figure 2: SARS-CoV-2 E gene RT-PCR Cycle Threshold (Ct) values and symptom to test time (STT) in samples that were culture positive (Ct +, STT +), or negative (Ct -, STT -). Positive SARS-CoV-2 culture samples had a significantly lower Ct when compared to culture negative samples (17 [16-18] vs 27 [22-33], $p<0.001$). Symptom to test time was also significantly lower in culture positive vs. culture negative samples (3 [2-4] vs. 7 [4-11], $p<0.001$).

Figure 3: Comparison of symptom onset to test (days) to the probability of successful cultivation on Vero cells and SARS-CoV-2 E gene RT-PCR Cycle threshold (Ct) value. Ct values are represented by the line graph with circles. Probability of SARS-CoV-2 culture is shown by the bar graph.

Figure 1

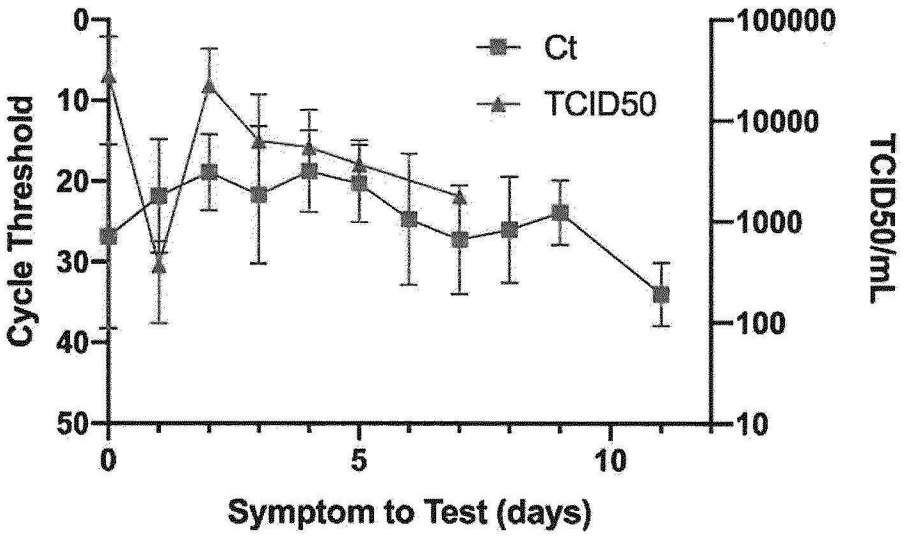
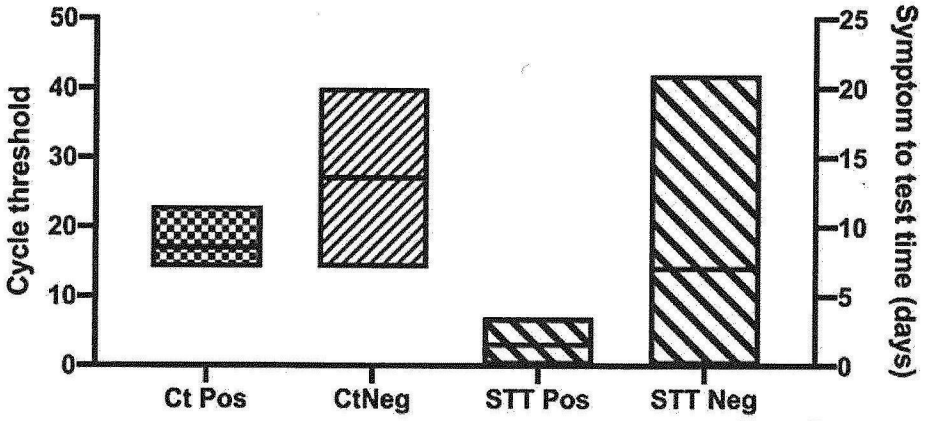
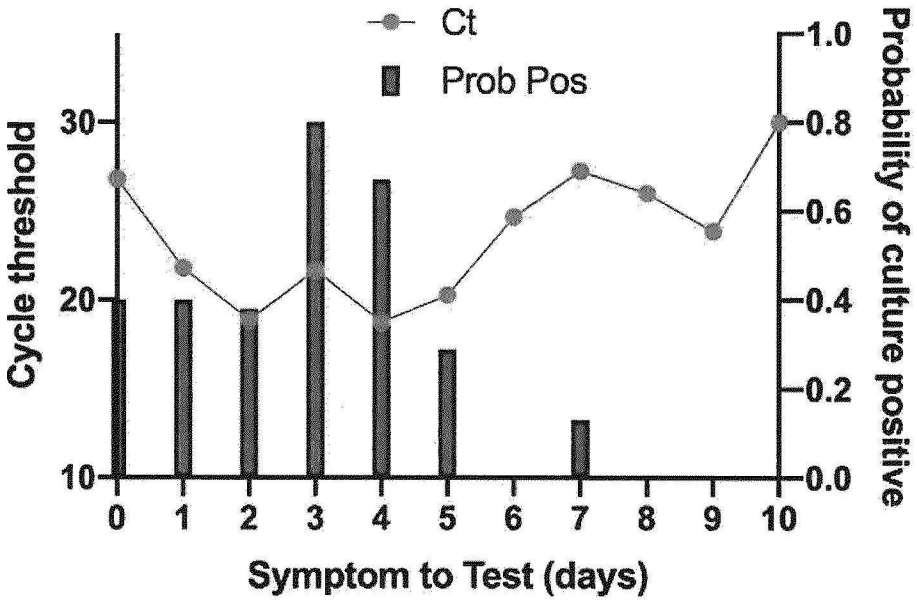


Figure 2





Bastien, Nathalie (PHAC/ASPC)

From: Li, Yan (PHAC/ASPC)
Sent: 2020-04-14 10:19 AM
To: [redacted]
Cc: Bastien, Nathalie (PHAC/ASPC)
Subject: RE: propagate VIDO viral culture isolate (COVID-19 virus)

Yes, your calculation is correct. The working solution should be stored at -20C.

Yan

From [redacted]@oahpp.ca>
Sent: 2020-04-14 10:15 AM
To: Li, Yan (PHAC/ASPC) <yan.li@canada.ca>
Cc: Bastien, Nathalie (PHAC/ASPC) <nathalie.bastien@canada.ca>
Subject: RE: propagate VIDO viral culture isolate (COVID-19 virus)

Hi Yan,

Thanks for the information , it is very helpful.

Can the working dilution, (1mg/ml) be stored at 4 C or should it be frozen at -20 C ?

Also, in order to get 1 ug/ml solution, I am figuring that I have to use only 1 ul of this solution per ml of the working solution? So, if I am making up 20ml then I only need 20ul?

Thank you,

[redacted]

From: Li, Yan (PHAC/ASPC) [mailto:yan.li@canada.ca]
Sent: April 14, 2020 10:57 AM
To: [redacted]@oahpp.ca>
Cc: Bastien, Nathalie (PHAC/ASPC) <nathalie.bastien@canada.ca>
Subject: RE: propagate VIDO viral culture isolate (COVID-19 virus)

Hi [redacted]

If you like , you can double up on this amount (50 ul virus plus 2ml medium)to ensure sufficient cell coverage in the flask.

For 50 mg TPCK trypsin, you could first dissolve in 50 ml medium (1 mg/ml), then, you can use it to prepare working solution.

Hope this will be helpful.

Yan

From: [redacted]@oahpp.ca>
Sent: 2020-04-13 7:54 AM
To: Li, Yan (PHAC/ASPC) <yan.li@canada.ca>
Cc: Bastien, Nathalie (PHAC/ASPC) <nathalie.bastien@canada.ca>
Subject: RE: propagate VIDO viral culture isolate (COVID-19 virus)

Hi Dr. Li,

I have a question for you regarding the virus propagation. When we perform the 1 hour incubation with the following dilution:

50ul virus plus 950ul MEM+2%FBS+penn/strep+ 1ug/ml of TPCK trypsin for I hr, my question is :

Would this volume be enough to cover the whole 72 cm flask surface? It is a total of 1.0 ml volume , is this sufficient?
Is there any need for us to possibly double up on this amount, to ensure sufficient cell coverage in the flask?
Is there a quick formula for preparing the 1ug/ml TPCK solution, I just want to double check with my calculation to ensure we're using the proper concentration , we have received T1426 TPCK, so it would be the same .

Thanks so much,

[redacted]

From: Li, Yan (PHAC/ASPC) [mailto:yan.li@canada.ca]
Sent: March 23, 2020 3:05 PM
To [redacted]@oahpp.ca>; Bastien, Nathalie (PHAC/ASPC) <nathalie.bastien@canada.ca>
Subject: RE: propagate VIDO viral culture isolate (COVID-19 virus)

H[redacted]

Here is how we propagate a viral stock:

We culture Vero E6 cells in MEM+10%FBS+Penn/strep at 37C/5%CO2 in T75 flask. When cells grow to 80-90% confluence, cells were infected with 50ul virus plus 950ul MEM+2%FBS+penn/strep+ 1ug/ml of TPCK trypsin for I hr. Then inoculum was removed and replaced with 20 ml of fresh MEM+2%FBS+penn/strep+ 1ug/ml of TPCK trypsin. CPE showed up at day 3 postinfection.

TPCK trypsin is from Sigma. Cat#: T1426-50mg. It is lyophilized. We directly dissolve it in MEM.

Yan

From: [redacted]@oahpp.ca>
Sent: 2020-03-23 1:10 PM
To: Bastien, Nathalie (PHAC/ASPC) <nathalie.bastien@canada.ca>
Cc: Li, Yan (PHAC/ASPC) <yan.li@canada.ca>
Subject: propagate VIDO viral culture isolate (COVID-19 virus)

Hi Nathalie,

I just have a few questions for you re. the COVID -19 virus propagation.

We have repassed Vero 76 cells in EMEM with FBS, Pen Strep and Fungizone added, and they are currently starting to grow. We are not familiar with this media, as we don't use it as our primary media for the PRNT West Nile assay.

1. Your current procedure states that TPCK Trypsin (1ug/ml) , is added to the inoculum . We don't use this TPCK at all, can you provide me with the supplier and Catalogue number for this trypsin? Is it in lyophilized or liquid form? From what I see in the procedure, this same concentration of TPCK is then used for the 3 day incubation, should this incubation also be done at 37 C ?

2. After the CPE is observed at 3 days, do we have to perform any freeze-thaw cycles, or is the virus primarily in the 20 mls of media that we have added after the 1 hour incubation?

3. Is it necessary to use this supernatant, and repeat this procedure in order to amplify the growth of virus?

Thanks very much,

[redacted]

Public Health Ontario | Santé publique Ontario
Public Health Laboratory – Toronto |Laboratoire de santé publique – Toronto
661 University Avenue, 20th Floor
Toronto, ON M5G 1M1
[redacted]@oahpp.ca

Please note: Public Health Ontario is the new operating name for Ontario Agency for Health Protection and Promotion.
Notez que Santé publique Ontario est le nouveau nom de l'Agence ontarienne de protection et de promotion de la santé.

Bastien, Nathalie (PHAC/ASPC)

From: Li, Yan (PHAC/ASPC)
Sent: 2020-03-09 9:13 AM
To: [redacted]@oahpp.ca)
Cc: Bastien, Nathalie (PHAC/ASPC); Li, Yan (PHAC/ASPC)
Subject: propagate VIDO viral culture isolate (COVID-19 virus)

H[redacted]

Here is how we propagate a viral stock:

We culture Vero E6 cells in MEM+10%FBS+Penn/strep at 37C/%%CO2 in T75 flask. When cells grow to 80-90% confluence, cells were infected with 50ul virus plus 950ul MEM+2%FBS+penn/strep+ 1ug/ml of TPCK trypsin for I hr. Then inoculum was removed and replaced with 20 ml of fresh MEM+2%FBS+penn/strep+ 1ug/ml of TPCK trypsin. CPE showed up at day 3 postinfection.

Hope this helps.
Yan

Yan Li, Ph.D.
Chief, Influenza and Respiratory Viruses Section
National Microbiology Laboratory
Public Health Agency of Canada
Canadian Science Centre for Human and Animal Health
1015 Arlington St., Suite H4050
Winnipeg, MB
Canada R3E 3R2
Phone: 204-789-6045
Fax: 204-789-2082
EMail: yan.li@canada.ca

Bastien, Nathalie (PHAC/ASPC)

From: Li, Yan (PHAC/ASPC)
Sent: 2020-02-25 1:41 PM
To: Gilmour, Matthew (PHAC/ASPC)
Cc: Bastien, Nathalie (PHAC/ASPC); Li, Yan (PHAC/ASPC)
Subject: Vido virus growth

Hi Matt,

I want to let you know that we have grown Vido virus. We have obtained low CT with Corman E assay. We will work with Morag to get sequence.

Yan

Yan Li, Ph.D.
Chief, Influenza and Respiratory Viruses Section
National Microbiology Laboratory
Public Health Agency of Canada
Canadian Science Centre for Human and Animal Health
1015 Arlington St., Suite H4050
Winnipeg, MB
Canada R3E 3R2
Phone: 204-789-6045
Fax: 204-789-2082
EMail: yan.li@canada.ca

Gmail **Christine Massey <cmssyc@gmail.com>**

PHAC A-2020-000110

Turpin-Loyer, Tammy (HC/SC) <tammy.turpin-loyer@canada.ca> Mon, Dec 7, 2020 at 2:29 PM
To: Christine Massey <cmssyc@gmail.com>

Please find the letter attached, resigned with a date on the letter.

I also sent out two packages to you , splitting the records in half. Please confirm you have received these two emails.

Tammy

From: Christine Massey <cmssyc@gmail.com>
Sent: 2020-12-07 1:27 PM
To: Turpin-Loyer, Tammy (HC/SC) <tammy.turpin-loyer@canada.ca>
Subject: Re: PHAC A-2020-000110

Hi Tammy,

I've only received 1 email from you today, with a letter attached. I've received no records.

Thanks,

Christine

[Quoted text hidden]

PHAC A-2020-000110 Disclosed in Part Release letter (002).pdf
349K

Public Health Agency of Canada | Agence de la santé publique du Canada
Access to Information and Privacy Division
7th Floor, Suite 700, Holland Cross - Tower B
1600 Scott Street, (Mail Stop: 3107A)
Ottawa, Ontario K1A 0K9

2020-Our file: PHAC-A-2020-000110 / TTL

2020-12-07

Christine Massey
21 Keystone Avenue
Toronto, Ontario
M4C 1G9

Dear Christine Massey:

This is in response to your request made under the *Access to Information Act* (the Act) for the following information:

> **All records in the possession, custody or control of the Public Health Agency of Canada (PHAC) describing the isolation of a SARS-COV-2 virus, directly from a sample taken from a diseased patient, where the patient sample was not first combined with any other source of genetic material (i.e. monkey kidney cells aka vero cells; liver cancer cells).**
>
> **Please note that I am using "isolation" in the every-day sense of the word: the act of separating a thing(s) from everything else. I am not requesting records where "isolation of SARS-COV-2" refers instead to:**
> - **the culturing of something, or**
> - **the performance of an amplification test (i.e. a PCR test), or**
> - **the sequencing of something.**
>
> **Please also note that my request is not limited to records that were authored by the PHAC or that pertain to work done by PHAC. My request includes any sort of record, for example (but not limited to) any published peer-reviewed study that PHAC has downloaded or printed.**
> **Clarification:**
> **Date range of request is January 1, 2020 until June 15, 2020**

Enclosed please find records responsive to your request. You will note that portions of the records are withheld from disclosure pursuant to sections 19 and 20 of the Act. For ease of reference, a copy of the Act may be found at https://laws-lois.justice.gc.ca/eng/acts/a-1/ which provides a description of the redaction(s) applied.

Should you have any questions or concerns about the processing of your request please do not hesitate to contact Tammy Turpin-Loyer, the analyst responsible for this file, by email at tammy.turpin-loyer@canada.ca with reference to our file number cited above.

Please be advised that you are entitled to complain to the Office of the Information Commissioner of Canada concerning the processing of your request within 60 days of the receipt of this notice. In the event you decide to avail yourself of this right, your notice of complaint can be made online at: https://www.oic-ci.gc.ca/en/submitting-complaint or by mail to:

Office of the Information Commissioner of Canada
30 Victoria Street
Gatineau, Quebec K1A 1H3

Yours sincerely,

Digitally signed by Mathews, Curtis
DN: C=CA, O=GC, OU=HC-SC, CN="Mathews, Curtis"
Date: 2020-12-07 14:18:56

Curtis Mathews
Manager
Access to Information and Privacy Division

Enclosure: Release package

Public Health Agency of Canada | Agence de la santé publique du Canada

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The Public Health Agency of Canada's Access to Information and Privacy (ATIP) Office is now offering requesters an alternative way to receive responses to requests submitted under the *Access to Information Act* and the *Privacy Act.* EPOST Connect is a service that allows you to receive documents digitally in a safe, secure and timely manner. And there is **no cost to you!**

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Gmail **Christine Massey <cmssyc@gmail.com>**

PHAC A-2020-000110

Christine Massey <cmssyc@gmail.com> Mon, Dec 7, 2020 at 3:46 PM
To: "Turpin-Loyer, Tammy (HC/SC)" <tammy.turpin-loyer@canada.ca>

Hi Tammy,

Thank you for the dated letter, however there is still a problem with it. The letter states that responsive records are enclosed.

I've gone through both of the pdf attachments that contain the records and there is nothing in them that is responsive to my request.

The manuscript and emails discuss exactly what I stated in my request that I am not interested in: mixing patient samples (adulterating them) with genetic material, specifically monkey kidney (aka "Vero") cells and fetal bovine serum (FBS); and PCR tests; the emails also mention sequencing.

There is no description anywhere of what I requested: separating a thing (the alleged "SARS-COV-2") from everything else in a patient sample.

I don't even see the word "isolate" (or "isolation", or "purify" or "purification") anywhere, except in the manuscript where it appears **only in the context of isolating people**, not a virus (the published version of the paper is searchable.) (And note the admission on page 1: ***"RT-PCR detects RNA, not infectious virus"***).

All references here to "the virus" are absurd and fraudulent and based on wild, unscientific assumptions.

No one has looked for or found "the virus". They simply assumed (based on PCR tests that are utterly incapable of determining the presence of an intact virus) that patient samples contained "the virus"; they then adulterated the samples with genetic material and toxic drugs, then irrationally blamed "the virus" for harm to the monkey kidney cells.

This is a typical example of what I call "fraudulent monkey business", the only difference being that the manuscript and emails do not even make a fraudulent claim (that I can see) of having isolated (or "purified") any virus.

[Also note that the samples were stored in "viral transport media" for 1-3 days before the PCR testing was even begun. The CDC's SOP for such includes fetal bovine serum and toxic drugs. Thus in all likelihood, the samples in this study were contaminated with genetic material before any investigation even began.]

These records have nothing to do with isolation of a virus (as per the every day meaning that I indicated in my quest); they are not responsive to my request.

Thank you for your efforts, but I require an accurate response from PHAC indicating that they have "no responsive records".

[Quoted text hidden]

[Quoted text hidden]

Gmail **Christine Massey <cmssyc@gmail.com>**

PHAC A-2020-000110

Turpin-Loyer, Tammy (HC/SC) <tammy.turpin-loyer@canada.ca> Mon, Dec 14, 2020 at 12:07 PM
To: Christine Massey <cmssyc@gmail.com>

Good afternoon,

Just wanted to touch base, and let you know that we have gone back to the program area with your concerns, and requested further clarification from the program area.

I will provide you with additional information as soon as possible.

Please do not hesitate to contact me should you require additional information.

Tammy Turpin-Loyer

ATIP Consultant

Access to Information and Privacy Division

From: Christine Massey <cmssyc@gmail.com>
Sent: 2020-12-07 3:47 PM
To: Turpin-Loyer, Tammy (HC/SC) <tammy.turpin-loyer@canada.ca>
Subject: Re: PHAC A-2020-000110

Hi Tammy,

Thank you for the dated letter, however there is still a problem with it. The letter states that responsive records are enclosed.

I've gone through both of the pdf attachments that contain the records and there is nothing in them that is responsive to my request.

The manuscript and emails discuss exactly what I stated in my request that I am not interested in: mixing patient samples (adulterating them) with genetic material, specifically monkey kidney (aka "Vero") cells and fetal bovine serum (FBS); and PCR tests; the emails also mention sequencing.

Gmail **Christine Massey <cmssyc@gmail.com>**

Subsequent response PHAC A-2020-000110

Turpin-Loyer, Tammy (HC/SC) <tammy.turpin-loyer@canada.ca> Tue, Feb 2, 2021 at 7:22 AM
To: Christine Massey <cmssyc@gmail.com>

Good morning,

Please find attached a subsequent response to your request.

Tammy

Subsequent Response A2020000110 20210202.pdf
185K

Public Health Agency of Canada | Agence de la santé publique du Canada
Access to Information and Privacy Division
7th Floor, Suite 700, Holland Cross - Tower B
1600 Scott Street, (Mail Stop: 3107A)
Ottawa, Ontario K1A 0K9

Our file: PHAC-A-2020-000110 / TTL

Christine Massey
21 Keystone Avenue
Toronto, Ontario
M4C 1G9

Dear Christine Massey:

This is in follow-up to our response, December 28, 2020 to your request made under the *Access to Information Act* (the Act) for the following information:

> **All records in the possession, custody or control of the Public Health Agency of Canada (PHAC) describing the isolation of a SARS-COV-2 virus, directly from a sample taken from a diseased patient, where the patient sample was not first combined with any other source of genetic material (i.e. monkey kidney cells aka vero cells; liver cancer cells).**
>
> **Please note that {I am} using "isolation" in the every-day sense of the word: the act of separating a thing(s) from everything else. {I am} not requesting records where "isolation of SARS-COV-2" refers instead to:**
> - **the culturing of something, or**
> - **the performance of an amplification test (i.e. a PCR test), or**
> - **the sequencing of something.**
>
> **Please also note that {my} request is not limited to records that were authored by the PHAC or that pertain to work done by PHAC. {My} request includes any sort of record, for example (but not limited to) any published peer-reviewed study that PHAC has downloaded or printed.**
> **Clarification:**
> **Date range of request is January 1, 2020 until June 15, 2020**

As requested, The Public Health Agency of Canada has further discussed with the program area and requested clarification of the records that were provided in response to the request above.

Your request has resulted in a “No Records Exist”, because of the way that you have formulated your request. The isolation of the virus is not completed without the use of another medium, therefore we have no records that would show this process taking place. It is important to understand the following: The gold standard assay used to determine the presence of intact virus in patient samples is viral isolation in cell culture. With this

assay, if virus is present in the patient sample, it will multiply and produce visible cytopathic effects, which means that infected cells demonstrate visible changes. Additionally, the detection of an increase in the genetic viral material by PCR further confirms that intact virus is present in the patient sample, since increasing viral genetic material necessitates replication of the viral within the cell culture. This technique was successfully used to confirm that intact SARS-COV-2 was present in Canadian patient samples as evidenced in the material provided. In the case of SARS-COV-2 isolation, Vero cells combined with minimal essential medium (MEM) were used because they are essential to support viral replication and cell growth. This combination supports the growth of other coronavirus types and was successful in the case of SARS-CoV-2 as well

Should you have any questions or concerns about the processing of your request, please do not hesitate to contact Tammy Turpin-Loyer, the analyst responsible for this file, by email at tammy.turpin-loyer@canada.ca with reference to our file number cited above.

Please be advised that you are entitled to complain to the Office of the Information Commissioner of Canada concerning the processing of your request within 60 days of the receipt of this notice. In the event you decide to avail yourself of this right, your notice of complaint can be made online at: https://www.oic-ci.gc.ca/en/submitting-complaint or by mail to:

Office of the Information Commissioner of Canada
30 Victoria Street
Gatineau, Quebec K1A 1H3

Yours sincerely,

Smith, Christine N

Digitally signed by Smith, Christine N
DN: C=CA, O=GC, OU=HC-SC, CN="Smith, Christine N"
Reason: I am the author of this document
Location: your signing location here
Date: 2021-02-02 07:13:42
Foxit PhantomPDF Version: 9.7.0

Christine Smith
Team Leader
Access to Information and Privacy Division