

**From:** Petrik, Amy (NIH/NIAID) [E]  
**Sent:** Thu, 12 Dec 2019 13:06:45 +0000  
**To:** Stein, Judy (NIH/VRC) [C]; UNC Office of Tech Dev MTA; Shaun Ryan  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E]; Sunny Himansu (b)(6) Baric, Ralph  
**Subject:** RE: NIAID/UNC/Moderna MTA  
**Attachments:** NIAID - UNC - Moderna MTA (12.10.19 draft) (00034264xD7FD0)\_final  
clean\_PE\_NIAID.pdf

Hi Carmen,

Please find the partially executed MTA attached for signature at UNC.

Thanks,  
Amy

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**From:** Stein, Judy (NIH/VRC) [C] (b)(6)  
**Sent:** Wednesday, December 11, 2019 4:39 PM  
**To:** UNC Office of Tech Dev MTA <mta@unc.edu>; Shaun Ryan (b)(6)@modernatx.com>  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Petrik, Amy (NIH/NIAID) [E]  
(b)(6) Sunny Himansu (b)(6)@modernatx.com> (b)(6)  
(b)(6)@modernatx.com>; Baric, Ralph (b)(6)  
**Subject:** RE: NIAID/UNC/Moderna MTA

Hi Carmen,  
Amy Petrik, our tech transfer specialist, can finalize and sign the agreement first.  
Thanks very much.  
Judy

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**From:** UNC Office of Tech Dev MTA <mta@unc.edu>  
**Sent:** Wednesday, December 11, 2019 4:35 PM  
**To:** Shaun Ryan (b)(6)@modernatx.com>  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Stein, Judy (NIH/VRC) [C]  
(b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6) Sunny Himansu  
(b)(6)@modernatx.com>; (b)(6)@modernatx.com>; Baric, Ralph  
(b)(6) UNC Office of Tech Dev MTA <mta@unc.edu>  
**Subject:** RE: NIAID/UNC/Moderna MTA

Thanks, Shaun!

Judy – let me know if you would prefer to initiate signature or if you would like us to. I'm happy to do either!

Best,  
Carmen

**Carmen Melvin**

Licensing Manager | Office of Technology Commercialization

The University of North Carolina at Chapel Hill | 109 Church Street | Chapel Hill, NC 27516

(b)(6) | 919-966-3929 (office) | (b)(6) (direct)

CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu) | Tangible Property Program: [researchtools@unc.edu](mailto:researchtools@unc.edu)

---

**From:** Shaun Ryan (b)(6)@modernatx.com>

**Sent:** Wednesday, December 11, 2019 12:56 PM

**To:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>

**Cc:** (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6)

Sunny Himansu (b)(6)@modernatx.com> (b)(6)

(b)(6)@modernatx.com>; Baric, Ralph S (b)(6)

**Subject:** RE: NIAID/UNC/Moderna MTA

Thank you Carmen, these changes are acceptable to Moderna.

We defer to UNC and NIAID regarding the preferred method of execution – please let us know how you would like to proceed.

Best,

Shaun

Shaun Ryan

SVP & Deputy General Counsel | Moderna (b)(6)

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**From:** UNC Office of Tech Dev MTA [<mailto:mta@unc.edu>]

**Sent:** Wednesday, December 11, 2019 12:52 PM

**To:** Shaun Ryan (b)(6)@modernatx.com>

**Cc:** (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6)

Sunny Himansu (b)(6)@modernatx.com> (b)(6)

(b)(6)@modernatx.com>; Baric, Ralph S (b)(6) UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>

**Subject:** RE: NIAID/UNC/Moderna MTA

Hi Shaun,

Moderna's edits are acceptable to UNC with a few revisions to Section 4 (see attached). Please let us know if there are any questions or concerns with this change. I'm happy to discuss over the phone if helpful.

Best,

Carmen

**Carmen Melvin**

Licensing Manager | Office of Technology Commercialization

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(b)(6) | 919-966-3929 (office) | (b)(6) direct)  
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**From:** Shaun Ryan (b)(6)@modernatx.com>  
**Sent:** Tuesday, December 10, 2019 3:48 PM  
**To:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>; Baric, Ralph S (b)(6) Baric, Ralph S (b)(6)  
**Cc:** (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6)  
Sunny Himansu (b)(6)@modernatx.com> (b)(6)  
(b)(6)@modernatx.com>  
**Subject:** NIAID/UNC/Moderna MTA

All,

Attached please a handful of proposed revisions to the NIAID/UNC/Moderna MTA. The attached draft is acceptable to both NIAID and Moderna. Would UNC please let us know if the attached version is acceptable, or if it would be useful to have a brief call to discuss?

Best regards,

Shaun

Shaun Ryan  
SVP & Deputy General Counsel | Moderna (b)(6)

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**From:** (b)(6)  
**Sent:** Friday, December 6, 2019 4:00 PM  
**To:** Stein, Judy (NIH/VRC) [C] (b)(6) UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Sunny Himansu (b)(6)@modernatx.com>; Baric, Ralph (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Thank you, Judy. I have forwarded to Moderna's legal group, who are still reviewing the initial version of the document.

Best regards,

(b)(6)

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**From:** Stein, Judy (NIH/VRC) [C] (b)(6)  
**Sent:** Friday, December 6, 2019 3:32 PM  
**To:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)> (b)(6)@modernatx.com>  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Sunny Himansu (b)(6)@modernatx.com>; Baric, Ralph (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6)

(b)(6)

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Thanks Carmen.

(b)(6) Would you be able to review this version and let us know if it is acceptable.

Judy

**From:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>

**Sent:** Friday, December 6, 2019 3:26 PM

**To:** Stein, Judy (NIH/VRC) [C] (b)(6) Sophia Zendzian

(b)(6) @modernatx.com>

**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Sunny Himansu

(b)(6) @modernatx.com>; Baric, Ralph (b)(6) Petrik, Amy (NIH/NIAID) [E]

(b)(6) UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Please see attached. UNC has only a few edits to the provided draft. Don't hesitate to let us know if there are any questions or comments.

We are waiting on some additional input from our investigator, but do not anticipate any further changes.

Best,  
Carmen

**Carmen Melvin**

Licensing Manager | Office of Technology Commercialization

The University of North Carolina at Chapel Hill | 109 Church Street | Chapel Hill, NC 27516

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CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu) | Tangible Property Program: [researchtools@unc.edu](mailto:researchtools@unc.edu)

**From:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>

**Sent:** Friday, December 06, 2019 10:04 AM

**To:** Stein, Judy (NIH/VRC) [C] (b)(6) UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>;

Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Sophia Zendzian

(b)(6) @modernatx.com>

**Cc:** Sunny Himansu (b)(6) @modernatx.com>; Baric, Ralph S (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6)

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Happy to, Judy. I will review the draft today. I can already say that the jurisdiction language is acceptable to UNC.

Best,  
Carmen

**Carmen Melvin**

Licensing Manager | Office of Technology Commercialization

The University of North Carolina at Chapel Hill | 109 Church Street | Chapel Hill, NC 27516

(b)(6) | 919-966-3929 (office) | (b)(6) (direct)

CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu) | Tangible Property Program: [researchtools@unc.edu](mailto:researchtools@unc.edu)

**From:** Stein, Judy (NIH/VRC) [C] (b)(6)

**Sent:** Thursday, December 05, 2019 2:13 PM

**To:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>; Morabito, Kaitlyn (NIH/VRC) [E]

(b)(6) (b)(6) @modernatx.com>

**Cc:** Sunny Himansu (b)(6) @modernatx.com>; Baric, Ralph S (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6)

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi everyone,

I have attached the original agreement. I believe that Moderna was inserting the shipping address but as of now, there have been no changes to the terms.

Carmen, perhaps you can insert your suggested edits and circulate, although the jurisdiction language could be consistent with other NIAID agreements, we would appreciate it.

Thanks,

Judy

**From:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>

**Sent:** Thursday, December 5, 2019 2:04 PM

**To:** Stein, Judy (NIH/VRC) [C] (b)(6) Morabito, Kaitlyn (NIH/VRC) [E]

(b)(6) (b)(6) @modernatx.com>

**Cc:** Sunny Himansu (b)(6) @modernatx.com>; Baric, Ralph (b)(6) UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>; Petrik, Amy (NIH/NIAID) [E] (b)(6)

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi all,

To my knowledge, my office has not received a draft MTA for this transfer. I am happy to review one once it is received. We may need to add/edits terms due to our status as a state institution.

Best,

Carmen

**Carmen Melvin**

Licensing Manager | Office of Technology Commercialization

The University of North Carolina at Chapel Hill | 109 Church Street | Chapel Hill, NC 27516

(b)(6) | 919-966-3929 (office) | (b)(6) (direct)

CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu) | Tangible Property Program: [researchtools@unc.edu](mailto:researchtools@unc.edu)

**From:** Stein, Judy (NIH/VRC) [C] (b)(6)

**Sent:** Thursday, December 05, 2019 9:27 AM

**To:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) (b)(6)

(b)(6)@modernatx.com>

**Cc:** Sunny Himansu (b)(6)@modernatx.com>; Baric, Ralph S (b)(6) UNC  
Office of Tech Dev MTA <mta@unc.edu>; Petrik, Amy (NIH/NIAID) [E] (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi everyone,

We would like to complete this MTA within the next 2 weeks if possible.

(b)(6) and Ralph,

Can you please let me know if the legal reviews are completed and if so, are there any requested changes. Once we are all in agreement, NIAID can sign first and then circulate to the others.

Thanks very much.

Judy

Judy Stein, MBA, MSPH  
Strategic Planning and Development  
Contractor to Vaccine Research Center, NIAID, NIH  
Tel: (b)(6)

**From:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)

**Sent:** Wednesday, October 30, 2019 9:32 AM

**To:** Stein, Judy (NIH/VRC) [C] (b)(6) (b)(6)

(b)(6)@modernatx.com>

**Cc:** Sunny Himansu (b)(6)@modernatx.com>; Baric, Ralph (b)(6) UNC  
Office of Tech Dev MTA <mta@unc.edu>

**Subject:** Re: MERS S mRNA Vaccine for Challenge Studies

Hi All,

This is the shipping address that we have used for sending reagents to UNC.

Sarah Leist/Ralph Baric  
UNC-CH  
135 Dauer Drive  
3105 MHRC  
Chapel Hill, NC 27599  
Phone# (b)(6)

Thanks,  
Kaitlyn

**From:** Judy Stein (b)(6)  
**Date:** Sunday, October 27, 2019 at 1:13 PM  
**To:** (b)(6)@modernatx.com>

**Cc:** Sunny Himansu (b)(6)@modernatx.com>, "Morabito, Kaitlyn (NIH/VRC) [E]"  
(b)(6) Ralph Baric (b)(6) UNC Office of Tech Dev MTA  
<mta@unc.edu>

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi Ralph,

Would you be able to provide the shipping address for the material. Moderna is reviewing a MTA that lists VRC and Moderna as the providers and UNC as the recipient.

Once they review and comment, we will send it to you for review.

Thanks,

Judy

**From:** (b)(6)@modernatx.com>

**Sent:** Friday, October 25, 2019 3:04 PM

**To:** Stein, Judy (NIH/VRC) [C] (b)(6)

**Cc:** Sunny Himansu (b)(6)@modernatx.com>; Morabito, Kaitlyn (NIH/VRC) [E]

(b)(6) Baric, Ralph (b)(6) UNC Office of Tech Dev MTA  
<mta@unc.edu>

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Thank you, Judy. Would you, or perhaps someone on the UNC side, happen to know the receiving address?

Thank you,

(b)(6) Moderna  
(b)(6)@modernatx.com | modernatx.com  
mobile (b)(6) | fax (b)(6)

**From:** Stein, Judy (NIH/VRC) [C] (b)(6)

**Sent:** Tuesday, October 15, 2019 9:48 AM

**To:** (b)(6)@modernatx.com>

**Cc:** Sunny Himansu (b)(6)@modernatx.com>; Morabito, Kaitlyn (NIH/VRC) [E]

(b)(6)

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi (b)(6)

Can you please look at this attached draft MTA and let me know if you have comments. Once Moderna and NIAID agree, I will send this to UNC.

Thanks,

Judy

Judy Stein, MBA, MSPH  
Senior Manager

Strategic Planning and Development  
Contractor to Vaccine Research Center, NIAID, NIH  
Tel: (b)(6)

**From:** (b)(6)@modernatx.com>  
**Sent:** Thursday, October 10, 2019 4:40 PM  
**To:** Stein, Judy (NIH/VRC) [C] (b)(6)  
**Cc:** Sunny Himansu (b)(6)@modernatx.com>; Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi Judy. This works for Moderna. Please circulate a draft.  
Thank you,  
(b)(6)

**From:** Sunny Himansu (b)(6)@modernatx.com>  
**Sent:** Tuesday, October 8, 2019 3:10 PM  
**To:** (b)(6)@modernatx.com>  
**Subject:** FW: MERS S mRNA Vaccine for Challenge Studies

**From:** "Stein, Judy (NIH/VRC) [C]" (b)(6)  
**Date:** Tuesday, October 1, 2019 at 10:23 AM  
**To:** UNC Office of Tech Dev MTA <mta@unc.edu>, "Morabito, Kaitlyn (NIH/VRC) [E]" (b)(6), Sunny Himansu (b)(6)@modernatx.com>  
**Cc:** "Baric, Ralph" (b)(6), "Petrik, Amy (NIH/NIAID) [E]" (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi everyone,  
The VRC proposes using a MTA with 'data back' provisions listing Moderna and NIAID as providers of the material and UNC as a recipient.  
If this would work for everyone, we will be happy to draft this agreement for circulation.

Thanks,  
Judy

Judy Stein, MBA, MSPH  
Senior Manager  
Strategic Planning and Development  
Contractor to Vaccine Research Center, NIAID, NIH  
Tel: (b)(6)



**From:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>  
**Sent:** Tuesday, October 1, 2019 9:59 AM  
**To:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)@modernatx.com;  
UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>; Stein, Judy (NIH/VRC) [C] (b)(6)  
**Cc:** Baric, Ralph (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Kaitlyn, Sunny, Judy

This email is forwarded to confirm receipt of the information below, and that we understand a draft agreement will be forwarded to UNC from NIH and/or Moderna. We will take no further action until we receive the draft agreement. Thank you

**From:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)  
**Sent:** Friday, September 27, 2019 1:17 PM  
**To:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>; Baric, Ralph S (b)(6) Sunny  
Himansu (b)(6)@modernatx.com; Corbett, Kizzmekia (NIH/VRC) [E]  
(b)(6)  
**Cc:** Parsons, Kelly Sivertson (b)(6) Stein, Judy (NIH/VRC) [C] (b)(6)  
**Subject:** Re: MERS S mRNA Vaccine for Challenge Studies

Hi All,

In further discussions with Sunny, it seems we may need a 3-way agreement or written permission from Moderna to send the mRNA from VRC to UNC. I'm looping in Judy Stein who can help facilitate this on the VRC's side.

Best,  
Kaitlyn

**From:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>  
**Date:** Monday, July 15, 2019 at 4:15 PM  
**To:** Ralph Baric (b)(6) Sunny Himansu (b)(6)@modernatx.com, Kizzmekia  
Corbett (b)(6)  
**Cc:** "Morabito, Kaitlyn (NIH/VRC) [E]" (b)(6) UNC Office of Tech Dev MTA  
<[mta@unc.edu](mailto:mta@unc.edu)>, "Parsons, Kelly Sivertson" (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi All,

I'm a member of the MTA Team in the OTC at UNC-Chapel Hill. We are happy to help with the execution of this agreement. Feel free to reach out to us at [mta@unc.edu](mailto:mta@unc.edu) with any questions or related documents, and let us know if we can be of any further assistance.

Best,  
Jacob

**Jacob B. Smith, PhD**  
Licensing Fellow

**THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL**  
**INNOVATION, ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT – INNOVATE CAROLINA**

Office of Technology Commercialization  
109 Church Street | Chapel Hill, NC 27516

(b)(6) office)

CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu)  
[otc.unc.edu](http://otc.unc.edu)

**From:** Parsons, Kelly Sivertson (b)(6)  
**Sent:** Monday, July 15, 2019 3:13 PM  
**To:** Baric, Ralph S (b)(6); Sunny Himansu (b)(6) @modernatx.com>;  
Corbett, Kizzmekia (NIH/VRC) [E] (b)(6)  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6); UNC Office of Tech Dev MTA  
<[mta@unc.edu](mailto:mta@unc.edu)>  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hello All,  
I am cc'ing our MTA team who can work with you on the MTA or any other necessary documents.

Thanks,  
Kelly

Kelly S. Parsons, Ph.D.  
Associate Director, Commercialization

**THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL**  
**INNOVATION, ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT – INNOVATE CAROLINA**

Office of Technology Commercialization (note new office name)  
Campus Box 4105  
109 Church Street | Chapel Hill, NC 27516  
T: (b)(6) F: 919.962.0646  
Email: (b)(6)  
Web: [otc.unc.edu](http://otc.unc.edu)

**From:** Baric, Ralph S (b)(6)  
**Sent:** Monday, July 15, 2019 11:56 AM  
**To:** Sunny Himansu (b)(6) @modernatx.com>; Corbett, Kizzmekia (NIH/VRC) [E]  
(b)(6)  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6); Parsons, Kelly Sivertson  
(b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi Sunny, Kelly (or an associate) is our contact person in the UNC OTD department. Kelly, this is a collaboration between Moderna, NIH VRC and UNC to test RNA-based MERS-CoV vaccines. Thanks, ralph

**From:** Sunny Himansu (b)(6)@modernatx.com>  
**Sent:** Monday, July 15, 2019 8:27 AM  
**To:** Baric, Ralph S (b)(6) Corbett, Kizzmekia (NIH/VRC) [E]  
(b)(6)  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)  
**Subject:** Re: MERS S mRNA Vaccine for Challenge Studies

Hi Ralph,

I have initiated the MTA process from my end. There are couple pieces of additional info that I need for the MTA.

- What would be shipping address of the vaccine to you?
- Who is the best contact for our legal team at UNC?

Thanks

Sunny

**From:** "Baric, Ralph S" (b)(6)  
**Date:** Thursday, July 11, 2019 at 8:20 AM  
**To:** "Corbett, Kizzmekia (NIH/VRC) [E]" (b)(6) Sunny Himansu  
(b)(6)@modernatx.com>  
**Cc:** "Morabito, Kaitlyn (NIH/VRC) [E]" (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi (b)(6) I look forward to interacting with your group. Please let me know how we can proceed.  
Thanks, ralph

**From:** Corbett, Kizzmekia (NIH/VRC) [E] (b)(6)  
**Sent:** Thursday, July 11, 2019 5:25 AM  
**To:** Sunny Himansu (b)(6)@modernatx.com>  
**Cc:** Baric, Ralph S (b)(6) Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)  
**Subject:** MERS S mRNA Vaccine for Challenge Studies

Good morning Sunny,

I hope that all is well. Per our last conversation, with the Baric Lab at UNC, we were going to try to get an MTA started so that we may do challenge studies with the mRNA vaccine and move forward with the project from an academic perspective. It is my understanding that you have plenty of the last batch of mRNA available for this?

Please let me know if there is anything you need from me to spark the MTA conversation again with Dr. Baric, who is cc'ed here.

Cheers.

--

Kizzmekia S. Corbett, PhD  
Senior Research Fellow

National Institutes of Health  
National Institutes of Allergy and Infectious Diseases  
Vaccine Research Center  
Viral Pathogenesis Laboratory

Building 40 Room 2608  
40 Convent Drive  
Bethesda MD 20892

Laboratory: (b)(6)

Personal: (b)(6)

Fax: (301) 480-2771

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PUBLIC HEALTH SERVICE

**MATERIAL TRANSFER AGREEMENT**

This Material Transfer Agreement ("MTA") has been adopted for use by the National Institutes of Health, the Food and Drug Administration and the Centers for Disease Control and Prevention, collectively referred to herein as the Public Health Service ("PHS") in all transfers of research material (Research Material) whether PHS is identified below as its Provider or Recipient.

Providers: *National Institute of Allergy and Infectious Diseases, National Institutes of Health ("NIAID")*

ModernaTX, Inc ("Moderna")

Recipient: The University of North Carolina at Chapel Hill

1. Provider agrees to transfer to Recipient's Investigator the following Research Material:

mRNA coronavirus vaccine candidates developed and jointly-owned by NIAID and Moderna.

2. THIS RESEARCH MATERIAL MAY NOT BE USED IN HUMAN SUBJECTS. The Research Material will only be used for research purposes by Recipient's Investigator in his/her laboratory, for the research project described below, under suitable containment conditions. **This Research Material will not be used for commercial purposes such as screening, production or sale, for which a commercialization license may be required.** Recipient agrees to comply with all Federal rules and regulations applicable to the Research Project and the handling of the Research Material.

- a. Are the Research Materials of human origin?

☐ Yes ☒ No

- b. If Yes in 2a, were Research Materials collected according to 45 CFR Part 46, "Protection of Human Subjects"?

☐ Yes Please provide Assurance Number: \_\_\_\_\_  
☐ No

3. This Research Material will be used by Recipient's Investigator solely in connection with the following research project ("Research Project") described with specificity as follows (use an attachment page if necessary):

Perform challenge studies with the mRNA vaccine in a humanized mouse model as described on Exhibit A.

4. Upon a Provider's reasonable request, Recipient will furnish a status report to such Provider regarding the use of the Research Materials and any data or results generated therefore. In all oral presentations or written publications concerning the Research Project, Recipient will acknowledge Providers' contribution of this Research Material unless requested otherwise. To the extent permitted by law, Recipient agrees to treat in confidence, and not to disclose to third parties or use for any purpose other than the performance of the Research Project, for a period of three (3) years from the date of its disclosure, any of Providers' written information about this Research Material that is stamped "**CONFIDENTIAL**," except for information that was previously known to Recipient or that is or becomes publicly available or which is disclosed to Recipient without a confidentiality obligation. Any oral disclosures from Providers to Recipient shall be identified as being **CONFIDENTIAL** by notice delivered to Recipient within ten (10) days after the date of the oral disclosure. Notwithstanding the foregoing, all information disclosed by Providers relating to the sequence, chemistry or formulation of the Research Material will be treated as **CONFIDENTIAL** information as set forth above, whether or not marked or otherwise identified as "confidential." Recipient may publish or otherwise

publicly disclose the results of the Research Project, but if Providers have given **CONFIDENTIAL** information to Recipient such public disclosure may be made only after Providers have had thirty (30) days to review the proposed disclosure to determine if it includes any **CONFIDENTIAL** information, except when a shortened time period under court order, law (including the North Carolina Public Records Act), or the Freedom of Information Act pertains. Recipient will comply with all requests to delete **CONFIDENTIAL** information from any proposed publication or presentation; provided, that Providers agree to allow use of sufficient information regarding the identity and properties of the Research Material to reasonably enable publication of the results of the Research Project.

5. This Research Material represents a significant investment on the part of Providers and is considered proprietary to Providers. Recipient's Investigator therefore agrees to retain control over this Research Material and further agrees not to transfer the Research Material to other people not under her or his direct supervision without advance written approval of Provider. Providers reserve the right to distribute the Research Material to others and to use it for their own purposes. **When the Research Project is completed or three (3) years have elapsed, whichever occurs first, the Research Material will be disposed of as directed by Providers.**
6. This Research Material is provided as a service to the research community. **IT IS BEING SUPPLIED TO RECIPIENT WITH NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** Provider makes no representations that the use of the Research Material will not infringe any patent or proprietary rights of third parties.
7. Inventorship of any inventions or discoveries arising from the use of the Research Material hereunder ("Inventions"), shall be determined according to U.S. patent law. Ownership shall follow inventorship. Recipient will promptly disclose to Moderna in writing any Inventions. Recipient hereby grants to Moderna an option to obtain an exclusive license to Recipient's interest in all Inventions. For each Invention, Moderna's option must be exercised within ninety (90) days of receipt by Moderna of notice from Recipient describing such Invention. Unless prohibited by law from doing so, including the North Carolina Tort Claims Act, Recipient agrees to hold the United States Government harmless and to indemnify the Government for all liabilities, demands, damages, expenses and losses arising out of Recipient's use for any purpose of the Research Material.
8. The undersigned Providers and Recipient expressly certify and affirm that the contents of any statements made herein are truthful and accurate.
9. This MTA shall be construed in accordance with Federal law as applied by the Federal courts in the District of Columbia.

SIGNATURES BEGIN ON NEXT PAGE

# MATERIAL TRANSFER AGREEMENT

## SIGNATURE PAGE

### FOR RECIPIENT:

*Recipient's Investigator*

\_\_\_\_\_  
Ralph Baric, PhD  
Professor

Date: \_\_\_\_\_

Mailing Address for Materials:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tel: \_\_\_\_\_ Fax: \_\_\_\_\_

### FOR PROVIDERS:

*NIAID's Investigator*

\_\_\_\_\_  
Barney Graham, MD, PhD

Date: \_\_\_\_\_

*Duly Authorized*

\_\_\_\_\_  
Jacqueline Quay  
Director, Licensing & Innovation Support, OTC

Date: \_\_\_\_\_

Mailing Address for Notices:

The University of North Carolina at Chapel Hill  
Office of Technology Commercialization  
109 Church Street, Chapel Hill, NC 27516

Tel: 919-966-3929 Fax: 919-962-0646

*Duly Authorized*

**Amy F. Petrik-S**  
\_\_\_\_\_  
Amy Petrik, PhD  
Technology Transfer Specialist, TTIPO, NIAID

Digitally signed by Amy  
F. Petrik -S  
Date: 2019.12.12  
08:05:22 -05'00'

Date: \_\_\_\_\_

Mailing Address for Notices:

Technology Transfer and Intellectual Property Office  
National Institute of Allergy and Infectious Diseases  
Department of Health and Human Services  
Suite 6D, MSC 9804  
5601 Fishers Lane  
Rockville, MD 20852  
Tel: 301/496-2644 Fax: 240-627-3117

*Moderna's Investigator*

*Duly Authorized*

\_\_\_\_\_  
Sunny Himansu, PhD

Date: \_\_\_\_\_

\_\_\_\_\_  
Date: \_\_\_\_\_

Mailing Address for Notices:

ModernaTX, Inc.  
200 Technology Square  
Cambridge, MA 02139  
Attn: General Counsel



**Exhibit A**  
**Research Program**

(b)(4)



**From:** Petrik, Amy (NIH/NIAID) [E]  
**Sent:** Tue, 17 Dec 2019 16:34:24 +0000  
**To:** Shaun Ryan; UNC Office of Tech Dev MTA  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E]; Sunny Himansu (b)(6) Baric, Ralph; Stein, Judy (NIH/VRC) [C] (b)(6)  
**Subject:** RE: NIAID/UNC/Moderna MTA (MI-15961) -- ID:[n1u94j/24114/10945]

Thanks, Nathan.

Yes, the agreement is effective now as Dr. Graham's signature is an acknowledgment of the agreement and not binding.

We will send it for his signature and return a the fully signed PDF.

Best,  
Amy

---

**From:** Shaun Ryan (b)(6)@modernatx.com>  
**Sent:** Tuesday, December 17, 2019 11:26 AM  
**To:** UNC Office of Tech Dev MTA <mta@unc.edu>  
**Cc:** Petrik, Amy (NIH/NIAID) [E] (b)(6) Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Sunny Himansu (b)(6)@modernatx.com> (b)(6)@modernatx.com>; Baric, Ralph (b)(6) Stein, Judy (NIH/VRC) [C] (b)(6) Contracts (b)(6)@modernatx.com> (b)(6)@modernatx.com>  
**Subject:** RE: NIAID/UNC/Moderna MTA (MI-15961) -- ID:[n1u94j/24114/10945]

Hi Nathan,

Attached please find a copy of the MTA with Moderna's signatures. I appears that only remaining signature required is that of NIAID's Investigator.

Kaitlyn, Amy -- Will Dr. Graham be signing the agreement?

Best,

Shaun

Shaun Ryan  
SVP & Deputy General Counsel | Moderna (b)(6)

---

**From:** UNC Office of Tech Dev MTA [mailto:mta@unc.edu]  
**Sent:** Monday, December 16, 2019 4:41 PM  
**To:** Shaun Ryan (b)(6)@modernatx.com>  
**Cc:** UNC Office of Tech Dev MTA <mta@unc.edu> (b)(6) Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Sunny Himansu (b)(6)@modernatx.com> (b)(6)@modernatx.com>; Baric, Ralph

S (b)(6)

**Subject:** RE: NIAID/UNC/Moderna MTA (MI-15961)

Hi Shaun,

I am part of the MTA team in the tech transfer office at UNC Chapel Hill. Please find attached a copy of the partially executed agreement for countersignature. Once finalized, please return a fully executed copy for our records.

Best,  
Nathan

Nathan Whitman, PhD  
Licensing Fellow

THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL  
INNOVATION, ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT – INNOVATE CAROLINA  
Office of Technology Commercialization  
Campus Box 4105  
109 Church Street | Chapel Hill, NC 27516  
T: (b)(6) F: 919.962.0646  
Email: (b)(6) Twitter: @innovateunc | Facebook: @InnovateUNC  
Web: [otc.unc.edu](http://otc.unc.edu) | [innovate.unc.edu](http://innovate.unc.edu)

---

**From:** Petrik, Amy (NIH/NIAID) [E] (b)(6)  
**Sent:** Thursday, December 12, 2019 8:07 AM  
**To:** Stein, Judy (NIH/VRC) [C] (b)(6) UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>; Shaun Ryan (b)(6) <[@modernatx.com](mailto:(b)(6)@modernatx.com)>  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Sunny Himansu (b)(6) <[@modernatx.com](mailto:(b)(6)@modernatx.com)> (b)(6) <[@modernatx.com](mailto:(b)(6)@modernatx.com)>; Baric, Ralph S (b)(6)  
**Subject:** RE: NIAID/UNC/Moderna MTA

Hi Carmen,

Please find the partially executed MTA attached for signature at UNC.

Thanks,  
Amy

---

**From:** Stein, Judy (NIH/VRC) [C] (b)(6)  
**Sent:** Wednesday, December 11, 2019 4:39 PM  
**To:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>; Shaun Ryan (b)(6) <[@modernatx.com](mailto:(b)(6)@modernatx.com)>  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6) Sunny Himansu (b)(6) <[@modernatx.com](mailto:(b)(6)@modernatx.com)> (b)(6) <[@modernatx.com](mailto:(b)(6)@modernatx.com)>; Baric, Ralph (b)(6) <[@modernatx.com](mailto:(b)(6)@modernatx.com)>  
**Subject:** RE: NIAID/UNC/Moderna MTA

Hi Carmen,  
Amy Petrik, our tech transfer specialist, can finalize and sign the agreement first.  
Thanks very much.  
Judy

---

**From:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>  
**Sent:** Wednesday, December 11, 2019 4:35 PM  
**To:** Shaun Ryan (b)(6)@modernatx.com>  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6); Stein, Judy (NIH/VRC) [C]  
(b)(6); Petrik, Amy (NIH/NIAID) [E] (b)(6); Sunny Himansu  
(b)(6)@modernatx.com>; (b)(6)@modernatx.com>; Baric, Ralph  
(b)(6)@modernatx.com>  
**Subject:** RE: NIAID/UNC/Moderna MTA

Thanks, Shaun!

Judy – let me know if you would prefer to initiate signature or if you would like us to. I’m happy to do either!

Best,  
Carmen

**Carmen Melvin**

Licensing Manager | Office of Technology Commercialization  
The University of North Carolina at Chapel Hill | 109 Church Street | Chapel Hill, NC 27516  
(b)(6) | 919-966-3929 (office) | (b)(6) (direct)  
CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu) | Tangible Property Program: [researchtools@unc.edu](mailto:researchtools@unc.edu)

---

**From:** Shaun Ryan (b)(6)@modernatx.com>  
**Sent:** Wednesday, December 11, 2019 12:56 PM  
**To:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>  
**Cc:** (b)(6); Petrik, Amy (NIH/NIAID) [E] (b)(6); Sunny Himansu (b)(6)@modernatx.com>; (b)(6)@modernatx.com>; Baric, Ralph S (b)(6)  
**Subject:** RE: NIAID/UNC/Moderna MTA

Thank you Carmen, these changes are acceptable to Moderna.

We defer to UNC and NIAID regarding the preferred method of execution – please let us know how you would like to proceed.

Best,

Shaun

Shaun Ryan  
SVP & Deputy General Counsel | Moderna (b)(6)

---

**From:** UNC Office of Tech Dev MTA [mailto:mta@unc.edu]

**Sent:** Wednesday, December 11, 2019 12:52 PM

**To:** Shaun Ryan (b)(6)@modernatx.com>

**Cc:** (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6)

Sunny Himansu (b)(6)@modernatx.com> (b)(6)

(b)(6)@modernatx.com>; Baric, Ralph S (b)(6) UNC Office of Tech Dev MTA <mta@unc.edu>

**Subject:** RE: NIAID/UNC/Moderna MTA

Hi Shaun,

Moderna's edits are acceptable to UNC with a few revisions to Section 4 (see attached). Please let us know if there are any questions or concerns with this change. I'm happy to discuss over the phone if helpful.

Best,  
Carmen

**Carmen Melvin**

Licensing Manager | Office of Technology Commercialization

The University of North Carolina at Chapel Hill | 109 Church Street | Chapel Hill, NC 27516

(b)(6) | 919-966-3929 (office) | (b)(6) (direct)

CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu) | Tangible Property Program: [researchtools@unc.edu](mailto:researchtools@unc.edu)

---

**From:** Shaun Ryan (b)(6)@modernatx.com>

**Sent:** Tuesday, December 10, 2019 3:48 PM

**To:** UNC Office of Tech Dev MTA <mta@unc.edu>; Baric, Ralph S (b)(6) Baric, Ralph S

(b)(6)

**Cc:** (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6)

Sunny Himansu (b)(6)@modernatx.com> (b)(6)

(b)(6)@modernatx.com>

**Subject:** NIAID/UNC/Moderna MTA

All,

Attached please a handful of proposed revisions to the NIAID/UNC/Moderna MTA. The attached draft is acceptable to both NIAID and Moderna. Would UNC please let us know if the attached version is acceptable, or if it would be useful to have a brief call to discuss?

Best regards,

Shaun

Shaun Ryan

SVP & Deputy General Counsel | Moderna (b)(6)

**From:** (b)(6)  
**Sent:** Friday, December 6, 2019 4:00 PM  
**To:** Stein, Judy (NIH/VRC) [C] (b)(6) UNC Office of Tech Dev MTA <mta@unc.edu>  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Sunny Himansu  
(b)(6)@modernatx.com>; Baric, Ralph (b)(6) Petrik, Amy (NIH/NIAID) [E]  
(b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Thank you, Judy. I have forwarded to Moderna's legal group, who are still reviewing the initial version of the document.

Best regards,

(b)(6)

**From:** Stein, Judy (NIH/VRC) [C] (b)(6)  
**Sent:** Friday, December 6, 2019 3:32 PM  
**To:** UNC Office of Tech Dev MTA <mta@unc.edu> (b)(6)@modernatx.com>  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Sunny Himansu  
(b)(6)@modernatx.com>; Baric, Ralph (b)(6) Petrik, Amy (NIH/NIAID) [E]  
(b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Thanks Carmen.

(b)(6) Would you be able to review this version and let us know if it is acceptable.

Judy

**From:** UNC Office of Tech Dev MTA <mta@unc.edu>  
**Sent:** Friday, December 6, 2019 3:26 PM  
**To:** Stein, Judy (NIH/VRC) [C] (b)(6)  
(b)(6)@modernatx.com>  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Sunny Himansu  
(b)(6)@modernatx.com>; Baric, Ralph (b)(6) Petrik, Amy (NIH/NIAID) [E]  
(b)(6) UNC Office of Tech Dev MTA <mta@unc.edu>  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Please see attached. UNC has only a few edits to the provided draft. Don't hesitate to let us know if there are any questions or comments.

We are waiting on some additional input from our investigator, but do not anticipate any further changes.

Best,  
Carmen

**Carmen Melvin**

Licensing Manager | Office of Technology Commercialization

The University of North Carolina at Chapel Hill | 109 Church Street | Chapel Hill, NC 27516

(b)(6) | 919-966-3929 (office) | (b)(6) (direct)

CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu) | Tangible Property Program: [researchtools@unc.edu](mailto:researchtools@unc.edu)

**From:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>

**Sent:** Friday, December 06, 2019 10:04 AM

**To:** Stein, Judy (NIH/VRC) [C] (b)(6) UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>;

Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) (b)(6)

(b)(6) @modernatx.com>

**Cc:** Sunny Himansu (b)(6) @modernatx.com>; Baric, Ralph S (b)(6) Petrik,

Amy (NIH/NIAID) [E] (b)(6)

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Happy to, Judy. I will review the draft today. I can already say that the jurisdiction language is acceptable to UNC.

Best,  
Carmen

**Carmen Melvin**

Licensing Manager | Office of Technology Commercialization

The University of North Carolina at Chapel Hill | 109 Church Street | Chapel Hill, NC 27516

(b)(6) | 919-966-3929 (office) | (b)(6) (direct)

CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu) | Tangible Property Program: [researchtools@unc.edu](mailto:researchtools@unc.edu)

**From:** Stein, Judy (NIH/VRC) [C] (b)(6)

**Sent:** Thursday, December 05, 2019 2:13 PM

**To:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>; Morabito, Kaitlyn (NIH/VRC) [E]

(b)(6) (b)(6) @modernatx.com>

**Cc:** Sunny Himansu (b)(6) @modernatx.com>; Baric, Ralph S (b)(6) Petrik,

Amy (NIH/NIAID) [E] (b)(6)

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi everyone,

I have attached the original agreement. I believe that Moderna was inserting the shipping address but as of now, there have been no changes to the terms.

Carmen, perhaps you can insert your suggested edits and circulate, although the jurisdiction language could be consistent with other NIAID agreements, we would appreciate it.

Thanks,  
Judy

**From:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>

**Sent:** Thursday, December 5, 2019 2:04 PM

**To:** Stein, Judy (NIH/VRC) [C] (b)(6) Morabito, Kaitlyn (NIH/VRC) [E]

(b)(6) (b)(6)@modernatx.com>  
**Cc:** Sunny Himansu (b)(6)@modernatx.com>; Baric, Ralph (b)(6) UNC  
Office of Tech Dev MTA <mta@unc.edu>; Petrik, Amy (NIH/NIAID) [E] (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi all,

To my knowledge, my office has not received a draft MTA for this transfer. I am happy to review one once it is received. We may need to add/edits terms due to our status as a state institution.

Best,  
Carmen

**Carmen Melvin**

Licensing Manager | Office of Technology Commercialization  
The University of North Carolina at Chapel Hill | 109 Church Street | Chapel Hill, NC 27516  
(b)(6) 919-966-3929 (office) (b)(6) direct)  
CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu) | Tangible Property Program: [researchtools@unc.edu](mailto:researchtools@unc.edu)

**From:** Stein, Judy (NIH/VRC) [C] (b)(6)  
**Sent:** Thursday, December 05, 2019 9:27 AM  
**To:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) (b)(6)  
(b)(6)@modernatx.com>  
**Cc:** Sunny Himansu (b)(6)@modernatx.com>; Baric, Ralph S (b)(6) UNC  
Office of Tech Dev MTA <mta@unc.edu>; Petrik, Amy (NIH/NIAID) [E] (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi everyone,  
We would like to complete this MTA within the next 2 weeks if possible.

(b)(6) and Ralph,  
Can you please let me know if the legal reviews are completed and if so, are there any requested changes. Once we are all in agreement, NIAID can sign first and then circulate to the others.

Thanks very much.  
Judy

Judy Stein, MBA, MSPH  
Strategic Planning and Development  
Contractor to Vaccine Research Center, NIAID, NIH  
Tel: (b)(6)

**From:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)  
**Sent:** Wednesday, October 30, 2019 9:32 AM  
**To:** Stein, Judy (NIH/VRC) [C] (b)(6) (b)(6)  
(b)(6)@modernatx.com>



**Cc:** Sunny Himansu (b)(6)@modernatx.com>; Baric, Ralph (b)(6) UNC  
Office of Tech Dev MTA <mta@unc.edu>  
**Subject:** Re: MERS S mRNA Vaccine for Challenge Studies

Hi All,

This is the shipping address that we have used for sending reagents to UNC.

Sarah Leist/Ralph Baric  
UNC-CH  
135 Dauer Drive  
3105 MHRC  
Chapel Hill, NC 27599  
Phone# (b)(6)

Thanks,  
Kaitlyn

**From:** Judy Stein (b)(6)  
**Date:** Sunday, October 27, 2019 at 1:13 PM  
**To:** (b)(6)@modernatx.com>  
**Cc:** Sunny Himansu (b)(6)@modernatx.com>, "Morabito, Kaitlyn (NIH/VRC) [E]"  
(b)(6) Ralph Baric (b)(6) UNC Office of Tech Dev MTA  
<mta@unc.edu>  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi Ralph,  
Would you be able to provide the shipping address for the material. Moderna is reviewing a MTA that lists VRC and Moderna as the providers and UNC as the recipient.  
Once they review and comment, we will send it to you for review.  
Thanks,  
Judy

**From:** (b)(6)@modernatx.com>  
**Sent:** Friday, October 25, 2019 3:04 PM  
**To:** Stein, Judy (NIH/VRC) [C] (b)(6)  
**Cc:** Sunny Himansu (b)(6)@modernatx.com>; Morabito, Kaitlyn (NIH/VRC) [E]  
(b)(6) Baric, Ralph (b)(6) UNC Office of Tech Dev MTA  
<mta@unc.edu>  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Thank you, Judy. Would you, or perhaps someone on the UNC side, happen to know the receiving address?

Thank you,

(b)(6)  
Moderna  
(b)(6) @modernatx.com | modernatx.com  
mobile (b)(6) fax (b)(6)

**From:** Stein, Judy (NIH/VRC) [C] (b)(6)  
**Sent:** Tuesday, October 15, 2019 9:48 AM  
**To:** (b)(6) @modernatx.com>  
**Cc:** Sunny Himansu (b)(6) @modernatx.com>; Morabito, Kaitlyn (NIH/VRC) [E]  
(b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi (b)(6)  
Can you please look at this attached draft MTA and let me know if you have comments. Once Moderna and NIAID agree, I will send this to UNC.  
Thanks,  
Judy

Judy Stein, MBA, MSPH  
Senior Manager  
Strategic Planning and Development  
Contractor to Vaccine Research Center, NIAID, NIH  
Tel: (b)(6)

**From:** (b)(6) @modernatx.com>  
**Sent:** Thursday, October 10, 2019 4:40 PM  
**To:** Stein, Judy (NIH/VRC) [C] (b)(6)  
**Cc:** Sunny Himansu (b)(6) @modernatx.com>; Morabito, Kaitlyn (NIH/VRC) [E]  
(b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi Judy. This works for Moderna. Please circulate a draft.  
Thank you,  
(b)(6)

**From:** Sunny Himansu (b)(6) @modernatx.com>  
**Sent:** Tuesday, October 8, 2019 3:10 PM  
**To:** (b)(6) @modernatx.com>  
**Subject:** FW: MERS S mRNA Vaccine for Challenge Studies

**From:** "Stein, Judy (NIH/VRC) [C]" (b)(6)  
**Date:** Tuesday, October 1, 2019 at 10:23 AM  
**To:** UNC Office of Tech Dev MTA <mta@unc.edu>, "Morabito, Kaitlyn (NIH/VRC) [E]" (b)(6) Sunny Himansu (b)(6)@modernatx.com>  
**Cc:** "Baric, Ralph" (b)(6) "Petrik, Amy (NIH/NIAID) [E]" (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi everyone,

The VRC proposes using a MTA with 'data back' provisions listing Moderna and NIAID as providers of the material and UNC as a recipient.

If this would work for everyone, we will be happy to draft this agreement for circulation.

Thanks,  
Judy

Judy Stein, MBA, MSPH  
Senior Manager  
Strategic Planning and Development  
Contractor to Vaccine Research Center, NIAID, NIH  
Tel: (b)(6)

**From:** UNC Office of Tech Dev MTA <mta@unc.edu>  
**Sent:** Tuesday, October 1, 2019 9:59 AM  
**To:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)@modernatx.com;  
UNC Office of Tech Dev MTA <mta@unc.edu>; Stein, Judy (NIH/VRC) [C] (b)(6)  
**Cc:** Baric, Ralph (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Kaitlyn, Sunny, Judy

This email is forwarded to confirm receipt of the information below, and that we understand a draft agreement will be forwarded to UNC from NIH and/or Moderna. We will take no further action until we receive the draft agreement. Thank you

**From:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)  
**Sent:** Friday, September 27, 2019 1:17 PM  
**To:** UNC Office of Tech Dev MTA <mta@unc.edu>; Baric, Ralph S (b)(6) Sunny Himansu (b)(6)@modernatx.com>; Corbett, Kizzmekia (NIH/VRC) [E] (b)(6)  
**Cc:** Parsons, Kelly Sivertson (b)(6) Stein, Judy (NIH/VRC) [C] (b)(6)  
**Subject:** Re: MERS S mRNA Vaccine for Challenge Studies

Hi All,

In further discussions with Sunny, it seems we may need a 3-way agreement or written permission from Moderna to send the mRNA from VRC to UNC. I'm looping in Judy Stein who can help facilitate this on the VRC's side.

Best,  
Kaitlyn

**From:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>

**Date:** Monday, July 15, 2019 at 4:15 PM

**To:** Ralph Baric (b)(6) Sunny Himansu (b)(6) @modernatx.com>, Kizzmekia Corbett (b)(6)

**Cc:** "Morabito, Kaitlyn (NIH/VRC) [E]" (b)(6) UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>, "Parsons, Kelly Sivertson" (b)(6)

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi All,

I'm a member of the MTA Team in the OTC at UNC-Chapel Hill. We are happy to help with the execution of this agreement. Feel free to reach out to us at [mta@unc.edu](mailto:mta@unc.edu) with any questions or related documents, and let us know if we can be of any further assistance.

Best,  
Jacob

**Jacob B. Smith, PhD**

Licensing Fellow

**THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL**

**INNOVATION, ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT – INNOVATE CAROLINA**

Office of Technology Commercialization

109 Church Street | Chapel Hill, NC 27516

(b)(6) (office)

CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu)

[otc.unc.edu](http://otc.unc.edu)

**From:** Parsons, Kelly Sivertson (b)(6)

**Sent:** Monday, July 15, 2019 3:13 PM

**To:** Baric, Ralph S (b)(6) Sunny Himansu (b)(6) @modernatx.com>;

Corbett, Kizzmekia (NIH/VRC) [E] (b)(6)

**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hello All,

I am cc'ing our MTA team who can work with you on the MTA or any other necessary documents.

Thanks,  
Kelly

Kelly S. Parsons, Ph.D.  
Associate Director, Commercialization

THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL  
INNOVATION, ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT – INNOVATE CAROLINA  
Office of Technology Commercialization (note new office name)  
Campus Box 4105  
109 Church Street | Chapel Hill, NC 27516  
T: (b)(6) F: 919.962.0646  
Email: (b)(6)  
Web: [otc.unc.edu](http://otc.unc.edu)

**From:** Baric, Ralph S (b)(6)  
**Sent:** Monday, July 15, 2019 11:56 AM  
**To:** Sunny Himansu (b)(6)@modernatx.com>; Corbett, Kizzmekia (NIH/VRC) [E]  
(b)(6)  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Parsons, Kelly Sivertson  
(b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi Sunny, Kelly (or an associate) is our contact person in the UNC OTD department. Kelly, this is a collaboration between Moderna, NIH VRC and UNC to test RNA-based MERS-CoV vaccines. Thanks,  
ralph

**From:** Sunny Himansu (b)(6)@modernatx.com>  
**Sent:** Monday, July 15, 2019 8:27 AM  
**To:** Baric, Ralph S (b)(6) Corbett, Kizzmekia (NIH/VRC) [E]  
(b)(6)  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)  
**Subject:** Re: MERS S mRNA Vaccine for Challenge Studies

Hi Ralph,

I have initiated the MTA process from my end. There are couple pieces of additional info that I need for the MTA.

- What would be shipping address of the vaccine to you?
- Who is the best contact for our legal team at UNC?

Thanks

Sunny

**From:** "Baric, Ralph S" (b)(6)  
**Date:** Thursday, July 11, 2019 at 8:20 AM  
**To:** "Corbett, Kizzmekia (NIH/VRC) [E]" (b)(6) Sunny Himansu  
(b)(6)@modernatx.com>  
**Cc:** "Morabito, Kaitlyn (NIH/VRC) [E]" (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi Sunny, I look forward to interacting with your group. Please let me know how we can proceed.  
Thanks, ralph

**From:** Corbett, Kizzmekia (NIH/VRC) [E] (b)(6)  
**Sent:** Thursday, July 11, 2019 5:25 AM  
**To:** Sunny Himansu (b)(6) @modernatx.com>  
**Cc:** Baric, Ralph S (b)(6) Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)  
**Subject:** MERS S mRNA Vaccine for Challenge Studies

Good morning Sunny,  
I hope that all is well. Per our last conversation, with the Baric Lab at UNC, we were going to try to get an MTA started so that we may do challenge studies with the mRNA vaccine and move forward with the project from an academic perspective. It is my understanding that you have plenty of the last batch of mRNA available for this?

Please let me know if there is anything you need from me to spark the MTA conversation again with Dr. Baric, who is cc'ed here.

Cheers.

--

**Kizzmekia S. Corbett, PhD**  
**Senior Research Fellow**  
National Institutes of Health  
National Institutes of Allergy and Infectious Diseases  
Vaccine Research Center  
Viral Pathogenesis Laboratory

Building 40 Room 2608  
40 Convent Drive  
Bethesda MD 20892  
Laboratory: (b)(6)  
Personal: (b)(6)  
Fax: (301) 480-2771

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**From:** Baric, Ralph S  
**Sent:** Wed, 11 Dec 2019 13:50:38 +0000  
**To:** Shaun Ryan; UNC Office of Tech Dev MTA  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E]; Stein, Judy (NIH/VRC) [C]; Petrik, Amy (NIH/NIAID) [E]; Sunny Himansu (b)(6)  
**Subject:** RE: NIAID/UNC/Moderna MTA

Hi Shaun, The draft is acceptable to me, the UNC OTD office needs to make the final determination.  
Thanks, ralph

---

**From:** Shaun Ryan (b)(6)@modernatx.com>  
**Sent:** Tuesday, December 10, 2019 3:48 PM  
**To:** UNC Office of Tech Dev MTA <mta@unc.edu>; Baric, Ralph S (b)(6) Baric, Ralph S (b)(6)  
**Cc:** (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6)  
Sunny Himansu (b)(6)@modernatx.com> (b)(6)  
(b)(6)@modernatx.com>  
**Subject:** NIAID/UNC/Moderna MTA

All,

Attached please a handful of proposed revisions to the NIAID/UNC/Moderna MTA. The attached draft is acceptable to both NIAID and Moderna. Would UNC please let us know if the attached version is acceptable, or if it would be useful to have a brief call to discuss?

Best regards,

Shaun

Shaun Ryan  
SVP & Deputy General Counsel | Moderna (b)(6)

**From:** (b)(6)  
**Sent:** Friday, December 6, 2019 4:00 PM  
**To:** Stein, Judy (NIH/VRC) [C] (b)(6) UNC Office of Tech Dev MTA <mta@unc.edu>  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Sunny Himansu (b)(6)  
(b)(6)@modernatx.com>; Baric, Ralph (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Thank you, Judy. I have forwarded to Moderna's legal group, who are still reviewing the initial version of the document.  
Best regards,

(b)(6)

**From:** Stein, Judy (NIH/VRC) [C] (b)(6)  
**Sent:** Friday, December 6, 2019 3:32 PM  
**To:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>; (b)(6)@modernatx.com>  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Sunny Himansu (b)(6)@modernatx.com>; Baric, Ralph (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Thanks Carmen.

(b)(6) Would you be able to review this version and let us know if it is acceptable.  
Judy

**From:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>  
**Sent:** Friday, December 6, 2019 3:26 PM  
**To:** Stein, Judy (NIH/VRC) [C] (b)(6) (b)(6)  
(b)(6)@modernatx.com>  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Sunny Himansu (b)(6)@modernatx.com>; Baric, Ralph (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6) UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Please see attached. UNC has only a few edits to the provided draft. Don't hesitate to let us know if there are any questions or comments.

We are waiting on some additional input from our investigator, but do not anticipate any further changes.

Best,  
Carmen

**Carmen Melvin**

Licensing Manager | Office of Technology Commercialization

The University of North Carolina at Chapel Hill | 109 Church Street | Chapel Hill, NC 27516

(b)(6) 919-966-3929 (office) | (b)(6) (direct)

CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu) | Tangible Property Program: [researchtools@unc.edu](mailto:researchtools@unc.edu)

**From:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>  
**Sent:** Friday, December 06, 2019 10:04 AM  
**To:** Stein, Judy (NIH/VRC) [C] (b)(6) UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>; Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) (b)(6)  
(b)(6)@modernatx.com>  
**Cc:** Sunny Himansu (b)(6)@modernatx.com>; Baric, Ralph S (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies



Happy to, Judy. I will review the draft today. I can already say that the jurisdiction language is acceptable to UNC.

Best,  
Carmen

**Carmen Melvin**

Licensing Manager | Office of Technology Commercialization

The University of North Carolina at Chapel Hill | 109 Church Street | Chapel Hill, NC 27516

(b)(6) | 919-966-3929 (office) | (b)(6) direct)

CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu) | Tangible Property Program: [researchtools@unc.edu](mailto:researchtools@unc.edu)

**From:** Stein, Judy (NIH/VRC) [C] (b)(6)

**Sent:** Thursday, December 05, 2019 2:13 PM

**To:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>; Morabito, Kaitlyn (NIH/VRC) [E]

(b)(6) (b)(6) @modernatx.com>

**Cc:** Sunny Himansu (b)(6) @modernatx.com>; Baric, Ralph S (b)(6) Petrik, Amy (NIH/NIAID) [E] (b)(6)

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi everyone,

I have attached the original agreement. I believe that Moderna was inserting the shipping address but as of now, there have been no changes to the terms.

Carmen, perhaps you can insert your suggested edits and circulate, although the jurisdiction language could be consistent with other NIAID agreements, we would appreciate it.

Thanks,

Judy

**From:** UNC Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>

**Sent:** Thursday, December 5, 2019 2:04 PM

**To:** Stein, Judy (NIH/VRC) [C] (b)(6) Morabito, Kaitlyn (NIH/VRC) [E]

(b)(6) (b)(6) @modernatx.com>

**Cc:** Sunny Himansu (b)(6) @modernatx.com>; Baric, Ralph (b)(6) UNC

Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>; Petrik, Amy (NIH/NIAID) [E] (b)(6)

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi all,

To my knowledge, my office has not received a draft MTA for this transfer. I am happy to review one once it is received. We may need to add/edits terms due to our status as a state institution.

Best,  
Carmen

**Carmen Melvin**

Licensing Manager | Office of Technology Commercialization

The University of North Carolina at Chapel Hill | 109 Church Street | Chapel Hill, NC 27516

(b)(6) | 919-966-3929 (office) (b)(6) (direct)

CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu) | Tangible Property Program: [researchtools@unc.edu](mailto:researchtools@unc.edu)

**From:** Stein, Judy (NIH/VRC) [C] (b)(6)

**Sent:** Thursday, December 05, 2019 9:27 AM

**To:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) (b)(6)  
(b)(6)@modernatx.com>

**Cc:** Sunny Himansu (b)(6)@modernatx.com>; Baric, Ralph S (b)(6) UNC  
Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>; Petrik, Amy (NIH/NIAID) [E] (b)(6)

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi everyone,

We would like to complete this MTA within the next 2 weeks if possible.

(b)(6) and Ralph,

Can you please let me know if the legal reviews are completed and if so, are there any requested changes. Once we are all in agreement, NIAID can sign first and then circulate to the others.

Thanks very much.

Judy

Judy Stein, MBA, MSPH

Strategic Planning and Development

Contractor to Vaccine Research Center, NIAID, NIH

Tel: (b)(6)

**From:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)

**Sent:** Wednesday, October 30, 2019 9:32 AM

**To:** Stein, Judy (NIH/VRC) [C] (b)(6) (b)(6)  
(b)(6)@modernatx.com>

**Cc:** (b)(6)@modernatx.com>; Baric, Ralph (b)(6) UNC  
Office of Tech Dev MTA <[mta@unc.edu](mailto:mta@unc.edu)>

**Subject:** Re: MERS S mRNA Vaccine for Challenge Studies

Hi All,

This is the shipping address that we have used for sending reagents to UNC.

Sarah Leist/Ralph Baric

UNC-CH

135 Dauer Drive

3105 MHRC

Chapel Hill, NC 27599

Phone# (b)(6)

Thanks,  
Kaitlyn

**From:** Judy Stein (b)(6)  
**Date:** Sunday, October 27, 2019 at 1:13 PM  
**To:** (b)(6)@modernatx.com>  
**Cc:** Sunny Himansu (b)(6)@modernatx.com>, "Morabito, Kaitlyn (NIH/VRC) [E]" (b)(6) Ralph Baric (b)(6) UNC Office of Tech Dev MTA <mta@unc.edu>  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi Ralph,  
Would you be able to provide the shipping address for the material. Moderna is reviewing a MTA that lists VRC and Moderna as the providers and UNC as the recipient. Once they review and comment, we will send it to you for review.  
Thanks,  
Judy

**From:** (b)(6)@modernatx.com>  
**Sent:** Friday, October 25, 2019 3:04 PM  
**To:** Stein, Judy (NIH/VRC) [C] (b)(6)  
**Cc:** Sunny Himansu (b)(6)@modernatx.com>; Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Baric, Ralph (b)(6) UNC Office of Tech Dev MTA <mta@unc.edu>  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Thank you, Judy. Would you, or perhaps someone on the UNC side, happen to know the receiving address?

Thank you,

(b)(6) Moderna  
(b)(6)@modernatx.com | modernatx.com  
mobile (b)(6) | fax (b)(6)

**From:** Stein, Judy (NIH/VRC) [C] (b)(6)  
**Sent:** Tuesday, October 15, 2019 9:48 AM  
**To:** (b)(6)@modernatx.com>  
**Cc:** Sunny Himansu (b)(6)@modernatx.com>; Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi (b)(6)

Can you please look at this attached draft MTA and let me know if you have comments. Once Moderna and NIAID agree, I will send this to UNC.

Thanks,  
Judy

Judy Stein, MBA, MSPH  
Senior Manager  
Strategic Planning and Development  
Contractor to Vaccine Research Center, NIAID, NIH  
Tel: (b)(6)

**From:** (b)(6)@modernatx.com>  
**Sent:** Thursday, October 10, 2019 4:40 PM  
**To:** Stein, Judy (NIH/VRC) [C] (b)(6)  
**Cc:** Sunny Himansu (b)(6)@modernatx.com>; Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi Judy. This works for Moderna. Please circulate a draft.  
Thank you,

(b)(6)

**From:** Sunny Himansu (b)(6)@modernatx.com>  
**Sent:** Tuesday, October 8, 2019 3:10 PM  
**To:** (b)(6)@modernatx.com>  
**Subject:** FW: MERS S mRNA Vaccine for Challenge Studies

**From:** "Stein, Judy (NIH/VRC) [C]" (b)(6)  
**Date:** Tuesday, October 1, 2019 at 10:23 AM  
**To:** UNC Office of Tech Dev MTA <mta@unc.edu>, "Morabito, Kaitlyn (NIH/VRC) [E]" (b)(6)  
**Cc:** "Baric, Ralph" (b)(6) Sunny Himansu (b)(6)@modernatx.com> "Petrik, Amy (NIH/NIAID) [E]" (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi everyone,  
The VRC proposes using a MTA with 'data back' provisions listing Moderna and NIAID as providers of the material and UNC as a recipient.  
If this would work for everyone, we will be happy to draft this agreement for circulation.

Thanks,  
Judy

Judy Stein, MBA, MSPH

Senior Manager  
Strategic Planning and Development  
Contractor to Vaccine Research Center, NIAID, NIH  
Tel: (b)(6)

**From:** UNC Office of Tech Dev MTA <mta@unc.edu>  
**Sent:** Tuesday, October 1, 2019 9:59 AM  
**To:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)@modernatx.com;  
UNC Office of Tech Dev MTA <mta@unc.edu>; Stein, Judy (NIH/VRC) [C] (b)(6)  
**Cc:** Baric, Ralph (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Kaitlyn, Sunny, Judy

This email is forwarded to confirm receipt of the information below, and that we understand a draft agreement will be forwarded to UNC from NIH and/or Moderna. We will take no further action until we receive the draft agreement. Thank you

**From:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)  
**Sent:** Friday, September 27, 2019 1:17 PM  
**To:** UNC Office of Tech Dev MTA <mta@unc.edu>; Baric, Ralph S (b)(6) Sunny  
Himansu (b)(6)@modernatx.com>; Corbett, Kizzmekia (NIH/VRC) [E]  
(b)(6)  
**Cc:** Parsons, Kelly Sivertson (b)(6) Stein, Judy (NIH/VRC) [C] (b)(6)  
**Subject:** Re: MERS S mRNA Vaccine for Challenge Studies

Hi All,

In further discussions with Sunny, it seems we may need a 3-way agreement or written permission from Moderna to send the mRNA from VRC to UNC. I'm looping in Judy Stein who can help facilitate this on the VRC's side.

Best,  
Kaitlyn

**From:** UNC Office of Tech Dev MTA <mta@unc.edu>  
**Date:** Monday, July 15, 2019 at 4:15 PM  
**To:** Ralph Baric (b)(6) Sunny Himansu (b)(6)@modernatx.com>, Kizzmekia  
Corbett (b)(6)  
**Cc:** "Morabito, Kaitlyn (NIH/VRC) [E]" (b)(6) UNC Office of Tech Dev MTA  
<mta@unc.edu>, "Parsons, Kelly Sivertson" (b)(6)  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi All,

I'm a member of the MTA Team in the OTC at UNC-Chapel Hill. We are happy to help with the execution of this agreement. Feel free to reach out to us at [mta@unc.edu](mailto:mta@unc.edu) with any questions or related documents, and let us know if we can be of any further assistance.

Best,  
Jacob

**Jacob B. Smith, PhD**  
Licensing Fellow

**THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL**  
**INNOVATION, ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT – INNOVATE CAROLINA**  
Office of Technology Commercialization  
109 Church Street | Chapel Hill, NC 27516  
(b)(6) (office)  
CDAs: [otc\\_cda@unc.edu](mailto:otc_cda@unc.edu) | MTAs: [mta@unc.edu](mailto:mta@unc.edu)  
[otc.unc.edu](http://otc.unc.edu)

**From:** Parsons, Kelly Sivertson (b)(6)  
**Sent:** Monday, July 15, 2019 3:13 PM  
**To:** Baric, Ralph S (b)(6); Sunny Himansu (b)(6) @modernatx.com>;  
Corbett, Kizzmekia (NIH/VRC) [E] (b)(6)  
**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6); UNC Office of Tech Dev MTA  
<[mta@unc.edu](mailto:mta@unc.edu)>  
**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hello All,  
I am cc'ing our MTA team who can work with you on the MTA or any other necessary documents.

Thanks,  
Kelly

Kelly S. Parsons, Ph.D.  
Associate Director, Commercialization

**THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL**  
**INNOVATION, ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT – INNOVATE CAROLINA**  
Office of Technology Commercialization (note new office name)  
Campus Box 4105  
109 Church Street | Chapel Hill, NC 27516  
T: (b)(6) F: 919.962.0646  
Email: (b)(6)  
Web: [otc.unc.edu](http://otc.unc.edu)

**From:** Baric, Ralph S (b)(6)  
**Sent:** Monday, July 15, 2019 11:56 AM  
**To:** Sunny Himansu (b)(6) @modernatx.com>; Corbett, Kizzmekia (NIH/VRC) [E]  
(b)(6)

**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Parsons, Kelly Sivertson  
(b)(6)

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi Sunny, Kelly (or an associate) is our contact person in the UNC OTD department. Kelly, this is a collaboration between Moderna, NIH VRC and UNC to test RNA-based MERS-CoV vaccines. Thanks,  
ralph

**From:** Sunny Himansu (b)(6)@modernatx.com>

**Sent:** Monday, July 15, 2019 8:27 AM

**To:** Baric, Ralph S (b)(6) Corbett, Kizzmekia (NIH/VRC) [E]

(b)(6)

**Cc:** Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)

**Subject:** Re: MERS S mRNA Vaccine for Challenge Studies

Hi Ralph,

I have initiated the MTA process from my end. There are couple pieces of additional info that I need for the MTA.

- What would be shipping address of the vaccine to you?
- Who is the best contact for our legal team at UNC?

Thanks

Sunny

**From:** "Baric, Ralph S" (b)(6)

**Date:** Thursday, July 11, 2019 at 8:20 AM

**To:** "Corbett, Kizzmekia (NIH/VRC) [E]" (b)(6) Sunny Himansu

(b)(6)@modernatx.com>

**Cc:** "Morabito, Kaitlyn (NIH/VRC) [E]" (b)(6)

**Subject:** RE: MERS S mRNA Vaccine for Challenge Studies

Hi Sunny, I look forward to interacting with your group. Please let me know how we can proceed.  
Thanks, ralph

**From:** Corbett, Kizzmekia (NIH/VRC) [E] (b)(6)

**Sent:** Thursday, July 11, 2019 5:25 AM

**To:** Sunny Himansu (b)(6)@modernatx.com>

**Cc:** Baric, Ralph S (b)(6) Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)

**Subject:** MERS S mRNA Vaccine for Challenge Studies

Good morning Sunny,

I hope that all is well. Per our last conversation, with the Baric Lab at UNC, we were going to try to get an MTA started so that we may do challenge studies with the mRNA vaccine and move forward with the project from an academic perspective. It is my understanding that you have plenty of the last batch of mRNA available for this?

Please let me know if there is anything you need from me to spark the MTA conversation again with Dr. Baric, who is cc'ed here.

Cheers.

--

**Kizzmekia S. Corbett, PhD**  
**Senior Research Fellow**  
National Institutes of Health  
National Institutes of Allergy and Infectious Diseases  
Vaccine Research Center  
Viral Pathogenesis Laboratory

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Personal: (b)(6)

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PUBLIC HEALTH SERVICE

**MATERIAL TRANSFER AGREEMENT**

This Material Transfer Agreement ("MTA") has been adopted for use by the National Institutes of Health, the Food and Drug Administration and the Centers for Disease Control and Prevention, collectively referred to herein as the Public Health Service ("PHS") in all transfers of research material (Research Material) whether PHS is identified below as its Provider or Recipient.

Providers: *National Institute of Allergy and Infectious Diseases, National Institutes of Health ("NIAID")*  
ModernaTX, Inc ("Moderna")

Recipient: The University of North Carolina at Chapel Hill

1. Provider agrees to transfer to Recipient's Investigator the following Research Material:

mRNA coronavirus vaccine candidates developed and jointly-owned by NIAID and Moderna.

2. **THIS RESEARCH MATERIAL MAY NOT BE USED IN HUMAN SUBJECTS.** The Research Material will only be used for research purposes by Recipient's Investigator in his/her laboratory, for the research project described below, under suitable containment conditions. **This Research Material will not be used for commercial purposes such as screening, production or sale, for which a commercialization license may be required.** Recipient agrees to comply with all Federal rules and regulations applicable to the Research Project and the handling of the Research Material.

- a. Are the Research Materials of human origin?

☐ Yes ☒ No

- b. If Yes in 2a, were Research Materials collected according to 45 CFR Part 46, "Protection of Human Subjects"?

☐ Yes Please provide Assurance Number: \_\_\_\_\_  
☐ No

3. This Research Material will be used by Recipient's Investigator solely in connection with the following research project ("Research Project") described with specificity as follows (use an attachment page if necessary):

Perform challenge studies with the mRNA vaccine in a humanized mouse model as described on Exhibit A.

4. Upon a Provider's reasonable request, Recipient will furnish a status report to such Provider regarding the use of the Research Materials and any data or results generated therefore. In all oral presentations or written publications concerning the Research Project, Recipient will acknowledge Providers' contribution of this Research Material unless requested otherwise. To the extent permitted by law, Recipient agrees to treat in confidence, and not to disclose to third parties or use for any purpose other than the performance of the Research Project, for a period of three (3) years from the date of its disclosure, any of Providers' written information about this Research Material that is stamped "CONFIDENTIAL," except for information that was previously known to Recipient or that is or becomes publicly available or which is disclosed to Recipient without a confidentiality obligation. Any oral disclosures from Providers to Recipient shall be identified as being CONFIDENTIAL by notice delivered to Recipient within ten (10) days after the date of the oral disclosure. Notwithstanding the foregoing, all information disclosed by Providers relating to the sequence, chemistry or formulation of the Research Material will be treated as CONFIDENTIAL information as set forth above, whether or not marked or otherwise identified as "confidential." Recipient may publish or otherwise

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NIAID Ref. No. 2019-1177

publicly disclose the results of the Research Project, but if Providers have given **CONFIDENTIAL** information to Recipient such public disclosure may be made only after Providers have had thirty (30) days to review the proposed disclosure to determine if it includes any **CONFIDENTIAL** information, except when a shortened time period under court order, law (including the North Carolina Public Records Act), or the Freedom of Information Act pertains. Recipient will comply with all requests to delete **CONFIDENTIAL** information from any proposed publication or presentation; provided, that Providers agree to allow use of sufficient information regarding the identity and properties of the Research Material to reasonably enable publication of the results of the Research Project.

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6. This Research Material is provided as a service to the research community. **IT IS BEING SUPPLIED TO RECIPIENT WITH NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** Provider makes no representations that the use of the Research Material will not infringe any patent or proprietary rights of third parties.
7. Inventorship of any inventions or discoveries arising from the use of the Research Material hereunder ("Inventions"), shall be determined according to U.S. patent law. Ownership shall follow inventorship. Recipient will promptly disclose to Moderna in writing any Inventions. Recipient hereby grants to Moderna an option to obtain an exclusive license to Recipient's interest in all Inventions. For each Invention, Moderna's option must be exercised within ninety (90) days of receipt by Moderna of notice from Recipient describing such Invention. Unless prohibited by law from doing so, including the North Carolina Tort Claims Act, Recipient agrees to hold the United States Government harmless and to indemnify the Government for all liabilities, demands, damages, expenses and losses arising out of Recipient's use for any purpose of the Research Material.
8. The undersigned Providers and Recipient expressly certify and affirm that the contents of any statements made herein are truthful and accurate.
9. This MTA shall be construed in accordance with Federal law as applied by the Federal courts in the District of Columbia.

**SIGNATURES BEGIN ON NEXT PAGE**

# MATERIAL TRANSFER AGREEMENT

## SIGNATURE PAGE

### FOR RECIPIENT:

*Recipient's Investigator*



Ralph Baric, PhD  
Professor

Date: 12/12/2019

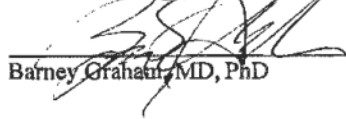
Mailing Address for Materials:

Attention: Dr. Rachel Graham, Department of  
Epidemiology, University of North Carolina at  
Chapel Hill, 135 Dauer Drive, 2101 McGavran-  
Greenberg Hall, CB #7435, Chapel Hill, NC 27599-  
7435

Tel: 919-966-3895 Fax: \_\_\_\_\_

### FOR PROVIDERS:

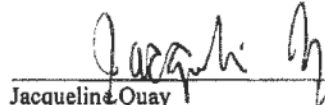
*NIAID's Investigator*



Barney Graham, MD, PhD

Date: \_\_\_\_\_

*Duly Authorized*



Jacqueline Quay  
Director, Licensing & Innovation Support, OTC

Date: 12/16/19

Mailing Address for Notices:

The University of North Carolina at Chapel Hill  
Office of Technology Commercialization  
109 Church Street, Chapel Hill, NC 27516

Tel: 919-966-3929 Fax: 919-962-0646

*Duly Authorized*

Amy F.

Petrik-S

Amy Petrik, PhD

Technology Transfer Specialist, TTIPO, NIAID

Digitally signed by Amy  
F. Petrik -S

Date: 2019.12.12  
08:05:22 -05'00'

Date: \_\_\_\_\_

Mailing Address for Notices:

Technology Transfer and Intellectual Property Office  
National Institute of Allergy and Infectious Diseases  
Department of Health and Human Services  
Suite 6D, MSC 9804  
5601 Fishers Lane  
Rockville, MD 20852  
Tel: 301/496-2644 Fax: 240-627-3117

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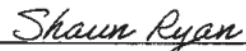
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*Moderna's Investigator*

  
\_\_\_\_\_  
Sunny Himansu, PhD

Date: 12/17/2019

*Duly Authorized*

  
\_\_\_\_\_  
Shaun Ryan  
Deputy General Counsel

Date: 12/17/19

Mailing Address for Notices:

ModernaTX, Inc.  
200 Technology Square  
Cambridge, MA 20139  
Attn: General Counsel

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**Exhibit A**  
**Research Program**

(b)(4)



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**From:** Baric, Ralph S  
**Sent:** Thu, 20 Jun 2019 20:32:26 +0000  
**To:** Corbett, Kizzmekia (NIH/VRC) [E]; Wang, Lingshu (NIH/VRC) [E]  
**Cc:** Graham, Barney (NIH/VRC) [E]; Morabito, Kaitlyn (NIH/VRC) [E]  
**Subject:** RE: VRC mAb information

We will get the information together and send along. We are working on a manuscript describing the recovery, host range and pathogenic properties of the new MERS-like CoV. We are hoping you would be interested in helping us finish up the paper by providing some cross neut data comparing mers and the new strain? This possible? ralph

---

**From:** Corbett, Kizzmekia (NIH/VRC) [E] (b)(6)  
**Sent:** Thursday, June 20, 2019 4:10 PM  
**To:** Wang, Lingshu (NIH/VRC) [E] (b)(6) Baric, Ralph S (b)(6)  
**Cc:** Graham, Barney (NIH/VRC) [E] (b)(6) Morabito, Kaitlyn (NIH/VRC) [E] (b)(6)  
**Subject:** Re: VRC mAb information

Hi Ralph,  
I just left a meeting with Lingshu, and I am following up here (below), as we are planning out the challenge study timeline to send to you.

Could you please share the sequences or plasmids of your MERS-CoV (from Bat) and SARS-related strains (SCH014, WIV16, WIV1, HKU3 you mentioned in the joint meeting) with us? We can make pseudoviruses and test the breadth of our mAbs. We are very interested in testing our mAbs on these viruses and your animal models.

--

**Kizzmekia S. Corbett, PhD**  
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Building 40 Room 2608  
40 Convent Drive  
Bethesda MD 20892  
Laboratory: (b)(6)  
Personal: (b)(6)  
Fax: (301) 480-2771

---

**From:** "Wang, Lingshu (NIH/VRC) [E]" (b)(6)  
**Date:** Monday, May 20, 2019 at 1:11 PM  
**To:** "Baric, Ralph" (b)(6)

**Cc:** Kizzmekia Corbett (b)(6) Barney Graham (b)(6)  
"Morabito, Kaitlyn (NIH/VRC) [E]" (b)(6)  
**Subject:** VRC mAb information

Dear Ralph,

Thanks for your advice about testing our mAbs on your viruses. Please see attached the table for the contact residues/mutation information of our MERS mAbs.

Could you please share the sequences or plasmids of your MERS-CoV (from Bat) and SARS-related strains (SCH014, WIV16, WIV1, HKU3 you mentioned in the joint meeting) with us? We can make pseudoviruses and test the breadth of our mAbs. We are very interested in testing our mAbs on these viruses and your animal models.

Best,  
lingshu

---

**From:** Corbett, Kizzmekia (NIH/VRC) [E]  
**Sent:** Thursday, May 16, 2019 11:05 AM  
**To:** Graham, Barney (NIH/VRC) [E] (b)(6) Wang, Lingshu (NIH/VRC) [E]  
(b)(6) Shi, Wei (NIH/VRC) [E] (b)(6) Kong, Wing-Pui (NIH/VRC) [E]  
(b)(6) Morabito, Kaitlyn (NIH/VRC) [E] (b)(6) Abiona,  
Olubukola (NIH/VRC) [F] (b)(6) Rosen, Osnat (NIH/VRC) [C]  
(b)(6) Denison, Mark (NIH) (b)(6) Chappell, Jim  
(b)(6) Baric, Ralph (b)(6)  
Cockrell, Adam (b)(6) Daniel P. Wrapp  
(b)(6) (b)(6) (b)(6)  
Kocher, Jacob Frederick

**Subject:** Action Items >>> Re: VRC/Vanderbilt CoV Collaboration Meeting

Thanks for another very productive meeting yesterday. We have a lot brewing in the pipeline, as you can see below, and I'm sure that the next meet will be rather data intense.

#### UNC

- Complete passive transfer experiment with serum from CC mice and share data. (Lead: Ande)
- Send serum from CC experiment with 5 ug MERS S-2P (repeat in new mice). (Lead: Ande)
- Send SARS mAb escape mutation table to VRC. (Lead: Ralph)
- Send serum from infected 288/330 +/- mice to VRC for dissection of antibody responses. (Lead: Sarah)

#### VRC

- Complete HKU1 neutralization assay under Amy's advice (Lead: Olubukola)
- Write draft one MERS S-2P immunogenicity paper and send to Sarah/Ralph. (Lead: Kizzmekia)
- Discuss SARS nanoparticle experiment with Ward group and plan to move forward with Baric lab model. (Lead: Kizzmekia)

- Send upcoming experiment timeline to Baric lab. (Lead: Kizzmekia)
- Write draft one of mAb combination manuscript and circulate. (Lead: Lingshu)
- Send experiment plan for SARS mAbs to Baric lab. (Lead: Lingshu)
- Test SARS divergent strain neutralization with SARS antibodies. (Lead: Lingshu)
- Send Ralph an email re: antibodies to test with new MERS-like viral isolate. (Lead: Lingshu)
- Follow-up on Moderna MTA. (Lead: Kaitlyn)
- Follow-up with Ragon: data analysis and serum amounts (email sent May 16, 2019). (Lead: Kizzmekia)

#### Vanderbilt

- Built apt mutations into EMC backbone for “replication” studies in Baric lab & test the mutations in vitro for fitness. - Jim

--

Kizzmekia S. Corbett, PhD

**Senior Research Fellow**

National Institutes of Health

National Institutes of Allergy and Infectious Diseases

Vaccine Research Center

Viral Pathogenesis Laboratory

Building 40 Room 2608

40 Convent Drive

Bethesda MD 20892

Laboratory: (b)(6)

Personal: (b)(6)

Fax: (301) 480-2771

---

**From:** (b)(6)

**When:** 11:00 AM - 12:00 PM May 14, 2019

**Subject:** VRC/Vanderbilt CoV Collaboration Meeting

**Location:** 40/2nd floor Conference Room

**Title of Meeting:** VRC/Vanderbilt CoV Collaboration Meeting

**Time:** 11:00 AM EST / 10:00 AM CST

**Date:** 2<sup>nd</sup> Tuesday bi-monthly

**Principal Meeting Organizer:** Kizzmekia Corbett

**VRC Participants:** Barney Graham, Kaitlyn Morabito, Olu Abiona, Kizzmekia Corbett, Osnat Rosen, Lingshu Wang, Wei Shi, and Wing-Pui Kong

**Vanderbilt Participants:** Mark Denison, Jim Chappell, and Laura Stevens

**UNC Participants:** Ralph Baric, Kenneth Dinnon, Adam Cockrell, Sarah Rebecca Leist, Alexander Schaefer, Rachel Graham, West Ande, and Jacob Kocher

**Dartmouth Participant:** Daniel Wrapp

**Univ of Texas-Austin Participants:** Jason McLellan and Nianshuang Wang



\*\*\*\*\*

**VRC/Vanderbilt CoV Collaboration Meeting**

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