



MHC Genotyping via Deep Sequencing

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Figure 4. PacBio Full-Length MHC Class I Genotyping Report

Animal ID		PT190	PT136	PT129	PT135	PT172
Relationship		Dam 1	Progeny 1	Sire	Progeny 2	Dam 2
Mane-A Haplotype 1		A084	A004	A004	A052:A063	A052:A063
Mane-A Haplotype 2		A010	A010	A019	A019	A082
Mane-B Haplotype 1		B104	B025	B025	B150	B150
Mane-B Haplotype 2		B015a	B015a	B069a	B069a	B016a
# Reads Evaluated	Totals Ave	20,972 4,194	3410 4476	4155 4155	3999 3999	4932 4932
# Identical Full-length Reads		6,158 1,232	842 1350	1350 1350	1158 1158	1458 1458
% Identical Full-length Reads		29.17	24.7 30.2	32.5	29.0	29.6
# Full-length Alleles		13	13 13	11	12	14
Mane-A1						
A1*004:01	e	404	2	208	196	
A1*010:SP	n	363	2	142	221	
A1*019:nov:01	n	447	2		239	207
A1*052:01	p	420	2			167 252
A1*063:nov:03	n	316	2			122 194
A1*082:03	p	262	1			262
A1*084:01:01	p	150	1	150		
Mane-A minors						
A2*05:03:01	p	6	2	3		3
A2*05:07	n	5	2	2	3	
A3*13:01:01	p	48	1			48
A4*01:01:01	e	24	2		17	7
A6*01:nov:03	n	6	3	2	2	2
Mane-B						
B*015:01	e	453	2	154	299	
B*016:01	e	89	1			89
B*017:02	p	243	2			122 121
B*025:SP	n	1,088	2	482	606	
B*027:nov:04	n	17	2	5	12	
B*046:01:01	e	2	1	2		
B*064:01	p	3	2	2	1	
B*068:02:01	e	158	2	47	111	
B*068:06	e	94	1			94
B*068:nov:03	n	161	2			84 77
B*069:01	p	351	2		208	143
B*072:02:02	e	7	1	7		
B*088:01	p	19	2	11	8	
B*104:02	p	309	1	309		
B*107:02	p	52	2		33	19
B*112:02	e	13	1			13
B*115:nov:02	n	7	1		7	
B*116:01	p	40	2		24	16
B*119:01	p	12	1	12		
B*150:nov:02	n	558	2			267 291
Mane-I						
I*01:02	e	5	2			2 3
I*01:06	e	6	1			6
I*01:nov:03	n	9	2		3	6
I*01:nov:06	n	5	2	1	4	
I*01:nov:07	n	3	1		3	
I*01:nov:08	n	5	1			5
Novel full length sequence	n	14				
Extension of partial sequence	e	11				
Identical to known sequence	p	13				

Wisconsin National Primate Research Center Service Agreement

This Service Agreement (“Agreement”) is entered into as of the date of last signature below (“Effective Date”), between the Board of Regents of the University of Wisconsin System on behalf of the Wisconsin National Primate Research Center at the University of Wisconsin-Madison, a public educational institution of the State of Wisconsin, with an address at 21 N. Park Street, Suite 6401, Madison, WI 53715 (“University” or “WNPRC”), and The Trustees of the **University of Noname**, a company having its principal place of business at Neverland, AK 99999 (“Service Recipient”).

Whereas the service contemplated by this agreement is of mutual interest and benefit to the University and to the Service Recipient, and will further the University’s instructional, research or outreach objectives in a manner consistent with its status as a non-profit, tax-exempt, educational institution.

Now therefore, the parties hereto agree as follows:

1. Statement of Work

The Service Recipient agrees to have the WNPRC provide the following service (“Service”):

**Genetics Services - Mauritian Cynomolgus Macaque MHC Class I + Class II Genotyping
(Fresh blood, frozen blood, or PBMC)**

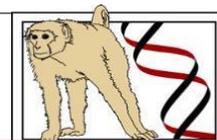
Standard: \$99/sample (base rate) + \$15.84/sample (cost recovery of 17%) = \$114.84/sample

**Expedited: \$99/sample (base rate) + \$49.50/sample (expedited rate) + \$23.76/expedited sample
(cost recovery of 17%) = \$172.26/sample**

The WNPRC agrees to use reasonable efforts to perform the Service. The Service Recipient acknowledges that the WNPRC makes no express or implied warranties for results of this Service unless specifically identified in this agreement. The Service is limited to the scope of work as provided in this Agreement, and does not include any consultation that the WNPRC may provide to Service Recipient before or after the performance of Service. The terms and conditions of this Agreement do not govern any rights or duties that may be associated with any such consultation.

2. Term of Agreement

This Agreement shall begin on the Effective Date, and continue until **6/30/2020**, and may be extended by mutual agreement of the parties. Terms which by their nature are intended to survive shall not be affected by the expiration or termination of this Agreement.



3. Payment Terms

Service Recipient shall pay WNPRC in U.S. dollars the total amount of **\$114.84 per sample and \$172.26 per sample as noted in the statement of work.**

Per National Institutes of Health (NIH)/Office of Research Infrastructure Programs (ORIP) guidelines and as determined by the WNPRC in coordination with the Service Recipient, this agreement is considered a Tier 2 agreement and cost recovery will be in accordance with the applicable Tier rate structure. **The 17% rate will be applied as a separate line item on the invoice.**

While it is estimated that this amount is sufficient to conduct the Service outlined in the scope of work, the WNPRC will submit to Service Recipient a revised budget requesting additional funds in the event the Service Recipient requests additional services.

4. Payment Schedule

Email Purchase Orders (each a "PO") to:

Carrie Coley
Grants Assistant
ccoley@primate.wisc.edu

If electronic submission is not possible, fax the PO to: (608) 262-8946.

WNPRC will invoice the Service Recipient and such invoices shall be due within 30 days of receipt.

Checks shall be made payable to: Wisconsin National Primate Research Center

And sent to:

Debra L. Jurmu
Associate Director, Operational Services
Wisconsin National Primate Research Center
1220 Capitol Court
Madison, WI 53715

5. Notices

Notices and communications hereunder shall be deemed made if given by registered or certified mail, postage prepaid, and addressed to the party to receive such notice or communication at the address given below, or such other addresses as may hereafter be designated in writing.

If to Service Recipient:

Service Recipient Scientist:

Polly Pi
Department of Surgery
University of Noname
1000 Campus Drive
Neverland, AK 99999
Tel: (000) 000-9000
polly.pi@noname.edu

Service Recipient Administrative Contact:

Alison Alpha
Department of Surgery
University of Noname
2000 Campus Drive
Neverland, AK 99999
Tel: (000) 000-1800
alison.alpha@noname.edu

If to WNPRC:

WNPRC Scientist:

David O'Connor
Genetics Services Unit Head
Wisconsin National Primate Research Center
585 Science Drive
Madison, WI 53711
Tel: (608) 890-0845
dhoconno@wisc.edu

WNPRC Administrative Contact:

Carrie Coley
Grants Assistant
Wisconsin National Primate Research Center
1220 Capitol Court, Room 210
Madison, WI 53715
Tel: (608) 262-7756
Fax: (608) 262-8946
ccoley@primate.wisc.edu

6. Entire Agreement

Unless otherwise explicitly agreed by WNPRC in writing, this Agreement, with the Wisconsin National Primate Research Center Standard Terms and Conditions attached hereto as Exhibit A, embodies the entire understanding between the WNPRC and the Service Recipient for this Service, and any prior or contemporaneous representations, either oral or written, are hereby superseded. No amendments or changes to this Agreement, including without limitation, changes in the scope of work, total estimated cost, and period of performance, shall be effective unless made in writing and signed by authorized representatives of each party.

IN WITNESS WHEREOF,

The parties hereto have executed this Agreement by proper persons thereunto duly authorized.

The Trustees of the University of Noname

**Board of Regents of the
University of Wisconsin System**

By: _____

By: _____

Name: _____

Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

EXAMPLE

EXHIBIT A
Wisconsin National Primate Research Center
Standard Terms and Conditions

The Wisconsin National Primate Research Center (“WNPRC”), a center of the University of Wisconsin-Madison, offers service in support of research. The WNPRC reserves the right to decline to perform any services that it determines not to be in the best interests of the University of Wisconsin-Madison, the University of Wisconsin System, or the State of Wisconsin.

All Service Agreements entered into by WNPRC are subject to these Standard Terms and Conditions (“Terms”) unless specifically agreed to otherwise in writing by the WNPRC.

1. Pricing and Payment Terms and Payment Schedule

The WNPRC shall be paid the amount specified in the Agreement.

2. Acceptance of Proposal

WNPRC’s receipt of a signed Service Agreement or other form of a signed written contractual agreement constitutes Service Recipient and WNPRC’s acceptance of the proposed scope of work, price, and terms and conditions.

The Agreement may be executed in any number of counterparts, each of which is deemed to be an original, but which together shall constitute but one instrument. This Agreement shall be considered accepted once it has been executed by both parties. A signature delivered by facsimile or electronic means will be considered binding for each party.

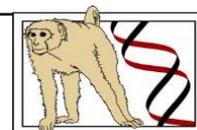
3. Termination

The Service Recipient upon sixty (60) days written notice may terminate performance under this Agreement; performance may be terminated by the WNPRC if circumstances beyond its control preclude continuation of the Service. Upon termination by the Service Recipient, WNPRC will be reimbursed for all costs and non-cancelable commitments incurred in the performance of the Service and not yet paid for, such reimbursements together with other payments not to exceed the total estimated project cost specified in the service agreement.

In the event that either party hereto shall commit any breach of or default in any of the terms or conditions of the Agreement, and also fail to remedy such default or breach within thirty (30) days after written notice thereof from the other party hereto, the party giving notice may, at its option and in addition to any other remedies which it may have at law or in equity, terminate this Agreement by sending notice of termination in writing to the other party to such effect, and such termination shall be effective as of the date of the receipt of such notice.

4. Publicity

Neither party shall use the name of the other party (including staff members of such other party), in connection with any products, press releases, promotions, or advertising without the prior written approval of the other party. This shall not include internal documents available to the public that identify the existence of the Agreement.



Notwithstanding the restrictions above, and in recognition of the support provided to WNPRC by the National Institutes of Health, which allows WNPRC to provide such Services, any publication resulting from the Services provided by WNPRC under this Agreement shall contain the following acknowledgement: "Research in this publication was supported in part by the Office Of The Director, National Institutes of Health under Award Number P51OD011106 to the Wisconsin National Primate Research Center, University of Wisconsin-Madison. This research was conducted/conducted in part (as applicable) at a facility constructed with support from Research Facilities Improvement Program grant numbers RR15459-01 and RR020141-01. The content of this publication is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health."

5. Confidentiality

Unless otherwise required by law, governmental proceeding, or court order, WNPRC will exercise reasonable efforts to maintain in confidence all Confidential Information (as defined herein). Confidential Information shall mean any information, documentation and materials specifically developed or prepared for Service Recipient by the WNPRC in performance of the Services, and any proprietary or confidential information disclosed or submitted to WNPRC by the Service Recipient that is designated in writing as confidential at the time of disclosure. Confidential Information does not include information which:

- a) Is generally available in the public domain or becomes available to the public through no act of the WNPRC;
- b) Is independently known prior to receipt thereof or is discovered independently by an employee of WNPRC who had no access to the Confidential Information; or
- c) Is made available to the WNPRC as a matter of lawful right by a third party.

The WNPRC retains the right to refuse to accept any Confidential Information that is not considered to be essential to the completion of the Service. The obligations of the WNPRC under this paragraph shall survive and continue for one (1) year after this Agreement ends.

6. Liability

The Service Recipient agrees to hold the WNPRC harmless from any loss, claim, damage, or liability of any kind arising out of or in connection with this Agreement, except to the extent that it is founded upon or grows out of the acts or omissions of any of the officers, employees or agents of the University of Wisconsin System while acting within the scope of their employment where protection is afforded by ss.893.82 and 895.46(1), Wis. Stats.

7. Warranties

THE UNIVERSITY AND WNPRC MAKE NO WARRANTIES, EXPRESSED OR IMPLIED, AS TO ANY MATTER WHATSOEVER, INCLUDING, WITHOUT LIMITATION, THE CONDITION OF THE SERVICE OR DELIVERABLES, WHETHER TANGIBLE OR INTANGIBLE, OR DEVELOPED UNDER THIS AGREEMENT; OR THE OWNERSHIP, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THE SERVICE OR DELIVERABLES. THE UNIVERSITY AND WNPRC SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, SPECIAL OR OTHER DAMAGES SUFFERED BY ANY PERSON RESULTING FROM THIS SERVICE OR THEIR USE OF THE DELIVERABLES.

8. Equipment

Equipment, supplies, and materials purchased or produced under this Agreement shall be owned by WNPRC, unless expressly stated otherwise herein.

9. Assignment

Neither party shall assign this Agreement to any third party without the prior written consent of the other party; however, the Service Recipient may assign this Agreement to a successor in ownership of all or substantially all its business assets, provided that such successor shall expressly assume in writing the obligation to perform in accordance with the terms and conditions of this Agreement. Any other purported assignment shall be void.

10. Independent Contractor

In the performances of all services hereunder:

- a) The WNPRC shall be deemed to be and shall be an independent contractor and, as such, shall not be entitled to any benefits applicable to employees of the Service Recipient; and
- b) Neither party is authorized or empowered to act as agent for the other for any purpose and shall not on behalf of the other enter into any contract, warranty, or representation as to any matter. Neither party shall be bound by the acts or conduct of the other.

11. Independent Inquiry

Nothing in this Agreement shall be construed to limit the freedom of University researchers who are participants in this Agreement, whether paid under this Agreement or not, from engaging in similar projects made independently under other grants, contracts, or agreements with parties other than the Service Recipient.

12. Insurance

The University warrants and represents that it has adequate liability protection, such protection being applicable to officers, employees, and agents while acting within the scope of their employment by the University. The University has no liability insurance policy as such that can extend protection to any other person.

13. Governing Law

This Agreement shall be governed by the laws of the State of Wisconsin, excluding its conflict of laws provisions.

14. Export Control

Each party agrees that it shall comply with any applicable import and export control laws, rules, and regulations relating to the import and export of technical information, materials, or products in connection with the Service conducted under this Agreement. Service Recipient shall provide WNPRC in writing prior to providing WNPRC with access to any export regulated information or materials. Such notification shall include all associated classification numbers. WNPRC reserves the right to refuse receipt of any information or materials that are subject to export controls.

15. Compliance with Laws

Each party shall comply fully with all applicable federal, state, and local laws and regulations, including treaties such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Further, each party shall comply with all applicable regulations in the event that they share or transfer non-human primate biological materials with or to any other individual or organization.
