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Nonhuman Primate Investigator Survey and Responses

This appendix presents a copy of the committee's survey of National Institutes of Health (NIH)–supported nonhuman primate (NHP) investigators alongside frequencies of responses to each survey question. These results tables are not inclusive of all analyses generated by the committee and presented in the body of the report and in Appendix B. Additionally, respondents were not required to answer all questions and, as such, the number of total responses will change on a question-by-question basis. See Appendix A for a description of the survey methodology.

SURVEY OF NIH-SUPPORTED RESEARCHER EXPERIENCES AND PERSPECTIVES ON NHP USE IN BIOMEDICAL RESEARCH

Background Information and Consent

As part of the information-gathering activities of the congressionally mandated National Academies consensus study on the State of the Science and Future Needs for Nonhuman Primate Model Systems, you are being contacted because you are listed as a Principal Investigator (PI) on an active NIH grant or contract that we have identified as likely to use nonhuman primates. While this National Academies consensus study relies heavily on published reports and publicly available data, there are critical pieces of information which the study committee cannot gather from those sources. The goal of this survey is to fill in those gaps.

This survey will focus on the nonhuman primate models that you may use as part of your NIH-supported research, your personal experiences related to accessing nonhuman primates, and your predictions for the future use of nonhuman primates in your NIH-funded research. The risks for participating in this survey are low, although you may have concerns about providing information about research that could be perceived as controversial or that

you or your institution could be identified. We have taken the following steps to respond to these concerns and to protect your data.

You may choose not to answer some or all of the survey questions and can choose to stop the survey at any time or to save your progress and return to complete the survey. Your name, email, grant number, and any other identifiable information, including your employer or research institution's name, will not be included in the information provided to the committee or in its final report. Instead, your answers will be aggregated with those from other PIs with active NIH awards involving the use of nonhuman primate models. The original data that you and other respondents provide will be de-identified by a National Academies staff member (in particular, your grant number will be converted into a random alphanumeric code and no key will be kept of the link between the two). The de-identified data file will be stored on a password protected computer in a file that is only accessible via a single National Academies employee's VPN. All analysis will be carried out on the de-identified data by study staff with assistance from one committee member whose access to the data will be strictly limited. The de-identified data will be deleted permanently within 1 year following the publication of the final committee report.

There may be no direct benefit to you personally from participating in the survey. We nonetheless hope that you will choose to participate as your responses will help us to describe the current state of biomedical research involving the use of nonhuman primate models, prior and future contributions to science and health advancements, and the role of these models in future NIH-funded research.

If you have questions about your participation in this research or would like to speak with someone independent from the research team, please contact Dr. Constance Citro, Senior Scholar and Chair of the National Academies Institutional Review Board, at CCitro@nas.edu. If you have questions or if you do not wish to receive further communication about this study, please contact Autumn Downey, Study Director, at ADowney@nas.edu.

<u>Please click below to indicate that you have read and understand this information and whether you agree to participate</u>. [Answer required]

Thank you,
Committee on the State of the Science and Future Needs for Nonhuman Primate Model Systems

( ) Yes, I have read the above material and I would like to participate.
( ) No, I do not wish to participate.

> **Page exit logic:** Skip / Disqualify Logic **IF:** One of the following answers is ("No, I do not wish to participate.") **THEN:** Jump to page 20 - Thank You! Flag response as complete

Section 1: Nonhuman Primate Use and Research Information

Question 1) As part of your active NIH award(s), did you or do you use nonhuman primate models? If no, your response will be recorded and the survey will close. [Answer required]
( ) Yes
( ) No

Response Frequency

Yes   273

Question 2) For how many **active NIH-funded awards or contracts** for which you are a PI have you used or are you planning to use nonhuman primates? If you are a PI on more than 10 active NIH awards, please indicate that you have more than 10 awards. We will only be asking for information on 10 NIH awards. [Answer required]

( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8
( ) 9
( ) 10
( ) >10

Number of Awards	Response Frequency
1	273
2	139
3	63
4	30
5	16
6	5
7	4
8	3
9	2
10	0
>10	0
Total awards	535
Unique respondents	273

NOTE: These responses are based on the number of responses received to Question 2 only. Information for six of the awards indicated in this table was not completed and were excluded from further analysis.

Award 1 (Questions for Awards 1-10)

NOTE: Identical questions are repeated for Awards 2-10, depending on the number of awards reported by the respondent in Question 2. For the purposes of this document, these questions (3–12) are only included once. All response frequencies listed below are aggregated across all awards reported by respondents.

Question 3) What is the NIH grant or contract number for this award? Note: this information will be de-identified before analysis.

_____

Question 4) Indicate your position on this award. Select all that apply.
[ ] Sole PI
[ ] Contact PI on a multi-PI grant
[ ] Non-contact PI on a multi-PI grant
[ ] Other: _____

	Response Frequency
Sole PI	230
Contact PI on a multi-PI grant	173
Non-contact PI on a multi-PI grant	89
Other	30
Total unique awards	517
Unique respondents	262

NOTE: A total of 10 responses were excluded from the analysis due to duplication of 8 awards reported by investigators working on multi-investigator grants.

Question 5) Please fill out the question below to indicate which species you used for this award. Select all that apply.
[ ] African Green, Vervet, or Grivet
[ ] Baboon
[ ] All Owl Monkey Species
[ ] All Capuchin Species
[ ] Common Marmoset
[ ] Macaque – Crab Eating, Cynomolgus, or Longtailed
[ ] Macaque – Japanese
[ ] Macaque – Pigtailed
[ ] Macaque – Rhesus
[ ] Sooty Mangabey
[ ] Squirrel Monkey
[ ] Titi Monkey
[ ] White Capped Mangabey
[ ] Other – Write In:

_____

	Response Frequency
African Green, Vervet, or Grivet	10
Baboon	32
All Owl Monkey Species	2
All Capuchin Species	3
Common Marmoset	30
Macaque – Crab Eating, Cynomolgus, or Longtailed	75
Macaque – Japanese	8
Macaque – Pigtailed	30
Macaque – Rhesus	366
Sooty Mangabey	0
Squirrel Monkey	12
Titi Monkey	1
White Capped Mangabey	0
Other	10
Total unique awards	517
Unique respondents	262

NOTE: More than one species was reported for some awards. Additionally, a total of 10 responses were excluded from the analysis of total awards due to duplication in awards reported by investigators working on multi-investigator grants.

Question 6) How many nonhuman primates were planned for use when drafting this NIH award application? [Validation: Must be numeric]

	Response Overview
Mean Nonhuman Primates Planned for Use	48
Median Nonhuman Primates Planned for Use	16
Minimum Nonhuman Primates Planned for Use	0
Maximum Nonhuman Primates Planned for Use	2300
Total unique awards	513
Unique respondents	260
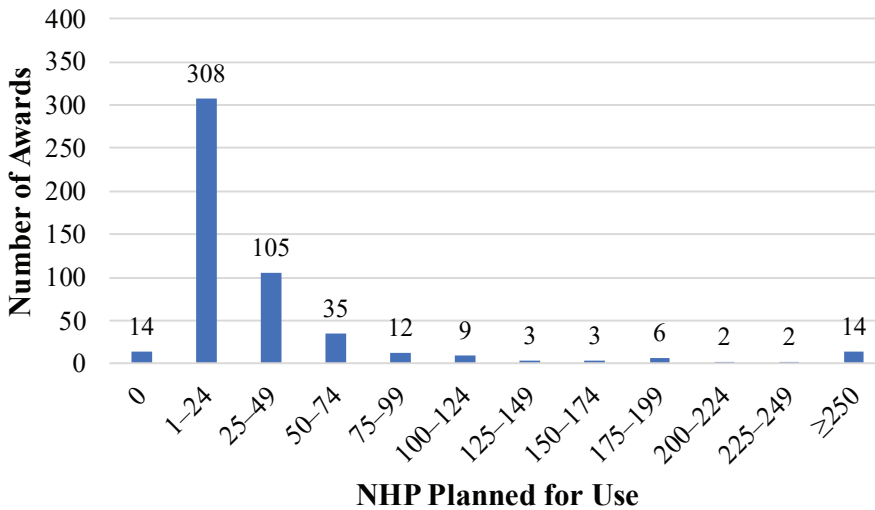
NOTE: Responses were grouped into the ranges presented on the X axis.

Question 7) How many nonhuman primates were ultimately used or are currently being used, if research is ongoing? [Validation: Must be numeric]

	Response Overview
Mean Nonhuman Primates Used	35
Median Nonhuman Primates Used	10
Minimum Nonhuman Primates Used	0
Maximum Nonhuman Primates Used	2300
Total unique awards	501
Total unique respondents	257
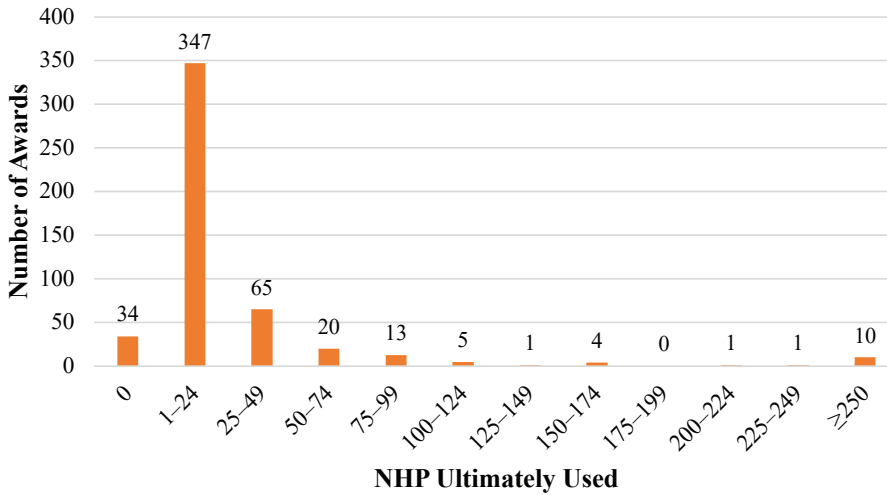
NOTE: Responses were grouped into the ranges presented on the x axis.

Question 8) If the number of nonhuman primates planned differs from the number of animals used, was this related to any of the following? Select all that apply.
[ ] Change of study design
[ ] Availability of nonhuman primates
[ ] Cost of nonhuman primates
[ ] N/A
[ ] Other: _____

	Response Frequency
Change of study design	67
Availability of nonhuman primates	174
Cost of nonhuman primates	68
N/A	166
Other	126
Total awards	469
Unique respondents	246

Question 9) For this award, how quickly did you need to enroll nonhuman primates on your project?
( ) Less than 3 months
( ) More than 3 months but less than 6 months
( ) More than 6 months but less than a year
( ) Greater than a year

	Response Frequency
Less than 3 months	247
More than 3 months but less than 6 months	133
More than 6 months but less than a year	67
Greater than a year	55
Total awards	**502**
Unique respondents	**256**

Question 10) For this award, how quickly were you able to access and enroll nonhuman primates on your project?
( ) Less than 3 months
( ) More than 3 months but less than 6 months
( ) More than 6 months but less than a year
( ) Greater than a year
( ) Other – Write In: _____

	Response Frequency
Less than 3 months	119
More than 3 months but less than 6 months	124
More than 6 months but less than a year	129
Greater than a year	75
Other	57
Total awards	**514**
Unique respondents	**256**

Question 11) From what source(s) did you obtain the nonhuman primates used in this active NIH award? Please check all that apply.
[ ] From my institute
[ ] From an NPRC
[ ] From a domestic breeder
[ ] Imported
[ ] Other – Write In: _____

	Response Frequency
From my institute	111
From an NPRC	245
From a domestic breeder	114
Imported	59
Other	85
Total awards	**507**
Unique respondents	**259**

Question 12) Please indicate your primary domain(s) of research for this award or contract from the list below. Click all that apply.
[ ] Alzheimer's Disease and Related Dementias
[ ] Anatomy and/or Neuroanatomy
[ ] Auditory System Function & Disorders
[ ] Behavior & Psychological Research (including animal welfare)

[ ] Behavioral and Systems Neuroscience
[ ] Blood Disorders
[ ] Cancer
[ ] Cardiovascular Disease
[ ] Dental/Oral Disease
[ ] Diabetes
[ ] General Molecular Immunology (non-Disease Specific)
[ ] HIV/AIDS
[ ] Infectious Diseases – bacterial
[ ] Infectious Diseases – viral (non-HIV/AIDS)
[ ] Infectious Diseases – parasitic
[ ] Infectious Diseases – fungal
[ ] Musculoskeletal & Neuromusculoskeletal Disorders
[ ] Molecular Neuroscience
[ ] Nutritional and Metabolic Disorders (excluding Diabetes)
[ ] Pharmacology
[ ] Regenerative Medicine & Transplantation
[ ] Reproductive Health
[ ] Respiratory System
[ ] Toxicology
[ ] Urologic Diseases
[ ] Visual System
[ ] Welfare/Behavioral Management
[ ] Other: _____

	Response Frequency
Alzheimer's Disease and Related Dementias	37
Anatomy and/or Neuroanatomy	38
Auditory System Function & Disorders	7
Blood Disorders	7
Behavior & Psychological Research (including animal welfare)	43
Cancer	10
Cardiovascular Disease	15
Dental/Oral Disease	1
Diabetes	18
HIV/AIDS	91
Infectious Diseases – bacterial	35
Infectious Diseases – viral (non-HIV/AIDS)	52
Infectious Diseases – parasitic	7
Infectious Diseases – fungal	0
General Molecular Immunology (non-Disease Specific)	10
Musculoskeletal & Neuromusculoskeletal Disorders	5
Behavioral and Systems Neuroscience	155
Molecular Neuroscience	43
Nutritional and Metabolic Disorders (excluding Diabetes)	13

Regenerative Medicine & Transplantation	31
Reproductive Health	44
Respiratory System	10
Urologic Diseases	0
Visual System	50
Pharmacology	28
Toxicology	6
Welfare/Behavioral Management	3
Other	84
Total awards	482
Unique respondents	250

Page entry logic: This page will show when: #2 Question "For how many **active NIH-funded awards or contracts** for which you are a PI have you used or are you planning to use nonhuman primates? If you are a PI on more than 10 active NIH awards, please indicate that you have more than 10 awards. We will only be asking for information on 10 NIH awards." is one of the following answers ("2","3","4","5","6","7","8","9","10",">10")

Questions for All NIH Awards Involving the Use of Nonhuman Primates

NOTE: Numbering of questions below reflects numbering if information about 10 NIH awards using NHPs were added.

Question 113) Which of the following options best describes the institution at which you carry out your research?
( ) National Primate Research Center
( ) National resource or academic center with breeding colony
( ) Other academic center
( ) Federal laboratory
( ) Commercial organization

	Response Frequency
National Primate Research Center	82
National resource or academic center with breeding colony	23
Other academic center	153
Federal laboratory	1
Commercial organization	13
Unique respondents	272

Question 114) For any of your active NIH awards, have you had issues with obtaining non-human primates in a timely fashion?
( ) Yes
( ) No

	Response Frequency
Yes	176
No	94
No Answer	3
Unique Respondents	273

Question 115) Have these issues been related to any of the following challenges? Select all that apply.
[ ] Infrastructure issues (e.g., lack of access to appropriate equipment for conducting research)
[ ] Funding and costs associated with obtaining nonhuman primates
[ ] Transportation
[ ] Availability from my preferred source
[ ] Availability of specific demographics of animals (e.g., age classes, sex)
[ ] Availability of animals with specific genotypes or genetic diversity
[ ] Other – Write In: _____

> Logic: Hidden unless: #114 Question "For any of your active NIH awards, have you had issues with obtaining nonhuman primates in a timely fashion?" is one of the following answers ("Yes")

	Response Frequency
Infrastructure issues (e.g., lack of access to appropriate equipment for conducting research)	50
Funding and costs associated with obtaining nonhuman primates	76
Transportation	32
Availability from my preferred source	87
Availability of specific demographics of animals (e.g., age classes, sex)	126
Availability of animals with specific genotypes or genetic diversity	27
Other	44
Unique respondents	175

Question 116) Did issues with obtaining nonhuman primates result in any of the following? Select all that apply.
[ ] Delays in research
[ ] Alterations to study design (including reduction of sample size)
[ ] Loss of grant funding or termination of study
[ ] Other – Write In: _____

Logic: Hidden unless: #114 Question "For any of your active NIH awards, have you had issues with obtaining nonhuman primates in a timely fashion?" is one of the following answers ("Yes")

	Response Frequency
Delays in research	158
Alterations to study design (including reduction of sample size)	92
Loss of grant funding or termination of study	6
Other	15
Unique respondents	173

Section 2: Researcher Perspectives on the Future of Nonhuman Primate Research

Question 117) For future grant applications to be submitted in the next 5 years, do you anticipate using nonhuman primates as part of your research?
( ) Yes
( ) No

Logic: Show/hide trigger exists.

	Response Frequency
Yes	258
No	14
Unique Respondents	272

Question 118) What species are you most likely to use? Check all that apply. [Validation: Max. answers = 3 *(if answered)*]
[ ] African Green, Vervet, or Grivet
[ ] Baboon
[ ] All Owl Monkey Species
[ ] All Capuchin Species
[ ] Common Marmoset
[ ] Macaque – Crab Eating, Cynomolgus, or Longtailed
[ ] Macaque – Japanese
[ ] Macaque – Pigtailed
[ ] Macaque – Rhesus
[ ] Sooty Mangabey
[ ] Squirrel Monkey
[ ] Titi Monkey
[ ] White Capped Mangabey
[ ] Other – Write In: _____

Logic: Hidden unless: #117 Question "For future grant applications to be submitted in the next 5 years, do you anticipate using nonhuman primates as part of your research?" is one of the following answers ("Yes")

	Response Frequency
African Green, Vervet, or Grivet	15
Baboon	28
All Owl Monkey Species	2
All Capuchin Species	4
Common Marmoset	29
Macaque – Crab Eating, Cynomolgus, or Longtailed	58
Macaque – Japanese	4
Macaque – Pigtailed	20
Macaque – Rhesus	211
Sooty Mangabey	0
Squirrel Monkey	7
Titi Monkey	1
White Capped Mangabey	0
Other	6
Unique respondents	258

Question 119) In thinking about the future of nonhuman primates research, are there research domains in which you think it is important to strategically invest? Check up to three research domains.

[ ] Alzheimer's Disease and Related Dementias
[ ] Aging
[ ] Anatomy and/or Neuroanatomy
[ ] Auditory System Function & Disorders
[ ] Blood Disorders
[ ] Behavior & Psychological Research (including animal welfare)
[ ] Behavioral and Systems Neuroscience
[ ] Cancer
[ ] Cardiovascular Disease
[ ] Dental/Oral Disease
[ ] Diabetes
[ ] General Molecular Immunology (non-Disease Specific)
[ ] HIV/AIDS
[ ] Infectious Diseases – bacterial
[ ] Infectious Diseases – viral (non-HIV/AIDS)
[ ] Infectious Diseases – parasitic
[ ] Infectious Diseases – fungal
[ ] Musculoskeletal & Neuromusculoskeletal Disorders
[ ] Molecular Neuroscience
[ ] Nutritional and Metabolic Disorders (excluding Diabetes)
[ ] Pharmacology
[ ] Regenerative Medicine & Transplantation

[ ] Reproductive Health
[ ] Respiratory System
[ ] Urologic Diseases
[ ] Toxicology
[ ] Visual System
[ ] Welfare/Behavioral Management
[ ] Other – Write In: _____

	Response Frequency
Alzheimer's Disease and Related Dementias	49
Aging	46
Anatomy and/or Neuroanatomy	25
Auditory System Function & Disorders	7
Behavior & Psychological Research (including animal welfare)	27
Behavioral and Systems Neuroscience	102
Blood Disorders	4
Cancer	9
Cardiovascular Disease	13
Dental/Oral Disease	1
Diabetes	13
General Molecular Immunology (non-Disease Specific)	14
HIV/AIDS	41
Infectious Diseases – fungal	2
Infectious Diseases – parasitic	7
Infectious Diseases – viral (non-HIV/AIDS)	79
Infectious Diseases – bacterial	29
Molecular Neuroscience	32
Musculoskeletal & Neuromusculoskeletal Disorders	4
Nutritional and Metabolic Disorders (excluding Diabetes)	9
Other – Write In	34
Pharmacology	8
Regenerative Medicine & Transplantation	35
Reproductive Health	28
Respiratory System	4
Toxicology	6
Urologic Diseases	0
Visual System	33
Welfare/Behavioral Management	4
Unique respondents	259

Question 120) From your perspective, what do you see as the major **challenges** facing non-human primate research and/or researchers in the next 10 years? [Free text response]

_____

	Response Frequency
Unique respondents	264

Question 121) From your perspective, what do you see as the major **opportunities** facing nonhuman primate research and/or researchers in the next 10 years? [Free text response]

	Response Frequency
Unique respondents	253

Question 122) There is an increasing push for openness in science with the goal of improving scientific rigor. Please indicate any such practices in which you are engaged as related to research using nonhuman primates using the check list below. Select all that apply.
[ ] Sharing data (i.e., raw or aggregate data is deposited in trusted repository minimally upon submission or publication of a manuscript)
[ ] Analytic methods (code) sharing (i.e., code to run analyses is deposited in a trusted repository)
[ ] Research materials sharing (i.e., materials required to carry out experiment are deposited in a trusted repository or available via some other publicly known method)
[ ] Design and analysis transparency (i.e., publications detail sufficient experimental details to recreate experiments, including the use of standardized checklists like the ARRIVE guidelines, reporting of variables such as social housing conditions of animals, etc.)
[ ] Pre-registration of studies
[ ] Pre-registration of analysis plans
[ ] Engagement in replicating existing studies
[ ] Meta-analytic or quantitative reviews of existing literature
[ ] Other – Write In: _____

	Response Frequency
Sharing data (i.e., raw or aggregate data is deposited in trusted repository minimally upon submission or publication of a manuscript)	212
Analytic methods (code) sharing (i.e., code to run analyses is deposited in a trusted repository)	131
Research materials sharing (i.e., materials required to carry out experiment are deposited in a trusted repository or available via some other publicly known method)	158
Design and analysis transparency (i.e., publications detail sufficient experimental details to recreate experiments, including the use of standardized checklists like the ARRIVE guidelines, reporting of variables such as social housing conditions of animals, etc.)	194
Pre-registration of studies	21
Pre-registration of analysis plans	17
Engagement in replicating existing studies	70

Meta-analytic or quantitative reviews of	
existing literature	45
Other	21
Unique respondents	263

Question 123) If you are not engaged in such practices at all, or not engaged in such practices as fully as you would like to be, what are the barriers that prevent you from engaging in such openness practices? [Free text response]

	Response Frequency
Unique respondents	121

Question 124) Is there anything else you would like the study committee to know about NIH-supported nonhuman primate research? [Free text response]

	Response Frequency
Unique respondents	153

Thank You!