United States Department of Agriculture
Animal and Plant Health Inspection Service

2016082568419978 Insp_id

Inspection Report

I I T Research Institute
10 West 35th Street
Chicago, IL 60616

Customer ID: **694**
Certificate: **33-R-0008**
Site: 001
ITT RESEARCH INSTITUTE

Type: ROUTINE INSPECTION
Date: 19-JUN-2017

No non-compliant items identified during this inspection.

This inspection and exit briefing was conducted with the facility representative.

Prepared By:

BARKSDALE DAWN, D V M USDA, APHIS, Animal Care

Title: VETERINARY MEDICAL OFFICER 1062

Date: 19-JUN-2017

Received By:

(b) (6), (b) (7)(C)

Title: SENT BY EMAIL

Date: 19-JUN-2017

United States Department of Agriculture
Animal and Plant Health Inspection Service

Customer: 694
Inspection Date: 19-JUN-17

Animal Inspected at Last Inspection

Cust No	Cert No	Site	Site Name	Inspection
694	33-R-0008	001	I I T RESEARCH INSTITUTE	19-JUN-17

Count	Species
000002	WHITE-EARED MARMOSET
000004	DOMESTIC RABBIT / EUROPEAN RABBIT
000004	RHESUS MACAQUE
000018	DOG ADULT
000052	CRAB-EATING MACAQUE / LONG-TAILED MACAQUE / CYNOMOLGUS MONKEY
000100	DOMESTIC FERRET
000180	**Total**

United States Department of Agriculture
Animal and Plant Health Inspection Service

2016082569060576 Insp_id

Inspection Report

I I T Research Institute
10 West 35th Street
Chicago, IL 60616

Customer ID: **694**
Certificate: **33-R-0008**
Site: 001
ITT RESEARCH INSTITUTE

Type: ROUTINE INSPECTION
Date: 22-FEB-2018

No non-compliant items identified during this inspection.

This inspection and exit briefing was conducted with facility representatives.

Additional Inspectors

Steneroden Katie, Veterinary Medical Officer

Prepared By:

BARKSDALE DAWN, D V M USDA, APHIS, Animal Care

Date: 22-FEB-2018

Title: VETERINARY MEDICAL OFFICER 1062

Received By:

(b) (6), (b) (7)(C)

Title: LAM SECTION HEAD

Date: 23-FEB-2018

United States Department of Agriculture
Animal and Plant Health Inspection Service

Customer: 694
Inspection Date: 22-FEB-18

Animal Inspected at Last Inspection

Cust No	Cert No	Site	Site Name	Inspection
694	33-R-0008	001	ITT RESEARCH INSTITUTE	22-FEB-18

Count	Species
000004	DOMESTIC RABBIT / EUROPEAN RABBIT
000006	CRAB-EATING MACAQUE / CYNOMOLGUS MONKEY
000012	RHESUS MACAQUE
000036	DOMESTIC FERRET
000052	DOG ADULT
000110	**Total**

United States Department of Agriculture
Animal and Plant Health Inspection Service

2016082569397843 Insp_id

Inspection Report

I I T Research Institute
10 West 35th Street
Chicago, IL 60616

Customer ID: **694**
Certificate: **33-R-0008**
Site: 001
ITT RESEARCH INSTITUTE

Type: FOCUSED INSPECTION
Date: 08-MAR-2019

No non-compliant items identified during this inspection.

This inspection and exit briefing was conducted with the facility representative.

Prepared By:

BARKSDALE DAWN, D V M USDA, APHIS, Animal Care

Date: 08-MAR-2019

Title: VETERINARY MEDICAL OFFICER 1062

Received By:

(b) (6), (b) (7)(C)

Title: SENT BY EMAIL

Date: 08-MAR-2019

19-04102_000005

United States Department of Agriculture
Animal and Plant Health Inspection Service

Customer: 694
Inspection Date: 08-MAR-19

Species Inspected

Cust No	Cert No	Site	Site Name	Inspection
694	33-R-0008	001	ITT RESEARCH INSTITUTE	08-MAR-19

No Animals were Inspected.

Count	Scientific Name	Common Name
000000	NONE	NONE
000000	Total	

Research Facility Protocol Selection Worksheet*

Legal Name: Illinois Institute Technology

Customer Number: 694 **Certificate Number:** 33-R-0008 **Site Number:** 001

Inspection Date: Mar 08, 2019

Inspection Type: **Routine** ☑ **Focused** ☐ **(list areas inspected)**_____

Inspector: Dawn Barksdale

Reasons Protocols Were Selected for Review :	**How Many Protocols Were Selected**
1. Protocols identified during inspection of concern (select all)	0
2. Column E protocols (select all)	2
3. Protocols with IACUC-approved exemptions/exceptions (select all)	0
4. Protocols cited as noncompliant and not corrected during the last inspection (select all)	0
5. Additional Protocols Selected: a. If <5 remaining protocols, select all remaining: b. If >5 remaining protocols, select 5 additional protocols: 1) Protocol for each regulated species and/or, 2) Protocols involving high risk procedures (see Chapter 7, Animal Welfare Inspection Guide for guidance):	3
Total Protocols Selected and Reviewed	5

*Note: Protocol selection guidance applies to protocols which have been initially approved, or have had significant changes approved, since the last inspection. For protocols reviewed by an Animal Care Veterinary Medical Officer within the last year, professional judgment should be used in determining whether another review is necessary.

Version 2/11/19

From: (b) (6), (b) (7)(C)
To: Barksdale, Dawn E - APHIS
Subject: Re: USDA inspection
Date: Thursday, March 14, 2019 6:13:23 PM

Good evening -

Thank you so much for the report and review. I have reviewed the report.

This email was in my draft folder.

Thanks for the follow up!

My best,
(b) (6), (b) (7)(C)

On Mar 8, 2019, at 4:54 PM, Barksdale, Dawn E - APHIS <Dawn.E.Barksdale@aphis.usda.gov> wrote:

> Good afternoon (b) (6), (b) (7)(C)
>
> It was a pleasure to meet with you today. As we discussed I am forwarding a copy of the report to you. Once you have reviewed the report, your response to this email will serve as your signature. Again, if you have any further questions regarding Category E protocols, please let me know.
>
> Regards,
>
> Dawn Barksdale, DVM
> Veterinary Medical Officer
> dawn.e.barksdale@aphis.usda.gov
> 920 Main Campus Drive, Ste 200
> Raleigh, NC 27606
> (b) (6), (b) (7)(C) Cell
>
> This electronic message contains information generated by the USDA solely for the intended recipients. Any unauthorized interception of this message or the use or disclosure of the information it contains may violate the law and subject the violator to civil or criminal penalties. If you believe you have received this message in error, please notify the sender and delete the email immediately.
>
> <iit2019.pdf>

Every research facility, exhibitor, carrier, and intermediate handler not required to be licensed under Section 3 of the Animal Welfare Act, shall register with the USDA (7 USC 2136). This application provides information for such registration.

OMB No. 0579-0036
FORM APPROVED

U.S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

APPLICATION FOR REGISTRATION

(TYPE OR PRINT)

REGISTRATION UPDATE

USDA USE ONLY

Applicant should send completed form to this address.
USDA APHIS ANIMAL CARE
EASTERN
920 Main Campus Drive
Suite 200
Raleigh, NC 27606-5210
(919) 855-7100

JUL 25 2017

CERTIFICATE NO./CUST NO:
33-R-0008

694

RENEWAL DATE
24-Aug-2017
24 Aug 2020 SA

1. REGISTRANT *(Name and permanent mailing address, including Zip Code)*

I I T Research Institute
10 West 35th Street
Chicago, IL 60616

COUNTY: COOK TELEPHONE (312) 567 - 4972

2. LOCATION (S) OF BUSINESS, EXHIBITION SITE(s), OR RESEARCH FACILITIES *(Use additional sheets if necessary)*

10 West 35th Street
Chicago, IL 60616
County: Cook

3. (A) PREVIOUS USDA REGISTRATION NUMBER (IF ANY)

4. (B) ACTIVE USDA CERTIFICATE NUMBER(S) IN WHICH YOU HAVE AN INTEREST

5. ARE YOU USING FEDERAL FUNDS TO CARRY OUT RESEARCH, TESTS, OR EXPERIMENTS

☒ Yes ☐ No

6. TYPE OF REGISTRATION:

◇ Class E – Exhibitor ◇ Class H – Intermediate Handler
◈ Class R – Research Facility ◇ Class T - Carrier

7. FEDERAL FUND TYPES:

◇ Award ☒ Contract ☒ Grant ◇ Loan

8. TYPE OF ORGANIZATION:

◇ Partnership ☒ Corporation ◇ Individual
◈ Other *(Specify)* NOT FOR PROFIT

9. IF INDIVIDUAL IDENTIFY EACH OWNER, IF PARTNERSHIP IDENTIFY EACH PARTNER OR OFFICER, IF CORPORATION, IDENTIFY PRINCIPAL OFFICERS FOR RESEARCH FACILITIES INCLUDE THE INSTITUTIONAL OFFICIAL (Use separate sheet if needed)

A NAME	B TITLE	C ADDRESS
(b) (6), (b) (7)(C), (b) (7)(F)		

CERTIFICATION

I hereby register as a Research Facility, Exhibitor, Carrier, or Intermediate Handler under the Animal Welfare Act, 7 U.S.C., 2131 et seq. and I certify that the information provided herein is true and correct to the best of my knowledge. I hereby acknowledge receipt of and agree to comply with all the regulations and standards contained in 9 CFR, Subpart A, parts 1, 2 and 3. I certify that all listed persons are 18 years of age or older.

10. (b) (6), (b) (7)(C) 12. DATE SIGNED 7/24/17

APHIS FORM 7011
(FEB 2009)

USDA

EXPIRATION DATE: AUGUST 24, 2020

United States Department of Agriculture

Marketing and Regulatory Programs

Animal and Plant Health Inspection Service

Animal Care

This is to certify that

I I T RESEARCH INSTITUTE

is a registered under the

CLASS R RESEARCH FACILITY

Animal Welfare Act

(7 U.S.C. 2131 et seq.)

Certificate No. 33-R-0008

Customer No. 694

Deputy Administrator

APHIS FORM 7021 (NOV 95) *Previous editions are obsolete.*

19-04102_000011

OMB APPROVED
0579-0036
Exp. 10/31/2018

This report is required by law (7 U.S.C. 2143). Failure to report according to the regulations can result in an order to cease and desist and to be subject to penalties as provided for in Section 2150.

Interagency Report Control No. 0180-DOA-AN

Fiscal Year 2017

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

ANNUAL REPORT OF RESEARCH FACILITY

(TYPE OR PRINT)

1. REGISTRATION NUMBER
33-R-0008

2. HEADQUARTERS RESEARCH FACILITY *(Name, address, and telephone number as registered with USDA, include ZIP Code)*

I I T RESEARCH INSTITUTE
10 WEST 35TH STREET

CHICAGO, IL 60616

3. REPORTING FACILITY *(List all locations where animals were housed or used in actual research, testing, teaching, or experimentation, or held for these purposes. Attach additional sheets, if necessary.)*

FACILITY LOCATIONS *(Sites)*

ITT RESEARCH INSTITUTE	

REPORT OF ANIMALS USED BY OR UNDER CONTROL OF RESEARCH FACILITY *(Attach additional sheets, if necessary, or use APHIS FORM 7023A.)*

A. Animals Covered By The Animal Welfare Regulations	B. Number of animals being bred, conditioned, or held for use in teaching, testing, experiments, research, or surgery but not yet used for such purposes.	C. Number of animals upon which teaching, research, experiments, or tests were conducted involving no pain, distress, or use of pain-relieving drugs.	D. Number of animals upon which experiments, teaching, research, surgery, or tests were conducted involving accompanying pain or distress to the animals and for which appropriate anesthetic, analgesic, or tranquilizing drugs were used.	E. Number of animals upon which teaching, experiments, research, surgery, or tests were conducted involving accompanying pain or distress to the animals and for which the use of appropriate anesthetic, analgesic, or tranquilizing drugs would have adversely affected the procedures, results, or interpretation of the teaching, research, experiments, surgery, or tests. *(An explanation of the procedures producing pain or distress on these animals and the reasons such drugs were not used must be attached to this report.)*	F. TOTAL NUMBER OF ANIMALS **(Cols. C + D + E)**
4. Dogs	0	92	0	5	97
5. Cats	0	0	0	0	0
6. Guinea Pigs	0	40	0	0	40
7. Hamsters	0	0	0	0	0
8. Rabbits	0	4	100	0	104
9. Non-human Primates	3	94	7	0	101
10. Sheep	0	0	0	0	0
11. Pigs	0	0	0	0	0
12. Other Farm Animals					
13. Other Animals	0	84	0	308	392

ASSURANCE STATEMENTS

1.) Professionally acceptable standards governing the care, treatment, and use of animals, including appropriate use of anesthetic, analgesic, and tranquilizing drugs, prior to, during, and following actual research, teaching, testing, surgery, or experimentation were followed by this research facility.

2.) Each principal investigator has considered alternatives to painful procedures.

3.) This facility is adhering to the standards and regulations under the Act, and it has required that exceptions to the standards and regulations be specified and explained by the principal investigator and approved by the Institutional Animal Care and Use Committee (IACUC). **A summary of all such exceptions is attached to this annual report.** In addition to identifying the IACUC approved exceptions, this summary includes a brief explanation of the exceptions, as well as the species and number of animals affected.

4.) The attending veterinarian for this research facility has appropriate authority to ensure the provisions of adequate veterinary care and to oversee the adequacy of other aspects of animal care and use.

CERTIFICATION BY HEADQUARTERS RESEARCH FACILITY OFFICIAL

(Chief Executive Officer (C.E.O.) or Legally Responsible Institutional Official (I.O.))

I certify that the above is true, correct, and complete (7 U.S.C. Section 2143).

SIGNATURE OF C.E.O. OR I.O.	NAME AND TITLE OF C.E.O. OR I.O. *(Type or Print)*	DATE SIGNED
	(b) (6), (b) (7)(C)	31-JAN-2018

APHIS FORM 7023
JUL 2013

19-04102_000012

OMB APPROVED
0579-0036

This report is required by law (7 U.S.C. 2143). Failure to report according to the regulations can result in an order to cease and desist and to be subject to penalties as provided for in Section 2150.

Interagency Report Control No. 0180-DOA-AN

Fiscal Year 2017

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

CONTINUATION SHEET FOR ANNUAL REPORT OF RESEARCH FACILITY

(TYPE OR PRINT)

1. REGISTRATION NUMBER
33-R-0008

2. HEADQUARTERS RESEARCH FACILITY *(Name, address, and telephone number as registered with USDA, include ZIP Code)*

I I T RESEARCH INSTITUTE
10 WEST 35TH STREET
CHICAGO, IL 60616

REPORT OF ANIMALS USED BY OR UNDER CONTROL OF RESEARCH FACILITY *(Attach additional sheets if necessary or use this form.)*

A. Animals Covered By The Animal Welfare Regulations	B. Number of animals being bred, conditioned, or held for use in teaching, testing, experiments, research, or surgery but not yet used for such purposes.	C. Number of animals upon which teaching, research, experiments, or tests were conducted involving no pain, distress, or use of pain-relieving drugs.	D. Number of animals upon which experiments, teaching, research, surgery, or tests were conducted involving accompanying pain or distress to the animals and for which appropriate anesthetic, analgesic, or tranquilizing drugs were used.	E. Number of animals upon which teaching, experiments, research, surgery, or tests were conducted involving accompanying pain or distress to the animals and for which the use of appropriate anesthetic, analgesic, or tranquilizing drugs would have adversely affected the procedures, results, or interpretation of the teaching, research, experiments, surgery, or tests. *(An explanation of the procedures producing pain or distress on these animals and the reasons such drugs were not used must be attached to this report.)*	F. TOTAL NUMBER OF ANIMALS **(Cols. C + D + E)**
COTTON RATS	0	75	0	0	75
FERRETS	0	9	0	308	317

ASSURANCE STATEMENTS

1.) Professionally acceptable standards governing the care, treatment, and use of animals, including appropriate use of anesthetic, analgesic, and tranquilizing drugs, prior to, during, and following actual research, teaching, testing, surgery, or experimentation were followed by this research facility.

2.) Each principal investigator has considered alternatives to painful procedures.

3.) This facility is adhering to the standards and regulations under the Act, and it has required that exceptions to the standards and regulations be specified and explained by the principal investigator and approved by the Institutional Animal Care and Use Committee (IACUC). **A summary of all such exceptions is attached to this annual report.** In addition to identifying the IACUC approved exceptions, this summary includes a brief explanation of the exceptions, as well as the species and number of animals affected.

4.) The attending veterinarian for this research facility has appropriate authority to ensure the provisions of adequate veterinary care and to oversee the adequacy of other aspects of animal care and use.

CERTIFICATION BY HEADQUARTERS RESEARCH FACILITY OFFICIAL

(Chief Executive Officer (C.E.O.) or Legally Responsible Institutional Official (I.O.))

I certify that the above is true, correct, and complete (7 U.S.C. Section 2143).

SIGNATURE OF C.E.O. OR I.O.	NAME AND TITLE OF C.E.O. OR I.O. *(Type or Print)*	DATE SIGNED
	(b) (6), (b) (7)(C)	31-JAN-2018

APHIS FORM 7023A
AUG 2013 19-04102_000013

OMB APPROVED
0579-0036

Interagency Report Control No. 0180-DOA-AN

Fiscal Year: 2018

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

ANNUAL REPORT OF RESEARCH FACILITY

(TYPE OR PRINT)

REGISTRATION NUMBER **33-R-0008**

Customer Number **694**

2. HEADQUARTERS RESEARCH FACILITY *(Name and Address, as registered with USDA, include ZIP Code)*

I I T RESEARCH INSTITUTE

10 WEST 35TH STREET

CHICAGO, IL 60616

Telephone: (312) 567-4972

3. REPORTING FACILITY *(List all locations where animals were housed or used in actual research, testing, teaching, or experimentation, or held for these purposes. Attach additional sheets if necessary)*
FACILITY LOCATIONS *(Sites)* *See Attached Listing*

REPORT OF ANIMALS USED BY OR UNDER CONTROL OF RESEARCH FACILITY *(Attach additional sheets if necessary or use APHIS FORM 7023A.)*

A. Animals Covered By The Animal Welfare Regulations	**B.** Number of animals being bred, conditioned, or held for use in teaching, testing, experiments, research, or surgery but not yet used for such purposes.	**C.** Number of animals upon which teaching, research, experiments, or tests were conducted involving no pain, distress, or use of pain-relieving drugs.	**D.** Number of animals upon which experiments, teaching, research, surgery, or tests were conducted involving accompanying pain or distress to the animals and for which appropriate anesthetic, analgesic, or tranquilizing drugs were used.	**E.** Number of animals upon which teaching, experiments, research, surgery, or tests were conducted involving accompanying pain or distress to the animals and for which the use of appropriate anesthetic, analgesic, or tranquilizing drugs would have adversely affected the procedures, results, or interpretation of the teaching, research, experiments, surgery, or tests. *(An explanation of the procedures producing pain or distress on these animals and the reasons such drugs were not used must be attached to this report.)*	**F.** TOTAL NUMBER OF ANIMALS **(Cols. C + D + E)**
4 Dogs	44	236	11	17	264
5 Cats	0	0	0	0	0
6 Guinea Pigs	0	0	0	0	0
7 Hamsters	0	0	0	0	0
8 Rabbits	9	0	223	0	223
9 Non-Human Primates	5	59	3	5	67
10 Sheep	0	0	0	0	0
11 Pigs	0	0	0	0	0
12 Other Animals	0	0	0	30	30
Ferrets	0	0	0	30	30

ASSURANCE STATEMENTS

1.) Professionally acceptable standards governing the care, treatment, and use of animals, including appropriate use of anesthetic, analgesic, and tranquilizing drugs, prior to, during, and following actual research, teaching, testing, surgery, or experimentation were followed by this research facility.

2.) Each principal investigator has considered alternatives to painful procedures.

3.) This facility is adhering to the standards and regulations under the Act, and it has required that exceptions to the standards and regulations be specified and explained by the principal investigator and approved by the Institutional Animal Care and Use Committee (IACUC). **A summary of all such exceptions is attached to this annual report.** In addition to identifying the IACUC approved exceptions, this summary includes a brief explanation of the exceptions, as well as the species and number of animals affected.

4.) The attending veterinarian for this research facility has appropriate authority to ensure the provisions of adequate veterinary care and to oversee the adequacy of other aspects of animal care and use.

CERTIFICATION BY HEADQUARTERS RESEARCH FACILITY OFFICIAL
(Chief Executive Officer (C.E.O.) or Legally Responsible Institutional Official (I.O.)) I certify that the above is true, correct, and complete (7 U.S.C. Section 2143).

SIGNATURE OF C.E.O. OR I.O.	**NAME AND TITLE OF C.E.O. OR I.O.** *(Type or Print)*	**DATE SIGNED**
	(b) (6), (b) (7)(C)	21-NOV-2018

APHIS FORM 7023
JUL 2013

19-04102_000014

Category E Explanation
Registration Number: 33-R-0008
Customer No. 694

Data from preclinical toxicology and pharmacokinetics studies provide key information to support the selection of appropriate doses of new therapeutic agents for use in clinical trials, and to identify sensitive target organs that should be monitored in those trials.

In our studies, animals are observed at least twice daily to identify any evidence of drug toxicity and to identify animals that should be considered for euthanasia due to moribundity or evidence of pain or distress. Criteria for animal euthanasia are defined by institutional Standard Operating Procedures; moribundity is confirmed and the decision to euthanize is made by the Study Veterinarian, Study Veterinary Pathologist, and/or the Study Director.

In a preclinical toxicology and pharmacokinetics study of a novel small molecule therapeutic, five nonhuman primates (marmosets) demonstrated clinical evidence of toxicity resulting from exposure to the test article. Toxic effects identified in one or more study animals during routine observations included mild weight loss, vomiting, reduction in food intake, and neurologic signs. Necropsy data did not demonstrate evidence of gross pathology.

Analgesic agents cannot be administered in such studies for the following reasons:

- Many common analgesics (e.g., non-steroidal anti-inflammatory drugs) can modulate the activity of enzymes involved in drug metabolism, with resulting effects on agent Absorption, Distribution, Metabolism, and/or Excretion (ADME). For this reason, co-administration of analgesic agents in a preclinical toxicology study may have a significant impact on agent toxicity with resulting influences on study results.
- Administration of analgesics may mask clinical signs of toxicity, and thereby reduce the sensitivity of the test system to identify toxicologic effects of mild to moderate severity.

The animal species and group numbers used in this study were selected to meet published FDA and ICH standards for the design of preclinical safety assessments of novel therapeutic agents. The use of non-rodent test systems is mandated by U.S. and international regulatory agencies, and no *in vitro* alternatives are accepted by these agencies. Furthermore, literature searches performed prior to the initiation of these studies were not successful in identifying alternate model systems that are both (a) scientifically rigorous and (b) acceptable to the FDA and other regulatory agencies.

Category E Explanation
Registration Number: 33-R-0008
Customer No. 694

In a preclinical toxicology study of a novel small molecule therapeutic drug, seventeen dogs demonstrated clinical evidence of toxicity as a result of exposure to the test article. Toxic effects included mild weight loss, vomiting, decrease in appetite, and/or neurologic signs. Dogs were observed at least twice daily throughout the studies to identify toxic effects and to identify animals that should be euthanized due to the development of a moribund state (as defined by institutional Standard Operating Procedures). All dogs underwent a complete necropsy with tissue collection; a full set of tissues from each animal was evaluated histopathologically. Data from these studies were critical parameters supporting the selection of appropriate doses of these therapeutic agents for use in clinical trials, and in identifying sensitive target organs that should be monitored in those trials.

Analgesic agents cannot be administered in such studies for the following reasons:

- Many common analgesics (e.g., non-steroidal anti-inflammatory drugs) can modulate the activity of enzymes involved in drug metabolism, with resulting effects on agent Absorption, Distribution, Metabolism, and/or Excretion (ADME). For this reason, co-administration of analgesic agents in a preclinical toxicology study may have a significant impact on agent toxicity with resulting influences on study results.
- Administration of analgesics may mask clinical signs of toxicity, and thereby reduce the sensitivity of the test system to identify toxicologic effects of mild to moderate severity.

The animal species and group numbers used in these studies were selected to meet published FDA and ICH standards for the design of preclinical safety assessments of novel therapeutic agents. The use of non-rodent test systems is mandated by U.S. and international regulatory agencies, and no *in vitro* alternatives are accepted by these agencies. Furthermore, literature searches performed prior to the initiation of these studies were not successful in identifying alternate model systems that are both (a) scientifically rigorous and (b) acceptable to the FDA and other regulatory agencies.