

	UCSD INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE POLICY MANUAL	POLICY 38.01
	Policy on Literature Search for Alternatives	Approval Date: 09.18.13

## **I. Background & Purpose**

Federal Regulations, including the Animal Welfare Act and the Animal Welfare Regulations require a Literature Search for Alternatives for any protocol application for USDA-covered species.

Title 9 of the Code of Federal Regulations (9CFR, Part 2, Sec.2.31 (d) states "...the IACUC shall determine that... (ii) The principal investigator has considered alternatives to procedures that may cause more than momentary or slight pain or distress to the animals, and has provided a written narrative description of the methods and sources, e.g. the Animal Welfare Information Center, used to determine that alternatives were not available...."

USDA/Animal Care Policy 12 states "...the performance of a database search remains the most effective and efficient method for demonstrating compliance with the requirement to consider alternatives to painful/distressful procedures."

The description and narrative of the literature search is described in the PI's answer to Question 9 on the UCSD animal use protocol.

## **II. Who Should Read This Policy**

All personnel listed on UCSD animal protocols

## **III. Definitions**

<b>Term</b>	<b>Definition</b>
Literature Search	A search of recognized national/international databases for alternatives to animal use, new or alternate methods that may cause less pain/distress, methods to reduce numbers of animals used, and assurance that the proposed research is not duplicative.
3-Rs	Reduction, Refinement, Replacement
Reduction	To minimize the number of animals used

Refinement	To use techniques and procedures that reduce pain and distress
Replacement	To substitute animal models with non-animal techniques or lower organisms.
USDA-covered species	Any live or dead dog, cat, nonhuman primate, guinea pig, hamster, rabbit, or any other warm-blooded animal, which is being used, or is intended for use for research, teaching, testing, experimentation, or exhibition purposes, or as a pet. This term excludes birds, rats of the genus <i>Rattus</i> , and mice of the genus <i>Mus</i> bred for use in research; horses not used for research purposes; and other farm animals, such as, but not limited to, livestock or poultry used or intended for use as food or fiber, or livestock or poultry used or intended for use for improving animal nutrition, breeding, management, or production efficiency, or for improving the quality of food or fiber.

#### **IV. Policy**

1. The PI must consider alternatives to any procedures that may cause more than momentary or slight pain or distress to animals. For USDA-covered species, the PI must provide a written narrative of the methods and sources used to determine the availability of alternatives, including refinements, reductions, and replacements.
2. This literature search for alternatives must be completed at the time of new application, including the third year Rewrite application (considered a de novo protocol by the Federal government).
3. The PI must search a minimum of 2 appropriate databases and provide the search results and a detailed narrative on the protocol application.
4. PI must keep a record of the search results and narrative for and this documentation must be easily available to inspectors for 3 years after the end of the studies (not the death of the animal).

*Note: Please see Section VI below for step-by-step instructions.*

#### **V. Related Documents**

Federal Documents	<a href="#">AWIC Literature Search Worksheet</a> <a href="#">AWIC Alternatives Brochure</a> <a href="#">Animal Welfare Act</a> <a href="#">USDA Animal Care Policy Manual Policy 12</a>
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Other Documents and References	<a href="#">Animal Welfare Information Center</a> <a href="#">Russell and Burch The 3 R's</a> <a href="#">ALTWEB</a> <a href="#">AWIC Literature Search Center</a>
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## **VI. Additional information**

### **How to fulfill your Literature Search Obligations**

- Search a minimum of 2 appropriate databases
  - Databases may be accessed through the UCSD library system.
  - The Animal Welfare Information Center can be accessed at <http://netvet.wustl.edu/awic.htm>
- Document the databases used, dates covered in the search and date of search.
- Use appropriate key words which cover reduction, refinement, and replacement alternatives.
- Document the key words used for the search.
- Write a narrative that evaluates the search results and assesses the alternative possibilities. It should support the decisions to both use and to not use available alternatives. Be sure to address refinement and reduction alternatives, not just replacement.
  - If alternatives to the use of animals are found, but not used, you must scientifically justify not using the alternative methods.
  - If no alternatives to the use of animals are found, a statement to this effect should be included.
- Keep a record of the search results for laboratory files and easily available to inspectors for 3 years after the end of the studies. (not the death of the animal)

### **How to Formulate a Search Strategy**

-Phase 1

#### *Reduction and Refinement*

Provides a comprehensive view of the field of study, including techniques and common species used, and may address unnecessary duplication.

Keyword Examples:

analgesic or painkiller or sedative  
 anesthesia or anaesthesia or anasthesia  
 housing or facility or caging or management  
 welfare or well-being or pain or distress  
 technique or procedure or method or assay

-Phase 2

#### *Replacement*

Addresses potential alternatives such as cell or tissue culture, models, simulations, animals lower on the phylogenetic scale, plants, etc.

Keyword Examples:

vitro or culture or artificial

tissue or cell or organ

virtual or simulation or digital or interactive

fish or mollusk or cephalopod

\* Consider synonyms, alternate spellings and variations of the words (such as tenses).

### **Select Appropriate Databases:**

Below are listed some of the most popular databases for biomedical research topics. Although there is some overlap in journals and other publications covered by the databases, each database is unique. A search of MEDLINE should also include EMBASE since EMBASE includes monographs, reports, and European research not included in MEDLINE. Several of the core databases should be searched in order to conduct a comprehensive literature search. Keep in mind the type of protocol when choosing databases.

#### Biomedical and Biological

- AGRICOLA: <http://agricola.nal.usda.gov>
- Aquatic Sciences and Fisheries Abstracts (file 44)
- BIOSIS
- CAB
- Current Contents
- EMBASE
- Life Sciences
- MEDLINE: <http://www.ncbi.nlm.nih.gov/pubmed>
- Pascal
- PsycINFO
- SciSearch
- TOXLINE
- Zoological Record
- Scopus and ScienceDirect
- Web of Science

#### Pharmaceutical and Technological

- Ei Compendex
- Gale Group Computer Database
- INSPEC
- International Pharmaceutical Abstracts
- Pharmaceutical News Index
- Japanese Science and Technology: <http://sciencelinks.jp/j-east/>

#### Federally Funded Research

- CRIS: <http://cris.nifa.usda.gov>
- NIH RePORTER: <http://projectreporter.nih.gov/reporter.cfm>
- NTIS National Technical Information Service
- FEDRIP Federal Research in Progress

#### Education

- ERIC : <http://www.eric.ed.gov/>
- HSVMA: <http://altd.hsoma.org/>
- EURCA: <http://www.eurca.org/>
- Norwegian Reference Centre for Laboratory Animal Science & Alternatives (NORINA)  
<http://oslovet.veths.no/NORINA>  
<http://oslovet.veths.no/teaching/materials.html>  
<http://oslovet.veths.no/textbase/>

#### Law and Legislation

- GPO's Federal Digital System (FDsys): <http://fdsys.gpo.gov>
- LexisNexis: <http://www.lexisnexis.com>
- Thomas: <http://thomas.loc.gov>

#### Additional Web Based Resources

- Altweb: <http://altweb.jhsph.edu>
  - Defense Technical Information Center:  
<http://multisearch.deepwebaccess.com/multisearch/>
  - NC3Rs: <http://www.nc3rs.org.uk>
  - AWI Enrichment & Refinements Databases:  
<http://www.awionline.org/ht/d/sp/i/11590/pid/11590>
  - Scirus: <http://www.scirus.com>
  - ICCVAM: <http://iccvam.niehs.nih.gov>
  - ECVAM: <http://ecvam.jrc.ec.europa.eu/>
- See more links on AWIC's Alternatives pages: <http://awic.nal.usda.gov/alternatives>

Keywords, concepts and ultimate search strategy (excerpted from [AWIC Search Strategy Worksheet](#)):

These are words that will likely be found in the title, abstract, and descriptor fields of the citation. Use as many synonyms as possible such as "cardiac" and "heart". Include acronyms and complete spellings (ie "GH" and "growth hormone"). Also include all possible spellings of words. For example, "anesthesia", and "anesthetic", and "anaesthesia". Include words that make the study different from other studies. This will help detect unintentional duplication as well as limit the scope of the search if the number of citations from a broader search is more than 200. All potential alternatives should be

included as keywords whether or not the researcher believes they will be useful. They will be used in the replacement phase of the search.

The search strategy consists of the reduction and refinement phase and the replacement phase as mentioned before. Using the keywords selected, put together brief strings of words so that each search set covers a separate concept. For example, the first set might include words relating to the experimental outcome and the second set will contain words relating to the animal model. Short and simple search sentences can later be combined. The reduction and refinement phase should be similar to the typical literature review done in preparation for a new project or scientific publication.

Keywords used will help the researcher determine if there is unintentional duplication, how many animals are necessary using the proposed model, appropriate anesthetics and analgesics, and any other method of minimizing pain and distress. Since much of the refinement and reduction information will be found in the materials and methods sections, it is important for the researcher to review some of the articles that may be of interest.

Many people make the mistake of putting the term 'alternatives' in to the strategy and expect to find all possible alternatives. Because alternatives is a complex concept involving refinement, reduction and replacement, this term is best used only in those areas of study where larger amounts of research have been conducted on alternatives, such as in toxicology or education.

The replacement phase should include keywords for potential alternatives such as "vitro", "culture", or simulation". The word "alternative" may also be included here. The selected animal model, other species, and the word "model" will help retrieve animal and non-animal models as potential alternatives.

NOTE: It is very important to realize that stringing together keywords on one line (i.e. dogs or cats and cardiac or thoracic and stint or device and alternative), does not create a proper search strategy and results in a poor search with inaccurate results.