

How to construct a literature search

Alice Tillema, Medical Library, Nijmegen

<http://libguides.ru.nl/norecopa>



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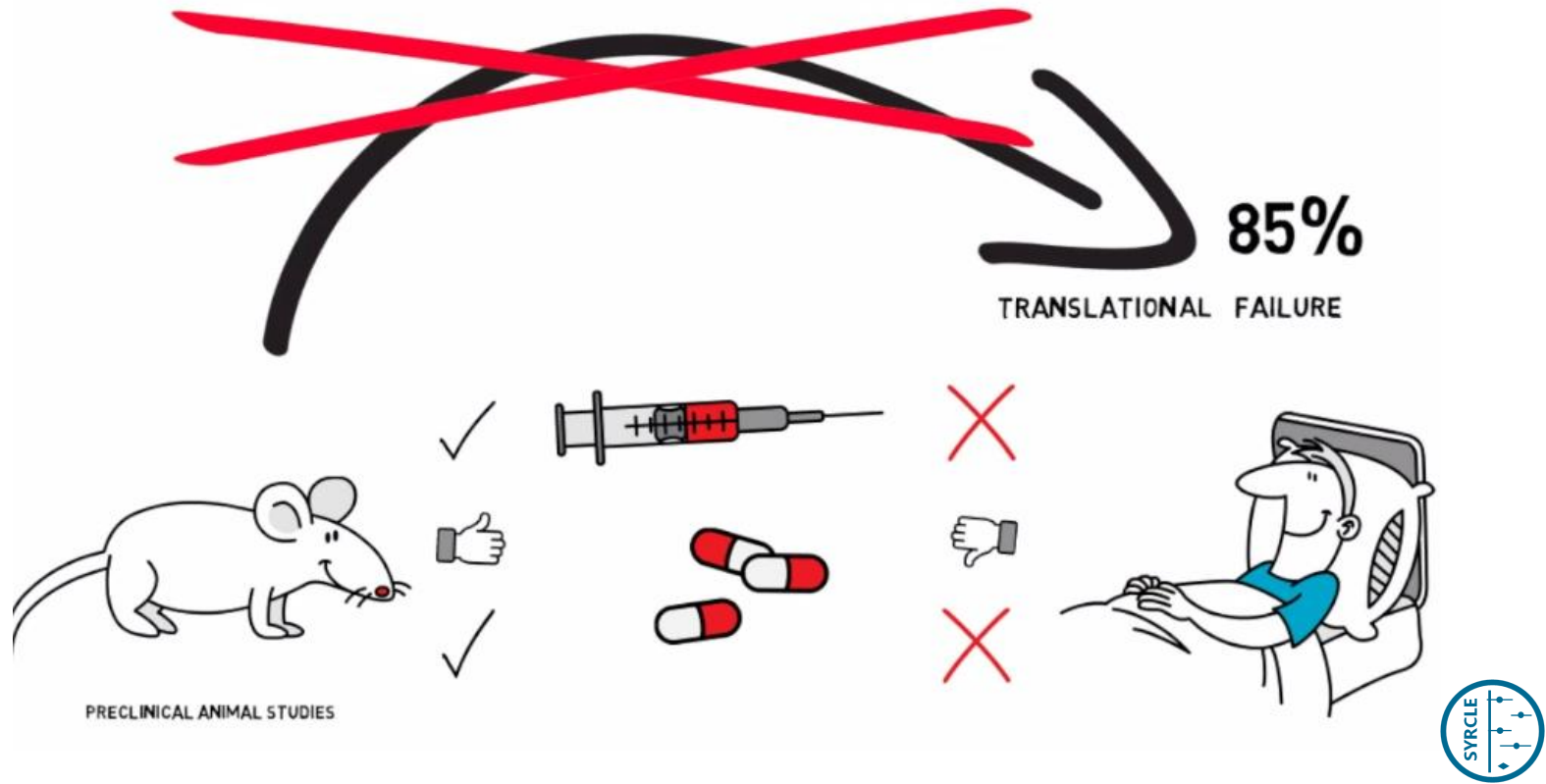
How to construct a literature search

- Introduction
- Systematic Reviews
- Comprehensive Searching
 - Research Questions
 - Sources
 - Search options
- Practical

SYstematic Review Centre for Laboratory animal Experimentation

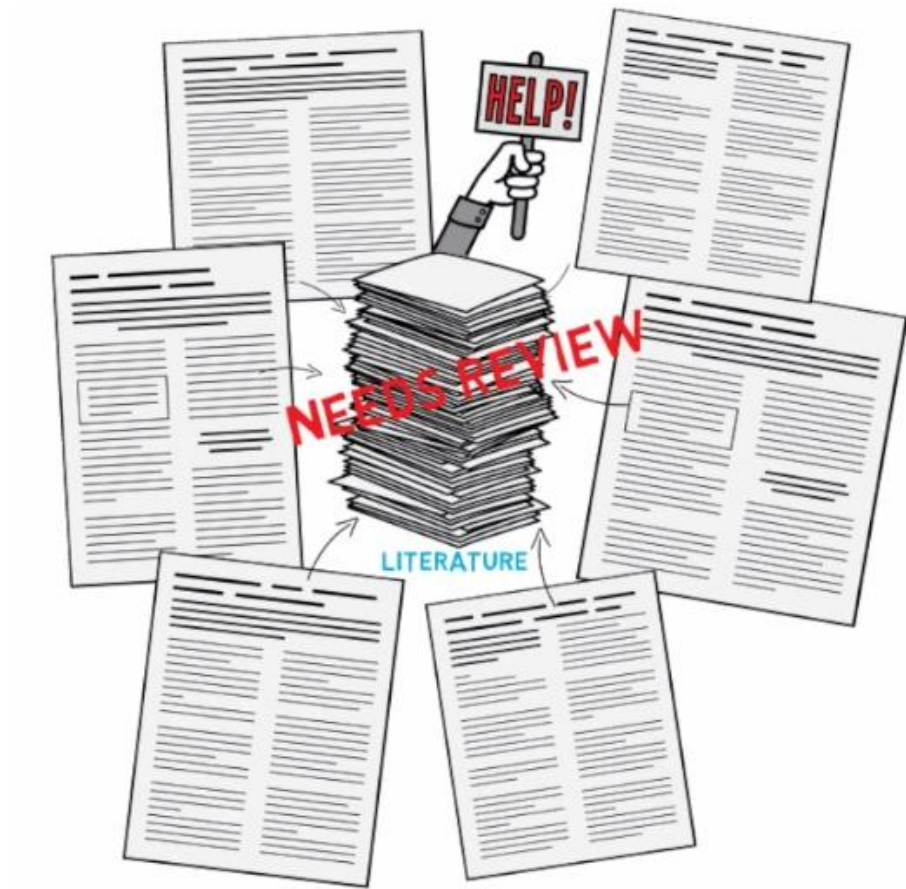


Preclinical Testing and Patient Care

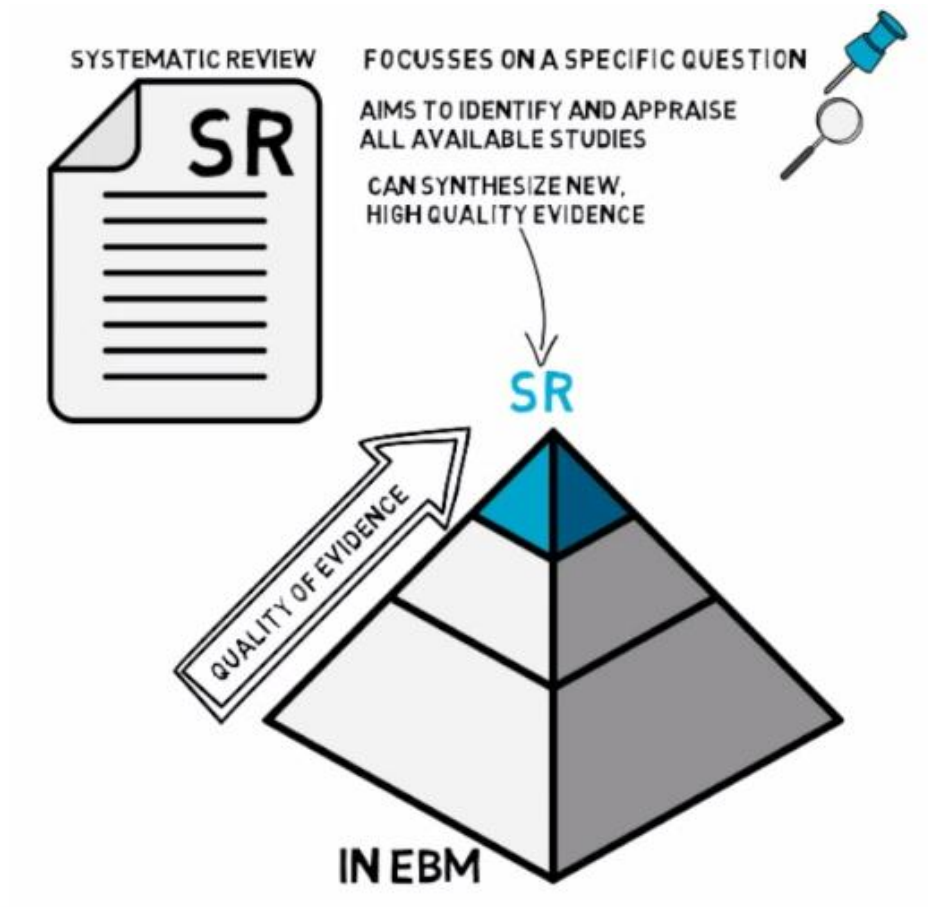


[Video on Systematic Reviews](#)

Searching for literature



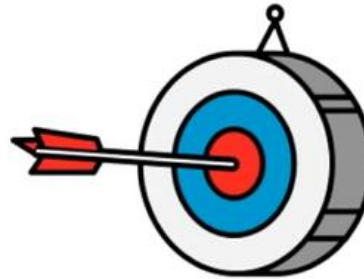
Searching for literature



Systematic Reviews



- PROVIDE OVERVIEW OF AVAILABLE EVIDENCE
- IDENTIFY KNOWLEDGE GAPS
- CRITICAL APPRAISAL OF STUDY QUALITY
- IDENTIFY FACTORS INFLUENCING TREATMENT EFFICACY
- INFORM EXPERIMENTAL DESIGN OF ANIMAL CLINICAL STUDIES



Review Article

A step-by-step guide to systematically identify all relevant animal studies

Marlies Leenaars¹, Carlijn R Hooijmans¹, Nieky van Veggel^{1,2}, Gerben ter Riet³, Mariska Leeftang⁴, Lotty Hooff⁵, Gert Jan van der Wilt⁶, Alice Tillema⁷ and Merel Ritskes-Hoitinga¹

Abstract

Before starting a new animal experiment, thorough analysis of previously performed experiments is essential from a scientific as well as from an ethical point of view. The method that is most suitable to carry out such a thorough analysis of the literature is a systematic review (SR). An essential first step in an SR is to search and find all potentially relevant

Keywords: Search guide, systematic review, education and training

Laboratory Animals 2012; 46: 24–31. DOI: 10.1258/la.2011.011087

<http://lan.sagepub.com/content/46/1/24.full.pdf+html>

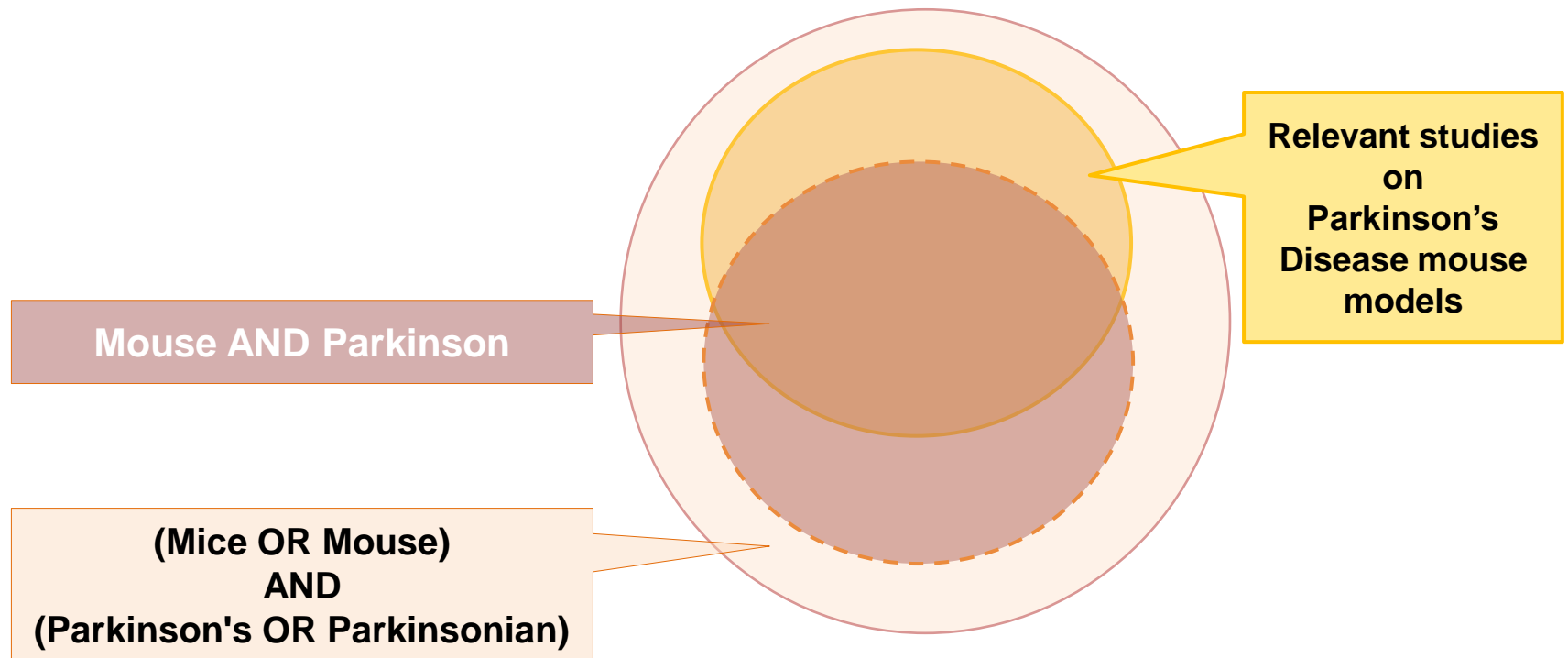


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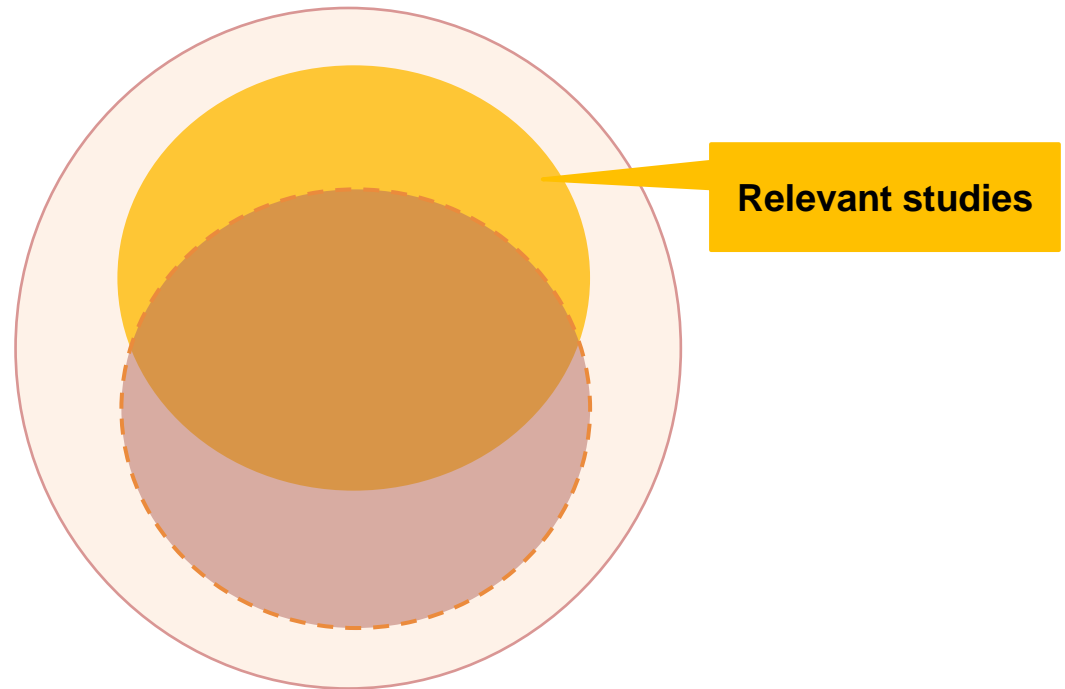
Comprehensive searching:



Comprehensive search: balance between sensitivity & specificity

A sensitive search retrieves:

more relevant studies
&
more irrelevant studies



Steps in comprehensive searching

1. Research Question
2. Sources
3. Comprehensive search strategy
4. Search results
5. Select relevant papers
6.

From: A step-by-step guide to systematically identify all relevant animal studies, Leenaars 2012

1. Research question

- Specific and structured
 - Animals (species)
 - Disease model/biological phenomenon/mechanism
 - Intervention/exposure
 - Outcome

1. Research question (example)

In animal models for acute pancreatitis what is the effect of probiotic supplementation on harmful effects?



Search Components (SC)?

<http://libguides.ru.nl/norecopa>

Answer

In animal models for acute pancreatitis what is the effect of probiotic supplementation on harmful effects?

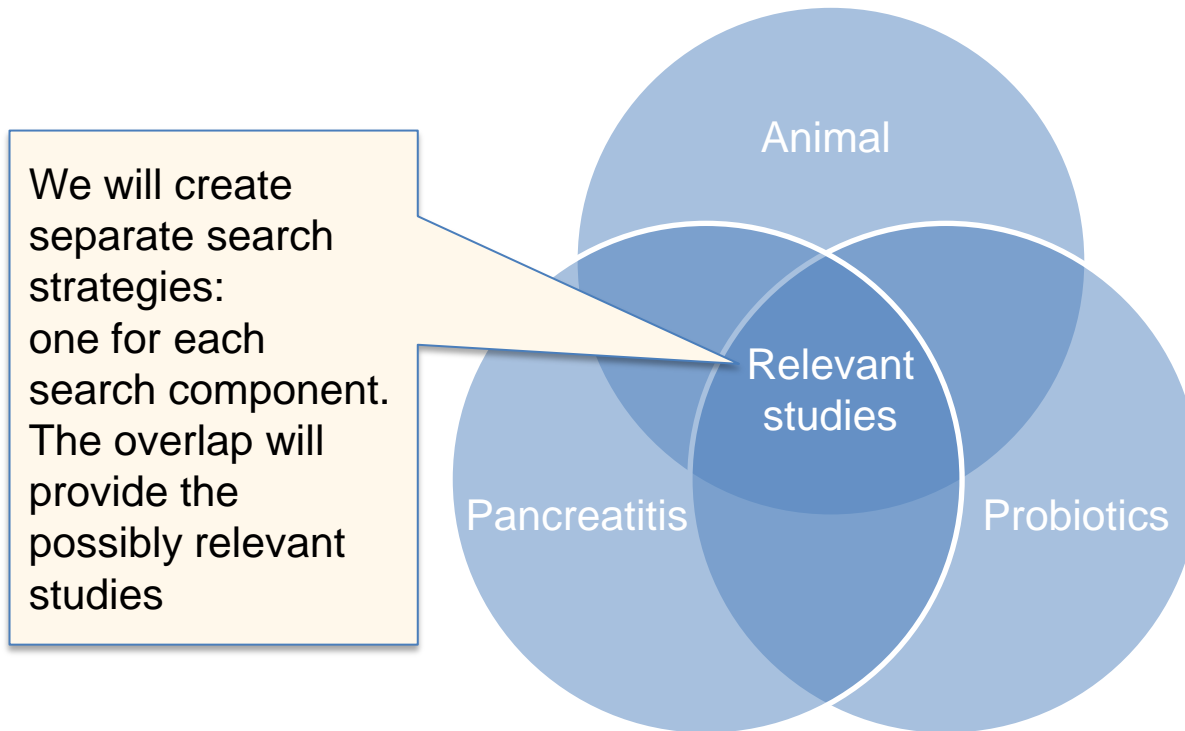
Search Components (SC)?

1. pancreatitis
2. probiotics
3. animal

To enhance comprehensiveness of search results we are not including: models, acute, effect, supplementation, harmful effects

Answer

In animal models for acute pancreatitis what is the effect of probiotic supplementation on harmful effects?



1. Research question

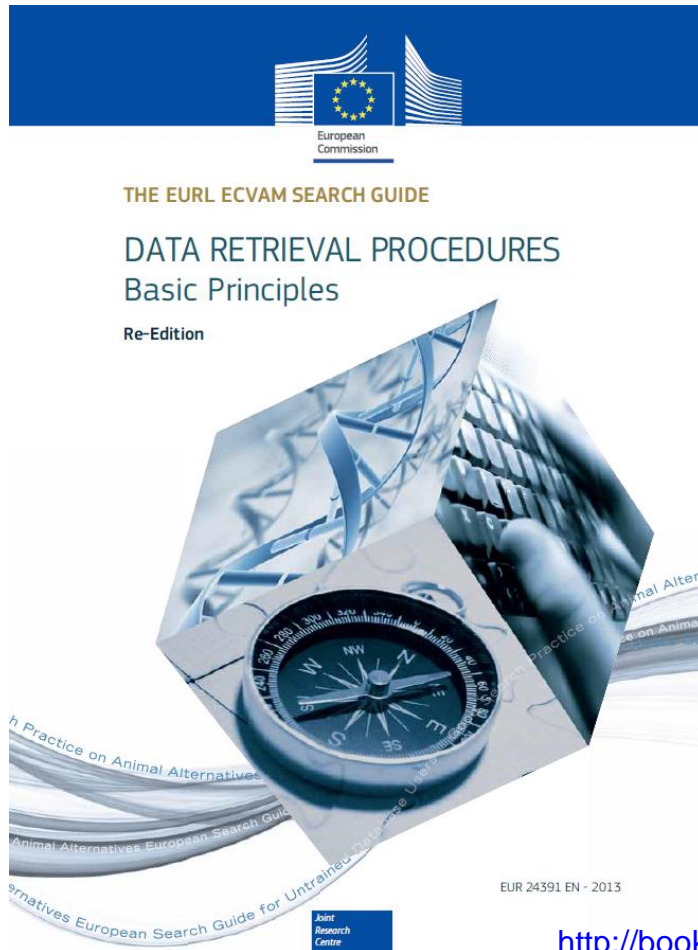
Deriving search components from your question think about

- How many?
- More specific or more general concepts?
- Phrasing?

2. Sources – bibliographic databases

- Coverage
 - Disciplines
 - Journals
 - Time period
- Types of publications
 - Journal articles
 - Conference Abstracts
 - Book reviews
 - Grey literature
- Search options
 - Controlled vocabulary
- Availability

2. Sources – bibliographic databases



<http://bookshop.europa.eu/en/the-eurl-ecvam-search-guide-pbLBN124391/>

TABLE OF JOURNALS relevant to the 3Rs indexed by Databases and Meta-Databases

Journal	Databases							Meta-Databases		
	AGRICOLA	BIOSIS Previews	CAB Abstracts	EMBASE	MEDLINE	ScienceDirect	Scisearch	PubMed	Scopus	Web of Science
Alternative Approaches to Animal Testing, AATEX										
Alternativen zu Tierexperimenten, ALTEX				•	•		•	•	•	•
Alternatives to Laboratory Animals, ATLA				•	•		•	•	•	
Animal Technology and Welfare ATW										
Animal Welfare Journal			•	•			•	•	•	
Institute of Laboratory Animal Resources, ILAR	•			•	•			•	•	•
Journal of Animal Science, JAS	•	•	•		•			•		•
Journal of Applied Animal Welfare Science, JAAWS	•	•	•	•	•		•	•	•	•
Lab Animal	•				•			•	•	•
Laboratory Animals			•	•	•			•	•	•
Toxicology in vitro		•		•	•	•	•	•	•	

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AGRICultural OnLine Access, AGRICOLA

Subject Coverage	Agriculture, biotechnology, food and nutrition, microbiology, veterinary medicine, environmental sciences
Content	<p>File Size 1970 to the present more than 4,6 million records</p> <p>Sources Journal articles, conference proceedings, books, book chapters, monographs, theses, patents, computer files, maps, audiovisual materials, technical reports</p>
Features for the 3Rs	<p>AGRICOLA indexes publications that address alternatives to animal experiments and other areas of animal welfare, e.g. farm animals. The database covers several 3Rs relevant journals, e.g. ILAR Journal, Journal of Animal Science, and Lab Animal.</p> <p>The NAL Agricultural Thesaurus (NALT) includes 3Rs relevant terms: <i>animal welfare</i>, <i>animal use alternatives</i>, <i>animal use reduction</i>, <i>animal use refinement</i>, and <i>animal use replacement</i>, see section Search Terms and their Use.</p> <p>The NALT (http://agclass.nal.usda.gov/agt/agt.shtml) is used as a supplement to the CAB Thesaurus, which is the original AGRICOLA indexing system.</p>

BIOSIS Previews®

Subject Coverage	Biology, biochemistry, biotechnology, botany, medicine, pharmacology, toxicology, environmental sciences, zoology, agriculture, veterinary science
Content	<p>File Size 1926 to the present more than 21,9 million records</p> <p>Sources Journal articles, serials, proceedings of meetings, conferences, and symposia; reports, books, book chapters, U.S. patents, reviews</p>
Features for the 3Rs	<p>BIOSIS Previews® offers information from many different life science disciplines. The database provides comprehensive access to literature in pre-clinical and experimental research, methods, and animal studies. It allows scientists expansive retrospective literature.</p> <p>BIOSIS Previews® covers several 3Rs relevant journals, e.g. Animal Welfare, Alternativen zu Tierexperimenten (ALTEX), Alternatives to Laboratory Animals (ATLA), ILAR Journal, Laboratory Animals, Journal of Animal Science, Journal of Applied Animal Welfare Science, and Toxicology in vitro.</p>

THE EURL ECVAM
SEARCH GUIDE

DATA
RETRIEVAL
PROCEDURES
Basic
Principles
Re-Edition

MEDLINE

Subject Coverage	Biomedicine, psychology, environmental and public health, molecular biology, and complementary medicine, bioethics, pharmacology, veterinary medicine
Content	File Size 1946 to the present more than 21 Million records Sources Journal articles
Features for the 3Rs	MEDLINE records are indexed with Medical Subject Headings (MeSH®), the U.S. National Library of Medicine's controlled vocabulary. From 1985 till 2000 the 3Rs relevant term " <i>animal testing alternatives</i> " was used to index publication according to the 3Rs. Since 2000 the term " <i>animal use alternatives</i> " is used by the NLM, see section Search Terms and their Use. In addition, the MeSH includes the term " <i>animal welfare</i> ". Selection of journals indexed by MEDLINE is based on the evaluation and recommendation of an NIH-chartered advisory committee of external experts. MEDLINE covers 3Rs relevant journals , e.g. Alternativen zu Tierexperimenten (ALTEX), Alternatives to Laboratory Animals (ATLA), ILAR Journal, Journal of Animal Science, Journal of Applied Animal Welfare Science, Lab Animal, Laboratory Animals, and Toxicology in vitro.

2. Sources – search options & search fields

- Controlled vocabulary: e.g. thesaurus
- Title, abstract, keyword searching

2. Sources – search options & search fields

Reference from PubMed

[A Protein Extract from Chicken Reduces Plasma Homocysteine in Rats.](#)

Lysne V, Bjørndal B, Vik R, Nordrehaug JE, Skorve J, Nygård O, Berge RK.

Nutrients. 2015 Jun 4;7(6):4498-511. doi: 10.3390/nu7064498.

PubMed article description contains *fields* like title, abstract, MeSH terms etc.

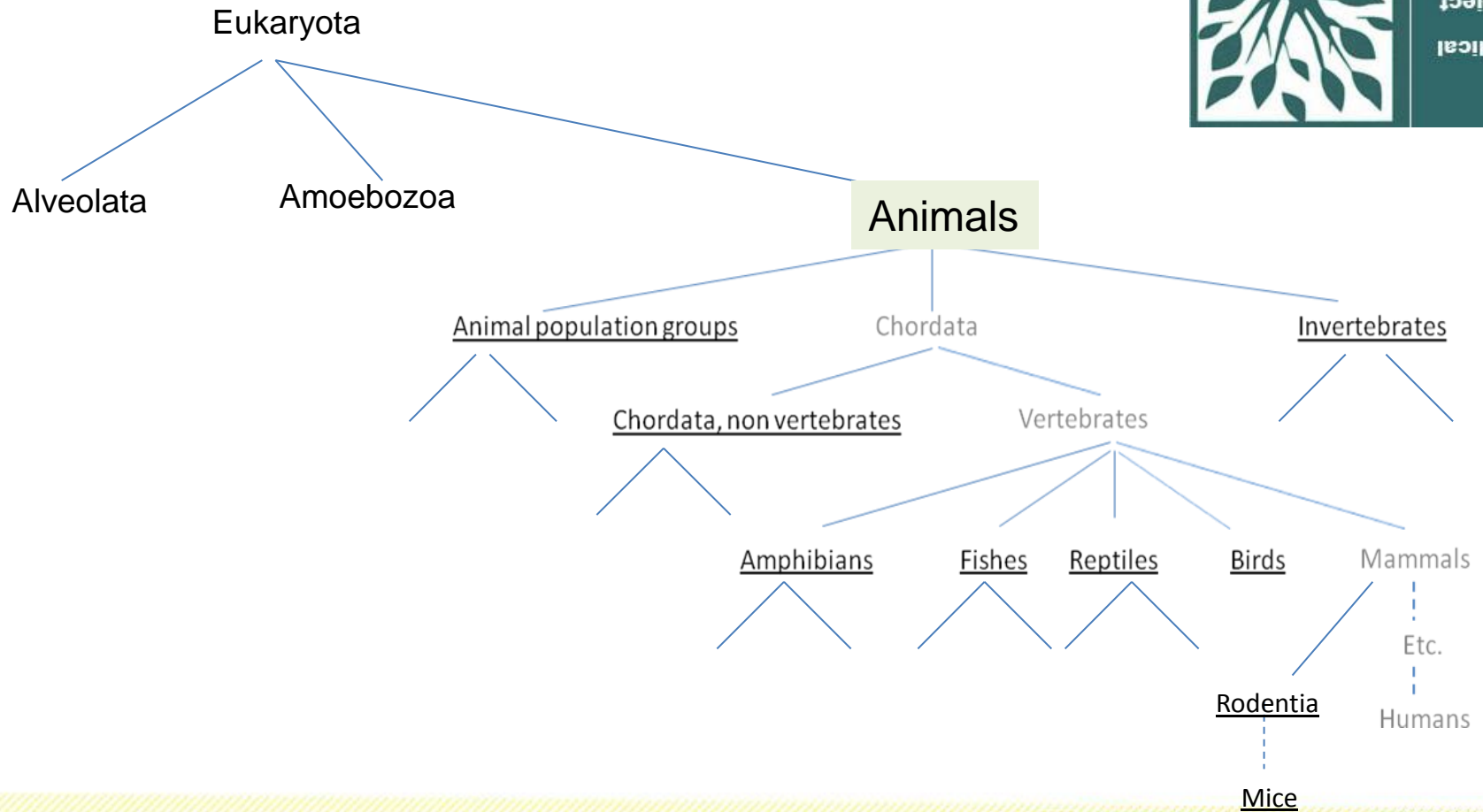
In general PubMed does not search the full text of articles.

```
VI - 7
IP - 6
DP - 2015 Jun
TI - A Protein Extract from Chicken Reduces Plasma Homocysteine in Rats.
PG - 4498-511
AB - The present study aimed to evaluate effects of a water-soluble
protein fraction ....
AU - Lysne V
AD - Dept. Clinical Science, University of Bergen, 5020 Bergen, Norway.
.....
PT - Journal Article
PT - Research Support, Non-U.S. Gov't
JT - Nutrients
RN - 0 (Caseins)
RN - EC 2.1.1.5 (Betaine-Homocysteine S-Methyltransferase)
.....
MH - Animals
MH - Betaine/blood
MH - Betaine-Homocysteine S-Methyltransferase/metabolism
.....
OT - Wistar rats
OT - chicken protein
OT - homocysteine
OT - one-carbon metabolism
OT - peroxisome proliferator activated receptor
SO - Nutrients. 2015 Jun 4;7(6):4498-511. doi: 10.3390/nu7064498.
```

Controlled vocabulary



Thesaurus – Medical Subject Headings



MeSH Database

Mice = MeSH term

The common name for the genus *Mus*.

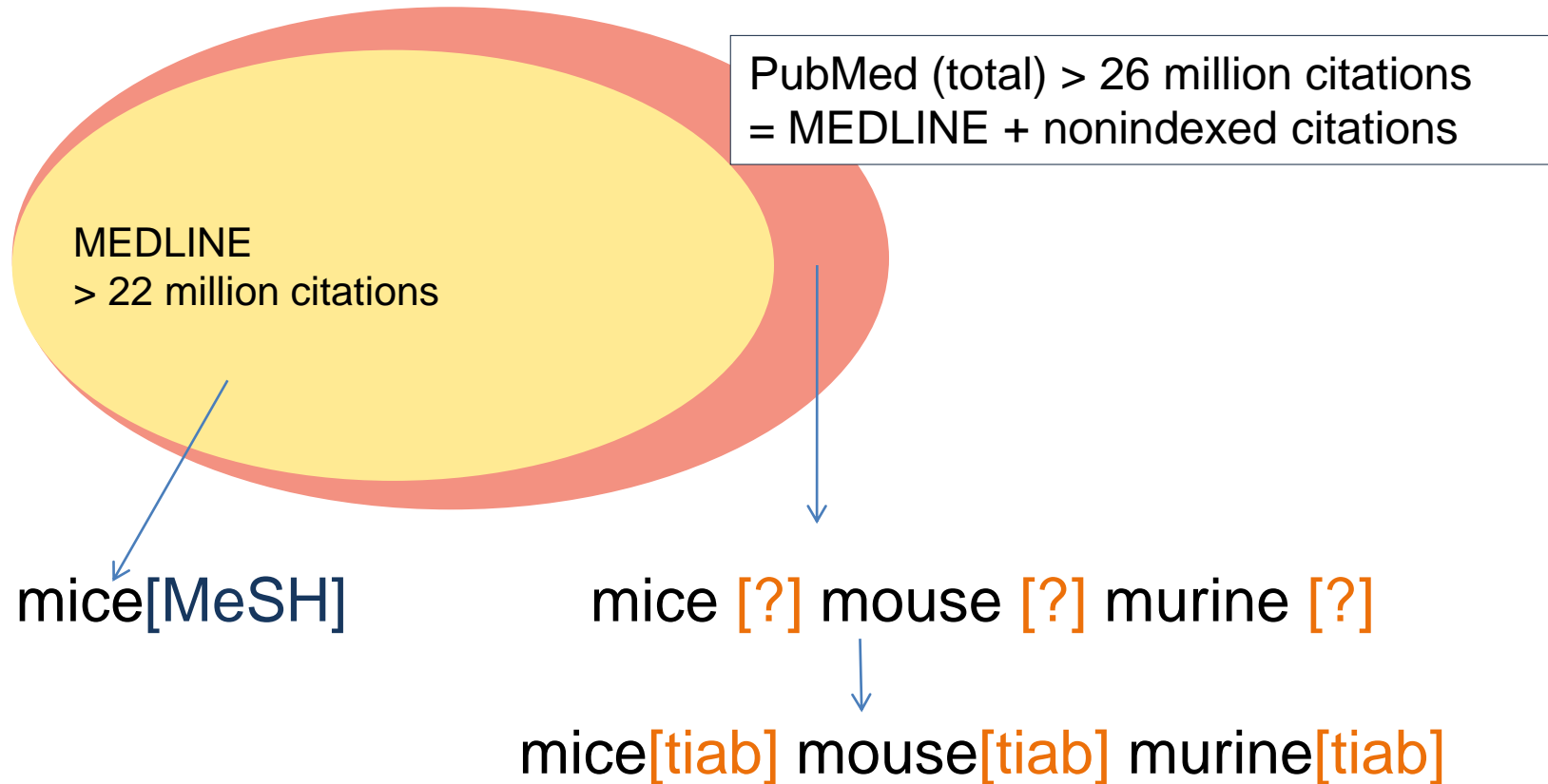
Year introduced: 2006

Entry Terms: = synonyms

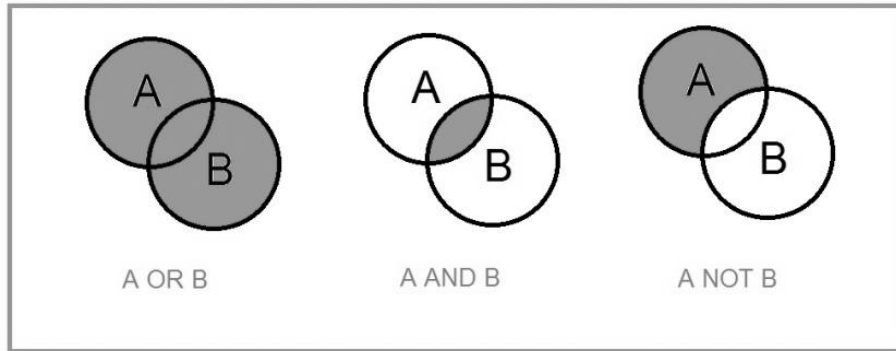
- *Mus*
- Mouse
- *Mus musculus*
- **Mice**, House
- House **Mice**
- Mouse, House
- House Mouse
- *Mus domesticus*
- *domesticus*, *Mus*
- *Mus musculus domesticus*
- *domesticus*, *Mus musculus*
- *musculus domesticus*, *Mus*
- **Mice**, Laboratory
- Laboratory **Mice**
- Mouse, Laboratory
- Laboratory Mouse
- Mouse, Swiss
- Swiss Mouse
- Swiss **Mice**
- **Mice**, Swiss

<http://libguides.ru.nl/norecopa>

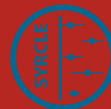
PubMed search for all publications on 'mice'



Combining search terms



mice[MeSH] OR mice[tiab] OR mouse[tiab] OR murine[tiab]






Sensory network dysfunction, behavioral impairments, and their reversibility in an Alzheimer's β -amyloidosis mouse model.

Wesson DW, Borkowski AH, Landreth GE, Nixon RA, Lew E, Wilson DA.

Abstract

The unique vulnerability of the olfactory system to Alzheimer's disease (AD) provides a quintessential translational tool for understanding mechanisms of synaptic dysfunction and pathological progression in the disease. Using the Tg2576 mouse model of β -amyloidosis, we show that aberrant, hyperactive olfactory network activity begins early in life, before detectable behavioral impairments or comparable hippocampal dysfunction and at a time when amyloid- β ($A\beta$) deposition is restricted to the olfactory bulb (OB). Hyperactive odor-evoked activity in the piriform cortex (PCX) and increased OB-PCX functional

Which search in PubMed will retrieve this record?

1. mice[ti] 
2. mouse[tiab] 
3. mice[mesh] 



Sensory network dysfunction, behavioral impairments, and their rescue in a mouse model of Alzheimer's β -amyloidosis **mouse** model.

Wesson DW, Borkowski AH, Landreth GE, Nixon RA, Lewy E, Wilson DA.




Abstract

The unique vulnerability of the olfactory system to Alzheimer's disease (AD) provides a quintessential understanding mechanisms of synaptic dysfunction and pathological progression in the disease. Using a mouse model of β -amyloidosis, we show that aberrant, hyperactive olfactory network activity begins early in life, leading to behavioral impairments or comparable hippocampal dysfunction and at a time when amyloid- β ($A\beta$) deposits are minimal in the olfactory bulb (OB). Hyperactive odor-evoked activity in the piriform cortex (PCX) and increased OB-PCX connectivity emerged at a time coinciding with olfactory behavior impairments. This hyperactive activity subsided over time as the network converted to a hypo-responsive state. This conversion was $A\beta$ -dependent, because agonist treatment to promote $A\beta$ degradation rescued the hypo-responsive state and olfactory behavior. These findings provide evidence to a novel working model of olfactory dysfunction in AD and, complimentary to other recent

MeSH Terms

[Alzheimer Disease/complications*](#)
[Alzheimer Disease/genetics](#)
[Amyloid beta-Peptides/metabolism](#)
[Amyloid beta-Protein Precursor/genetics](#)
[Amyloidosis/etiology*](#)
[Amyloidosis/genetics](#)
[Amyloidosis/metabolism*](#)
[Animals](#)
[Behavioral Symptoms/etiology*](#)
[Behavioral Symptoms/genetics](#)
[Benzoic Acids/pharmacology](#)
[Benzylamines/pharmacology](#)
[Brain Waves/genetics](#)
[Brain Waves/physiology](#)
[Cerebral Cortex/drug effects](#)
[Cerebral Cortex/physiopathology](#)
[Disease Models, **Animal**](#)
[Electroencephalography](#)
[Enzyme-Linked Immunosorbent Assay/methods](#)
[Fourier Analysis](#)
[Habituation, Psychophysiology/genetics](#)
[Humans](#)
[Mice](#)
[Mice, Transgenic](#)
[Odors](#)
[Olfactory Pathways/pathology](#)
[Sensation Disorders/etiology*](#)
[Sensation Disorders/genetics](#)
[Small Intestine](#)

PMID: 22049439 [PubMed - indexed for MEDLINE]

1. mice[ti] 
2. mouse[tiab] 
3. mice[mesh] 



How to create search strategies

In animal models for acute pancreatitis what is the effect of probiotic supplementation on harmful effects?

Search components:

1. pancreatitis
2. probiotics
3. animal

Search components: finding search terms

- What is/are the MeSH term(s)?
 - Try to find a relevant MeSH term via the [MeSH database](#)
- Are there any synonyms?
 - Copy the 'Entry terms' and the selected MeSH term
- Are there any other synonyms?
 - Wikipedia?
 - Experts?
 - Relevant publications?

Search component: Pancreatitis

- What is/are the MeSH term(s)?

Pancreatitis[MeSH]

- Are there any synonyms?

Pancreatitis

Pancreatitides

- Are there any other synonyms?

- Wikipedia?

- Experts?

- Relevant publications?

Pancreas inflammation

Pancreatic inflammation

Search Component: Probiotics

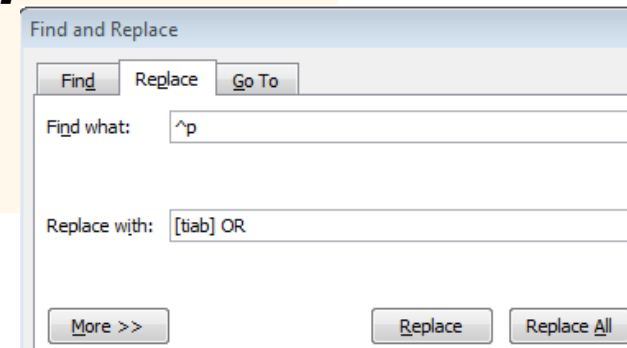
- What is the MeSH term?
Probiotics[MeSH], Synbiotics[MeSH],
- Are there any synonyms?
probiotics
probiotic
synbiotics
synbiotic
- Are there any other synonyms?
Lactobacillus
Bifidobacterium
Lactococcus
Bacillus

Creating a search string in Word

Pancreatic Neoplasms[MeSH]

Pancreas neoplasms
Pancreas neoplasm
Pancreatic neoplasms
Pancreatic neoplasms
Pancreas cancer
Pancreatic cancer
Cancer of the Pancreas

1. List the MeSH term
2. Make a list of synonyms, e.g. Entry terms, etc.
If you have a bulleted list → remove the bullets
3. Select all synonyms (not the MeSH term)
 - Choose *Replace*
 - Replace: **^p** Replace with: **[tiab] OR**
(a space before and after OR)
 - Replace all
4. Add MeSH term with **OR**



Pancreatic Neoplasms[MeSH] OR Pancreas neoplasms[tiab] OR Pancreas neoplasm[tiab]
OR Pancreatic neoplasms[tiab] OR Pancreatic neoplasms[tiab] OR Pancreas cancer[tiab]
OR Pancreatic cancer[tiab] OR Cancer of the pancreas[tiab]



Search component: Animals

```
("animal experimentation"[MeSH Terms] OR "models, animal"[MeSH Terms] OR
"invertebrates"[MeSH Terms] OR "Animals"[Mesh:noexp] OR "animal
population groups"[MeSH Terms] OR "chordata"[MeSH Terms:noexp] OR
"chordata, nonvertebrate"[MeSH Terms] OR "vertebrates"[MeSH Terms:noexp]
OR "amphibians"[MeSH Terms] OR "birds"[MeSH Terms] OR "fishes"[MeSH
Terms] OR "reptiles"[MeSH Terms] OR "mammals"[MeSH Terms:noexp] OR
"primates"[MeSH Terms:noexp] OR "artiiodactyla"[MeSH Terms] OR
"carnivora"[MeSH Terms] OR "cetacea"[MeSH Terms] OR "chiroptera"[MeSH
Terms] OR "elephants"[MeSH Terms] OR "hyraxes"[MeSH Terms] OR
"insectivora"[MeSH Terms] OR "lagomorpha"[MeSH Terms] OR
"marsupialia"[MeSH Terms] OR "monotremata"[MeSH Terms] OR
"perissodactyla"[MeSH Terms] OR "rodentia"[MeSH Terms] OR
"scandentia"[MeSH Terms] OR "sirenia"[MeSH Terms] OR "xenarthra"[MeSH
Terms] OR "haplorhini"[MeSH Terms:noexp] OR "strepsirhini"[MeSH Terms] OR
"platyrrhini"[MeSH Terms] OR "tarsii"[MeSH Terms] OR "catarrhini"[MeSH
Terms:noexp] OR "cercopithecidae"[MeSH Terms] OR "hylobatidae"[MeSH
Terms] OR "hominidae"[MeSH Terms:noexp] OR "gorilla gorilla"[MeSH Terms]
OR "pan paniscus"[MeSH Terms] OR "pan troglodytes"[MeSH Terms] OR "pongo
pygmaeus"[MeSH Terms]) OR ((animals[tiab] OR animal[tiab] OR mice[Tiab]
OR mus[Tiab] OR mouse[Tiab] OR murine[Tiab] OR woodmouse[tiab] OR
rats[Tiab] OR rat[Tiab] OR murinae[Tiab] OR muridae[Tiab] OR
cottonrat[tiab] OR cottonrats[tiab] OR hamster[tiab] OR hamsters[tiab] OR
cricetinae[tiab] OR rodentia[Tiab] OR rodent[Tiab] OR rodents[Tiab] OR
pigs[Tiab] OR pig[Tiab] OR swine[tiab] OR swines[tiab] OR piglets[tiab]
OR piglet[tiab] OR boar[tiab] OR boars[tiab] OR "sus scrofa"[tiab] OR
```

[SYRCLE PubMed url](#)

[Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed.](#)

Hooijmans CR, Tillema A, Leenaars M, Ritskes-Hoitinga M.

Lab Anim. 2010 Jul;44(3):170-5. doi: 10.1258/la.2010.009117. Epub 2010 Jun 15.

Creating a search for separate Search Components

Table 2

Step A

Search Components

Step B

Search strategy

- Identify standardized subject terms e.g. MeSH
- Identify free-text terms
- Combine standardized and free-text terms

A step-by-step guide to systematically identify all relevant animal studies, Leenaars 2012

Simple Search versus Comprehensive Search

In animal models for acute pancreatitis what is the effect of probiotic supplementation on harmful effects?

Simple Searches

- | | | |
|----------|---|-----------|
| 1 | pancreatitis AND probiotics AND animal models | 11 |
| 2 | pancreatitis AND probiotic AND animal models | 12 |
| 3 | pancreatitis AND probiotics AND animals | 34 |

Comprehensive search

Search date 20 May 2016

PANCREATITIS

#1 pancreatitis[MeSH Terms] OR pancreatitis[tiab] OR pancreatitides[tiab] OR ANP[tiab] OR (pancreas[tiab] AND inflammation[tiab]) OR (pancreatic[tiab] AND inflammation[tiab])

Results
69971

PROBIOTICS

#2 probiotics[MeSH Terms] OR probiotics[tiab] OR probiotic[tiab] OR probiotica [tiab] OR synbiotic[tiab] OR synbiotics[tiab] OR bifidobacterium[MeSH Terms] OR bifidobacterium[tiab] OR bifidobacteria[tiab] OR lactobacillus[MeSH Terms] OR lactobacillus[tiab] OR lactobacilli[tiab] OR lactobacteria[tiab] OR lactobacterium[tiab] OR lactococcus[MeSH Terms] OR lactococcus[tiab] OR lactococci[tiab] OR bacillus[MeSH Terms] OR bacillus[tiab] OR bacilli[tiab] OR saccharomyces[MeSH Terms] OR saccharomyces[tiab] OR sporobacterin[Substance Name] OR sporobacterin[tiab] OR lactic acid bacteria[tiab] OR lactic acid bacterium[tiab] OR Nissle 1917[tiab]

257877

#3 #1 AND #2

#4 With PubMed **Animal Search Filter** (see Hooijmans 2010)

253
60

Practical



Research question 2

In animal models for Alzheimer's Disease
what is the effect of supplementation of omega-3 fatty acids on
cognition and neurodegeneration?



Search Components (SC)?

<http://libguides.ru.nl/norecopa>

Research question 2: Search Components

- Animals
- Alzheimer(s)
- Omega-3 Fatty Acid(s)

Practical: Start

- Go to <http://libguides.ru.nl/norecopa> → Tab Search tips
- Click the tab Search tips
- Start PubMed with incorporated Animal filter
- Go to SYRCLE training website and copy search string for component *Alzheimer*
- Paste search string for *Alzheimer* in search box PubMed

Practical exercise

Create comprehensive search strategy for:

Omega 3 fatty acids

Tips:

- Use the MeSH Database for selecting MeSH terms
- Use Word for collecting MeSH terms and synonyms
- Combine MeSH *terms* OR 'free text' in your search

Where to find the MeSH Database

Start:

- Open the MeSH Database in PubMed
- Explore & collect search terms in a Word document


The image shows a screenshot of the PubMed.gov website. The top left corner displays the PubMed logo and the text "US National Library of Medicine National Institutes of Health". A navigation menu is open, listing various categories such as PubMed, Assembly, BioProject, BioSample, BioSystems, Books, ClinVar, Clone, Conserved Domains, dbGaP, dbVar, Epigenomics, EST, Gene, Genome, GEO DataSets, GEO Profiles, GSS, HomoloGene, MedGen, and MeSH. The 'MeSH' option is highlighted in blue. A yellow box with the text "MeSH Database" is positioned in the center, with two red arrows: one pointing to the 'MeSH' menu item and another pointing to the "MeSH Database" link in the "More Resources" section on the right. The "More Resources" section also includes "Journals in NCBI Databases".

Where to find the Search History

 PubMed [Advanced](#)

US National Library of Medicine
National Institutes of Health

A red arrow points to the search bar area.

 PubMed

PubMed comprises more than 25 million citations for biomedical literature from MEDLINE, life science journals, and online books. Citations may include links to full-text content from PubMed Central and publisher web sites.

PubMed COMMONS



Featured comment - Nov
What's it worth? Cicely Saund
a discrete choice experiment i
1.usa.gov/1PqDcUs

Using PubMed

[PubMed Quick Start Guide](#)

[Full Text Articles](#)

PubMed Tools

[PubMed Mobile](#)

[Single Citation Matcher](#)

More Resources

[MeSH Database](#)

[Journals in NCBI Databases](#)

Comprehensive search for Omega-3 fatty acids

First find the MeSH term(s):

Fish Oils

Fatty Acids, Omega-3

Docosahexaenoic Acids

Eicosapentaenoic Acid

Then find synonyms per MeSH term e.g.:

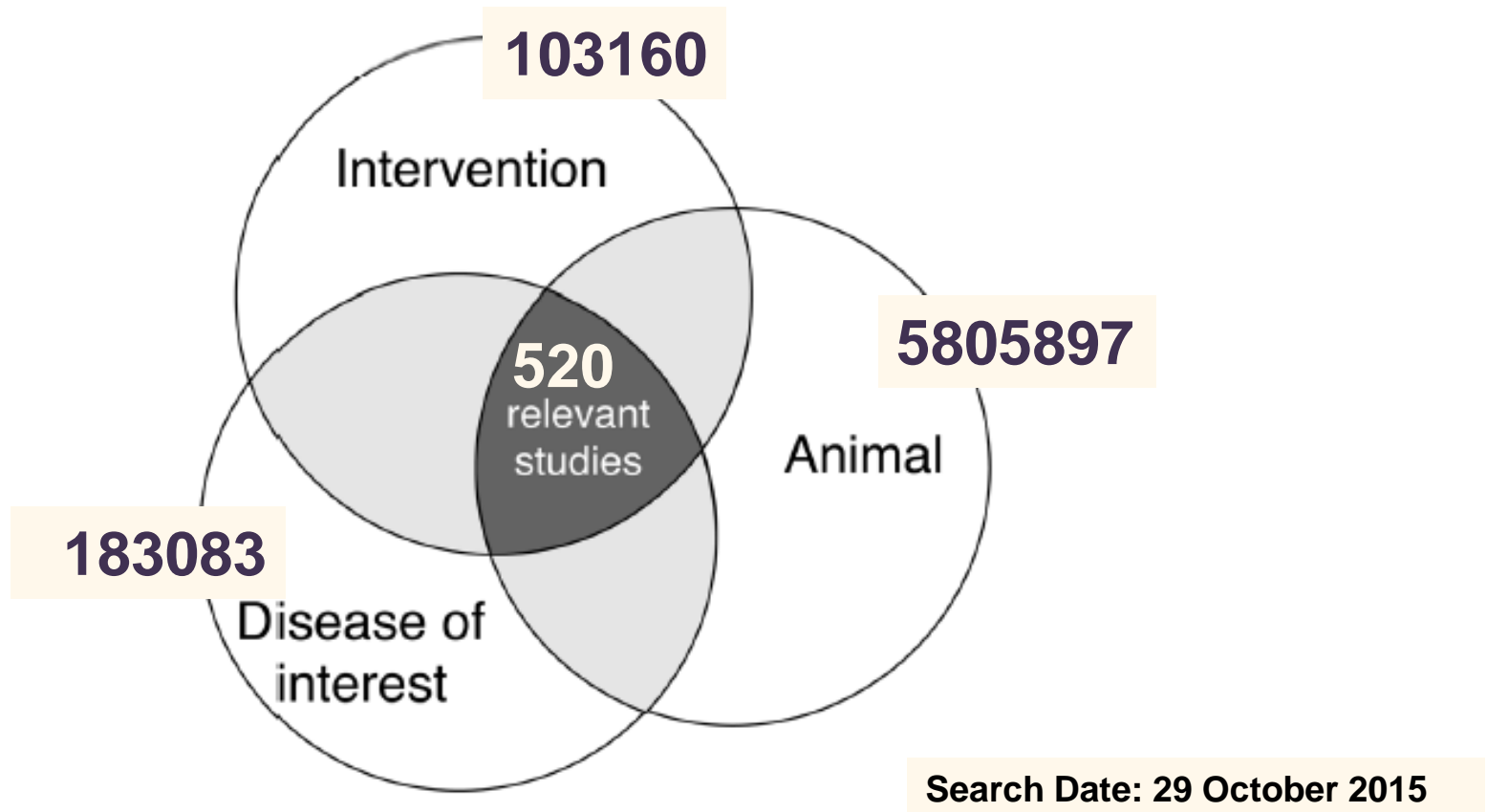
n-3 PUFA , n-3 Fatty Acids, Fatty Acids, n-3, n 3 Fatty Acids
n-3 Polyunsaturated Fatty Acid, n 3 Polyunsaturated Fatty Acid, etc.

Combine MeSH terms with synonyms (in title or abstract [tiab])

fish oils[MeSH:Noexp] OR “fatty acids, omega-3”[MeSH] OR (fatty[Tiab] AND acids[Tiab] AND omega-3[Tiab]) OR (fatty[Tiab] AND acid[Tiab] AND omega-3[Tiab]) OR (fatty[Tiab] AND acids[Tiab] AND omega3[Tiab]) OR (fatty[Tiab] AND acid[Tiab] AND omega3[Tiab]) OR (fatty[Tiab] AND acids[Tiab] AND omega 3[Tiab]) OR (fatty[Tiab] AND acid[Tiab] AND omega 3[Tiab]) OR fish oils[Tiab] OR fish oil[Tiab] OR docosahexaenoic acid[Tiab] OR docosahexaenoic acids[Tiab] OR eicosapentaenoic acids[Tiab] OR eicosapentaenoic acid[Tiab] OR alpha-linolenic acids[Tiab] OR alpha-linolenic acid[Tiab] OR a-linolenic acid[Tiab] OR essential fatty acids[tiab] OR essential fatty acid[tiab] OR unsaturated fatty acids[tiab] OR unsaturated fatty acid[tiab] OR-polyunsaturated fatty acid [Tiab] OR polyunsaturated fatty acids [Tiab] OR PUFA [Tiab] OR PUFAs [Tiab] OR n-3 fatty acids [Tiab] OR n-3 fatty acid [Tiab] OR n3 fatty acids[Tiab] OR n3 fatty acid [Tiab] OR n 3 fatty acids[Tiab] OR n 3 fatty acid [Tiab] OR fatty acids n-3 [Tiab] OR DHA [Tiab] OR EPA [Tiab] OR ALA [Tiab] OR dietary fats [Tiab] OR dietary fat [Tiab] OR unsaturated fat [Tiab] OR unsaturated fats [Tiab] OR dietary lipids [Tiab] OR fish intake[Tiab]

more than 100.000 records

Combination of search strategies



Useful links

- ECVAM Search Guide
<http://bookshop.europa.eu/en/the-eurl-ecvam-search-guide-pbLBN124391/>
- A step by step guide tot systematically find all animal studies
<http://lan.sagepub.com/content/46/1/24.full.pdf+html>
- PubMed url with incorporated animal filter
<http://www.ncbi.nlm.nih.gov/pubmed?myncbshare=syrcl>
- SYRCLE website
www.syrcl.nl
<https://www.radboudumc.nl/srtraining>

Images mouse/mice

[https://commons.wikimedia.org/wiki/File:Mice_\(1\).jpg](https://commons.wikimedia.org/wiki/File:Mice_(1).jpg)

<https://www.flickr.com/photos/davedugdale/5102302821>

https://en.wikipedia.org/wiki/Mouse#/media/File:%D0%9C%D1%8B%D1%88%D1%8C_2.jpg