

Science Connections- Accessing Tools to Support Your Literature Review

- **Moderator:** Dawanna James-Holly, PhD
- **Presenter:** Wendy Shaw MBA, RDN
- Presentation: *Getting Started: Developing Food Safety Literature Reviews*
 - **Presenter:** Megan Kocher, MLIS
- Presentation: *Systematic Reviews and Evidence Synthesis in Food Safety*

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Webinar Housekeeping

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- Questions should be submitted to the presenters during the presentation via the **Questions section** at the right of the screen.



Webinar Housekeeping

- It is important to note that all opinions and statements are those of the individual making the presentation and not necessarily the opinion or view of IAFP.
- This webinar is being recorded and will be available for access by IAFP members at www.foodprotection.org within one week.

Science Connections – Accessing Tools to Support Your Literature Review

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Science Connections- Accessing Tools to Support Your Literature Review

This forum will help the participant:

- Learn about the information products available to scientists at USDA's National Agricultural Library, and at their University or institutional libraries.
- Initiate search strategies and access customizable tools to support the literature review process.
- Take a deep dive into modes of evidence synthesis in food safety and tools/strategies to support it.

Science Connections- Accessing Tools to Support Your Literature Review

INTRODUCTION OF THE SPEAKERS:

Wendy Shaw, MBA RDN

Branch Chief, National Agricultural Library

Wendy Shaw is the Branch Chief for the Information and Customer Service Branch at USDA's National Agricultural Library. In this role, Wendy oversees eight information centers in the areas of food safety, nutrition, alternative farming, rural information, agricultural law, invasive species, animal welfare, and water quality and agriculture, as well as NAL's reference staff in the customer service unit. She is also an Adjunct Professor at George Washington University, Milken School of Public Health. Ms. Shaw holds an MBA in Marketing from Loyola College, and a Bachelor of Science in Clinical Dietetics and Nutrition from the University of Pittsburgh. She is a Registered Dietitian.

Science Connections- Accessing Tools to Support Your Literature Review

INTRODUCTION OF THE SPEAKERS:

Megan Kocher, MLIS

Science Librarian at University of Minnesota Libraries

Megan Kocher is the science librarian for the Departments of Food Science and Nutrition, Animal Science; and Soil, Water, and Climate at the University of Minnesota. She is also co-chair of the University of Minnesota Libraries systematic review team. Megan received a master of library and information science degrees at the University of Wisconsin – Milwaukee and a Bachelor of Arts in Psychology from Brown University. Megan has been an active board member of the Academic and Research Library Division and chaired Minnesota's Library Association's Intellectual Freedom Committee. Megan has led numerous groups within the University of Minnesota Libraries and the U.S. Agricultural Information Network.

Getting Started: Developing Food Safety Literature Reviews

Wendy Shaw, MBA, RDN

Branch Chief, Information & Customer Service

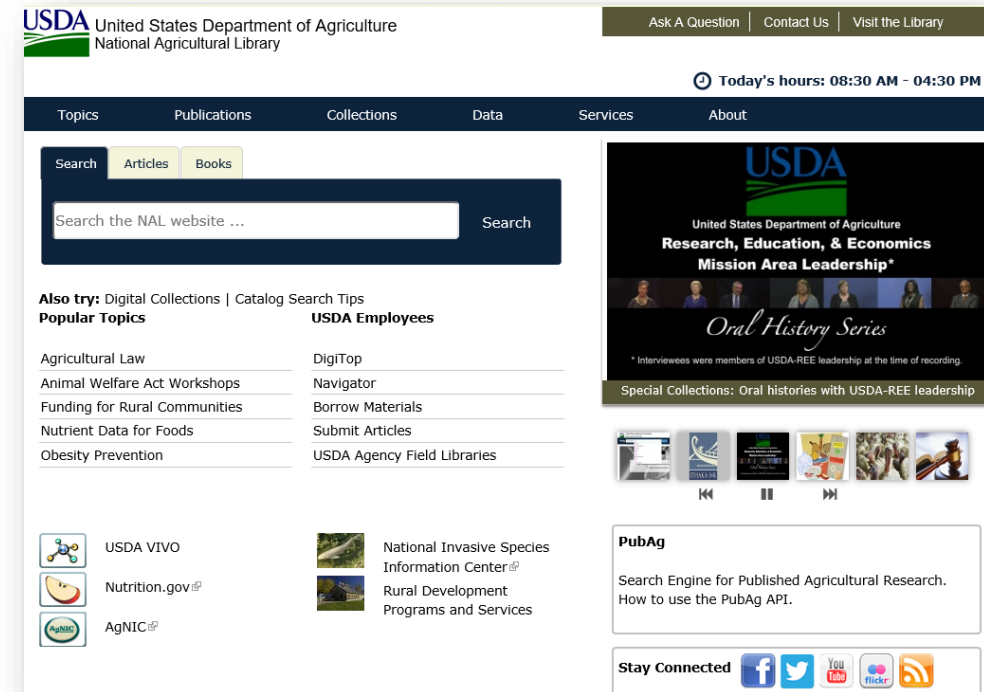
National Agricultural Library/ARS/USDA

The Library & Literature Reviews

- The role of the library
- How librarian's can support the literature review process
- Accessing the library's resources for your literature review
- Creating your search strategy
- Selecting your research database(s)
- Collaborations for obtaining literature

About the National Agricultural Library

- One of five U.S. national libraries
- Houses one of the world's largest collections devoted to agriculture and its related sciences, with both physical and digital collections
- Eight information centers across such topics as food safety, nutrition, water quality, alternative farming, and animal welfare
- Is a branch of ARS and collaborates with agencies inside and outside of USDA



<https://www.nal.usda.gov>

Food Safety Research Information Office

- **History:** The Food Safety Research Information Office (FSRIO) was created by the Agricultural Research, Extension and Education Reform Act of 1998 launched in 2001.
- **Audience:** Food Safety Researcher Community
- **Content highlights:** Provides access to food safety grants and projects, publications and videos. Helps to prevent unintended duplication of research.

USDA United States Department of Agriculture National Agricultural Library

Ask A Question | Contact Us | Visit the Library

Today's hours: 08:30 AM - 04:30 PM

Topics Publications Collections Data Services About

Food Safety Research Information Office Search FSRIO

Home » Information Center » Food Safety Research Information Office

About FSRIO

Research Projects Database

Research Publications

Food Safety Topics

New Meet the Experts

Food Safety Research Information Office

The **Food Safety Research Information Office (FSRIO)** supports the research community by collecting, organizing & disseminating food safety information in accordance with the Agricultural Research, Extension, and Education Reform Act of 1998.

Research Projects Database

The Research Projects Database provides users with information on current food safety research projects from both U.S. and international government and non-government organizations.

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FAQ Contact Us

FSRIO Research Projects Database

- Extensive collection of more than 12,000 food safety research projects
- Track U.S. and international government agencies, and private organizations
- Browse by food safety topics, commodities, date, title, principal investigator, funding sources

The screenshot shows the USDA National Agricultural Library's FSRIO Research Projects Database search results page. The page features a navigation bar with links for Home, Topics, Publications, Collections, Data, Services, and About. Below the navigation bar, there is a search bar and a list of search results. The search results are sorted by Relevance (Most - Least) and display the following information for each project:

- 1. Detection of Biofilm Bacteria and Survival and Virulence of Pathogens in Biofilms and Under Stress**
Investigators: Slavik, Michael
Funding Source: National Institute of Food and Agriculture
Start date: 2007
End date: 2012
- 2. Development of Phage Preparation for Managing Salmonella in Foods**
Investigators: Sulakvelidze, Alexander
Funding Source: National Institute of Food and Agriculture
Start date: 2011
End date: 2012
- 3. Fed and State Transport Plan for Movement of Eggs and Egg Products from Non-Infected Premises w/i an Avian Influenza/Exotic Newcastle Disease Control Area (Fast Eggs Plan)**
Investigators: Trampel, Darrell
Funding Source: National Institute of Food and Agriculture
Start date: 2011
End date: 2012
- 4. Further Development of the Secure Milk Supply Plan for Movement of Milk and Non-Infected Premises in a Food and Mouth Disease (FMD) Control Area**

The page also includes a search filter section on the left with the following options:

- Project Status:** All Projects
- Category:**
 - Foodborne Disease (10)
 - Education and Training (1)
 - Food Defense (2)
 - Microbial Contaminants (7)
 - Policy and Planning (1)
- Commodity:**
 - Eggs (10)
 - Grains, Beans, Legumes (1)
 - Meat, Poultry, Game (6)
- Funding Source:**
 - United States Department of Agriculture (10)
 - National Institute of Food and Agriculture (10)

FSRIO Research Publication Feeds

- Provides access to the latest food safety research publications, including ahead of print
- Tracks more than 200 journals focused on food safety topics
- Publications generated by feeds are grouped by:
 - Journal
 - Subject

The screenshot shows the USDA National Agricultural Library website. The header includes the USDA logo, the text "United States Department of Agriculture National Agricultural Library", and navigation links: "Ask A Question", "Contact Us", and "Visit the Library". Below the header is a navigation bar with tabs for "Topics", "Publications", "Collections", "Data", "Services", and "About". The main content area is titled "Food Safety Research Information Office" and includes a search bar. A sidebar on the left lists navigation options: "About FSRIO", "Research Projects Database", "Research Publications", "Food Safety Topics", and "*New* Meet the Experts". The main content area displays "Research Publications from Peer-Reviewed Journals" with a search box and "Quick Links" for "Browse by journal", "Browse by subject", "See USDA articles", and "See FDA articles". Below this, there are two publication entries under the heading "Results". The first entry is titled "Modification of Multiresidue QuEChERS Protocol to Minimize Matrix Effect and Improve Recoveries for Determination of Pesticide Residues in Dried Herbs Followed by GC-MS/MS" and is dated "Thu, 03/01/2018 - 00:00". The second entry is titled "Hollow Fiber-Stir Bar Sorptive Extraction and Gas Chromatography-Mass Spectrometry for Determination of Organochlorine Pesticide Residues in Environmental and Food Matrices" and is also dated "Thu, 03/01/2018 - 00:00".

What is a Systematic Review?

According to SAGE Research Methods:

- “...a literature review focused on a research question that tries to identify, appraise, select, and synthesize all high-quality research evidence relevant to that question.”
- “...the next step after conducting a literature review is assessing the relevance of published research to a research question.”
- “...aims to provide an exhaustive summary of current literature relevant to a research question.”

Benefits of Systematic Reviews

- Address unnecessary duplication
- Keep current on subject areas of interest
- Examine impact of research results
- Establish levels of evidence
- Minimize bias and random errors when reviewing existing knowledge
- Find new techniques or collaborators

Agriculture and Systematic Reviews

- Systematic reviews typically conducted in delivery of health care
- Other fields conducting reviews include educational research, sociology, business and management
- Recent growth of reviews in agriculture
- All have the need for data, published literature, and assessment

Role of the Librarian

- Identifies the foundational piece or starting point for your literature review strategy
- Serves as your partner for literature reviews
- Supports you in clarifying the research question
- Advises on key terms and concepts
- Designs repeatable search strategies in scientific databases
- Implements search in databases, and sends citations to researcher for review
- Applies in multiple databases for comprehensive results

The Library as a Database Resource



The screenshot shows the DigiTop website homepage. At the top left is the USDA logo and the text "United States Department of Agriculture" and "DigiTop". On the top right are links for "Contact Us" and "Help". A dark navigation bar contains "Home" (highlighted in blue), "About DigiTop", "Journals", "Databases", and "News Sources". Below this are links for "Integrity and Impact" and "Register Your ORCID". The main content area features a dark background with the "DigiTop" logo and three statistics: "20+ Databases", "7,000+ Journals", and "5,000+ News Sources". Below this is a section titled "What is DigiTop?" with a description: "DigiTop is a service of the National Agricultural Library (NAL) delivering licensed electronic resources to authorized USDA users."

USDA United States Department of Agriculture
DigiTop

Contact Us | Help

Home | About DigiTop | Journals | Databases | News Sources

Integrity and Impact | Register Your ORCID

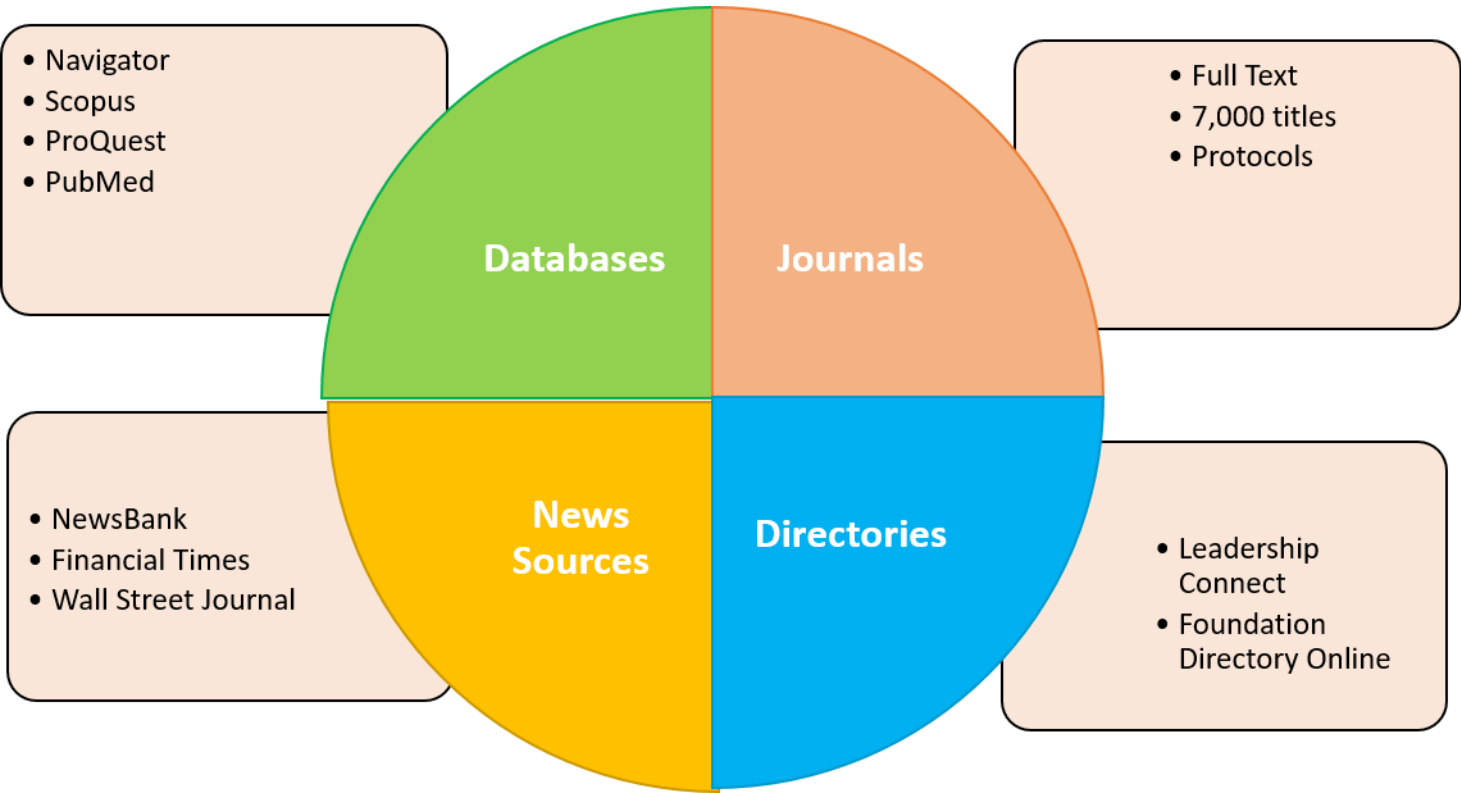
DigiTop

20+ Databases | 7,000+ Journals | 5,000+ News Sources

What is DigiTop?

DigiTop is a service of the National Agricultural Library (NAL) delivering licensed electronic resources to authorized USDA users.

The Library as a Database Resource



Trusted vs. Non-Trusted Journals



Features of Non-Trusted Journals

- Peer-review process not clearly defined
- Editor-in-chief is not an expert in the journal's subject matter
- Editorial board members' affiliations not noted
- Journal titles similar to established journals to create confusion
- Author fees are not stated or unclear
- Publisher notifies author of publication fee after article acceptance

Features of Non-Trusted Journals

- Very low author fees charged to attract large numbers of article submissions
- Misleading information about the publisher's actual country of origin
- Scope of journal is very broad - any subject content can be accepted for publication
- Americans serve as editors-in-chief as means of legitimizing journals

How to Initiate Your Search



Design Your Search Strategy

1. Form a research statement
2. Identify the major subject(s) or topic(s) to be investigated
3. Expand on your research statement with related terms or concepts
4. Identify the most important concepts and combine to form your search statement
5. Determining whether to use AND, OR, NOT
6. Become familiar with specific database search requirements
7. Examine the results and refine your search as necessary
8. Add more specific terms, as needed
9. Narrow or expand your search
10. Identify variations of terms



Refine or Expand Your Search Terms

The NAL Thesaurus

Finding Synonyms

<https://agclass.nal.usda.gov>

Topic Area:

Food Safety Modernization Act

Used For:

FDA Food Safety Modernization Act
Food Safety Modernization Act
US FDA Food Safety Modernization Act

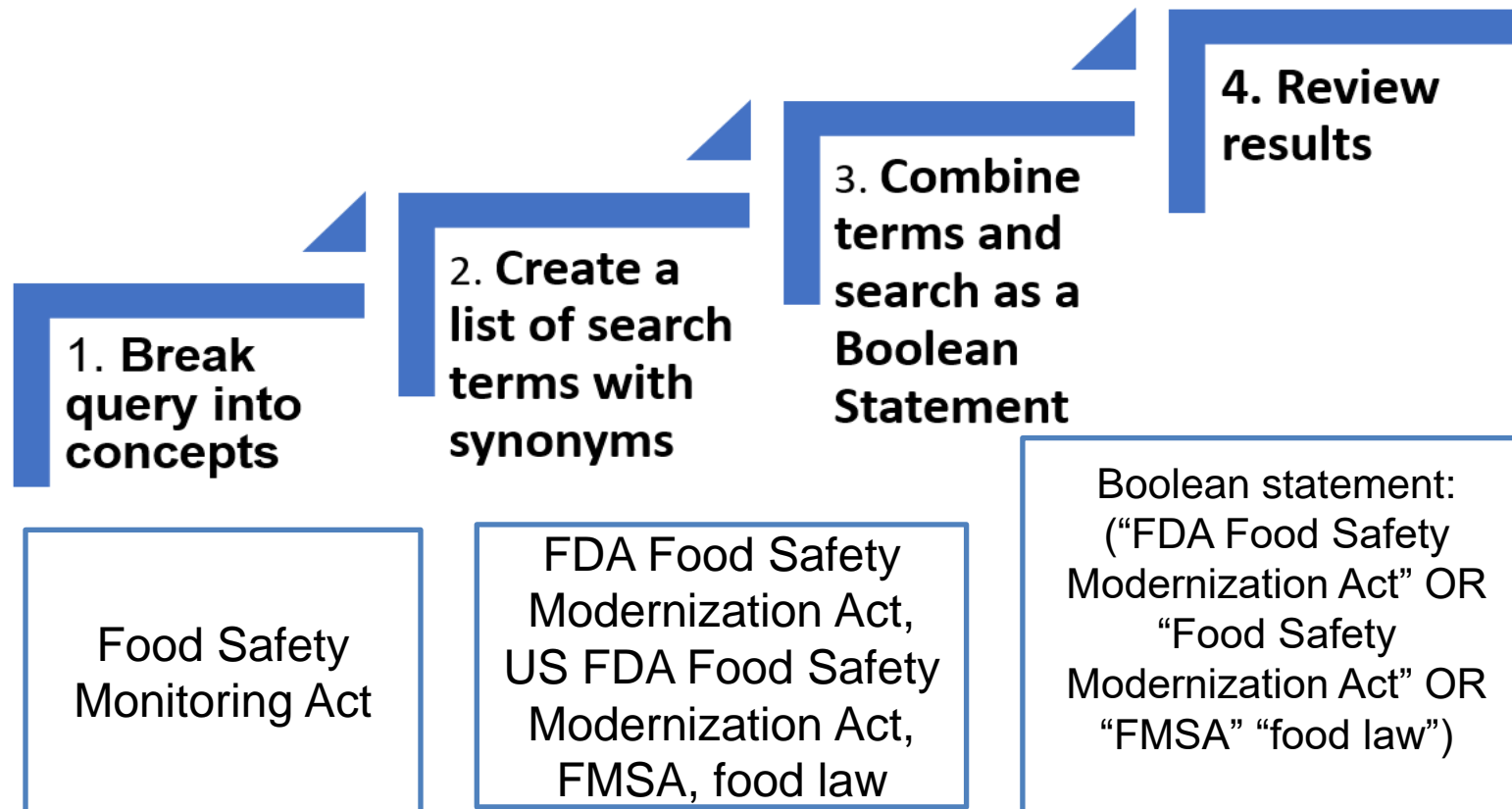
Broader Term:

Food law

The screenshot displays the NAL Thesaurus interface. At the top, it features the USDA National Agricultural Library logo and the Inter-American Institute for Cooperation on Agriculture (IICA) logo. Below the logos is a navigation bar with links for Home, About Thesaurus and Glossary, Download Files, Help, Contact Us, and En Español. The main content area shows search results for the term 'FDA Food Safety Modernization Act'. The results include a subject category (D Government, Law and Regulations; Q Food and Human Nutrition), a definition (FSMA was signed into law by President Obama on January 4, 2011), a definition source (Food and Drug Administration), an RDF/XML format link, a persistent URI, and a list of terms used for (FDA Food Safety Modernization Act (FSMA), Food Safety Modernization Act, US FDA Food Safety Modernization Act). A broader term, 'food law', is also listed. On the right side, there are options to change the display (Show Hierarchy, Narrower Terms, Broader Terms) and search the term in Google Scholar, AGRICOLA Articles, AGRICOLA Books, and Navigator (USDA only).

Search Strategy Example

Question: What is the Food Safety Modernization Act?



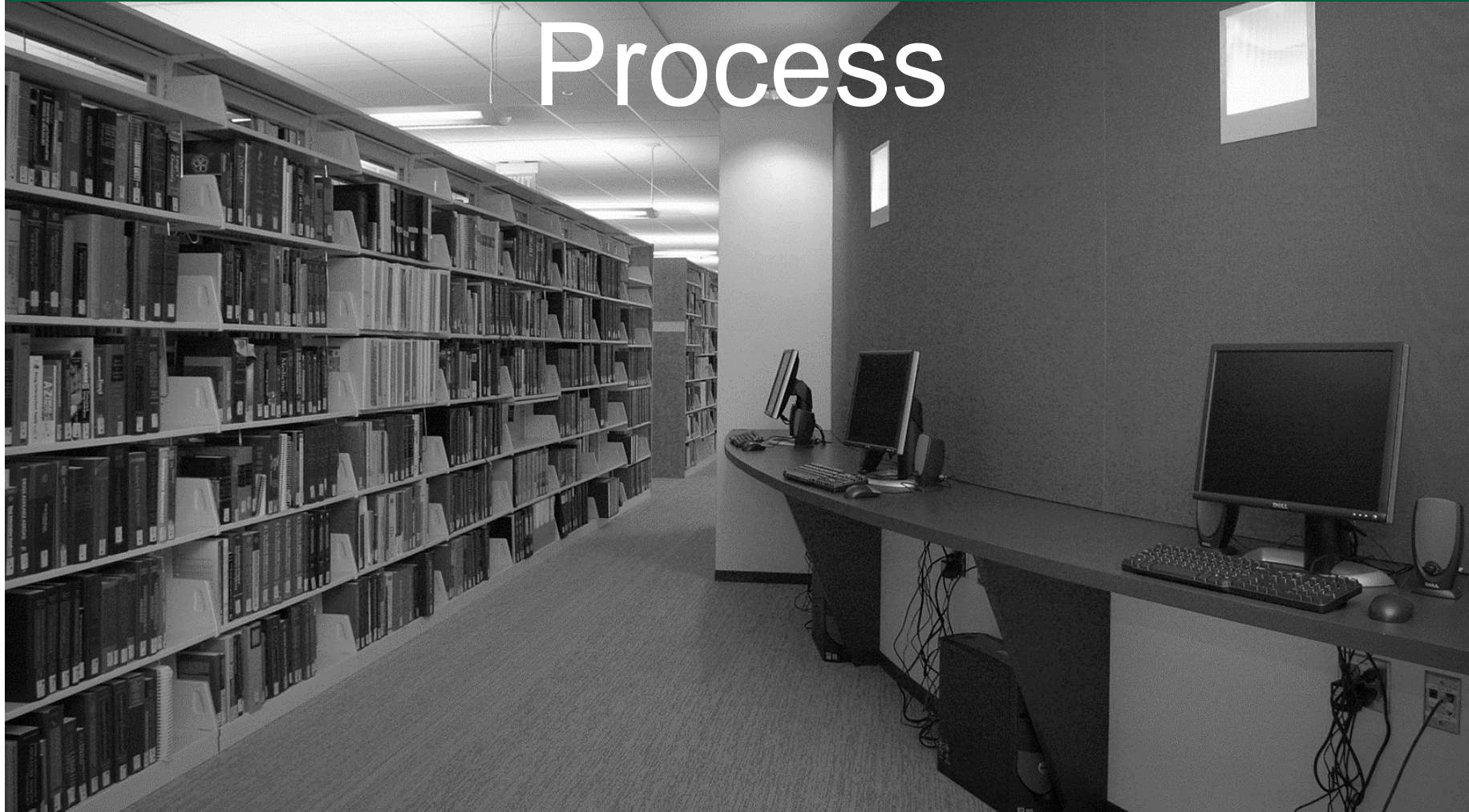
Selecting Your Database



Establish Database Selection Criteria

- What are the preferred publications in your topic area?
- Can you locate the publications in the database?
- Are your topic areas found in the database?
- What is the year span of the database?
- Can you access the database and its journals?
- Do you belong to a federal or university library to access the database and its licensed journals?

Managing Your Search Process



Managing Your Search Process

Search	Alerts	Citation Management
Simple Search	Weekly	Record of last 30 searches
Advance Search	Monthly	Return later for review
Expert Search		

Why Set Up Alerts?

- Address unnecessary duplication
- Stay informed and up-to-date
- Save time repeating searches
- Set-up varies by resource
- Database alerts allow you to track
 - Authors and/or subjects
 - Citations

Collaborations for Literature Reviews

- Interlibrary Loan with other libraries
- License agreements with databases for literature
- Collaboration on literature reviews
- Ceres 2030: Sustainable Solutions to End Hunger
- PubAg/PubMed Integration

Thank You!

Wendy Shaw

Branch Chief, Information & Customer Service

National Agricultural Library

Wendy.shaw@usda.gov

Systematic Reviews and Evidence Synthesis in Food Safety

Megan Kocher, MLIS, University of Minnesota Libraries, mkocher@umn.edu

Review Spectrum

Narrative
Review

Scoping
Review

Systematic
Review

Meta-
Analysis

Subjective
Broad Question
Methods Unclear

Objective
Narrow Question
Methods Clearly Defined

Recommended Reading

Grant, M. J., & Booth, A. (2009). **A typology of reviews: an analysis of 14 review types and associated methodologies.** *Health Information & Libraries Journal*, 26(2), 91-108. <https://doi.org/10.1111/j.1471-1842.2009.00848.x>

What is a Systematic Review?

A review of a clearly formulated question that uses systematic and **explicit methods** to identify, select, and **critically appraise relevant research**, and to collect and analyse data from the studies that are included in the review. Statistical methods (meta-analysis) may or may not be used to analyse and summarise the results of the included studies.

From <http://community.cochrane.org/glossary#letter-S>

Key Components of a Systematic Review

- A **methodical, comprehensive** literature synthesis focused on a well-formulated research question
- Identifies and synthesizes **all** of the available literature on particular topic
- Included and excluded studies are determined systematically using pre-determined criteria

Key Components of a Systematic Review

- Is conducted in an unbiased, **reproducible** way
- Identifies gaps in research
- Provides evidence for practice and policy-making

The Review Type Depends on the Question

- **Meta-analysis** - What is the strength of evidence? (quantitative analysis)
- **Systematic review** - What is the strength of evidence? (qualitative analysis)
- **Scoping review** - What do we know about research into this question? What is the nature of the research? What are the gaps in the research? What theories have been applied to the research?

Forming A Systematic Review Question

Systematic Reviews answer questions of effectiveness

Does this intervention:

- Work?
- Not work?
- Or is there insufficient evidence?

“Goldilocks” Syndrome

- **Too broad:** What are the health benefits of green tea?
- **Too narrow:** Which type of green tea--macha or sencha--reduces rate of heart attack in an otherwise healthy population?
- **Just right (almost):** What is the impact of green tea on blood pressure?

“Russian Doll” Questions

What are the best practices, including practices around waste disposal, patient transport and transfer, personal protective equipment, and patient isolation policies, for the prevention of secondary infection of infectious disease for health care workers and patients?

...this is actually 8 questions

PICO

Population/Patients/Problem

Intervention

Comparison

Outcome

For this **p**opulation, does this **i**ntervention more than this **c**omparison result in this **o**utcome?

PICO Example

For teenagers, does chocolate cause more pimples than jelly beans?

(side note: this is based on an actual study)

- P** **Teenagers**
- I** **Chocolate**
- C** **Jelly beans**
- O** **Number of pimples**

Other Frameworks For Questions

- PICO (Population, Interest, Context) (qualitative research)
- ECLIPSE (Expectation ,Client Group, Location, Impact, Profession Service)
- SPICE (Setting, Perspective, Intervention, Comparison, Evaluation)
- SPIDER (Sample, Phenomenon of interest, Design, Evaluation, Research type)

Example Questions

What is the efficacy of slaughter and processing interventions to control *Salmonella* in beef and pork?

<https://doi-org/10.4315/0362-028X.JFP-16-203>

What is the efficacy of instant hand sanitizers against foodborne pathogens compared with hand washing with soap and water in food preparation settings?

<https://doi-org/10.4315/0362-028X.JFP-15-492>

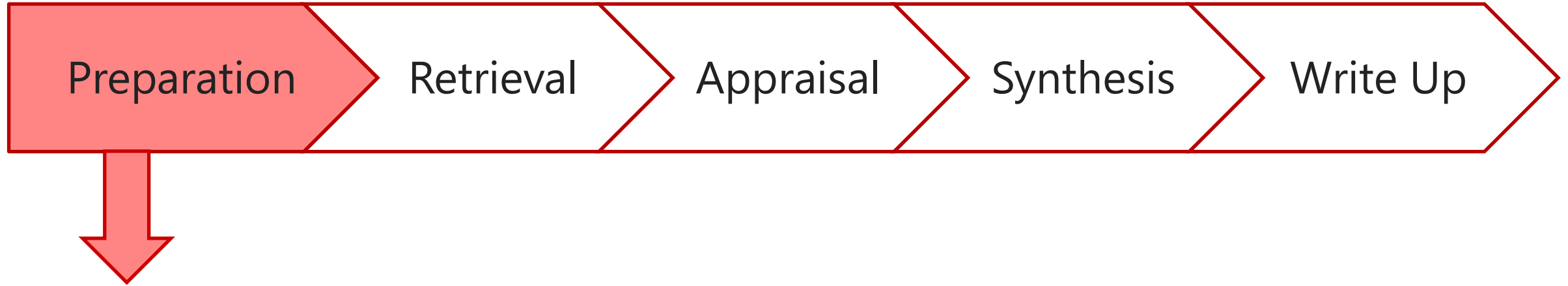
What are the effects of pasteurization on vitamin levels in raw vs. pasteurized milk?

<https://doi-org/10.4315/0362-028X.JFP-10-269>

Working With A Librarian on a Systematic Review



Systematic Reviews: How Librarians Collaborate



Protocol

Development

Subject matter experts will

- Refine & finalize the research question
- Write the background section
- Write eligibility criteria & screening plans
- Write risk of bias assessment methods
- Write data extraction & synthesis methods

Librarian co-authors will

- Identify sources for searching
- Design search strategy for the “master database”
- Provide background and guidance on protocol development and registration

Why Register a Protocol?

Publication of a protocol for a review prior to knowledge of the available studies...

- **reduces** the impact of review authors' **biases**,
- promotes **transparency** of methods and processes,
- **reduces** the potential for **duplication**,
- and allows **peer review** of the planned methods.

From <http://handbook-5-1.cochrane.org/>

Where to Register Protocols

- [SYREAF](#): Systematic Reviews For Animals & Food
- [OSF](#): Open Science Framework
 - Any topic
- [PROSPERO](#): International prospective register of systematic reviews
 - Must have health related outcome
 - Longer turnaround time



The protocol for this systematic review and meta-analysis was published on the Systematic Reviews for Animals and Food (SYREAF) Web site, and the University of Guelph's atrium and can be accessed at <https://atrium.lib.uoguelph.ca/xmlui/handle/10214/10486>. The protocol followed the PRISMA reporting guidelines and used PRISMA items as headings.

<https://doi-org./10.4315/0362-028X.JFP-18-158>

Systematic Reviews: How Librarians Collaborate

Preparation

Retrieval

Appraisal

Synthesis

Write Up

Searching Databases

Subject matter experts will

- Hand search journals and websites
- Calls to listservs or known researchers, if any

Librarian co-authors will

- Work with researchers to develop master search strategy
- “Translate” master search strategy to syntax of all databases and gray literature
- Run all database searches
- Search grey literature
- Save searches for updates



The search strategy was developed in collaboration with a librarian. A comprehensive search algorithm was developed by extracting key words and terms from 10 relevant articles and combining them into topic (e.g., “food safety” and “food hygiene”), population (e.g., handler* and employee*), intervention (e.g., intervention* and train*), and outcome (e.g., behavior* and knowledge) categories. The search was pretested in Scopus and then implemented on 22 January 2018 in eight bibliographic databases: Scopus, PubMed, CAB Abstracts, Food Safety and Technology Abstracts, PsycINFO, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Hospitality & Tourism Index, and ProQuest Dissertations & Theses. No publication date or other restrictions were imposed.

Search Strategy Toolkit

- Use of controlled vocabulary (subject headings)
- Truncation & adjacency searching
- Search hedges
- Field searching
- Exclusion searching

FinalResult NOT ("Animals"[Mesh] NOT ("Animals"[Mesh]
AND "Humans"[Mesh]))

Systematic Reviews: How Librarians Collaborate



Article Screening and Risk of Bias Assessment

Subject matter experts will

- Screen all studies retrieved from the search against eligibility criteria in two stages:
 - title & abstract screening
 - full text screening
- Perform risk of bias assessment for included studies

Librarian co-authors will

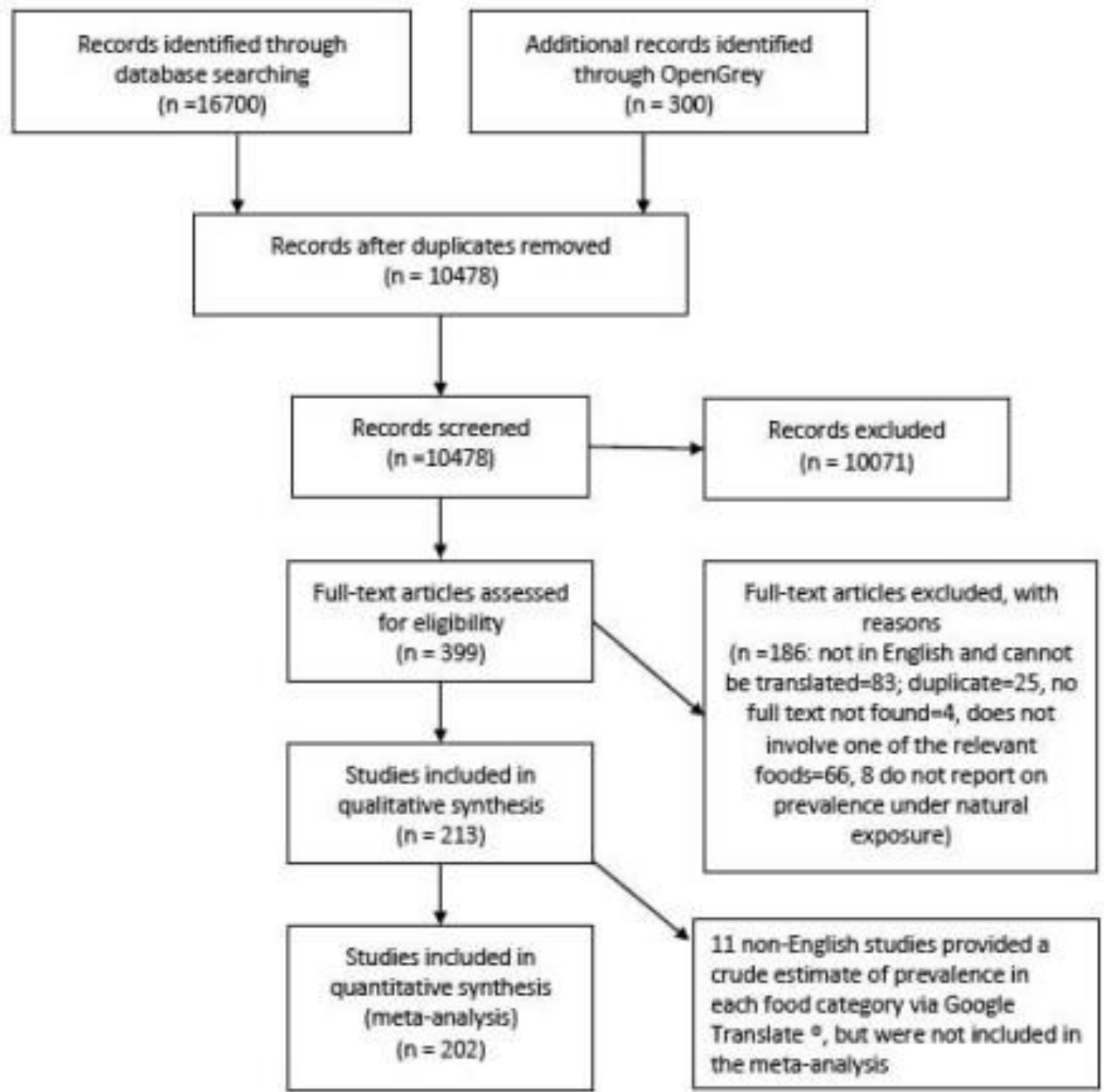
- Advise on use of article screening software like Covidence or Rayyan
- Suggest risk of bias assessment tools

Identification

Screening

Eligibility

Included



<https://doi-org./10.4315/0362-028X.JFP-18-158>

Systematic Reviews: How Librarians Collaborate

Preparation

Retrieval

Appraisal

Synthesis

Write Up

Data Extraction and Synthesis

Subject matter experts will

- Extract data from included studies
- Thematically characterize or quantitatively synthesis data from included studies

Librarian co-authors will

- Answer questions or provide guidance as needed

Systematic Reviews: How Librarians Collaborate



Writing the Article

Subject matter experts will

- Prepare the manuscript according to submission guidelines.

Librarian co-authors will

- Write up the information retrieval methods section
- Prepare the search strategies for publication in an appendix



Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.

-PRISMA Checklist, item 8

The Google Scholar Issue

- Unknown Coverage
- Can't sort by date
- Can't sort by times cited
- No controlled vocabulary
- Can't save the whole search result
- Too many results to screen

Thanks!



Any questions?

You can find me at:

- mkocher@umn.edu

Questions?

Questions can be submitted via the **Questions section** at the right of the screen.

Slides and a recording of this webinar will be available for access by IAFP members at www.foodprotection.org within one week.