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Crowd Science for Collecting Data in Preclinical Systematic Reviews

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Conflict of Interest Declaration

- Funded by the BBSRC
- Open Science Badges and Preprint Editor at BMJ Open Science
- International Association for the Study of Pain Presidential Taskforce on Cannabis and Cannabinoid Analgesia

Collaborative Approach to Meta Analysis and ·C·A·M·A·R·A·D·E·S· Review of Animal Data from Experimental Studies

ePPI CENTRE

BBSRC bioscience for the future

International Association for the Study of Pain IASP Working together for pain relief

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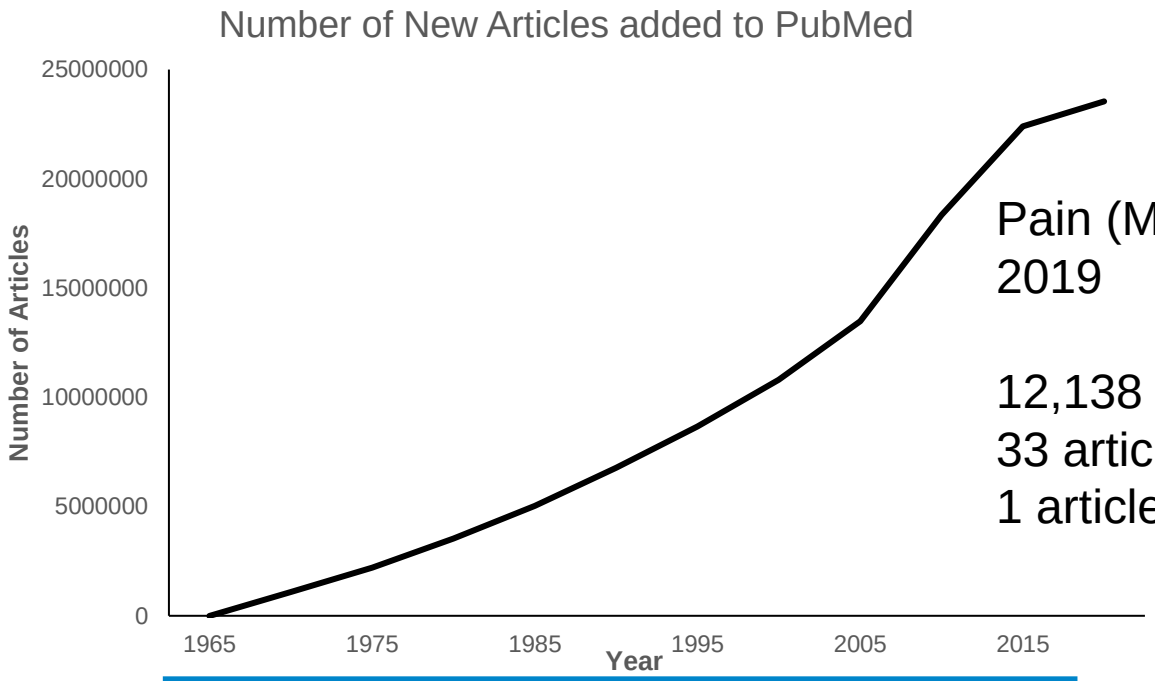
The Practical Challenges of Preclinical Systematic Review

- Time
- Complexity and Size
- Minimum team of 3



Pain (MeSH term)
2019

12,138 total
33 articles per day
1 article an hour

Neuropathic Pain Systematic Review Number of studies (2015)	
Preclinical	**Clinical**
12,614	129

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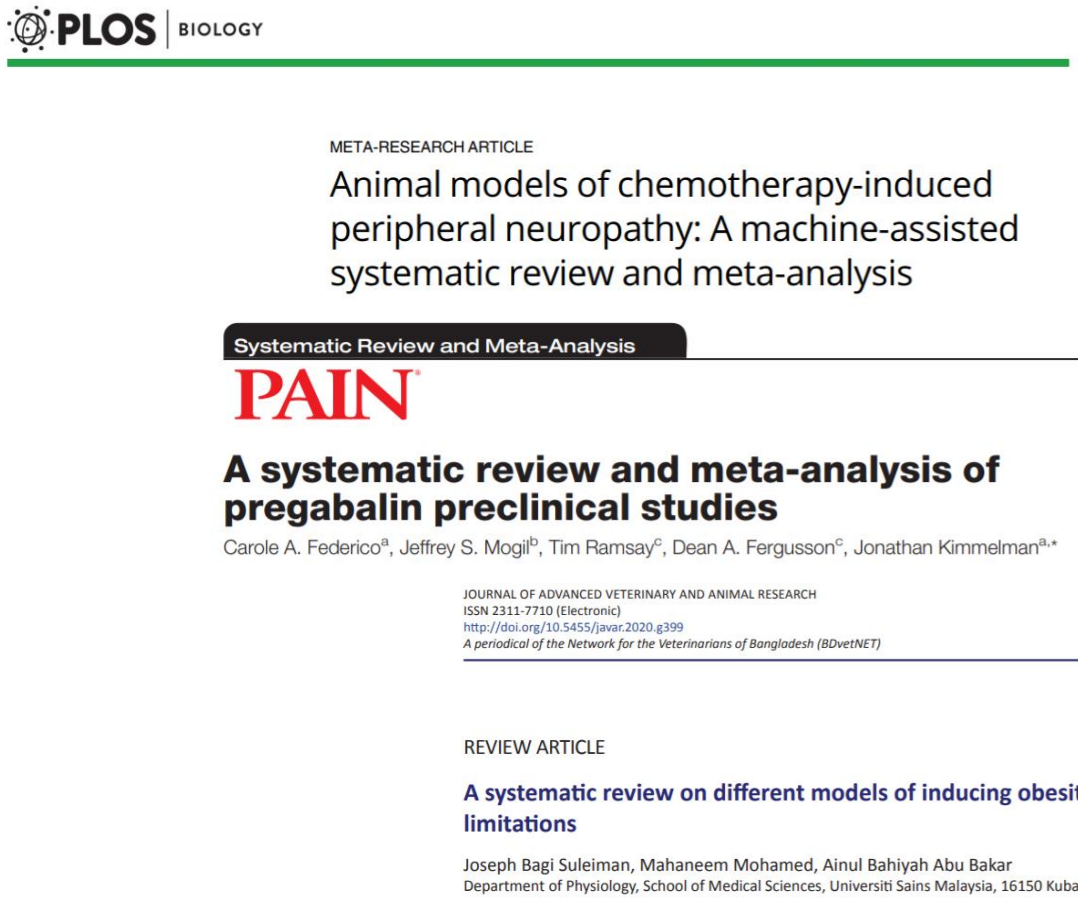
Improving Feasibility: Design of the Review

- Research question
- Inclusion criteria
- Resource allocation



PLOS BIOLOGY

META-RESEARCH ARTICLE

Animal models of chemotherapy-induced peripheral neuropathy: A machine-assisted systematic review and meta-analysis

Systematic Review and Meta-Analysis

PAIN

VIDEO

A systematic review and meta-analysis of pregabalin preclinical studies

Carole A. Federico[a], Jeffrey S. Mogil[b], Tim Ramsay[c], Dean A. Fergusson[c], Jonathan Kimmelman[a,*]

JOURNAL OF ADVANCED VETERINARY AND ANIMAL RESEARCH
ISSN 2311-7710 (Electronic)
http://doi.org/10.5455/javar.2020.g399
A periodical of the Network for the Veterinarians of Bangladesh (BDvetNET)
March 2020
VOL 7, NO. 1, PAGES 103–114

JAVAR Journal of Advanced Veterinary and Animal Research

REVIEW ARTICLE

A systematic review on different models of inducing obesity in animals: Advantages and limitations

Joseph Bagi Suleiman, Mahaneem Mohamed, Ainul Bahiyah Abu Bakar
Department of Physiology, School of Medical Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Malaysia.

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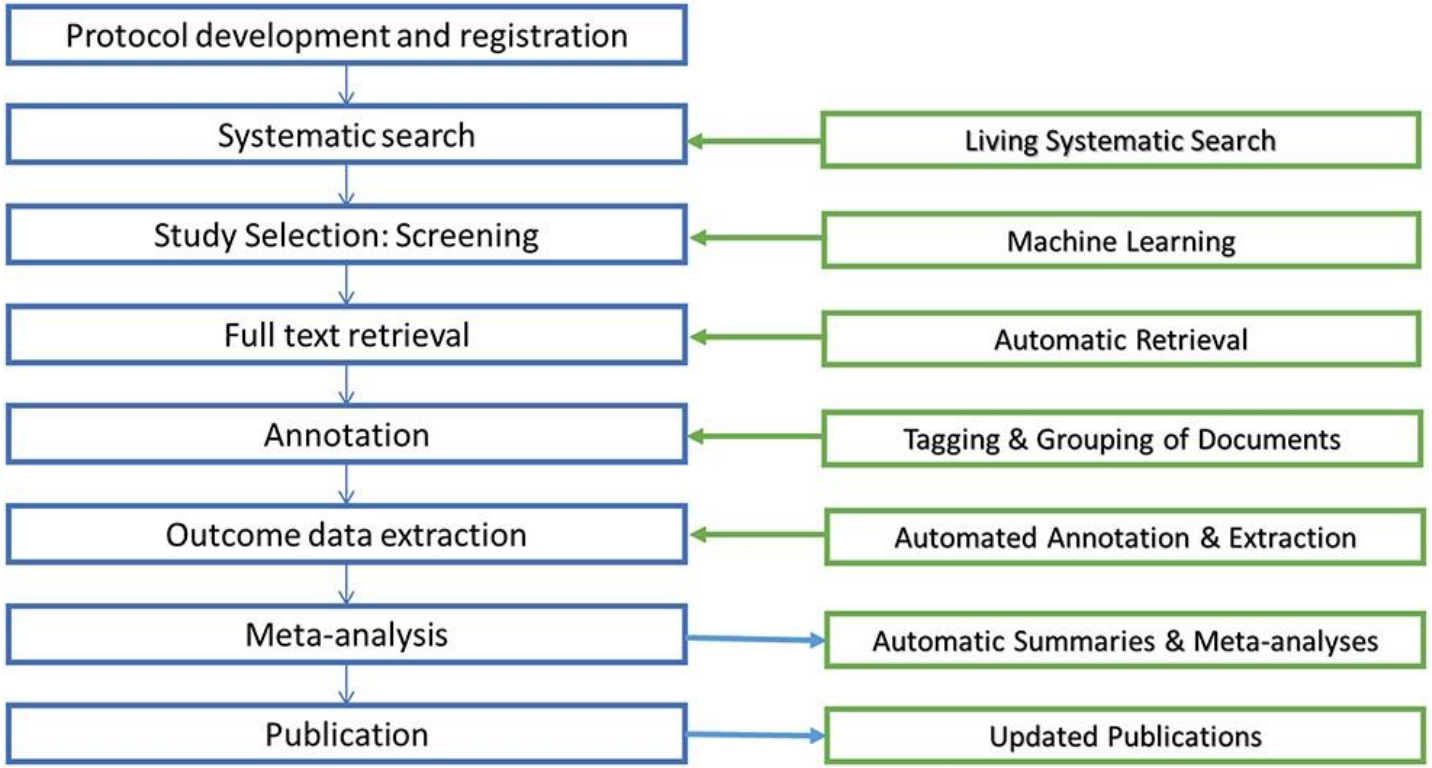
Improving Feasibility: Automation Technologies



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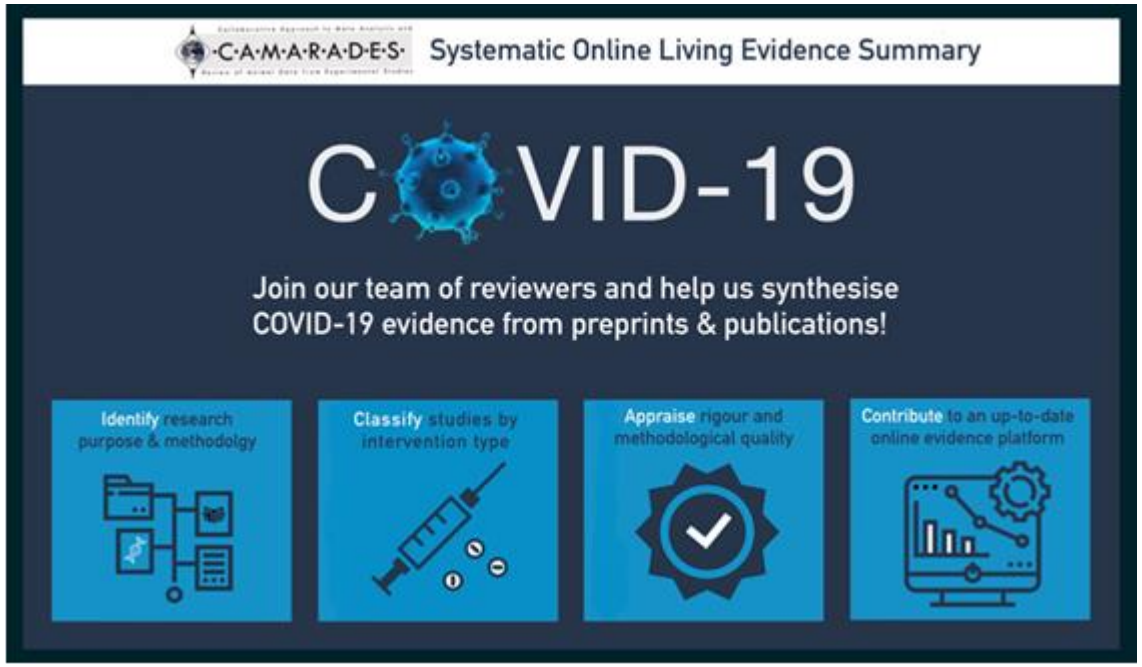
Improving Feasibility: Contributing to Reviews



EQIPD

The European Quality in Preclinical Data consortium are conducting an Alzheimer's Disease Preclinical Systematic Review and are looking for more volunteers to contribute to the data extraction phase.

The focus is Alzheimer's transgenic disease models and the open field test and/or sleep wake EEG; this review gives you a further opportunity to hone those critical appraisal skills.

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Pharmacology Research Protocol

OPEN

PAIN REPORTS®

A protocol for the systematic review and meta-analysis of studies in which cannabinoids were tested for antinociceptive effects in animal models of pathological or injury-related persistent pain

Nadia Soliman[a,*], Andrea G. Hohmann[b], Simon Haroutounian[c], Kimberley Wever[d], Andrew S.C. Rice[a], David P. Finn[e]

Search = 10,816 articles

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The Solution…

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How can a crowd help…

SYSTEMATIC Review Facility

- Screening
- Data Extraction

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Crowd members would…

- ✓ Critical analysis skills
- ✓ Meaningful contribution
- ✓ Collaborative Working
- ↑ Rate
- ↑ Accuracy
- ↓ Individual input

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Recruitment

- Bioscientists; no pre-requisite criteria
- Advertised through the IASP network, collaborators, colleagues, and students using direct communication, email, newsletters and social media
- Incentives – authorship, acknowledgement and prizes
- Did not have a minimum/maximum recruitment target

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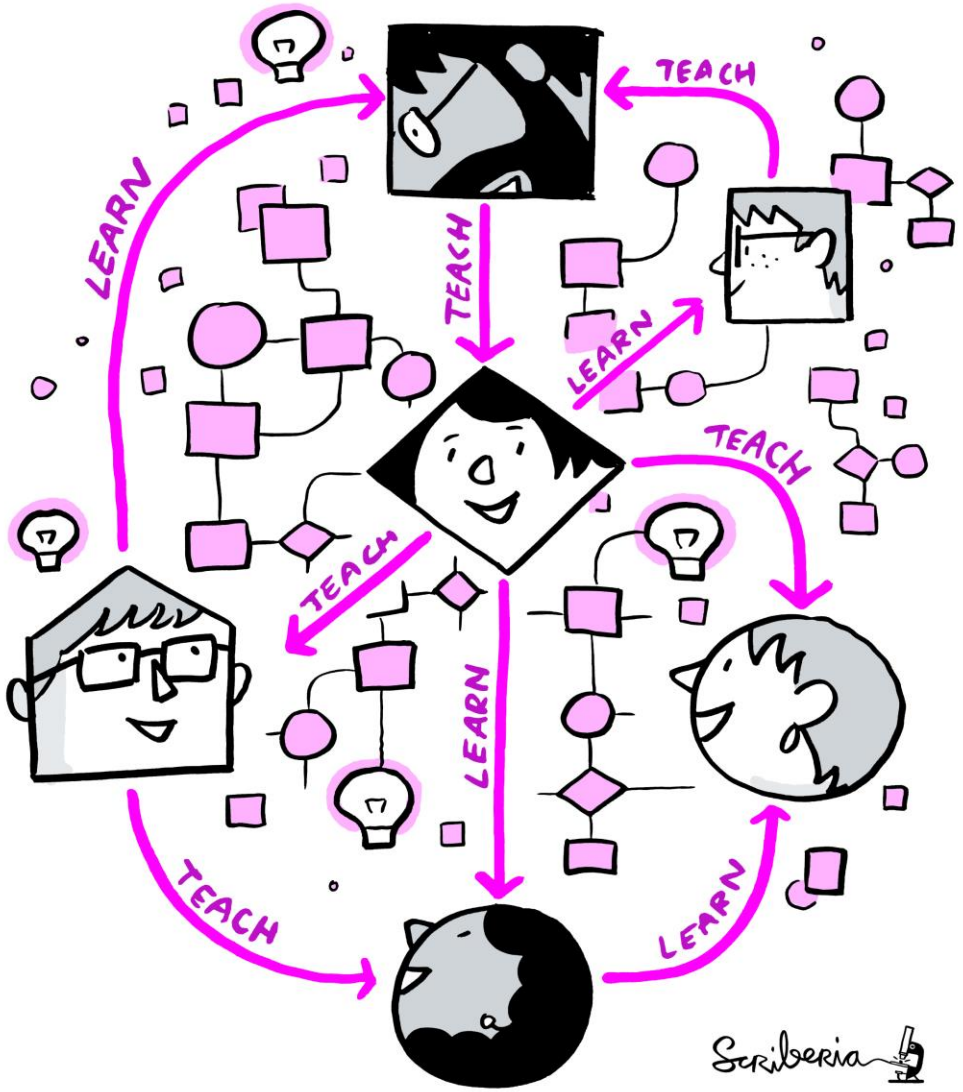
Training

- Learn to SyRF
  - Screening module
  - Data extraction module
- Guidance notes and worked examples
- Videos for how to extract data form graphs
- ‘Reading Corner’ in the newsletters linking to useful published articles
- Not a panacea for quality control



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Communication

- Newsletters
- Email
- Collaboration Club

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The Crowd!

- **453** crowd members
- **44** countries
- Not everyone contributed but all received the newsletters and would be able to follow the project progress

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The Crowd

Stage	Enrolled on Learn to SyRF	Passed Training	Contributed to Project
Screening	91	46	36
Data Extraction	123	65	62

28 authors

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Did using a crowd save time and improve accuracy?

Volunteer force

Quality Control

	Crowd (weeks)	2 Specialist reviewers (approx. weeks)
Screening	6	5 (10 person weeks)
Data Extraction	37	15 (30 person weeks)

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Benefits…

- Community engagement
- Training and education
- Economy of effort
- Feedback for tool development and future crowd science projects

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Since contributing to this project…

Crowd members agreed (25 surveyed so far…)	Improved…
91.6 %	Professional skillset
75 %	Own research practises
100 %	Understanding of the conduct of preclinical systematic reviews
87.5 %	Understanding of study design
95.8 %	Understanding of experimental bias and how to mitigate the risks

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Acknowledgements

WP1

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- Dr Andrew Rice

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SYRCLE, Radboud University

- Dr Kim Wever (search strategy)

IASP

- Matthew D'Uva
- Yulanda Grant
- Diana Bender-Bier
- Luke Waldron

The Crowd!

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(funded by Dr Michael Rowbotham)

- Catherine Healy
- Dr Emer Power
- Mary Hopkins
- Darragh Mattimoe
- Dr Mehnaz Ferdousi