Demonstration of the CAMARADES-NC3Rs Systematic Review Facility (SyRF)

SYSTEMATIC
Review Facility

30 March 2017

Gillian Currie

Outline

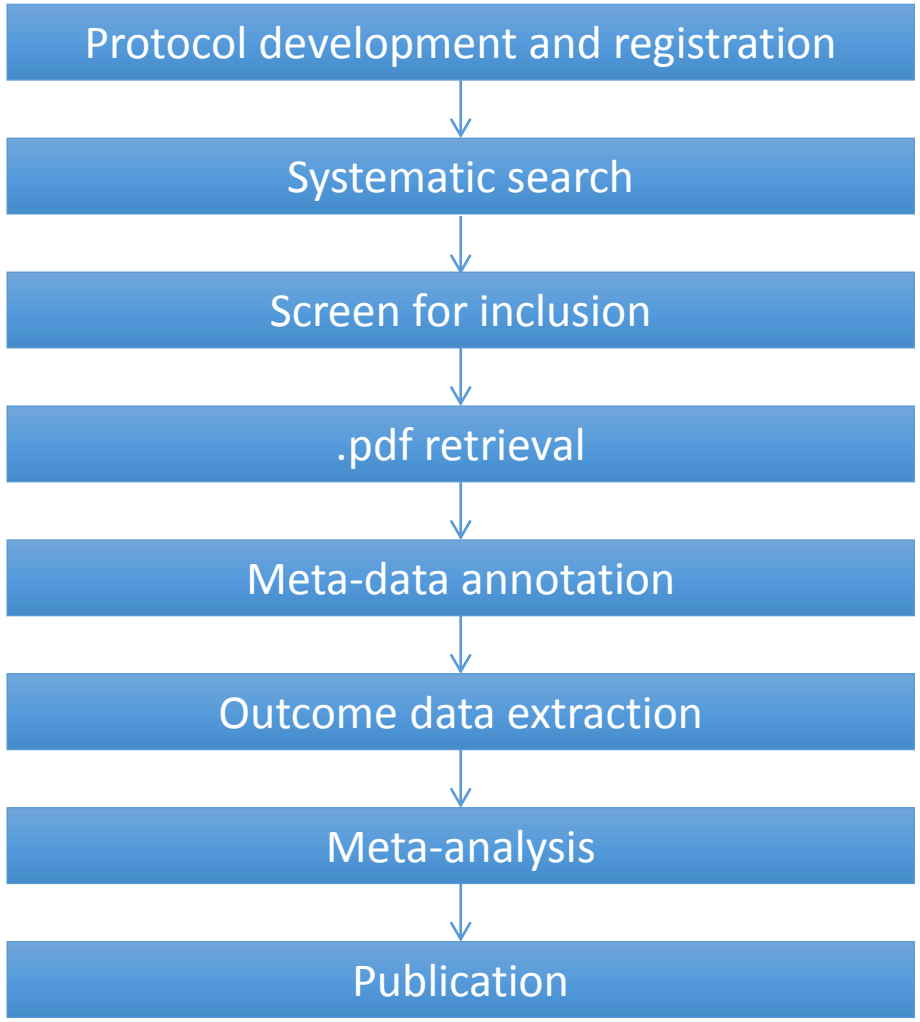
- **Previous CAMARADES database**
- **SyRF - Systematic Review Facility**
  - Educational resources for systematic review and meta-analysis
  - Online platform
  - Flexible for individual projects
- **Demonstration and learn to SyRF**

National Centre for the Replacement Refinement & Reduction of Animals in Research

CAMARADES

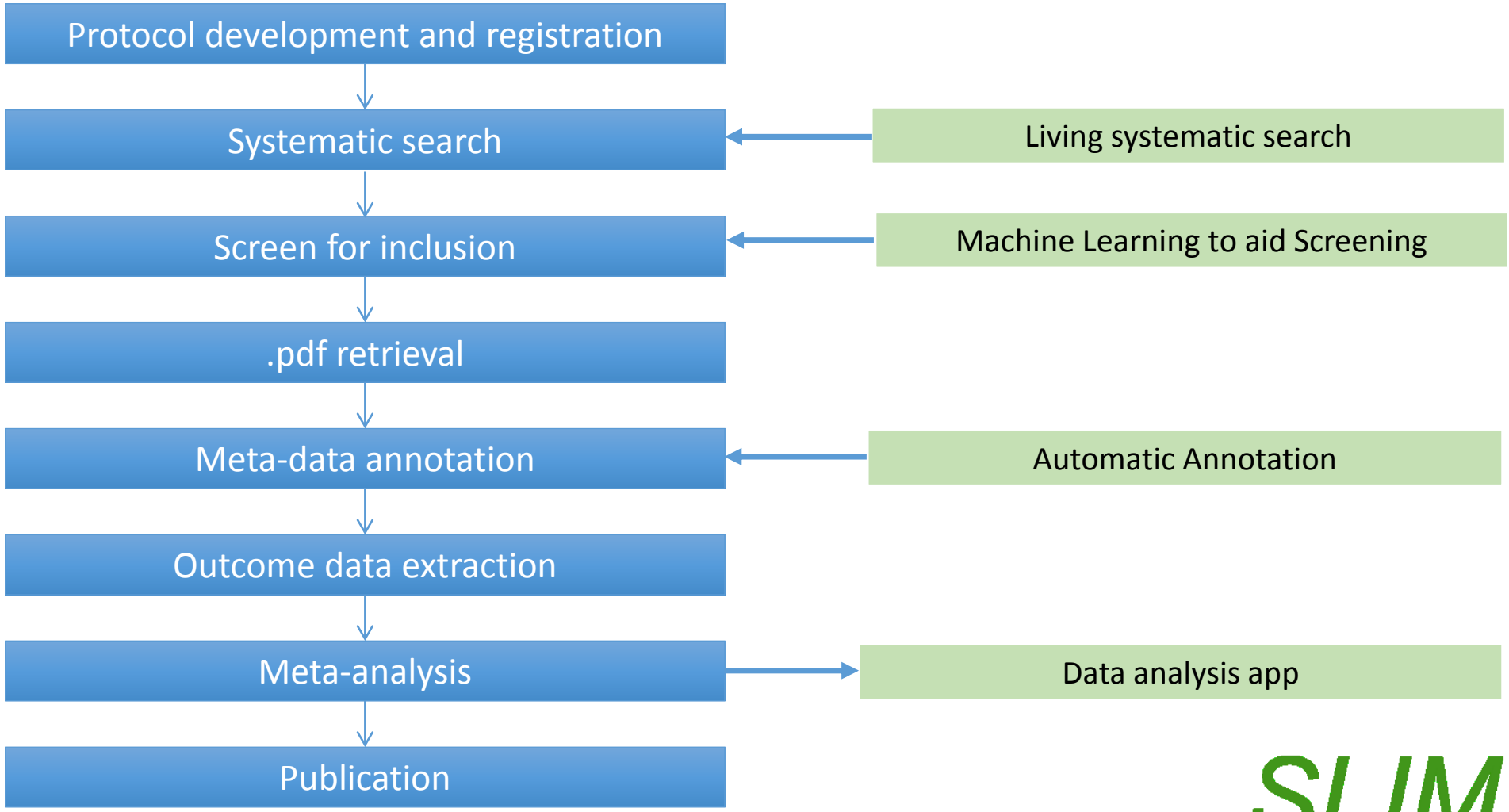
- **C**ollaborative **A**pproach to **M**eta-**A**nalysis and **R**eview of **A**nimal **D**ata from **E**xperimental **S**tudies
- Supporting framework for systematic review and meta-analysis of animal studies
- Look systematically across the modelling of a range of conditions
- Microsoft Access Data Repository
  - 40 Projects
  - 30 Diseases
  - 25,000 studies
  - from over 400,000 animals

Stages of Systematic Review and Meta-analysis



SYSTEMATIC Review Facility

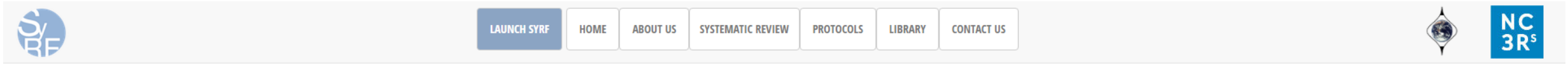
Toolbox for SyrF



SYSTEMATIC Review Facility

SLIM Systematic Living Information Machine

http://syrf.org.uk



SYSTEMATIC Review Facility

Welcome to the **CAMARADES-NC3Rs** Preclinical **Sy**stematic **R**eview & Meta-analysis **F**acility (SyRF)

What is SyRF?

SyRF is a fully integrated online platform for performing systematic reviews of preclinical studies.

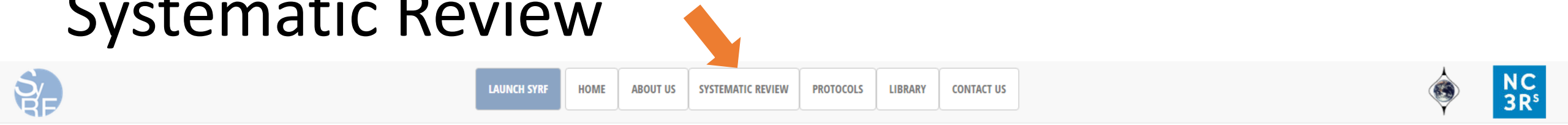
SyRF provides:

- Educational resources on how to conduct and report a systematic review
- Secure screening database, data repository and analysis applications
- Guidance on any aspect of preclinical systematic review and meta-analysis

How to use SyRF

- Use the SyRF website to learn about preclinical systematic review and ask questions or request assistance through our helpdesk
- Search published protocols to check if there is a review underway in your field of interest
- Publish your preclinical systematic review protocol in the SyRF protocol repository
- Find existing preclinical systematic reviews in our systematic review library

Systematic Review



What is a Systematic Review?

A systematic review is a literature review that involves systematically locating, appraising, and synthesising evidence from scientific studies to answer a defined research question based on pre-specified criteria.

What is a meta-analysis?

A method of combining quantitative results from individual studies identified through systematic review in an overall statistical analysis.

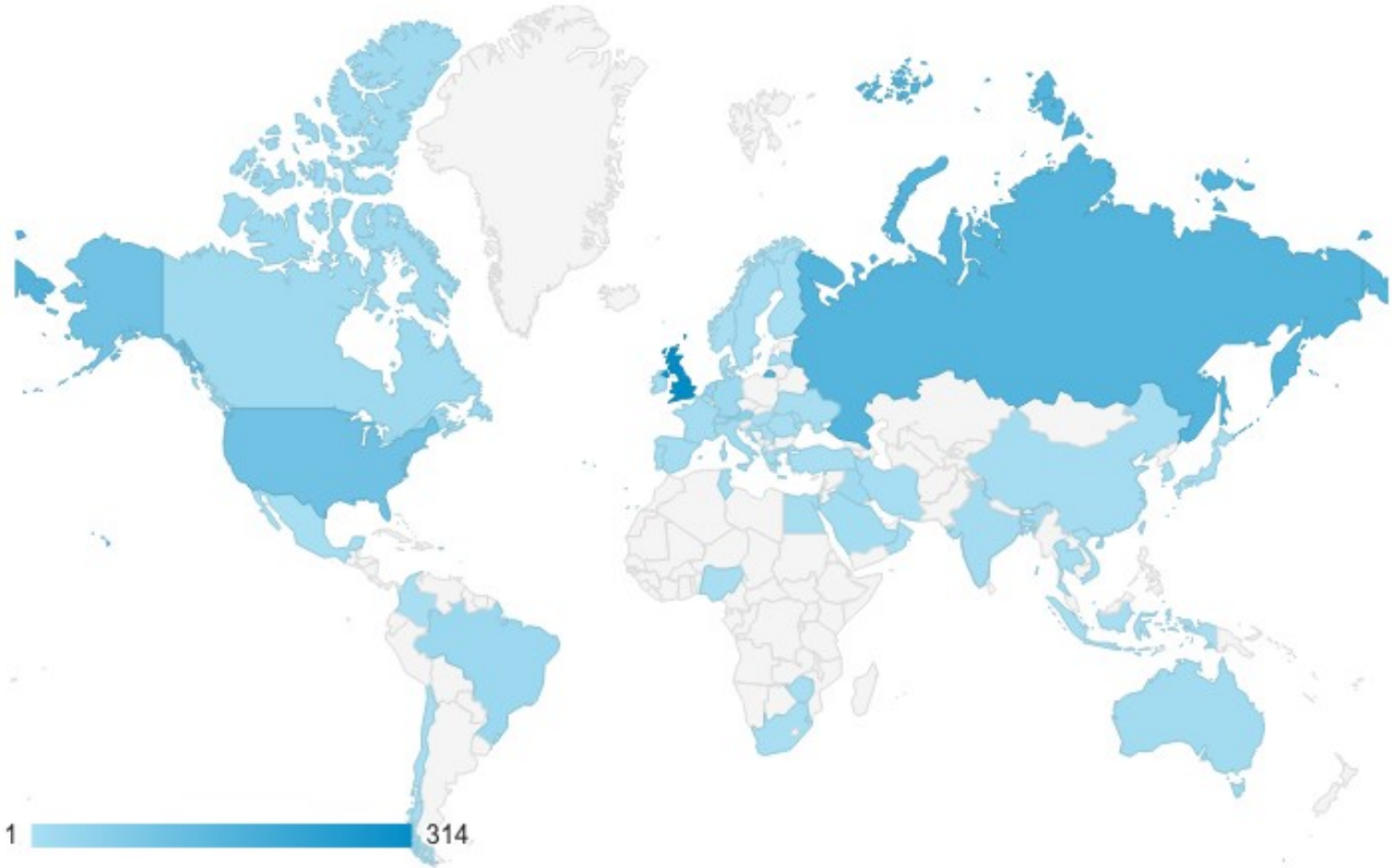
Why perform a systematic review of preclinical research?

- Provide an overview of available evidence
- Identify knowledge gaps
- Critically appraise study quality
- Identify factors influencing treatment efficacy
- Inform experimental design of new studies
- Reduce waste in future research

The results of preclinical systematic reviews can:

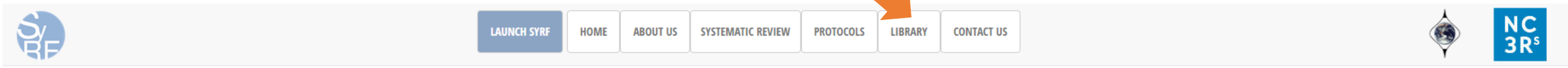
- Provide evidence to change research practice by identifying risks of bias in preclinical experiments
- Influence development of reporting guidelines and editorial policies
- Provide evidence to support reporting of positive, negative and neutral results through detection of publication bias

SyRF Traffic



Protocol development and registration

Systematic review library



Systematic Review & Protocol Library

This a repository for existing preclinical systematic reviews published in peer-reviewed journals. Search this library to check whether your research question has already been answered with a systematic review, to find a specific systematic review, or to get a broad overview of a topic or drug intervention.

Systematic reviews were identified using PubMed, Embase, Web of Science, and Evidence-based Preclinical Medicine databases. The library can be searched for a specific drug, intervention, animal or disease. A logo denotes the review was supported by SyRF and NC3Rs.

Search for... SEARCH

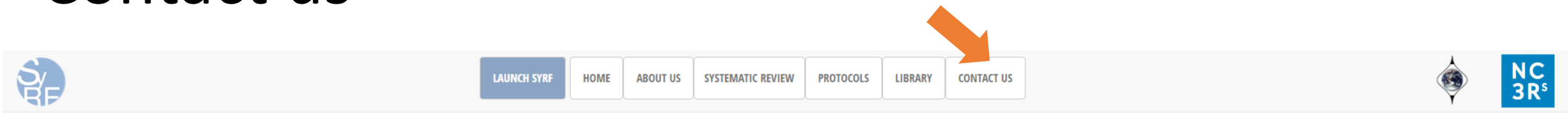
Title: [Mouse models of diabetic retinopathy: systematic review of the literature]
Year: 3/1/2013
Author: Giocanti-Auregan A;Tadayoni R;Ahn L;Pena JT;D'Amico DJ;
Journal: J Fr Ophtalmol

Title: [The efficacy of hypertonic saline treatment in cardiopulmonary resuscitation in animal model with cardiac arrest: a Meta-analysis]
Year: 2015
Author: Li W;Xu J;Tan D;Yu X;
Journal: Zhonghua wei zhong bing ji jiu yi xue

Title: [The efficacy of traditional Chinese medicin in animal model of lung injury induced by paraquat: a meta-analysis]
Year: 6/1/2014
Author: Wang L;Hong G;Li D;Chen X;Han W;Lu Z;
Journal: Zhonghua Wei Zhong Bing Ji Jiu Yi Xue

Protocol development and registration

Contact us



Contact Us

Name *

Name

Email *

Email

Institution*

Institute

Subject *

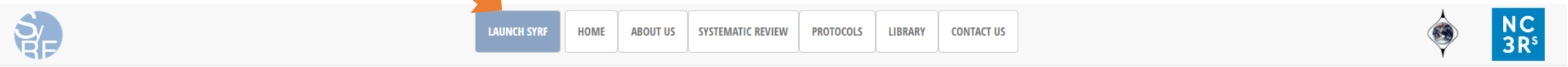
Question about Systematic Reviews

Message *

Message

Protocol development and registration

Launch SyRF



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- Find existing preclinical systematic reviews in our systematic review library

Protocol development and registration

An easily accesible resource to aid systematic review and meta-analysis of *in vivo* studies.

Login

SYSTEMATIC
Review Facility

Protocol development and registration

CAMARADES Identity Server

Register.

Create a new account.

Use another service to log in.

Log in with Google

Email

First Name

Surname

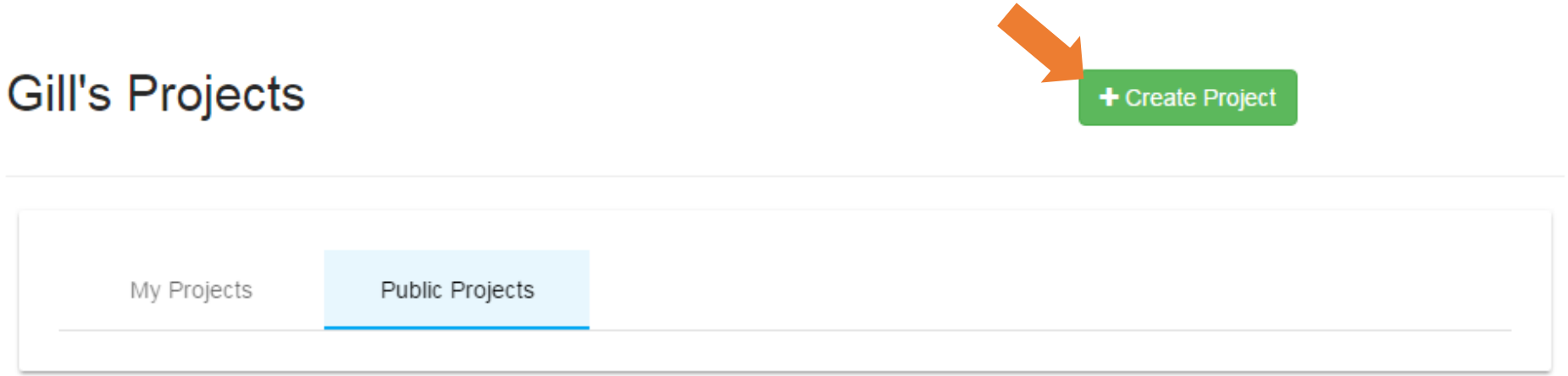
Preferred Name

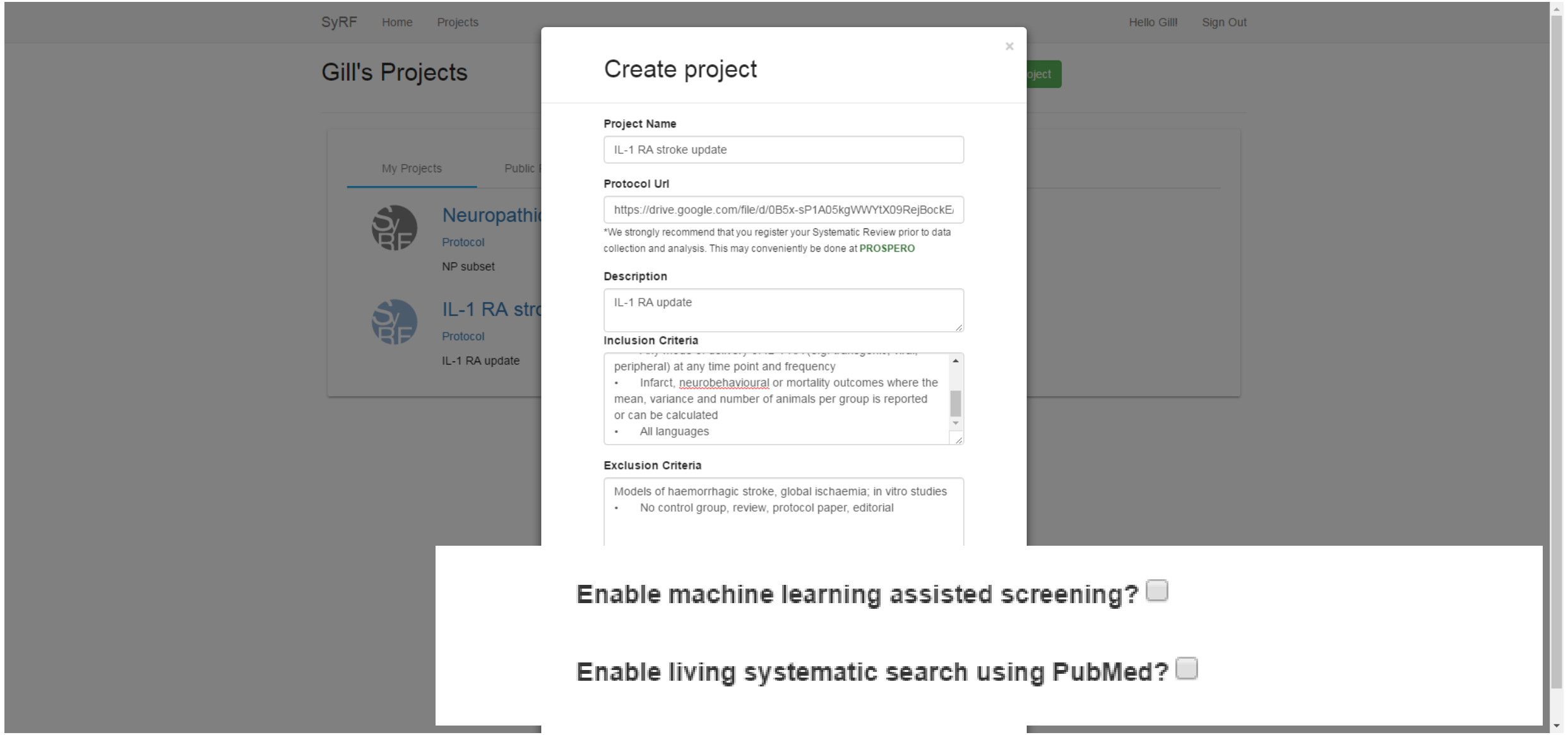
Password

Confirm password

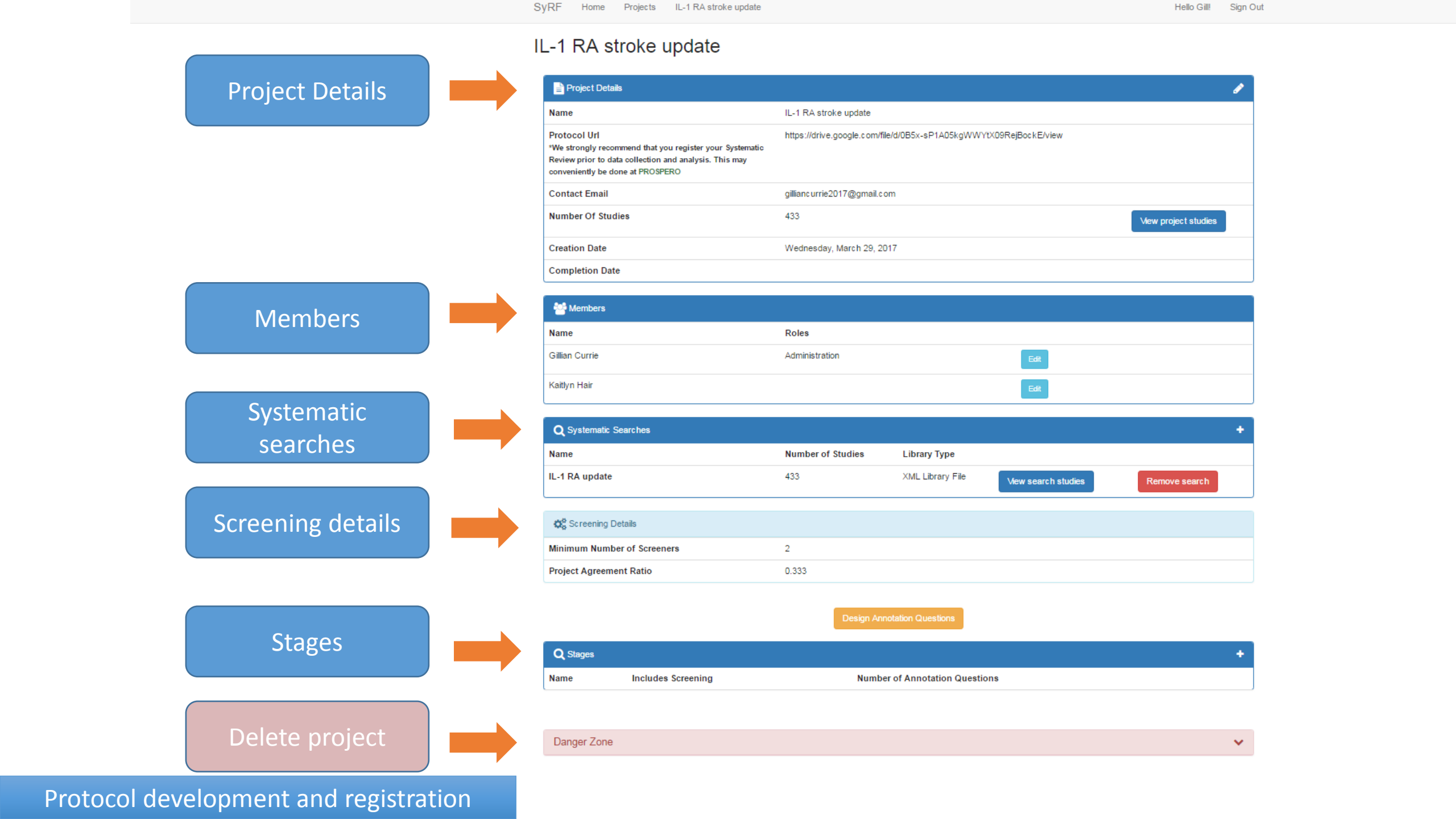
Register

Protocol development and registration


Gill's Projects
+ Create Project
My Projects
Public Projects



Protocol development and registration


SyRF
Home
Projects
IL-1 RA stroke update
Hello Gill!
Sign Out
IL-1 RA stroke update
Project Details
Name
IL-1 RA stroke update
Protocol Url
*We strongly recommend that you register your Systematic Review prior to data collection and analysis. This may conveniently be done at PROSPERO
https://drive.google.com/file/d/0B5x-sP1A05kgWWYtX09RejBockE/view
Contact Email
gilliancurrie2017@gmail.com
Number Of Studies
433
View project studies
Creation Date
Wednesday, March 29, 2017
Completion Date
Members
Name
Roles
Gillian Currie
Administration
Edit
Kaitlyn Hair
Edit
Systematic Searches
Name
Number of Studies
Library Type
IL-1 RA update
433
XML Library File
View search studies
Remove search
Screening Details
Minimum Number of Screeners
2
Project Agreement Ratio
0.333
Design Annotation Questions
Stages
Name
Includes Screening
Number of Annotation Questions
Danger Zone
Project Details
Members
Systematic searches
Screening details
Stages
Delete project
Protocol development and registration

Kaitlyn's Projects

+ Create Project

My Projects | Public Projects

NP Subset Mar 2017 Invited

Protocol

NP subset

Small Invited

Protocol

small example

IL-1 RA stroke update Invited

Protocol

IL-1 RA update

D-galactose-induced brain aging model in rodent: a systematic review and meta-analysis Invited

Protocol

secondary contact Malcolm Macleod

Depression Test Set 1000 Invited

Protocol

Protocol development and registration

IL-1 RA stroke update

Project Details

Name	IL-1 RA stroke update
Protocol Url *We strongly recommend that you register your Systematic Review prior to data collection and analysis. This may conveniently be done at PROSPERO	https://drive.google.com/file/d/0B5x-sP1A05kgWWYtX09RejBockE/view
Contact Email	gilliancurrie2017@gmail.com
Number Of Studies	433 View project studies
Creation Date	Wednesday, March 29, 2017
Completion Date	

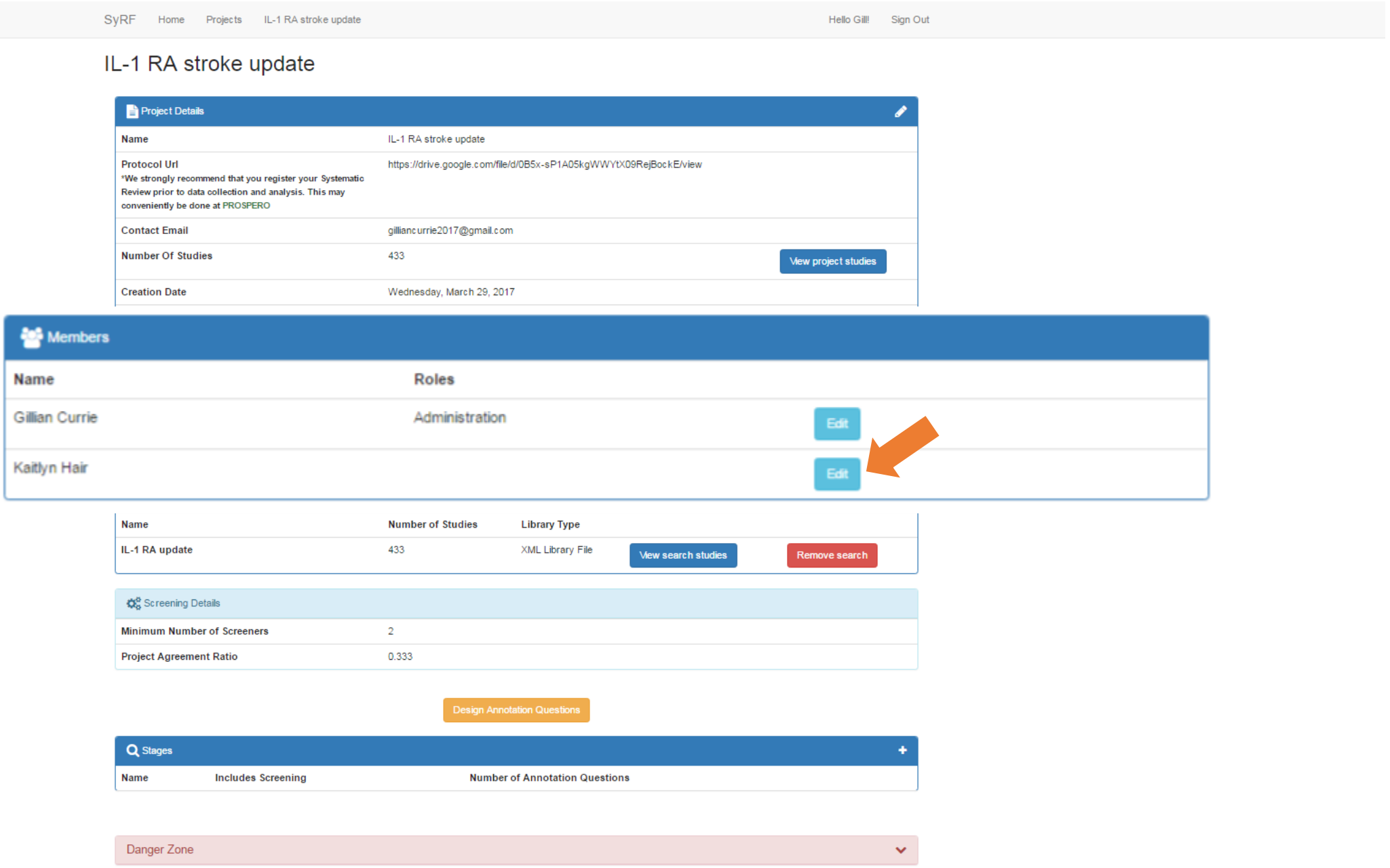
Screening Details

Minimum Number of Screeners	2
Project Agreement Ratio	0.333

Design Annotation Questions

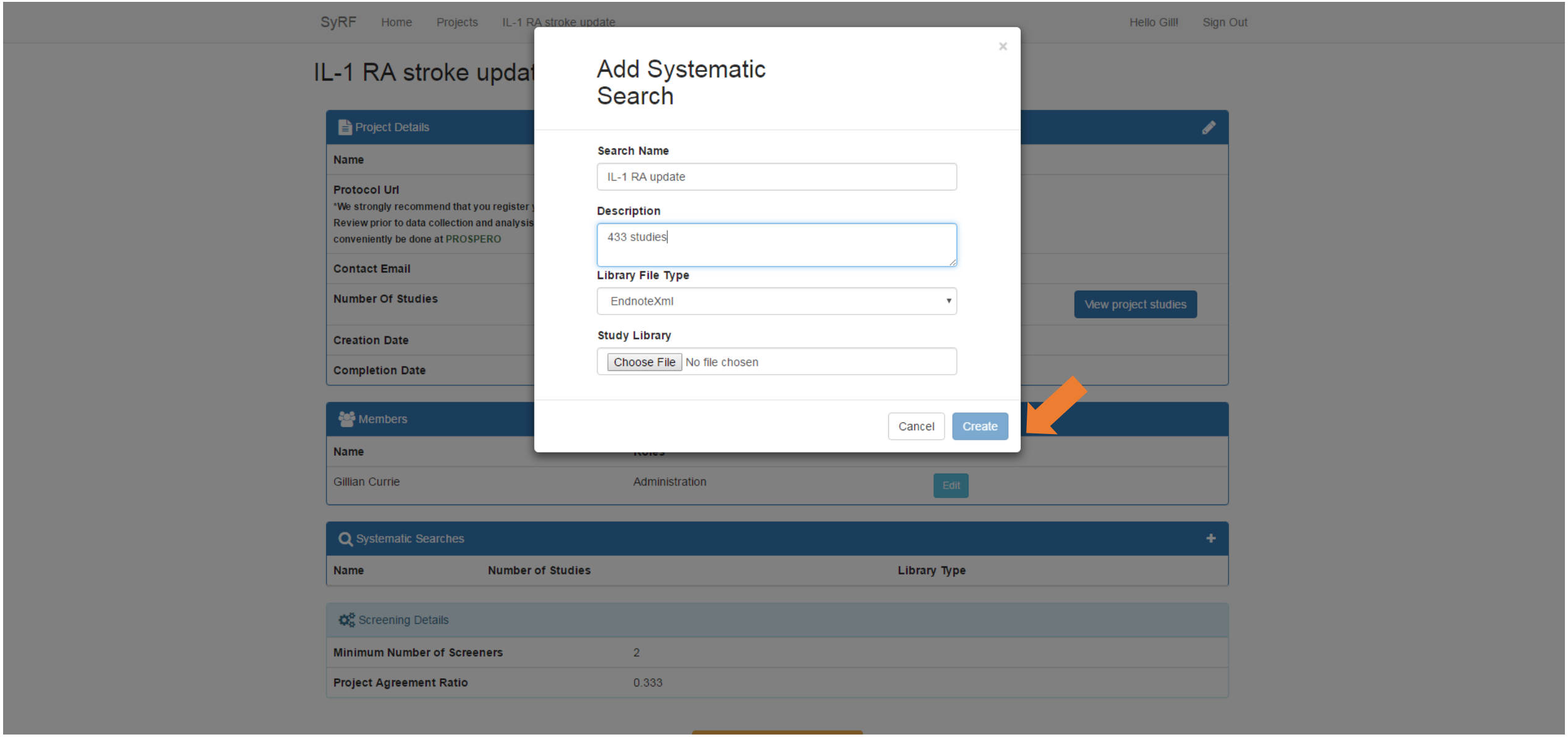
You are not currently a member of this project.

Register to join

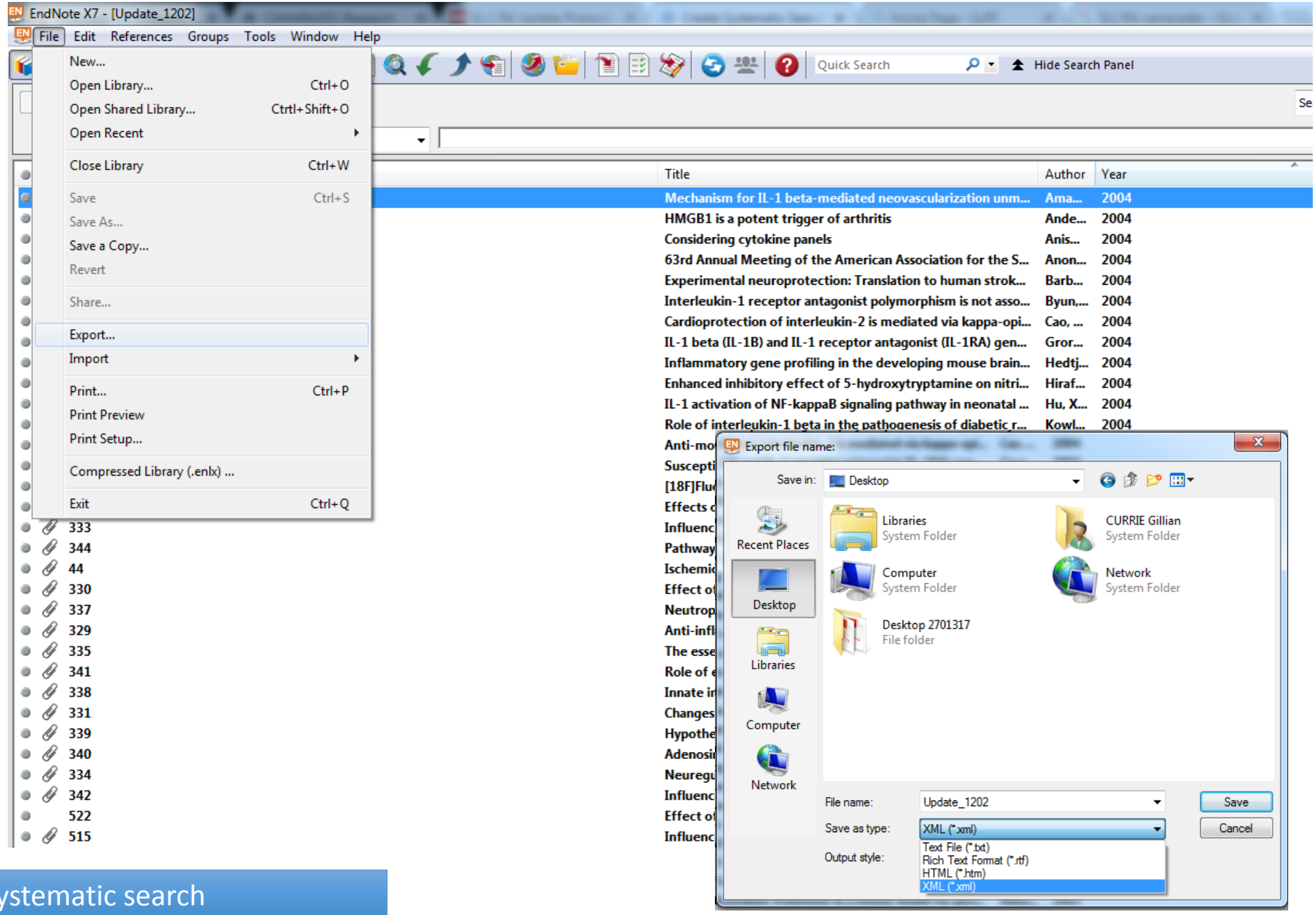


Protocol development and registration

Systematic search



Systematic search



Systematic search

SyRF Home Projects IL-1 RA stroke update Hello Gill! Sign Out

Project Studies

Rows per page: 10 1-10 of 433 studies (filtered from 433 total studies)

Title	Year	Reference Type	Journal	Author	Inclusion Status	Search
Mechanism for IL-1 beta-mediated neovascularization unmasked by IL-1 beta knock-out mice	2004	Journal Article	Journal of Molecular and Cellular Cardiology	K. Amano	Insufficiently Screened	IL-1 RA update
HMGB1 is a potent trigger of arthritis	2004	Journal Article	Journal of Internal Medicine	U. Andersson	Insufficiently Screened	IL-1 RA update
Considering cytokine panels	2004	Journal Article	Brain Behavior and Immunity	Hymie Anisman	Insufficiently Screened	IL-1 RA update
63rd Annual Meeting of the American Association for the Surgery of Trauma held jointly with the Japanese Association of Acute Medicine, Maui, Hawaii, USA, September 29-October 2, 2004	2004	Journal Article	Journal of Trauma Injury Infection and Critical Care	Anonymous	Insufficiently Screened	IL-1 RA update
Experimental neuroprotection: Translation to human stroke trials	2004	Book	Maturation Phenomenon in Cerebral Ischemia V	P. A. Barber	Insufficiently Screened	IL-1 RA update
Interleukin-1 receptor antagonist polymorphism is not associated with ischemic stroke in Type 2 diabetes	2004	Journal Article	Diabetologia	S. H. Byun	Insufficiently Screened	IL-1 RA update
Cardioprotection of interleukin-2 is mediated via kappa-opioid receptors	2004	Journal Article	Journal of Pharmacology and Experimental Therapeutics	Chun-Mei Cao	Insufficiently Screened	IL-1 RA update
IL-1 beta (IL-1B) and IL-1 receptor antagonist (IL-1RA) gene polymorphism and the clinical course of ischemic stroke (IS)	2004	Journal Article	European Journal of Neurology	G. Grornadzka	Insufficiently Screened	IL-1 RA update
Inflammatory gene profiling in the developing mouse brain after hypoxia-ischemia	2004	Journal Article	Journal of Cerebral Blood Flow and Metabolism	M. Hedtjarn	Insufficiently Screened	IL-1 RA update

Systematic search

Screen for inclusion

200 Screened | 233 Remaining

Whole live animal models of ischaemic occlusive stoke of the middle cerebral or anterior cerebral arteries or their branches • Any primary study comparing treatment and control groups • Any mode of delivery of IL-1 RA (e.g. transgenic, viral, peripheral) at any time point and frequency • Infarct, neurobehavioural or mortality outcomes where the mean, variance and number of animals per group is reported or can be calculated • All languages

Models of haemorrhagic stroke, global ischaemia; in vitro studies • No control group, review, protocol paper, editorial

Excluded

Include

Exclude

Next

Trimethyltin-evoked apoptosis of murine hippocampal granule neurons is accompanied by the expression of interleukin-1beta and interleukin-1 receptor antagonist in cells of ameboid phenotype, the majority of which are NG2-positive

A. Fiedorowicz, I. Figiel, M. Zaremba, K. Dzwonek, R. Schliebs, B. Oderfeld-Nowak

Brain Research Bulletin, 2008

Abstract:

Interleukin-1beta (IL-1 beta) has been implicated in various neuropathologies, while IL-1 receptor antagonist (IL-1ra) has been shown to reduce neuronal injury. We investigated the pattern of expression of both cytokines in murine hippocampus after trimethyltin (TMT) intoxication. Using a ribonuclease protection assay, we demonstrated induction of transcription of IL-1 beta and IL-1ra 3 days following TMT treatment which correlated with the peak of neuronal apoptosis. At this time, immunocytochemical staining revealed enhanced expression of both cytokines in NG2 proteoglycan expressing ameboid cells located at the site of neurotoxic insult, some of which bound also the microglial marker, lectin. There was some overlap between NG2 and lectin staining. Our results suggest that the two cytokines are involved in apoptotic processes in dentate granule cells and indicate that the pro-apoptotic effect of IL-1 beta prevails over the presumed protective action of IL-1 ra. The novel finding of expression of both cytokines in NG2(+) cells of ameboid phenotype indicates that these cells, through the regulatory roles of pro- and anti-inflammatory cytokines, may be involved in control of neuronal death or survival after injury.

View PDF

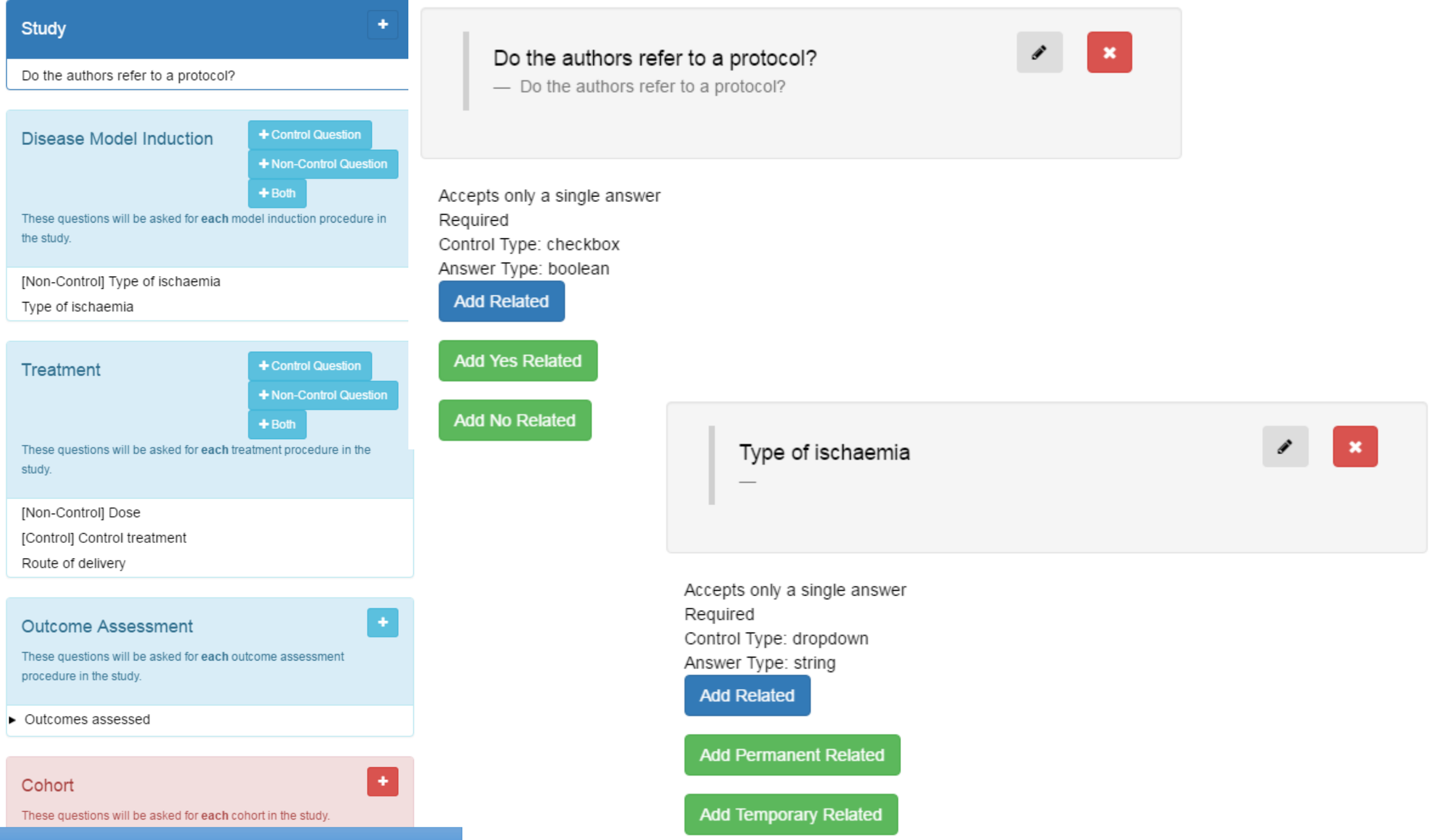
Screen for inclusion

Screening with the help of machine learning

- For studies with at least **500 hits** can use machine learning to aid screening
-  indicate that you want to enable machine learning assisted screening for your project
- NaCTeM created an API that supports this function

Screen for inclusion

Meta-data annotation



Meta-data annotation

126 Screened | 307 Remaining

Whole live animal models of ischaemic occlusive stoke of the middle cerebral or anterior cerebral arteries or their branches • Any primary study comparing treatment and control groups • Any mode of delivery of IL-1 RA (e.g. transgenic, viral, peripheral) at any time point and frequency • Infarct, neurobehavioural or mortality outcomes where the mean, variance and number of animals per group is reported or can be calculated • All languages

Models of haemorrhagic stroke, global ischaemia; in vitro studies • No control group, review, protocol paper, editorial

Included

Local stimulation of the adenosine A(2B) receptors induces an increased release of IL-6 in mouse striatum: an in vivo microdialysis study

J. F. Vazquez, H. W. Clement, O. Sommer, E. Schulz, D. van Calker

Journal of neurochemistry, 2008

Abstract:

Both adenosine and interleukin-6 (IL-6) have been implicated in the pathophysiology of, e.g., epileptic seizures, traumatic brain injury, and affective disorders. Stimulation of adenosine A(2B) receptors on astrocytes in vitro leads to the increased synthesis and secretion of IL-6. We investigated whether or not activation of adenosine receptors evokes an increase of IL-6 release also in vivo. 5'-N-ethylcarboxamidoadenosine, a non-specific adenosine-agonist or vehicle was administered into the striatum of freely moving mice by reverse microdialysis. A statistical significant increase of the IL-6 concentration in the perfusate was detected already 60 min after 5'-N-ethylcarboxamidoadenosine administration. IL-6 increased progressively and reached a maximum after 240 min. This effect appears to be mediated through adenosine A(2B) receptors since it was counteracted by the specific A(2B) receptor antagonist MRS1706 but not by the specific A(1) receptor antagonist DPCPX. We conclude that adenosine via activation of A(2B) receptors evokes IL-6 release also in vivo.

View PDF

Include

Exclude

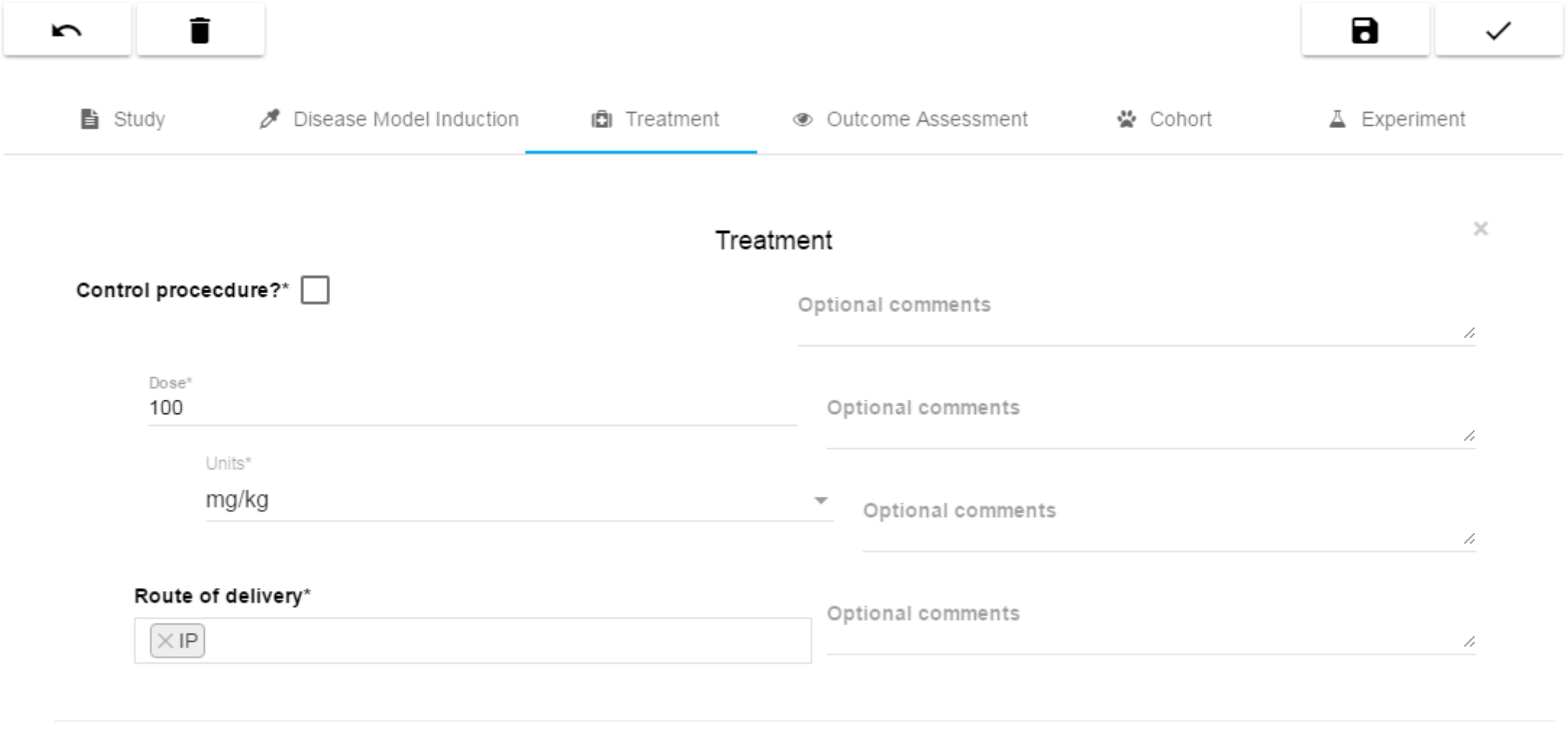
Next

Study | Disease Model Induction | Treatment | Outcome Assessment | Cohort | Experiment

Do the authors refer to a protocol?*

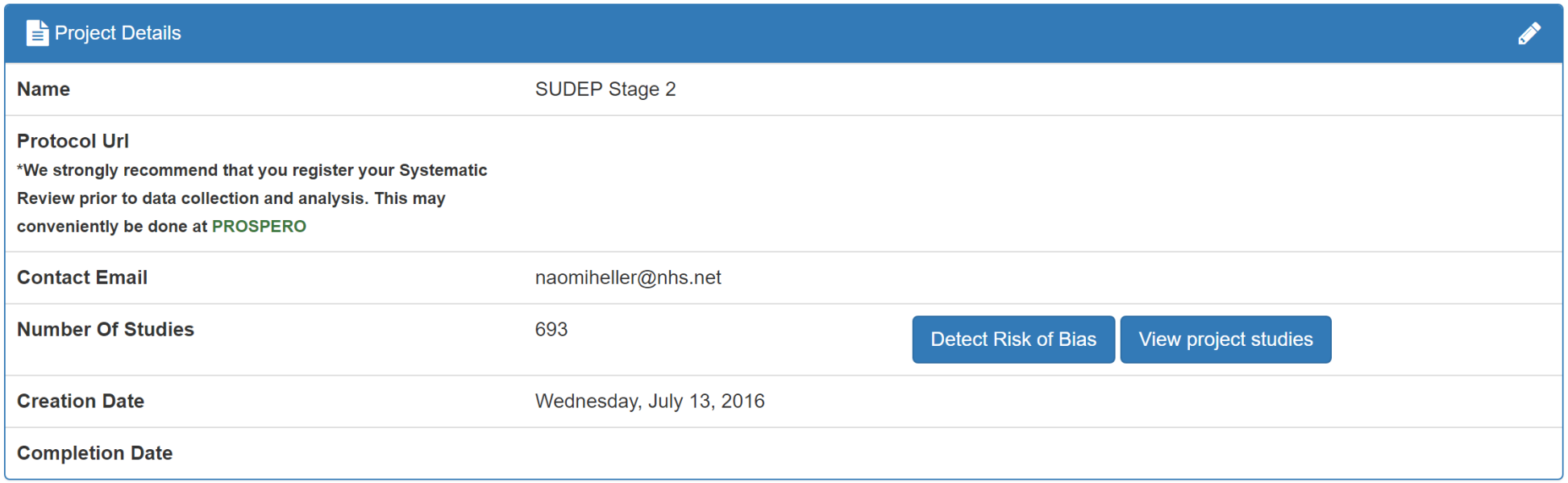
Optional comments

Meta-data annotation



Meta-data annotation

Automatic Annotation



Project Studies

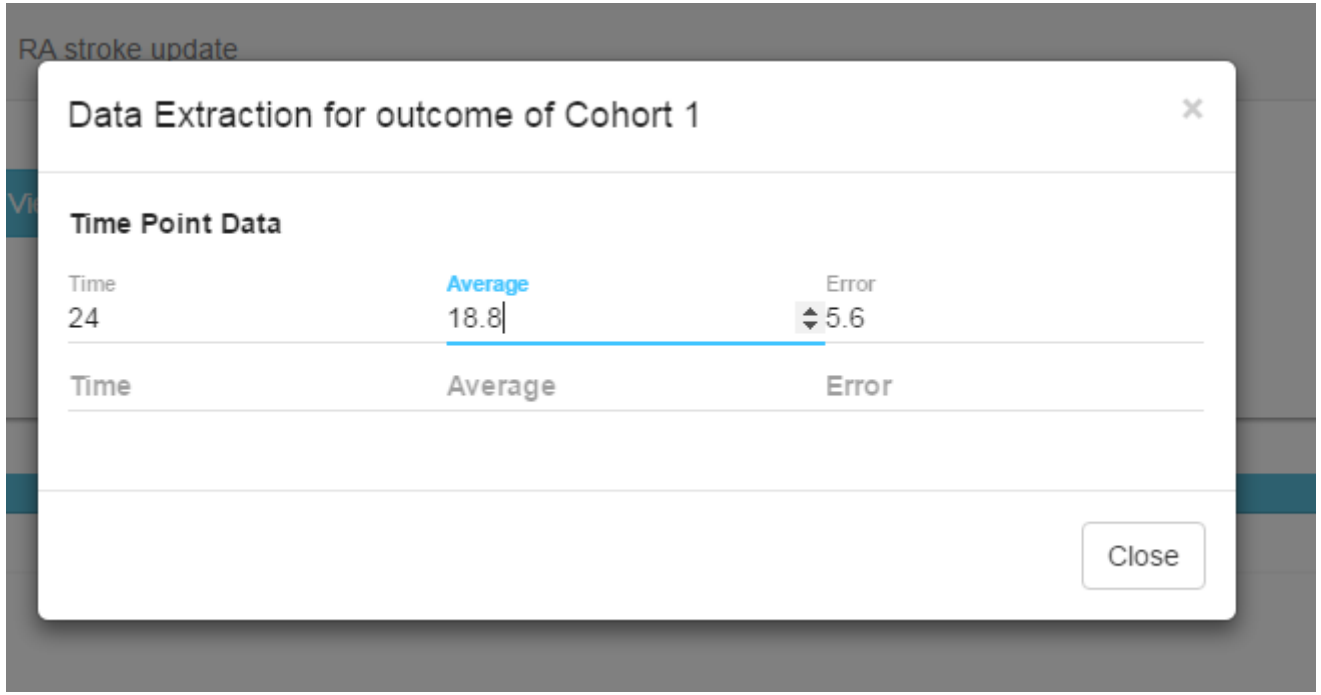
Search here

Display risk of bias information

Rows per page: 10 1-10 of 492 studies (filtered from 492 total studies)

Title	Year	Reference Type	Journal	Author	Inclusion Status	Search	Blinding	Randomisation	Sample Size
Clinical implications	2014	Journal Article	Hypertension (Dallas, Tex. : 1979)		Insufficiently Screened	first	True	False	False
Abnormal Rho-associated kinase activity contributes to the dysfunctional myogenic response of cerebral arteries in type 2 diabetes	2015	Journal Article	Canadian journal of physiology and pharmacology	K. S. Abd-Elrahman	Insufficiently Screened	first	True	True	False
Diffuse near-infrared reflectance spectroscopy during heatstroke in a mouse model: pilot study	2012	Journal Article	Journal of biomedical optics	D. Abookasis	Insufficiently Screened	first	True	False	False
Migraine and small vessel diseases	2012	Journal Article	Neurological sciences : official journal of the Italian Neurological Society and of the Italian Society of Clinical Neurophysiology	E. Agostoni	Insufficiently Screened	first	False	False	False
Consistent focal cerebral									

Outcome data extraction



Outcome data extraction

Meta-analysis

Meta-Analysis

Select effect size measure

- (•) Normalised mean difference
- ( ) Standardised mean difference
- ( ) Odds ratio

Select comparison

- ( ) Analysis of model
- (•) Analysis of intervention

Select data table

- (•) Raw data
- ( ) Calculated data

Select heterogeneity estimator

Restricted maximum-likelihood

User guide

Data | Meta-Analysis | Forest Plot | Meta-Regression | Heterogeneity Bar Plot | Meta-Regression plot | Funnel Plot | Trim-and-Fill | Egger's Regression | Egger's Regression Plot

Show 10 entries Search:

Pub.ID	Drug	Outcome.Measure	User.Defined.2a	Unit	Entry.Completed	Year	Animal	Type.of.Ischaemia	Route.of.Drug.Delivery
64	IL1-RA	Infarct Volume	Protein	?g	TRUE	1996	Rat	Permanent	ICerebVentricular
10	IL1-RA	Infarct Volume	Protein	?g	TRUE	2003	Rat	Temporary	ICerebVentricular
117	IL1-RA	Infarct Volume	Protein	?g	TRUE	1997	Rat	Permanent	Stereotactic
117	IL1-RA	Infarct Volume	Protein	?g	TRUE	1997	Rat	Permanent	Stereotactic
64	IL1-RA	Infarct Volume	Protein	?g	TRUE	1996	Rat	Permanent	ICerebVentricular
1001	IL1-RA	Infarct Volume	Protein	unknown	TRUE	2008	Rat	Temporary	IVenous
117	IL1-RA	Infarct Volume	Protein	?g	TRUE	1997	Rat	Permanent	Stereotactic
117	IL1-RA	Infarct Volume	Protein	?g	TRUE	1997	Rat	Permanent	Stereotactic
64	IL1-RA	Infarct Volume	Protein	?g	TRUE	1996	Rat	Permanent	ICerebVentricular
10	IL1-RA	Infarct Volume	Protein	?g	TRUE	2003	Rat	Temporary	ICerebVentricular
Pub.ID	Drug	Outcome.Measure	User.Defined.2a	Unit	Entry.Completed	Year	Animal	Type.of.Ischaemia	Route.of.Drug.Delivery

Showing 1 to 10 of 65 entries

Previous 1 2 3 4 5 6 7 Ne

Meta-analysis

Data | Meta-Analysis | Forest Plot | Meta-Regression | Heterogeneity Bar Plot | Meta-Regression plot | Funnel Plot | Trim-and-Fill | Egger's Regression | Egger's Regression Plot

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- (•) Normalised mean difference
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- (•) Analysis of intervention

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- ( ) Calculated data

Select heterogeneity estimator

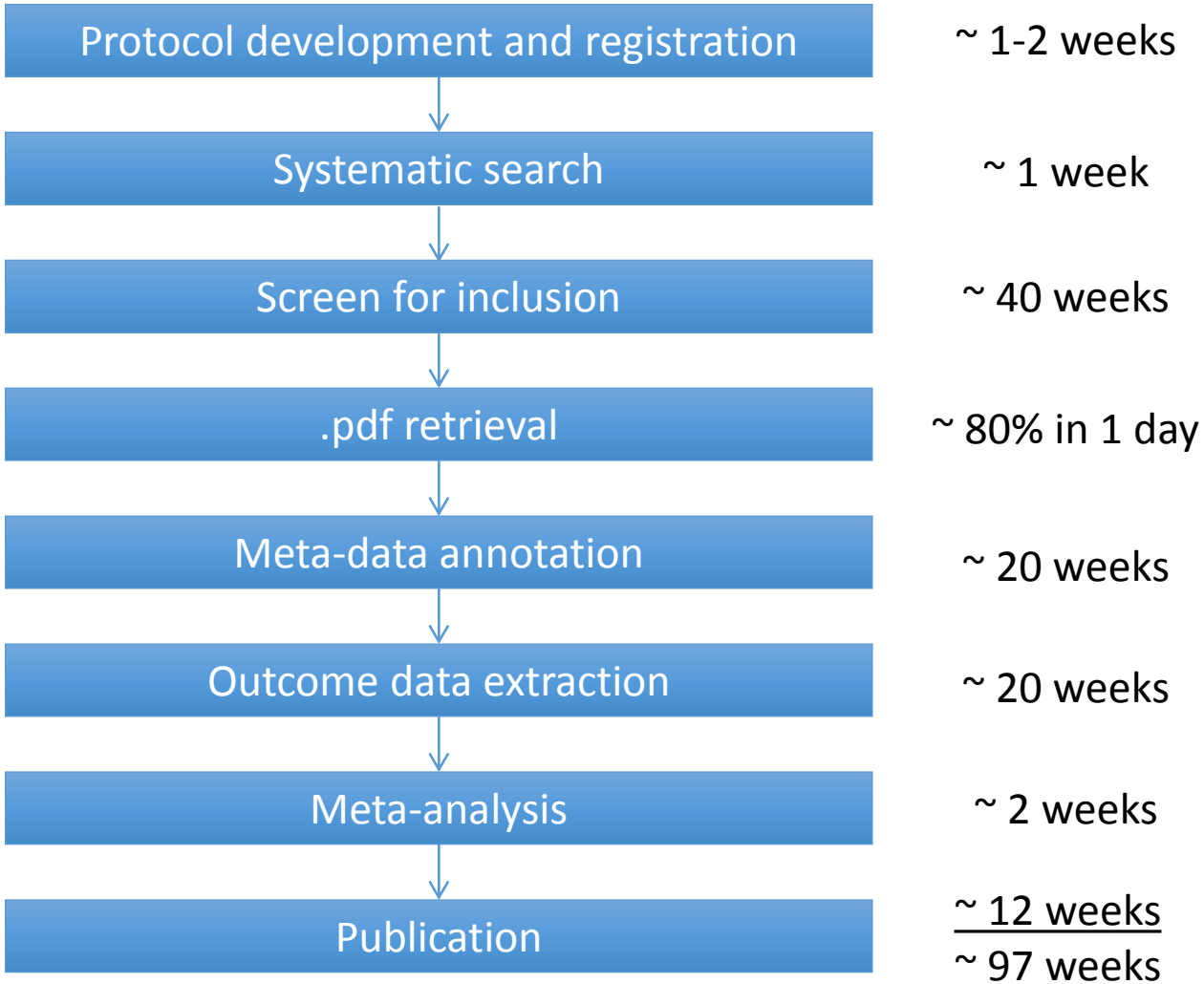
Restricted maximum-likelihood ▾

User guide

Meta-analysis

Launch Meta-Analysis App

Predicted time frame using SyRF



~ 1-2 weeks

~ 1 week

~ 40 weeks

~ 80% in 1 day

~ 20 weeks

~ 20 weeks

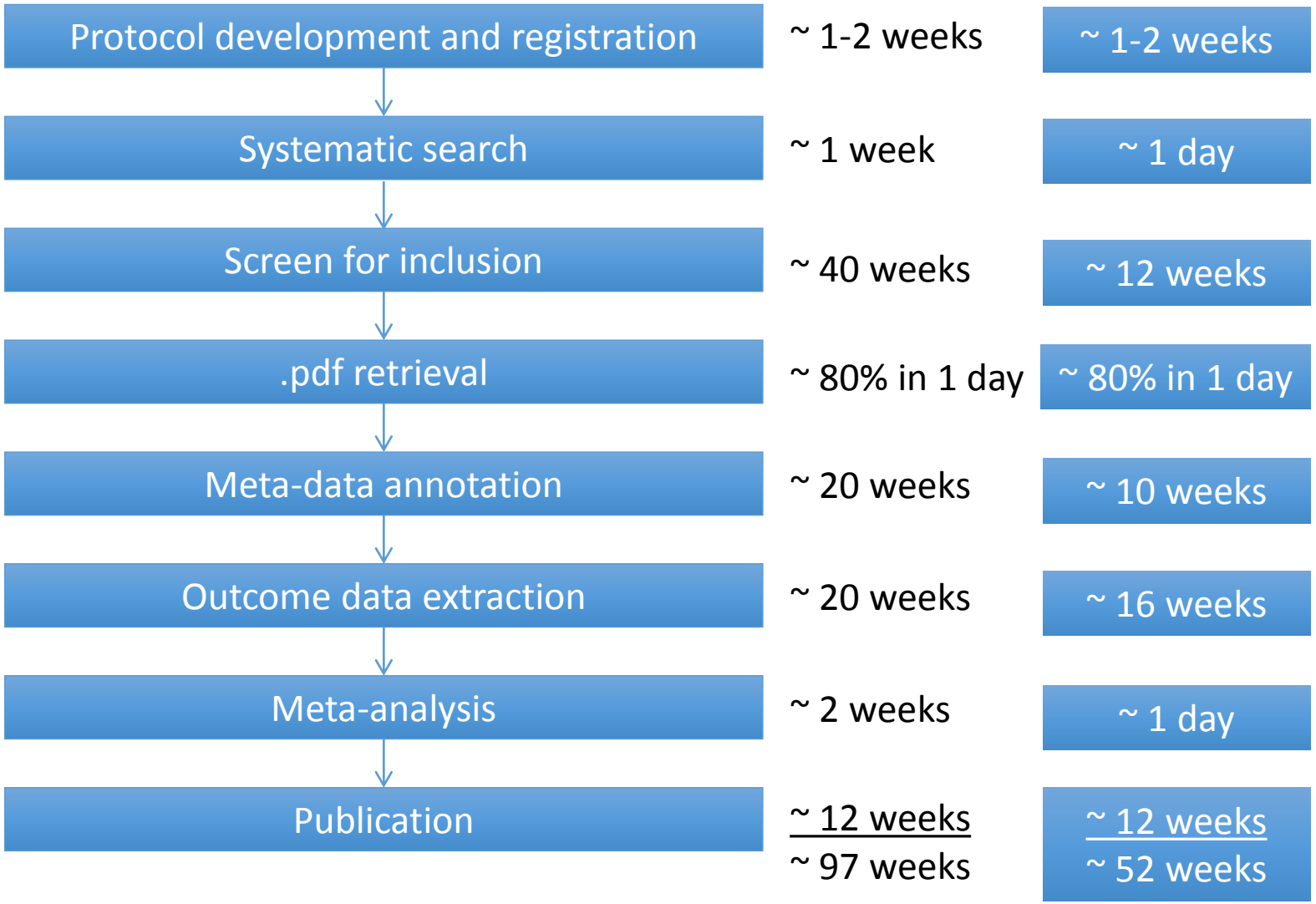
~ 2 weeks

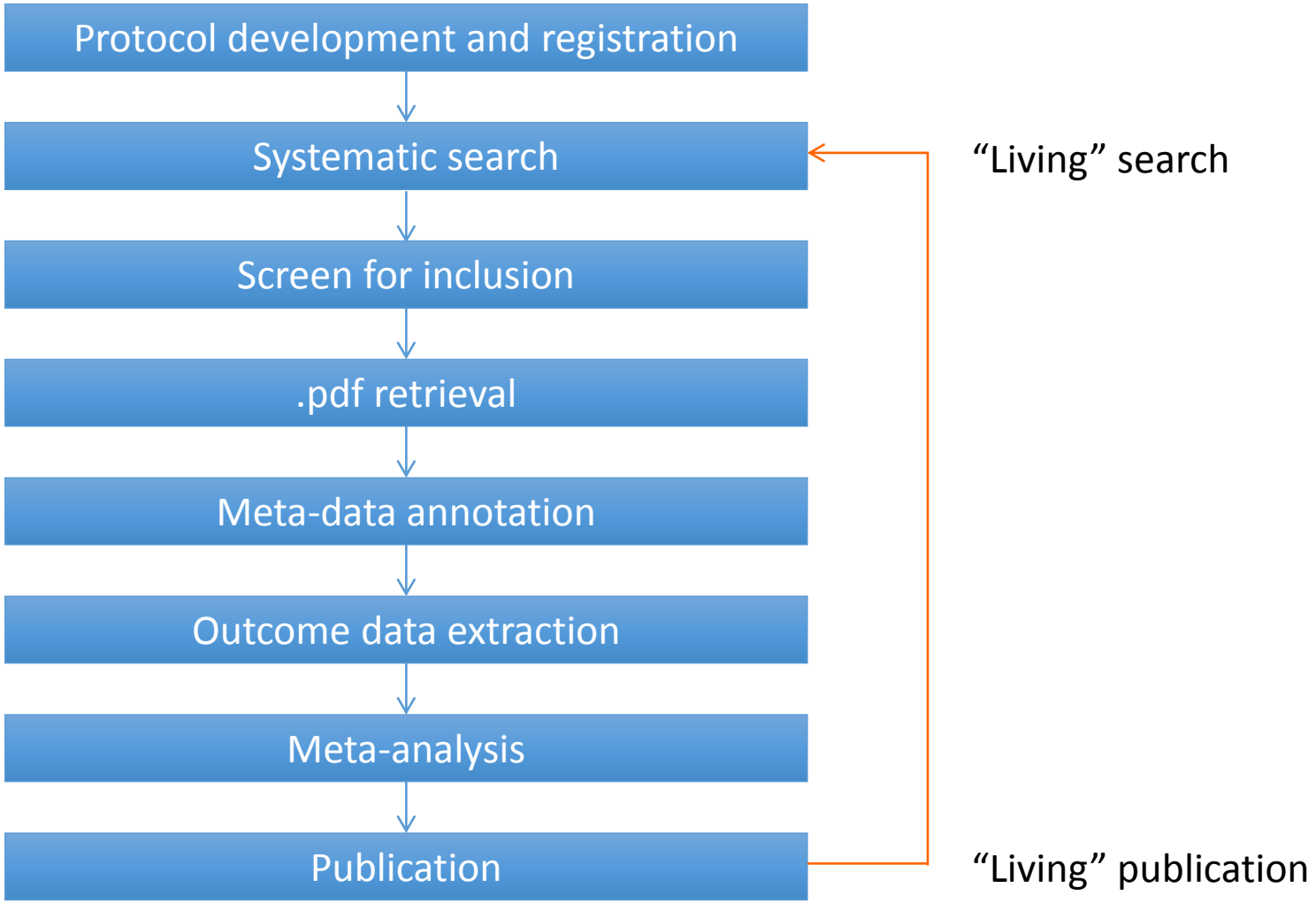
~ 12 weeks

~ 97 weeks

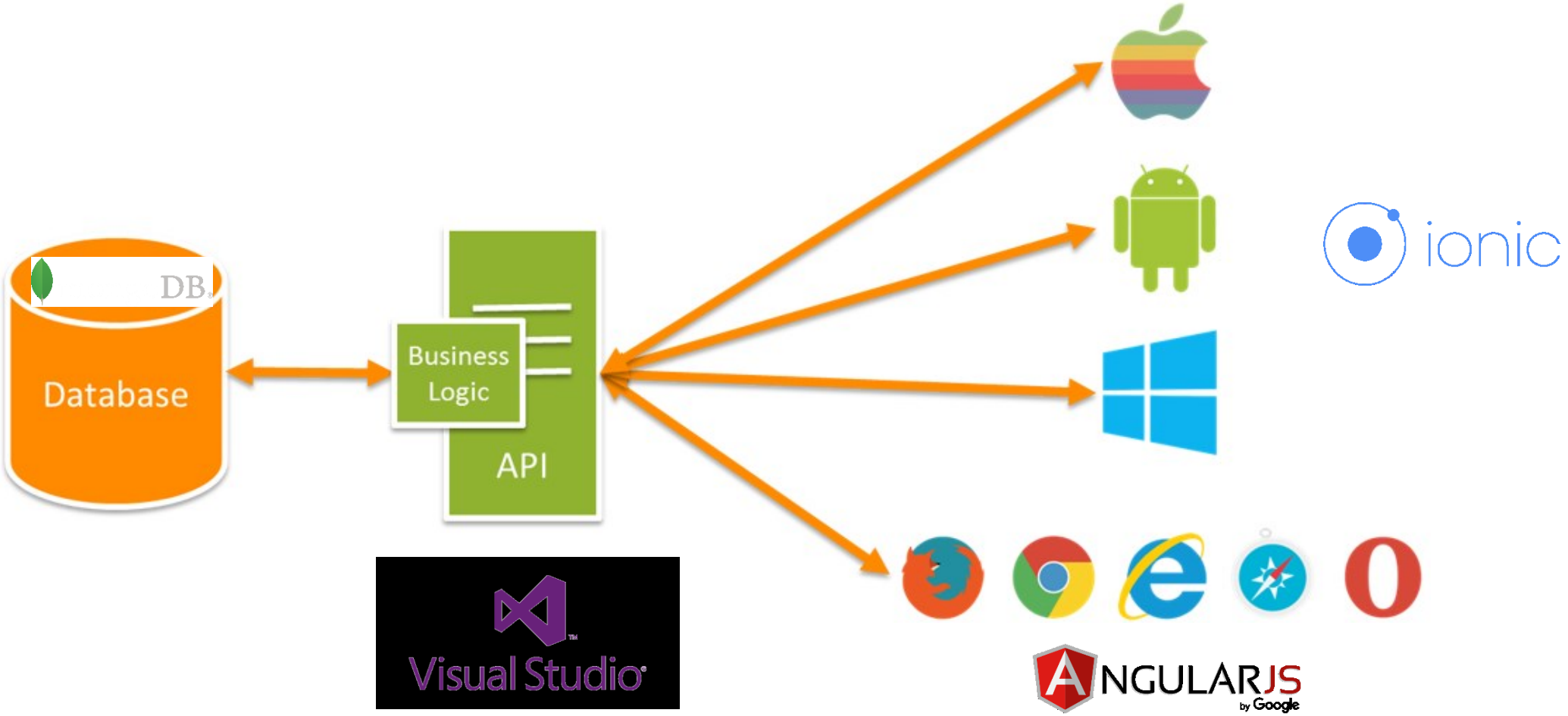
10,000 hit project

Predicted time frame using SyRF




Protocol development and registration
Systematic search
Screen for inclusion
.pdf retrieval
Meta-data annotation
Outcome data extraction
Meta-analysis
Publication
“Living” search
“Living” publication

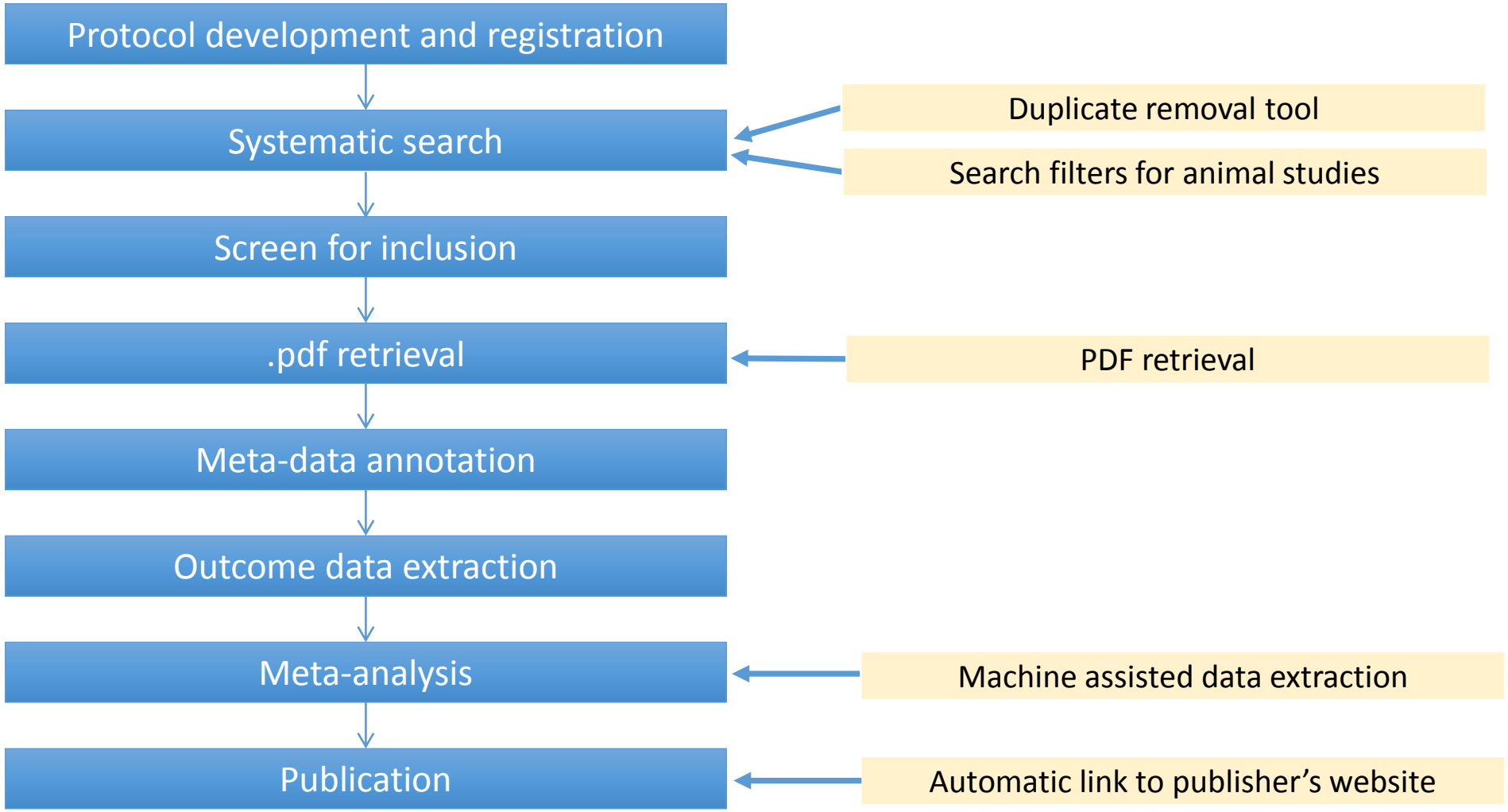
SyRF Architecture



Future considerations for SyRF

- SyRF is a living system and can be adapted as new methods and tools are introduced
  - Scalable
  - Adaptable
  - Future proof
  - Sustainable

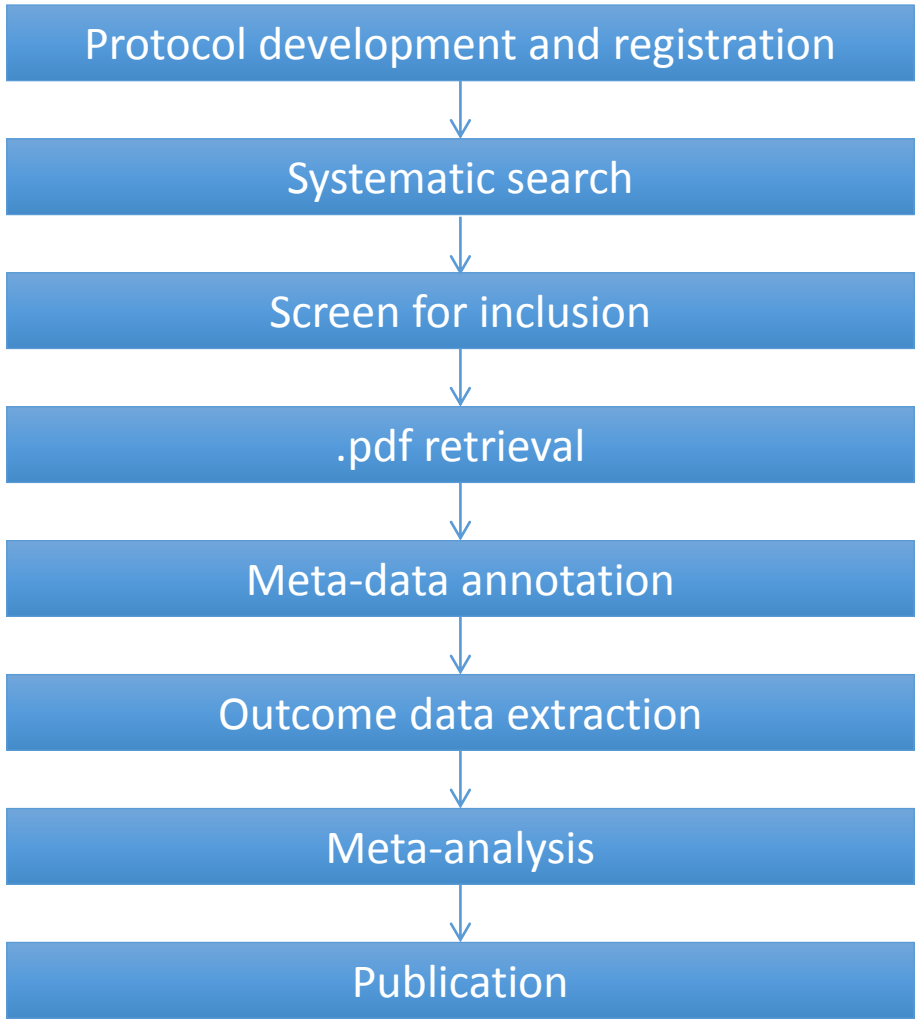
Tools under development…



SYSTEMATIC Review Facility

SYSTEMATIC Review Facility

SLIM
Systematic Living Information Machine



Living systematic search

Duplicate removal tool

Search filters for animal studies

Machine Learning to aid Screening

PDF retrieval

Automatic Annotation

Machine assisted data extraction

Data analysis app

Automatic link to publisher's website

Thank you

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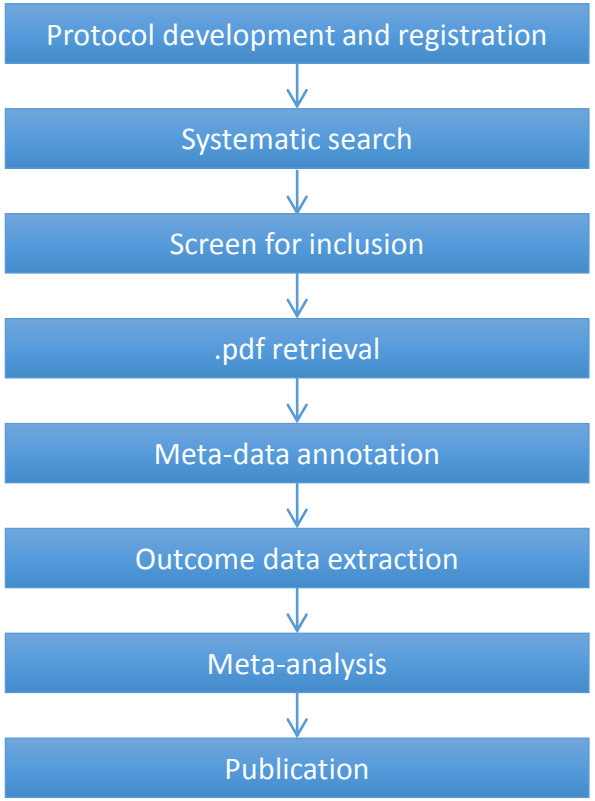

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for the Replacement
Refinement & Reduction
of Animals in Research