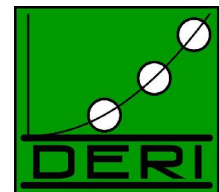


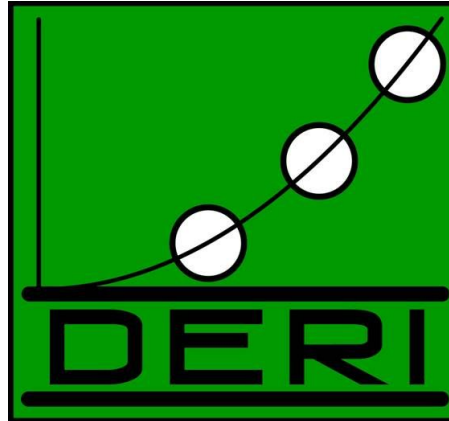
High-level knowledge representation on the Semantic Web

--

The Concept Web Alliance and related efforts

Konrad Lorenz Institute
for Evolution & Cognition Research





Konrad Lorenz Institute
for Evolution & Cognition Research



KLI

W3C[®] WORLD WIDE WEB
c o n s o r t i u m



Konrad Lorenz Institute
for Evolution & Cognition Research



KLI



→ speed up progress in biology

→ speed up development of novel therapies

(for the greater benefit of humankind, you know)



→ Transdisciplinary research, seeing the 'bigger picture'

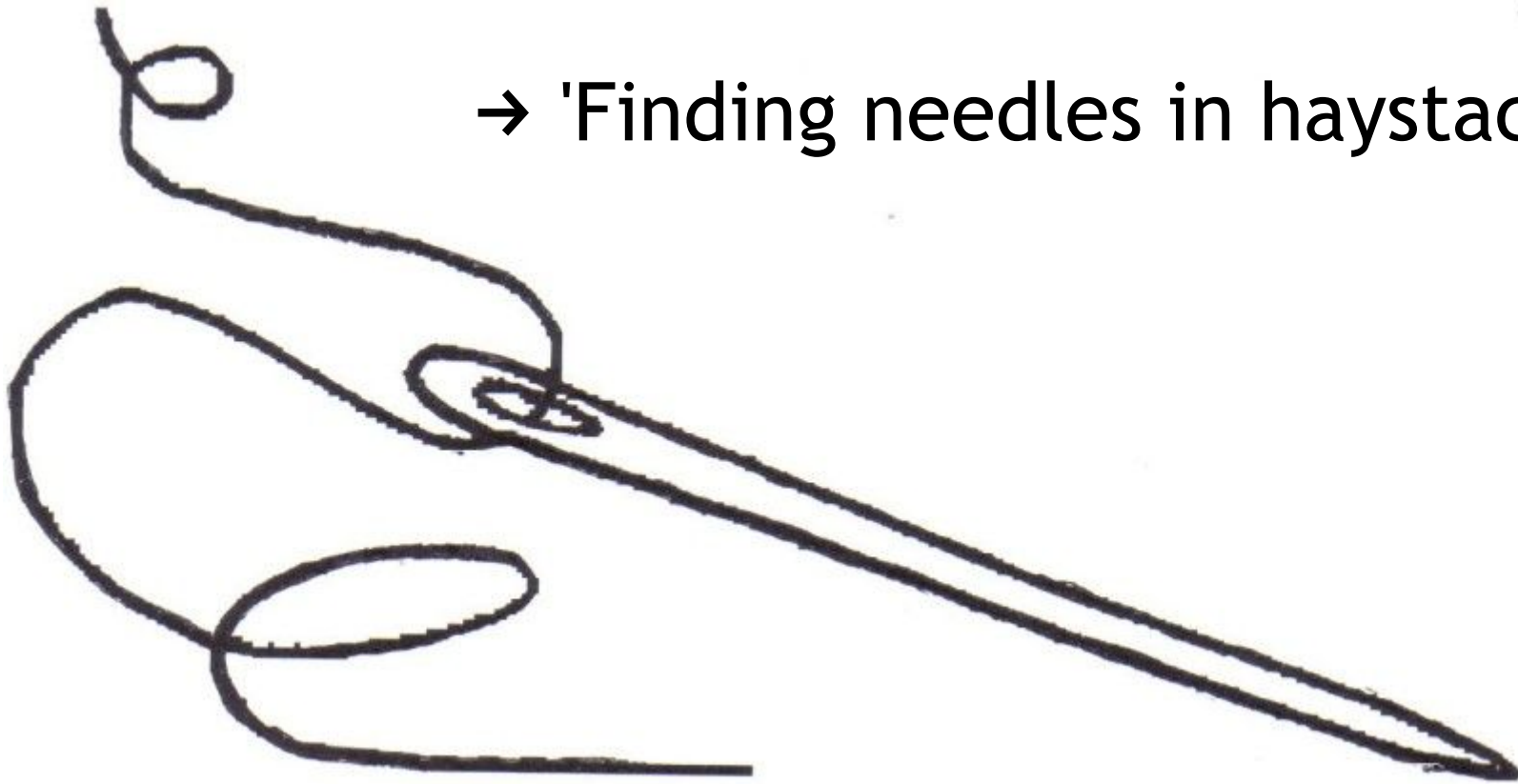
→ Enable integration of theories, hypotheses, facts

→ Standardisation, adoption by scientific publishers, database providers

but also:

→ Rapidly understanding previously unknown concepts

→ 'Finding needles in haystacks'



Current information infrastructure



'A needle transporter'

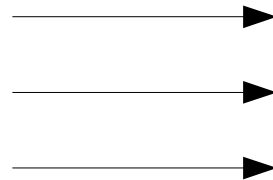
Identify key assertions in publications and database entries

„... Substance A interacts with receptor B in region C of the brain ...“

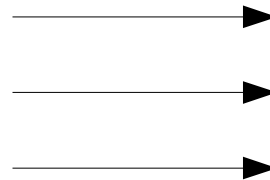
„... Region C has strong axonal projections into region D ...“

„... Region D is implicated in the processing of aversive stimuli ...“

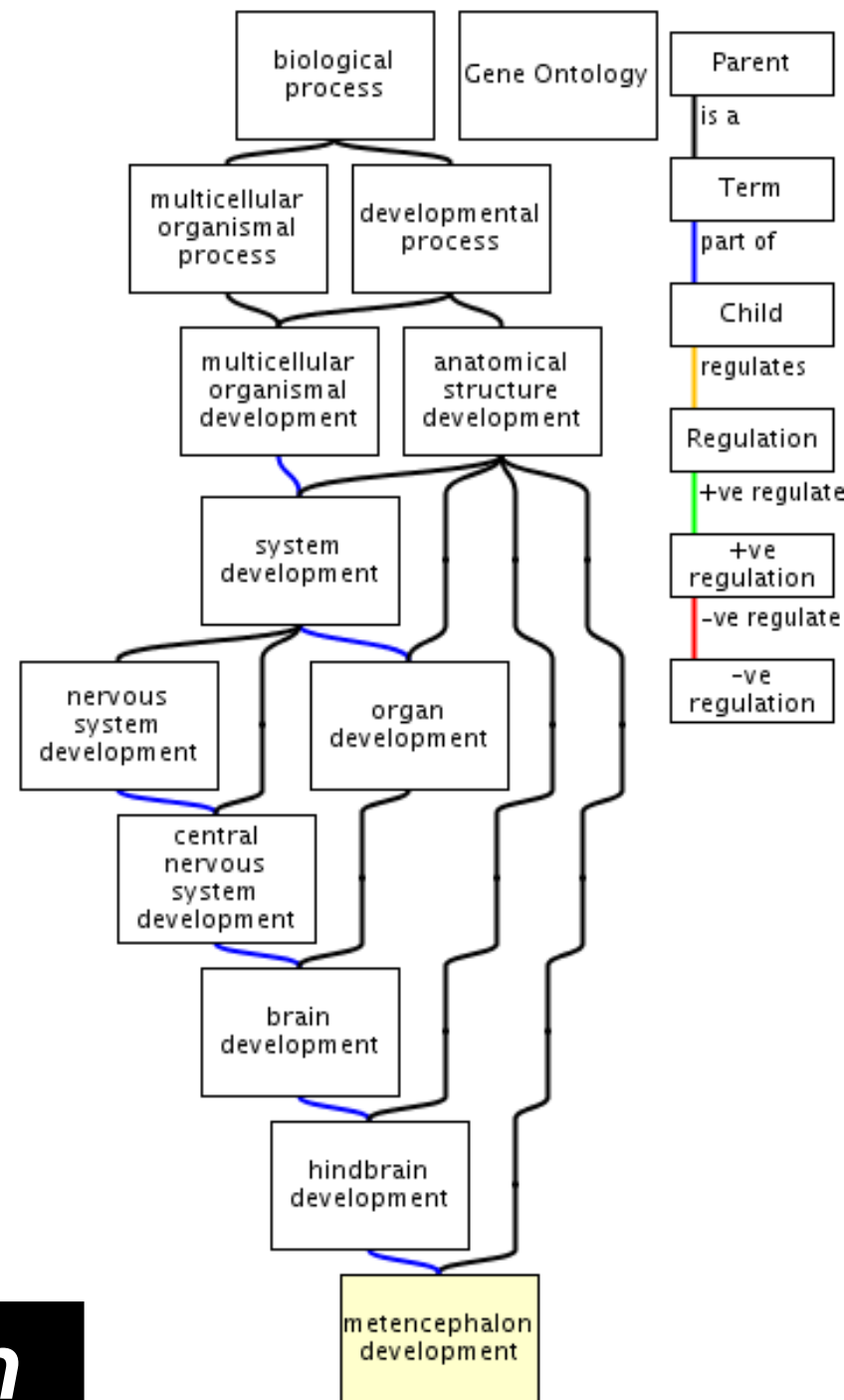
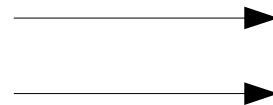
Substance A
Interacts with
Receptor B



Region C
axonal projections
brain region D



Region D
aversive stimuli



Interlink these entities with taxonomies & ontologies

As an example:

<a>Tag

**light-weight representation of semantically
annotated scientific assertions**

<a>Tag



Generator Examples Datasets Pastebin Pastebin (Exhibit)

Generator

aTags ("associative tags") are snippets of HTML that capture the information that is most important to you in a machine-readable, interlinked format, making it easier for you and others to see the big picture.

aTag Generator Bookmarklet

With this bookmarklet you can create aTags for any kind of content on the web. To use it:

- Drag the **aTag this** bookmarklet to your bookmarks bar. (You might need to enable the bookmarks bar in your browser first.)
- When you are at a webpage that contains a snippet of text that you want to capture with an aTag, **select the snippet of text**, then **click on the aTag bookmarklet** in your bookmarks bar.
- A pop-up window will appear, containing the snippet of text you selected. Add tags to this snippet of text by typing in the box below it. Matching terms will be suggested as you type. Tag recommendation is currently based on [DBpedia](#). If no suitable term already exists, you can choose to create a new term.
- When you are finished, **click on 'Generate aTag'**.
- You can copy and paste the generated aTag into your HTML-based application (such as a [Wordpress](#) blog, content management system, e-mail). The aTags on the web will be found by RDF-enabled search engines.
- If you are an RDF/OWL enthusiast, you can also visualize the RDF in the aTag you created with the [RDFa](#) highlight bookmarklet you can find [here](#).

Technical Background

aTags are based on Semantic Web standards and [Linked Data](#) practices. Specifically, they make use of [RDFa](#), the [SIOC](#) vocabulary and various domain ontologies and taxonomies that are available in RDF/OWL format. The autocomplete functionality is based on [Apache Calcite](#).

[Datei](#) [Bearbeiten](#) [Ansicht](#) [Chronik](#) [Lesezeichen](#) [Extras](#)

[RDFa Highlight](#) [post to Favik](#) [aTag this](#)

All Databases PubMed Nucleotide

Search PubMed for

[Limits](#) [Preview/Index](#) [History](#) [Clipboard](#)

Display AbstractPlus Show 20

All: 1 Review: 0

1: [Neuroscience](#). 2001;105(3):663-9.

Huperzine A, a nootropic alkaloid, inhibits N-methyl dissociated hippocampal neurons.

[Zhang JM](#), [Hu GY](#).

State Key Laboratory of Drug Research, Shanghai Institute for Biological Sciences, Chinese Academy of Sciences, 2 China.

Huperzine A, a nootropic alkaloid isolated from a Chinese plant, is one of the most promising agents to treat Alzheimer's disease. It was found to inhibit the N-methyl-D-aspartate (NMDA) receptor current in addition to causing an inhibitory effect on acetylcholine release. The mechanisms underlying NMDA receptor inhibition were investigated by voltage-clamp recording in CA1 pyramidal neurons in rat hippocampus. Huperzine A reversibly inhibited the NMDA receptor current (IC₅₀ 0.2 μM, Hill coefficient=0.92), whereas it had no effect on the L-glutamate (5 μM) and dithiothreitol (5 mM) to the external solution. However, addition of spermine (200 μM) to the external solution caused a parallel shift to the right of the huperzine A concentration-response curve. From these we suggest that huperzine A acts as a non-competitive antagonist of the NMDA receptors, via a competitive interaction with one of the polyamine binding sites. The potential relevance of NMDA receptor antagonist activity of huperzine A to the treatment of Alzheimer's disease is discussed.

New aTag - Mozilla Firefox

http://hcls.deri.org/atag-dev/add_atag.php?url=http%3A%2F%2Fwww.ncbi.nlm.nih.gov%2Fpubmed%2F11516831

Page title "Huperzine A, a nootropic alkaloid, inhibits N-meth... [Neuroscience. 2001] - PubMed Result"
URL "http://www.ncbi.nlm.nih.gov/pubmed/11516831?ordinalpos=7&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultRe..."

huperzine A acts as a non-competitive antagonist of the NMDA receptors,

Add tags

Huperzine A x Non-competitive inhibition x nda

- NMDA
- NMDA antagonist
- NMDA blocker
- Create new tag: "nmda"
- NMDA channel
- NMDA receptor**
- NMDA receptor antagonist
- NMDA receptor antagonists
- NMDA receptor blocker
- APV (NMDAR antagonist)

Fertig

- Huperzine A, a nootropic alkaloid, inhibits N-methyl-D-aspartate-induced current in rat di...
- Long-term potentiation in hippocampus of rats is enhanced by endogenous acetylcholine in a...
- [huperzine nmda](#) (13)

<a>Tag

"Huperzine A, a nootropic alkaloid, inhibits N-meth...[Neuroscience, 2001] - PubMed Result"
(http://www.ncbi.nlm.nih.gov/pubmed/11516831?ordinalpos=7&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPane)

Huperzine A acts as a non-competitive antagonist of the NMDA receptors

Add aTag

Huperzine A * Receptor antagonist * nmda |

- NMDA receptor
- NMDA receptor blocker
- NMDA receptor antagonist
- Create new tag: "nmda r"
- NMDA receptor antagonists

aTag Pastebin | DERI Galway - Health Care and Life Sciences Working Group - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

http://hcls.deri.org/atag/data/pastebin.html antagonist

<a>Tag



Generator Examples Datasets Pastebin Pastebin (Exhibit)

Pastebin

You can add aTags to this page with the [aTag bookmarklet](#). The data embedded in this page can be visualized and processed with [various tools](#).



| "Huperzine A acts as a non-competitive antagonist of the NMDA receptors" aTags: [Huperzine A Receptor antagonist NMDA receptor](#) (Source) |

| "Radiofrequency ablation (RFA) for the treatment of superficial venous reflux has been available since 1998 and is now established as a safe and efficacious treatment modality for the ablation of refluxing superficial and perforating veins." aTags: [Radiofrequency ablation Varicose veins](#) (Source) |

| "Evodia rutaecarpa (Rutaceae) is used in TCM for cardiotonic, restorative and analgesic effects" aTags: [Evodiamine Analgesic Heart](#) (Source) |

| "Coptis chinensis (Ranunculaceae) has been used in TCM for several conditions. A methanol extract fraction of C. chinensis, jatrorrhizine and berberine are MAO inhibitors [Kong et al], indicating potential antidepressant activity, and C. chinensis and some alkaloids isolated from this plant (berberine, coptisine and palmatine) are reported to be anti-Cholinesterase" aTags: [Coptis chinensis Monoamine oxidase inhibitor Acetylcholinesterase inhibitor](#) (Source) |

| "In TCM, Codonopsis pilosula (Campanulaceae) root is used for various disorders including amnesia, and is believed to promote blood circulation and enhance vitality" aTags: [Codonopsis pilosula Therapy Amnesia Circulatory System](#) (Source) |

| "Biota orientalis (Coniferae) is used in TCM for insomnia and amnesia" aTags: [Biota orientalis Insomnia Amnesia](#) (Source) |

| "A crude alcoholic extract of Angelica archangelica (Umbelliferae), which has been used in TCM for cerebral diseases, displaced nicotine binding to nicotine receptors in a concentration-dependent manner, but it is unknown if this effect was due to agonistic or antagonistic binding" aTags: [Angelica Nicotinic acetylcholine receptor](#) (Source) |

| "Salvia miltiorrhiza root may inhibit neuronal cell death by inhibition of presynaptic glutamate release" aTags: [Salvia miltiorrhiza Therapy Excitotoxicity Glutamatergic](#) (Source) |

| "Salvia miltiorrhiza prescribed in TCM to stabilise the heart and calm nerves. Official

Fertig

contains RDFa

What the machine sees...

```
<http://hcls.deri.org/atag-data/pastebin.html#49ddfee65f7f4> a  
  sioc:Item ;  
  sioc:content "Huperzine A acts as a non-competitive  
               antagonist of the NMDA receptors"@en ;  
  sioc:topic  <http://dbpedia.org/resource/Huperzine_A> ,  
              <http://purl.org/obo/owl/GO#GO_0048019> ,  
              <http://dbpedia.org/resource/NMDA_receptor> ;  
  rdfs:seeAlso <http://www.ncbi.nlm.nih.gov/pubmed/11516831> .
```

RDFa is simple to embed into existing systems
websites, blogs, wikis, e-mails, biomedical
databases...

handling data and annotations via Copy & Paste

Some aTags about neuropharmacology etc.

Below I have collected some interesting statements from research papers I recently stumbled upon. They are encoded as [aTags](#).

| “Huperzine A acts as a non-competitive antagonist of the NMDA receptors” aTags: [Huperzine A receptor antagonist activity](#) [NMDA receptor](#) (Source) |

| “some effects of CDP-choline could be mediated by changes in brain platelet-activating factor (PAF) levels” aTags: [Citicoline](#) [Platelet-activating factor](#) (Source) |

| “Changes in brain striatum dopamine and acetylcholine receptors induced by chronic CDP-choline treatment of aging mice” aTags: [Striatum](#) [Dopamine receptor](#) [Acetylcholine receptor](#) [Citicoline](#) (Source) |

| “changes in ERK phosphorylation in hippocampus and PFC were regulated by GABAA receptor in a learning and memory paradigm under acute restraint stress conditions” aTags: [MAPK/ERK pathway](#) [Hippocampus](#) [Stress](#) (Source)|

| “our data suggest actions of memantine beyond NMDA receptor antagonism, including stimulating effects on cholinergic signalling via muscarinic receptors” aTags: [Memantine](#) [Muscarinic acetylcholine receptor](#) (Source)|

Written by admin
March 18th, 2009 at 8:32 pm

Posted in [Uncategorized](#)

add to blog post

SIDER drug side effect data



This document/database contains information about side effects (adverse drug reactions) derived from [SIDER](#). Relevant terms are mapped to DBpedia, the OBO Disease ontology and the OBO symptom ontology. Mappings were established via shared PubChem and UMLS identifiers. SIDER entries where no mapping for drug or disease/symptom could be established were omitted.

License: Except as otherwise noted, this work is licensed under a [Creative Commons Attribution-Noncommercial-Share Alike 3.0 License](#). This data has been derived from a dataset by Kuhn et al. See <http://sideeffects.embl.de/download/> for further information (including information about commercial use).

Disclaimer: The content of this document/database is intended for educational and scientific research purposes only. It is not intended as a substitute for professional medical advice, diagnosis or treatment.

This document was generated by Matthias Samwald on 30 April 2009

" [methadone](#) might cause [weight loss](#) . "

" [methadone](#) might cause [urinary retention](#) . "

" [methadone](#) might cause [palpitations](#) . "

" [methadone](#) might cause [constipation](#) . "

" [methadone](#) might cause [weakness](#) . "

" [methadone](#) might cause [cardiomyopathy](#) . "


database converted to
aTags

Whatizit / Science Commons RDFa (prototype) - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

http://whatizit.neurocommons.org/index.py/pmid?pipeline=whatizitEBIMedDiseaseChemicals&que

Google



Science Commons text annotation service | highlight RDF/OWL (experimental) | Documentation

Science Commons text mining results

powered by [EBI Whatizit](#)

Note: The `<a>` signs contain annotations in [aTag](#) format (embedded [RDFa](#)). You can copy & paste these annotations to other RDFa-enabled applications.

[pmid:11263250](#) [HTML] [XML]

J W Ye, Y Z Shang, Z M Wang, X C Tang
Acta pharmacologica Sinica
Jan 2000

Huperzine A ameliorates the impaired [memory](#) of aged rat in the Morris [water](#) maze performance `<a>`.

AIM: To determine the [memory](#)-improving properties of huperzine A in aged rats with [memory](#) impairments naturally occurring or induced by scopolamine `<a>`. METHODS: Morris [water](#) maze was used to investigate the effects of huperzine A on the acquisition and [memory](#) impairments `<a>`. RESULTS: During 7- day acquisition trials, aged rats took longer latency to find the platform. Huperzine A (0.1-0.2 mg/kg, s.c.) could significantly reduce the latency. In the probe trials on the eighth day, huperzine A (0.1, 0.2 and 0.4 mg/kg, s.c.) significantly increased the time in the quadrant where platform had disappeared in aged rats `<a>`. In the acute experiment, scopolamine (0.1 mg/kg, i.p.) significantly impaired spatial [memory](#) in the trained aged rats `<a>`. Huperzine A (0.4 mg/kg, s.c.) significantly reversed the [memory](#) deficits induced by scopolamine `<a>`. CONCLUSION: Huperzine A ameliorates the impaired [memory](#) naturally occurring or induced by scopolamine in aged rats `<a>`.

Fertig

aTags generated by NLP
web service

Search found 48 items

- [\(-\) Darwinism](#)

Filter results by keyword

- [\(-\) Darwinism](#)
- [Darwin \(46\)](#)
- [science \(44\)](#)
- [Evolution \(21\)](#)
- [history \(14\)](#)
- [philosophy \(12\)](#)
- [Cognition \(8\)](#)
- [Psychology \(7\)](#)
- [history of biology \(7\)](#)
- [methods \(7\)](#)

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Go to more specific keyword

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- [Darwinian archaeology](#)
- [Darwinian fundamentalism](#)
- [Darwinian natural right](#)
- [darwinian psychodynamics](#)
- [Darwinian evolutionary epistemology](#)
- [Darwinian Left](#)
- [Darwinian theory of institutions](#)

[Home](#) » [Darwinism](#)

Darwinism

Darwinism is a term used for various movements or concepts related to ideas of transmutation of species or evolution, including ideas in connection to the work of Charles Darwin. The meaning of Darwinism has changed over time, and varies depending on who is using the term. In modern usage, particularly in the United States, Darwinism is often used by creationists as a pejorative term.

Darwinizing sexual ambivalence: a new evolutionary hypothesis of male homosexuality

„Homosexuality evolved as a means to strengthen social bonds“

De Block, Andreas, & Pieter Adriaens (2004). [Darwinizing sexual ambivalence: a new evolutionary hypothesis of male homosexuality](#). *Philosophical Psychology*. 17(1), 61 - 78.

[darwinian psychodynamics](#) [evolution of human sociality](#) [gay and lesbian studies](#) [psychoanalysis](#) [reciprocal altruism](#)

Reference - 05/26/2009 - 23:12 - 0 comments

A Darwinian Left: Politics, Evolution, and Cooperation

Singer, Peter (2000). [A Darwinian Left: Politics, Evolution, and Cooperation](#).

[cooperation](#) [Darwinian Left](#) [p](#)

Reference - 05/26/2009 - 23:12 - 0 comments

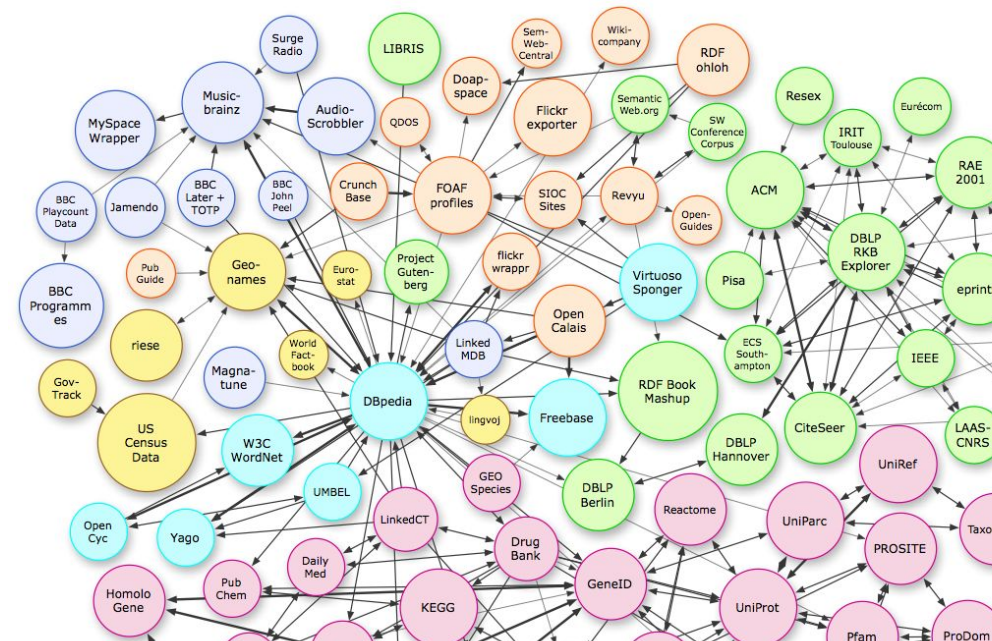
Neo-classical thinking

Khalil, Elias L. (1996)

Content management system
(KLI Theory Lab 2)

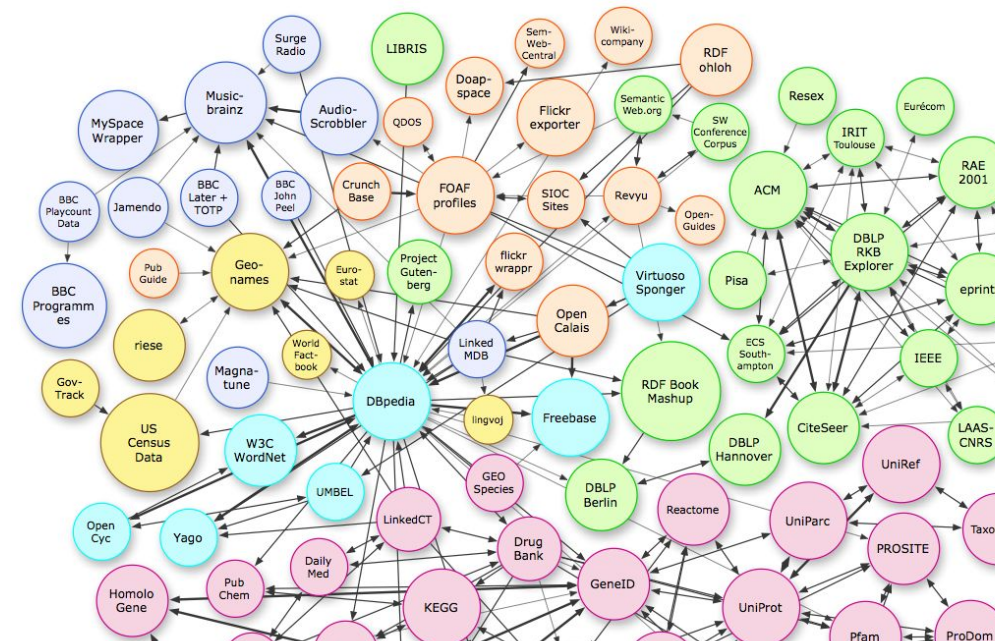
Standing on ~~the shoulders of giants~~

clouds



Linked Data paradigm:

Entities have URIs that can be resolved to yield further information



Current Selection

remove all

(x) all_text_1:varenicline

(x) broader_label:Tobacco Use Cessation

Search

(press ESC to close suggestions)

Tags

Benzazepines (9)

Humans (9)

Quinoxalines (9)

Smoking Cessation (9)

Adolescent (8)

Adult (8)

Bupropion (8)

Middle Aged (8)

Aged (7)

Double-Blind Method (5)

Broader tags

Heterocyclic Compounds, 2-Ring (9)

Hominidae (9)

Tobacco Use Cessation (9)

<< < > >> displaying 1 to 9 of 9

Varenicline was more efficacious than bupropion SR or placebo. Varenicline's efficacy versus placebo was not influenced by factors predictive of abstinence.

Adolescent Smoking Follow-Up Studies Aged Humans Adult Middle

Aged Quinoxalines Benzazepines Double-Blind Method Antidepressive Agents, Second-Generation Bupropion Smoking Cessation

The economic benefit of varenicline is improved over bupropion, despite the increased initial cost of varenicline.

Program Evaluation Humans Absenteeism Time Factors Cost-Benefit

Analysis Quinoxalines Benzazepines Cost Savings Maintenance Health Benefit Plans, Employee Receptors, Nicotinic Decision Trees Bupropion Smoking Cessation Employer Health Costs Nicotinic Agonists

Varenicline significantly reduces craving and the rewarding effects of smoking after the target quit date to a greater extent than bupropion, which may contribute to varenicline's greater efficacy for smoking cessation. Varenicline's lack of effect in reducing insomnia, restlessness and increased appetite in this analysis suggests that receptors other than the alpha4-beta2 nicotinic acetylcholine receptor subtype may be implicated in these withdrawal symptoms.

Adolescent Follow-Up Studies Aged Nicotine Motivation Humans Adult Middle

Aged Delayed-Action Preparations Substance Withdrawal

Syndrome Affect Quinoxalines Benzazepines Double-Blind Method Randomized Controlled Trials as Topic Multicenter Studies as Topic Dopamine Uptake Inhibitors Tobacco Use Disorder Bupropion Smoking Cessation Clinical Trials, Phase III as Topic Nicotinic Agonists

Open-label varenicline augmentation was associated with significant improvement in mood in a small sample of outpatient smokers with persistent

The Concept Web Alliance

A new project for furthering and unifying work
such as this

(initiated by Barend Mons)



Wikipedia (free-anonymous edits)

Review million minds (Scholar)

MiSciELO

Full in text semantic support (SMW+)

I-repositories

Blogs



Community annotation
Not yet authorized
Nano-publication by: xxxx

Triple generation (anywhere)

[edit]

Biobanks



Also Referred To As ..ARTA



F

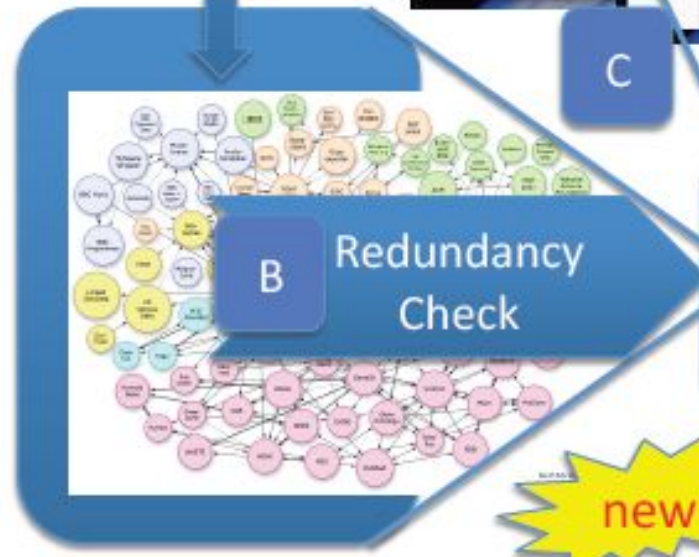


NCBI Resources How



A

C



B Redundancy Check

Unique Assertions NANO-PUB



new

D



Nano-review million minds

E

Biohackathon aims

Helping develop the Concept Web Alliance model
and surrounding tools

Representing your data in a way that is
compatible with this (as aTags)

Thanks for listening

→ Concept Web Alliance

<http://www.nbic.nl/about-nbic/affiliated-organisations/cwa/>

→ Scientific Discourse task force of the W3C Health Care and Life Science Interest Group

<http://esw.w3.org/topic/HCLSIG/SWANSIOC/>

→ HypER (Hypotheses, Evidence and Relationships) community

<http://hyp-er.wik.is/>

→ aTag project

<http://hcls.deri.org/atag/>

→ SWAN

<http://swan.mindinformatics.org/>

<http://hypothesis.alzforum.org>