

Detecting Knowledge-Level Claims in Research Articles

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special credit to
Frédérique Lisacek (Genebio)
Simon Buckingham Shum (KMI, OU)
Anna de Liddo (KMI, OU)

Knowledge-level claims

In contrast with previous hypotheses, **compact plaques form before significant deposition of diffuse A beta ...**

The WFS1 protein is a glycoprotein located in the endoplasmic reticulum (ER) membrane but its function is poorly understood.

Ex vivo gene therapy is emerging as a promising approach **for the treatment of neurodegenerative diseases and central nervous system (CNS) trauma.**

Knowledge-level claims

In contrast with previous hypotheses, compact plaques form before significant deposition of diffuse A beta ... contrast

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Ex vivo gene therapy is emerging as a promising approach **for the treatment of neurodegenerative diseases and central nervous system (CNS) trauma.**

Knowledge-level claims

In contrast with previous hypotheses, compact plaques form before significant deposition of diffuse A beta ... contrast

The WFS1 protein is a glycoprotein located in the endoplasmic reticulum (ER) membrane but its function is poorly understood. open question

Ex vivo gene therapy is emerging as a promising approach **for the treatment of neurodegenerative diseases and central nervous system (CNS) trauma.**

Knowledge-level claims

rhetorical formulas

scientific facts

In contrast with previous hypotheses, compact plaques form before significant deposition of diffuse A beta ... contrast

The WFS1 protein is a glycoprotein located in the endoplasmic reticulum (ER) membrane but its function is poorly understood. open question

Ex vivo gene therapy is emerging as a promising approach for the treatment of neurodegenerative diseases and central nervous system (CNS) trauma. emerging tendency

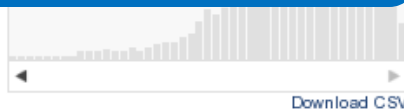
Knowledge-level claims

PubMed [RSS](#) [Save search](#) [Advanced](#) [Help](#)

contrasting ideas concerning diffuse A beta

1. [Protein expression states in molecular and submolecular patterns of brain lesions and their predictive value for lymph node metastasis.](#)

Lee KB, Park DJ, Choe G, Kim HH, Kim WH, Lee HS.
APMIS. 2013 Jun 12. doi: 10.1111/apm.12119. [Epub ahead of print]
PMID: 23758612 [PubMed - as supplied by publisher]



2. open questions concerning diffuse A beta

Acta Neuropathol. 2013 Jun 12. [Epub ahead of print]
PMID: 23756600 [PubMed - as supplied by publisher]
[Related citations](#)

Significance of tumor burden, vascular endothelial growth factor, lactate [J BUON. 2012]
Coordinated expression of REG4 and aldehyde dehydrogenase 1 regulating tur [J Pathol. 2012]

3. [Pilot research for the correlation between the expression pattern of E-cadherin-β-catenin](#)

[See more...](#)

emerging tendencies concerning diffuse A beta

4. [Pyroglutamate-3 Amyloid-β Deposition in the Brains of Humans, Non-Human Primates, Canines, and Alzheimer Disease-Like Transgenic Mouse Models.](#)

Frost JL, Le KX, Cynis H, Ekpo E, Kleinschmidt M, Palmour RM, Ervin FR, Snigdha S, Cotman CW, Saido TC, Vassar RJ, George-Hyslop PH, Ikezu T, Schilling S, Demuth HU, Lemere CA

masquerading as ci [J Gastrointest Oncol. 2013]
Genetic grouping of medulloblastomas by representative markers in [Transl Oncol. 2013]
Aggressive adenocarcinoma of the lung consisting solely of c [J Cardiothorac Surg. 2013]

major advances concerning diffuse A beta

5. Abediankenari S, Janbabaei Mollae G, Ghasemi M, Yousefzadeh Y, Bahrami M, Alimoghaddam K.
Acta Med Iran. 2013 May 30;51(5):284-8.
PMID: 23737309 [PubMed - in process]
[Related citations](#)

Database:

Knowledge-level claims

and loss of its function disrupts axonal extension and pathfinding. SMN is known to associate with the RNA-binding protein hnRNP-R, and together they are responsible for the transport and/or local translation of β -actin mRNA in the growth cones. **open question**

However, the full complement of SMN-interacting proteins in neurons remains unknown. Here we used mass spectrometry to identify HuD as a novel neuronal SMN-interacting partner. HuD is a neuron-specific RNA-binding protein that interacts with mRNAs, including candidate plasticity-related gene 15 (cpg15). We show that SMN and HuD form a complex in spinal motor axons, and that both interact with cpg15 mRNA in neurons. CPG15 is highly expressed in the developing ventral spinal cord and can promote motor axon branching and neuromuscular synapse formation, suggesting a crucial role in the development of motor axons and neuromuscular junctions. Cpg15 mRNA previously has been shown to localize into axonal processes. Here we show that SMN deficiency reduces cpg15 mRNA levels in neurons, and, more importantly, cpg15 overexpression partially rescues the SMN-deficiency phenotype in zebrafish. **Our results provide insight**

into the function of SMN protein in axons and **advance** potential targets for the study of mechanisms that lead to the SMA pathology and related neuromuscular diseases.

Categories

open question

contrasting ideas

tendency

novelty

significance

surprise

background knowledge

summarizing

Xerox Incremental Parser

CONTRASTING IDEAS

... unorthodox view resolves ... paradoxes ...

In contrast with previous hypotheses ...

... inconsistent with past findings

OPEN QUESTION

... little is known ...

... role ... has been elusive

Current data is insufficient ...

Applications

Use-case types:

- Text-mining
- Information retrieval
- Support for peer-reviewing
- Support for human annotation
- Visualisation of research literature

Domains:

- Bio-medicine
- Educational science

Genres:

- Research articles
- Project reports

Detecting "paradigm shifts"

document PUBMED:15795929

document details

id 15795929
date 2005 May 1
in J Neurosci Res
authors Feuillette, SÃ©bastien; Blard, Olivier; Lecourtois, Magalie; FrÃ©bourg, Thierry; Campion, Dominique; Dumanchin, CÃ©cile;
title **Tau is not normally degraded by the proteasome**

abstract **Tau**-positive inclusions in neurons are consistent neuropathologic features of the most common **causes** of dementias such Alzheimer's disease and frontotemporal dementia. **Ubiquitinated tau-positive inclusions** have been reported in brains of Alzheimer's disease patients, but involvement of the **ubiquitin-dependent proteasomal system in tau degradation** remains controversial. Before considering the **tau degradation** in pathologic conditions, it is important to determine whether or not endogenous **tau** is normally **degraded** by the proteasome pathway. We therefore investigated this question using two complementary approaches in vitro and in vivo. Firstly, SH-SY5Y **human** neuroblastoma cells were treated with different proteasome **inhibitors**, MG132, lactacystin, and epoxomicin. Under these conditions, neither total nor phosphorylated endogenous **tau protein** levels were increased. **Instead, an unexpected decrease of tau protein was observed.** Secondly, we took advantage of a temperature-sensitive mutant allele of the 20S proteasome in *Drosophila*. Genetic inactivation of the proteasome also resulted in a decrease of **tau** levels in *Drosophila*. These results obtained in vitro and in vivo demonstrate that endogenous **tau** is not normally **degraded** by the proteasome. (c) 2005 Wiley-Liss, Inc.

key textword meshterm neg level subj1 subj2 summarysent pearlpssent pssent pssummarysent logic

document PUBMED:15804428

document details

id 15804428
date 2005 Apr 8
in Brain Res
authors Nakajima, T; Takauchi, S; Ohara, K; Kokai, M; Nishii, R; Maeda, S; Takanaga, A; Tanaka, T; Takeda, M; Seki, M; Morita, Y;
title **alpha-Synuclein-positive structures induced in leupeptin-infused rats**

abstract Abnormal accumulation of **alpha-synuclein** is regarded as a key pathological **step** in a wide range of neurodegenerative **processes**, not only in Parkinson's disease (PD) and dementia with Lewy bodies (DLB) but also in multiple-system atrophy (MSA). **Nevertheless, the mechanism of alpha-synuclein accumulation remains unclear.** Leupeptin, a protease **inhibitor**, has been known to **cause** various neuropathological **changes** in vivo resembling those of aging or neurodegenerative **processes** in the **human** brain, including the accumulation of neuronal **processes** and neuronal cytoskeletal abnormalities leading to neurofibrillary tangle (NFT)-like formations. In the present study, we administered leupeptin into the **rat** ventricle and found that **alpha-synuclein-positive structures** appeared widely in the neuronal tissue, mainly in neuronal **processes** of the fimbria and **alveus**. Immunoelectron microscopic study revealed that **alpha-synuclein** immunoreactivity was located in the swollen axons of the fimbria and alveus, especially in the dilated presynaptic terminals. In addition colocalization of **alpha-synuclein** with **ubiquitin** was rarely observed in confocal laser-scan image. **This is the first report of experimentally induced in vivo accumulation of alpha-synuclein in non-transgenic rodent brain injected with a well-characterized protease inhibitor by an infusion pump.** The present finding suggests that the local accumulation of **alpha-synuclein** might be induced by the impaired metabolism of **alpha-synuclein**, which are likely related to lysosomal or **ubiquitin-independent** proteasomal systems.

key textword meshterm neg level subj1 subj2 summarysent pearlpssent pssent pssummarysent logic

document PUBMED:15781872

CONTRASTING IDEAS

SUMMARY

BACKGROUND KNOWLEDGE

OPEN QUESTION

Claimed Knowledge Updates*

interact with cpg15 mRNA in neurons. CPG15 is highly expressed in the developing ventral spinal cord and can promote motor axon branching and neuromuscular synapse formation, suggesting a crucial role in the development of motor axons and neuromuscular junctions. Cpg15 mRNA previously has been shown to localize into axonal processes. **Here we show that SMN deficiency reduces cpg15 mRNA levels in neurons, and, more importantly, cpg15 overexpression partially rescues the SMN-deficiency phenotype in zebrafish.** Our results provide insight into the function of SMN protein in axons and also identify potential targets for the study of mechanisms that lead to the SMA pathology and related neuromuscular diseases.

Keywords: neuritin, embryonic lethal abnormal vision Drosophila-like 4 (ELAV-L4), local protein synthesis

Other Sections▼

Spinal muscular atrophy (SMA) is a devastating genetic disease leading to infant mortality, due mainly to the loss of α -motor neurons of the spinal cord and brainstem nuclei. SMA occurs due to depletion of a ubiquitously expressed protein, SMN, which in all cells regulates RNA biogenesis and splicing through its role in the assembly of small nuclear ribonucleoprotein (snRNP) complexes (1). Despite the well-characterized association of SMN with the snRNP complex in both the nucleus and cytoplasm of motor neurons, in the axons SMN associates with mobile ribonucleoprotein (RNP) particles that are free of the core snRNP complex proteins (2). Thus, it is hypothesized that SMN may function in the assembly of axonal RNPs to regulate axonal mRNA transport and/or local protein synthesis (3, 4). Deficits in mRNA transport and local mRNA translation are associated with such neurologic disorders as fragile X syndrome and tuberous sclerosis (5, 6). Therefore, the interaction of SMN complex with other RNPs and their associated mRNAs within the axon may be crucial to understanding the pathophysiology of SMA.

- ▶ Nucleotide
- ▶ Protein
- ▶ PubMed
- ▶ Substance
- ▶ Taxonomy
- ▶ Taxonomy Tree

▶ SMN deficiency reduces cpg15 mRNA levels in neurons.

▶ cpg15 overexpression partially rescues the SMN-deficiency phenotype in zebrafish

- ▶ **Review** The SMN complex. [Exp Cell Res. 2004]
 - ▶ Multiprotein complexes of the survival of motor neuron protein SMN with Gemins traffic to neuror [J Neurosci. 2006]
 - ▶ Active transport of the survival motor neuron protein and the role of exon-7 in cytoplasmic localization [J Neurosci. 2003]
 - ▶ Smn, the spinal muscular atrophy-determining gene product, modulates axon growth and local [J Cell Biol. 2003]
 - ▶ Dynamic association of the fragile X mental retardation protein as a messenger ribonucleoprote [Mol Biol Cell. 2008]
- See more articles cited in this paragraph

Social sciences: search engine + peer-reviewing

highlighting knowledge-level claims

Summary of the research problem

The purpose of this article is to develop the idea that ...

The perspective I shall use in this essay relies heavily on the view ...

Description of the research problem

My interest of inquiry emerged in 1997 from a new idea ...

... contrast with prior research results ...



enhancing
document
search



reading support
for quality
judgment

Human and machine annotation

KMi

OLnet
open learning network

template

Hewlett Grantees Reports - template

 open learning network

Title of article and number: Not sure what the title is #2009 - 4244

Related URL: http://www.abc.net.au/news/stories/2009/01/10/20090110_olnet.html

Suggested main theme name: Sustainability

Name of person collating this information: Lydia Makropoulos

Organization name and country of origin for bid: (eg USA, UK etc) WSET USA

Countries (geographical area served by bid): (eg India, Africa, UK etc) USA

Project Time Span: (starting date, duration, ending date) February 2006 - January 2007

Objective: (objective of the project as stated in the report) To encourage work and use of OERs as well as business plan for Edutech.

Target audience: (see suggested list at the end of this document) Community Executives

Subject or discipline if appropriate: (see suggested list at the end of this document) N/A

Level: (see suggested list at the end of this document) N/A


Medium if appropriate: (see suggested list at the end of this document) Webpages Documents

Brief summary of background information: The report covers two initiatives; the authors more specifically for Sally Johnson, who p

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cohere
>>> make the connection

OLnet
open learning network

 mied
Midwest Open Education Research
Draft Project Report

NARRATIVE


A. Description of activities/venues

The primary goal of this project was to conduct an exploratory research study to determine if providing a professional development program using open education resources (OER) would help teachers begin to transform their curriculum and teaching through the use of technology. Our right year/phase Learning Technology Initiative (LTI) experience had shown us that while providing laptops to all middle school teachers and students had had many positive impacts on schools, classrooms and learning, many mathematics teachers still had not fully integrated the laptop technology into their teaching. Accordingly, this research study was designed to determine the impact of helping a group of middle school and high school mathematics teachers, through professional development with mathematics OER, to teach targeted algebra topics using technology.

Several key activities were undertaken in the project over an 18-month time period. First, we attempted to conduct an environmental scan to determine the challenges teachers encounter in using OER. Although the use of OER has grown quite extensively in higher education and K-12 settings in developing countries, OER use by K-12 teachers in the United States appears to be limited. The purpose of this activity was to explore why this may be the case, to identify challenges teachers encounter in using OER, and to develop strategies for overcoming these challenges through our professional development program and new work. This environmental scan consisted of several activities, including interviews with leading OER experts and proponents, surveys of teachers, and a limited number of focus groups. Through these activities we began to draw conclusions about the use of OER in K-12 school settings, and these conclusions are discussed below under Lessons Learned.

8/17/07
Sally Johnson
Midwest Open Education Research
Draft Project Report

XIP-annotated report

 mied
Midwest Open Education Research
Draft Project Report

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Sally Johnson
Midwest Open Education Research
Draft Project Report

- Publish Ideas**
(and optionally add relevant websites)

Problem: Global Warming

www.abc.net www.xyz.org

- Weave webs of meaningful connections**
between ideas: your own, and the world's

Global Warming is an example of Large-scale problems of the 21st century

- Discover new ideas and people**

RESULTS

Group: Global Warming - Discussion

OLnet open learning network

cohere

Large-scale problems of the 21st century

Human and machine annotation

Annotation of an analyst

The primary goal of this project was to conduct an exploratory research study to determine if providing a professional development program using open education resources (OER) would help teachers begin to transform their curriculum and teaching through the use of technology. Our eight-year Maine Learning Technology Initiative (MLTI) experience had shown us that while providing laptops to all middle school teachers and students has had many positive impacts on schools, classrooms and learning, many mathematics teachers still had not fully integrated the laptop technology into their teaching. Accordingly, this research study was designed to determine the impacts of helping a group of middle school and high school mathematics teachers, through professional development with mathematics OER, to teach targeted algebra topics using technology.

Comment [Panglota 1]: Brief summary

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Comment [Panglota 2]: summary

Comment [Panglota 3]: good arguments, rigorous methodology

Comment [Panglota 4]: multiple methods

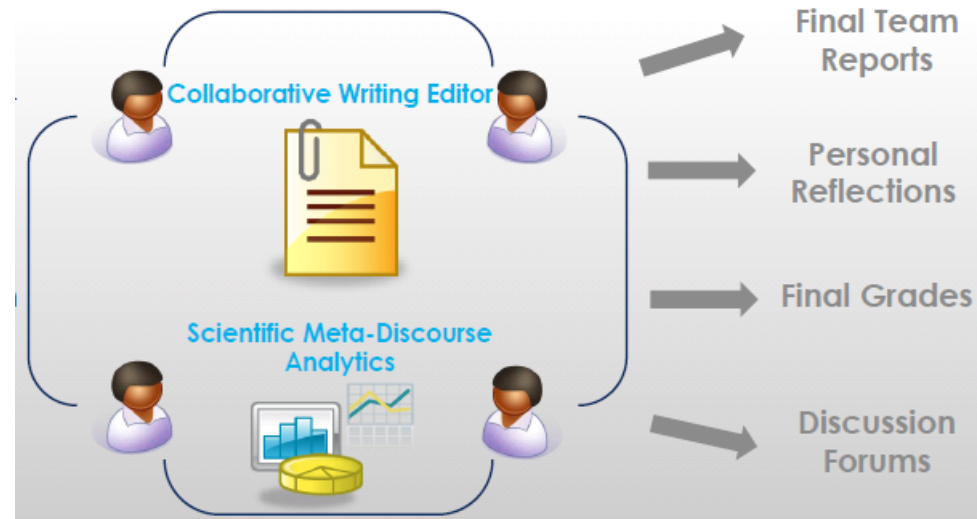
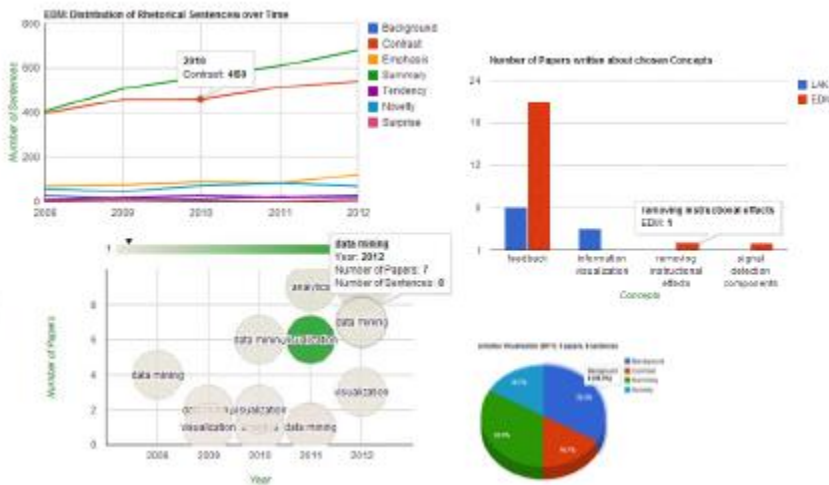
XIP

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Collaborative Writing Editor Student / Educator / Researcher

Extract from the PhD plan of Duygu Simsek

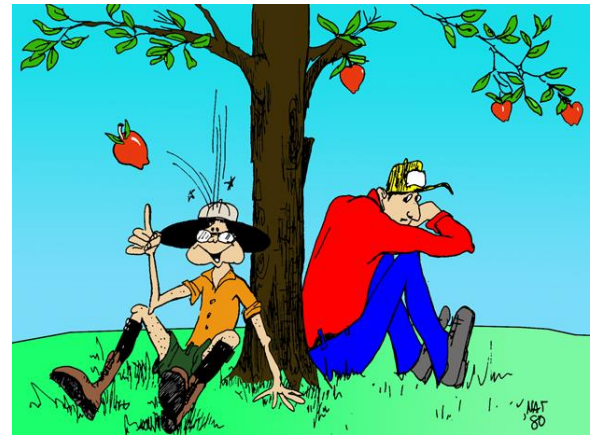


XIP dashboard: visual analytics of
concepts as they appear in knowledge-
level claims

Wrap-up

SCIENTIFIC FACTS

concerning
entities, relationships, correlations,
events etc.



Wrap-up

KNOWLEDGE-LEVEL CLAIMS

RHETORIC

contrasting ideas

open questions

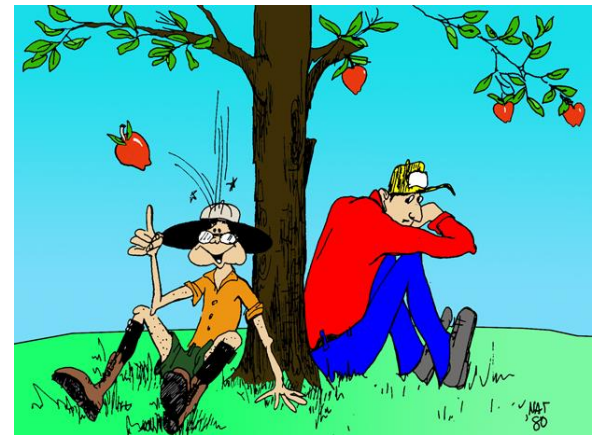
findings

tendencies

major advances

SCIENTIFIC FACTS

concerning
entities, relationships, correlations,
events etc.



A lot of plans

- detection of Claimed Knowledge Updates
- user interfaces for complementing human annotation
- rhetorical content + scientific facts
- educational applications
- web-service in Open Xerox: <http://open.xerox.com/>
- ... open to any suggestion!

References

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Sándor, Á., Vorndran, A. (2010). The detection of salient messages from social science research papers and its application in document search. Workshop Natural Language Processing in Social Sciences, May 10-14. Buenos Aires.

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De Liddo, A., Sándor, Á. and Buckingham Shum, S. (2012). Contested Collective Intelligence: rationale, technologies, and a human-machine annotation study. *Computer Supported Cooperative Work (CSCW)*, 21(4-5), pp.

Simsek, D., Buckingham Shum, S., Sándor, Á., de Liddo, A., Ferguson, R. (2013). XIP Dashboard: visual analytics from automated rhetorical parsing of scientific metadiscourse. 3rd Conference on Learning Analytics and Knowledge, Leuven, Belgium, 8-12 April, 2013.



for your attention!