

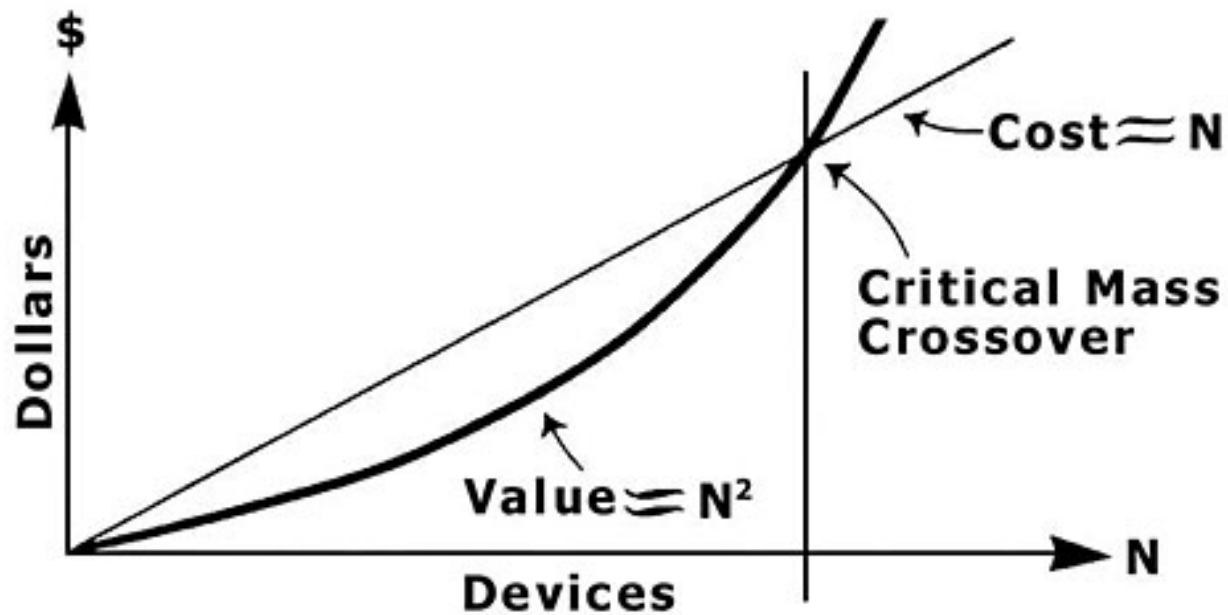
Vignette: Building on Open PSI

John Wilbanks
Creative Commons

Australian National Summit on Open Access to Public Sector Information
13 July 2007



The Systemic Value of Compatibly Communicating Devices Grows as the Square of Their Number:



design for re-use

WWW: “view source”, open linking,
standard languages

Internet: “end to end”, open connection,
standard protocols

the rule of least power:

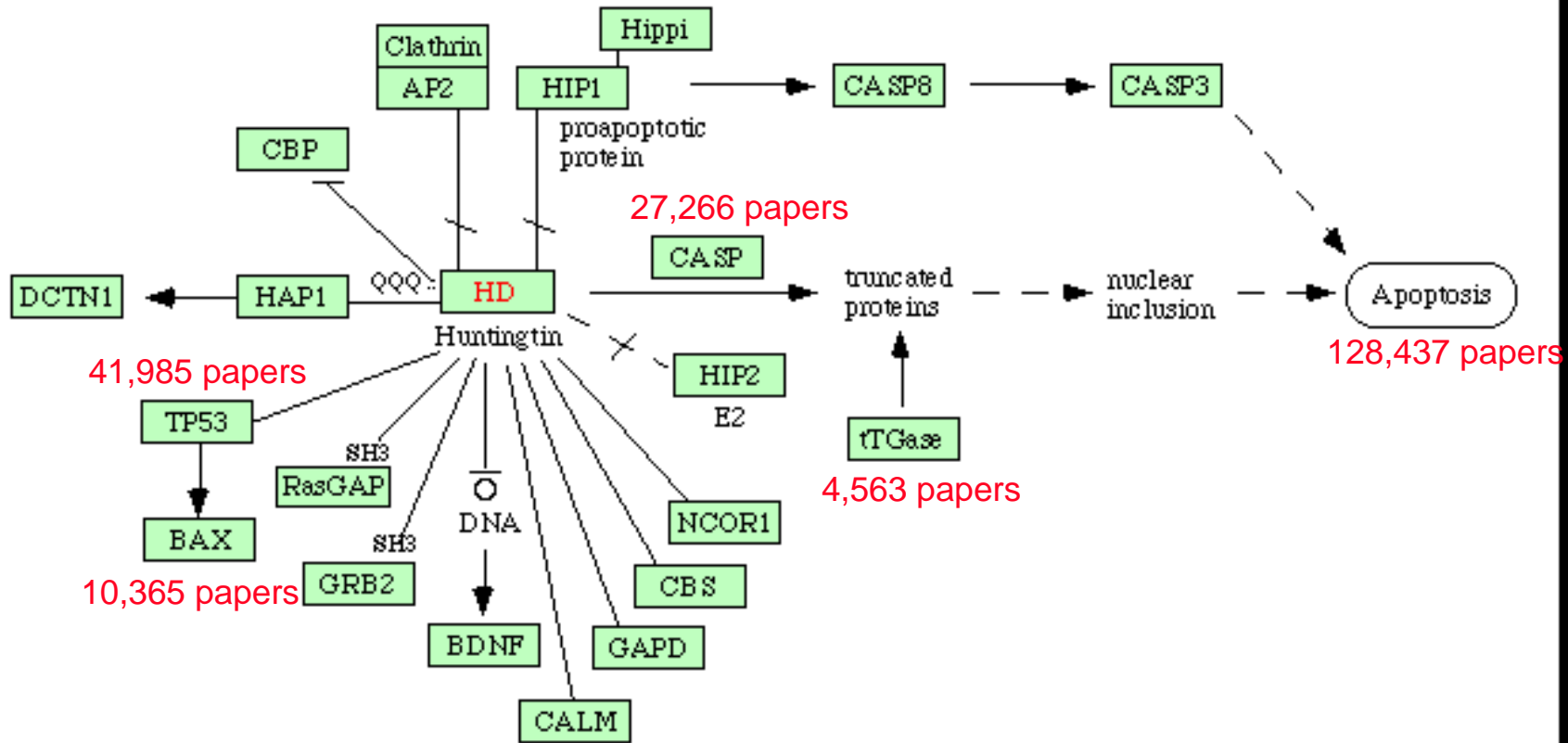
powerful languages inhibit information reuse

the network principles now apply to
information and content

technical and legal standards allow the
“compatible communication” in information
and content networks

access to PSI in standard technical and
legal forms enables dramatic innovation

Huntington's Disease



05040 12/27/06

the neurocommons

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 1: [J Neuropathol Exp Neurol.](#) 2003 Jan;62(1):14-24.**Transglutaminase cross-links in intranuclear inclusions in Huntington disease.**[Zainelli GM](#), [Ross CA](#), [Troncoso JC](#), [Muma NA](#).

Department of Pharmacology, Loyola University Medical Center, Maywood, Illinois 60153, USA.

Cortical and striatal perinuclear cytoplasmic aggregates and intranuclear inclusions of mutant huntingtin are neuropathological hallmarks of Huntington disease (HD). Although the mechanisms involved in the formation of these aggregates are unclear, a recent hypothesis implicates cross-linking of mutant huntingtin protein into aggregates by transglutaminase. This study explores the hypothesis that transglutaminase catalyzes cross-linking of huntingtin into intranuclear inclusions. Using immunofluorescence and confocal microscopy we demonstrate 99% colocalization of transglutaminase-catalyzed epsilon-(gamma-glutamyl) lysine covalent cross-links with nuclear aggregates of huntingtin protein in the frontal cortex of postmortem HD brain tissue. Furthermore, the transglutaminase 2 isoform colocalizes with both huntingtin protein and epsilon-(gamma-glutamyl) lysine covalent cross-links in HD intranuclear inclusions. Transient transfection of N-terminally truncated huntingtin with an expanded glutamine domain (htt-N63-148Q-myc) with and without and transglutaminase 2 into HEK 293T cells resulted in an increase in cross-linked huntingtin in the insoluble formic acid-treated pellet in comparison to transfection of N-terminally truncated huntingtin with normal length glutamine domain (htt-N63-18Q-myc). Transfection with both htt-N63-148Q-myc and transglutaminase 2 resulted in high molecular weight huntingtin in the insoluble fraction. These data support the hypothesis that transglutaminase catalyzed cross-linking of mutant huntingtin is involved in the formation and/or stabilization of huntingtin protein aggregates in HD. Based on these and other studies, modulation of transglutaminase activity could be explored as a treatment for HD.

“transglutaminase catalyzes cross-linking of huntingtin into intranuclear inclusions”

copyrights on a forced move?

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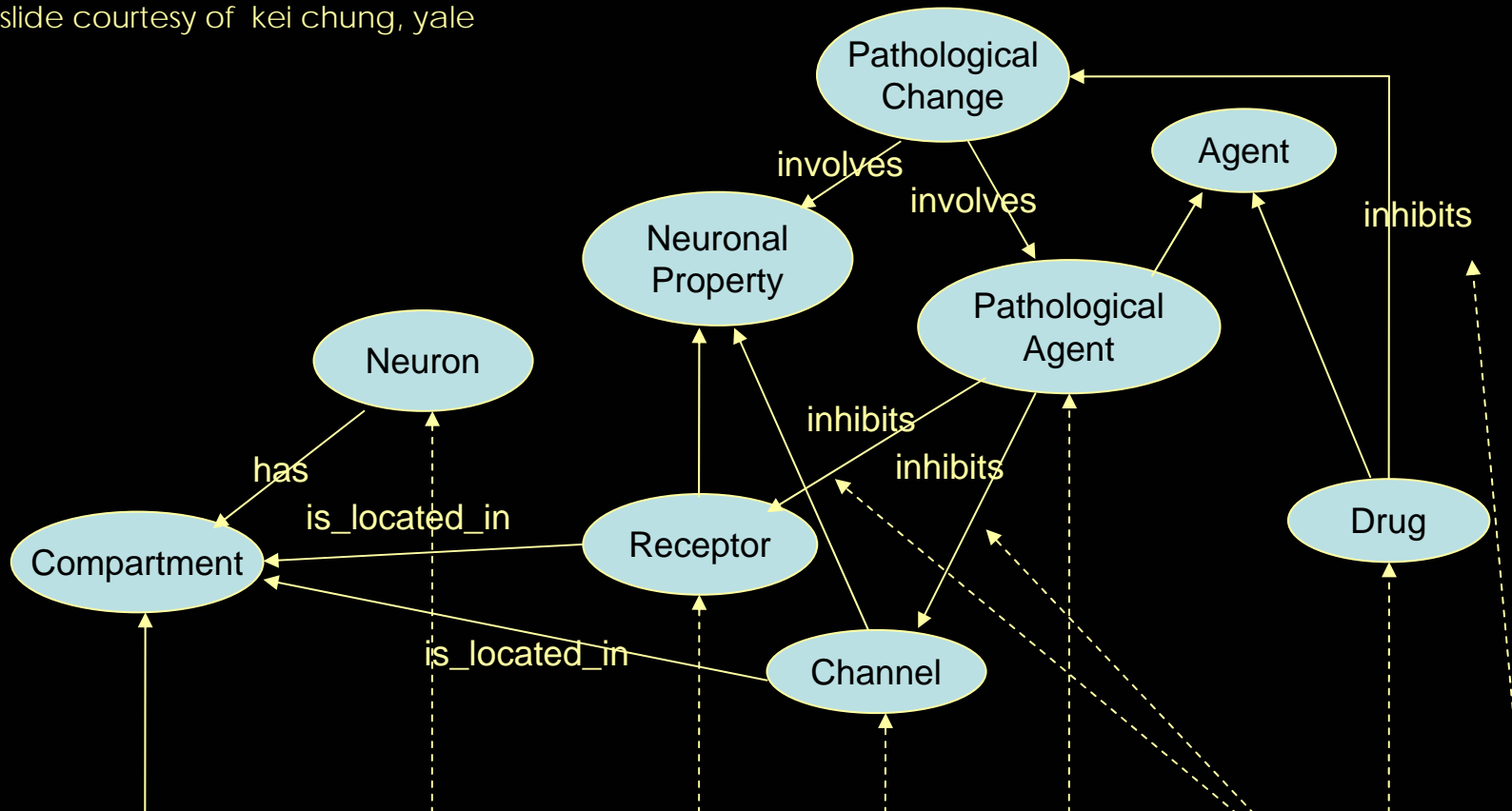
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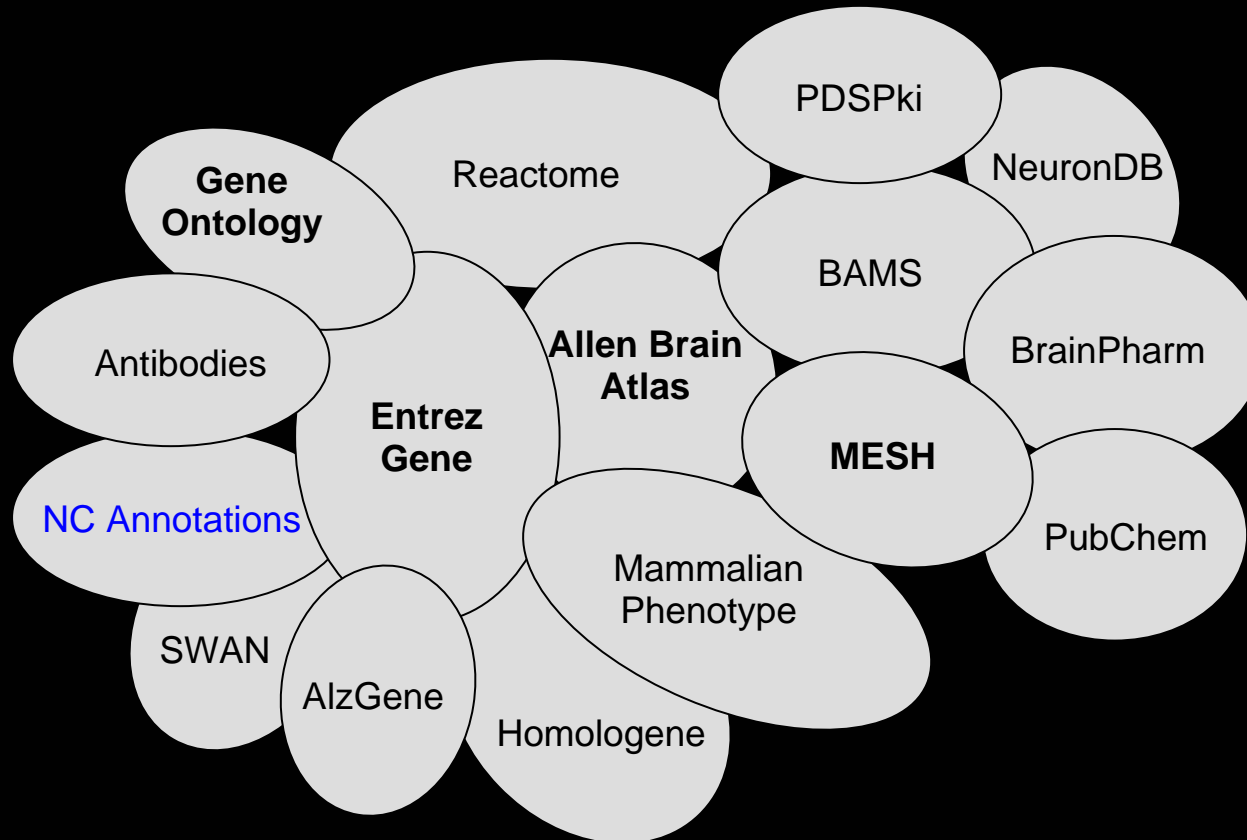
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slide courtesy of kei chung, yale



Compartment	Cell: NeuronDB	Receptor	Channel	Pathological Agent (PA)	PA Action	Drug	Drug Action	Stage	Note	Detail
Soma	CA1 pyramidal neuron		I A	beta Amyloid	Inhibits			Early	View	66240
	Olfactory bulb mitral cell	GabaA						Early	View	66750
Dendrite	CA1 pyramidal neuron		I A	beta Amyloid	Inhibits			Early	View	66240
	Olfactory bulb mitral cell	GabaA						Early	View	66750
Unspecified	Oocyte		I L high threshold	beta Amyloid	Inhibits			Early	View	66252
								Early	View	66753
	CA1 pyramidal neuron			beta Amyloid	Inhibits			Early	View	66758
	CA1 pyramidal neuron	NMDA	I Calcium	beta Amyloid	Inhibits		Inhibits		View	66250



“find me genes involved in signal transduction that are related to pyramidal neurons”

“find me potential drug targets for
alzheimer’s disease, based on what is
publicly known”

[Neurocommons Virtuoso RDF Store](#) ([about Banff](#), [query notes](#), [biology script](#), [virtuoso docs](#), [sparql spec](#), [sparul proposal](#))

Default Graph:

SPARQL Query

```
?res2 owl:someValuesFrom ?process.  
graph <http://purl.org/commons/hcls/20070416/classrelations>  
  {{?process <http://purl.org/obo/owl/obo#part_of> go:GO_0007166}  
  union  
  {?process rdfs:subClassOf go:GO_0007166 }  
  ?protein rdfs:subClassOf ?parent.  
  ?parent owl:equivalentClass ?res3.  
  ?res3 owl:hasValue ?gene.  
  }  
graph <http://purl.org/commons/hcls/gene>  
  { ?gene rdfs:label ?genename }  
graph <http://purl.org/commons/hcls/20070416>  
  { ?process rdfs:label ?processname }  
}
```

Output format Max Rows

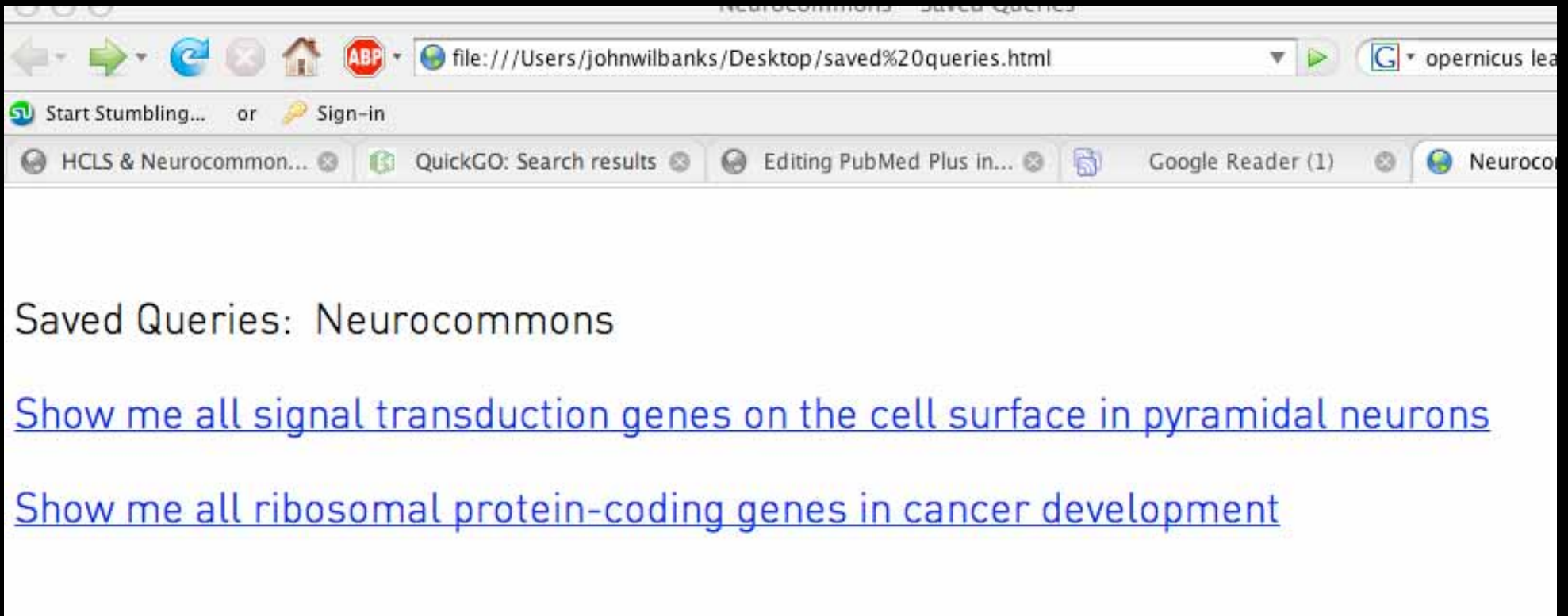
Retrieve remote RDF data for all missing source graphs

```
POST /sparql/? HTTP 1.1  
Host: ashby.csail.mit.edu:8890  
Accept: text/html  
Content-Type: application/x-www-form-urlencoded  
Content-Length: 2074
```

query=prefix%20go%3A%20%3Chttp%3A%2F%2Fpurl.org%2Fobo%2Fowl%2FGO%23%3E%0Aprefix%20rdfs%3A%20%3Chttp%3A%2F%2Fw



[The image shows the Creative Commons Attribution \(CC BY\) license logo, which consists of two circular icons: one with the letters 'cc' and another with a person icon, followed by the text 'BY'.](http://hcls1.csail.mit.edu:8890/sparql/?query=prefix%20go%3A%20%3Chttp%3A%2F%2Fpurl.org%2Fobo%2Fowl%2FGO%23%3E%0Aprefix%20rdfs%3A%20%3Chttp%3A%2F%2Fwww.w3.org%2F2000%2F01%2Frdf-schema%23%3E%0Aprefix%20owl%3A%20%3Chttp%3A%2F%2Fwww.w3.org%2F2002%2F07%2Fowl%23%3E%0Aprefix%20mesh%3A%20%3Chttp%3A%2F%2Fpurl.org%2Fcommons%2Frecord%2Fmesh%2F%3E%0Aprefix%20sc%3A%20%3Chttp%3A%2F%2Fpurl.org%2Fscience%2Fowl%2Fsciencecommons%2F%3E%0Aprefix%20ro%3A%20%3Chttp%3A%2F%2Fwww.obofoundry.org%2Fro%2Fro.owl%23%3E%0A%0Aselect%20%3Fgenename%20%3Fprocessname%0Awhere%0A%7B%20%20graph%20%3Chttp%3A%2F%2Fpurl.org%2Fcommons%2Fhcls%2Fpubmesh%3E%0A%20%20%20%20%20%20%7B%20%3Fpaper%20%3Fp%20mesh%3AD017966%20.%0A%20%20%20%20%20%20%20%20%20%3Farticle%20sc%3Aidentified by pmid%20%3Fpaper.%0A%20%20%20%20%20%20%20%20%20%3Fgene%20sc%3Adescribes gene or gene product mention ed by%20%3Farticle.%0A%20%20%20%20%20%20%20%7D%0A%20%20%20graph%20%3Chttp%3A%2F%2Fpurl.org%2Fcommo ns%2Fhcls%2Fgoa%3E%0A%20%20%20%20%20%20%20%7B%20%3Fprotein%20rdfs%3AsubClassOf%20%3Fres.%0A%20%20 %20%20%20%20%20%3Fres%20owl%3AonProperty%20ro%3Ahas function.%0A%20%20%20%20%20%20%20%20%20%3Fres% 20owl%3AsomeValuesFrom%20%3Fres2.%0A%20%20%20%20%20%20%20%20%20%3Fres2%20owl%3AonProperty%20ro%3Are alized as.%0A%20%20%20%20%20%20%20%20%20%3Fres2%20owl%3AsomeValuesFrom%20%3Fprocess.%0A%20%20%20gra ph%20%3Chttp%3A%2F%2Fpurl.org%2Fcommons%2Fhcls%2F20070416%2Fclassrelations%3E%0A%20%20%20%20%20%20 %7B%7B%3Fprocess%20%3Chttp%3A%2F%2Fpurl.org%2Fobo%2Fowl%2Fobo%23part of%3E%20go%3AGO 0007166% 7D%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20%20%20%20%20%7B%3Fprocess%20rdfs%3AsubClassOf%20go %3AGO 0007166%20%7D%7D%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20%20%20%20%20%3Fprotein%20rdfs%3AsubClassOf%20%3Fparent.%0 A%20%20%20%20%20%20%20%20%20%3Fparent%20owl%3AequivalentClass%20%3Fres3.%0A%20%20%20%20%20%20%20%20% 3Fres3%20owl%3AhasValue%20%3Fgene.%0A%20%20%20%20%20%20%20%20%20%7D%0A%20%20%20graph%20%3Chttp%3A% 2F%2Fpurl.org%2Fcommons%2Fhcls%2Fgene%3E%0A%20%20%20%20%20%20%20%7B%20%3Fgene%20rdfs%3Alabel%20%3F genename%20%7D%0A%20%20%20graph%20%3Chttp%3A%2F%2Fpurl.org%2Fcommons%2Fhcls%2F20070416%3E%0 A%20%20%20%20%20%20%20%7B%20%3Fprocess%20rdfs%3Alabel%20%3Fprocessname%7D%0A%7D&format=&maxrows=50</p></div><div data-bbox=)



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[Show me all ribosomal protein-coding genes in cancer development](#)

this is the equivalent of modern proprietary
knowledge management in pharma

PSI enabled this to be done in 6 months of
two people's work...

the results are already public and being
used here in Queensland