Il progetto Science Commons

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the future of science is network science

la scienza incontra Internet

realizzare il potenziale

cominciassimo oggi,
come faremmo le cose?

enorme quantità di dati/documenti

"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"
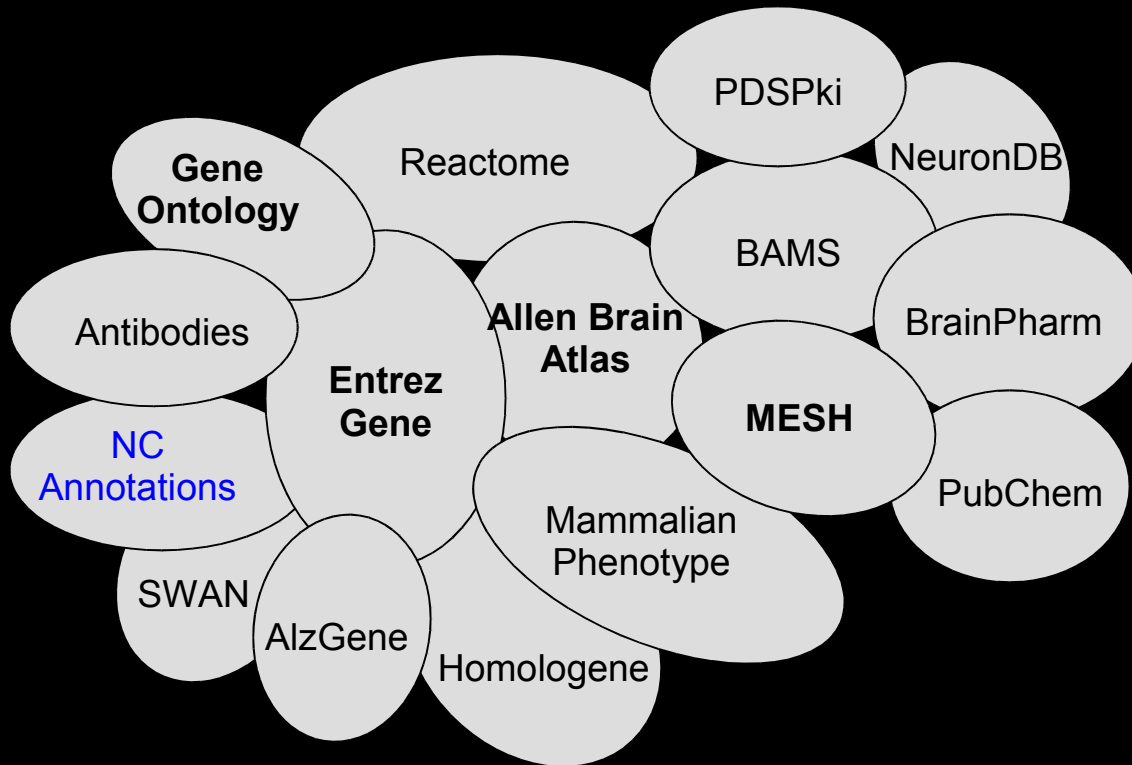
slide courtesy of kei chung, yale
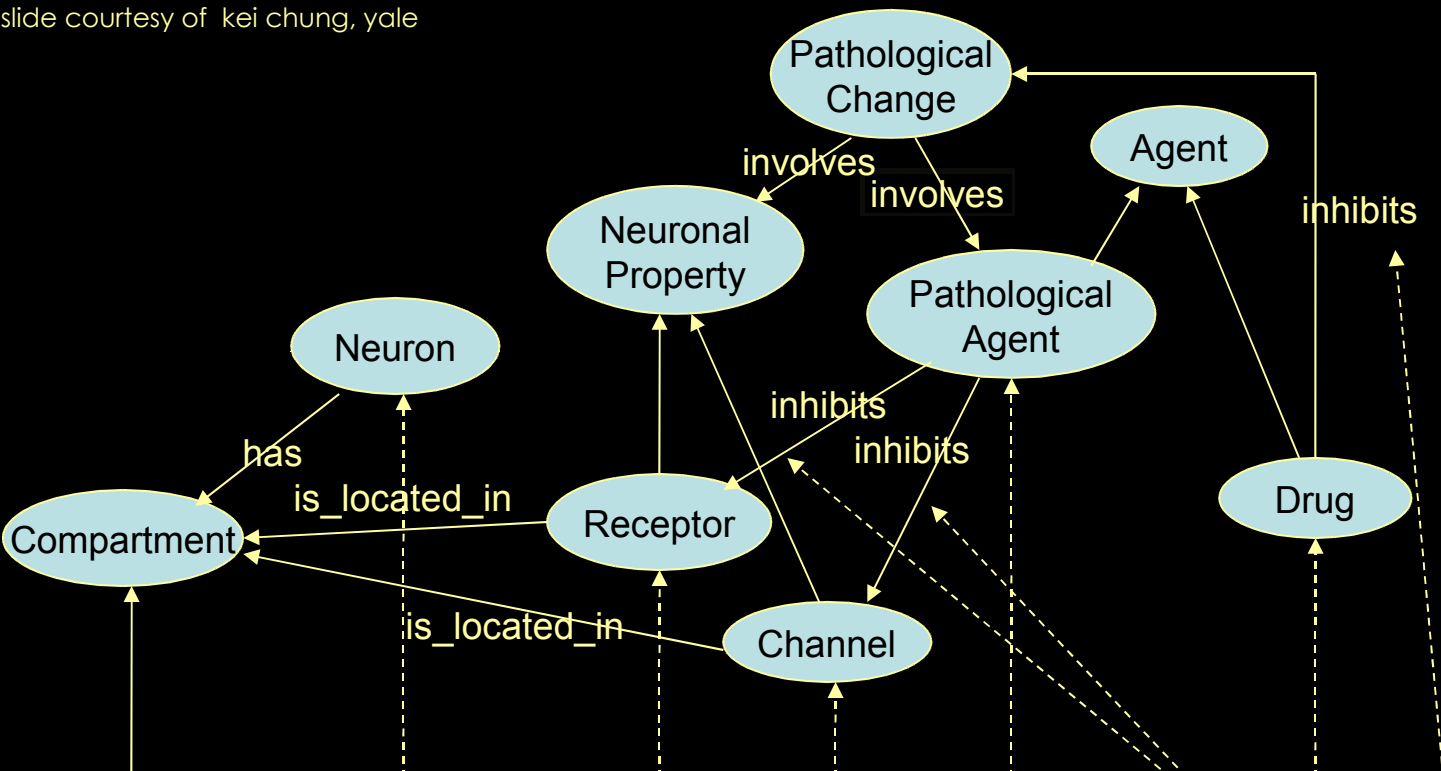
Compartment	Cell: NeuronDB	Receptor	Channel	Pathological Agent (PA)	PA Action	Drug	Drug Action	Stage	Note	Detail
Soma	CA1 pyramidal neuron		I A	beta Amyloid	Inhibits			Early	View	66240
	Olfactory bulb mitral cell	GabaA						Early	View	66750
Dendrite	CA1 pyramidal neuron		I A	beta Amyloid	Inhibits			Early	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

why sc, why now?

realizzare il potenziale:
ridurre/eliminare
le barriere inutili/dannose

"protocols":
content licenses
materials transfer agreements   ⟶   public
patent licenses
software licenses

tangible tools:
biological materials
drug compounds   ⟶   private
research equipment / labs
software

"the canon":
scholarly journals
fundamental data   ⟶   mixed
state change data

infrastructure:
ICT
funding   ⟶   mixed
names and meanings
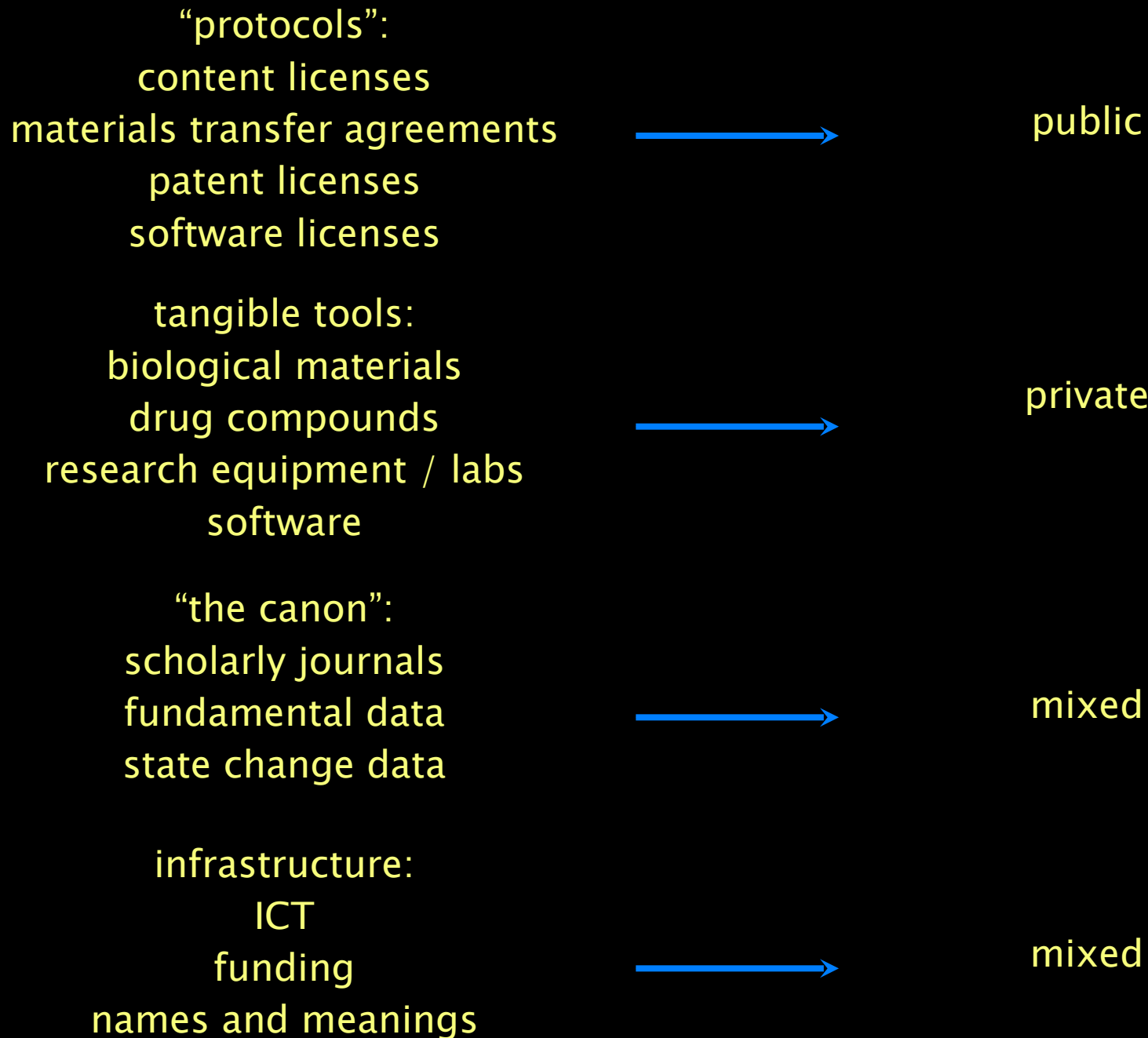
running code: semantic web query / four open government data sources

```
prefix go: <http://purl.org/obo/owl/GO#>
prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
prefix owl: <http://www.w3.org/2002/07/owl#>
prefix mesh: <http://purl.org/commons/record/mesh/>
prefix sc: <http://purl.org/science/owl/sciencecommons/>
prefix ro: <http://www.obofoundry.org/ro/ro.owl#>

select ?genename ?processname
where
{ graph <http://purl.org/commons/hcls/pubmesh>
    { ?paper ?p mesh:D017966 .
      ?article sc:identified_by_pmid ?paper.
      ?gene sc:describes_gene_or_gene_product_mentioned_by ?article.
    }
  graph <http://purl.org/commons/hcls/goa>
    { ?protein rdfs:subClassOf ?res.
      ?res owl:onProperty ro:has_function.
      ?res owl:someValuesFrom ?res2.
      ?res2 owl:onProperty ro:realized_as.
      ?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}
}
```

Mesh: Pyramidal Neurons

Pubmed: Journal Articles

Entrez Gene: Genes

GO: Signal Transduction

Default Graph: | None ▼ |

SPARQL Query | Insert prefix ▼ | Insert query ▼ | Tools & Sni

```
            ?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 | Table ▼ | Max Rows | 50 ▼ |

Run Query | Reset | Clear | ☐ Retrieve remote RDF data for all missing source graphs

| result | **request** | response |

```
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%2Fww
```

Default Graph: None ▼

| Insert prefix ▼ | Insert query ▼ | Tools & Snippets ▼ |

SPARQL Query

```
prefix dc: <http://purl.org/dc/elements/1.1/>
prefix skos: <http://www.w3.org/2004/02/skos/core#>
prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
prefix owl: <http://www.w3.org/2002/07/owl#>
prefix sc: <http://purl.org/science/owl/sciencecommons/>
prefix foaf: <http://xmlns.com/foaf/0.1/>

select distinct ?submeshname ?title ?plasmidname ?catalogpage ?generecname
   from <http://purl.org/commons/hcls/20070416>
   from <http://purl.org/commons/hcls/20070416/classrelations>
where
{
   # Alzheimer
   ?submesh skos:broader <http://purl.org/commons/record/mesh/D003704>.
```

Output format: Table ▼ Max Rows: 50 ▼   Execution plan

Run Query   Reset   Clear   ☐ Retrieve remote RDF data for all missing source graphs   Load   Store

result | request | response

submeshname	title	plasmidname	catalogpage	generecname
Alzheimer Disease – metabolism	Neprilysin regulates amyloid Beta peptide levels.	pCSC-SP-PW-Nep (aka: pBOB-NEP)	http://www.addgene.org/pgvec1:	Entrez Gene record for mouse Mme, 17380
Alzheimer Disease – metabolism	Neprilysin regulates amyloid Beta peptide levels.	pCSC-SP-PW-NepX (aka: pBOB-NEPX)	http://www.addgene.org/pgvec1:	Entrez Gene record for mouse Mme, 17380
Huntington Disease – metabolism	Inaugural Article: A linear lattice model for polyglutamine in CAG-expansion diseases.	pET32a-HD16Q	http://www.addgene.org/pgvec1:	Entrez Gene record for human HD, 3064
Huntington Disease – metabolism	Inaugural Article: A linear lattice model for polyglutamine in CAG-expansion diseases.	pET32a-HD25Q	http://www.addgene.org/pgvec1:	Entrez Gene record for human HD, 3064
Huntington Disease – metabolism	Inaugural Article: A linear lattice model for polyglutamine in CAG-expansion diseases.	pET32a-HD39Q	http://www.addgene.org/pgvec1:	Entrez Gene record for human HD, 3064
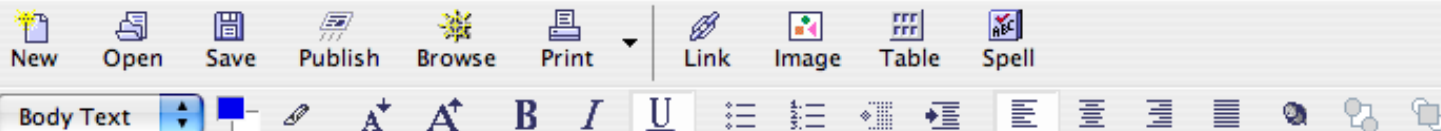
Saved Queries: Neurocommons

[Show me all signal transduction genes on the cell surface in pyramidal neurons](#)

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

[Show me all the plasmids available under standard contracts for either query](#)

300,000,000+ RDF "triples"
pre-formatted queries
analytic software under BSD

available for download and mirroring

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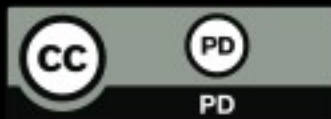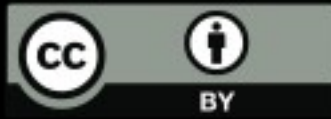
```xml
<rdf:RDF xmlns="http://web.resource.org/cc/"
   xmlns:dc="http://purl.org/dc/elements/1.1/"
   xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
<Work rdf:about="http://example.org/gnomophone.mp3">
 <dc:title>Compilers in the Key of C</dc:title>
 <dc:description>A lovely classical work on compiling code.</dc:description>
 <dc:creator><Agent>
  <dc:title>Yo-Yo Dyne</dc:title>
 </Agent></dc:creator>
 <dc:rights><Agent>
  <dc:title>Gnomophone</dc:title>
 </Agent></dc:rights>
 <dc:date>1842</dc:date>
 <dc:format>audio/mpeg</dc:format>
 <dc:type rdf:resource="http://purl.org/dc/dcmitype/Sound" />
 <dc:source rdf:resource="http://example.net/gnomovision.mov" />
 <license rdf:resource="http://creativecommons.org/licenses/by-nc-nd/2.0/" />
 <license rdf:resource="http://www.eff.org/IP/Open_licenses/eff_oal.html" />

</Work>

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 <permits rdf:resource="http://web.resource.org/cc/Reproduction" />
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 <requires rdf:resource="http://web.resource.org/cc/Attribution" />
 <prohibits rdf:resource="http://web.resource.org/cc/CommercialUse" />

</License>
</rdf:RDF>
```

Registry of Open Access Repositories (ROAR)

Please sign the petition in support of the European Commission's proposed Open Access Self-Archiving

| Any Geographic Country ▼ | Any System Software ▼ | Any Content Type ▼ | Sort by Name ▼ | Filt |

Your query resulted in **922** repositories matching

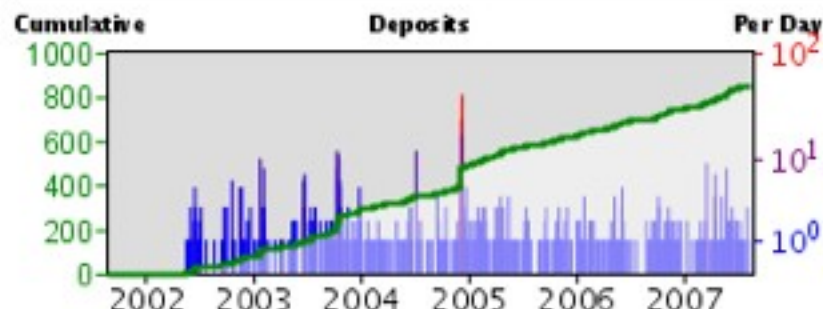**View this result set as a chart:**

Export this result set as:
Comma-Separated Format
Google Earth Overlay
(Thumbnails / Bars)
... other formats

Analyse the content of these repositories (caveats)
Export repository records summary as: View repos
Cumulative Graph   File For
Cumulative Table

@RCHIVESIC (849 records)

Running **HAL**, based in **France**
Cross-Institutional
Registered on 2002-05-17
Cumulative deposits: 849 total [
Daily deposits in last year: 99 d
days of 100+ [table] [graph (PN(
(requires SVG format support)]
OAI Interface: Identify List Meta
status]

Aberdeen University Research Archive: AURA

Not registered in Celestial:

Either the OAI-PMH interface isn't working or it is awaiting action by a ROAR editor

Running **DSpace**, based in **Uni**
as **Research Institutional or D**
Registered on 2006-01-27
No successful harvest yet.
OAI Interface: Identify List Meta
status]

info:other:archives.eprints.org:import

does the user of the article have the rights to:

distribute?
translate?
aggregate multiple articles into virtual journals?

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2. harmonizes author rights (location, timing, document format)

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4. Panel on Open Access * 05/01/07 video *

Carnegie Mellon faculty members Jay Kadane, Barbara Johnstone, and David Danks will talk about why they self-archive, the tools they use, the problems they have encountered and how they solved them, etc. The panelists' goal is to evoke a lively Q & A session with audience members.

BIOS

Joseph B ("Jay") Kadane is Leonard J. Savage University Professor of Statistics and Social Sciences, Emeritus. He has been at Carnegie Mellon since 1971, and served as Head of the Statistics Department from 1972 to 1981. Subsequently he served for 2.5 years as Chair of the

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goals:

lower barrier to opening negotiations
author education
empirical evidence of usage for policy
debate
put the library in legal position to archive

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