Exploration of a Data Landscape using a Collaborative Linked Data Framework

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Scientists are looking for answers to translational questions
Instead they research how to find and access data.

Which data source should I choose? Which interfaces are available? Can I access it? Who should I talk to?

Scientists want to do Science, not Data Management.
knowIT helps scientists and IT manage what they know about Information Systems.
Collaborative cataloging of data sources

ADNI data

Data origin: Externally
Data source location: Full copy in JBI
Data provider (vendor): Alzheimer's Disease Neuroimaging Initiative (ADNI)
Agreement type: Subscription - Global
License URL: http://www.loni.ucla.edu/ADNI/CommonTermsOfUse.pdf
Funding source: This project is funded for $160 million, with $140 million from the National Institute on Aging and National Institute of Biotechnology and Human Genetics, and $20 million from the Pharmaceutical Industry and several foundations, donated to the Foundation for the NIH. More details available on the ADNI sponsors page and About ADNI funding.

Pubmed ID:

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The Alzheimer's Disease Neuroimaging Initiative (ADNI) is a large five-year (July 2004) research project to study the rate of change of cognition, function, brain structure and function, and biomarkers in 200 elderly controls, 400 subjects with mild cognitive impairment, and 200 with Alzheimer's disease.

Source:
1. https://www.adni-info.org/ScientistsAboutADNI.aspx

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**Structured data inside wiki pages**

### User interfaces

A list of data sources and user interfaces to access them.

#### Usage:
- Select from the list to the right to filter the view
- Switch to Tile view for more details
- Export data to CSV

#### TILES • TABLE

<table>
<thead>
<tr>
<th>Data Set</th>
<th>Data Source</th>
<th>Data Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADNI_data</td>
<td>3DX_DriverStream</td>
<td>ADNI_Distributed_Dataset Entry System</td>
</tr>
</tbody>
</table>

#### Data classes

- ADAS-Cognitive_Behavior
- Diagnosis_and_Symptoms_Checklist
- Asf_Geriatric
- Baseline_Symptoms_Checklist
- Clinical_Dementia_Rating
- Exclusion_Criteria
- Functional_Assessment_Questionnaire
- Family_History_Questionnaire
- Geriatric_Depression_Scale
- Inclusion_Criteria
- Clinical_Laboratory_Test
- Medical_History
- Mini_Mental_State_Exam
- Modified_Behavior
- Magnetic_Resonance_Imaging (MRI)
- Position_Emision_Tomography (PET)
- Neuropsychological_Battery
- Physical_Exam
- Participant_Demographic_Information
- Adverse_Event
- Hospitalization
- Concurrent_Medication
- Blood_Sample
- Vitals
- Central_Spine_Fluid (CSF)
- Hippocampal_Volume
- Tau
- Beta_Amyloid
- Alzheimer%27s_Disease
Advantages of Semantic MediaWiki (SMW)

Wiki pages are subjects for Semantic annotations
(triples: page – property – value)

MediaWiki knowledge management tools

Many ways to input and output content.
Linked Data Pilot for Neuroscience

Provide a flexible integrative data layer

- Linked Data concepts can be used for flexible data integration of internal and external sources of disparate data

Enable scientists to answer novel translational questions

- Linked Data queries support diverse translational scientific questions
Overview of the Linked Data Framework
Reviewing W3C’s Translational Medicine Ontology (TMO) as a base for J&J Ontology
C# API allows programmatic abstraction of....

Data Source discovery
  • Provides framework with provenance information

Resource discovery
  • Extracts relationships between concepts across data sources

SPARQL Querying
  • Constructs and captures queries, parses results

Inferencing
  • Pulls pre-constructed rule sets hosted in server directory
Ask questions using federated queries
Integration with analytical tools
Improved enterprise search

Search results for "ADNI data"

A page using your search term already exists: ADNI data

Keywords for ADNI data: Alzheimer

Category: Clinical_data_source

1. ADNI data

ADNI uses MRI and PET imaging, as well as laboratory and cognitive testing of 321 normal, mildly cognitively impaired and Alzheimer's disease patients. Among the goals of the study is to provide better tools for carrying out effective clinical trials and identifying biomarkers that can predict clinical outcome.

2. LONI Image Data Archive (IDA)

The LONI Image Data Archive (IDA) is a user disseminating neuroimaging and related clinical data.

Universal Search SciTech Directory LINK

Answer not found? Ask J&J experts using LINK!

Searched for: Alzheimer SNP

Results 1 - 4 of 4 found Sort by relevance Sort by date

Sources

ADNI data

All (4) knowIT (2)
J&J Patents (2)

March 8, 2010 - knowIT
Analysis of data sources content
Visualization of relationships between data sources
Next steps

- Automation and integration with existing ontologies
- Enable self-describing data sources
- Dynamic, layered map of data landscape
- Incorporate additional data sources
- Drive broader awareness and adoption of the tool
Acknowledgements

We would like to thank current and past contributors for their patience, ideas and support:

- Tim Schultz
- Susie Stephens
- Dimitris Agrafiotis
- Rudi Verbeek
- John Stong
- Joe Ciervo
- Keith McCormick