Portfolio Analysis in OPASI at NIH

Timothy Hays, Ph.D.
Branch Chief, Portfolio Analysis and Scientific Opportunities

Office of Portfolio Analysis & Strategic Initiatives (OPASI)
Office of the Director
National Institutes of Health
June 2008

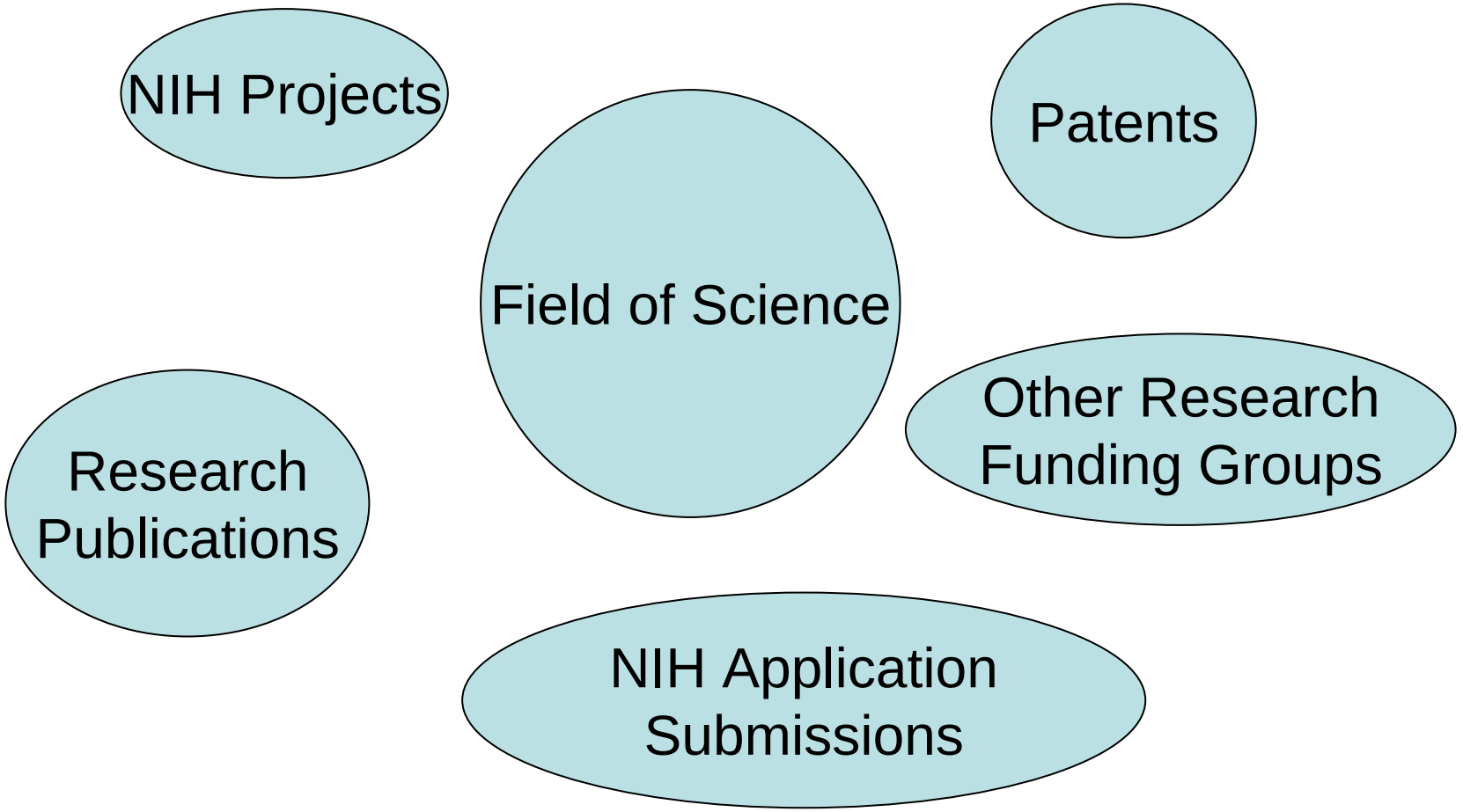
Portfolio Analysis in OPASI

- **Analyses of the NIH research portfolio (Intramural and Extramural) in all its dimensions**

- **Enhance the evaluation and management of the large and complex NIH scientific portfolio**
  - Facilitate trans-NIH scientific planning and priority-setting initiatives
  - Support the ICs in their own planning processes
  - Gap and overlap analyses of research (within and outside of NIH)
  - Identify opportunities to invest in new areas of research
  - Explore return on scientific investment

Evaluating the Full Research Portfolio

Connecting the “dots” to evaluate a field



Portfolio Analysis for Evaluation

Enhancing evaluation through portfolio analysis –

First: What is the question we are trying to answer?

Second: Choose the tool(s) and data set (s) best able to answer the question.

Questions:

- What is the state of the science?
- Are there gaps in our research portfolio?
  - How do the gaps compare to research carried out in other agencies?
- How much do we spend on mitochondrial research?
- What is the average number of scientific papers generated per $100K spent per grant?

Portfolio Analysis for Evaluation

Enhancing evaluation through portfolio analysis –

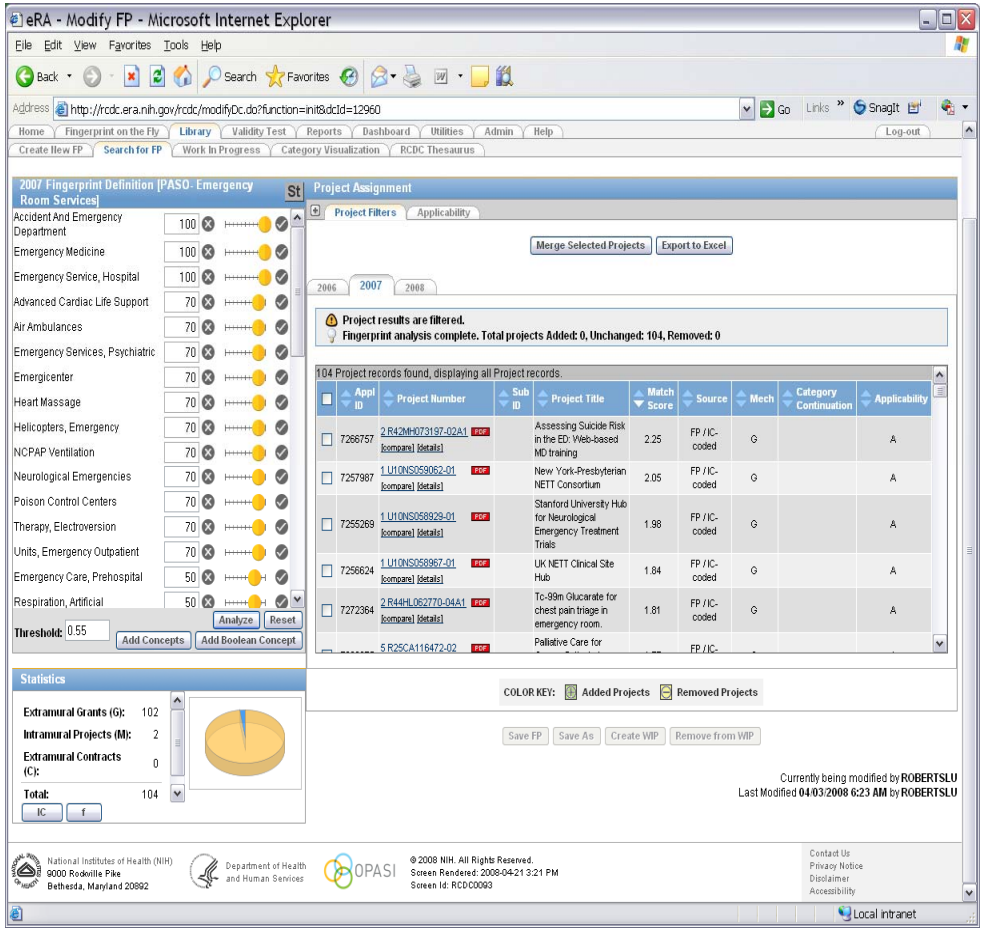
- **Exploring funded NIH projects**
  - Funding rates among ICs
  - Analysis of scientific content of projects
- **Understanding unfunded NIH grant submissions**
  - Are emerging theories or innovation left unfunded?
- **Evaluation of progress and/or future directions**
  - Return on investment
  - Identify most promising avenues for future investment

Portfolio Analysis for Evaluation

Tools for Identifying and Evaluating NIH Projects - examples

- **Research, Condition, and Disease Categorization** (OD/NIH)
  - Mining projects for scientific content
    - Extramural, intramural, contracts
- **e-SPA – Electronic Scientific Portfolio Assistant** (NIAID/NIH)
  - Linking projects and portfolios to research outcome indicators
- **QVR – Query, View and Report** (CIT/NIH)
- **Spires** (NIEHS/NIH)
  - Publications listings associated with NIH funded projects and also RCDC categories

Portfolio Analysis with RCDC

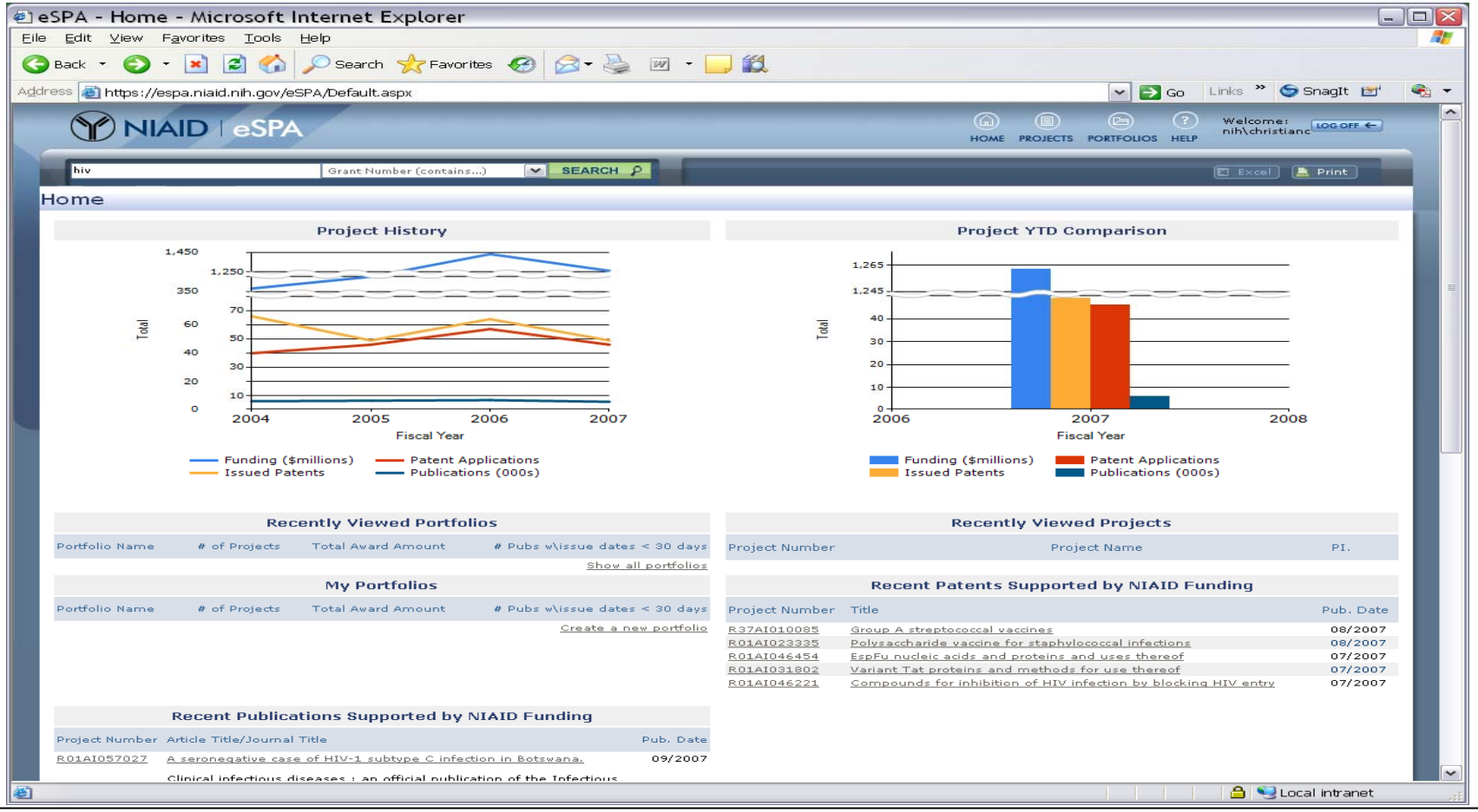


RCDC – understanding NIH funded research projects using the scientific content

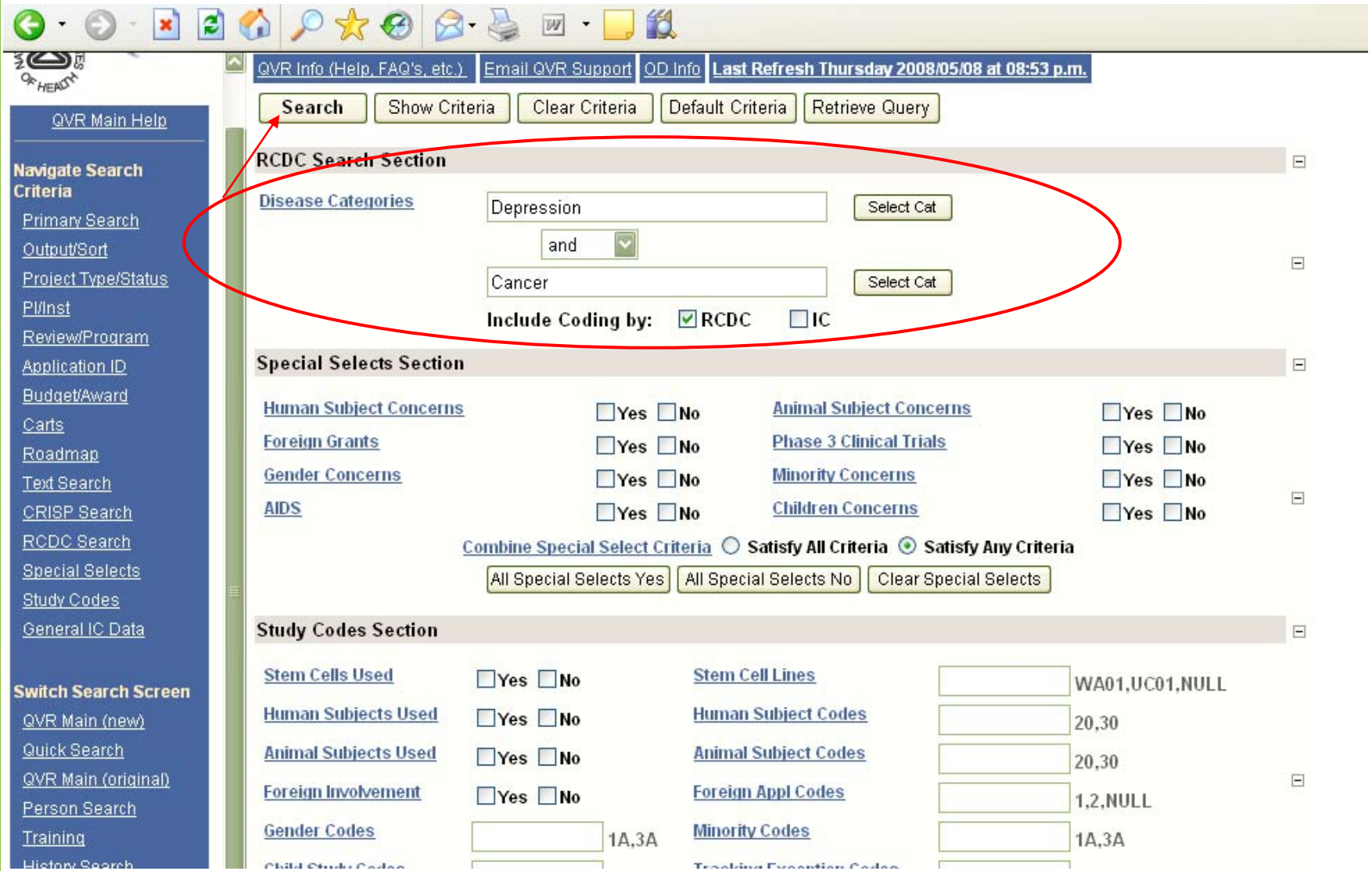
- Fingerprint – scientific concepts from the thesaurus
- Research Project Fingerprint (weighted list of concepts)
- Category Definition Fingerprint (weighted list of concepts)
- Matching process to see what projects match the categories

Portfolio Analysis with e-SPA

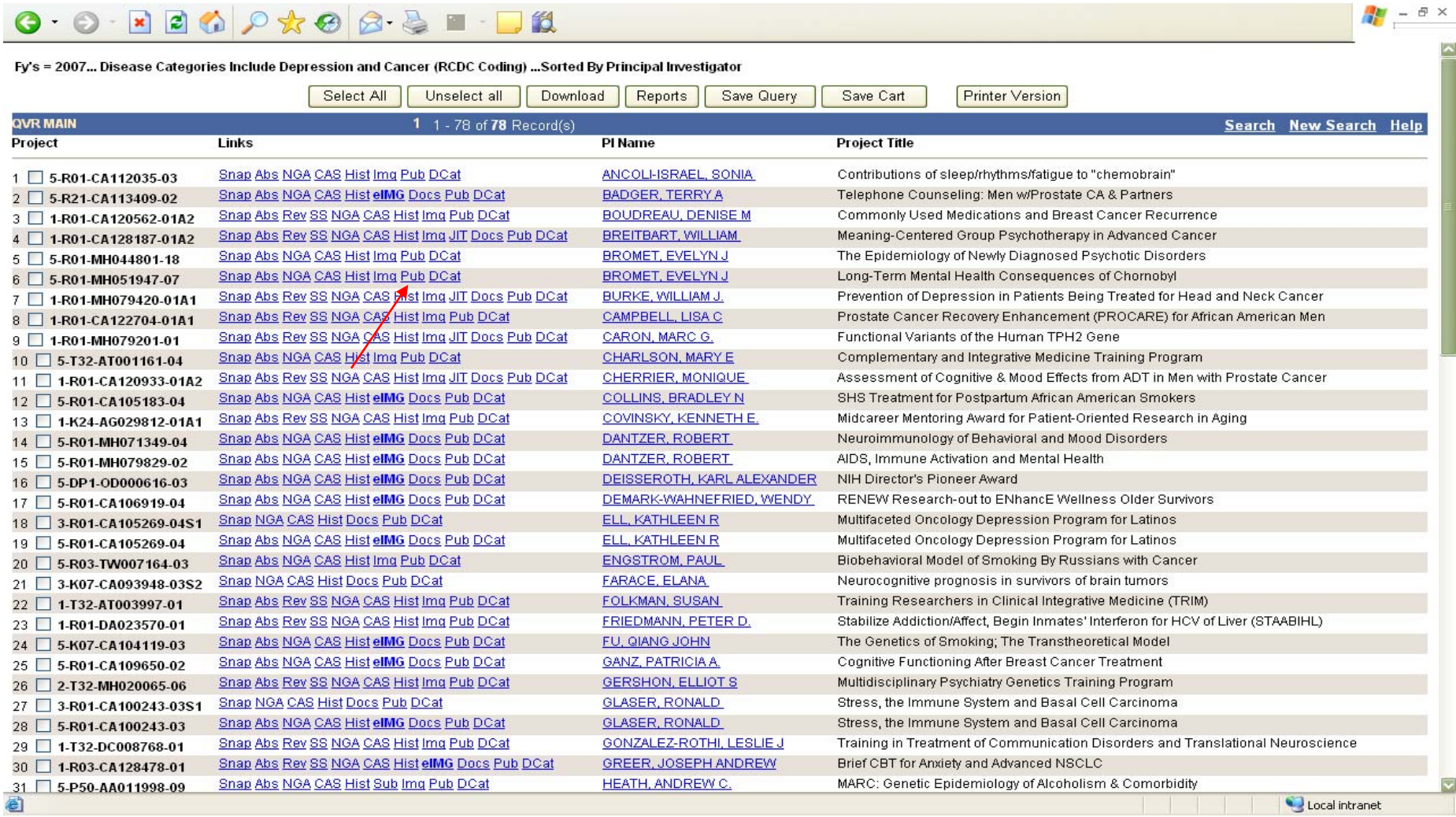
NIAID's Electronic Scientific Portfolio Assistant (e-SPA)
– connecting the entire NIAID portfolio



QVR/SPIRES – links publications to NIH Grants database



Projects in Cancer and Depression



Fy's = 2007... Disease Categories Include Depression and Cancer (RCDC Coding) ...Sorted By Principal Investigator

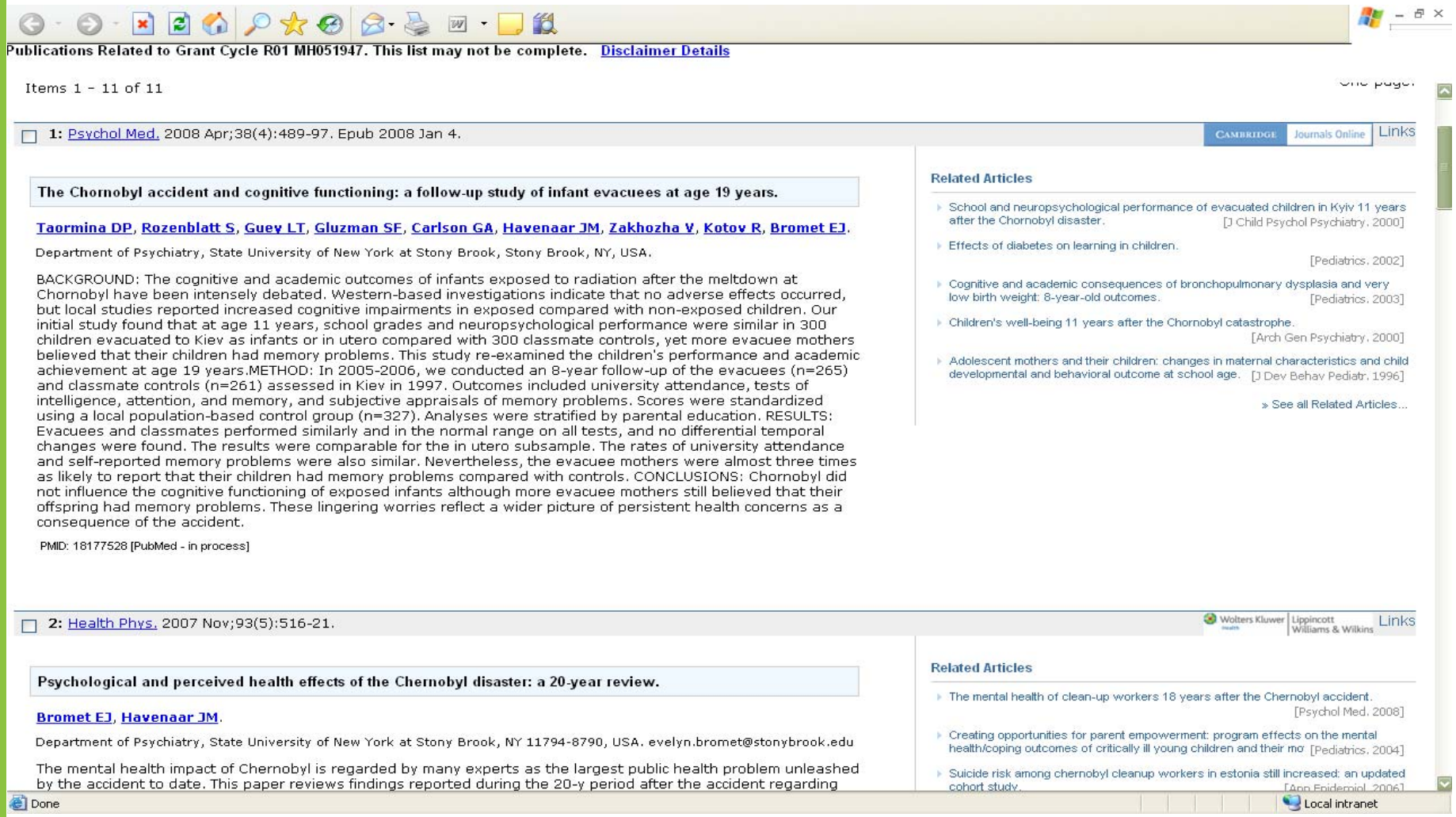
Select All | Unselect all | Download | Reports | Save Query | Save Cart | Printer Version

QVR MAIN 1 1 - 78 of 78 Record(s) Search New Search Help

	Project	Links	PI Name	Project Title
1	5-R01-CA112035-03	Snap Abs NGA CAS Hist Img Pub DCat	ANCOLI-ISRAEL, SONIA	Contributions of sleep/rhythms/fatigue to "chemobrain"
2	5-R21-CA113409-02	Snap Abs NGA CAS Hist eIMG Docs Pub DCat	BADGER, TERRY A	Telephone Counseling: Men w/Prostate CA & Partners
3	1-R01-CA120562-01A2	Snap Abs Rev SS NGA CAS Hist Img Pub DCat	BOUDREAU, DENISE M	Commonly Used Medications and Breast Cancer Recurrence
4	1-R01-CA128187-01A2	Snap Abs Rev SS NGA CAS Hist Img JIT Docs Pub DCat	BREITBART, WILLIAM	Meaning-Centered Group Psychotherapy in Advanced Cancer
5	5-R01-MH044801-18	Snap Abs NGA CAS Hist Img Pub DCat	BROMET, EVELYN J	The Epidemiology of Newly Diagnosed Psychotic Disorders
6	5-R01-MH051947-07	Snap Abs NGA CAS Hist Img Pub DCat	BROMET, EVELYN J	Long-Term Mental Health Consequences of Chornobyl
7	1-R01-MH079420-01A1	Snap Abs Rev SS NGA CAS Hist Img JIT Docs Pub DCat	BURKE, WILLIAM J.	Prevention of Depression in Patients Being Treated for Head and Neck Cancer
8	1-R01-CA122704-01A1	Snap Abs Rev SS NGA CAS Hist Img Pub DCat	CAMPBELL, LISA C	Prostate Cancer Recovery Enhancement (PROCARE) for African American Men
9	1-R01-MH079201-01	Snap Abs Rev SS NGA CAS Hist Img JIT Docs Pub DCat	CARON, MARC G.	Functional Variants of the Human TPH2 Gene
10	5-T32-AT001161-04	Snap Abs NGA CAS Hist Img Pub DCat	CHARLSON, MARY E	Complementary and Integrative Medicine Training Program
11	1-R01-CA120933-01A2	Snap Abs Rev SS NGA CAS Hist Img JIT Docs Pub DCat	CHERRIER, MONIQUE	Assessment of Cognitive & Mood Effects from ADT in Men with Prostate Cancer
12	5-R01-CA105183-04	Snap Abs NGA CAS Hist eIMG Docs Pub DCat	COLLINS, BRADLEY N	SHS Treatment for Postpartum African American Smokers
13	1-K24-AG029812-01A1	Snap Abs Rev SS NGA CAS Hist Img Pub DCat	COVINSKY, KENNETH E.	Midcareer Mentoring Award for Patient-Oriented Research in Aging
14	5-R01-MH071349-04	Snap Abs NGA CAS Hist eIMG Docs Pub DCat	DANTZER, ROBERT	Neuroimmunology of Behavioral and Mood Disorders
15	5-R01-MH079829-02	Snap Abs NGA CAS Hist eIMG Docs Pub DCat	DANTZER, ROBERT	AIDS, Immune Activation and Mental Health
16	5-DP1-OD000616-03	Snap Abs NGA CAS Hist eIMG Docs Pub DCat	DEISSEROTH, KARL ALEXANDER	NIH Director's Pioneer Award
17	5-R01-CA106919-04	Snap Abs NGA CAS Hist eIMG Docs Pub DCat	DEMARK-WAHNEFRIED, WENDY	RENEW Research-out to ENhancE Wellness Older Survivors
18	3-R01-CA105269-04S1	Snap NGA CAS Hist Docs Pub DCat	ELL, KATHLEEN R	Multifaceted Oncology Depression Program for Latinos
19	5-R01-CA105269-04	Snap Abs NGA CAS Hist eIMG Docs Pub DCat	ELL, KATHLEEN R	Multifaceted Oncology Depression Program for Latinos
20	5-R03-TW007164-03	Snap Abs NGA CAS Hist Img Pub DCat	ENGSTROM, PAUL	Biobehavioral Model of Smoking By Russians with Cancer
21	3-K07-CA093948-03S2	Snap NGA CAS Hist Docs Pub DCat	FARACE, ELANA	Neurocognitive prognosis in survivors of brain tumors
22	1-T32-AT003997-01	Snap Abs Rev SS NGA CAS Hist Img Pub DCat	FOLKMAN, SUSAN	Training Researchers in Clinical Integrative Medicine (TRIM)
23	1-R01-DA023570-01	Snap Abs Rev SS NGA CAS Hist Img Pub DCat	FRIEDMANN, PETER D.	Stabilize Addiction/Affect, Begin Inmates' Interferon for HCV of Liver (STAABIHL)
24	5-K07-CA104119-03	Snap Abs NGA CAS Hist eIMG Docs Pub DCat	FU, QIANG JOHN	The Genetics of Smoking; The Transtheoretical Model
25	5-R01-CA109650-02	Snap Abs NGA CAS Hist eIMG Docs Pub DCat	GANZ, PATRICIA A.	Cognitive Functioning After Breast Cancer Treatment
26	2-T32-MH020065-06	Snap Abs Rev SS NGA CAS Hist Img Pub DCat	GERSHON, ELLIOT S	Multidisciplinary Psychiatry Genetics Training Program
27	3-R01-CA100243-03S1	Snap NGA CAS Hist Docs Pub DCat	GLASER, RONALD	Stress, the Immune System and Basal Cell Carcinoma
28	5-R01-CA100243-03	Snap Abs NGA CAS Hist eIMG Docs Pub DCat	GLASER, RONALD	Stress, the Immune System and Basal Cell Carcinoma
29	1-T32-DC008768-01	Snap Abs Rev SS NGA CAS Hist Img Pub DCat	GONZALEZ-ROTHI, LESLIE J	Training in Treatment of Communication Disorders and Translational Neuroscience
30	1-R03-CA128478-01	Snap Abs Rev SS NGA CAS Hist eIMG Docs Pub DCat	GREER, JOSEPH ANDREW	Brief CBT for Anxiety and Advanced NSCLC
31	5-P50-AA011998-09	Snap Abs NGA CAS Hist Sub Img Pub DCat	HEATH, ANDREW C.	MARC: Genetic Epidemiology of Alcoholism & Comorbidity

Local intranet

Publications linked to NIH Grant: R01 MH051947



Publications Related to Grant Cycle R01 MH051947. This list may not be complete. Disclaimer Details

Items 1 - 11 of 11

1: Psychol Med. 2008 Apr;38(4):489-97. Epub 2008 Jan 4.

The Chornobyl accident and cognitive functioning: a follow-up study of infant evacuees at age 19 years.

Taormina DP, Rozenblatt S, Guey LT, Gluzman SF, Carlson GA, Havenaar JM, Zakhozha V, Kotov R, Bromet EJ.

Department of Psychiatry, State University of New York at Stony Brook, Stony Brook, NY, USA.

BACKGROUND: The cognitive and academic outcomes of infants exposed to radiation after the meltdown at Chornobyl have been intensely debated. Western-based investigations indicate that no adverse effects occurred, but local studies reported increased cognitive impairments in exposed compared with non-exposed children. Our initial study found that at age 11 years, school grades and neuropsychological performance were similar in 300 children evacuated to Kiev as infants or in utero compared with 300 classmate controls, yet more evacuee mothers believed that their children had memory problems. This study re-examined the children's performance and academic achievement at age 19 years.METHOD: In 2005-2006, we conducted an 8-year follow-up of the evacuees (n=265) and classmate controls (n=261) assessed in Kiev in 1997. Outcomes included university attendance, tests of intelligence, attention, and memory, and subjective appraisals of memory problems. Scores were standardized using a local population-based control group (n=327). Analyses were stratified by parental education. RESULTS: Evacuees and classmates performed similarly and in the normal range on all tests, and no differential temporal changes were found. The results were comparable for the in utero subsample. The rates of university attendance and self-reported memory problems were also similar. Nevertheless, the evacuee mothers were almost three times as likely to report that their children had memory problems compared with controls. CONCLUSIONS: Chornobyl did not influence the cognitive functioning of exposed infants although more evacuee mothers still believed that their offspring had memory problems. These lingering worries reflect a wider picture of persistent health concerns as a consequence of the accident.

PMID: 18177528 [PubMed - in process]

CAMBRIDGE Journals Online Links

Related Articles

- School and neuropsychological performance of evacuated children in Kyiv 11 years after the Chornobyl disaster. [J Child Psychol Psychiatry. 2000]
- Effects of diabetes on learning in children. [Pediatrics. 2002]
- Cognitive and academic consequences of bronchopulmonary dysplasia and very low birth weight: 8-year-old outcomes. [Pediatrics. 2003]
- Children's well-being 11 years after the Chornobyl catastrophe. [Arch Gen Psychiatry. 2000]
- Adolescent mothers and their children: changes in maternal characteristics and child developmental and behavioral outcome at school age. [J Dev Behav Pediatr. 1996]

» See all Related Articles...

2: Health Phys. 2007 Nov;93(5):516-21.

Psychological and perceived health effects of the Chernobyl disaster: a 20-year review.

Bromet EJ, Havenaar JM.

Department of Psychiatry, State University of New York at Stony Brook, NY 11794-8790, USA. evelyn.bromet@stonybrook.edu

The mental health impact of Chernobyl is regarded by many experts as the largest public health problem unleashed by the accident to date. This paper reviews findings reported during the 20-y period after the accident regarding

Wolters Kluwer Lippincott Williams & Wilkins Links

Related Articles

- The mental health of clean-up workers 18 years after the Chernobyl accident. [Psychol Med. 2008]
- Creating opportunities for parent empowerment: program effects on the mental health/coping outcomes of critically ill young children and their mo [Pediatrics. 2004]
- Suicide risk among chernobyl cleanup workers in estonia still increased: an updated cohort study. [Ann Epidemiol. 2006]

Done Local intranet

Portfolio Analysis for Evaluation

Evaluation of progress and/or future directions

- Explore return on investment:
  - Publications and Patents
  - Research Resources: Advances in Tools, Analytics, Methodologies, Biologics, etc.
  - Medical Discoveries, Devices, Treatments, CURES…
- Identify promising avenues for future investment
  - Gap and overlap analysis
    - Using visualization tools
    - Looking at the wider portfolio – beyond NIH

Comprehensive Portfolio Analysis

Looking for Gaps and Overlaps in the Wider Portfolio

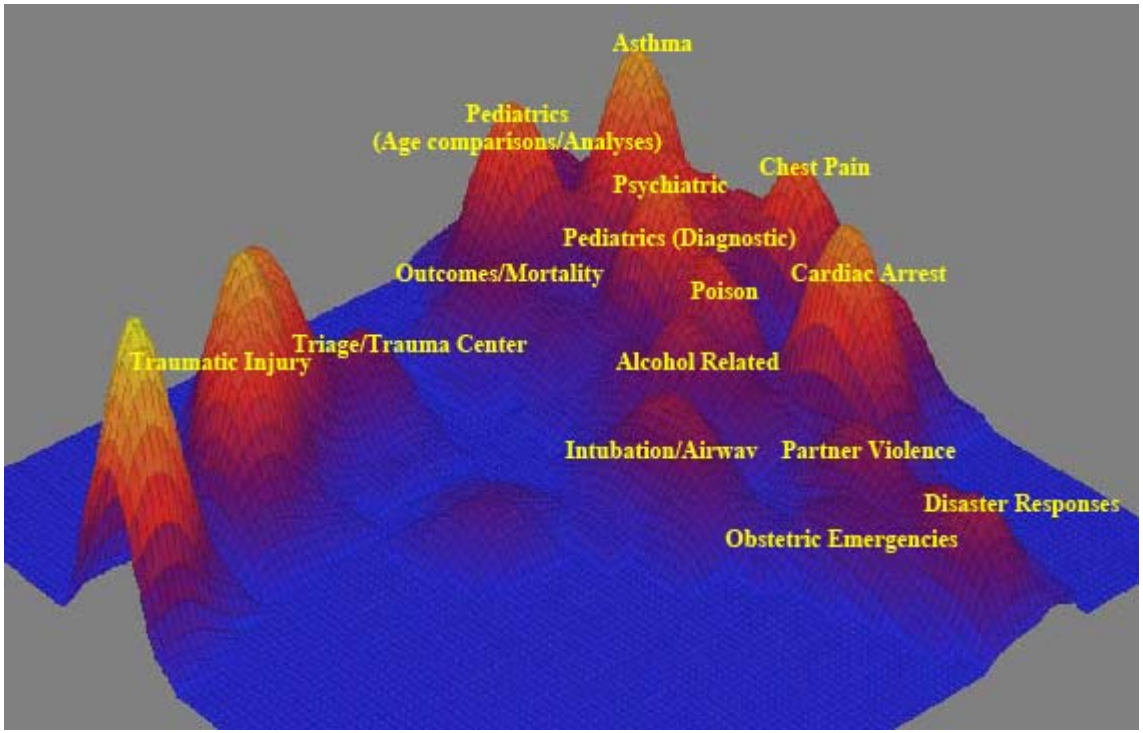
- **The Literature**
  - PubMed
  - Web of Science
  - Biological abstracts – a source of more current of information than publications
- **Portfolios of other Funding Agencies**
  - Federal agencies
  - Private non-profits sponsors

Analyzing Portfolio Data

- Tools for Mining Scientific Content
  - *PubMed tools*
  - *Other text mining tools*
  - *IN-SPIRE – text mining and clustering*
  - *Heat maps*

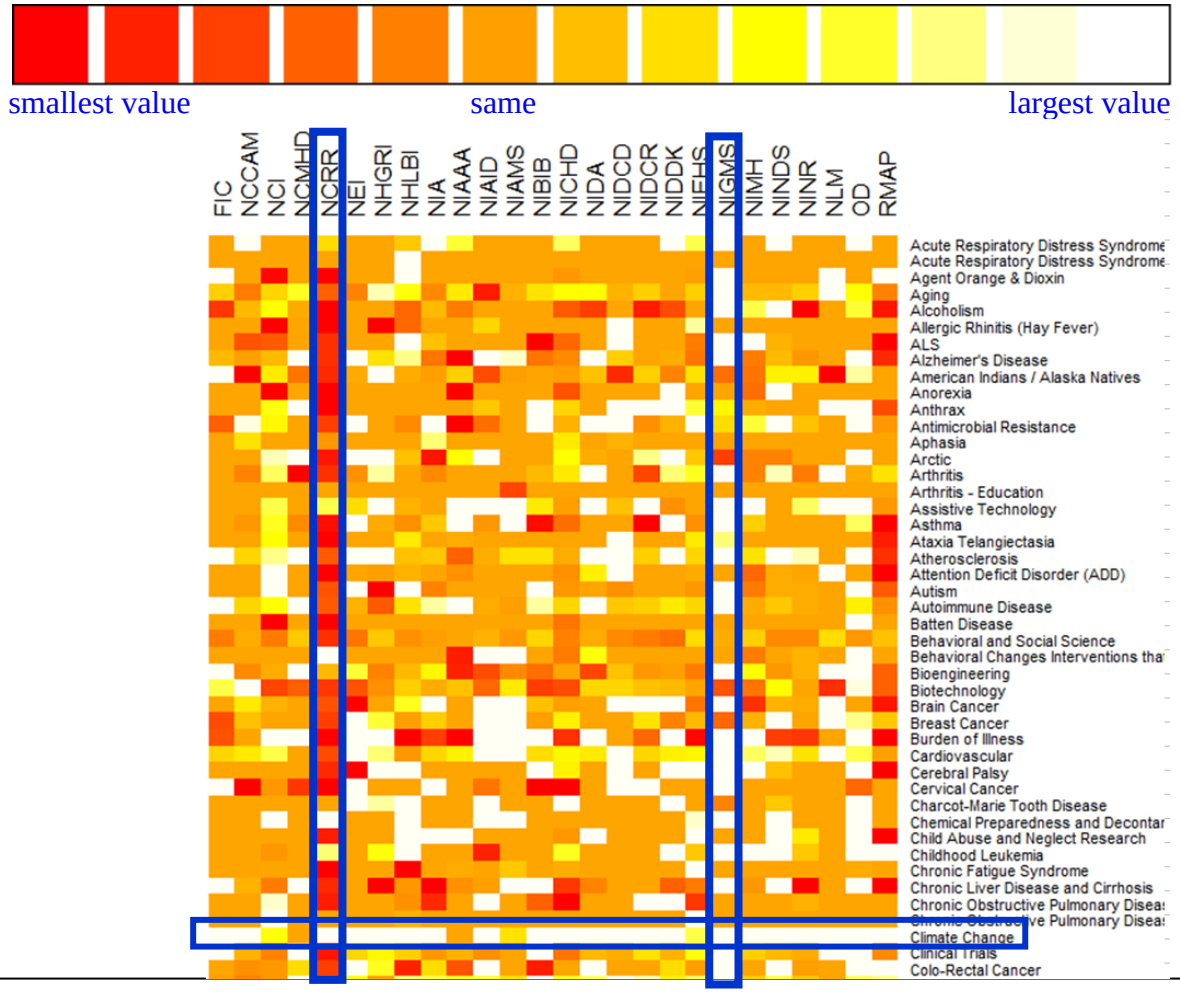
Analyzing Portfolio Data

Visualizing data with IN-SPIRE™ to facilitate the analysis of patterns – giving insight into gaps



Visualization – Heat Map

Provides a high level visual overview of the changes with NIH RCDC Category information over time



Portfolio Reporting to the Public

Office of Extramural Research (OER)

Research Portfolio Online Reporting Tool (RePORT): http://report.nih.gov/

Portfolio Analysis and Evaluation

- Conclusions – comprehensive analyses of the scientific content of research portfolios affords powerful means for evaluating and managing complex research portfolios

- Questions
  - How are you analyzing your research portfolios?
  - What are the opportunities for cross-federal analyses?
  - Are there opportunities to share data?