

Cancer Genomics and Epidemiology Navigator (CGEN)

User's Guide

Table of Contents

Introduction	1
CGEN Home Page	2
Using What's in CGEN?	3
Searching CGEN.....	4
Full Text Searching	4
Advanced Searches	4
Faceted Searching	6
Search Results Page	11
Detail Pages.....	13
Publications Detail Page.....	13
Grants Detail Page	15
Genomic Tests Detail Page.....	17
Genomic Evidence Detail Page	18
Meta-Analyses Detail Page	19
Searching for Linked Grants and Publications Data.....	21
Exporting Search Results.....	22

Introduction

Cancer Genomics and Epidemiology Navigator (CGEN) is an integrated searchable and regularly updated knowledge base intended to facilitate cancer epidemiologic research. It collates information derived from multiple sources into a centralized search engine to assess the impact of genomic, environmental and clinical factors on cancer occurrence and outcomes.

CGEN is comprised of linked data on NCI-funded grants, peer-reviewed publications on cancer epidemiology, publications on human genome epidemiology, and Genomic Evidence-based guidelines and recommendations. Filtering options (e.g., by cancer site, by risk factors, by authorship) permit users to fine-tune searches.

CGEN was conceptualized and developed by the Epidemiology and Genomics Research Program (EGRP) at the National Cancer Institute (NCI).

CGEN has [full text searching](#) , [faceting/filtering](#) capabilities that make it possible to search data fields across all data sources within the knowledgebase. CGEN also identifies links between publications and grants. CGEN currently contains the following data sources:

- The NIH IMPAC-II database of active and inactive EGRP grants (Title, Grant Number, Principal Investigator, Institution, Abstract, and Funding Status).
- The Publications linked to EGRP-funded grants (Citation, Authors, Journal, PubMed ID, Publication Date, and Abstract).
- Publications resulting from NCI's Division of Cancer Epidemiology and Genetics (DCEG) (Citation, Authors, Journal, PubMed ID, Publication Date, Abstract.)
- Other publications from the Epidemiology and Genomics Research Program.
- Cancer-related Publications from Centers for Disease Control and Prevention (CDC) Human Genome Epidemiology (HuGE) Navigator.
- Genomic Evidence-based Guidelines and Recommendations for Cancer-related genomic tests and applications from the CDC HuGE Navigator's [GAPP Finder](#).
- Detailed information about Genomic Tests (Cancer-related genomic tests and applications from the CDC HuGE Navigator's [GAPP Finder](#)).
- Cancer Genome-Wide Association Studies (GWAS) and Genomics Meta Analyses.
- EGRP Studies that are have genomic data in the NIH Genotype and Phenotype Database (dbGAP).

CGEN Home Page

The CGEN home page has the following components:

1. Breadcrumbs are nested links that show you where you are on the site and link back to previous pages.
2. The **About CGEN** section contains information about the navigator, a full text search box, and links to the EGRP Grants catalog, the catalog of EGRP Grants literature and search engines for DCEG literature and the Cancer HUGE database.
3. The search box and button, for entering search terms and running a full text search.
4. The link to the **Grants** page with information on the active and inactive **EGRP** grants.

1 EGRP Home / Research Resources / CGEN Home

2 About CGEN

CGEN provides regularly updated linked information on NCI-funded cancer epidemiology & genomics research grants, peer-reviewed publications, and evidence-based cancer genomic tests. Filtering options (e.g., by cancer site, by risk factors, by authorship) permit users to fine-tune searches.

3 Search CGEN: Enter search terms, or press Search to view all

Search terms may include cancer type, exposure, gene, author, journal, etc.

CGEN is comprised of the following data:

4 Grants: A catalog of all active and inactive grants funded by the Epidemiology and Genomics Research Program at NCI.

5

Grant Activity	Number of Grants	Number of Associated Publications
Active Grants	325	5,707
Inactive Grants	2,208	23,348

6 Literature: A catalog of publications linked to EGRP grants, publications resulting from NCI's DCEG, and publications from the Cancer HuGE Literature Finder

Publication Databases	Number of Publications	Number of Associated Grants
Publications from EGRP Active Grants	5,707	325
Publications from EGRP Inactive Grants	23,348	2,208
Publications from DCEG Investigators	9,162	3,585
Publications from the Cancer HuGE Literature Finder	24,104	4,626

7

Cancer Genomic Tests and Genomic Evidence: Searchable database of cancer related genomic tests and applications and the subsequent evidence supporting their use.

8

9 CGEN User's Guide, FAQ

10 What's in CGEN? Show: Grants - Funding Status

Inactive (2208)
Active (325)

Figure 1 - CGEN Home Page

5. The Grant table shows the number of active and inactive grants **EGRP** in the database and the number of associated publications.

6. The **Literature** links take you to the **CGEN Publications** page, and the search engines for publications related to **NCI's DCEG** and publications in the **Cancer HuGE Literature Finder**.
7. The **Publications** table shows the number of publications and the number of their associated grants. It also provides links to and the search engines for publications related to **NCI's DCEG** and publications in the **Cancer HuGE Literature Finder**.
8. Links to the **Genomics Tests** and **Genomics Evidence** pages.
9. Links to **CGEN User's Guide** and **FAQ** have information to help you use **CGEN**.
10. The **What's in CGEN** section has a dropdown list of premade pie and bar charts summarizing the contents of the **CGEN** database.

Using What's in CGEN?

The **What's in CGEN?** section has premade pie charts and bar graphs that illustrate the portions of the database which contains specific types of information. For example, when you first open the website, the default pie chart illustrates the proportion of active to inactive grants in the database. By using the dropdown list you can select any of the premade graphs and charts.

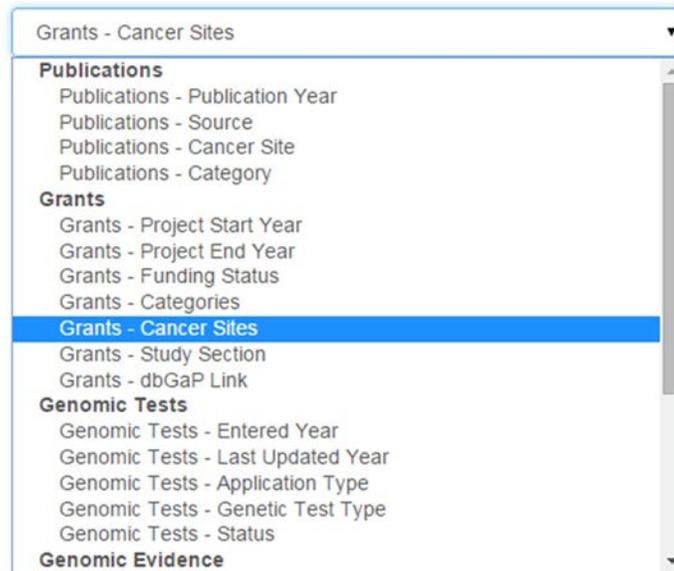


Figure 2 - What's in CGEN? Dropdown List

Searching CGEN

CGEN uses two types of searching, a full text search and a faceted search for filtering results. You can use either the full text search or a faceted search or a combination of both. You can choose to first search across CGEN with the full text search to narrow your results. Your results are categorized as publications, grants, genomic tests, and genomic evidence. Each category has its own page and by moving from one page to another you can see all of the results from your search across all data sources included in CGEN. Full text searching can be done using the **Search** box alone, or for more control in narrowing your search, you can use the **Advanced Search**.

Full Text Searching

To begin a full text search on CGEN, key your word or words into the **Search** box on the **Home** page and click the **Search** button. The search engine will search for your words and phrases across all data sources and open the results on the **Publications** page. At any point during your search you can add more terms to the text search to narrow your results or delete terms to broaden them. When there are multiple words in the main search box, they are treated as AND searches.



Figure 3 - Full Text Search

Advanced Searches

The **Advanced Search** section helps you create more complex searches by adding the correct query syntax to the main **Search** box. An example of query syntax would be a minus sign (-) in front of a word which adds NOT to that word. If you know the syntax, you can add it directly into the main **Search** box, but if you need help putting your search into the correct syntax, the **Advanced Search** function will do it for you.

You can reach an **Advanced Search** page, from any of the data source pages; **Publications**, **Grants**, **Genomic Tests**, **Genomic Evidence** or **Meta-Analysis**. The **Advanced Search** page is specific to the data source from which you opened that search, and so searches only that specific data source. Each data source page has a general section that is the same across all data sources. The general section has the four main lines for adding the correct query syntax for AND, OR, NOT and specific word order.

Each data source page also has a link that opens a set of data source-specific fields that can be searched. The data source-specific search function puts the words or numbers you enter into query syntax that searches for them only in the specified field. When you have finished your advanced search entries, click on the Search button. The **Advanced Search** page will close and the query syntax will appear in the main **Search** box. The images on the page show the general section of the **Advanced Search** function, some sample data source-specific fields, and an example of query syntax for a **Publications** search.

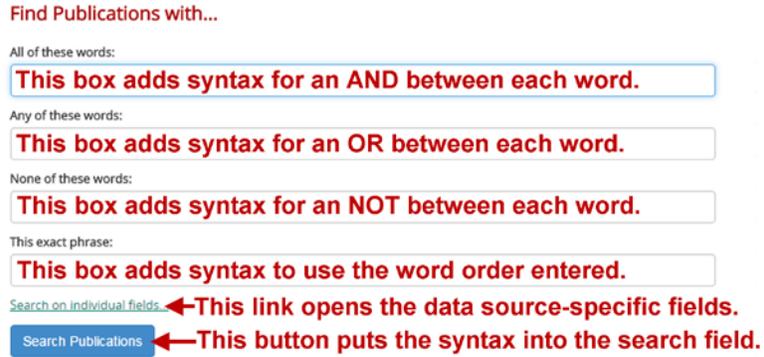


Figure 4 - General Section of the Advanced Search

[Search on individual fields...](#)

Pubmed ID containing:

Title containing:

Journal containing:

Abstract containing:

Figure 5 - Sample Data Source-specific Fields

thyroid cancer (polymorphism, OR homozygosity) -malignant abstract: (Codon AND 72)

Figure 6 - Sample Syntax Query

In the sample syntax query the words *thyroid* and *cancer* were an AND statement, *polymorphism* and *homozygosity* were an OR statement, *malignant* was a NOT statement and *Codon* and *72* were an AND statement searching only the abstract.

Here are some tips for full text searches on CGEN:

- All simple text searches are AND searches, so when there are multiple terms **all** terms must be present for a result to be selected. For more complex searches you can add the query syntax to the search yourself, or through the Advanced Search section.
- The Advanced Search function does not allow you to enter query syntax on that page; however, if you wanted to change the sample search above to search the abstract field for Codon *OR* 72, you can make changes to the syntax in the main Search box. In this instance to change that part of the search statement from an AND statement to an OR statement you could remove the AND and substitute an OR, changing it to *abstract (Codon OR 72)*.

- CGEN searches all data from all data sources for each search term that you enter into the **Search** box, not just the title or citation. Therefore a specific result may have no highlighted terms showing on the Search results page. The terms must be present in a data source but may be in a field that does not appear on the search results page. For example, a term may be a MeSH term assigned by PubMed or a term in the abstract. Click on a link from a title or citation on one of the results pages to see the full entry on the details page.
- Search terms are stemmed. This means that the search is carried out not just on the key word as entered, but also on derivatives of that word. For example, if you entered the word *operate* you would also get search results for *operating*, *operated*, *operators*, *operation*, and *post-operative*.
- When searching for a specific phrase, put it in quotation marks. If you searched on the phrase, “breast cancer patients”, the results will include only those entries that have “breast cancer patients” – those three words in that exact sequence in any field, in any source of the database.

Faceted Searching

CGEN uses faceted navigation for filtering the results on each page. The faceted terms were created specifically for CGEN to allow users to filter on **multiple terms** simultaneously **within one data source**.

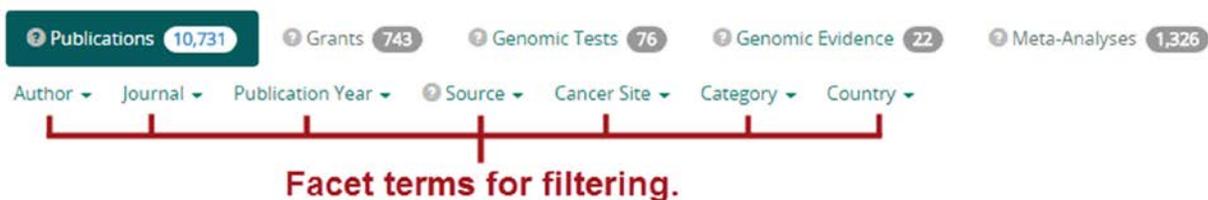


Figure 7 - Faceted Searches

Note 1 for facets: when you choose a facet term, only that particular data source is subset by that term. *The search results on the other pages are not affected.*

Note 2 for facets: when you choose to facet by more than one value per facet term, those facet terms are “and’ed” together for the subsetting, *except where noted below*. For example, if you go to the Publications page and choose Author as your facet term and then choose Willett WC and Stampfer MI as your two facet values for Author, the publications list will be subset by all publications that have BOTH Willett AND Stampfer as authors in the publication. However, if you go to the Publications page and choose Publication Year (an OR facet) and choose two years 1999 and 2000, the list of publications will be subset by publication that were published in either 1999 OR 2000. Again, all facet terms are “and’ed” unless noted as an “OR” facet.

Note 3 for facets: when you choose to facet by a term that has too many results to show on one page (for example, the **Author** filter on the **Publications** page), if you are looking for a specific author you can type the first few letters of the author’s name and filter on it specifically.

Each data source page has its own list of faceted terms:

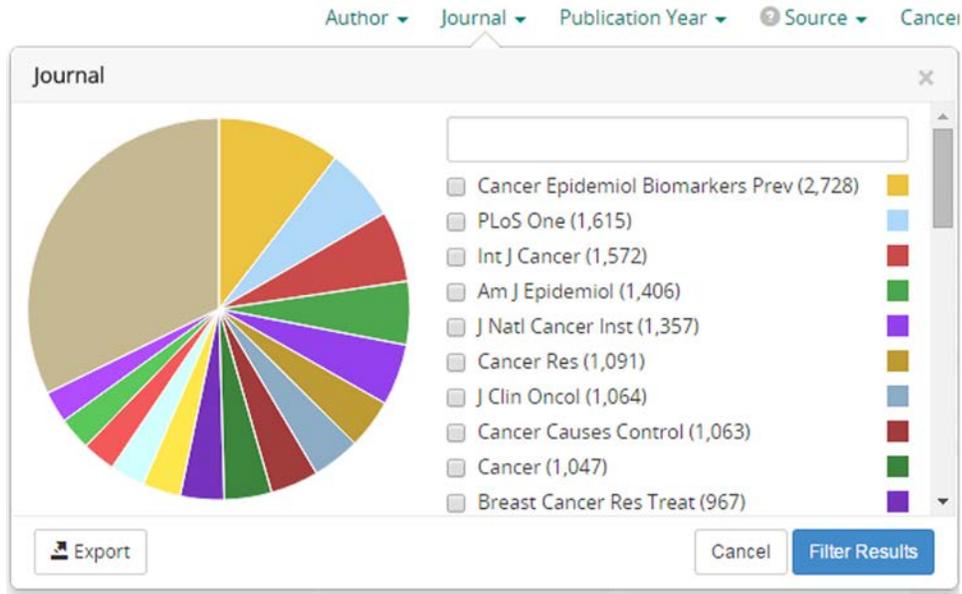
- **Publications**

- **Author** – this is a list of all authors for all publications in the database. Choosing an author will subset the publications data by listing all publications in which that author appears in the authors list.
- **Journal** – this is a list of all journals for all publications.
- **Publication Year (an OR facet term)** – publication year
- **Source** – this is the source of the publication. Current values are EGRP, DCEG and HuGE. HuGE encompasses cancer-related literature that is from the CDC HuGE Navigator and is focused on human genetic epidemiology literature.
- **Cancer Site** – this is a special facet term that was developed using PubMed’s MeSH term field. The facet was created by searching the MeSH terms field for *Neoplasms* in order to be able to group the publications by Cancer Site.
- **Category** – this facet term allows selection of publications that concern cohort studies from all others.
- **Country** – this is a list of countries of publication.

- **Grants**

- **PI Name** – the principle investigator for the grant
- **Project Start Year (an OR facet term)** – starting year for the grant
- **Project End Year (an OR facet term)** – ending year for the grant
- **Funding Status** – this indicates whether the grant is currently active or inactive
- **Categories** – this facet term allows selection of publications that concern cohort studies from all others.
- **Cancer Sites** – cancer site being studied, if available
- **Study Section** – NIH scientific review group assigned to evaluate each grant
- **dbGaP Link** – this is a Yes/No to indicate whether you will find a link to dbGaP on the details page of the grant. Grants that have data deposited into the NIH Genotype and Phenotype database (dbGaP) are indicated by this filter.

- **Genomic Tests**
 - **Entered Year (an OR facet term)** – the year the genomic test was originally entered into the database
 - **Last Updated Year (an OR facet term)** – the year the genomic test was last updated in the database
 - **Application Type** - This may include if the test is a diagnostic test, prognostic test, pharmacogenomic test, screening test, risk prediction test or other
 - **Genetic Test Type** – type of genetic test
 - **Status** – the status of the genomic test, currently, whether it is in R&D or whether it is commercially available
- **Genomic Evidence**
 - **Evidence Type** – type (tier) of evidence
 - **Published Year (an OR facet term)** – year the genomic evidence was published
 - **Entered Year (an OR facet term)** – year the Genomic Evidence was entered into the database
 - **Last Updated Year (an OR facet term)** – year the Genomic Evidence was last updated in the database
 - **Authors** – group author of the Genomic Evidence
- **Meta-Analyses**
 - **Author** – this is a list of the authors whose publications or studies used statistical methods to compare, contrast and combine the results of other studies to reach new conclusions. Choosing an author will subset the data by listing the publications in which that author appears in the authors list.
 - **Journal** – this is a list of all journals in which publications from the meta-analyses search appeared.
 - **Year** – this is a list of years in which publications from the meta-analyses search appeared.
 - **Cancer Site** – this is a special facet term that was developed using PubMed’s MeSH term field. The facet was created by searching the MeSH terms field for *Neoplasm* in order to be able to group the publications in the by Cancer Site.
 - **Cancer Care Continuum** – this is the list of outcomes in terms of risk, treatment, prognosis, diagnosis and screening of the cancers.
 - **Study Types** – this is a list of the study types; observational, clinical, both observational and clinical, individual patient data, and not stated.
 - **Study Characteristics** – this is a list of the study characteristics; ‘omics, clinical-pharmaceutical, modifiable, demographic, clinical-radiologic, clinical-surgical, non-modifiable physiologic, geographic, clinical-transplant, and socioeconomic.



Figure

8 - Sample Facet Filter for Journal Names

Each faceted term opens a page with a pie chart, showing the portion of the results for each term. All of the possible values for that term are on that page and have a checkbox. Each value has a number in parentheses which is the number of results that appear under that term in the database for that page. If there are too many terms to fit in the box a scroll bar appears.

To filter your search using faceted searching, open the data source you want to filter and select one of the facet terms on the list at the top of the page. Select the term(s) by checking the checkboxes next to the ones you want to use. The **Export** button will export a list in a .csv file that can be opened in Microsoft Excel. The **Filter Results** button will open a page with the results. The **Cancel** button closes the box without filtering.

For example on the **Publications** page, if you want to filter on the *Journal of Clinical Oncology*, first select the **Journal** link at the top of the results, then click on the checkbox for **J Clin Oncol**. Then click on the Filter Results button and the facet term box will close, and only those citations from the *Journal of Clinical Oncology* will appear on the **Publications** page.

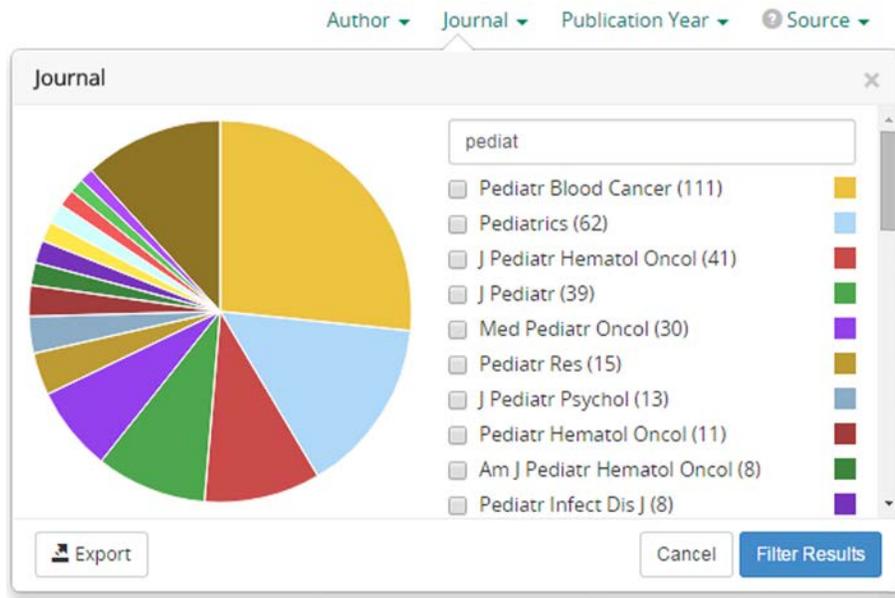


Figure 9 - Sample Facet Filter for Journal Names Using the Text Filter

To narrow the results on your faceted terms, you can do a full text search on those terms. For example, if you are in the **Journal** facet box, you may want to see journals with the word “pediatric” in their title. Begin keying the term into the **Text Filter**. As you type, you will see the journals being filtered from the list and the pie chart will change to reflect the different set of journal.

Search Results Page

The search results are separated into categories on the data source pages. The controls allow you to filter them by or page through the results, add or delete search terms and export your data into a csv file.

1. The links to **CGEN User's Guide** and **FAQ** have information to help you use **CGEN**.
2. The **Breadcrumbs** tell you where you are and link back to the home page.
3. The **Search** box allows a full text search of your results. When the search results page opens, the search box contains the terms in your original search. You can add or remove terms to broaden or narrow your search.
4. The **X** button cancels the search, removes the search terms from the search box and goes back to an unfiltered list.
5. The Advanced Search button allows more sophisticated searches by coding the query syntax for AND, OR, NOT, specific word order and specific field searches.
6. The Search button activates a search of the coded query in the Search box.

The screenshot shows the CGEN search results page for the query 'brain tumor'. The page includes a header with the CGEN logo and navigation links. A breadcrumb trail shows the path: EGRP Home / Research Resources / CGEN Home / Publications / Search. The search box contains 'brain tumor' and has buttons for cancel (X), advanced search, and search. Below the search box, there are filters for Publications (500), Grants (44), Genomic Tests (8), Genomic Evidence (1), and Consortia (3). A table of search results is displayed with columns for Weight and Citation. The results list several articles related to brain tumors, such as 'Epidemiology of brain tumors' and 'Genetic polymorphisms of GSTs and their association with primary brain tumor incidence'. At the bottom, there is a summary of 570 results found in 39 milliseconds and a pagination control showing page 1 of 7.

Found 570 results in 39 milliseconds — [Export these results](#)

Figure 10 - Search Results Page

7. There are six links for the results categorized by **Publications**, **Grants**, **Genomic Tests**, **Genomic Evidence**, and **Meta-Analyses**. The number in the pill next to the category name tells you how many results are currently being displayed in that category. You can click on each link to see the data for that data source.
8. The **Show Linked Data** link opens the data linked to the results. This icon is only present when there are fewer than 500 results.
9. Each data category has its own set of filters (facet terms) that allow you filter on multiple terms. You only see the filters for the category on the screen.
10. The Search results appear underneath the facet terms. If you entered a search term into the search box and pressed the Search button, any matches will be highlighted in the search results.
11. The **Export** button allows you to export your data to a .csv file.
12. The page controls allow you to page through multiple pages of the results.

Detail Pages

From the **Search Results** pages you can access the details of individual results. The detail pages for each data source have different information available. To access the detail page for a result click on the link for the result that interests you.

Publications Detail Page

From the **Publications** page click on a link for an article. Any highlighted terms you see in this example are simply terms from the search that were entered on the search results page. The detail page will open with the following components:

1. The links to **CGEN User's Guide** and **FAQ** have information to help you use **CGEN**.
2. The breadcrumbs, showing the path to the current page.
3. The title of the article appears near the top of the page and again in the information table underneath.
4. The **Back to Search** link takes you back to the **Search Results** page.

AN CANCER GENOMICS AND EPIDEMIOLOGY NAVIGATOR (CGEN)
A searchable knowledge base of genomics and epidemiology including funding, publications, and resources.

EGRP Home / Research Resources / CGEN Home / Publications
/ 8324751 - Comparison of O6-methylguanine-DNA methyltransferase activity in brain tumors and adjacent normal brain

CGEN User's Guide FAQ

Comparison of O6-methylguanine-DNA methyltransferase activity in brain tumors and adjacent normal brain.

Back to search Contact us about this record

6	Citation	Silber JR, Mueller BA, Ewers TG, Berger MS. Comparison of O6-methylguanine-DNA methyltransferase activity in brain tumors and adjacent normal brain. Cancer Res 1993 Jul 15;53(14):3416-20
7	Authors	Berger MS, Ewers TG, Mueller BA, Silber JR
8	Title	Comparison of O6-methylguanine-DNA methyltransferase activity in brain tumors and adjacent normal brain
8	Journal	Cancer research
9	PubMed ID	8324751
10	Publication Date	July 15, 1993
11	Abstract	We assayed the activity of the DNA repair protein O6-methylguanine-DNA methyltransferase (MGMT) in 60 human brain tumors to assess the effects of tumorigenesis in brain on DNA repair capability. Activity was not detectable (< 0.5 fmol/10(6) cells, i.e., < 300 molecules/cells) in 27% of the tumors. Measurable MGMT varied by more than 2 orders of magnitude, 0.5-104.1 fmol/10(6) cells. Mean tumor MGMT levels did not differ between the sexes but did vary widely between diagnostic groups. A significant inverse correlation was observed between tumor MGMT activity and patient age. We also assayed MGMT activity in overlying, histologically tumor-free brain resected with 25 tumors. Of these samples, 52% had no detectable MGMT activity, and the remainder had activity comparable to that in tumors ranging from 0.7-21.8 fmol/10(6) cells. MGMT activity in normal brain was also inversely correlated with patient age. For 15 of 25 (60%) paired samples, tumor activity was 2 to > 38-fold greater than that of normal brain; for 4 pairs (16%) tumor activity was 2.5 to > 17-fold lower than that of normal brain; the remaining 6 (24%) had no detectable activity in both tumor and normal tissue. These differences in the magnitudes and distributions of activities for tumor versus normal brain tissue were significant (P = 0.02), demonstrating that tumorigenesis in brain is often accompanied by marked elevation of MGMT.
12	Data Sources	EGRP Grantees
13	MeSH Terms	Oligodendroglioma, O(6)-Methylguanine-DNA Methyltransferase, Middle Aged, Methyltransferases, Medulloblastoma, Male, Infant, Humans, Glioma, Female, Ependymoma, Child, Preschool, Child, Brain Neoplasms, Brain, Astrocytoma, Aged, Adult, Adolescent

NIH Grant #	Search CGEN	PubMed
CA047082	CGEN	

Figure 11 - Publications Detail Page

5. An envelope icon takes you to a contact page which will help you send a message to the CGEN staff with pre-populated information about this particular entry. The authors of the article.
6. The citation of the article.
7. The names of all of the article's authors.
8. The name of the journal in which the article appeared.
9. The PubMed ID with its associated link to PubMed.
10. The publication date.
11. The article abstract with any words from the search highlighted.
12. The data sources. This is a comma separated list to tell you where the publication came from. The current values are: EGRP, DCEG, and HuGE.
13. The MeSH terms from PubMed.
14. Related grants with links to the publications in **CGEN** and **PubMed**.
 - a. The first column, NIH Grant #, represents the list of grant ids of grants that are associated with this publication. If the grant id is displayed with an underline, this is because this is a link directly to that grant's detail page within CGEN.
 - b. The second column, Search Publications, is a shortcut provided to help facilitate a search of CGEN for that particular grant id. For example, in the screenshot above, if you press the button next to NIH Grant # NS071441, you will be conducting a search across all CGEN data sources for NIH Grant # NS071441. This has the same effect as you copying the NIH Grant # and pasting it into the full text search box and pressing the Search button.
 - c. The third column is a quick link to PubMed. This link does a search of PubMed for the grant number in that row of the Related Grants table.

Grants Detail Page

From the **Grants** page click on a link for a grant. The highlighted terms you see in this example are the terms from the search that were entered on the search results page. The detail page will open with the following components:

1. The links to **CGEN User's Guide** and **FAQ** have information to help you use **CGEN**.
2. The breadcrumbs, showing the path to the current page.
3. The grant title appears near the top of the page. The grant title appears again in the information table.
4. The **Back to Search** link takes you back to the **Search Results** page.
5. An envelope icon takes you to a contact page which will help you send a message to the CGEN staff with pre-populated information about this particular entry.
6. The Project title.
7. The NIH Grant number, which is also a link to PubMed.
8. The name of the Principal Investigator (PI) for the grant.
9. The date the project started.

CANCER GENOMICS AND EPIDEMIOLOGY NAVIGATOR (CGEN)
A searchable knowledge base of genomics and epidemiology including funding, publications, and resources.

EGRP Home / Research Resources / CGEN Home / Grants / CA022533 - Epidemiology of Brain Tumors (Inactive)

CA022533 - Epidemiology of Brain Tumors (Inactive)

4 — Back to search 5 — Contact us about this record

6 — Project Title	Epidemiology of Brain Tumors
7 — NIH Grant Number	CA022533
8 — PI Name	Hochberg, Fred
9 — Project Start Date	July 1, 1978
10 — Project End Date	Dec. 31, 1982
11 — Institution	Massachusetts General Hospital
12 — Abstract	This is a case-control study involving 230 patients and 230 "best friend" controls designed to elucidate risk factors in the development of primary gliatumors of the brain . The control who is provided by the patient, is a person of the same sex, within 5 years of age, living within 100 miles and not a bloodrelative. Both patients and controls are given a 45 page questionnaire to complete. Telephone followups are performed to further clarify responses. Areas covered by the questionnaire include family history, medical background, environmental and occupational exposures.
13 — Funding Status	Inactive
14 — Category	
15 — Study Section	EDC

16 — Related Publications

PubMed ID	Search CGEN	PubMed
6310394	Q CGEN	PubMed
6493505	Q CGEN	PubMed
2319291	Q CGEN	PubMed

Figure 12 - Grants Detail Page

10. The date the project ended or will end.
11. The institution where the grant is located.
12. An abstract of the grant.
13. The funding status of the grant, Active or Inactive. Active grants are defined by EGRP as grants that are currently using NIH funds to conduct research. Inactive grants are defined by EGRP as grants that are no longer conducting research with NIH funds.
14. The grant category.
15. A link to the study section.
16. A list of related publications with links to them in CGEN and on PubMed.
 - a. The first column, PubMed ID, represents the list of publications that are associated with this grant. If the PubMed ID is displayed with an underline, this is because this is a link directly to that publication's detail page within CGEN.
 - b. The second column, Search Grants, is a shortcut provided to help facilitate a search of CGEN for that particular PubMed ID. For example, in the screenshot below, if you press the button next to PubMed ID 21520030, you will be conducting a search across all CGEN data sources for PubMed ID 21520030. This has the same effect as you copying the PubMed ID and pasting it into the full text search box and pressing the Search button.
 - c. The third column is a quick link to PubMed. This link does a search of PubMed for the PubMed ID in that row of the Related Publications table.

Genomic Tests Detail Page

From the **Genomic Tests** page click on a link for a genomic test. Any highlighted terms you see in this example are simply terms from the search that were entered on the search results page. The detail page will open with the following components:

1. Link to **CGEN User's Guide** and **FAQ** have information to help you use **CGEN**.
2. The breadcrumbs, showing the path to the current page.
3. The disease name appears near the top of the page, with an envelope icon that takes you to a contact page which will help you send a message to the CGEN staff with pre-populated information about this particular entry. The disease name appears again in the information table.
4. The **Back to Search** link takes you back to the **Search Results** page.
5. An envelope icon takes you to a contact page which will help you send a message to the CGEN staff with pre-populated information about this particular entry.
6. The name of the genomic test being assessed.
7. The target population for the test.
8. The intended use of the test.

The screenshot shows the 'Genomic Tests Detail Page' for 'Brain cancer; gliomas, glioblastoma'. The page includes a header with the CGEN logo and navigation links, a breadcrumb trail, and a table of test details. Red arrows and numbers 1-16 point to specific elements: 1 (User's Guide and FAQ links), 2 (Breadcrumb trail), 3 (Disease name), 4 (Back to search link), 5 (Contact us link), 6 (Test to be assessed), 7 (Target Population), 8 (Intended Use), 9 (Entered Date), 10 (Last Updated), 11 (Sources / Links), 12 (Key Terms), 13 (Application Type), 14 (Status), 15 (Trade Name), and 16 (Company).

Disease / Disorder	Brain cancer; gliomas, glioblastoma
Test to be assessed	Next-generation sequencing (NGS) panel to detect mutations in BRAF, IDH1, IDH2, PTEN
Target Population	Not specified; patients with brain cancer
Intended Use	Aid histological diagnosis of brain tumors, help in planning enrollment in clinical trials, and determining appropriate therapeutic strategies
Entered Date	Jan. 17, 2012
Last Updated	Jan. 17, 2012
Sources / Links	GPS@WUSTL Services - Brain Cancer Panel
Key Terms	IDH2 (3418), IDH1 (3417), Glioblastoma (C0017636), BRAF (673), PTEN (5728), Sequence Analysis, DNA (C0162802), Carcinoma (C0007097), Brain Neoplasms (C0006118), Glioma (C0017638), NEOPLASMS (C0027651)
Application Type	Pharmacogenomics, Risk prediction, Prognostic, Diagnostic
Status	Commercially available
Trade Name	Brain Cancer Panel
Company	Genomics and Pathology Services at Washington University School of Medicine in St. Louis

Figure 13 - Genomics Test Detail Page

9. The date the entry was entered.
10. The date the entry was last updated.
11. Links to the source data.
12. The key terms with their associated CUI codes.
13. The application type.
14. The status of the genomic test product.
15. The genetic test type.
16. The trade name
17. The name of the company that developed the test.

Genomic Evidence Detail Page

From the **Genomic Evidence** page click on a link for Genomic Evidence. Any highlighted terms you see in this example are simply terms from the search that were entered on the search results page.

The screenshot shows the 'ANCCR GENOMICS AND EPIDEMIOLOGY NAVIGATOR (CGEN)' interface. At the top right, there are links for 'CGEN User's Guide' (1) and 'FAQ' (2). A breadcrumb trail below the header shows the path: 'EGRP Home / Research Resources / CGEN Home / Genomic Evidence / DecisionDx-GBM Gene Expression Assay for Prognostic Testing in Glioblastoma Multiform' (3). Below the breadcrumb is the title 'DecisionDx-GBM Gene Expression Assay for Prognostic Testing in Glioblastoma Multiform' (3). On the left side of the page, there are two buttons: 'Back to search' (4) and 'Contact us about this record' (5). The main content is a table with the following rows:

Title	DecisionDx-GBM Gene Expression Assay for Prognostic Testing in Glioblastoma Multiform (3)
Evidence Type	Tier 2 (6)
Abstract	It is estimated that approximately 22,000 Americans will be diagnosed with tumor of the brain or nervous system in 2010. Among primary brain tumors, approximately 60% are gliomas, the most common and most malignant of which is glioblastoma multiforme (GBM). The DecisionDx-GBM test is a multigene expression assay that is designed to predict which patients are likely to experience long-term (> 2 years) progression-free survival. (7)
Published Date	Nov. 26, 2010 (8)
Entered Date	March 8, 2011 (9)
Last Updated	Oct. 29, 2012 (10)
Authors	Diane Allingham-Hawkins, Andrew Lea, Susan Levine (11)
Source	Plos Currents: Evidence on Genomic Tests (12)

Figure 14 - Genomics Evidence Detail Page

The detail page will open with the following components:

1. Link to **CGEN User's Guide** and **FAQ** have information to help you use **CGEN**.
2. The breadcrumbs, showing the path to the current page.

3. The Genomic Evidence title appears near the top of the page, with an envelope icon that takes you to a contact page which will help you send a message to the CGEN staff with pre-populated information about this particular entry. The evidence title appears again in the information table.
4. The **Back to Search** link takes you back to the **Search Results** page.
5. An envelope icon takes you to a contact page which will help you send a message to the CGEN staff with pre-populated information about this particular entry.
6. The evidence type.
7. The abstract describing the Genomic Evidence.
8. The date of publication.
9. The date the evidence was entered.
10. The date the entry was last updated.
11. The authors of the Genomic Evidence publication.
12. The link to the source of the Genomic Evidence.

Meta-Analyses Detail Page

1. From the **Meta-Analyses** page click on a link for an article. The highlighted terms you see in this example are simply terms from the search that were entered on the search results page. The detail page will open with the following components: The links to **CGEN User's Guide** and **FAQ** have information to help you use **CGEN**.
2. The breadcrumbs, showing the path to the current page.
3. The title of the article appears near the top of the page and again in the information table underneath.
4. The **Back to Search** link takes you back to the **Search Results** page.
5. An envelope icon takes you to a contact page which will help you send a message to the CGEN staff with pre-populated information about this particular entry.
6. The citation of the article.
7. The names of all of the article's authors.

Cellular phone use and brain tumor: a meta-analysis. ← 3

4	← Back to search	Contact us about this record ← 5
6	Citation	Kan P, Simonsen SE, Lyon JL, Kestle JR. Cellular phone use and brain tumor: a meta-analysis. J Neurooncol 2008 Jan;86(1):71-8. Epub 2007 Jul 10.
7	Authors	Kestle JR, Lyon JL, Simonsen SE, Kan P
8	Title	Cellular phone use and brain tumor: a meta-analysis.
9	Journal	Journal of neuro-oncology
9	PubMed ID	17619826
10	Publication Date	Jan. 1, 2008
11	Abstract	<p>BACKGROUND:</p> <p>The dramatic increase in the use of cellular phones has generated concerns about potential adverse effects, especially the development of brain tumors. We conducted a meta-analysis to examine the effect of cellular phone use on the risk of brain tumor development.</p> <p>METHODS:</p> <p>We searched the literature using MEDLINE to locate case-control studies on cellular phone use and brain tumors. Odds ratios (ORs) for overall effect and stratified ORs associated with specific brain tumors, long-term use, and analog/digital phones were calculated for each study using its original data. A pooled estimator of each OR was then calculated using a random-effects model.</p> <p>RESULTS:</p> <p>Nine case-control studies containing 5,259 cases of primary brain tumors and 12,074 controls were included. All studies reported ORs according to brain tumor subtypes, and five provided ORs on patients with > or =10 years of follow up. Pooled analysis showed an overall OR of 0.90 (95% confidence interval [CI] 0.81-0.99) for cellular phone use and brain tumor development. The pooled OR for long-term users of > or =10 years (5 studies) was 1.25 (95% CI 1.01-1.54). No increased risk was observed in analog or digital cellular phone users.</p> <p>CONCLUSIONS:</p> <p>We found no overall increased risk of brain tumors among cellular phone users. The potential elevated risk of brain tumors after long-term cellular phone use awaits confirmation by future studies.</p>
12	Data Sources	Meta-Analysis
13	MeSH Terms	Radio Waves, Odds Ratio, MEDLINE, Longitudinal Studies, Humans, Cell Phones, Brain Neoplasms
	Meta Analysis	
14	Outcomes	Risk
15	Study Types	Observational
16	Study Characteristics	Modifiable

Related Grants		
NIH Grant #	Search CGEN	PubMed

Figure 15: Meta-Analyses Detail Page

8. The name of the journal in which the article appeared.
9. The PubMed ID with its associated link to PubMed.
10. The publication date.
11. The article abstract with any words from the search highlighted. Because this is meta-analyses research, combining, comparing, or contrasting data from other studies, the methodology and statistical information of may be detailed.
12. The data sources. This is a comma separated list to tell you where the publication came from. The current values are: EGRP, DCEG, and HuGE.
13. The MeSH terms from PubMed.

14. Outcomes of meta-analyses may be risk, treatment, prognosis, diagnosis and screening of the cancers.
15. Study Types for meta-analyses may be observational, clinical, both observational and clinical, individual patient data, and not stated.
16. Study Characteristics of meta-analyses may be 'omics, clinical-pharmaceutical, modifiable, demographic, clinical-radiologic, clinical-surgical, non-modifiable physiologic, geographic, clinical-transplant, and socioeconomic.

Searching for Linked Grants and Publications Data

CGEN has the functionality to search for linked data, if it exists. Currently, the data in CGEN is linked in the following ways:

- Publications can be linked to Grants by the PubMed ID being stored in the grants record provided by IMPAC II or by the grant id being provided in the PubMed record.
- Grants can be linked to Publications by the grant id being stored in the PubMed record or by the PubMed ID being stored in the grant record provided by IMPAC II.
- Genomic Test data is not currently linked to any other data source.
- Genomic Evidence data is not currently linked to any other data source.
- Meta-Analyses data is not currently linked to any other data source.

If you wish to see linked data, your search can begin with any data source page that currently links to other data sources.

1. Start by running a search. The linking functionality is only available when there are 500 results or fewer on the data source page for which you want to see the linked data, so you must narrow your search to restrict the number of results. In this example the initial search was made on the terms *genomic* and *leukemia*.



Figure 15 - Search Results to See Linked Data

2. Once you have the results, select the data source page. **Grants** and **Publications** are currently the only data sources that have linked data. Select the Show Linked Data button. From the Linked Data page in this example you can return to the search (1), Export the data (2), open a grant link (3), or open a publications link (4).

Showing linked data for 14 Grants

1 → [← Back to search](#) [Export this data](#) ← 2

CA089032 - Backtracking Translocations in Childhood Leukemia (Inactive) ← 3

Publications

- 20807887 - TEL-AML1 regulation of survivin and apoptosis via miRNA-494 and miRNA-320a.
- 17200355 - Nonsynonymous coding single-nucleotide polymorphisms spanning the genome in relation to glioblastoma survival and age at diagnosis.
- 20688547 - Backtracking RAS mutations in high hyperdiploid childhood acute lymphoblastic leukemia.
- 11753612 - Molecular characterization of genomic AML1-ETO fusions in childhood leukemia.
- 21352818 - Unusual space-time patterning of the Fallon, Nevada leukemia cluster: Evidence of an infectious etiology.



Figure 16 - Linked Data Page

Exporting Search Results

To export the results of any search, click on the **Export these results** link on search pages or the **Export this data** link on **Linked Data** pages. The **Export Search Results** page will open. Every data source page has a unique group of fields that are exported to a .csv file, which can be opened in Excel and other software applications.