The Cancer Genomics and Epidemiology Navigator: An NCI Online Tool to Enhance Cancer Epidemiology Research

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The Epidemiology and Genomics Research Program (EGRP) at the National Cancer Institute (NCI) has undergone strategic planning in an effort to transform the practice of cancer epidemiology in the 21st century (1). Through these efforts, the program has focused on the need for knowledge integration across the various disciplines that comprise cancer epidemiology (2). To this end, EGRP has released an online tool for the cancer epidemiology community; the Cancer Genomics and Epidemiology Navigator (CGEN; http://epi.grants.cancer.gov/cgen/), which is an integrated, searchable, and regularly updated knowledge base intended to facilitate cancer epidemiologic research. CGEN collates linked data on EGRP-funded grants, peer-reviewed publications on cancer epidemiology, publications on human genome epidemiology, and genomic evidence-based guidelines and recommendations into a centralized search engine to assess the impact of genomic, environmental, and clinical factors on cancer occurrence and outcomes. CGEN has full-text searching and filtering capabilities that make it possible to search data fields across all data sources within the database. In addition, filtering options equipped with graphs and real-time counts permit users to fine-tune searches, or export filtered (filtered) data for further processing. An advanced search is available to perform phrase matching or matching on any/all/no of the provided terms, or when field-level search granularity is necessary. CGEN also identifies links between publications and grants, and between publications and other sources of data. CGEN currently contains data from the NIH IMPAC-II database (database of information on extramural applications and awards) of active and inactive EGRP grants; publications linked to EGRP-funded grants; publications resulting from NCI’s Division of Cancer Epidemiology and Genetics; publications from EGRP staff members; cancer-related publications from the Centers for Disease Control and Prevention (CDC) Human Genome Epidemiology (HuGE) Navigator (3); Genomic Evidence-based Guidelines and Recommendations and detailed information on cancer-related genomic tests and applications from the CDC HuGE Navigator’s GAPP Finder (4); detailed information on cancer genome-wide association studies (GWAS) and candidate gene meta-analyses from the CDC HuGE Navigator’s GAMA; and EGRP studies that have genomic data in the NIH Genotype and Phenotype Database (5). Grants are defined as active (currently receiving funds from NCI) or inactive (no longer receiving funds from NCI). The publications in the database are updated on a monthly basis and grant and genomic information are updated quarterly.

The search results page separates the results into categories. Each category has its own tab; by alternating from one tab to another, users can see the entire search results across all data sources included in CGEN. CGEN also uses faceted navigation for filtering the results in each tab. The faceted terms were created specifically for CGEN to allow users to filter on multiple terms simultaneously within one data source. From search results pages users can access the details of individual results. The detail pages for each tab display information depending on how the search was performed. The data are linked throughout the database by NIH grant numbers and/or PubMed IDs, allowing users to easily link disparate data types. Users may also export the results of their searches of CGEN to a .csv file that can be opened in Microsoft Excel or other software applications.

CGEN is the first online tool to consolidate existing information on cancer epidemiology across multiple related disciplines. It serves as a valuable resource for cancer epidemiologists. We envision that cancer epidemiologists and other scientific researchers will use CGEN to enhance their research development. This may include: assessment of the current landscape in their scientific area; identification of potential areas of research; finding collaborators; and linking to resources that would benefit their research.

With information from grants funded through EGRP, peer-reviewed publications on cancer epidemiology, publications on human genome epidemiology, and genomic evidence-based guidelines and recommendations, CGEN may be a very valuable tool for researchers who are trying to navigate the funding climate. We invite your feedback on how CGEN could be more useful to the extramural community (http://blog-epi.grants.cancer.gov/2013/10/31/cgen/).

Disclosure of Potential Conflicts of Interest
No potential conflicts of interest were disclosed.

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