

PAR-21-330: Utilizing the PLCO Biospecimens Resource to Bridge Gaps in Cancer Etiology and Early Detection Research (U01 Clinical Trial Not Allowed)

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The PLCO Team

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Purpose of the PAR

- To stimulate cancer research in areas that require prospectively collected pre-diagnostic blood specimens and matched tumor tissues available from the NCI's PLCO (Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial) Biorepository
- To improve access to the PLCO Biorepository resource by the extramural community. This PAR provides an integrated review process for both the PLCO biospecimens and NCI funding. Applications selected for funding are granted access to the PLCO biospecimens automatically. (Previously, an investigator would have to apply for access to the PLCO biospecimens and for NCI funding separately.)

History of the PAR

- PAR-13-036 Initial FOA published on December 6, 2012
- PAR-15-297 1st re-issue published on July 14, 2015
- PAR-18-913 2nd re-issue published on September 7, 2018
- PAR-21-330 3rd re-issue published on September 9, 2021 (expires 10/12/2024)

Requirements Specific to this PAR

- Must use PLCO biospecimens, but may include biospecimens from other biobank(s)
- Must obtain pre-approval for the use of the biospecimens from PLCO and from other biobank(s), if applicable
 - Applicants must submit a “Specimen Verification Form” online at <https://biometry.nci.nih.gov/cdas/plco/>, at least one month before the U01 due date.
 - A “Confirmatory Letter” will be sent to the PI if the requested samples are available.
 - PI must include this letter (and approval letter(s) from other biobank(s), if applicable) in the U01 application.
- Data return policy
 - Samples are coded when released to the PI lab. PI must submit all laboratory results back to PLCO, at which point the samples are unblinded to the PI. These study-generated data are made available for secondary research after study results have been published.

Application Due dates

New	Renewal / Resubmission / Revision (as allowed)	AIDS
February 11, 2022	February 11, 2022	Not Applicable
June 10, 2022	June 10, 2022	Not Applicable
October 11, 2022	October 11, 2022	Not Applicable
February 10, 2023	February 10, 2023	Not Applicable
June 13, 2023	June 13, 2023	Not Applicable
October 11, 2023	October 11, 2023	Not Applicable
February 13, 2024	February 13, 2024	Not Applicable
June 11, 2024	June 11, 2024	Not Applicable
October 11, 2024	October 11, 2024	Not Applicable

Review and Award Cycles

Scientific Merit Review	Advisory Council Review	Earliest Start Date
June 2022	October 2022	December 2022
October 2022	January 2023	April 2023
February 2023	May 2023	July 2023
June 2023	October 2023	December 2023
October 2023	January 2024	April 2024
February 2024	May 2024	July 2024
June 2024	October 2024	December 2024
October 2024	January 2025	April 2025
February 2025	May 2025	July 2025

Background: The Prostate, Lung, Colorectal and Ovarian Cancer (PLCO) Cancer Screening Trial

Randomization

- 76,705 Men
- 78,237 Women
- 55-74 years
- Healthy
- 10 centers

Intervention Arm

- 38,350 Men
- 39,115 Women
- Chest X-ray (T0-T3)
- Flex Sig (T0, T3/T5)
- Follow-up (T6-T13)
- Blood sample (T0-T5)
- Buccal cell sample (one time)

Women

- CA125 test (T0-T5)
- TVU (T0-T3)

Men

- PSA test (T0-T5)
- DRE (T0-T3)

Control Arm

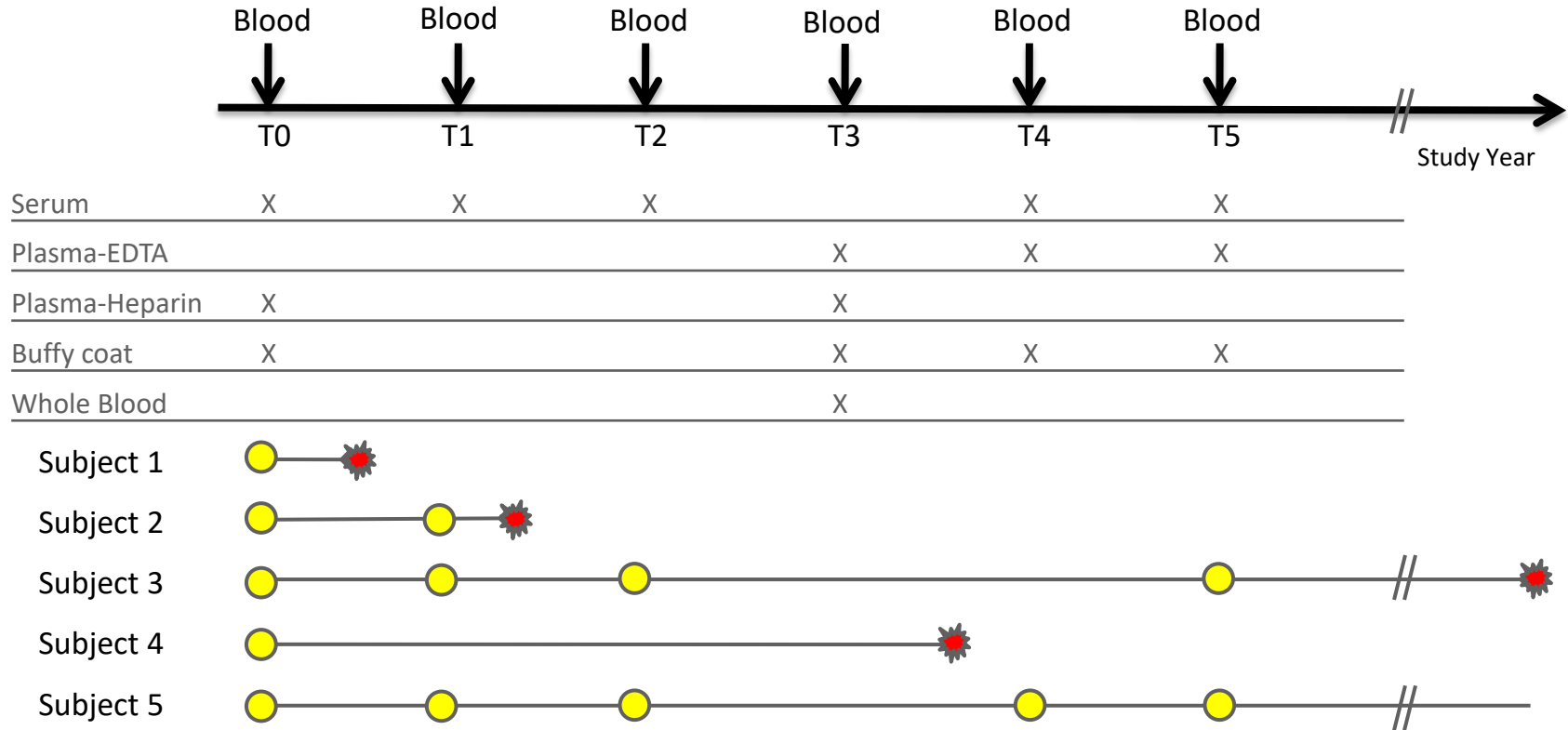
- 38,355 Men
- 39,122 Women
- Routine medical care
- Follow-up (T0-T13)
- Buccal cell sample (2 times)

PLCO Biorepository

Background: PLCO Biorepository Overview

- Serial blood samples (serum/plasma/DNA) collected annually for 6 years (intervention arm).
- Buccal cells (from mouth wash) collected at 1-2 time points (intervention and control arms).
- Tissue microarrays and cores of FFPE tumor samples for select cancers (breast, prostate, colorectal, lung, bladder and ovarian).
- Digital images of the H&E slides for the donor blocks used for tissue microarrays and immunohistochemistry (IHC) slides for various biomarkers generated from prior studies
- Genome wide association data available on almost all PLCO participants
- Detailed demographic, behavioral, dietary, lifestyle, and clinical data (all cancer incidence and all-cause mortality)

Background: Serial samples and time interval from sample collection to diagnosis



Background: Number of Cancer Cases* with Specimens Available

	Serum	EDTA Plasma	Heparin Plasma	Serum + DNA	Any DNA	Has GWAS Data
Prostate	4563	2799	4449	4337	8143	7734
Lung	2035	1367	1615	1762	2729	2896
Colon	1056	651	1031	944	1982	2079
Ovary	306	205	159	280	490	476
Female Breast (Invasive)	1970	1396	1894	1882	3817	3604
Melanoma	1126	862	1109	1079	2184	2096
Bladder	984	738	951	930	1863	1775
Non-Hodgkin's Lymphoma	857	625	835	777	1573	1549
Female Breast (In Situ)	533	361	509	511	960	922
Kidney and Renal Pelvis	498	372	488	448	794	858
Pancreas	490	355	469	425	577	671
Endometrium	414	262	403	390	811	803
Other Leukemia	371	296	362	342	662	626
Chronic Lymphocytic Leukemia	299	201	284	268	537	530
Multiple Myeloma	297	236	289	270	489	445
Oral Cavity/Tonsil/Pharynx	270	209	265	251	421	430
Stomach	242	176	234	216	330	344
Glioma	190	130	185	145	241	268
Esophagus	172	127	168	149	228	255
Liver/Intrahepatic Bile Duct	166	121	161	144	255	250
Acute Myeloid Leukemia	163	125	159	145	269	251
Thyroid	161	128	159	158	332	324
Larynx	129	80	124	114	170	176
Other Biliary	85	58	79	72	108	103
Small Intestine	76	57	72	70	127	122
Gallbladder	42	34	41	40	63	62
Hodgkin's Lymphoma	29	20	28	28	57	53
Male Breast	28	22	28	25	35	39

*Confirmed cases through
12/31/2017, including tumor
registry data

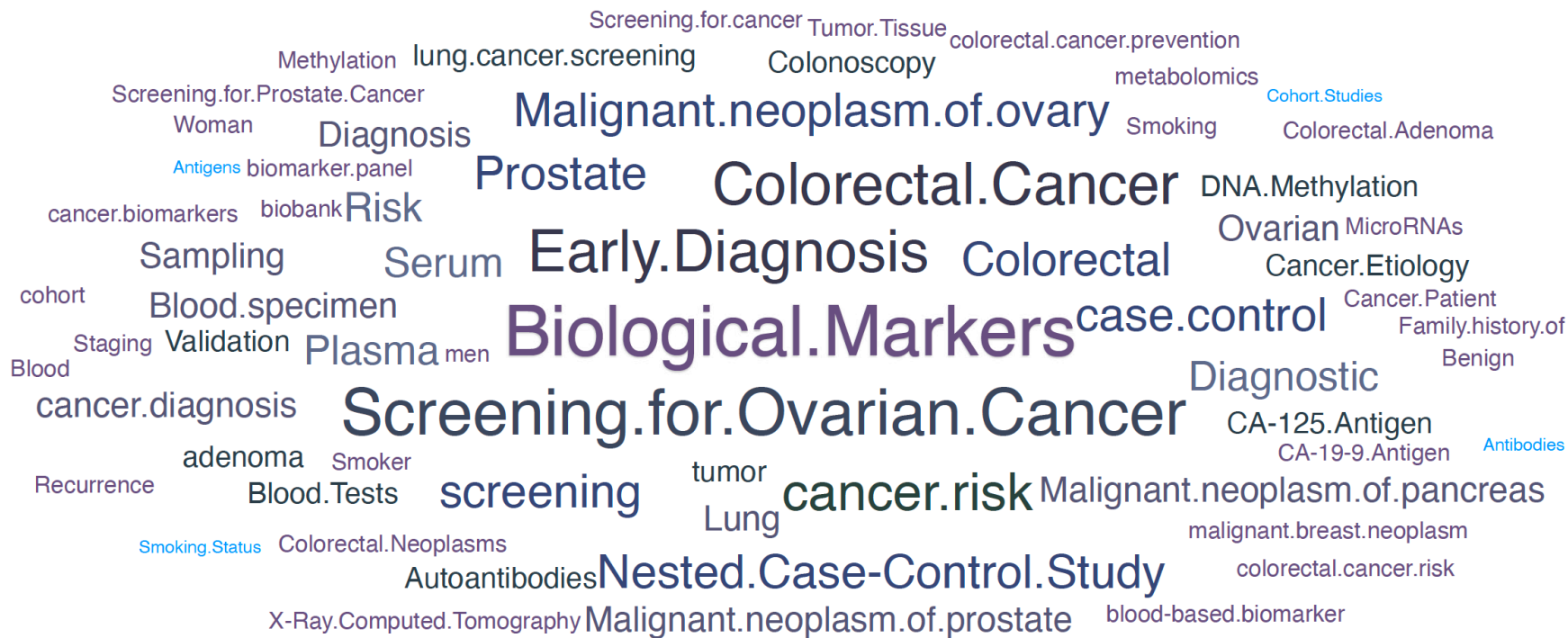
Scientific Scope

- Studies of biomarkers of various environmental, biochemical, and genetic risk factors of cancer;
- Pivotal validation studies of early detection blood biomarkers in pre-diagnostic samples;
- Studies of early detection and/or risk prediction models based on longitudinal patterns of the biomarkers;
- Studies of biomarkers that correlate with clinical behavior of the tumors, especially those that differentiate between aggressive and indolent cancers;
- Studies correlating blood biomarkers to tissue biomarkers, histological and molecular subtypes, and clinical behaviors;
- Biomarker discovery in pre-diagnostic samples using high through-put, proven technologies; and
- Research on non-cancer outcomes, especially those related to aging (e.g., Alzheimer's, depression, hip fracture, osteoporosis, and rheumatoid arthritis).

Additional Review Criteria Specific to This PAR

- Appropriateness of the overall study design/sampling plan
- Justifications for using pre-diagnostic specimens
- Rationale for the chosen time-to-diagnosis interval of the requested samples
- Justification for the need to use the serial samples, if applicable.
- Utilization of the characteristics of the PLCO cohort
- Parsimonious use of the samples
- Rationale for conducting biomarker discovery, if applicable

Applications Reviewed to Date (~150) – Concept Frequency



Funded Applications (N=14)

Project	FY	Contact PI	Title
CA181770-01	2014	LI, LI	15-Hydroxyprostaglandin Dehydrogenase, NSAIDs, Vitamin D, and Colorectal Neoplasia
CA182364-01	2014	DAI, QI	Translating gene-calcium interactions to precision medicine for colorectal cancer
CA182367-01A1	2015	CHAN, ANDREW T	Molecular Risk Stratification for Colonoscopic Surveillance
CA182370-01	2014	PEI, ZHIHENG	Oral microbiome in esophageal adenocarcinoma
CA182371-01	2014	WIEMELS, JOSEPH LEO	Varicella virus antigens in glioma etiology and survival
CA184910-01A1	2014	STURGEON, SUSAN R	Validation of findings from the Epigenome-Wide Association Study of Breast Cancer
CA185094-01A1	2014	PETERS, ULRIKE	Colorectal Tumor Risk Prediction in the PLCO Trial
CA185097-01	2014	LAMPE, PAUL D	Proteomic, Glycomic and Autoantibody Lung Cancer Biomarker Validation
CA194733-01A1	2016	FENG, ZIDING	Incorporating Biomarkers to Improve Lung Cancer Risk Prediction
CA217078-01	2017	BISSONNETTE, BRUCE MARC	Development of 5hmC and 5mC biomarkers in cell-free circulating DNA for sensitive colon cancer detection and prognosis
CA222163-01A1	2019	DAVIS, JENNIFER SARAH	Colorectal cancer risk factors, risk prediction and blood-based biomarker by tumor consensus molecular subtype
CA239522-01A1	2021	SCHMIDT, CHRISTIAN MAXIMILLIAN	Longitudinal Proteomic and Metabolomic Predictors of Pancreatic Cyst Malignant Progression and Early Stage Pancreatic Cancer
CA250186-01A1	2021	AHN, JIYOUNG	The Oral Mycobiome and Risk of Pancreatic Cancer
CA260758-01	2021	SKATES, STEVEN J	Proteomic Analyses of Serial Pre-diagnostic PLCO Serum in Cases and Controls to Identify Early Detection Ovarian Cancer Biomarkers Rising in a Substantial Fraction of Cases and Stable in Most Controls

Resources for Prospective Applicants

- NCI Cancer Data Access System (CDAS)

- <https://cdas.cancer.gov/plco/>
- “One-stop shop” for all things PLCO, including information needed for submitting applications to the PLCO PAR

- NIH RePORTER

- <https://reporter.nih.gov/>
- Abstract for all NIH/NCI funded research projects that involves the PLCO biospecimens

- PLCO Atlas GWAS Explorer

- <https://exploregwas.cancer.gov/plco-atlas/#/>
- Phenotypes (N=17) and genomic variants (>78,000,000) on ~110,000 PLCO participants

Explore PLCO

- PLCO Home
- Learn about PLCO
- PLCO Datasets
- Approved Projects
- Publications
- Contact Us

Access to PLCO Data and Biospecimens

- Begin a Data-Only Project
- Begin an Images Project
- Begin an EEMS Biospecimens Application
- Begin a Request Form for Specimen Verification (PAR-21-330)

Latest PLCO News

(More)

- Feb 24, 2022**
PLCO EEMS Round 34 open for preliminary applications from Feb 24 to Aug 17, 2022
- Nov 15, 2021**
Accepting Requests for Specimen Verification for FOA (PAR-21-330) from Nov 15, 2021 to Jan 13, 2022
- Sep 16, 2021**
PLCO EEMS Round 33 open for preliminary applications from Aug 21, 2021 to Feb 17, 2022

PLCO

The Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening Trial is a randomized, controlled trial to determine whether certain screening exams reduce mortality from prostate, lung, colorectal and ovarian cancer. Approximately 155,000 participants were enrolled between November 1993 and July 2001. PLCO has the following five ClinicalTrials.gov registration numbers: [NCT00002540](#) (Prostate), [NCT01696968](#) (Lung), [NCT01696981](#) (Colorectal), [NCT01696994](#) (Ovarian), and [NCT00339495](#) (EEMS).

Cancer data collected up to December 31, 2009 and mortality data collected through 2015 for each subject in the PLCO trial are available on this website. Cancers and deaths continue to accrue. At some point in the future, these data will become available. For more information, see <https://prevention.cancer.gov/major-programs/prostate-lung-colorectal-and-ovarian-cancer-screening-trial>.

- Learn about PLCO

This describes the trial, explaining how and what data were collected. The main findings of the trial and counts of cancers can be found here.

- Datasets

This page has detailed documentation of the PLCO data available on this website. Each dataset has a data dictionary, SAS format code, and a user guide.

- Approved Projects

Search through approved projects that used PLCO data.

- Publications

Search through published articles on PLCO data.

- Contact Us

If you have any questions about the data or access to it, please contact us.

Biospecimen Applications:

New applications for biospecimens are currently being accepted for the following project types. Application periods close on the dates indicated at 11:59 PM EST.

- PLCO PAR May 12
- PLCO EEMS Aug 17

Submit a PLCO Application

To gain access to available PLCO data and/or biospecimens, you must submit a project proposal. These are reviewed by NCI. If your project is approved, you will be required to complete a Data Transfer Agreement (and a Material Transfer Agreement, if applicable) before you will be granted access.

There are four types of PLCO projects. You may click one to begin a new project proposal.

Data-Only	Images	EEMS (Biospecimens)	Request Form for Specimen Verification for PAR-21-330
PLCO data is available to the general scientific community. You may begin a new project for PLCO data (no biospecimens).	PLCO images and corresponding data are available to the scientific community. You may begin a new project for PLCO image data (no biospecimens).	Etiologic and Early Marker Studies (EEMS) is the NCI program by which access to biospecimens is granted. You may begin a preliminary application for PLCO biospecimens .	The NCI has issued a Funding Opportunity Announcement (FOA), Utilizing the PLCO Biospecimens Resource to Bridge Gaps in Cancer Etiology and Early Detection Research (PAR-21-330), for soliciting grant applications to utilize the PLCO Biorepository. You may initiate a Request Form for Specimen Verification under PAR-21-330 .

Search Results

90 Projects

PLCO

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Active Projects

Fiscal Years

Org Names

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Principal Investigators

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Results are sorted by Relevance

T	Act	Project	Year	Sub	Principal Investigator(s)/ Project Leader(s)	Organization	Fiscal Year	Admin IC	Funding IC	FY Total Cost by IC	Similar Projects
Longitudinal Proteomic and Metabolomic Predictors of Pancreatic Cyst Malignant Progression and Early Stage Pancreatic Cancer											
5		U01CA239522-02			SCHMIDT, CHRISTIAN MAXIMILLIAN ZHANG, JIANJUN	INDIANA UNIV-PURDUE UNIV AT INDIANAPOLIS	2022	NCI	NCI	\$648,753	View
Longitudinal Proteomic and Metabolomic Predictors of Pancreatic Cyst Malignant Progression and Early Stage Pancreatic Cancer											
1		U01CA239522-01A1			SCHMIDT, CHRISTIAN MAXIMILLIAN ZHANG, JIANJUN	INDIANA UNIV-PURDUE UNIV AT INDIANAPOLIS	2021	NCI	NCI	\$677,787	View
Leveraging Diversity in Cancer Epidemiology Cohorts and Novel Methods to Improve Polygenic Risk Scores											
1		U01CA261339-01			CONTI, DAVID V WITTE, JOHN S	UNIVERSITY OF SOUTHERN CALIFORNIA	2021	NCI	NCI	\$999,722	View
Colorectal cancer risk factors, risk prediction and blood-based biomarker by tumor consensus molecular subtype											
5		U01CA222163-03			DAVIS, JENNIFER SARAH BRESALIER, ROBERT S	UNIVERSITY OF TX MD ANDERSON CAN CTR	2021	NCI	NCI	\$222,027	View
A Clinical Validation Center for Early Detection of Pancreatic Cancer											
3		U01CA200468-05S1			MAITRA, ANIRBAN	UNIVERSITY OF TX MD ANDERSON CAN CTR	2021	NCI	NCI	\$532,530	View
Proteomic Analyses of Serial Prediagnostic PLCO Serum in Cases and Controls to Identify Early Detection Ovarian Cancer Biomarkers Rising in a Substantial Fraction of Cases and Stable in Most Controls											
1		U01CA260758-01			SKATES, STEVEN J	MASSACHUSETTS GENERAL HOSPITAL	2021	NCI	NCI	\$546,231	View
Colorectal cancer risk factors, risk prediction and blood-based biomarker by tumor consensus molecular subtype											
5		U01CA222163-02			DAVIS, JENNIFER SARAH BRESALIER, ROBERT S	UNIVERSITY OF TX MD ANDERSON CAN CTR	2020	NCI	NCI	\$392,221	View
A Clinical Validation Center for Early Detection of Pancreatic Cancer											
5		U01CA200468-05			MAITRA, ANIRBAN	UNIVERSITY OF TX MD ANDERSON CAN CTR	2020	NCI	NCI	\$752,866	View
Molecular Risk Stratification for Colonoscopic Surveillance											
5		U01CA182367-05			CHAN, ANDREW T	MASSACHUSETTS GENERAL HOSPITAL	2019	NCI	NCI	\$616,839	View
Colorectal cancer risk factors, risk prediction and blood-based biomarker by tumor consensus molecular subtype											
1		U01CA222163-01A1			DAVIS, JENNIFER SARAH BRESALIER, ROBERT S	UNIVERSITY OF TX MD ANDERSON CAN CTR	2019	NCI	NCI	\$448,631	View
A Clinical Validation Center for Early Detection of Pancreatic Cancer											
5		U01CA200468-04			MAITRA, ANIRBAN	UNIVERSITY OF TX MD ANDERSON CAN CTR	2019	NCI	NCI	\$1,486,995	View

Phenotypes*

☐ Pairwise Plots

- ☐ Search
- ☐ Anthropometric measures
- ☒ Biochemical Measurements
- ☐ CA-125 Level, First Screen
- ☒ PSA Level, First Screen
- ☒ Cancer
- ☐ Lifestyle factors
- ☐ Non-cancer medical conditions

Ancestry/Sex *

European - Male

Submit

Reset

PSA Level, First Screen (European Male) - 60,282,946 variants 27,788 participants

PSA Level, first screen is restricted to participants in the screening arm.

Share Link

Manhattan Plot

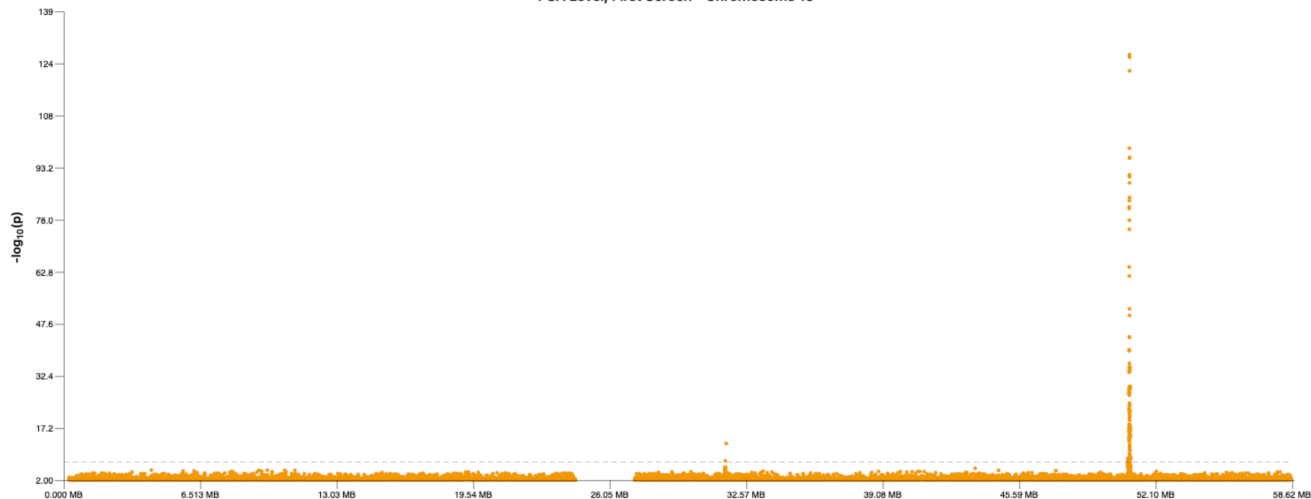
Q-Q Plot

PC Plot

All Chromosomes

PSA Level, First Screen - Chromosome 19

Export



Gene plot is not available at the current zoom level. Please zoom in to a 2MB range to see genes.



The Prostate, Lung, Colon, Ovary Screening Trial (PLCO)

dbGaP Study Accession: phs001286.v2.p2

Request Access

▸ [Study version history](#)

Study **Phenotype Datasets** Variables Molecular Datasets Analyses Documents

Jump to: [Authorized Access](#) | [Attribution](#) | [Authorized Requests](#)

Study Description

The Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening Trial is a large population-based randomized trial designed and sponsored by the National Cancer Institute (NCI) to determine the effects of screening on cancer-related mortality and secondary endpoints in over 150,000 men and women aged 55 to 74. The screening component of the trial was completed in 2006. However, participants have been under follow-up for cancer incidence and mortality since that time. In addition, PLCO included a large biological sample biorepository which has served as a unique resource for cancer research, particularly for etiologic and early-marker studies. As part of these efforts, PLCO has been used for a large number of genome-wide association and exome sequencing studies for different types of cancer.

- Study Weblinks:
 - [Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial \(PLCO\)](#)
- Study Design:
 - Prospective Longitudinal Cohort
- Study Type:
 - Cohort
- dbGaP estimated [ancestry](#) using [GRAF-pop](#)
- Total number of consented subjects: 110559

Important Links and Information

- Request access via [Authorized Access](#)
 - [Instructions](#) for requestors
 - [Data Use Certification \(DUC\) Agreement](#)
- [Talking Glossary of Genetic Terms](#)

Authorized Access

- Data access provided by:** [dbGaP Authorized Access](#)
- Release Date:** February 14, 2022
- Embargo Release Date:** February 14, 2022
- [Data Use Certification Requirements \(DUC\)](#)
- Public Posting of [Genomic Summary Results](#):** Allowed
- Use Restrictions**

Consent group	Is IRB required?	Data Access Committee	Number of participants
Research relating to adults diseases and methods	No	NCI DAC (NCIDAC@mail.nih.gov)	110559

- [List of components](#) downloadable from [Authorized Access](#)

Publicly Available Data (Public ftp)

Connect to the [public download site](#). The site contains release notes and manifests. The site also contains data dictionaries, variable summaries, documents, and truncated analyses, whenever available.

Study Inclusion/Exclusion Criteria

Here, we are posting a harmonized and imputed dataset of PLCO GWAS and exome data, consisting of all harmonizable PLCO genotype data from each completed scan of cancer cases and controls, as well as the key covariates

Contact information

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NCI Division of Cancer Prevention

Early Detection Research Group



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