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**NATIONAL CANCER INSTITUTE  
CLINICAL TRIALS AND TRANSLATIONAL RESEARCH  
ADVISORY COMMITTEE (CTAC)**

**GASTRIC AND ESOPHAGEAL CANCERS  
WORKING GROUP**

**WORKING GROUP REPORT  
APPENDIX 1 – PORTFOLIO ANALYSIS OF NIH-FUNDED  
GASTRIC AND ESOPHAGEAL CANCERS RESEARCH  
NOVEMBER 9, 2022**

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**REPORT ACCEPTED ON NOVEMBER 9, 2022  
THE CLINICAL TRIALS AND TRANSLATIONAL RESEARCH ADVISORY COMMITTEE**

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## OVERVIEW

To describe the current landscape of NIH<sup>1</sup>-funded awards in gastric and esophageal cancers and to facilitate the recommendation-making process of the Gastric & Esophageal Cancers Working Group, the Center for Research Strategy (CRS) at the National Cancer Institute (NCI) analyzed project data and provided data sets to the Working Group. Initially, CRS provided two data sets that correspond to funded NIH research project portfolios in esophageal and stomach cancer in fiscal year (FY) 2021, with each portfolio containing both competing (new) and non-competing projects. These data were identified using RCDC<sup>2</sup> disease categories “Esophageal Cancer” and “Stomach Cancer.” Multi-component projects, such as P01 and U54 grants, were identified at the sub-project level. Multi-year funded projects<sup>3</sup> were included if the budget covered FY 2021. More detail is provided in the Methods section below.

In addition, CRS used a machine learning model to assign International Cancer Research Partnership (ICRP) Common Scientific Outline (CSO) codes to projects. These codes are Biology, Etiology, Prevention, Early Detection, Treatment, and Cancer Control. A given project may be assigned to more than one CSO code. A panoply of information about each project was provided to enable the Working Group to better understand the attributes of each research portfolio, to determine what additional information may be useful, and to find research gaps. To facilitate these processes, CRS summarized each portfolio.

## METHODS

### Research Condition and Disease Categorization (RCDC)

CRS leveraged RCDC categories to identify awards relevant to stomach cancer and esophageal cancer, using the RCDC categories “esophageal cancer” or “stomach cancer”.

The RCDC system is used by the NIH in its reporting process to categorize funding in biomedical research for each fiscal year. The NIH currently reports funding to the public for 309 categories.

The RCDC system uses an automated text mining process in combination with a mathematical formula to produce a project index that consists of a weighted list of *concepts* from the RCDC thesaurus. The RCDC thesaurus consists of more than 180,000 biomedical terms and synonyms curated by NIH scientific experts and compiled from the National Library of Medicine’s MeSH thesaurus, CRISP thesaurus, NCI thesaurus, Metathesaurus, Jablonsky’s dictionary, and other sources from NIH institutes and centers.

Similarly, RCDC *categories* are developed using a mathematical formula that produces weighted lists of *concepts*. Ultimately, this process is used to define a *research area, condition, or disease* made up of well-defined RCDC *concepts* and *categories*.

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<sup>1</sup> National Institutes of Health

<sup>2</sup> RCDC, which stands for Research, Condition, and Disease Categorization, is a process the NIH uses to categorize a grant application to various categories of disease, condition, or research area.

<sup>3</sup> Multi-year funded (MYF) grants are funded in full at the start of the project period from a single fiscal year’s appropriation. In contrast to MYF grants, the majority of NIH grants are funded on a year-by-year basis.

In sum, the RCDC system provides consistent text mining methods applied to all categories each year, clear and efficient processes for categorizing and reporting on NIH funding, tools for program and category analysis, and user and manual categories for specific reporting requirements. More information on RCDC can be found at <https://report.nih.gov/funding/categorical-spending/rcdc-faqs>

### **Base Projects**

NIH grants are either single- or multi-component awards that are issued with an alpha-numeric project identifier. Multi-component grants consist of a parent project and multiple subprojects that share the same base project number (a subset of the alpha-numeric identifier). Unique base projects function as the unit of measure for the analyses herein. In this regard, if more than one subproject within a multi-component grant is identified in the search strategy, the grant is only counted once via the unique base project number. Base projects were included if at least one subproject was identified in the search strategy.

### **Inclusion Criteria**

The following criteria were included in the project search to generate the list of awards:

- Primary/Admin projects (all NIH)
- Awarded only
- FY 2021
- Award supplements (Type 3)
- Extramural grant subprojects

Intramural projects and contracts were not included in this analysis, but Intramural projects were provided separately as requested by the Working Group.

All identified awards are publicly available through the NIH Research Portfolio Online Reporting Tools (RePORT) website at <https://report.nih.gov/>.

### **Portfolio Research Continua**

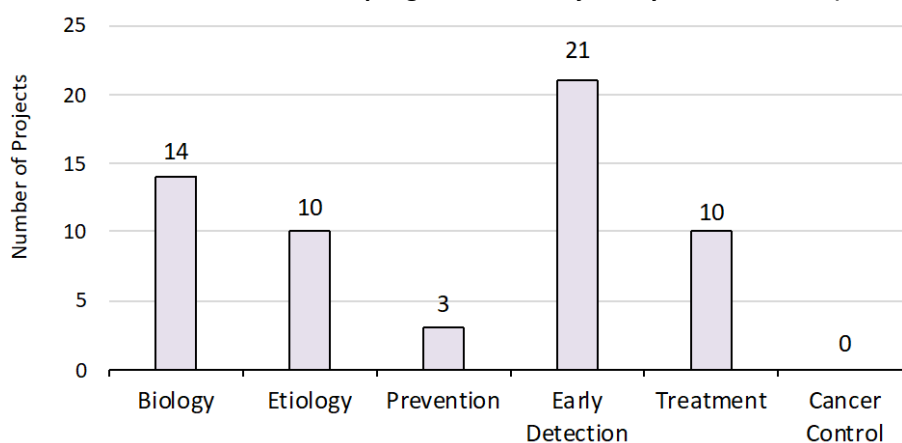
The International Cancer Research Partnership (ICRP) has crafted a set of coding guidelines, referred to as the Common Scientific Outline (CSO), that are used for discussing, comparing, and presenting cancer research portfolios. Grants can be broadly categorized into CSO codes using a machine learning model. Grants can be assigned into more than one of the following categories: 1. Biology; 2. Etiology; 3. Prevention; 4. Early Detection, Diagnosis, and Prognosis; 5. Treatment; 6. Cancer Control, Survivorship, and Outcomes Research. In some instances, there is not enough information to assign a grant to a particular category. Additionally, multiple CSO codes can be assigned to one grant. It is important to note that NCI/NIH does not assign CSO categories to grants and that categorization is independently applied in a retrospective manner.

## EXTRAMURAL PORTFOLIO SUMMARIES

The **NIH esophageal cancer portfolio** is comprised of 64 projects, corresponding to \$29.7M in total award total costs. NCI funded 70% of the projects. Seven other NIH institutes funded esophageal cancer research in FY 2021. For multi-component awards, such as P01 or U54, all subprojects were combined and counted as one project.

For NCI-funded projects in esophageal cancer, the largest grant category was R01 equivalent awards<sup>4</sup> (18 projects), followed by Cancer Center awards (11 projects). Other categories included substantial and small research program grants<sup>5</sup> (RPGs), small business innovation research (SBIR) awards, and career/training awards. The most common funding opportunity announcement was the Parent R01 Research Project Grant<sup>6</sup> (13 projects), followed by U54 BETRNET (Research Centers for Barrett's Esophagus Translational Research Network, 4 grants). The most frequent CSO category was Early Detection (21 projects), followed by Biology (14 projects); Figure 1 shows the awards in each category. Tables 1 and 2 list the NCI and NIH funded awards for esophageal cancer, along with their ICRP CSO codes.

**Figure 1. FY 2021 NCI-Administered Esophageal Cancer Projects by Scientific Area (ICRP CSO Code)**



The **NIH stomach cancer portfolio** is comprised of 61 projects, corresponding to \$24.7M in award total costs. NCI funded 64% of the projects. Five other NIH institutes funded stomach cancer research in FY 2021. For multi-component awards, such as P01 or U54, all subprojects were combined and counted as one project.

For NCI-funded projects in stomach cancer, the largest grant category was R01 equivalent awards (22 projects), followed by Centers (7 projects). The most common funding opportunity

<sup>4</sup> R01 is the oldest grant mechanism used by the NIH. It supports health-related research that aligns with the NIH mission. R01 equivalent awards from NCI include activity codes DP1, DP2, DP5, R01, R37, R56, RF1, RL1, U01

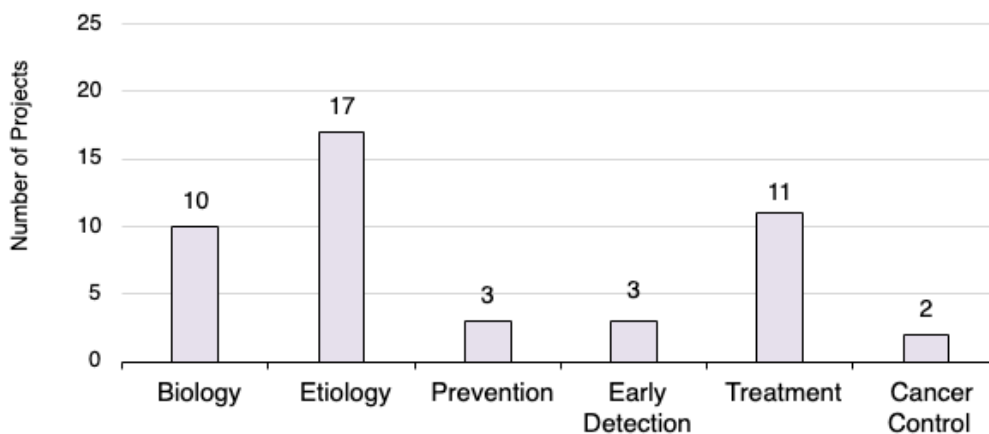
<sup>5</sup> Research Program Grants (RPG) is an award to support a specific research project in the area of PI's interest and competency. RPG is a broad category that includes R01 equivalents.

[https://grants.nih.gov/grants/glossary.htm#ResearchProjectGrant\(RPG\)](https://grants.nih.gov/grants/glossary.htm#ResearchProjectGrant(RPG))

<sup>6</sup> Parent R01 Research Project Grant is a general Funding Opportunity Announcement, which does not solicit applications in any particular research topic area, thus promoting investigator-initiated research.

announcement was also the Parent R01 Research Project Grant (13 projects), followed by Comprehensive Partnerships to Advance Cancer Health Equity U54 (4 grants). The most frequent CSO category for stomach cancer projects was Etiology (21 projects), followed by Treatment (11 projects) and Biology (10 projects); Figure 2 shows the awards in each category. Tables 3 and 4 list the NCI and NIH funded awards for esophageal cancer, along with their ICRP CSO codes.

**Figure 2. FY 2021 NCI-Administered Stomach Cancer Projects by Scientific Area (ICRP CSO Code)**



### INTRAMURAL PORTFOLIO SUMMARY

The intramural portfolio was manually curated at the request of the Working Group. Thirty-two NCI intramural research projects were identified that are focused on esophageal or stomach cancers for FY 2021; some projects are focused on both types of upper gastrointestinal cancers. The Center for Cancer Research (CCR) funds 21 of these, and the Division of Cancer Epidemiology & Genetics funds the other 11. Overall, there are 11 intramural awards focused on esophageal cancer, 4 on stomach, and 17 on multiple cancers that includes both stomach and esophageal cancers.

**Table 1. FY 2021 Extramural NCI Funded Projects Related to Esophageal Cancer**

Mech	Project Number	Project Titles	Principal Investigator(s)	Institution	ICRP CSO code
F31	CA254143-02	<a href="#">Regulation of RNA processing by the novel spliceosomal protein, TTDN1, in development and cancer</a>	Townley, Brittany A	Washington University	Biology; Etiology
F31	CA265158-01	<a href="#">Volumetric mapping of tissue microstructure with OCT for enhanced dysplasia detection</a>	Cannon, Taylor Marie	Massachusetts General Hospital	Early Detection
K22	CA255424-01	<a href="#">Novel Molecular Functions of WEE1 in Esophageal Adenocarcinoma</a>	Chen, Zheng	University Of Miami School Of Medicine	Treatment
P01	CA098101-19	<a href="#">Mechanisms of Esophageal Carcinogenesis</a>	Rustgi, Anil K	Columbia University Health Sciences	Biology; Etiology; Early Detection
P01	CA098101-19S1	<a href="#">Core A - Administrative and Biostatistics Core</a>	Rustgi, Anil K	University Of Pennsylvania	No code available
P30	CA043703-31	<a href="#">GI Cancer Genetics Research Program</a>	Markowitz, Sanford D	Case Western Reserve University	Biology; Etiology; Prevention; Early Detection; Treatment
P30	CA068485-26	<a href="#">Gastrointestinal Cancer Research Program</a>	Beauchamp, Robert Daniel	Vanderbilt University Medical Center	Etiology; Prevention; Early Detection; Treatment
P50	CA127003-13	<a href="#">Project 4 - Characterizing and Overcoming Resistance to ERBB2 Directed Therapy in Metastatic Gastric and Esophageal Adenocarcinoma</a>	Bass, Adam Joel	Dana-Farber Cancer Inst	Treatment
P50	CA150964-10	<a href="#">Case GI SPORE</a>	Markowitz, Sanford D	Case Western Reserve University	Biology; Prevention; Early Detection
R01	CA193219-07	<a href="#">The role of AXL-ABL axis in Barretts carcinogenesis</a>	Belkhir, Abbas	Vanderbilt University Medical Center	Biology
R01	CA208599-05	<a href="#">Development of diagnostic and prognostic tests for esophageal adenocarcinoma</a>	Godfrey, Tony E	Boston University Medical Campus	Early Detection
R01	CA210544-05	<a href="#">Advanced a/LCI systems for improved clinical utility</a>	Wax, Adam (Contact); Shaheen, Nicholas J	Duke University	Early Detection
R01	CA215596-05	<a href="#">RNF128 Regulation of TP53 in Barretts Progression</a>	Ray, Dipankar (Contact); Beer,	University Of Michigan At Ann Arbor	Biology

**Table 1. FY 2021 Extramural NCI Funded Projects Related to Esophageal Cancer**

Mech	Project Number	Project Titles	Principal Investigator(s)	Institution	ICRP CSO code
			David George; Nancarrow, Derek John		
R01	CA224366-04	<a href="#">The role of NRF2 in reflux-induced esophageal adenocarcinomas</a>	El-Rifai, Wael	University Of Miami School Of Medicine	Biology
R01	CA238433-03	<a href="#">The Oral Microbiome for the Detection of Barretts Esophagus</a>	Abrams, Julian	Columbia University Health Sciences	Early Detection
R01	CA238433-03S1	<a href="#">Study of the Oral Microbiome to Address Racial Disparities in Esophageal Cancer</a>	Abrams, Julian	Columbia University Health Sciences	No code available
R01	CA241164-03	<a href="#">Minimally Invasive Molecular Approaches for the Detection of Barrett's Esophagus and Esophageal Adenocarcinoma</a>	Iyer, Prasad G (Contact); Kisiel, John	Mayo Clinic Rochester	Early Detection
R01	CA241600-03	<a href="#">Clonal Reconstruction and Targeting of the Correa Sequence</a>	Mckee, Frank D	University Of Houston	Etiology
R01	CA244233-01A1	<a href="#">Improving radiolabeled imaging and targeting of HER2 positive EG cancers using lovastatin</a>	Lewis, Jason S (Contact); Janjigian, Yelena Y	Sloan-Kettering Inst Can Research	Treatment
R01	CA244236-02	<a href="#">Mechanisms and Targeted Therapy of NRF2-high Esophageal Squamous Cell Carcinoma</a>	Chen, Xiaoxin (Contact); Major, Michael Benjamin	North Carolina Central University	Treatment
R01	CA247790-02	<a href="#">A Personalized Approach to Targeted Esophageal Cancer Screening</a>	Hur, Chin	Columbia University Health Sciences	Early Detection
R01	CA248147-01A1	<a href="#">Serial immunotherapy combination to modulate the tumor environment in patients with metastatic gastroesophageal cancer</a>	Yoon, Harry H	Mayo Clinic Rochester	No code available
R01	CA248280-02	<a href="#">Rapid ex vivo biosensor cultures to assess dependencies in gastroesophageal cancer</a>	Boehm, Jesse Samuel	Broad Institute, Inc.	No code available
R01	CA252216-02	<a href="#">Omniview tethered capsule for low cost, non-endoscopic Barretts esophagus screening in unседated patients</a>	Fujimoto, James G	Massachusetts Institute Of Technology	Early Detection
R01	CA252245-01A1	<a href="#">Low Cost Tethered Capsule Endoscope with High-Resolution Digital Chromoscopy for Barretts Screening</a>	Richards-Kortum, Rebecca R (Contact);	Rice University	Early Detection



**Table 1. FY 2021 Extramural NCI Funded Projects Related to Esophageal Cancer**

Mech	Project Number	Project Titles	Principal Investigator(s)	Institution	ICRP CSO code
			Anandasabapathy, Sharmila		
R01	CA255298-01	<a href="#">The Role of the Microbiome and Notch Signaling in Esophageal Adenocarcinoma</a>	Abrams, Julian	Columbia University Health Sciences	Etiology
R01	CA255298-01S1	<a href="#">The Role of the Metaplastic Microenvironment in Barretts Esophagus</a>	Abrams, Julian	Columbia University Health Sciences	Biology
R03	CA252685-01A1	<a href="#">Dynamic BH3 Profiling with Patient Derived Organoids of Esophageal Cancer and Mesothelioma Enable Precision-Based Targeting of the Mitochondrial Apoptotic Pathway</a>	Ripley, Robert Taylor	Baylor College Of Medicine	Biology; Treatment
R03	CA256207-01	<a href="#">Modeling Esophageal Squamous Cell Cancer Initiation</a>	Park, Jae-Il	University Of Tx Md Anderson Can Ctr	No code available
R21	CA240881-02	<a href="#">Mitigating High Grade Radiation-Induced Lymphopenia through Pretreatment Autologous Lymphocyte Infusion</a>	Lin, Steven Hsheng (Contact); Al-Atrash, Gheath	University Of Tx Md Anderson Can Ctr	No code available
R21	CA256465-01	<a href="#">The impact of exposure to allergic inflammation on esophageal carcinogenesis</a>	Whelan, Kelly A	Temple Univ Of The Commonwealth	Etiology
R35	CA197694-06	<a href="#">Plastic States Associated with Cellular Stress and Malignancy: Insights for Prevention and Treatment of Lethal Metaplastic Cancers</a>	Tlsty, Thea D	University Of California, San Francisco	Biology; Etiology
R35	CA210088-05	<a href="#">The Role of Stem Cells and the Microenvironment in Gastrointestinal Cancers</a>	Wang, Timothy Cragin	Columbia University Health Sciences	No code available
R37	CA214679-04	<a href="#">Multi-site Gastrointestinal Cancer Detection by Stool DNA Methylation</a>	Kisiel, John	Mayo Clinic Rochester	Early Detection
R37	CA237022-02	<a href="#">Master regulator transcription factors promote esophageal neoplastic evolution</a>	Lin, De-Chen	Cedars-Sinai Medical Center	Biology
R41	CA261376-01A1	<a href="#">Diagnosis of Esophageal Squamous Cell Carcinoma in Low-Income Countries</a>	Abraham, John M	Capsulomics, Llc	Early Detection
R43	CA257701-01A1	<a href="#">A Novel Radiometry-Guided Ablation Catheter to Reliably Treat Barretts Esophagus</a>	Desai, Sohail	Symple Surgical, Inc.	Early Detection; Treatment
R44	CA261318-01A1	<a href="#">Endoscope development for the clinical use of near infrared fluorescence molecular probes in the GI tract</a>	Mcmorrow, Gerald	Veravanti, Inc.	Early Detection

**Table 1. FY 2021 Extramural NCI Funded Projects Related to Esophageal Cancer**

Mech	Project Number	Project Titles	Principal Investigator(s)	Institution	ICRP CSO code
R44	CA261490-01A1	<a href="#">Development of Notch1-selective Small Molecule Inhibitor for the Treatment of Cancer</a>	Guerrant, William Russell (Contact); Orton, Darren	Stemsynergy Therapeutics, Inc.	No code available
R50	CA233042-04	<a href="#">Translational Epigenomics in Gastrointestinal Cancer</a>	Yu, Ming	Fred Hutchinson Cancer Research Center	Biology
U01	CA152756-10S1	<a href="#">Biomarkers for Reducing Mortality of Cancers of the Colon and Esophagus</a>	Markowitz, Sanford D (Contact); Grady, William Mallory; Guda, Kishore	Case Western Reserve University	Early Detection
U24	CA163056-11	<a href="#">Barretts Esophagus Translational Research Network Coordinating Center (BETRNetCC)</a>	Shyr, Yu	Vanderbilt University Medical Center	No code available
U24	CA228550-05	<a href="#">Patient-Matched Stem Cells of the Barretts-Dysplasia-Adenocarcinoma Sequence</a>	Mckeon, Frank D	University Of Houston	No code available
U54	CA163004-10	<a href="#">The Role of the Microenvironment in Barrett's Esophagus</a>	Abrams, Julian	Columbia University Health Sciences	Biology; Etiology; Early Detection
U54	CA163059-10	<a href="#">Early Targets in Progression of Barrett's Esophagus to Esophageal Adenocarcinoma</a>	Wang, Thomas D	University Of Michigan At Ann Arbor	Early Detection
U54	CA163060-10	<a href="#">Genetic Determinants of Barrett's Esophagus and Esophageal Adenocarcinoma</a>	Chak, Amitabh	Case Western Reserve University	Biology; Etiology; Early Detection
U54	CA224068-04	<a href="#">An integrated translational approach to overcome drug resistance</a>	Corcoran, Ryan Bruce (Contact); Flaherty, Keith T	Massachusetts General Hospital	Biology; Early Detection; Treatment
UG1	CA242632-02	<a href="#">Early Phase Clinical Cancer Prevention Consortium</a>	Brenner, Dean E (Contact); Djuric, Zora	University Of Michigan At Ann Arbor	Treatment
UH3	CA211457-05	<a href="#">Facile screening for esophageal cancer in LMICs</a>	Meltzer, Stephen J (Contact); Wang, Tza-Huei Jeff	Johns Hopkins University	Early Detection

Table 2. FY 2021 Extramural Non-NCI NIH Funded Projects Related to Esophageal Cancer

Mech	Project Number	Project Title	Principal Investigator(s)	Institution	ICRP CSO code
K08	DK109209-05S1	<a href="#">Early TP53 Mutations and Genomic Doubling as a Novel Path for Barretts Esophagus Progression</a>	Stachler, Matthew D	University of California, San Francisco	No code available
K43	TW010715-05	<a href="#">Polycyclic aromatic hydrocarbons exposure and dietary risk of Esophageal squamous cell carcinoma in Uganda</a>	Okello, Samson	Mbarara University/Science/Technology	Etiology
P20	GM130423-03	<a href="#">Discovery, Evaluation and Clinical Decision Making Based on Non-Monotone Biomarkers for the Early Detection of Disease</a>	Bantis, Leonidas (Contact); Soper, Steven Allan; Yu, Alan S	University of Kansas Medical Center	No code available
R01	AA026297-05	<a href="#">Aldh2 and mitochondrial homeostasis in esophageal pathobiology</a>	Nakagawa, Hiroshi	Columbia University Health Sciences	Etiology
R01	DK116988-04	<a href="#">Molecular Mechanisms of Epithelial Contribution to Esophageal Inflammation and Tissue Repair</a>	Tetreault, Marie-Pier	Northwestern University at Chicago	Biology; Etiology
R01	DK118022-04	<a href="#">The role of gastrin in esophageal submucosal gland acinar ductal metaplasia</a>	Garman, Katherine	Duke University	Etiology
R01	DK118250-04	<a href="#">Academic-Industrial Partnership for Non-invasive Barretts Esophagus Detection</a>	Meltzer, Stephen J	Johns Hopkins University	Early Detection
R01	DK119314-03	<a href="#">KLF4 and WNT5A in esophageal epithelial differentiation and stratification</a>	Katz, Jonathan P	University of Pennsylvania	Etiology
R01	DK120650-03	<a href="#">Signaling Mechanisms Promoting Barrett's Metaplasia</a>	Que, Jianwen	Columbia University Health Sciences	Biology; Etiology
R01	DK120680-02	<a href="#">Gene therapy for GERD-associated esophageal epithelial barrier dysfunction</a>	Dean, David A (Contact); Zhou, Zhongren	University of Rochester	No code available
R01	EB025247-03	<a href="#">R01EB025247: Development and Validation of a Virtual Laparoscopic Hiatal Hernia Simulator (VLaHHS)</a>	Sankaranarayanan, Ganesh	Ut Southwestern Medical Center	No code available
R01	GM134358-03S1	<a href="#">Gene regulation for stem cell differentiation</a>	Peng, Jamy C	St. Jude Children's Research Hospital	Biology
R01	HL153720-01A1	<a href="#">Reducing cardiac toxicity with deep learning and MRI-guided radiation therapy</a>	Glide-Hurst, Carri Kaye	University of Wisconsin-Madison	Treatment; Cancer Control

Table 2. FY 2021 Extramural Non-NCI NIH Funded Projects Related to Esophageal Cancer

Mech	Project Number	Project Title	Principal Investigator(s)	Institution	ICRP CSO code
R01	MD013858-02	<a href="#">Designing a Plan of Action for Better Access and Quality of Surgery for African-Americans with Gastrointestinal Cancers in the Deep South</a>	Vickers, Selwyn M (Contact); Pisu, Maria	University of Alabama at Birmingham	Cancer Control
R21	AA028891-01	<a href="#">The role of esophageal myofibroblasts in alcohol related esophageal squamous cell carcinoma.</a>	Shaker, Anisa	University of Southern California	Biology; Etiology

Table 3. FY 2021 Extramural NCI Funded Projects Related to Stomach Cancer

Mech	Project Number	Project Title	Principal Investigator(s)	Institution	ICRP CSO code
F31	CA247112-02	<a href="#">Cell adhesion and ferroptosis: investigating a potential vulnerability in cancer cells</a>	Minikes, Alexander Michael	Weill Medical Coll of Cornell Univ	Biology
F99	CA253685-02	<a href="#">Assessing Helicobacter pylori and Diet to Develop Cancer Interventions in American Indian Communities in the Southwest</a>	Pete, Dornell	University of Washington	Etiology
K08	CA252635-01A1	<a href="#">PRECISE - a Personalized Risk Score for gastric CancEr</a>	Huang, Robert Jeffrey	Stanford University	Cancer Control
K99	CA263014-01	<a href="#">Functional characterization of novel oncogenic loci driving progression and immune response in gastrointestinal cancer</a>	Lo, Yuan-Hung	Stanford University	Treatment
P01	CA116087-14	<a href="#">H. pylori-induced Inflammation and Gastric Cancer</a>	Peek, Richard M	Vanderbilt University Medical Center	Biology; Etiology; Prevention; Early Detection
P20	CA251657-02	<a href="#">Project 2: Racial differences in host immune response and gastric carcinogenesis: Translating underlying biology to promote gastric cancer interception</a>	Epplein, Meira	Duke University	Etiology
P30	CA068485-26	<a href="#">Gastrointestinal Cancer Research Program</a>	Beauchamp, Robert Daniel	Vanderbilt University Medical Center	Etiology; Prevention; Early Detection; Treatment
P50	CA127003-13	<a href="#">Project 4 - Characterizing and Overcoming Resistance to ERBB2 Directed Therapy in Metastatic Gastric and Esophageal Adenocarcinoma</a>	Bass, Adam Joel	Dana-Farber Cancer Inst	Treatment
R01	CA077955-25	<a href="#">H. Pylori Relationship to Digestive Diseases and Cancer</a>	Peek, Richard M	Vanderbilt University Medical Center	Etiology
R01	CA138833-11	<a href="#">Regulation of the Oncogenic Stress Response in Helicobacter pylori-infected cells</a>	Zaika, Alexander I	University of Miami School of Medicine	Biology; Etiology
R01	CA219689-04	<a href="#">Therapeutic potential of antitumorigenic soluble MET variants induced by splicing interference</a>	Cartegni, Luca	Rutgers, The State Univ of N.J.	Treatment
R01	CA223978-04	<a href="#">Genetic studies of homologous recombination deficiency in hispanic gastric cancer</a>	Carvajal Carmona, Luis Guillermo	University of California at Davis	Etiology
R01	CA223978-04S1	<a href="#">Genetic studies of homologous recombination deficiency in hispanic gastric cancer</a>	Carvajal Carmona, Luis Guillermo	University of California at Davis	Etiology

Table 3. FY 2021 Extramural NCI Funded Projects Related to Stomach Cancer

Mech	Project Number	Project Title	Principal Investigator(s)	Institution	ICRP CSO code
R01	CA224428-04	<a href="#">The Role of RHOA in Diffuse Gastric Cancer</a>	Bass, Adam Joel (Contact); Der, Channing J; Wang, Timothy Cragin	Columbia University Health Sciences	Biology
R01	CA228512-04	<a href="#">A novel, short isoform of the +TIP microtubule (MT) binding protein CLIP170 confers taxane resistance by obstructing the MT pore.</a>	Giannakakou, Paraskevi (Contact); Elemento, Olivier ; Shah, Manish A	Weill Medical Coll of Cornell Univ	No code available
R01	CA233944-02	<a href="#">Rapid and flexible precision oncology mouse models of epithelial malignancies epithelial malignancies</a>	Lowe, Scott W	Sloan-Kettering Inst Can Research	Biology; Treatment
R01	CA236905-01A1	<a href="#">Molecular Understanding and Targeting of Determinant Factors in Gastric Tumorigenesis</a>	Zuo, Xiangsheng	University of Tx Md Anderson Can Ctr	Etiology
R01	CA239645-02	<a href="#">Mechanisms Governing Expansion of Embryonic Progenitor Cells (EPCs) inMetaplasia</a>	Mills, Jason C	Baylor College of Medicine	No code available
R01	CA240955-02	<a href="#">Gasdermin E and pyroptosis in cancer</a>	Lieberman, Judy	Boston Children'S Hospital	Biology; Treatment
R01	CA243793-03	<a href="#">RPMS1 circular RNAs in EBV malignancies</a>	Flemington, Erik K	Tulane University of Louisiana	Etiology
R01	CA244233-01A1	<a href="#">Improving radiolabeled imaging and targeting of HER2 positive EG cancers using lovastatin</a>	Lewis, Jason S (Contact); Janjigian, Yelena Y	Sloan-Kettering Inst Can Research	Treatment
R01	CA245673-02	<a href="#">The role of type 2 inflammation in the initiation and progression of metaplastic differentiation and neoplastic transformation of gastric epithelia</a>	Chen, Zhibin	University of Miami School of Medicine	Etiology
R01	CA246208-02	<a href="#">Mechanisms and biomarkers in aberrant paligenosis-induced stomach tumorigenesis</a>	Mills, Jason C	Baylor College of Medicine	Etiology
R01	CA247685-02	<a href="#">HER2-targeting transformable nanotherapeutic platform against HER2+ cancers</a>	Lam, Kit S	University of California at Davis	Treatment
R01	CA247685-02S1	<a href="#">A Mannose 6-Phosphate Decorated Transformable Nanoplatform for Targeted Uptake in HER2+ Tumors</a>	Lam, Kit S	University of California at Davis	Treatment

Table 3. FY 2021 Extramural NCI Funded Projects Related to Stomach Cancer

Mech	Project Number	Project Title	Principal Investigator(s)	Institution	ICRP CSO code
R01	CA248147-01A1	<a href="#">Serial immunotherapy combination to modulate the tumor environment in patients with metastatic gastroesophageal cancer</a>	Yoon, Harry H	Mayo Clinic Rochester	No code available
R01	CA248280-02	<a href="#">Rapid ex vivo biosensor cultures to assess dependencies in gastroesophageal cancer</a>	Boehm, Jesse Samuel	Broad Institute, Inc.	No code available
R01	CA249666-01A1	<a href="#">HER2-mediated delivery of cytotoxic agents in solid tumors</a>	Li, Bob T (Contact); Chandralapaty, Sarat	Sloan-Kettering Inst Can Research	Treatment
R01	CA249949-01A1	<a href="#">Molecular Functions of CDK1 in Gastric Tumorigenesis</a>	El-Rifai, Wael	University of Miami School of Medicine	Biology
R21	CA248804-01A1	<a href="#">Discovery of H. pylori T cell epitopes unique to minority populations that could contribute to increased gastric cancer rates.</a>	Settles, Erik W	Northern Arizona University	Etiology
R35	CA197694-06	<a href="#">Plastic States Associated with Cellular Stress and Malignancy: Insights for Prevention and Treatment of Lethal Metaplastic Cancers</a>	Tlsty, Thea D	University of California, San Francisco	Biology; Etiology
R35	CA210088-05	<a href="#">The Role of Stem Cells and the Microenvironment in Gastrointestinal Cancers</a>	Wang, Timothy Cragin	Columbia University Health Sciences	No code available
R37	CA214679-04	<a href="#">Multi-site Gastrointestinal Cancer Detection by Stool DNA Methylation</a>	Kisiel, John	Mayo Clinic Rochester	Early Detection
R37	CA244970-02	<a href="#">Drivers of gastric pre-neoplasia</a>	Choi, Eunyoung	Vanderbilt University Medical Center	Biology; Etiology
R41	CA257262-01A1	<a href="#">Efficacy of an Electrophile Scavenger in the Prevention of Gastrointestinal Inflammatory Carcinogenesis</a>	Rathmacher, John A (Contact); Wilson, Keith T	Mti Biotech, Inc.	Etiology; Prevention
R56	CA118374-12A1	<a href="#">The role of endothelial cells in the formation of early metastatic niches in the lung</a>	Ryeom, Sandra W	University of Pennsylvania	Biology
U01	CA265729-01	<a href="#">Comparative modeling of gastric cancer disparities and prevention in the US and globally</a>	Hur, Chin (Contact); Meester, Reinier Gs; Yeh, Jennifer M	Columbia University Health Sciences	Cancer Control
U54	CA096297-18	<a href="#">Pilot Project 1: Combination of Viroimmunotherapy and Microbiota Modulation to Treat Gastric Cancer</a>	Godoy-Vitorino, Filipa	University of Puerto Rico Med Sciences	Treatment

Table 3. FY 2021 Extramural NCI Funded Projects Related to Stomach Cancer

Mech	Project Number	Project Title	Principal Investigator(s)	Institution	ICRP CSO code
U54	CA096300-18	<a href="#">Pilot Project 1: Combination of Viroimmunotherapy and Microbiota Modulation to Treat Gastric Cancer</a>	Gomez-Manzano, Candelaria	University of Tx Md Anderson Can Ctr	Treatment
U54	CA143924-13	<a href="#">Project 3: Helicobacter pylori and Stomach Cancer Among Native American Populations</a>	Harris, Robin B	University of Arizona	Etiology
U54	CA143925-13	<a href="#">Project 3: Helicobacter pylori and stomach cancer among Native American populations</a>	Monroy, Fernando P	Northern Arizona University	Etiology
U54	CA233306-01	<a href="#">University of California Minority Patient-Derived Xenograft (PDX) Development and Trial Center (UCaMP) to Reduce Cancer Health</a>	Carvajal Carmona, Luis Guillermo	University of California at Davis	No code available



Table 4. FY 2021 Extramural Non-NCI NIH Funded Projects Related to Stomach Cancer

Mech	Project Number	Project Title	Principal Investigator(s)	Institution	ICRP CSO code
F30	DK118873-04	<a href="#">The Role of Epstein-Barr Virus-Induced Gene 3 (EBI3) in Preventing Gastric Atrophy and Metaplasia</a>	Bockerstett, Kevin A	Saint Louis University	Etiology
K08	DK122116-03	<a href="#">Establishing roles for the type I interferon/double-stranded RNA response and Helicobacter pylori-specific transcripts in the progression to metaplasia in gastric epithelium</a>	Saenz, Jose Bernardo	Washington University	Etiology
K08	DK125876-01A1	<a href="#">A Targeted Approach to the Surveillance of Precursor Lesions for Gastric Cancer</a>	Laszkowska, Monika	Sloan-Kettering Inst Can Research	Cancer Control
P20	GM121322-04	<a href="#">Immune Regulation of Gastric Cancer</a>	Busada, Jonathan	West Virginia University	No code available
R01	AI039657-24	<a href="#">Structure and function of Helicobacter pylori VacA</a>	Cover, Timothy L	Vanderbilt University Medical Center	Etiology
R01	AI054423-16	<a href="#">Genetic requirements of Helicobacter pylori infection</a>	Salama, Nina	Fred Hutchinson Cancer Research Center	Etiology
R01	AI118932-07	<a href="#">Type IV Protein Secretion in Helicobacter pylori</a>	Cover, Timothy L (Contact); Ohi, Melanie Diane	Vanderbilt University Medical Center	Etiology
R01	DK058587-21	<a href="#">Helicobacter Pylori and Gastrointestinal Biology</a>	Peek, Richard M	Vanderbilt University Medical Center	Etiology
R01	DK094989-09	<a href="#">Regulation Of Atrophy-Induced Progenitor Cells In The Gastric Corpus</a>	Mills, Jason C	Washington University	Etiology
R01	DK105129-07	<a href="#">Mechanisms Of Chief Cell Dedifferentiation</a>	Mills, Jason C	Baylor College Of Medicine	No code available
R01	DK118563-04	<a href="#">MDSC Polarization and Helicobacter-Induced Gastric Metaplasia</a>	Merchant, Juanita L	University Of Arizona	Biology
R01	DK121785-02	<a href="#">Regulation of gastric metaplasia, dysplasia and neoplasia by Bone Morphogenetic Protein signaling</a>	Todisco, Andrea	University Of Michigan At Ann Arbor	Biology; Etiology
R01	DK124302-01A1	<a href="#">Mechanisms of induction of gastric injury by H. pylori</a>	Marcus, Elizabeth A	University Of California Los Angeles	Etiology
R21	AI156357-01A1	<a href="#">Contribution of Helicobacter pylori HomA and HomB to colonization and disease</a>	Merrell, D Scott	Henry M. Jackson Fdn For The Adv Mil/Med	Etiology
R35	GM122535-05	<a href="#">Molecular Mechanisms of Signal Transduction Involving Light, Redox and Transmembrane Complexes</a>	Crane, Brian R	Cornell University	No code available

Table 4. FY 2021 Extramural Non-NCI NIH Funded Projects Related to Stomach Cancer

Mech	Project Number	Project Title	Principal Investigator(s)	Institution	ICRP CSO code
R56	DK110406-06A1	<a href="#">The Role of Inflammation in Regulating Gastritis and Gastric Carcinogenesis</a>	Dipaolo, Richard J	Saint Louis University	Biology; Etiology
SC1	GM127278-08	<a href="#">Biodegradable nanocarriers and antibodies as targeting delivery vehicles for cancer metallodrugs</a>	Contel, Maria	Brooklyn College	Treatment
U19	AI116484-06	<a href="#">Project 1: Biomimetic Interactions Between Bacterial Pathogens and the Gastrointestinal Epithelium</a>	Amieva, Manuel R	Stanford University	Etiology
U54	MD000538-19	<a href="#">Research Project 2</a>	Kwon, Simona	New York University School Of Medicine	No code available
UH3	TR002978-03	<a href="#">Acoustofluidic Separation (AFS), Purification and Raman Spectral Fingerprinting of Single EVs: From Cell of Origin to Target Cell and Biofluids</a>	Wong, David T (Contact); An, Ji Yeong ; Gall, Kenneth A; Kim, Yong ; Xie, Ya-Hong	University Of California Los Angeles	Early Detection