

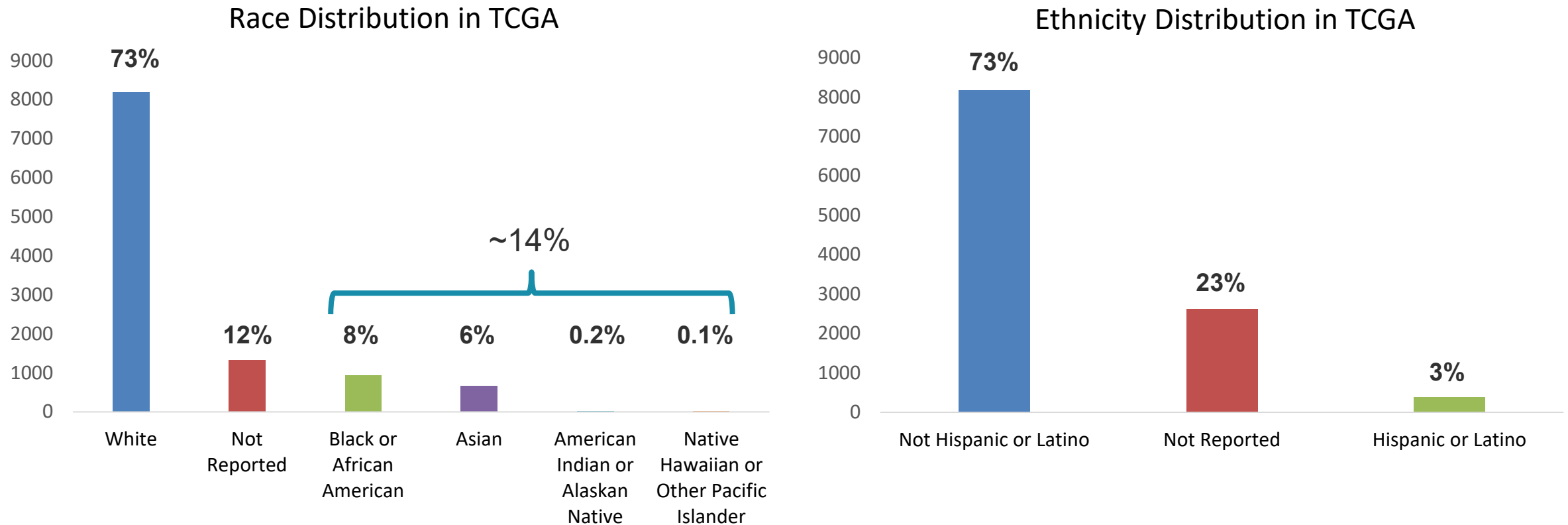
Patient Engagement for Priority Cancer Sequencing (PE4PC-Seq)

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for the Network for Direct Patient Engagement Team*

Goals of this Funding Opportunity

- Generate a comprehensive genomic landscape of cancers (or cancer subsets) that are currently poorly characterized. For example:
 - rare cancers
 - highly lethal cancers
 - cancers with an early age of onset
 - cancers with significant disparities
 - cancers in understudied populations
- Address research gaps in pediatric and adult cancers using an innovative direct volunteer approach.
- Optimize direct patient engagement approaches to inform future NCI activities

Problem: Research Gaps in Molecular Profiling of Cancer



Results...have resulted in substantial gains in the understanding of cancer prevention and treatment, yet their generalizability to all US populations is limited due to the lack of racial and ethnic diversity. It is imperative that the Cancer Moonshot not repeat this history.

- Martinez and Paskett (2018); JAMA Oncology.

Example of Success of Direct Patient Engagement: Myeloproliferative Disorders

- Using an internet-based protocol collected clinical information and biological specimens for several hundred patients
- Determined that a significant number of patients had recurrent mutations which were a potential target for pharmacologic inhibition
- Highlights how the internet can expand reach beyond traditional clinic-based approaches and address a research gap

Changes Based on BSA Feedback

- Define “direct patient engagement”
- Address specific patient engagement questions related to cancer sequencing projects
- Return of individual results
- Budget

Defining Direct Patient Engagement

- Patient engagement is an ongoing, bi-directional and mutually beneficial interaction between patients and researchers, where patients are included as an integral part of all phases of the research process: including the identification of research priorities and the design, conduct and uptake of research (*Fergusson et al 2018*)
- By direct patient engagement, we mean:
 - Research teams interact directly with patients (via the web, social media, online patient communities), not through providers or the clinical care setting
 - Incorporate patient input throughout research process (through surveys, interviews, and regular communication from consenting to return of research results)



Proposed Mechanisms to Support (U19s and U24)

- Program project grants (U19) to address research gap in molecular profiles of cancer using direct patient engagement strategy
 - Each U19 will focus on a single cancer subset
 - Each U19 will support three highly integrated projects and cores
 - Project 1: Implementation of Patient Engagement for Cancer Sequencing Research
 - Project 2: Sequencing, Analysis and Interpretation
 - Project 3: Research to Optimize Patient Engagement and Communication
 - Ensures that relevant patient engagement research specific to cancer sequencing projects plays an integral role in U19
- U24 Coordination Center

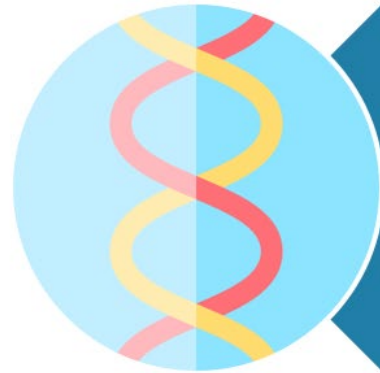
Project 1



Implementation of Patient Engagement for Cancer Sequencing Research

- Direct patient engagement, recruitment, tissue acquisition (normal and tumor), data collection, return of information to participants
- Number of patients justified by cancer frequency and characteristics of cancer
- Critical role for oncologists, pathologists and genetic counselors

Project 2



Sequencing, Analysis, and Interpretation

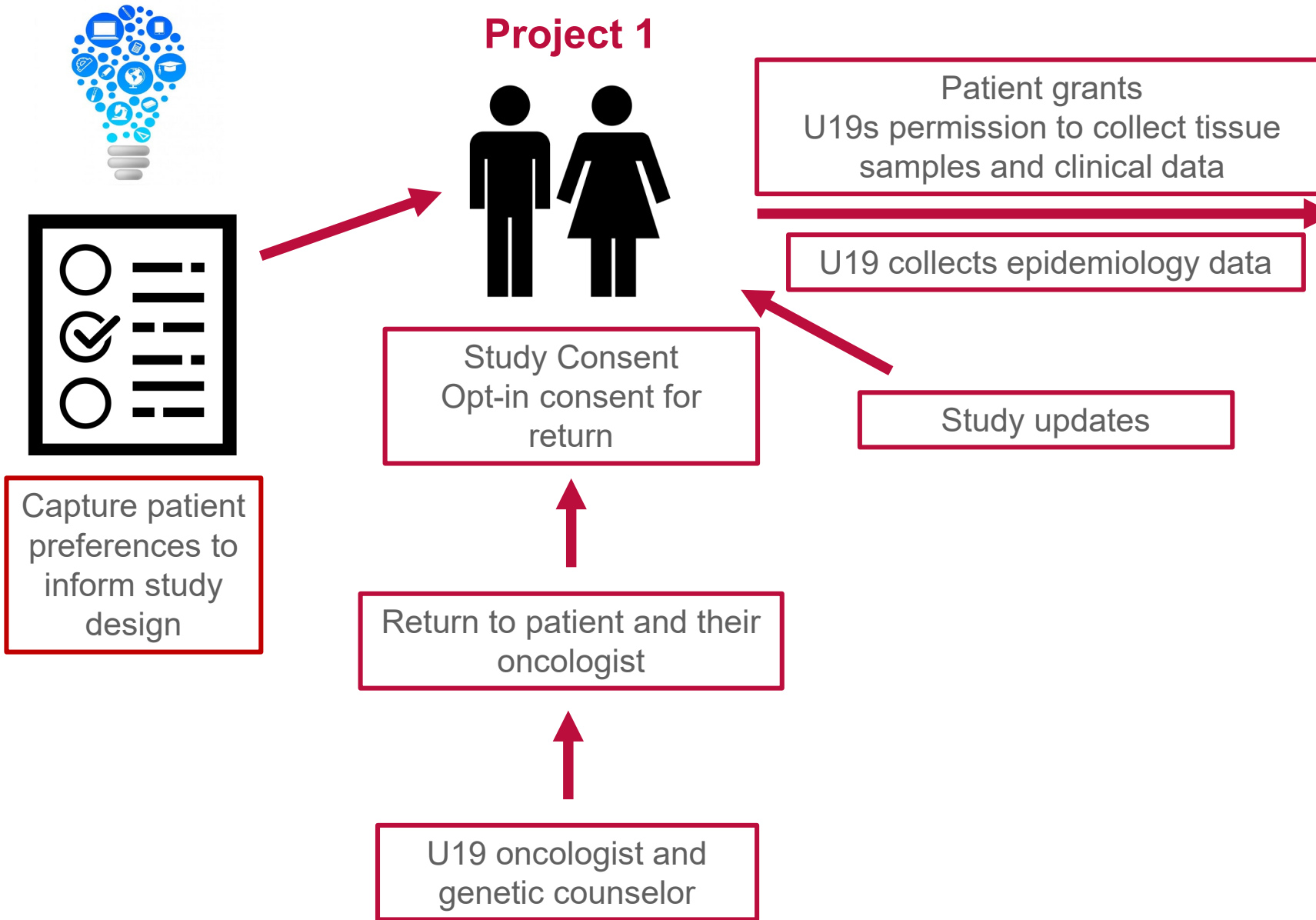
- Sequencing to be performed in a laboratory certified and fully compliant with Clinical Laboratory Improvement Amendment (CLIA) (to allow for return of genetic information)
- Tissue processing, molecular characterization, analysis and interpretation
- Planned Characterization: Whole Exome Sequencing, RNA Sequencing, low pass Whole Genome Sequencing
- Data to be submitted to the NCI Cancer Genomics Data Commons (GDC)

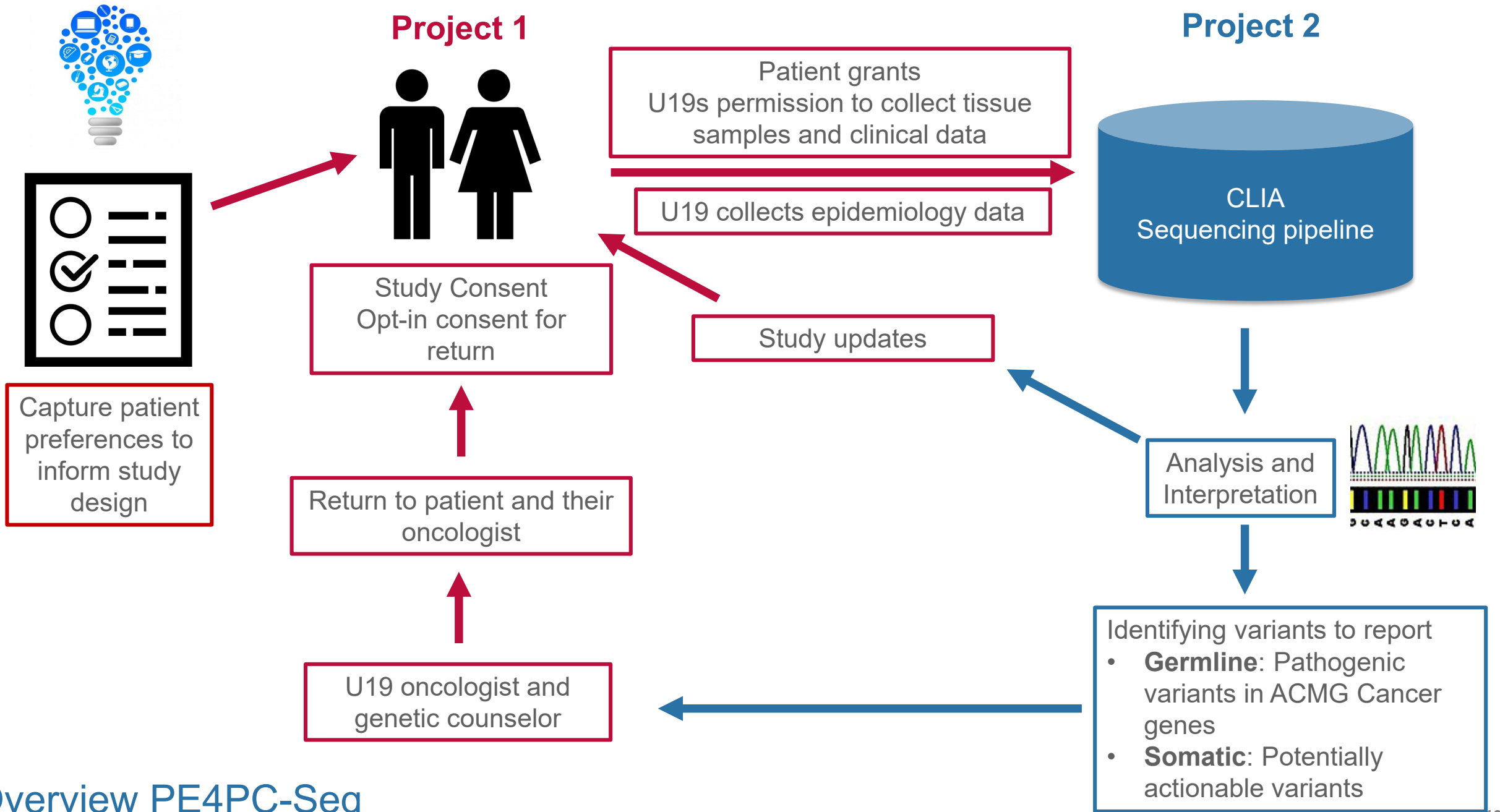
Project 3



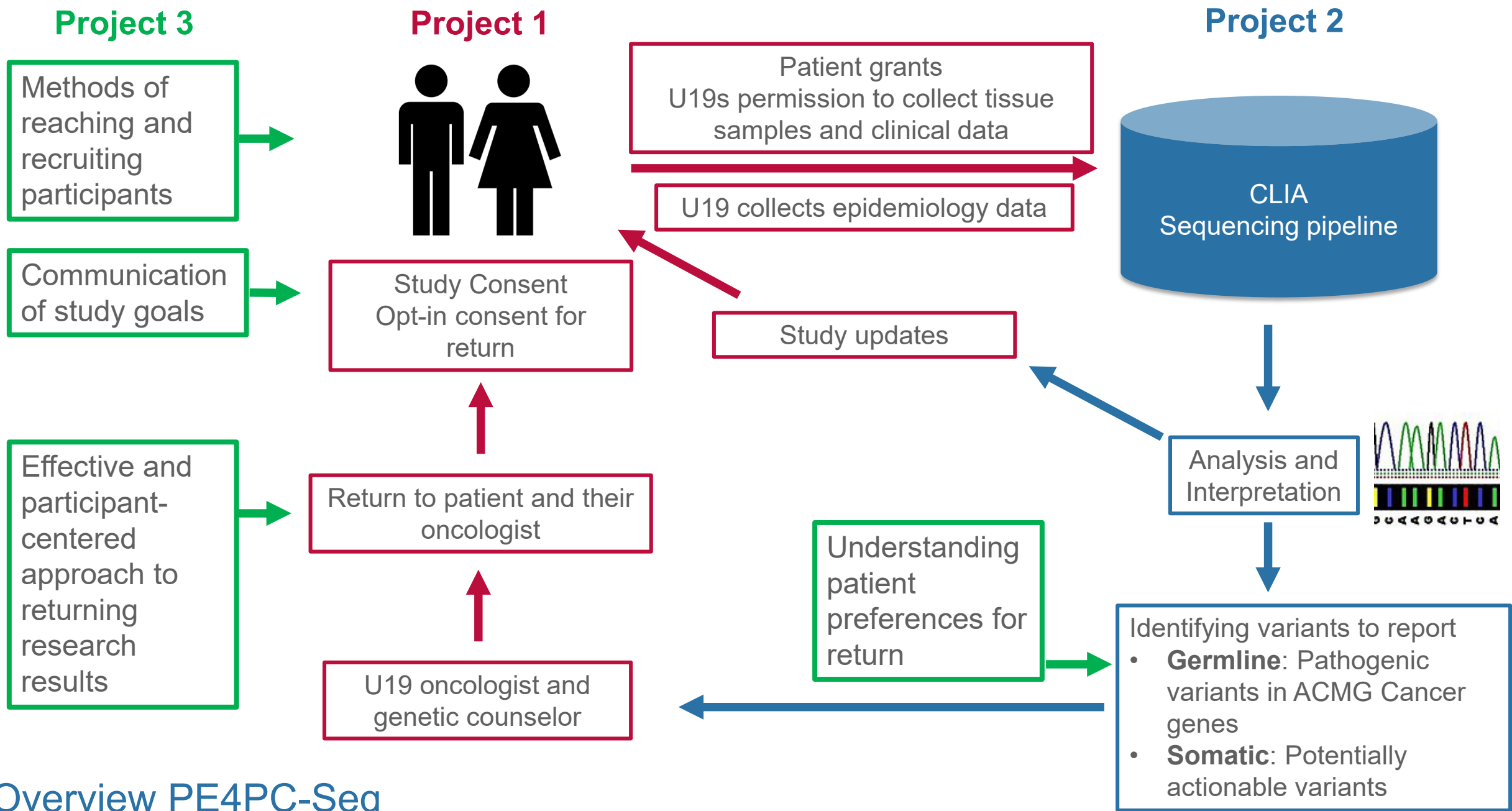
Research to Optimize Patient Engagement and Communication

- Rigorous empirical research on participant outreach, recruitment, communication, and education about cancer sequencing goals and discoveries. For example:
 - Determine participant preferences and needs in participation and return of genetic information
 - Develop and test interventions on optimal approaches to reach understudied populations, retain participants, and effectively communicate and explain results
- Social and behavioral research to be fully integrated in U19





Overview PE4PC-Seq



Overview PE4PC-Seq

Return of Information to Participants

- The return of individual research results is a critical way to engage and respect research participants;
- Participants may **opt-in** to receive, depending on their preferences:
 - Summary of Individual health information used in the study
 - Ongoing study updates
 - Aggregated results
 - Lay summary of scientific findings/ research results
 - Individual germline and somatic genetic results



PE4PC-Seq Policy for Returning Genetic Information

- CLIA sequencing allows for broader return of genetic information
- **NCI Recommended Germline Return policy** – similar to MATCH, APOLLO and other NCI projects
 - Report back to patients and their oncologist pathogenic variants within the ACMG59 cancer genes
- **NCI Recommended Somatic Return policy** –
 - Report back to patients and their oncologist potentially actionable variants
- Additional plan details (relevant to specific cancer type or population of study) can be suggested by U19 investigators
- This area will evolve and this policy will be periodically evaluated and revised



PE4PC-Seq Budget

Mechanism	Estimated Cost (M)					
	FY19	FY20	FY21	FY22	FY23	Total
U19 grants (4 awards/\$2.5M direct costs each)	\$10	\$10	\$10	\$10	\$10	\$50
U24 Coordination Center	\$0.5	\$0.5	\$0.5	\$0.5	\$0.5	\$2.5
Total						\$52.5

What will this Project Accomplish?

- Address research gaps in molecular profiles of cancer
 - Determine effectiveness of direct patient engagement approach
- Provide insights into development and sustainability of a larger network for direct patient engagement
 - Learn and respond to patient preferences
 - Identify optimal methods of engagement and communication
- Data will be shared as a resource



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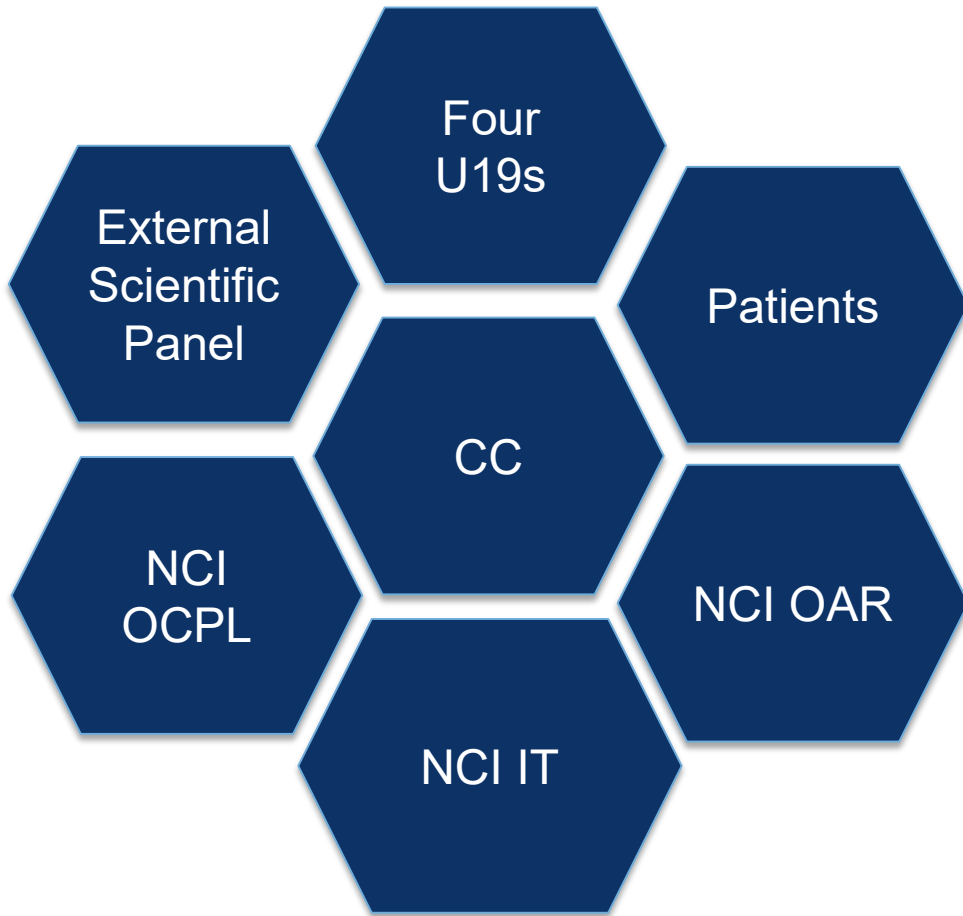
www.cancer.gov

www.cancer.gov/espanol

Portfolio Analysis

- Large number of grants and projects support tumor sequencing
 - Do not use direct patient engagement
 - Research gaps remain
- NCI Community Oncology Research Program (NCORP) and NCI National Clinical Trials Network (NCTN) develop best practices for their networks
- Several projects and initiatives for patient engagement *for health care delivery*
 - Patient-Centered Outcomes Research Institute (PCORI)
 - 23 NCI grants considering patient engagement for health care delivery
- One NCI grant focused on direct patient engagement to increase patient participation in *discovery research*
 - Does not include tumor molecular characterization

Coordination Center (CC)



- Infrastructure support, coordination and communication across U19s and with NCI, including collaborative research activities
- Responsibilities would include:
 - Creating and sustaining unified branding and public relations outreach
 - Supporting and coordinating pilot studies across network,
 - Developing a core set of measurements for U19s
 - Overseeing the development of patient engagement and communication materials and websites
 - Consolidating implementation strategies across the consortium,
 - Sharing best practices
 - Convening an External Scientific Panel
 - Organizing U19 investigator meetings and conference calls
 - Organizing annual meetings for U19 participants
 - Sustainability plans for the network

Need for Robust Clinical Annotation

- Recognize the importance of longitudinal collection of epidemiological and clinical variables to understand genomic information
- Opportunity to re-contact patients
- Need to optimize obtaining and abstracting data from medical records
 - All of Us
 - Sync for Science and Picnic Health
 - Surveillance Epidemiology and End Results (SEER) Program
 - Data Linkages and Natural Language Processing group



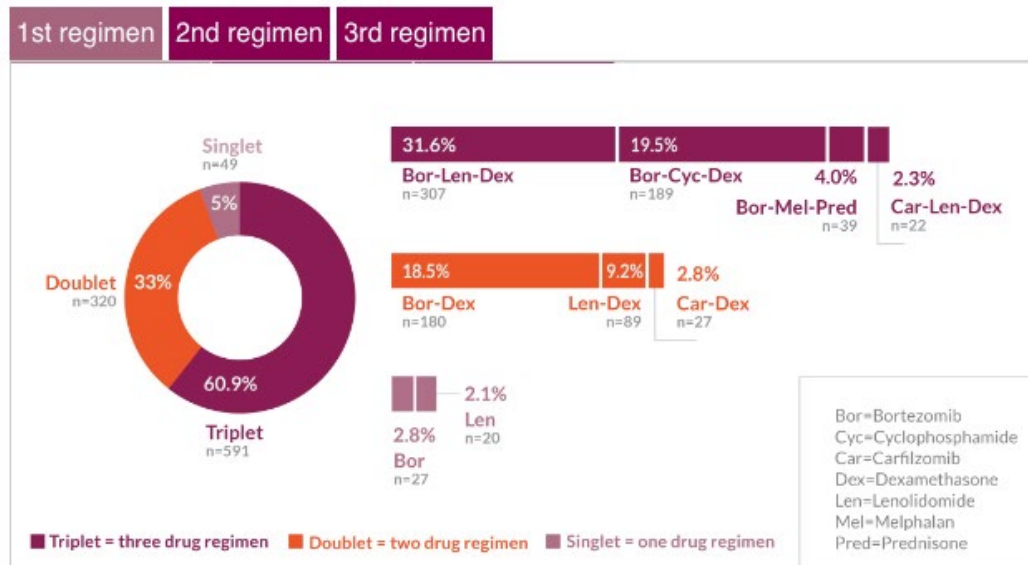
Consideration of Other Clinical Sequencing or Research Sequencing Efforts

- Clinical care will always be the priority.
 - Depending on tissue availability, PE4PC-Seq maybe complementary
 - Patients without sufficient biospecimen can still participate
- PE4PC-Seq will have a more narrow focus; enriched for rare cancer subsets or understudied populations
- PE4PC-Seq will be designed for discovery research, generating a more comprehensive molecular characterization
- PE4PC-Seq will collect rich epidemiologic and clinical data to increase value of genomic data.
- PE4PC-Seq will prioritize broad data sharing.
- Priority of PE4PC-Seq projects will be minority or underserved populations
- Focused, relatively modest effort design to complement existing efforts and inform future NCI activities



Examples: Return of Information to Participants

- Aggregated results including Individual survey data and aggregate comparison data



- Lay summary of scientific findings/ research results

3 medications are better than **2**

Patients who took triplet therapy (three medications) had better progression-free survival than who took doublet therapy (two medications).