

Patient Engagement for Priority Cancer Sequencing (PE4PC-Seq)

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for the Network for Direct Patient Engagement Team*

Overview:

Direct Patient Engagement for Discovery Science Research Program

June 2018 BSA Presentations

FUNDAMENTAL RESEARCH



Research to Develop Evidence-Based Approaches to Patient Engagement

DEMONSTRATION PROJECTS



Patient Engagement for Priority Cancer Sequencing (PE4PC-Seq)

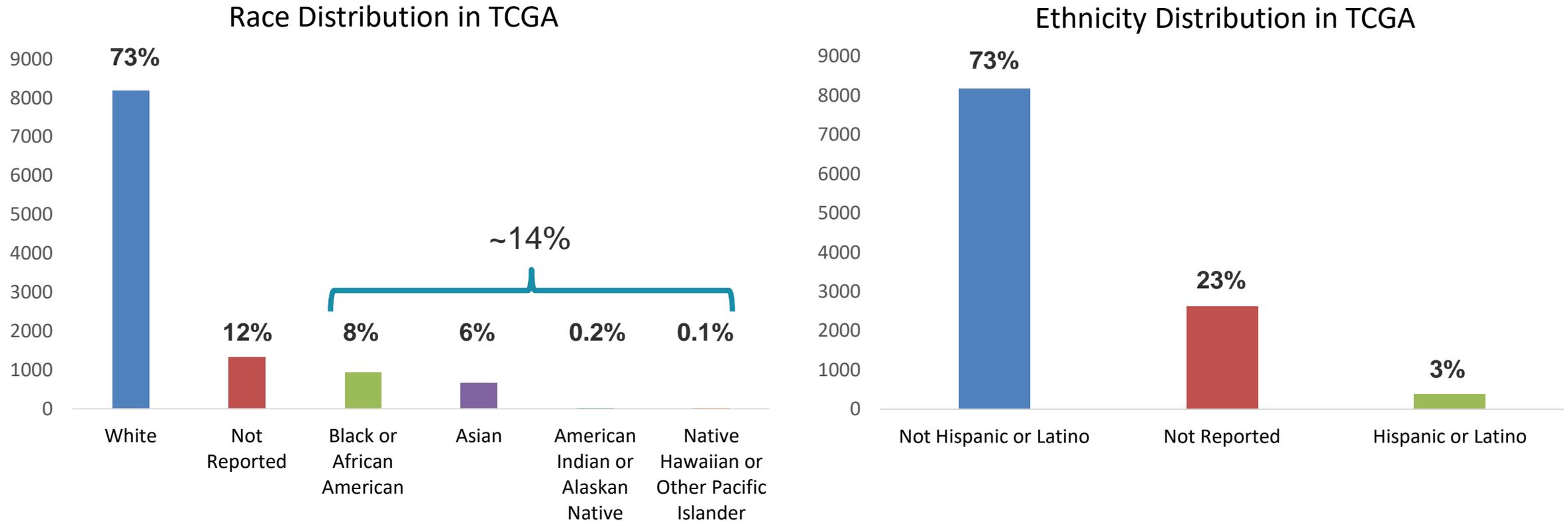
PATIENT PORTAL



Goals of this Funding Opportunity

- Support targeted direct patient engagement projects
 - The Blue Ribbon Panel noted the importance of directly engaging with patients to facilitate participation in research and ensure patients are respected and have access to the research enterprise.
 - The panel stated that efforts to reach minority and underserved populations should be a high priority
- Generate a comprehensive genomic landscape of cancers that are poorly characterized
- Address research gaps and NCI priorities

Problem: Research Gaps in Molecular Profiling of Cancer



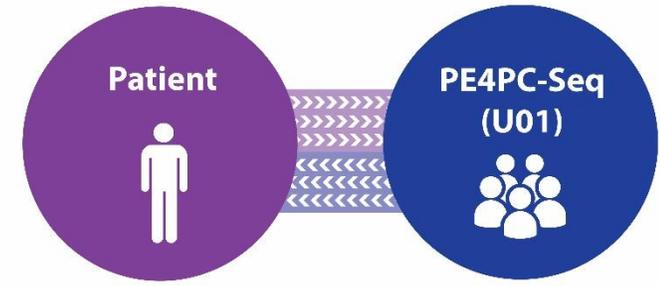
Results...have resulted in substantial gains in the understanding of cancer prevention and treatment, yet their generalizability to all US populations is limited due to the lack of racial and ethnic diversity. It is imperative that the Cancer Moonshot not repeat this history.

- Martinez and Paskett (2018); JAMA Oncology.

Mechanisms

- Patient Engagement: Cooperative agreements (U01) (N=4)
 - Direct patient engagement in priority cancer areas and/or understudied populations
 - Patient engagement, recruitment, tissue acquisition (normal and tumor), data collection, data analysis and interpretation, return of information to participants
- Molecular Characterization and Data Sharing: NCI Center for Cancer Genomics (CCG) pipeline
 - Tissue processing, molecular characterization, and analysis
 - Planned Characterization: Whole Exome Sequencing, Whole Genome Sequencing, DNA Methylation, RNA Sequencing
 - Data to be submitted to the NCI Cancer Genomics Data Commons (GDC)

Patient Engagement in PE4PC-Seq U01s



- Develop engagement plan to be evaluated in peer review
 - Addressing PCORI engagement principles of reciprocal relationships, co-learning, partnerships, transparency, honesty and trust
- Incorporate patient input throughout the research process.
- Use state of the art, culturally sensitive, and appropriate methods of engagement:
 - Coordinating center will serve as clearinghouse of existing resources (e.g. CRCHD) and facilitate information sharing across projects (Winn, Chambers)
- Maintain ability to re-contact patients
- Develop and report on patient-centered outcomes
- Plan regular communications with patients about study updates and results
- Listen to patient feedback, priorities, concerns, and address questions
- Participate in bi-annual meetings and webinars for patients

Selection of Cancer Subsets

Inclusion criteria (examples listed below are not exhaustive)

- **Rare cancers** (e.g. anal cancer, angiosarcoma, gallbladder cancer)
- **Highly lethal cancer subsets** (e.g. metastatic tumors, pancreatic cancer, serous ovarian cancer)
- **Cancer subsets with early age of onset** (e.g. pancreatic cancer below age 50)
- **Cancers with high disparities** (e.g. prostate cancer, colorectal cancer, endometrial cancer)
- **Cancers in understudied populations** (e.g. cancers in African American, Hispanic, Asian, Native American, rural and sexual and gender minority populations).

Exclusion criteria

- Cancers and cancer subsets well-captured in TCGA/ICGC or on-going activities such as CCR Rare Tumor Patient Engagement Network (RTPEN); Early Onset Malignancies Initiative

Process for selection

- Priority cancer areas and projects would be selected based on scientific discussion in peer review, NCI priorities and careful review of all ongoing activities.

Return of Information to Participants

- Leveraging the NCI Center for Genomics pipeline for research
 - Sequencing will be performed in research laboratory and is not CLIA test
- Develop an NCI Recommended Genetic Findings policy – similar to MATCH and other NCI projects
 - Report back to patient’s oncologist for cancer genes within the ACMG guidelines for follow up CLIA testing
- This area will evolve and this policy will be periodically evaluated
- Participants may 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



Evaluation Criteria for Success of RFA

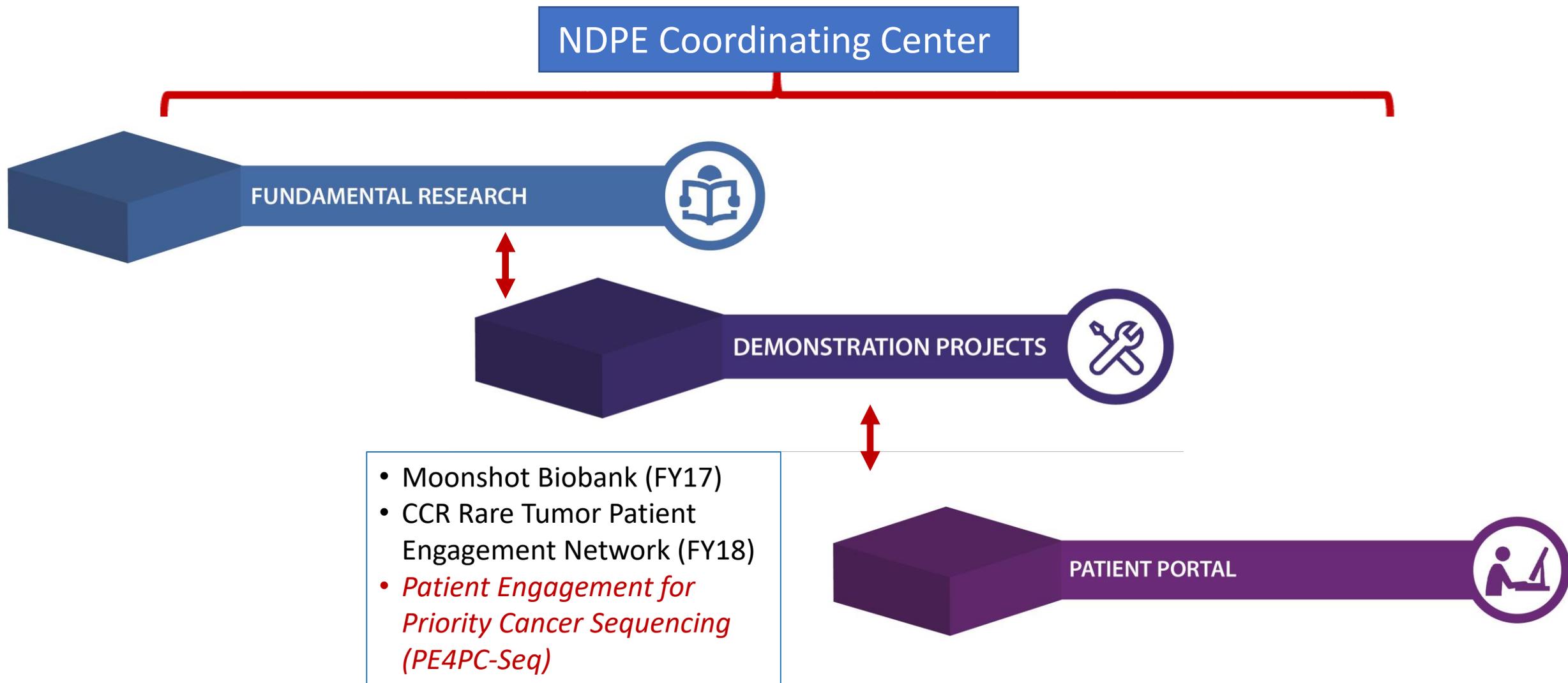
Patient Engagement Metrics

- Patients are respected, empowered, and motivated to participate
 - Lower perceived barriers to research participation
 - Confidence in ability to make decisions about research participation
 - Ease of providing clinical data and tissue specimens
 - Understand how and where tissue specimens will be used
 - Patients report high perceived return of value and satisfaction with study interactions
- Inform/advance patient engagement strategies specific to cancer sequencing projects such as PE4PC-Seq
- Number of patients participating at all stages of project
- Achieving a greater diversity of patients and cancer types

Scientific Metrics

- Ability to efficiently obtain and abstract medical record data
- Ability to perform genomic characterization using this approach
- Addressing research gaps

Integration: Direct Patient Engagement for Discovery Science Research Program

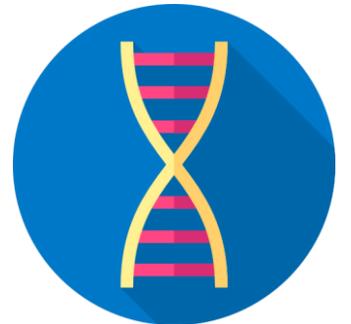
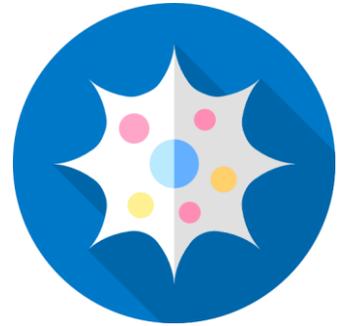


BSA Subcommittee Feedback

- Jim Lacey, Elena Martinez and Mary Lou Smith
- Define what we mean by patient engagement and how it will be measured.
- Overview of trans-NCI Network for Direct Patient Engagement activities
 - Coordination between this initiative and Research to Develop Evidence-Based Approaches to Patient Engagement (Winn) and Implementation Science Centers for Cancer Control (IS-C3) (Chambers) RFAs
- Recognize the importance of engaging minority populations and the difficulty of engaging these populations.
- What patient engagement strategies are essential for cancer sequencing projects
- PEER Review: Will be critical to identify appropriate reviewers
- Consideration of Other Clinical Sequencing or Research Sequencing Efforts

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



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

PE4PC-Seq Budget

Mechanism	Estimated Cost (M)					
	FY19	FY20	FY21	FY22	FY23	Total
RFA for U01 grants (4 awards/\$600K total costs each)	\$2.4	\$2.4	\$2.4	\$2.4	\$2.4	\$12.0
Center for Cancer Genomics Pipeline		\$4.0	\$4.0	\$4.0	\$4.0	\$16.0
Total	\$2.4	\$6.4	\$6.4	\$6.4	\$6.4	\$28.0

Assumptions:

500 specimens/project.

Tissue processing: \$2000/sample

Tissue characterization: \$5000/sample

Clinical Data Center: \$2M

What will this Project Accomplish?

- Provide insights into development and sustainability of a larger network for direct patient engagement
- Engage patients as part of the research enterprise
- Address gaps in understanding of genomics profile of patients of rare cancers, cancer subtypes, and cancers in minority or other understudied populations
- Provide a resource for the broad research community

Patient Voices on Contributing to Discovery Research- “Count Me In”



“I want to live and watch my children grow up, but if I can’t, then I want to leave a legacy and a cure.”
—Houston, TX

“As someone who does not live near a research center and therefore cannot easily participate in trials, I finally feel like I can contribute.”
—Lake Tahoe, CA



**NATIONAL
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www.cancer.gov

www.cancer.gov/espanol

Extra

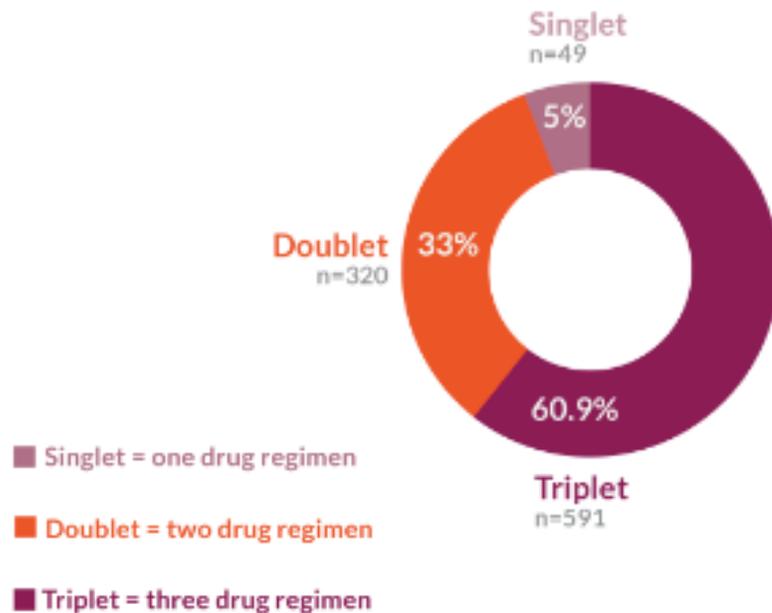
Need for Robust Clinical Annotation

- 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



Return of Information to Participants - Examples

Aggregated results



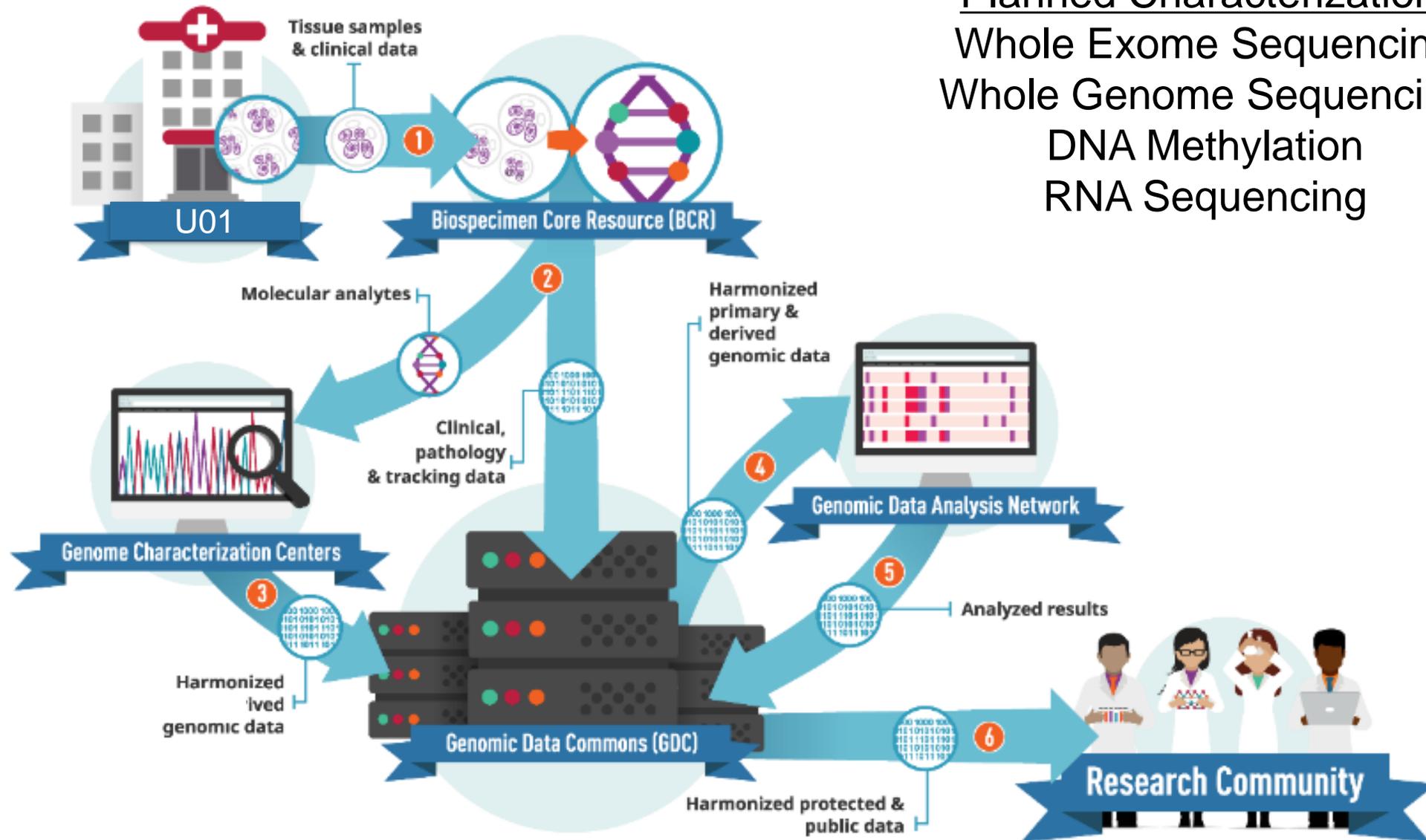
Lay summary of scientific findings

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).

Leveraging NCI CCG Genome Characterization Pipelines

Planned Characterization:
Whole Exome Sequencing
Whole Genome Sequencing
DNA Methylation
RNA Sequencing



Frequencies of Recurrently Mutated Genes in Multiple Myeloma

127 African Americans
691 Caucasians
MMRF CoMMpass

BCL7A,
BRWD3,
AUTS2
implicated in
other B-cell
malignancies

TP53

