Planning for Fluid Biomarkers on a Larger Scale

ADC Director's Meeting
Spring 2019

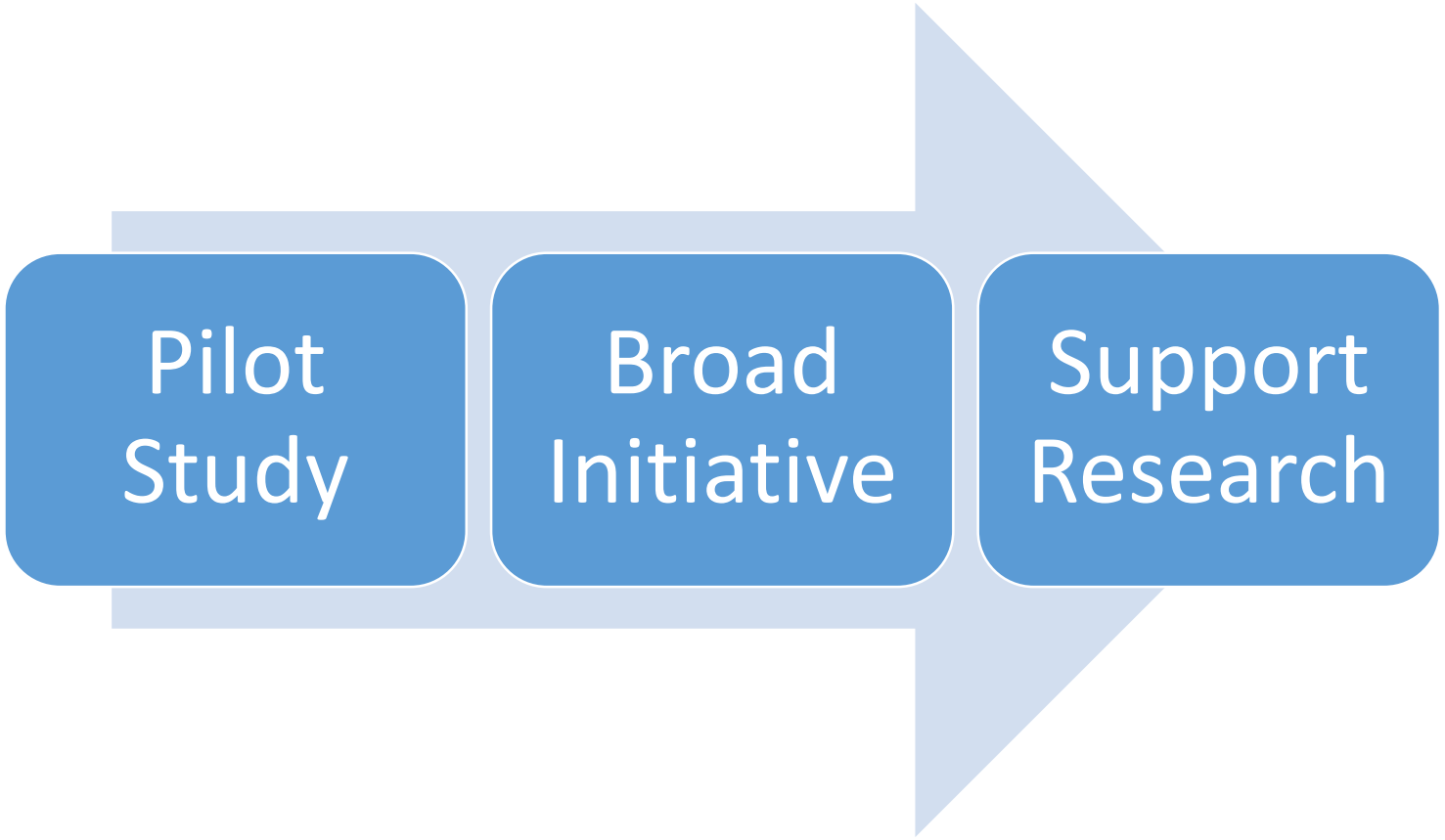
Rationale

Need to accelerate the development of blood-based biomarkers for ADRD

What are the obstacles?

- Uniformly collected, processed and stored specimens
- Availability of such specimens from diverse individuals with multimodal neuroimaging data and diagnostic heterogeneity
- Centralized process to request and receive samples

How to achieve this goal?



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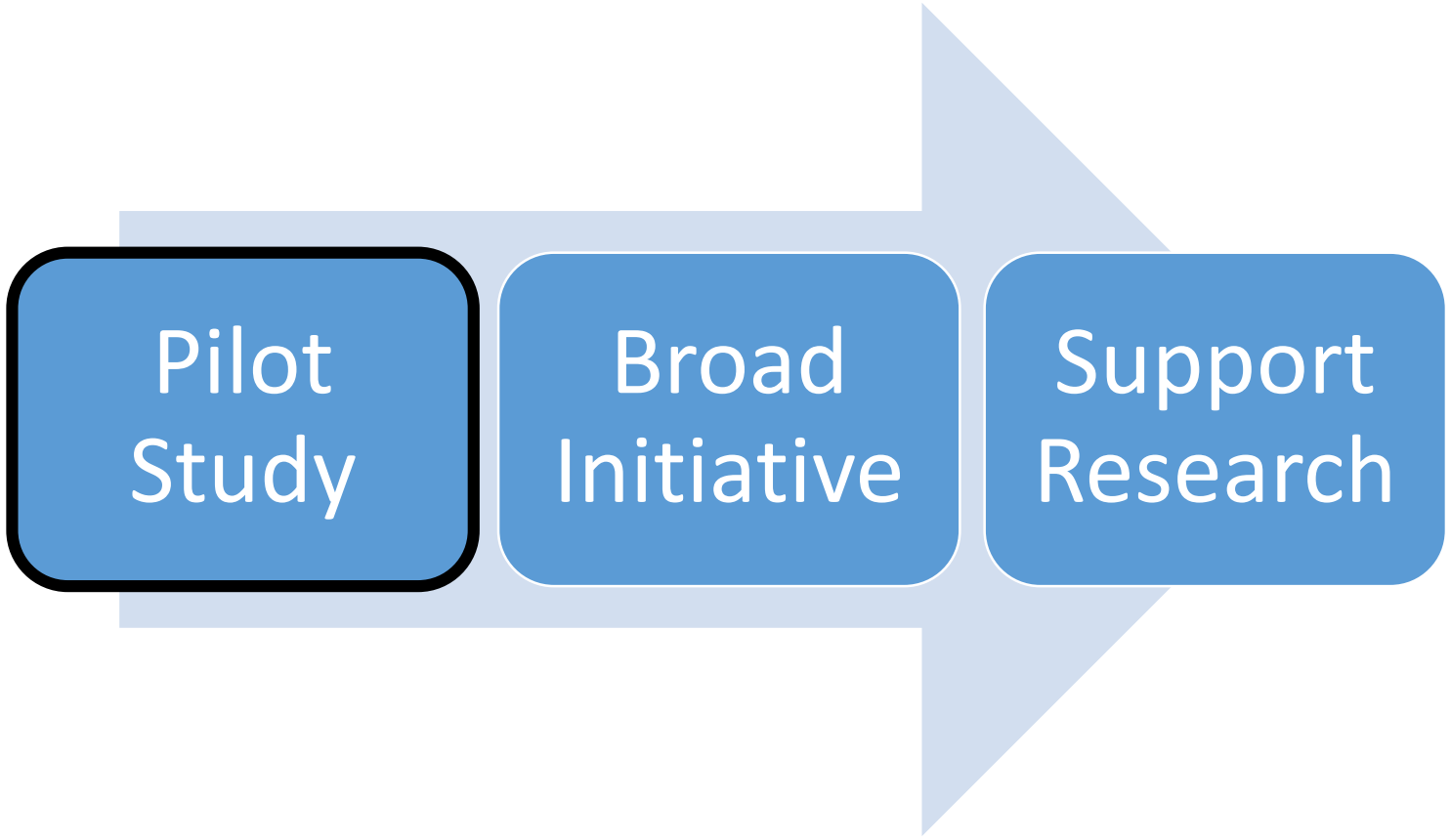


Pilot Study
NCRAD Administrative Supplement: ADRC Biomarker Initiative

18 ADCs — **Blood collection from 3,000 subjects (all diagnoses)**

Volume	Product
2x10 ml	Buffy coat (DNA) + Plasma aliquots
2x10 ml	PBMCs
1x10 ml	Serum aliquots
1x2.5 ml	RNA

- **Samples listed in order of preference**
- **Not all Centers can collect 52.5 ml**

Uniformly collected & processed blood samples

NCRAD — **Buffy coat (DNA), plasma, serum aliquots; Blood for RNA, PBMCs**

What is the Advantage to ADRCs?

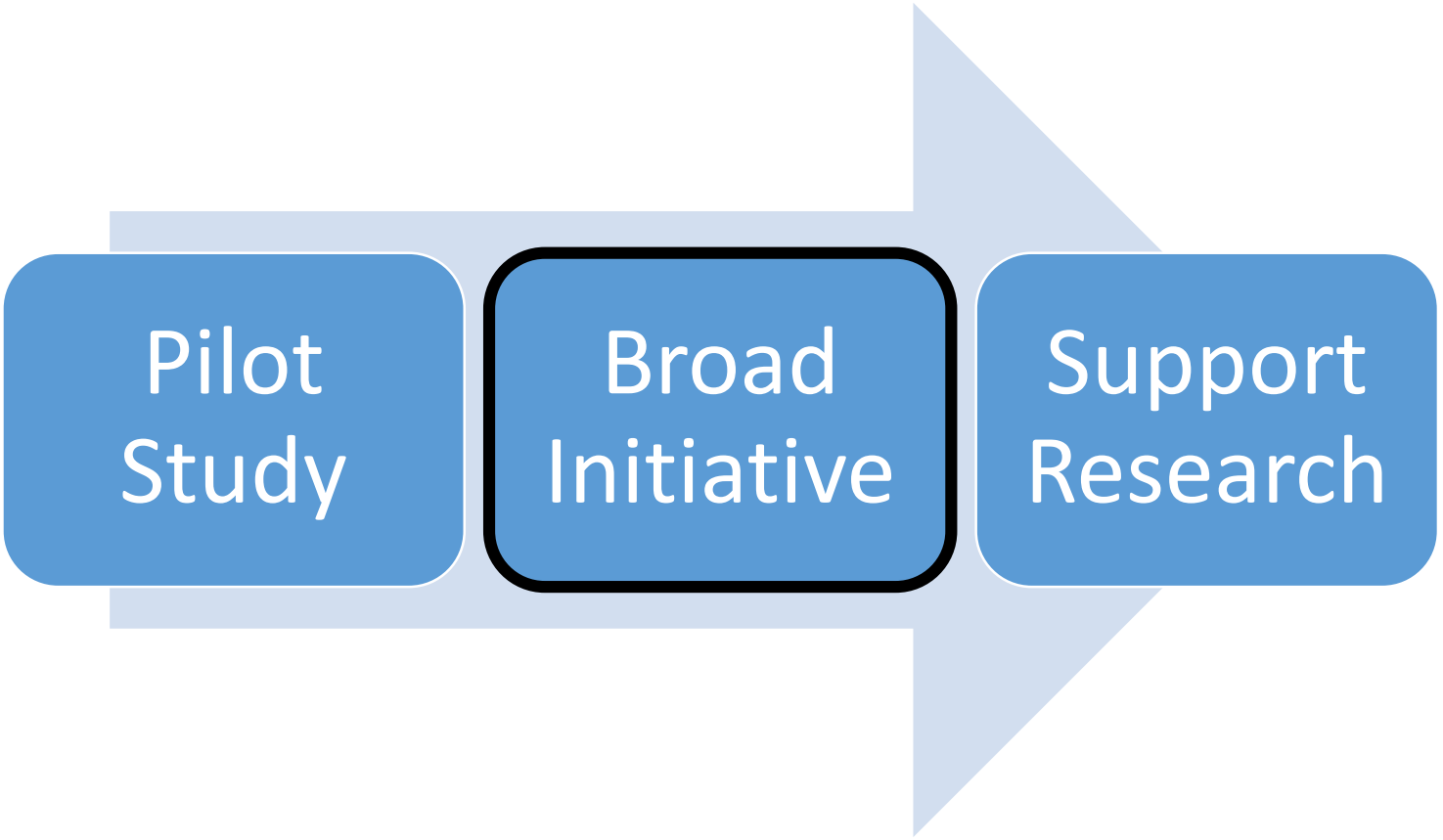
- ADRCs receive from NCRAD all materials for sample collection, processing and aliquoting
- ADRCs receive funding for sample collection
  - up to $250/subject
- Reduced ADRC burden to store large numbers of samples
- Portion of each sample type sent to NCRAD reserved for contributing ADRC to request *(*assuming full volume provided to NCRAD*)*
  - Plasma: up to 3 ml
  - PBMC: one vial (3-4 million cells)
  - Serum: up to 1.5 ml
  - RNA: 2 ug

Pilot Study
NCRAD Administrative Supplement: ADRC Biomarker Initiative

- May 2019 launch
- Memo already sent asking Centers to review consents and protocols to assess blood volumes
- While reviewing consents, please also review sharing language
- NCRAD website provides recommended consent language and guidance

https://www.ncrad.org/recommended_consent_language.html

Next Steps

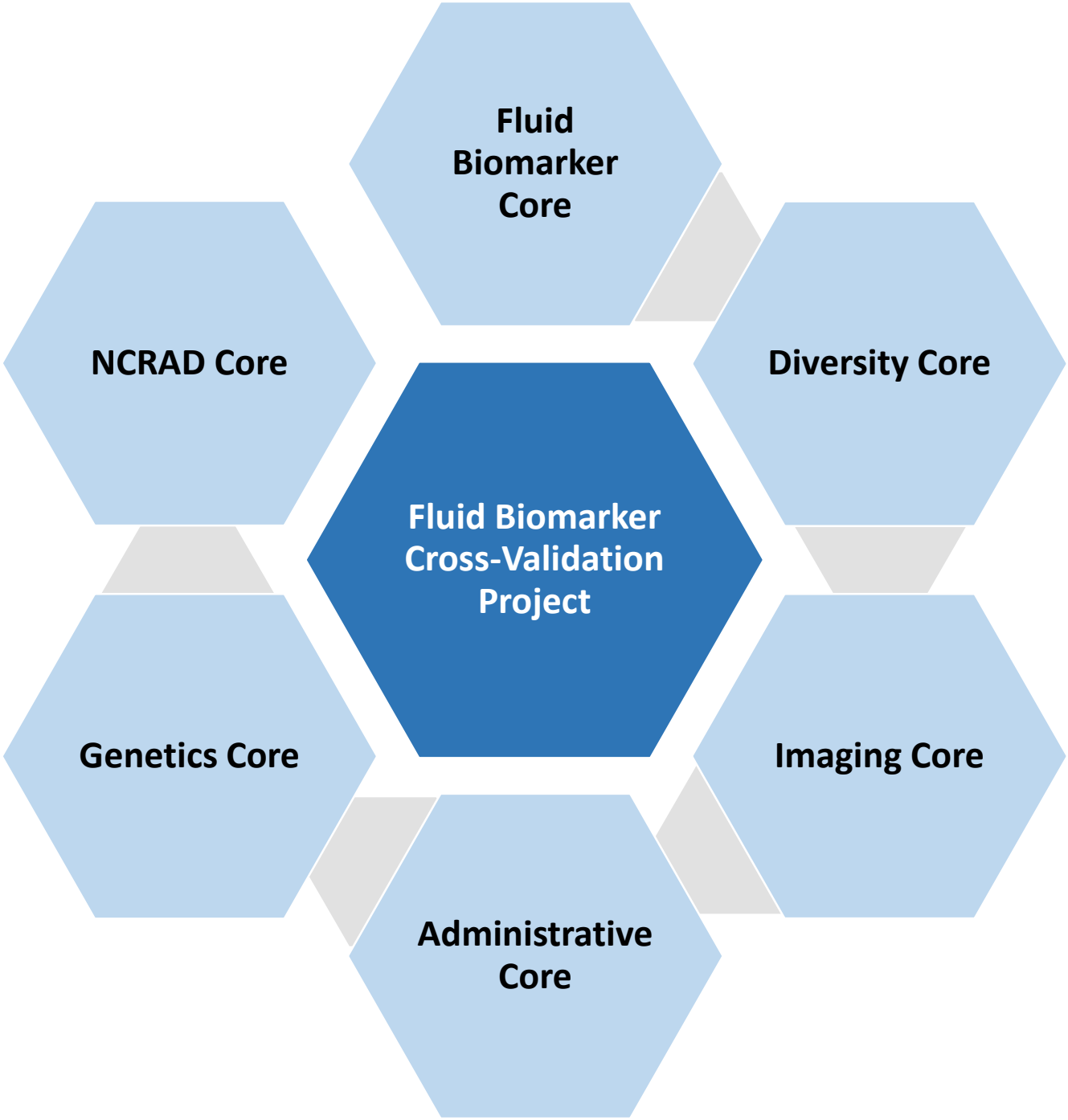


What Do We Need?

- Strategy to have biomarker analyses run in all samples on a single platform in a single laboratory
  - ADRCs won't need to invest in a local biomarker analysis platform and take the risk that it will be obsolete in a few years
  - Examples of assays that could be run: Aβ, Tau, P-tau, NfL, etc.
- All efforts must cross talk with other large scale initiatives (ADNI, ATRI)
  - Provide cross validation or opportunities to coordinate effort

ADRC Fluid Biomarker Initiative: Overall Goals

- Support the nationwide network of ADRCs to include diverse participants in fluid biomarker research.
- Evaluate and select assays that can be optimized for scalable platforms to generate data for key biomarkers for samples banked from ADRC participants.
- Cross validate blood-based markers against contemporaneous imaging-derived (and eventually post-mortem) ATN and other markers, and test whether or how associations are informed by social determinants of health (SDOH).
- Establish a biorepository available to the research community for future biomarker studies.


Fluid Biomarker Core
NCRAD Core
Diversity Core
Fluid Biomarker Cross-Validation Project
Genetics Core
Imaging Core
Administrative Core

Diversity Core Rationale & Goals

CL: Lisa Barnes

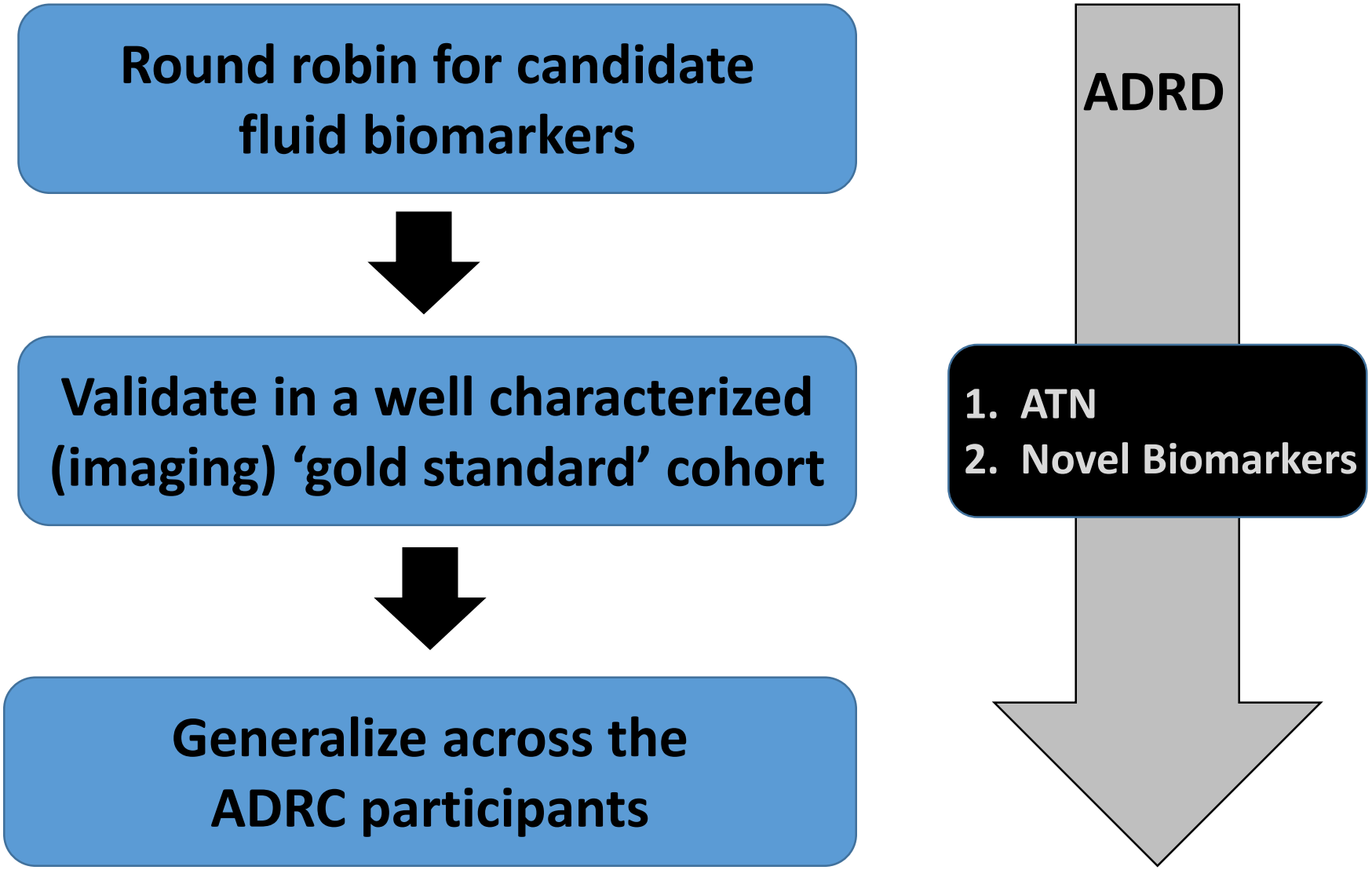
Rationale: Most biomarker data within ADC comes from non-Latino Whites

- Of Centers that collect biomarkers on diverse populations, few consider important social determinants of health
- Social determinants include social conditions in which people are born, live, work, & age, that influence health outcomes
  - E.g., Socioeconomic status, neighborhood conditions, social disadvantage; psychosocial stress

Diversity Core Rationale & Goals

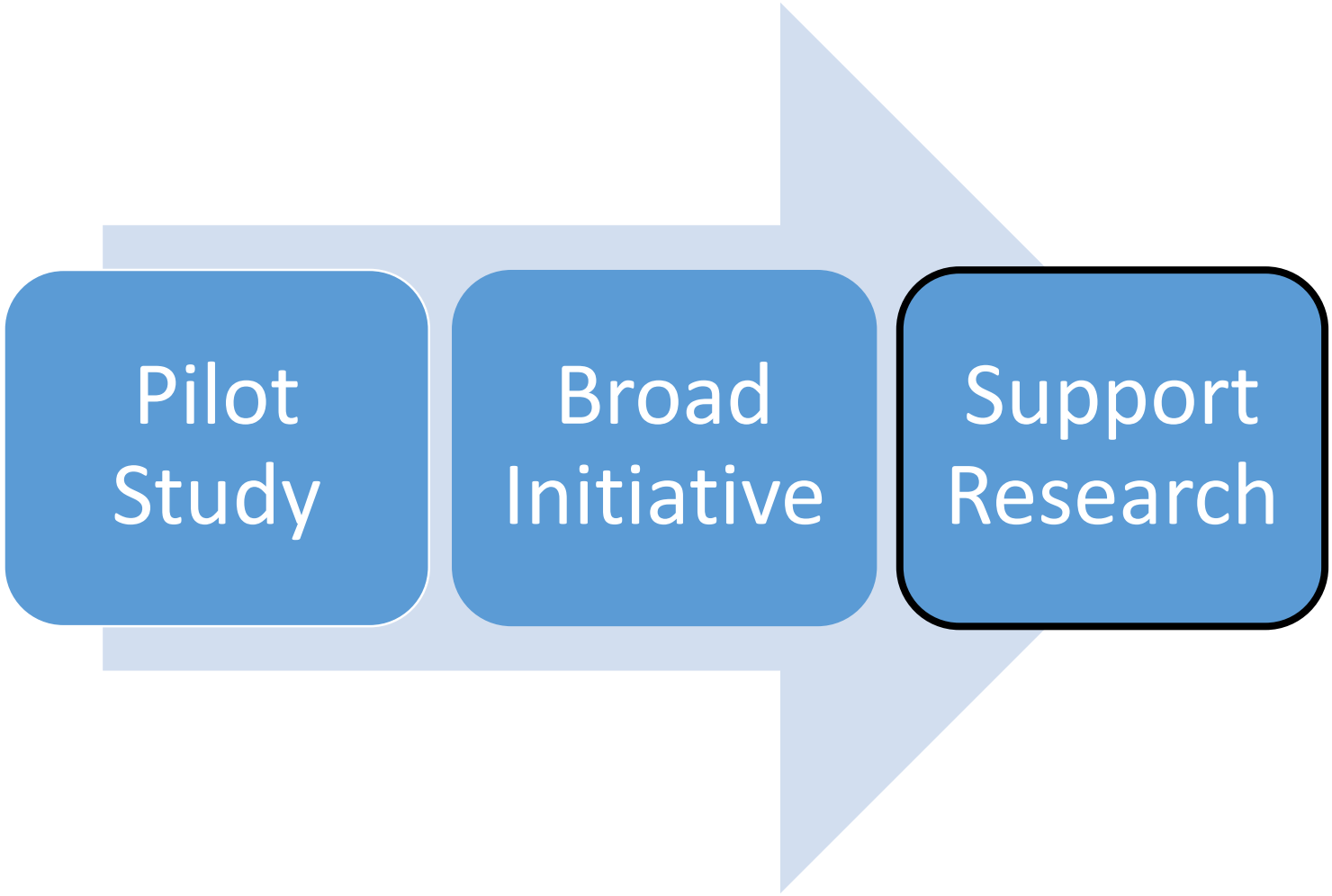
- Facilitate the sharing of successful models of engagement to increase availability of fluid biomarker data from underrepresented populations within the ADRCs
  - Work closely with Clinical Cores, Outreach & Education Cores, and the NIA
  - Provide pilot funding for innovative engagement programs
- Remote data collection from ADCs on social determinants of health
  - Create relevant metrics of social determinants
  - Centralized website where participants/informants can enter data from home
  - **Link social determinants to fluid biomarker assays**
  - **Integrate social determinants into analyses to understand differences across race/ethnicity**

ADRC Fluid Biomarker Initiative Workflow



How do ADCs benefit?

- Standardized collection protocol for which centers are paid
  - Blood, CSF, imaging (targeted subset)
- New data for the centers
  - Assay results
  - GWAS
  - Scan for a subset and processed results
  - Select routine labs (e.g., HbA1C)
  - Social determinants of health data
- Center has on reserve for 5 years at NCRAD a subset of their biospecimens, returned back to center at no cost
- Opportunities for training/education


Pilot Study
Broad Initiative
Support Research