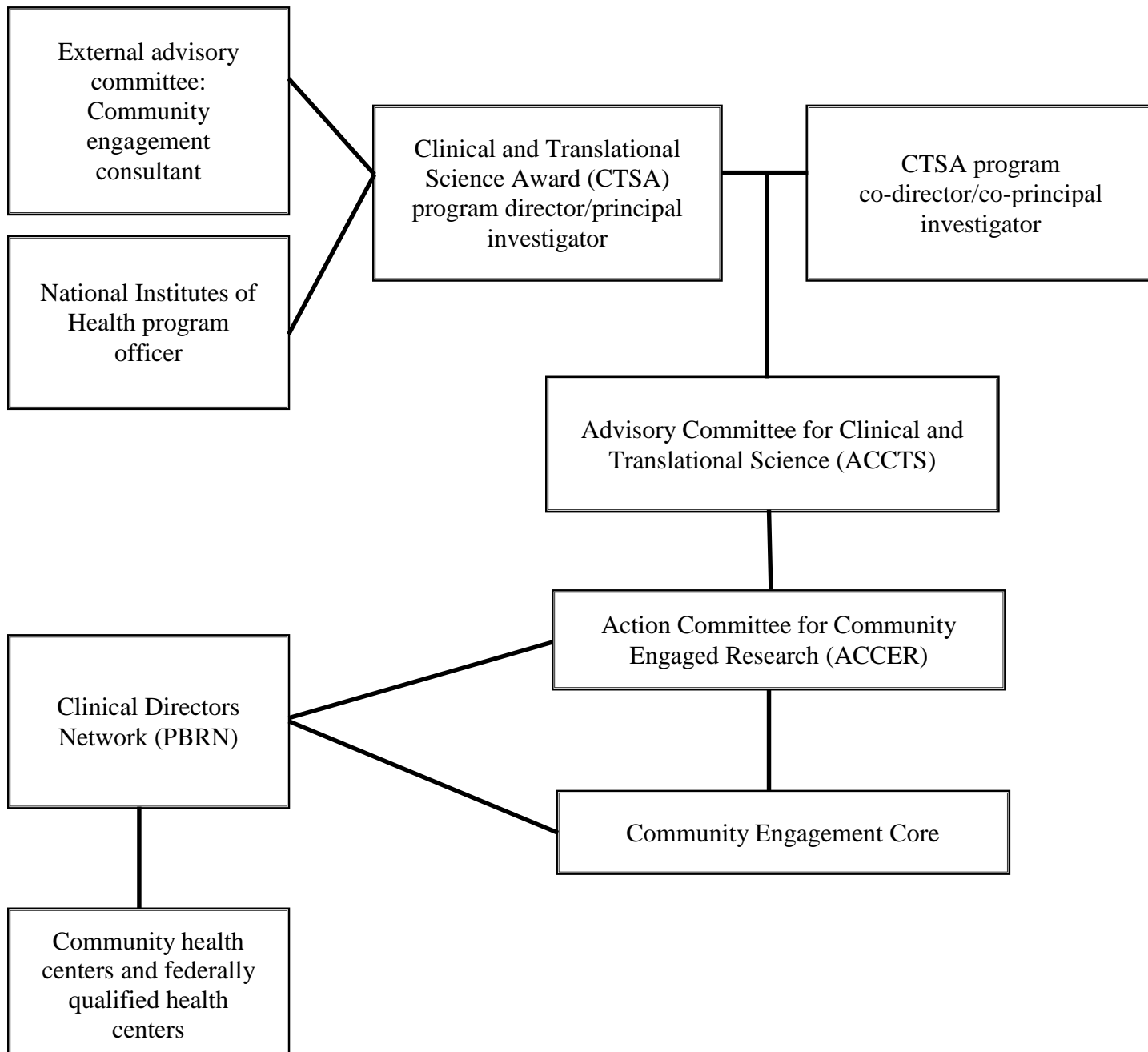


Supplemental Digital Appendix 1

Organizational Chart for Community-Engaged Research Navigation at The Rockefeller University Center for Clinical and Translational Science and the Clinical Directors Network



Supplemental Digital Appendix 2

Characteristics of Investigators and Projects in the Community-Engaged Research Navigation (CEnR-Nav) Program at The Rockefeller University Center for Clinical and Translational Science and the Clinical Directors Network, 2009-2014, That Did Not Develop Further into Translational Research Protocols

Year of initial CEnR- Nav (PI career stage ^a)	Status	Area of inquiry	Subject group	Origin ^b	Extent ^c	Location of proposed specific aims on translational continuum ^d				
						T0	T1	T2	T3	T4
2014 (P)	Completed; not ready for human research	Symbiosis in gut microbiome; assistance with pilot grant application	Animal model	Bottom up team	Brief	✓				
2014 (C)	Completed; no further development	Assess patient experience of pre-biopsy telephone research consent for rare disease study	Liver cancer	Bottom up team	Brief					✓
2010 (F)	Completed; no further development	Recruitment of HIV and intravenous drug user participants	HIV/Hepatitis C virus intravenous drug users	Middle out	Brief			✓		
2010 (R)	Completed; no change to plan	Interested in testing nasal colonization; needs patient population	MRSA	Bottom up team	Brief		✓			
2014 (N)	Completed; incorporated into another protocol	Discussion of protocol to evaluate impact on teachers of a laboratory-based afterschool initiative	Science outreach population	Bottom up team	Brief					
2014 (C)	Consult completed; no change to plan	Patients affected by Hepatitis C virus	Hepatitis C virus	Top down ACCER	Brief			✓		
2010 (H)	Completed; no protocol developed	Mentored lab members to develop science outreach day curriculum	Human biology	Bottom up team	Brief					✓
2010 (H)	Multiple consult visits; no funding source; no protocol	Develop allostatic load battery in PBRN, NIH-funded clinical trials for post-traumatic stress, teen pregnancy, and HIV/AIDS	Health disparity groups	Top down ACCER	Brief		✓			
2010 (H)	Completed; no protocol developed	Mentored lab members to develop science outreach day curriculum	Human biology	Bottom up team	Brief					✓
2012 (N)	Multiple consult visits; no funding source; no protocol	To align basic and public health aims among basic scientists and state health department researchers concerning Hepatitis C virus	Baby boomers with Hepatitis C virus	Top down ACCER	Brief	✓			✓	

Year of initial CEnR- Nav (PI career stage ^a)	Status	Area of inquiry	Subject group	Origin ^b	Extent ^c	Location of proposed specific aims on translational continuum ^d				
						T0	T1	T2	T3	T4
2013 (P)	Completed; not ready for human research	Development of public health impact statement for colon cancer genomic data	Colon cancer	Bottom up team	Brief	✓				
2013 (P)	Completed; not ready for human research	Role of gut microbes in a nutritional mutualism between aphids and ants	Animal model; obesity, mood disorder	Bottom up team	Brief	✓				
2014 (N)	Completed; no protocol	Community engagement program at a nearby unaffiliated college	Broad engagement	Bottom up team	Brief					✓
2013 (C)	Completed; no change to plan	Addition of clinical scholar to newly forming Hepatitis C virus project	Hepatitis C virus	Top down ACCER	Brief			✓		
2012 (H)	Multiple consults; aims not aligned; no funding source; no protocol	Collaboration and protocol development of project on Hepatitis C virus	Hepatitis C virus	Top down ACCER	Moderate		✓			
2010 (R)	Completed; no protocol developed	Discussion of clinical scholar diversity initiatives and onsite continuing medication education	Diverse health professionals	Bottom up Team	Moderate					✓
2010 (H)	Completed; no funding; no protocol	Develop comparative effectiveness research study	Substance abuse	Top down ACCER	Extended				✓	
2014 (R)	Completed; funding application not successful	Engaging stakeholder for input on PBRN funding application	Psoriasis	Bottom up team	Brief					✓
2013 (H)	Completed; incorporated into another protocol	HA-MRSA surveillance	MRSA	Bottom up team	Brief			✓		

Abbreviations: PBRN indicates practice-based research network; NIH, National Institutes of Health; HA-MRSA, hospital-acquired Methicillin-resistant Staphylococcus aureus; ACCER, Action Committee for Community-Engaged Research.

^a Principal investigator (PI) career stage: C, clinical scholar; F, faculty member; H, head of laboratory; R, early-career scientist; P, postdoctoral student; N, other.

^b Top down, initiated by leadership; Bottom up, initiated by research team; Middle out, initiated after self-referral or staff referral for protocol barrier.

^c Brief, 1-3 meetings; Moderate, 4-10 meetings; Extended, >10 meetings.

^d Translational spectrum: T0, basic science; T1, translation to humans; T2, translation to patients; T3, translation to practice; T4, translation to community.¹

Supplemental Digital Appendix 3

Examples of Community-Engaged Research Navigation (CEnR-Nav) Projects from The Rockefeller University Center for Clinical and Translational Science and the Clinical Directors Network, 2009-2014

Vignette 1: Infrastructure for surveillance network of CA-MRSA in federally-qualified health centers (in Appendix 1, last row)

The practice-based research network (PBRN) Navigator noticed the published work of a senior PhD basic scientist, in which he described an international molecular surveillance program to track an emerging antibiotic resistant infection. The basic scientist's work was exclusively T0-T1, characterizing the molecular footprint of strains within the network. The PBRN Navigator brought the work to the attention of the Action Committee for Community-Engaged Research (ACCER); members of ACCER discussed the potential for forming a new project and the principal investigator for the Center for Clinical and Translational Science (CCTS) brokered the introduction to the faculty member. The PBRN Navigator and the academic Navigator met with the basic scientist to explore the possibility of creating a similar community-based surveillance network to track the infection locally. The scientist was initially focused on obtaining research samples but agreed to attend a stakeholder meeting. Stakeholder engagement meetings included basic scientists, community and academic clinicians, CCTS leadership, and federally-qualified health center community and medical representation, Navigators, and others. Together, all of the stakeholders reviewed brief scientific presentations, community health center prevalence and practice data, and national best practice guidelines. Unmet scientific and patient-centered needs were identified by the stakeholders and discussed, and dual project aims developed collaboratively. A clinician steering committee was formed and met with the research team monthly or bimonthly. The project has been sustained and the steering committee still meets bimonthly, now in its fifth year. Governance, resources, protocol writing, analysis, and credit are shared across the project team. A CCTS pilot award was jointly written, and it supported initial retrospective clinical data extraction from electronic health records for feasibility assessment and hypothesis refinement. The data collected with the pilot award funding led to a Clinical and Translational Science Award (CTSA) Supplement grant, which funded a two-year community health center–academic infrastructure project. The supplement met major milestones and generated five satellite CEnR-Nav research projects. The satellite projects were initiated by different stakeholders, including a health center nurse, an early-career scientist in collaboration with a community educator, the PBRN leadership, the basic scientist, and a postdoctoral student in his laboratory. The CTSA Supplement-funded project provided the data for the design of a large Patient-Centered Outcomes Research Institute-funded comparative effectiveness research project addressing infection prevention, with parallel basic and patient-centered aims. More than 15 poster presentations and 3 publications have resulted, each with one or more community co-authors.

Vignette 2: Biology of stress related to shift work (in Appendix 1, row 10)

A basic science PhD student conducting T0 research on the neurobiology of stress met informally with the academic Navigator while both were panel members at a science outreach event. The student expressed interest in developing public health and community health expertise to increase the translational impact of her laboratory work. In follow-up meetings, the Navigators identified a suitable funding mechanism and assisted the student and her head of lab mentor in developing the application. The student independently identified a public health partner at a neighboring institution. She successfully secured the funding award to support her work integrating the public health and clinical ramifications of her basic research on the cell biology of stress. As a funded postdoctoral fellow, she continued her basic laboratory work, enrolled in a Master's degree-granting community health program, and developed a clinical protocol to study the biological impact of specific life stressors. She secured a CCTS pilot award to conduct the clinical protocol, which successfully accrued participants and completed in 2015. She initially partnered directly with two community organizations to gain insights into the challenges and concerns surrounding shift work in transportation workers, however barriers to collaboration among external stakeholders prevented conduct of the research in the workplace. With support from the Navigators she developed additional approaches to directly engage with a broad community of workers affected by the stressor under study.

Vignette 3: Engagement of Downs Syndrome patients (in Appendix 1, row 7)

As an MD/PhD first-year clinical scholar, this investigator focused at the T0-T1 level on identifying the genetic basis for undue susceptibility to specific infections in a population with a known congenital syndrome. The investigator developed a protocol to study the mechanisms underlying the interplay of genetic mutations and altered immune response in this vulnerable disease population exhibiting excess fungal disease. He had no prior experience or pre-existing relationships with members of the disease population nor with their clinicians. The investigator sought out the academic Navigator during protocol finalization to ask for recruitment assistance. The Navigator suggested there might be special considerations when working with this vulnerable population and their parents, and the community engagement specialist arranged a series of opportunities for the investigator to engage with clinicians, parents, and national advocacy groups that work with the population to build this skillset and understand the population's concerns. The nature of the disorder made it unlikely that PBRN would be an appropriate setting for engaging the population, as many patients would be referred elsewhere for care. With help from the Community Engagement Core staff, the investigator met with the president of a local chapter of the disease advocacy group, then he, his research team, and the recruitment and Community Engagement Core staff attended a public event hosted by this organization, at which the investigator talked informally with patients and parents. Independently the investigator subsequently arranged to speak at a series of events hosted by this organization, interacting with parents and patients and sharing additional aspects of his research. Interestingly, an alternate source for the needed research material became available to the investigator, and he

no longer needed to enroll the patients directly. However, of his own volition, he continued to interact with the advocacy group. Later, the investigator spontaneously shared with CCTS leadership and his peers the unexpected insights and satisfaction he gained from partnering with the advocacy group. The advocacy group had a grant-making program oriented toward patient and family services but had not previously made grants to fund basic science research. After engaging with the investigator and learning about his studies, the organization provided three rounds of unsolicited grant donations to support his research.

Vignette 4: Metabolic outcomes related to bariatric surgery (in Appendix 1, row 23)

This early-career physician-scientist conducts T0-T1 research in mice to understand the regulation of metabolism and its perturbation by bariatric surgery. Recognizing the health burdens and disparities caused by obesity in communities, the PBRN Navigator proposed to ACCER that the investigator might partner with the PBRN and one of its community practices with an active bariatric surgery program to explore potentially aligned aims. The medical leadership of the community practice had previously participated as a collaborator in Vignette 1, and the Navigator facilitated a series of partnership-building meetings. As a first step in CEnR-Nav partnership building, the scientist presented her work to date to assembled primary care physicians and surgeons and proposed a general project schema to the community health center clinicians to obtain their feedback, gauge their interest, and generate ideas. A series of collaborative meetings ensued to explore additional clinician and patient-centered questions, assess infrastructure, training, and resource needs, and converge on a set of aligned scientific and patient-centered aims. The scientist and community partners then jointly created, applied for, and received a CCTS pilot award grant to conduct a review of electronic health records and determine project feasibility. The preliminary data, scientific and patient-centered aims, and evidence of meaningful partnership were incorporated into the applications for external funding. The investigator subsequently received two external grants to continue the work both locally and nationally.