

INTRODUCTION: IMPACTING THE SOCIAL DETERMINANTS OF HEALTH THROUGH A REGIONAL ACADEMIC-COMMUNITY PARTNERSHIP: THE EXPERIENCE OF THE MID-SOUTH TRANSDISCIPLINARY COLLABORATIVE CENTER FOR HEALTH DISPARITIES RESEARCH

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Objective: The purpose of this article is to describe the background and experience of the Academic-Community Engagement (ACE) Core of the Mid-South Transdisciplinary Collaborative Center for Health Disparities Research (Mid-South TCC) in impacting the social determinants of health through the establishment and implementation of a regional academic-community partnership.

Conceptual Framework: The Mid-South TCC is informed by three strands of research: the social determinants of health, the socioecological model, and community-based participatory research (CBPR). Combined, these elements represent a science of engagement that has allowed us to use CBPR principles at a regional level to address the social determinants of health disparities.

Results: The ACE Core established state coalitions in each of our founding states—Alabama, Louisiana, and Mississippi—and an Expansion Coalition in Arkansas, Tennessee, and Kentucky. The ACE Core funded and supported a diversity of 15 community engaged projects at each level of the socioecological model in our six partner states through our community coalitions.

Conclusion: Through our cross-discipline, cross-regional infrastructure developed strategically over time, and led by the ACE Core, the Mid-South TCC has established an extensive infrastructure for accomplishing our overarching goal of investigating the social, economic, cultural, and environmental factors driving and sustaining health disparities in obesity and chronic illnesses, and developing and implementing interventions to ameliorate such disparities. *Ethn Dis.* 2017;27(Suppl 1):277-286; doi:10.18865/ed.27.S1.277.

INTRODUCTION

The Mid-South Transdisciplinary Collaborative Center for Health Disparities Research (Mid-South TCC) was founded in 2012 through a grant from the National Institute on Minority Health and Health Disparities (NIMHD). The goal of the Mid-South TCC is to identify solutions and strategies for addressing the important social, economic, environmental, and cultural factors that drive and sustain existing health disparities.¹⁻⁵ Such factors, collectively known as the social determinants of health (SDH), have been described by the World Health Organization as the circumstances in which people are born, grow up, live, work, and age.² Focusing on the role of SDH in producing disparate health outcomes for racial/ethnic minorities

and other vulnerable populations, the Mid-South TCC has conducted research to better understand the relationships between SDH and health and has developed, implemented, and evaluated interventions to ameliorate health disparities throughout the six-state Mid-South region—Alabama, Louisiana, Mississippi, Arkansas, Kentucky, and Tennessee.

In establishing the Transdisciplinary Collaborative Centers for Health Disparities Research program, the NIMHD stressed the importance of partnerships that allow for a synergistic effect among institutions and organizations, ideally leading to a more significant impact than any of the individual entities could have alone. Meaningful collaboration with communities affected by health disparities is considered essential in transdisciplinary research.⁶⁻⁹ Such col-

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laboration also helps build the capacity of these communities to address poor health outcomes and health disparities. While the Mid-South TCC wholly embraced this approach, as you will see in the articles presented in this special supplement of *Ethnicity & Disease*, we have also taken this a step further into a regional “science of engagement.” Our regional approach to collaboration across ecological levels, made possible by our exten-

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sive partnerships and infrastructure, has enabled research to examine the common factors that influence health across particular geographic areas, taking SDH research and interven-

tions beyond individual communities. Regional partnerships have yielded insights and results that would not have been possible with more limited academic-community partnerships.

In this collection of articles, you will read of the work of Mid-South TCC community partners and gain an appreciation for the importance of community collaboration in SDH research. We have included three additional articles from complementary and related projects, two from our sister TCC—The Gulf States Health Policy Center—and one from a Birmingham-based project that we feel would be beneficial to readers interested in academic-community partnerships. Together these articles report on the processes and experiences of innovative interventions initiated and successfully implemented jointly by academic investigators representing multiple disciplines and community partners from a wide array of organizations. These articles fill a gap in the literature by including the insights and experiences of community research partners, told from their perspectives. The majority of the projects represented here are either led or co-led by community partners. In this article, we describe the background and experience of the Mid-South TCC in addressing the effects of the social determinants of health through the establishment and implementation of a regional academic-community partnership.

BACKGROUND

The Mid-South TCC was initially proposed by the University of Alabama at Birmingham (lead insti-

tution), in partnership with Jackson State University, University of Mississippi Medical Center, Louisiana State University, and Dillard University, representing the states of Alabama, Mississippi, and Louisiana (Phase I). Upon the receipt of the award from the NIMHD in 2012, we immediately began planning the expansion of our activities to the states of Arkansas, Tennessee and Kentucky with projects in the three expansion states becoming well-established by the end of Year 3. The Mid-South TCC is now a multi-sector coalition representing all six mid-south states, with more than 120 local and regional partners. It builds on expertise, resources, and infrastructure developed over the course of more than 20 years of academic-community research and partnerships. (For more information about the structure of the Mid-South TCC, see Fouad et al, 2017, available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5333867/>).

As a transdisciplinary center, the goals of the Mid-South TCC are to: investigate the social, economic and environmental factors driving and sustaining health disparities in obesity and chronic diseases across the lifespan in the Mid-South region; determine pathways to obesity and chronic disease and mechanisms connecting these pathways to health disparities; and implement interventions to address the social determinants that impact health and produce disparate health outcomes. We focus on the SDH because they are the main drivers of health disparities and obesity in our region. Because the complex interplay of socio-environmental, behavioral, and bio-physiological influ-

ences involved in the etiology, management and amelioration of obesity and chronic diseases cannot be underestimated, our approaches include multi-sector experts and stakeholders in the study of pathways to racial/ethnic disparities in obesity and chronic diseases. Such an integrative approach is the only feasible strategy for understanding how the risk of disease is differentially acquired and manifested over the life course.^{6,8,9}

Target Population

Our targeted geographic area includes the six Mid-South states listed above. This area includes the most impoverished rural counties and inner-city communities in the nation, carrying an exceptionally high burden of obesity and chronic disease. The observed health disparities in the Mid-South region are exacerbated by socioeconomic factors, such as high poverty, low education level, widespread unemployment, lack of health insurance, unhealthy lifestyle behaviors, and health literacy issues. Further, only 20 of the Mid-South's 503 counties are NOT designated as Medically Underserved Areas according to criteria of the US Department of Health and Human Services.¹⁰ The Mid-South states have some of the highest percentages of persons living below the poverty level in the nation. Such unfavorable socioeconomic conditions are especially prevalent among African Americans, who remain socioeconomically disadvantaged when compared with the general population, possibly due to the region's history of segregation. Many African American families continue to live in a vicious cycle of poverty, which

has direct health implications. Given these facts, our focus has been on African Americans living in rural and low-income inner-city communities in the South. Our targeted population represents more than 50% of all African Americans in the United States.¹¹

CONCEPTUAL FRAMEWORK: A SCIENCE OF REGIONAL ENGAGEMENT

To address disparities in health outcomes in obesity and chronic disease and to create substantive change in the disparate health outcomes experienced by racial/ethnic minorities across our region, the Mid-South TCC is informed by three strands of research: 1) our approach is informed by the concept of social determinants of health; 2) our framework is based on the socioecological model; and 3) our implementation is guided by CBPR. Combined, these elements represent a science of engagement that has allowed us to use CBPR principles at a regional level to address the social determinants of health disparities.

Social Determinants of Health Contributing to Health Disparities

Social determinants of health (SDH) are the economic and social conditions, whose distribution across populations influence individual and group differences in health status.¹² In general, it has been estimated that genes, biology, and health behaviors collectively account for approximately 25% of population health.¹³ Yet, the majority of factors influencing health status are attributable to social

environment, physical environment/total ecology, and health services/medical care factors that are represented by the social determinants of health.¹³ It is not by chance that the uneven distribution of health-destructive experiences such as poverty, polluted environments, absence of public transportation, and lack of educational and employment opportunities tends to cluster in less-privileged communities.¹⁴ The lethal combination of inadequate social policies and biased economic arrangements adversely affects groups of people who have systematically experienced greater obstacles to health on the basis of their racial or ethnic group, geographic location, or other characteristics historically linked to discrimination or exclusion.² Addressing these and other intertwined and complicated SDH requires an integrated approach that cuts across organizational silos, backgrounds and disciplines.⁷

Socioecological Model

While the effects of the SDH are certainly felt locally, the required solutions are sometimes broader in scope. Thus, our conceptual framework is based on a socioecological model to address the many levels of influence. Socioecological models illustrate that individual health is impacted by complex factors at multiple levels of influence.¹⁵ In Figure 1, the Social Ecological Model,¹⁶ factors emerge at the relationship, community, and societal levels, as well as those directly affecting the person; however, all impact the health and well-being of an individual. The individual level includes an individual's health status, age, education level, income

and occupation. The relationship level includes family, friends and others in an individual's social network who may influence health-related behavior and life experiences. The next level is community, which includes physical settings, such as cities, neighborhoods, schools, churches, and workplaces that have the potential to affect health. Finally, societal-level factors include public policy as well as social norms that influence health of individuals and groups.¹⁶ All projects funded and undertaken by the Mid-South TCC sought to have a direct impact on the communities that were involved, whether targeted at the individual, relationship, community or societal level.

In order to make sustainable changes to population health in the Mid-South region, we aimed to address each level of the social ecological model.¹⁶ To do so, we have taken care to ensure that the research projects and interventions at each of these levels of influence were supported. From our major research projects

to pilot projects and secondary data analysis projects, we strive to ensure that each project is informed by other projects, across levels of influence. Key to the success of this effort has been our varied partnerships, with stakeholders from all levels of influence. By working across levels, we have broadened the impact of the Mid-South TCC and achieved the necessary balance between the creation of knowledge and intervention for the benefit of all partners. To achieve this kind of broad, yet substantive engagement, we have relied on the principles of CBPR as the foundation of our implementation.

Community-Based Participatory Research

Israel et al¹⁷ posits nine principles for community-based research. In formulating the approach of the Mid-South TCC, these principles served as the model. While we adhere to the traditional idea of "community" and define our local communities as the residents of rural and

low-income minority communities in the Mid-South states, we also employ the concept of community at larger ecological levels. The Mid-South TCC comprises a community of local and regional partner organizations, a community of academic institutions and researchers, and a community of local governments. Each of these "communities" is engaged in the design and conduct of research and interventions and in the dissemination of findings and best practices. This engagement occurs across ecological levels, both through the academic institutions of the Mid-South TCC and among the various communities themselves. Each community of the Mid-South TCC has brought complementary expertise, experience and resources to support the common goal of reducing the burden of health disparities. Indeed, this has been key to our success. The Mid-South TCC has long-standing relationships with more than 100 partners in our region, across ecological levels.

To have an impact beyond academic publications or conference presentations, we focused from the start on empowering communities to make change from within themselves and among their peers. Under the framework of CBPR, communities, academic partners, and government agencies share responsibilities, and solutions are implemented in partnership. This partnership extends to dissemination as well. Findings and best practices are disseminated with and through community and regional partners who have participated in the research and development of those findings. This more authentic

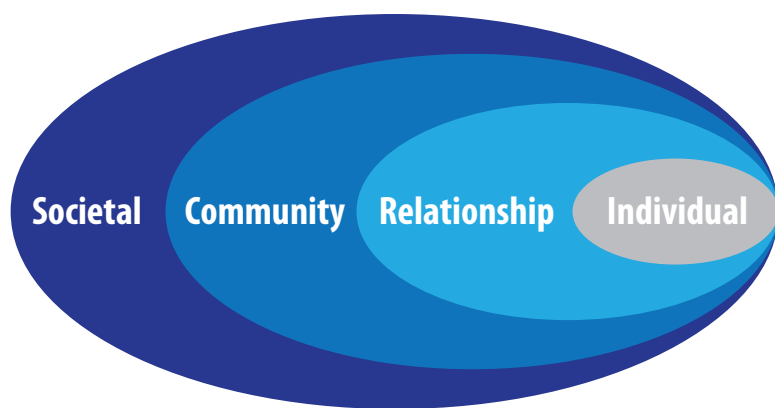


Figure 1. The Social Ecological Model: A Framework for Prevention¹⁶.

voice carries much greater weight in the respective communities and strengthens the positive effect of our work. Finally, sustainability is foundational to CBPR. The Mid-South TCC is committed to long-term relationships with our community partners and projects, and sustainability is a key focus of funded projects.¹⁷

The Academic-Community Engagement Core (ACE)

As a true partnership approach that equitably involves all segments of the community alongside academicians in the programmatic process,¹⁷ the Academic-Community Engagement (ACE) Core has employed CBPR principles across ecological levels to engage regional partners in addressing SDH. The primary objective of the ACE Core is to develop and implement an academic-community infrastructure that maintains engagement between the Mid-South TCC academic institutions and the partnering communities, including investigators, community-based organizations and leaders, potential research participants, community health-care systems, and health care providers. On the academic side, the Mid-South TCC represents a wide range of disciplines including behavioral, clinical, social, and biological sciences. Through true community-academic partnerships, the ACE Core builds relationships that are collaborative, participatory, and empowering.

Our first steps in establishing the ACE Core were to: 1) organize, support and expand the newly established local ACE coalitions in each state; 2) link Mid-South TCC investigators with local ACE coalitions; 3) pro-

vide technical assistance to coalition partners as they responded to various requests from investigators; and 4) provide pilot funding to coalition partners to conduct locally designed and implemented SDH interventions.

Leveraging partnerships established under previously funded initiatives such as the Centers for Disease Control and Prevention Racial and Ethnic Approaches to Community Health – Center of Excellence in the Elimination of Disparities, ACE core leaders formed diverse coalitions consisting of 8-10 members representing community-based organizations, health care, civic, business, government and private citizens to investigate the root causes of health disparities in each of the Mid-South states. An invitation was sent to the chair of each coalition in Alabama, Louisiana, and Mississippi informing them of the Mid-South TCC's mission, objectives, and scope of work. Those members who agreed to participate were invited to attend an informational meeting with investigators to discuss how the Mid-South TCC aligned with and supported their current endeavors.

To expand the impact of the Mid-South TCC beyond the three inaugural states, ACE leaders collaborated with the American Cancer Society to identify additional partners from Arkansas, Kentucky and Tennessee. Twenty-four key leaders were invited to attend a 1½ day informational meeting to learn more about the Mid-South TCC. During the meeting, partners shared their current research interests and discussed how their state-specific action plans could be advanced through collaboration.

Once the mission of the Mid-

South TCC and the specific aims of the ACE core were clearly articulated, the newly formed coalitions developed their own governing rules and regulations. For some coalitions that included outlining their specific short- and long-term goals, defining the roles of each member, electing a local chair and co-chair, and deciding on a voting system and the best methods of communication among coalition members. Short-term goals included detailed plans and schedules to assist Mid-South TCC users, who included investigators applying for pilot funding. Long-term goals included core sustainability and collaboration with Mid-South TCC investigators. To ensure that the ACE coalitions completed their tasks in a timely manner, monthly conference calls and periodic site visits were scheduled, and hands-on skill-building opportunities were provided during Mid-South TCC's annual regional meetings.

To aid in allowing all partners to share in each other's strengths, the ACE Core organized several opportunities for academic investigators and community partners to attend capacity building sessions together. Summits and workshops were held throughout the 5-year funding period on topics such as investigating the social determinants of health, best practices for conducting research in minority communities, disseminating results, and sharing lessons learned.

RESULTS

The ACE Core established state coalitions in each of our founding states--Alabama, Mississippi, and

Table 1. State coalition projects of the Mid-South TCC

State	Community Partner(s)	Project Goal	Individual	Relationship	Community	Societal	Article in supplement
Alabama	Norwood Resource Center and East Lake Market	Increase awareness and evaluate the impact of the Double Bucks program and SNAP benefits at two farmers' markets.				X	
Alabama	Jefferson County Committee for Economic Opportunity (JCCEO)	Project I: Build a community coalition. Project II: Implement a project identified by the coalition.			X		p. 329
Louisiana	Sankofa Community Development Inc	Train community leaders on nutrition. Lead a marketing campaign to promote fresh food and brand recognition. Evaluate the impact of the program.	X		X		p. 287
Louisiana	Gentilly Community/ Dillard University	Assess and evaluate the current level of community outreach at Dillard University; Develop policy initiatives based on neighborhood assessments.			X	X	p. 321
Louisiana	Louisiana Public Health Institution Daughters of Charity (DOC)	Using DOC data, characterize clinical variables, geocode the data and analyze it at the census tract level as it relates to SDH.			X		
Mississippi	Innovative Behavioral Services	Project I: Implement and evaluate a six-week summer camp media intervention with African American girls and assess their perceptions of nutrition and dietary practices. Project II: Pilot test a student-led media message with middle school African-American girls in the Jackson metro area.	X	X			

Louisiana – and an Expansion Coalition in Arkansas, Tennessee, and Kentucky. Community partners were invited to submit research project proposals to the coalitions. Each proposal was reviewed by a community and an academic investigator and funding decisions were made by the ACE Core leaders based on the review process. In addition to its central involvement in all research projects selected through

the Research and Pilot Core, half of which involve community partners directly, the ACE Core funded and supported 15 community-engaged projects of community coalitions in our six partner states. To impact our region, we funded a diversity of community-partnered projects at each level of the socioecological model.

Although our community-engaged projects seek to ultimately im-

part the health of individuals, those specifically aimed at the individual level include projects designed to impact physical activity, perceptions of healthy food, mindfulness, and overall heart health. For example, an individual level project is currently underway that is examining whether or not a self-guided mindfulness meditation program delivered via a smartphone app improves the practice of mindful-

Table 2. Community-based pilot projects of the Mid-South TCC

State	Community Partner(s)	Project Goal	Individual	Relationship	Community	Societal	Article in supplement
Alabama	Black People Run Bike and Swim	Enhance a Smartphone app that motivates individuals to meet recommended physical activity guidelines.	X				
Alabama	Zyp Bikeshare/REV Birmingham	Examine social determinants associated with bikeshare use in Birmingham, Alabama.			X		p. 303
Alabama	Health and Wellness Center of Livingston	Develop a family-based type 2 diabetes intervention to optimize healthy eating and physical activity.		X			
Louisiana	Daughters of Charity (DOC)	Geocode zip codes from patients from the DOC electronic health record to determine if exposure to individual and/or environmental stressors are associated with biomarkers of allostatic load.			X		
Louisiana	The Hollygrove Market	Develop and implement a social marketing campaign to increase fruit and vegetable purchases.		X			p. 295
Louisiana	Community Engagement Group	Assess the efficacy of a self-guided mindfulness meditation program delivered via a smartphone app and improvements in the practice of mindfulness among women in coastal Louisiana. Examine relationships between practice of mindfulness, social determinants of health, psychological well-being, and risk factors for obesity.	X		X		
Mississippi	New Horizon Ministries, Inc./ Stewpot Community Services	Test the feasibility of a physical activity app among adolescents. Identify relationships between participants' social engagement during app development/testing and changes in physical activity levels and perceptions of exercise.		X			

ness among women in coastal Louisiana and the relationships between the practice of mindfulness, social determinants of health, psychological well-being, and risk factors for obe-

sity. At the relationship level of the socioecological model, projects have examined a family-based intervention to optimize healthy eating and physical activity in diabetes patients and

the use of social media to increase farmer's market usage and to impact adolescent nutrition perceptions. For example, findings from a project based in Jackson, Mississippi in-

Table 3. Expanded coalition projects of the Mid-South TCC

State	Community Partner(s)	Project Goal	Individual	Relationship	Community	Societal	Article in supplement
Arkansas	Arkansas Coalition for Obesity Prevention	Utilize current data on neighborhood assets to build and host an interactive map.			X		
Arkansas	Arkansas Coalition for Obesity Prevention	Project I: Connect mayors who made healthy policy, system and environmental changes in their communities to mayors who could use help making healthy changes in their cities. Project II: Expand the model to the surrounding Mid-South States (became the Mid-South TCC signature regional project).			X	X	p. 347
Kentucky	Kentucky Department of Public Health	Collaborate with health department programs and community organizations to promote heart healthy interventions and address health inequities within the community.	X		X		
Louisiana	Rapides Foundation	Build and host an interactive map of fitness and nutrition community assets within the nine parish Central LA region			X		
Mississippi	UMMC	Project I: Develop and implement a community health worker training program. Project II: Expand the community health worker tracking and reporting system.			X		
Tennessee	Meharry Medical College	Work with community residents, stakeholders, and community partners to create and sustain a diabetes prevention and care coalition.			X		

dicate that a six-week summer camp intervention with African American middle school girls had a positive change of their perception of healthy nutrition practices and that social media messages developed by the girls had the potential to impact their peers' perceptions of healthy eating.

We funded the largest number of projects focused on the community

level. Neighborhood-level social determinants were examined from the perspective of bikeshare usage and geocoded patient zip codes linked to clinical data. And, two local coalitions were formed through Mid-South funding: a neighborhood health coalition and a city-wide diabetes coalition that sought to make changes in neighborhood living conditions. Further,

a powerful example of our regional engagement was the intellectual exchange that occurred between two partners in our Expansion Coalition. The Rapides Foundation received Mid-South TCC funding to build and host an interactive map of fitness and nutrition community assets in a 9-parish region in Louisiana. And, through exchanging ideas at month-

ly meetings and with the support of Mid-South TCC funding, the Arkansas Coalition for Obesity Prevention built an interactive map in their state.

Finally, in terms of society-level factors that include public policy as well as social norms that influence health of individuals and groups,¹⁶ the Mid-South TCC funded projects that aimed to develop policy initiatives based on neighborhood assessments and to evaluate an intervention that sought to increase SNAP usage at local farmer's markets. Further, through our regional engagement efforts, we funded a statewide project

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in Arkansas that connected mayors who had made health-related policy, system and environmental (PSE) changes in their communities to mayors who could use help in making health-related changes to their cities. The Mid-South TCC then transformed this statewide model into a regional project, Mayors Mentoring Mayors, and included mayors from all six Mid-South states who desired to make PSE changes in their communities; funding was offered for projects as well as mentoring for mayors. We leveraged our vast infra-

structure to implement the project at a regional level. A full listing and description of the Academic Community Engagement Core pilot projects demonstrating their level of influence based on the social ecological model are provided in Tables 1-3. Full descriptions of several of projects are included in articles in this supplement.

DISCUSSION/CONCLUSION

Accomplishing the outcomes supported by the academic-community engagement delineated here requires a cross-discipline, cross-regional infrastructure developed strategically over time. Work of this scope requires the support of a dedicated infrastructure and staff to cultivate and maintain the needed connections and resources. With community partnerships at the center, and led by our ACE Core, we have established an extensive infrastructure for accomplishing our overarching goal of investigating the social, economic, cultural, and environmental factors driving and sustaining health disparities in obesity and chronic illnesses, and developing and implementing interventions to ameliorate such disparities. We believe our regional approach to academic-community partnerships has several strengths. First, we have been able to build effective local and regional coalitions and foster successful partnerships between community organizations and academic institutions. Second, we have built capacity of both our academic and community partners as they have worked together to tackle locally defined health issues. Third, we were able to provide funding

for community-driven pilots that address these local health issues. Finally, our infrastructure provided a network of support for project implementation that led to successful outcomes with findings that could be reported in academic journals such as *Ethnicity & Disease*. Community-based projects tend not to be rigorous enough for academic publications; however, and although we have had challenges, we believe we have been able to support projects with the necessary rigor because of our CBPR foundation. An intimate understanding of the intervention population and the trusting relationships we have developed with our local communities and partnering institutions have ensured this productivity and success. We hope that within the articles of this supplement, the importance of cross-disciplinary, cross-regional, integrated community-based research will be evident. We also hope you will find evidence and inspiration for further community-based work aimed at reducing the burden of health disparities.

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CONFLICT OF INTEREST

No conflicts of interest to report.

AUTHOR CONTRIBUTIONS

Research concept and design: Fouad, Wynn, Scribner, Schoenberger, Antoine-Lavigne, Bateman; Acquisition of data: Scribner, Antoine-Lavigne, Eady; Data analysis and interpretation: Fouad, Eady, Anderson; Manuscript draft: Fouad, Wynn, Eady, Anderson, Bateman; Acquisition of funding: Fouad, Wynn; Administrative: Wynn, Schoenberger, Antoine-Lavigne, Eady, Anderson, Bateman; Supervision: Fouad, Scribner, Eady.

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