

# Office of Research Services Funding Application (Large Grant)

**DEADLINES: June 30 and December 31**

Please read *Funding Announcement Information* at [www.ucdenver.edu/ors](http://www.ucdenver.edu/ors) before completing application.

*NOTE WELL: THIS APPLICATION MUST BE WRITTEN FOR AND ACCESSIBLE TO LAY REVIEWERS. (LINE SPACING NO LESS THAN 1.5, FONT SIZE NO LESS THAN 12, FONT MUST BE TIMES NEW ROMAN)*  
**PLEASE ATTACH A 2-PAGE CV.**

## Applicant Information

Name: Scandlyn Jean Date: June 30, 2016  
*Last First*

Department: Health and Behavioral Sciences

Phone: 303-556-5864 Email Jean.scandlyn@ucdenver.edu

Title of Project: Energy Extraction, Dis/Trust in Science, and Community Health in Appalachia and Colorado

Amount of Request: \$23,425

## Required Match

*A 20% match is required.*

Please have the responsible party for the match send an email verification to [carie.carroll@ucdenver.edu](mailto:carie.carroll@ucdenver.edu).

## Project Abstract

*Provide a project abstract (one-third page)*

Only 50% of the American public believe that human activity contributes to climate change. While some scientists attribute this to low levels of scientific literacy, social scientists argue that distrust of science may play a more important role. The proposed study will compare patterns of dis/belief and dis/trust in the science of energy extraction and its relationship to climate change, environmental health, and social and community health in two communities experiencing different types of energy extraction and distinct political economies: Floyd County, KY, an Appalachian community dominated by the coal industry for generations, and Weld County, CO, a community where the hydraulic fracturing (“fracking”) industry has expanded rapidly in the past decade. This study will engage 80 in-depth, semi-structured, ethnographic interviews with four categories of people in the two communities: (1) 20 regional academic experts; (2) 20 energy extractions activists, both pro- and anti-industry; (3) 20 workers in each industry; and (4) 20 community residents serving their populations. Interviews will explore interviewees’ understandings of climate change debates, beliefs about the coal or fracking industries with regard to climate change and environmental and community health, and dis/trusted sources of information on climate change and health. Analysis will identify and compare patterns of dis/trust across the two study sites and communities on a variety of dimensions: occupation and employment, education, age, gender, ethnicity, and political, religious, social, and family affiliations.

## Project Description

*Provide a project description indicating the significance of the creative activity (limited to three and a half pages)*

Only 50% of the American public believe that human activity contributes to climate change.<sup>1</sup> While some scientists attribute such findings to low levels of scientific literacy, social scientists argue that distrust of science may play a more important role.<sup>2</sup> Trust in science is a complex phenomenon that varies with an individual’s overall belief system and identity<sup>3-7</sup> as well as by topic, with higher trust reported in the safety of vaccines than in evolution or in human contributions to climate change.<sup>1</sup> On a societal level, historical changes in the political economy, e.g., increasing privatization of science since the 1960s, have affected public trust in science.<sup>6,8</sup> Decreasing trust in science is concerning, as trust in social institutions and systems of knowledge make large, complex societies possible.<sup>9-11</sup> Trust is a necessary element of relationships between individuals and institutions by mitigating, at least to some extent, opportunistic behavior by those in power<sup>12,13</sup> and facilitating the accurate assessment of shared risks.<sup>14</sup> In a recent study, which served as the initial inspiration for this

project, distrust of the scientific process of creating and disseminating health information was a key factor in hesitance to use evidence-based health treatments in one low-income population.<sup>7</sup>

This study, a collaboration between Dr. Jean Scandlyn of the University of Colorado Denver (UCD) and Dr. Karen Albright of the University of Denver (DU), examines how individuals' social and geographic position, lived experience, and identity affect their level of dis/trust in science, particularly the science around energy extraction, climate change, and health. The primary research question is: *Among people who live in areas where energy extraction processes are prevalent, what are the patterns of dis/belief and dis/trust in the science of energy extraction and its relationships to climate change, environmental health, and social and community health?* Drs. Scandlyn and Albright have designed a comparative study to explore this question in two communities experiencing different types of energy extraction and distinct political economies: Floyd County, KY, an Appalachian community that has been dominated by the coal industry for generations, and Weld County, CO, a northern Colorado community that has seen a marked rise in the hydraulic fracturing ("fracking") industry over the past decade. The study examines dis/trust of science in these areas because previous research has shown that hegemonic narratives and beliefs are pervasive in areas where energy extractive industries dominate, and such narratives and beliefs significantly influence residents' worldviews.<sup>15</sup> Indeed, how the presence and power of industry shapes worldviews and beliefs, particularly those about science, is at the heart of this investigation. However, no research to date has comparatively examined how such worldviews may be affected (i.e., weakened, strengthened, or otherwise complicated) under varying socioeconomic circumstances. These two sites were selected for both their sociological similarities, (i.e., the presence of a dominant energy extractive industry), and their differences, (i.e., the perceived direction of their industry's and, thus, their community's socioeconomic trajectory) and health. This study examines the dynamics of scientific dis/trust at very different moments in the historical trajectories of each site's dominant energy extractive industry and asks how that difference may translate to patterns of dis/belief and dis/trust in the science of energy extraction and its relationships to climate change, environmental health, and social and community health.

Floyd County, located in the coal belt of Eastern Kentucky in the Appalachian Mountains, is a region strongly identified with coal mining since the mid-19<sup>th</sup> century. Beginning in 1900, large corporations based in East Coast cities consolidated smaller mines, ultimately resulting in long-standing poverty in the region.<sup>16-19</sup> The county's residents are overwhelmingly white (98.2%), with 28.9% of residents' income below the poverty level and 26.1% of adults over 25 having less than a high school education.<sup>20</sup> As in most of Appalachia, coal production and employment in coal mining has dropped consistently since its peak in 1990.<sup>21</sup> In November 2015 the unemployment rate was

8.7% compared to the national rate of 5.0%.<sup>22</sup> Population health in the county is poor across a number of indicators<sup>23,24</sup> and dependence on government assistance programs such as TANF and food stamps is high.<sup>18,25</sup>

In contrast, energy extraction in northern Colorado is experiencing an upward trajectory. From 1999 to 2011, oil production in Colorado's Denver-Julesburg Basin grew 124% and gas production 83%.<sup>26,27</sup> Beginning in 2005, production surged further, with massive fracking in horizontal wells in shale formations.<sup>28,29</sup> Weld County currently has the highest number of wells in Colorado, representing 85% of Colorado's oil and gas production.<sup>30</sup> Like Floyd County, Weld County is largely white (93%), but with a high proportion of people who identify as Hispanic or Latino (30%). Median family income is over twice that of Floyd County and per capita income is over one-third higher. Dependence on public programs is lower than in Floyd County, and population health is significantly better.<sup>31</sup>

How might dis/trust in science vary between a region that has been impoverished –and highly dependent upon mining for jobs—for generations, and a region where oil and gas extraction has recently boomed and there is less entrenched poverty? Studies, blogs, and journalistic accounts suggest that views on climate science and extraction are likely to be complex and varied both within regions and between them. Science is increasingly politicized, with political conservatives moving from having the highest levels of trust in science in the early 1970s to the lowest levels in 2010.<sup>32</sup> Populations in poor regions such as Appalachia, which have voted strongly Republican in the last two presidential elections, are often lumped together without attention to relevant social cleavages within them.<sup>33</sup> This study problematizes the notion of a monolithic or uniform reaction to the science of climate change and its implications for policy and social action. Drs. Scandlyn and Albright are not only interested in learning how beliefs about science may differ across these different communities, but also within them. Given rising rates of increasing mortality and morbidity in these regions,<sup>34-36</sup> and the contributions of environmental conditions to poor community and individual health, it is critical to understand how these populations view science and its ability to improve their health and the health of the environment.

The scope of this project, particularly the comparative study design that necessitates the inclusion of two sites, is better suited to a collaboration between two researchers than to a single researcher working alone. Both investigators have strong records of relevant research. Dr. Scandlyn has an extensive history of theoretically driven ethnographic work on complex social topics relevant to the proposed project, including how worldviews influence the framing of disasters,<sup>15</sup> and how political discourse and economic changes affect trust in social institutions and knowledge systems and consequently health-related behavior.<sup>37</sup> Her research explicitly takes into account political and

economic landscapes and contexts. Dr. Albright has extensive experience investigating patterns of behavior among socioeconomically disadvantaged populations, including those living in rural areas, and has focused particularly on the distrust of institutions and systems among these populations. She has studied the psychosocial and community effects of fracking in Western Colorado<sup>38</sup> and conducted the study on distrust of science and use of evidence-based treatments that inspired this project.<sup>7</sup> Both Drs. Scandlyn and Albright are experienced qualitative researchers whose areas expertise fit well with the proposed work. Dr. Scandlyn has written extensively about qualitative methods, received a Fulbright Teaching Fellowship to teach qualitative research methods to scholars in Bolivia, and collaborated on several research projects on the Anschutz Medical Campus (please see CV). Dr. Albright is an established qualitative methodologist who has previously directed qualitative research programs and served as a consultant on numerous federally funded research projects (please see CV). Drs. Scandlyn and Albright have an established working relationship and a history of collaboration on the steering committee of the Qualitative Research Methods Forum and in the Department of Community and Behavioral Health at the Colorado School of Public Health. Each investigator will also bring her social networks to the study. Dr. Scandlyn's husband has long worked in energy extraction and is very familiar with the fracking industry in Colorado and the coal industry in Appalachia. Dr. Albright's maternal relatives have lived in Appalachia for generations and occupy leadership positions in local government and the coal industry. These connections will provide entry in these communities and industries and advice on how to proceed in research on these sensitive topics.

Per discussion with Dr. Bob Damrauer, the study is designed to take place over a two-year period. This timeline is to align the requested funding with the funding that Dr. Albright has obtained from DU to partially support this collaborative project (please see budget and justification) and, importantly, to facilitate the application for additional external funding. The expected timeline for the study is as follows: In August 2016, Drs. Scandlyn and Albright will identify and recruit 20 regional academic experts in each of the two study sites for telephone interviews, and design an in-depth, semi-structured guide for interviews with these experts. These interviews will be conducted between September and November 2016. Then, between December 2016 and February 2017, Drs. Scandlyn and Albright will draw on domains that emerged as relevant in those interviews to design three in-depth semi-structured guides for interviews with the 60 remaining interviewees: energy extraction activists, industry workers, and community residents serving the populations affected by extractive industry. During this period, we will also identify and recruit 30 interviewees for in-person interviews in Weld County, CO. Between March and May 2017, Drs. Scandlyn and Albright will travel to Weld County to conduct ethnographic interviews with these 30 interviewees. Identification and recruitment

of 30 interviewees in Floyd County, KY, will also occur during this period. Between June and August 2017, Drs. Scandlyn and Albright will travel to Floyd County, KY to conduct ethnographic interviews with these 30 interviewees. Transcription, coding, and analysis of all interview data and ethnographic field notes, as well as submission of preliminary results for presentation at professional meetings, will take place between September 2017 and March 2018. The final results of the study will be written as 1-2 scholarly manuscript(s) and submitted for publication between April and June 2018. During this same period, Drs. Scandlyn and Albright will prepare and submit a grant proposal to the National Science Foundation (see the “Additional Project Information” section for more information about this grant proposal).

### **Methodology Description**

*Provide a description of the methodology to be used in approaching the project (one-half page)*

This study will engage 80 in-depth, semi-structured, ethnographic interviews to explore these issues. In each of the two regions, the following categories of people will be interviewed: (1) 20 regional academic experts (n=10 in each community); (2) 20 energy extraction activists (n=5 pro-industry and 5 anti-industry in each community); (3) 20 industry workers (i.e., people with vested interests; n=10 in each community); and (4) 20 community residents serving the populations affected by extractive industry (i.e., administrators of welfare benefits, local government officials, etc.; n=10 in each community). Each interview will explore the following domains: What do interviewees understand about the climate change debates? How do they explain the science and the differing views about it? What do they believe or understand about the coal or fracking industry with regard to its relationships to climate change, environmental health, and community health? What sources of information do they dis/trust about climate change and why? How does science seem relevant in their daily life/world? The interviews will also explore other characteristics that might affect interviewees’ worldviews and interests (e.g., gender, age, socioeconomic status, ethnicity, time living in the area, political ideology). (Please see timeline at the end of the project description).

Ethnographically informed research demands that the principal investigators not only lead but participate directly and significantly in data collection and analysis. Drs. Scandlyn and Albright will employ two student research assistants (one from DU and one from UCD) to assist with logistical arrangements, data management, and manuscript preparation. This will allow Drs. Scandlyn and Albright to concentrate on field-based data collection, and interpretation and analysis of the data. Students will benefit from participating in and working alongside experienced scholars on an original research project.

## Additional Project Information

### (i) How does this project advance the applicant's career

This research will also ultimately establish Dr. Scandlyn as an expert in this developing and important field, strengthen the collaborative relationship between UCD and DU, and impact the Rocky Mountain West by engaging with the Colorado community to serve the public good. It extends and deepens Dr. Scandlyn's previous research on how the political and economic context affects public health directly through structured social relations of work and life choices, and indirectly, through perceptions of health-related science and health care institutions. This project concerns translational science, an important and growing field of research internationally and a focus of research on the Anschutz campus. Dr. Scandlyn's latest research project was a collaboration with Dr. Sarah Hautzinger at Colorado College. The National Endowment for the Humanities funded that project, which resulted in a published, co-authored book, multiple papers and conference presentations, and exchanges among students at both institutions. This project will provide her with resources and dedicated time to pursue field-based research, benefits that will translate to her work mentoring undergraduate and graduate student research and increase the university's national profile.

### (ii) Provide future funding activities, agency, program name, program officer, and deadlines identified

Drs. Scandlyn and Albright will use the results of this study to develop a mixed-methods study, which will seek greater breadth of perspective (e.g., community surveys of Weld County, CO, and Floyd County, KY) and will expand the investigation by asking about additional scientific topics (e.g., evolution, vaccine safety) and about trust in a variety of social institutions (e.g., governments, corporations). An additional site not directly tied to the extractive energy industry may also be added. During the last three months of this project, Drs. Scandlyn and Albright will submit a proposal for external funding from the National Science Foundation's Science, Technology, and Society Program (STS). (Program Directors: Frederick Kronz and Wenda Bauchspies; submission deadline: August 3, 2018). As Drs. Scandlyn and Albright progress with data collection and analysis, Dr. Scandlyn will work with Lynette Michael in ORS to identify additional sources of funding as relevant.

### (iii) What specific outlets for the work accomplished in the project are likely (exhibit, journal articles, etc..)

At or near the completion of this work, 1-2 manuscript(s) reporting the results will be written and submitted to appropriate scholarly, peer-reviewed journal(s). Results will also be submitted for presentation at the 2018 meetings of the American Sociological Association and the American Anthropological Association.

### Applicant's Pending and Current Funding

**a. Pending proposals: (title, agency, amount, date submitted, when will decisions be made)**

- CHAPP-funded HIV Prevention Evaluation, CDPHE, amount not specified. I have been offered a one-year extension for 2016-2017 fiscal year, but the extension is currently on hold by CDPHE as they undergo contract negotiations with a database company.
- Dr. Scandlyn is currently a member of a quality-improvement team at Children's Hospital Colorado (see below). She has been asked to continue in this role as the team applies for additional funding to expand the project to multiple national sites and adds a research component. These grant applications will be prepared in Fall 2016.

**b. Current funding: (title, agency, amount, duration)**

- CHAPP-funded HIV Prevention Evaluation, CDPHE, \$100,000, ends June 30, 2016
- Formative Evaluation, Go Wild Northeast Metro Coalition, \$3,037.94, ends August 31, 2016.
- Co-Teaching Assessment, Undergraduate Degree in Public Health (with Dr Ronica Rooks), UCD Center for Faculty Development, \$5,000, June 30, 2017.
- Qualitative Research Consultant, Antibiotic Stewardship in the Emergency Department, Children's Hospital Colorado, EMF Basic Science and Clinical Innovation Grant (PI Dr. Rakesh Mistry), \$6,000 of \$25,000, ends August 31, 2016.
- Energy Extraction, Dis/Trust in Science, and Community Health in Appalachia and Colorado, PROF Grant, University of Denver, \$19,964, July1, 2016 to June 30, 2018 (24 months). The PROF Grant was awarded to Dr. Karen Albright (DU) to partially support this collaborative project. (Please see budget and budget justification).

**Detailed Budget**

*Provide a detailed budget*

<b>Project Budget</b>				
<b>Item</b>	<b>UCD ORS Large Grant</b>	<b>HBS Matching</b>	<b>DU PROF Grant</b>	
<b>Salaries and Benefits</b>				
Faculty Summer Salary, Jean Scandlyn	\$7,800			
Faculty Benefits, Jean Scandlyn	\$2,106			
Faculty Course Buyout, Karen Albright, 1 course				\$16,716
Student Research Assistant, UCD, 370 hours, wages		\$4,440		
Student Research Assistant, UCD, benefits, 5.5%		\$245		
Student Research Assistant, DU, 1 quarter, wages				\$1,620
Student Research Assistant, DU, benefits, 1.7%				\$28
<b>Total Salaries and Benefits</b>	<b>\$9,906</b>	<b>\$4,685</b>		<b>\$18,364</b>
<b>Expenses</b>				
Incentives	\$352			\$1,600
Transcription	\$4,337			
Travel to Weld County, CO for Jean Scandlyn				
Mileage	\$352			
Lodging	\$1,440			
Meals	\$400			
Subtotal for Weld County Travel	\$2,192			
Travel to Floyd County, KY for Jean Scandlyn				
Airfare	\$1,200			
Car Rental	\$1,800			
Lodging	\$3,040			
Meals	\$950			
Subtotal for Floyd County Travel	\$6,990			
<b>Total Travel</b>	<b>\$9,182</b>			
<b>Total Budget</b>				
Total for Project	\$48,074	\$23,425	\$4,685	\$19,964

## Detailed Budget Justification

Salaries and Benefits. The budget request includes one month's summer salary in and benefits for Dr. Scandlyn to travel to Floyd County, Kentucky in June 2017 to conduct field work.  $\$93,600/12$  months =  $\$7,800$ . Benefits are calculated at 27%;  $\$7,800 \times .27 = \$2,106$ .

Matching funds from the Department of Health and Behavioral Sciences of 20% of the total ORS request of  $\$23,425 = \$4,685$ . These funds will pay wages and benefits for an undergraduate student research assistant at  $\$12/\text{hour}$ , 5 hours/week  $\times$  74 weeks (3 semesters plus summer 2017) = 370 hours. Benefits are calculated at 5.5%.  $370 \text{ hours} \times \$12/\text{hour} = \$4,440$ .  $\$4,440 \times .055 = \$245$ .

Travel to Weld County includes roundtrip mileage to Greeley and 50 additional miles each trip for travel within Weld County. Four, four-day trips will accommodate Drs. Scandlyn's and Albright's teaching schedules. The budgeted amount was calculated using the federally approved rate of  $\$.54/\text{mile}$  with an estimated 652 miles across the four trips,  $652 \text{ miles} \times \$.54/\text{mile} = \$352$ . Lodging was calculated based on area hotel rates.  $12 \text{ nights} \times \$120/\text{night} = \$1,440$ . The budgeted amount for meals was calculated at  $\$25/\text{day}$  (3 meals per day)  $\times$  16 days =  $\$400$ .

Travel to Floyd County, Kentucky involves two shorter, 4-day trips to establish local contacts and recruit initial participants and one trip of one month in June 2017 to conduct interviews. Air transportation costs to Louisville, KY, the closest major airport, were calculated at  $\$400/\text{trip}$  at current average ticket prices  $\times$  3 trips =  $\$1,200$ . Car rental to travel from Louisville to Floyd County and within the county was calculated at  $\$500$  for the two shorter trips and  $\$800$  for the month-long trip.  $\$500 \times 2 = \$1,000 + \$800 = \$1,800$ . Lodging was calculated based on area hotel rates.  $38 \text{ days} \times \$80/\text{day} = \$3,040$ . Meals were calculated at  $38 \text{ days} \times \$25/\text{day}$  (3 meals/day) =  $\$950$ .

The budget includes  $\$4,337$  to transcribe digitally recorded interviews for analysis. Tigerfish Transcribing-Editing of San Francisco is a UCD-approved vendor that transcribes recordings at  $\$49$  an hour with an academic discount of 10%. We anticipate 80 interviews at an average of one hour/interview.  $98 \text{ hours transcription} \times \$49/\text{hour} = \$4,814.25 - \$485 \text{ academic discount} = \$4,337$ . Generally, one hour of recorded material takes 2.5 – 3 hours to transcribe, so student research assistants and Drs. Scandlyn and Albright will complete transcription.

The PROF grant from DU will provide Dr. Albright with one quarter course release, one quarter's wages and benefits for a student research assistant, and incentives for 80 interviewees. Dr. Albright's course buyout rate is  $\$16,716/\text{course}$ . Wages for a student RA for one quarter are  $\$1,620$  with benefits calculated at 1.7%.  $\$1,620 \times 0.17 = \$28.80$ . Incentives for 80 interviewees  $\times$   $\$20 \text{ gift card} = \$1,600$ .

**Pledge to Report Signature**

*I pledge to report to the Office of Research Services the projects outcomes at its conclusion and to update ORS on future developments related to the initial funding.*

Signature: 

Date: **June 30, 2016**