POPULATION: We are creating recombinant fusions in which glial cell-derived neurotrophic factor (GDNF) is linked to galectin-3 (G3), a human protein that binds to extracellular beta-galactoside glycans and glycosaminoglycans. GDNF-G3 fusion proteins will circumvent major therapeutic shortcomings of early GDNF human trials by anchoring GDNF to the midbrain in a preclinical animal model of PD over a therapeutically-relevant timescale in order to achieve DA neuron rescue. Further, in PD patients, we have detected significantly dysregulated dopamine signaling in peripheral, blood-derived monocytes, suggesting a systemic dopamine signaling change in PD. RESULTS/ANTICIPATED RESULTS: Based on results from published human NTF administration trials, we anticipate that a successful intervention using GDNF-G3 will result in rescue or delayed degeneration of midbrain dopaminergic neurons in a murine PD model. Outcome measures include behavioral PD phenotype testing via rotarod and pole descent compared to non-parkinsonian control animals, as well as corroborating immunohistological evidence from immunohistochemical examination of post-mortem brain tissue from the same animals to examine degree of degeneration. DISCUSSION/SIGNIFICANCE OF IMPACT: Current treatments for PD, whether pharmacological or surgical, center on alleviating movement symptoms that impair daily function - in other words, largely palliative care. Little has been accomplished by way of rescue of dopaminergic neurons or slowing disease progression using standard-of-care therapy. If successful, GDNF-G3 constructs administered intracranially at the site of degeneration would represent a milestone on the path to treating the basic pathology associated with PD, while addressing major shortcomings in earlier NTF-delivery attempts, namely NTF diffusion away from target site.

3369

Assessment to Action: Engaging network member's in identifying needs and directions of network improvement

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OBJECTIVES/SPECIFIC AIMS: To complete a needs assessment and action planning process that engaged clinical and translational research network members in identifying needs through survey feedback, characterizing the needs in small group sessions, and developing recommendations for action at the network's annual scientific meeting. METHODS/STUDY POPULATION: The project included (1) a survey of 357 members across partner institutions from the Great Plains IDeA CTR Network, (2) 6 - 90 minute brainstorming sessions to characterize needs identified through survey assessment, and (3) 6 - 60 minute sessions to develop recommendations for network improvement based on the characterization activity. Approximately 75 members participated in the characterization and recommendation sessions. RESULTS/ANTICIPATED RESULTS: Seven areas of need from the survey were identified based upon the frequency of identification by network members (support to move research across the translational spectrum, database design and management, data access and sharing, data analysis, recruitment and retention of subjects, support for members who have submitted grants but were repeatedly unsuccessful, mentoring). Members indicated which characterization sessions they were interested in attending and based on the enrollment numbers needs related to unsuccessful grant submitters and mentoring were combined as were needs related to database design and data access-sharing. Sessions resulted in 8 inter-related recommendations for network action that included to (1) develop GP-CTR directory/registry of clinicians, researchers, system partners, that can be used to identify people that want to be involved in research partnerships or mentoring, (2) create a GP CTR Navigators Program to will provide support to network members throughout the collaborative research and grant preparation process, (3) identify and disseminate information about assets (funding, databases/registries) that exist amongst network partners that can be leveraged by member, (4) develop a searchable repository of evidence-based interventions for T3/T4 efforts, (5) review GP CTR supported professional development, and technological resource offerings and identify potential gaps, (6) facilitate opportunities for peer support/networking, (7) provide guidance to GP CTR network institutions looking to adopt policies that will support translational research collaboration, and (8) identify potential barriers to GP CTR network engagement (i.e., infrastructure, communication, marketing). DISCUSSION/SIGNIFICANCE OF IMPACT: This process allowed for a wide range of network members to contribute to actionable recommendations for CTR leadership to move into action and improve the scientific network's ability to conduct clinical and translational research.

3203

Collaboration in Reappointment, Promotion, and Tenure Guidelines

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OBJECTIVES/SPECIFIC AIMS: As the issues facing our global society become more complex, university faculty are called upon to address these contemporary problems using interdisciplinary approaches. But do reappointment, promotion, and tenure (RPT) guidelines reflect and reward this fundamental change in the nature of higher education and scholarly inquiry? After collecting all of the RPT guidelines across the university, our research team at the University of Cincinnati (UC) conducted a content analysis of these documents to determine how collaborative work is defined, interpreted, and supported. In addition, we also sought to identify differences in how collaborative work is valued across disciplines and how that value has changed over time. METHODS/STUDY POPULATION: An initial database was assembled that included two distinct data samples: historical and current. Both included RPT criteria for over 100 disciplinary units at the university. Working with the initial comprehensive database, the team narrowed content by selecting all language related to collaborative work using several relevant keywords or keyword fragments (team, collaborat[*], disciplin[*], and interprofessional). This process resulted in a subset of data reflecting the area of interest that could then be coded. Three investigators independently coded common portions of the data for categories. The investigators met regularly to compare the results of their coding, and discrepancies between the investigators' coding schemes were resolved through discussion. The final, common coding scheme will used to code the remainder of the data by each independent investigator. The team meets weekly to discuss significant passages and assign codes, and then reach consensus related to important themes that are identified. Specifically, we will examine the frequency with which collaborative activities are included, the value and emphasis given to them, and the differences across units. Having a historical sample and a current sample also allows us to

https://doi.org/10.1017/cts.2019.297 Published online by Cambridge University Press

analyze trends over time and further compare disciplinary differences. RESULTS/ANTICIPATED RESULTS: UC is a diverse institution that includes world-renowned creative schools (the College Conservatory of Music and the College of Design, Architecture, Art, and Planning), as well as traditional colleges of medicine, nursing, pharmacy, allied health, engineering, business, arts and sciences, etc. UC also includes two branch campuses that specialize in associate's degree level education. Given the diversity in educational and research missions across these areas, we anticipate discovering several themes within the RPT guidelines, primarily centered around the traditional foundations of faculty work such as service, research, and teaching. We anticipate strong differences by college and disciplinary focus, with emphasis on collaborative work and engagement increasing as RPT guidelines become more current. DISCUSSION/SIGNIFICANCE OF IMPACT: Our experience is that faculty members want to engage in collaborative work when possible and appropriate, but their perception is that independent contributions to their field are more highly valued than interdisciplinary work. As universities rush to endorse and promote interdisciplinary, team-oriented research and teaching, this study will afford a better understanding of the types of activities valued at one large and diverse urban institution, grounded in the actual language of RPT criteria.

3184

Development of a Leadership Assessment Scale in Translational Science

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OBJECTIVES/SPECIFIC AIMS: To create the instrument, we employed a modified Delphi approach by conducting a thorough literature review on Leadership to help concretize the relevant constructs, and then usied these extracted constructs as a springboard for the Rockefeller Team Science Educators (TSE's) to discuss and refine the leadership domain areas, collectively creating domain-specific survey items, and then further discussed and refining the number, grouping, and wording of the items. METHODS/STUDY POPULATION: We piloted the Leadership Survey by having all of the Rockefeller TSEs rate Clinical Scholars. Each item was answered using a six-point Likert scale where a low score indicated poor expression of the specific leadership attribute and a high score represented excellent expression of the specific leadership attribute. RESULTS/ANTICIPATED RESULTS: Means, medians, standard deviations, and ranges of each item were calculated and tabulated. A complete (Pearson) correlation matrix was computed so that the raw inter-item relationships can be observed. For each a priori Domain an equal weighted summary scale was created and tabulated for review. The internal consistency of each a priori scale was assessed by calculating Cronbach's Alpha (α). Items with low Item to Construct coefficients were candidates for elimination or modification, and overall scales with low's will undergo further discussion. To challenge our assumptions of the construction and integrity of each domain, we employed exploratory Principal Components Analysis (PCA), followed by orthogonally rotated Factor Analysis (FA). We also forced the PCA / FA analysis to extract the a priori dimensions that allowed us to compare if the empirical and a priori structures match. DISCUSSION/SIGNIFICANCE OF IMPACT: We are partnering with the CTSA programs at Penn and Yale to assess issues of generalizability and scalability. We are working with Vanderbilt to install survey onto REDCap for ease of dissemination. Will continue to assess psychometric properties and refine as we receive more input.

3165

Diseased and Healthy Gastrointestinal Tissue Data Mining requires an Engaged Transdisciplinary team

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OBJECTIVES/SPECIFIC AIMS: To establish an effective team of researchers working towards developing and validating prognostic models employing use of image analyses and other numerical metadata to better understand pediatric undernutrition, and to learn how different approaches can be brought together collaboratively and efficiently. METHODS/STUDY POPULATION: Over the past 18 months we have established a transdisciplinary team spanning three countries and the Schools of Medicine, Engineering, Data Science and Global Health. We first identified two team leaders specifically a pediatric physician scientist (SS) and a data scientist/engineer (DB). The leaders worked together to recruit team members, with the understanding that different ideas are encouraged and will be used collaboratively to tackle the problem of pediatric undernutrition. The final data analytic and interpretative core team consisted of four data science students, two PhD students, an undergraduate biology major, a recent medical graduate, and a PhD research scientist. Additional collaborative members included faculty from Biomedical Engineering, the School of Medicine (Pediatrics and Pathology) along with international Global Health faculty from Pakistan and Zambia. We learned early on that it was important to understand what each of the member's motivation for contributing to the project was along with aligning that motivation with the overall goals of the team. This made us help prioritize team member tasks and streamline ideas. We also incorporated a mechanism of weekly (monthly/bimonthly for global partners) meetings with informal oral presentations which consisted of each member's current progress, thoughts and concerns, and next experimental goals. This method enabled team leaders to have a 3600 mechanism of feedback. Overall, we assessed the effectiveness of our team by two mechanisms: 1) ongoing team member feedback, including team leaders, and 2) progress of the research project. RESULTS/ANTICIPATED RESULTS: Our feedback has shown that on initial development of the team there was hesitance in communication due to the background diversity of our various member along with different cultural/social expectations. We used ice-breaking methods such as dedicated time for brief introductions, career directions, and life goals for each team member. We subsequently found that with the exception of one, all other team members noted our working environment professional and conducive to productivity. We also learnt from our method of ongoing constant feedback that at times, due to the complexity of different disciplines, some information was lost due to the difference in educational backgrounds. We have now employed new methods to relay information more effectively, with the use of not just sharing literature but also by explaining the content. The progress of our research project has varied over the past 4-6 months. There was a steep learning curve for almost every member, for example all the data science students had never studied anything related to medicine during their education, including minimal if none exposure to the ethics of medical research. Conversely, team members with medical/biology

https://doi.org/10.1017/cts.2019.297 Published online by Cambridge University Press