

culture. A 2D/3D infection culture system for IEC-6 and HT-29 cells was infected for 4 hr and imaged and then DNA damage examined by comet assay, cell cycle and $^3\text{H}2\text{AX}$ accumulation. Germ-free (GF) I110-/- (colitis) mice were orally gavaged with 108 cfu WT ori „fimH E. coli NC101 for 16 weeks. E. coli colonization were quantified by plate culture and qPCR. Lipocalin2 was quantified by ELISA. PCNA and β -catenin were evaluated by immunohistochemistry (IHC). RESULTS/ANTICIPATED RESULTS: Biofilm formation was reduced by more than 40% ($p < 0.05$) in E. coli NC101i „fimH compared to WT strain. Zebrafish larvae showed a 41% decrease in intestinal colonization of i „fimH compared to WT ($p < 0.05$). E. coli NC101-induced DNA damage was reduced by 67% ($p < 0.0001$) in HT-29 cells infected with i „fimH compared to WT strain. Using the 3D infection system, a 46% decrease in $\gamma\text{H}2\text{AX}$ ($p < 0.05$) and 42% decrease in G2 cell cycle arrest ($p < 0.05$) was observed in i „fimH infected IEC-6 cells compared to WT strain. Furthermore, i „fimH infected I110-/- mice showed decreased colonization ($p < 0.01$), decreased intestinal inflammation ($p < 0.05$), decreased stool lipocalin2 level ($p < 0.01$), and reduction of PCNA positive cells in the intestine ($p < 0.05$) compared to mice infected with WT strain. DISCUSSION/SIGNIFICANCE OF FINDINGS: Adhesin protein FimH is required by E. coli NC101 to colonize and promote colitis and carcinogenesis both in a 3D perfusion culture and in mice and may serve as potential therapeutic target.

Clinical Trial

10040

Proactive and responsive COVID-19 multidisciplinary research support through the University of Minnesota's Clinical Research Support Center

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ABSTRACT IMPACT: In a global pandemic where data development and dissemination are integral to combating the disease, the Clinical Research Support Center at the University of Minnesota provides a model of comprehensive virtual support, helping to attain and disseminate novel research on COVID-19, its individual and community impact, and treatment initiatives/outcomes. OBJECTIVES/GOALS: The pandemic created massive disruption to the conduct of clinical research with an unprecedented reorientation towards COVID-19. In this fast-paced environment, the Clinical Research Support Center (CRSC) rapidly developed innovative means of supporting diverse research initiatives. METHODS/STUDY POPULATION: The CRSC rapidly transitioned into a virtual environment and developed tools for the clinical research community to enhance remote clinical trial start up. This includes supporting remote consent, eBinders, COVID-19

research training for clinical staff, and easier identification of potential participants for COVID-19 studies; all through virtual support. Support provided research teams guidance on study protocols, regulatory requirements, informatics, biostatistics, financial management, recruitment strategies to support critical, urgent COVID-19 research. We outline proactive examples of how the CRSC now provides support to research teams through the pandemic. RESULTS/ANTICIPATED RESULTS: From March-November 2020, 116 COVID-19 projects received virtual support from the CRSC for COVID-19 research: disease understanding ($n=27$), treatment ($n=23$), pandemic impact ($n=20$), clinical care innovation ($n=18$), disease control and surveillance ($n=10$), prevention ($n=9$), detection ($n=5$), and impact on minorities ($n=4$). The diversity of these studies demonstrates the demand for and benefit from multidisciplinary expertise supporting study design and implementation. Through successful articulation and acceleration of research activities, the CRSC met the need for speed and rapidly adapted to new challenges created by the pandemic. DISCUSSION/SIGNIFICANCE OF FINDINGS: In a global pandemic where rapidly changing barriers to research is ongoing, through multidisciplinary efforts, the CRSC continues to provide comprehensive, virtual support to attain and disseminate novel research on COVID-19, its individual and community impact, and treatment initiatives/outcomes.

39901

Breaking down silos to synergize clinical trial development and initiation: The Clinical Research Support Center, University of Minnesota

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ABSTRACT IMPACT: The model of the Clinical Research Support Center at the University of Minnesota of streamlining clinical trial infrastructure can be leveraged by the larger clinical trial community to create valuable efficiencies and facilitate faster initiation of research activities by supporting researchers from concept to dissemination. OBJECTIVES/GOALS: Substantial time, energy, and money are spent bridging disparate resources in research. We describe how the University of Minnesota's (UMN) Clinical Research Support Center (CRSC) streamlines trial infrastructure, creating valuable efficiencies to support researchers from concept to dissemination. METHODS/STUDY POPULATION: The CRSC, established in 2018 through the Clinical and Translational Science Award (CTSA) program, brings resources together in a single, centralized, and convenient location to help researchers navigate the UMN clinical research startup process and specifically to assist with the development and initiation of a research study from feasibility assessment to project opening. Diverse expertise in components of human subject research is available to support the broad scope of projects at a large institution like the UMN. We present how CRSC services, when coordinated by Clinical Research Specialists, have

been used to improve access to clinical research resources during the start up process. RESULTS/ANTICIPATED RESULTS: Since inception in 2018, the CRSC has provided support to over 1700 studies with 437 research projects referred to a Clinical Research Specialist within the CRSC. Of those projects, 97 (22.2%) received comprehensive support from the following expert groups: regulatory guidance (n=74), biostatistics (n=68), clinical (hospital or clinic) partners (n=60), recruitment (n=36), budget development assistance (n=30), and (bio)informatics (n=27). Successful examples of synergies to streamlining study start up include shortening the window between protocol development support from Clinical Research Specialists and IRB submission preparation through to Regulatory Specialists to 3 days. DISCUSSION/SIGNIFICANCE OF FINDINGS: Providing cross-functional support to research teams through the CRSC increases the likelihood of quicker and successful execution and completion of research initiation and subsequently impacts the dissemination of that research to patients and the broader community.

Commercialization/Entrepreneurship

27229

Team Science: A Two-Year Follow-Up Case Study of Rutgers' Ideation Forum

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ABSTRACT IMPACT: This study will provide important insight about effective team formation from coming up with an idea to successfully implementing that idea, as well as will highlight the implementation, evolution, and future directions of a team science initiatives. OBJECTIVES/GOALS: The goal of this study is to describe the feasibility of initiating an ideation forum to catalyze team formation, explore the process by which themes and teams are selected to participate in the forum setting, and assess the progress of participating teams post-forum through internal and external funding and other synergistic research activities. METHODS/STUDY POPULATION: Three ideation forums took place between 2018-2019 at Rutgers University, with a defined process and collection of data. The method of intervention to trigger team science, specifically the methodology employed to identify teams and produce new collaborative ideas, will first be described to show the feasibility of such an event to encourage team formation. In post-hoc analysis, we compare various success matrices of participating teams received seed funding versus teams that didn't receive any funding to assess the progress of teams in the research ideation forum incubation process. RESULTS/ANTICIPATED RESULTS: Triggering team science through ideation forums is feasible and, in fact, quite productive to creating a durable response in formed teams showing continued productivity in publications, fundraising, and other academic metrics. DISCUSSION/SIGNIFICANCE OF FINDINGS: Our case review can illuminate how academic institutions can support team science research through ideation forums. In addition, this study lays an initial foundation for improvements in ideation forum creation and new metrics that can be shared broadly to compare across other institutions.

Dissemination and Implementation

54478

The NIH Reporter Database: A Wealth of Information for Developing Team Science Metrics?

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ABSTRACT IMPACT: As scientific research is trending towards greater interdisciplinary and collaboration in order to meet the challenges of contemporary science, which has led to increased recognition of the importance of Team Science, this study will promote team science research within NJ ACTS Consortium as well as across the country. OBJECTIVES/GOALS: The objective of this study is to assess the feasibility of using the NIH Reporter database for developing and tracking team science metrics within the CTSA-funded NJ ACTS Consortium, which consists of RU, PU, and NJIT. The NIH Reporter database provides detailed information on single-PI and multiple-PI R01 grants funded by NIH. METHODS/STUDY POPULATION: 58 multi-PI projects and 344 single-PI projects are currently funded within the NJ ACTS consortium. We will use information from the database on funding levels, institutional composition of projects (e.g., within-consortium projects vs. projects with PIs both within and outside of the consortium), numbers of publications, impact factors of publications, and funding supplements obtained to quantify and track NIH R01 Team Science activity in the consortium. RESULTS/ANTICIPATED RESULTS: Preliminary analysis suggests that it will be both feasible and efficient to use the NIH reporter database to develop Team Science metrics and to augment information in the database with information on PI characteristics such as department/center/school/university, academic discipline, and rank/tenure status, as well and detailed composition of research teams, such as the mix in terms of senior and junior scholars. DISCUSSION/SIGNIFICANCE OF FINDINGS: This study will make an important contribution to this movement by demonstrating the feasibility of using the publicly available NIH Reporter Database to quantify the level and success of Team Science in the form of single-PI and multiple-PI R01 grants funded by NIH, which represent extremely important Team Science activities at universities.

Education/Mentoring/Professional and Career Development

15000

Exploring team science, professional networks, and innovation success in the THRIVE COVID-19 fellowship program

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ABSTRACT IMPACT: Implement and evaluate a fellowship program to foster a new generation of entrepreneurial and collaboratively-minded team scientists, equipped with the knowledge and skills to innovate technology-based solutions for COVID-19 to