

backgrounds had minimal prior exposure to computational modeling, computer engineering and the verbage of communicating mathematical algorithms. While this may have slowed our progress we learned that by asking questions and engaging every member it was easier to delegate tasks effectively. Once our team reached an overall understanding of each member's goals there was a steady progress in the project, with new results and new methods of analysis being tested every week. **DISCUSSION/SIGNIFICANCE OF IMPACT:** We expect that our on-going collaboration will result in the development of new and novel modalities to understand and diagnose pediatric undernutrition, and can be used as a model to tackle several other problems. As with many team science projects, credit and authorship are challenges that we are outlining creative strategies for as suggested by International Committee of Medical Journal Editors (ICMJE) and other literature.

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Evaluation of a Team Leadership Assessment Center Study for Scientists

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OBJECTIVES/SPECIFIC AIMS: The objective for the present study is to evaluate qualitatively the Team Leadership Assessment Center (LAC) at UTMB-Galveston. There has been much discussion about the need for leader development within team science (Börner, et al, 2010; Falk-Krzensinski, et al., 2011). The LAC was designed to examine the study participants' beliefs and perceptions of and competencies in team leadership by means of a multi-trait multi-method approach. Our team competency model involves seven dimensions and twenty-five specific competencies. There were two complementary components to the evaluation: a quantitative survey and a series of qualitative interviews, to be discussed here. **METHODS/STUDY POPULATION:** The study population for the qualitative component consisted of seventeen volunteers from the pool of fifty-one LAC participants, including trainees (KL2 scholars, TL1 scholars) as well as assistant professors, and early career associate professors. Each volunteer respondent was engaged in a twenty to thirty-minute, recorded, conversational, telephone interview. They were asked to describe and evaluate their LAC experience in their own words, perceptions, and values. The study was reviewed by the Committee for the Protection of Human Subjects at UTMB. **RESULTS/ANTICIPATED RESULTS:** Major findings from respondents' overall assessment of their Center experience include: All respondents stated that the LAC was a worthwhile experience. All respondents stated they would be willing to participate in any follow-up LAC activity. Before the LAC experience, most respondents indicated that they perceived leadership as a condition or feature of a job, appointment, or profession and not an individualistic feature of personality or experience. Ideational or conceptual definitions of leadership were superseded by administrative or managerial tropes. Major categorical indexes were related to occupational status. The generally held belief is one is not trained to be a leader, but to perform leadership tasks. Significant differences among respondents tended to cluster around occupational positions and statuses at UTMB, for example: Surgeons feel they are team oriented and their work is organized according to necessary tasks. Assistant professors and post-docs generally perceive the design of leadership as defined by the demands of their specialized field, not determined institutionally or professionally. A general take-away was the sense that, although some participants did not consider themselves to be "leaders" before the training,

most felt that the "pressure" to be or become a leader was relieved a bit by the LAC. One was only expected to develop leadership skills and strategies, not change one's Self-Identity. **DISCUSSION/SIGNIFICANCE OF IMPACT:** The more complex the job status, the less critical is the need to achieve the Self-Identity of "leader." Complaints about the LAC were very few and non-modal in occurrence. A general recommendation would be for the facilitators of programs like LAC to take cultural differences more into consideration. The most highly rated feature of the LAC is the personal attention given to participants during the one-on-one evaluation profile.

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Longitudinal analysis of research collaborations and emerging networks

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OBJECTIVES/SPECIFIC AIMS: To longitudinally track emerging research collaborations and assess their development and productivity. **METHODS/STUDY POPULATION:** In four administrations (2011, 2013, 2015, 2017), all full- and part-time University of Rochester Medical Center faculty received an email invitation to complete a research collaborators survey. Respondents indicated whether they were involved in research, and if involved in research, identified collaborators from a drop-down list of investigators in the institution. Space was provided for write-ins. Full- and part-time status, faculty rank, and departmental affiliation was associated with each investigator. Grant data were obtained from a grant management database maintained by the institution's Office of Research and Project Administration. Grant data included all submissions (funded and not funded), award number, award effective date, award final expiration date, funding amounts, principal investigator and co-investigators. Using Mathematica SNA software, for each year we identified collaborator dyads (including their characteristics such as inter/intradepartmental; investigator characteristics) and networks (e.g. size, density). **RESULTS/ANTICIPATED RESULTS:** On average, 1800 (range 1730-2034) full- and part-time faculty received email invitations to complete the survey. An average of 403 respondents (range 385-441) completed the survey each administration. While the response rate seems low, the survey was distributed to every faculty member regardless of their primary appointment. Thus it included a large number of individuals whose role is exclusively clinical. Grant data included 4429 awards received between 2011 and 2018, involving 1395 investigators as principal or co-investigators. Survey respondents naming collaborators ranged from 233 to 280 (average 257) with 1594 to 2265 (average 1988) collaborations named each year. Overall density increased from .0204 in 2011 to .0342 in 2017. Density within the group of female investigators increased from .0219 in 2011 to .0412 in 2017. Within the group of male investigators, density increase from .0226 to .0333 in the same time span. Analysis by rank, changes over time and those with grant funding is underway. **DISCUSSION/SIGNIFICANCE OF IMPACT:** This methodology captured a consistent number of collaborations over an 8 year period. Analyses reveal network growth over time and of increasing heterogeneity (by gender). Analyzing research networks overtime provides an important metric to assess how research networks evolve and devolve and the characteristics of those that grow or stagnate. Further these analyses can demonstrate the impact

of support provided to networks or teams by the CTSI, department or other institutional mechanism.

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Percent Predicted Peak Exercise Oxygen Pulse Is a Marker of Cardiac Reserve Following Thoracic Radiotherapy

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OBJECTIVES/SPECIFIC AIMS: Cardiac radiation exposure following anti-cancer (CA) thoracic radiotherapy (RT) treatment increases risk of heart failure in a dose-dependent manner with a predominantly restrictive cardiomyopathy phenotype and is characterized by a diffuse fibrosis within the myocardium. The peak oxygen pulse (O₂Pulse) determined at cardiopulmonary exercise testing (CPET) is the quotient of oxygen consumption (VO₂) divided by the heart rate (HR) at peak exercise. Through deduction of the Fick equation (VO₂ = cardiac output (CO) x arteriovenous oxygen difference) it provides a noninvasive estimate of the stroke volume response to exercise. Knowledge of the relationship between cardiac radiation dose and O₂Pulse may provide mechanistic insight into the cardiac reserve of the CA survivor following thoracic RT. **METHODS/STUDY POPULATION:** Patients without a history of cardiovascular disease with a history of thoracic RT for CA treatment with significant incidental heart exposure (≥5 Gray (Gy) to ≥10% of the heart volume) underwent treadmill CPET to determine cardiorespiratory fitness and cardiac magnetic resonance (CMR) imaging to quantify central hemodynamics and for myocardial tissue characterization. The mean cardiac radiation dose (MCRD) and %volume of heart dose was determined from dose-volume histograms reflective of the dose contributions from all RT treatments for each patient. The oxygen pulse (milliliters (mL) of O₂ per heart beat) was determined by dividing the absolute VO₂ by the HR (beats per minute, bpm) at peak exercise and reported as %-predicted values to account for age and gender differences. Data are reported as number (%) or median (interquartile range). A stepwise multivariate linear regression model was created from significant univariate RT and CMR variables to determine independent predictors of %O₂Pulse. **RESULTS/ANTICIPATED RESULTS:** Thirty patients (age = 63 [57-67] years, 18 [60%] female, 2.0 [0.1-28.7] years since completion of RT) underwent study procedures. The peak VO₂=1376 mL·min⁻¹ (62% of predicted) and peak HR = 150 (122-164) bpm resulted in a peak O₂Pulse of 9.2 mL/beat (82% of predicted). The MCRD = 5.6 [3.7-17.8] Gy was inversely associated with %O₂Pulse at univariate analysis (R = -0.514, p < .01), but was not retained at multivariate analysis. The CMR-derived CO ([4.9 (4.09-5.90) Liters/minute], β = +.374, p < .01), CMR-extracellular volume ([ECV, 26.9 (24.8-29.2)%], β = -.536, p < .01), and volume of the heart exposed to ≥30 Gy ([2.5 (0-15.0)Gy], (β = -.345, p = .01) were retained in the model (R² = .709, F(3,19) = 15.438, p < .001) and were independent predictors of the %O₂Pulse. **DISCUSSION/SIGNIFICANCE OF IMPACT:** In patients with significant heart exposure following RT, %O₂Pulse (a surrogate of stroke volume response to exercise) is inversely associated with cardiac radiation dose and is related to central hemodynamics (CO) and markers of diffuse fibrosis (ECV).

Scientometric Analysis of the Puerto Rico Clinical and Translational Research Consortium (PRCTRC) Research Publications, 2010-2017

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OBJECTIVES/SPECIFIC AIMS: The objective of this study was to evaluate the impact of the research and the scientific collaborations as shown in research publication supported by the PRCTRC. **METHODS/STUDY POPULATION:** Manuscripts published from 2010 to 2017 were retrieved from the Science Citation Index database. Our search criteria included manuscripts: 1) with the PRCTRC grant number and 2) with a PMID number. Scientometric indicators including h-index (HI), average citation (AC), collaboration coefficient (CC), collaboration index (CI) and degree of collaboration (DC) were calculated using the Web of Science Platform and Stata software for statistical inquiry. Joinpoint was used to calculate the annual percent change (APC). **RESULTS/ANTICIPATED RESULTS:** A total of 316 publications were identified from 2010-2017, with an average of 39.5 publications per year, and a total of 2,383 citing articles without self-citations. During this period a significant growth (APC = 15.3%, p < 0.05) of scientific production was observed. The overall HI was 28, and the AC per item was 9.31. Regarding collaboration, the overall CC was 0.82, the CI was 6.93, and the DC was 99.3. **DISCUSSION/SIGNIFICANCE OF IMPACT:** This study demonstrated that the PRCTRC scientific production increased statistically significantly. Application of the scientometric indicators allows the PRCTRC assess the research productivity and collaboration to design and implement interventions according to program experience and needs.

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The CTSA Institutional website: A higher purpose - Researcher use of institutional Clinical and Translational Science Award (CTSA) website content to assess or promote NCATS CTSA Program Goals.

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OBJECTIVES/SPECIFIC AIMS: The objective of this research was to identify and evaluate published research articles that highlight the use of CTSA institutional websites as a research tool or data source for translational science research. **METHODS/STUDY POPULATION:** A multifaceted systematic search process was engaged for this literature review process using standard literature database searching, digital journal database searching, and pearl growing. All U.S. based studies and reports from 2006 through the present that addressed the application of websites of CTSA institutions for translational science purposes were included in this review. Identified articles were collected, organized, and analyzed using an excel spreadsheet. There were 2 different data collection and organization protocols, one for studies the other for reports. The first data collection protocol was for identified studies that used individual CTSA Institutional websites as a data source for a research topic. The organization processes for each relevant study article included a customized data extraction process that looked to identify