College Vision—Adam Kuspa, PhD

The Department of Medicine is positioned to play a major role in BCM’s strategic vision, which is centered around precision population health. The graduate school has been realigned with the College’s mission, taking the graduate programs out of the departments and bringing them under a single umbrella. Dr. Kuspa encouraged faculty to participate in the graduate school. The Institute for Clinical and Translational Research (ICTR) serves as an axis with respect to clinical translation in a hub-and-spokes model that is aiming to be as useful for researchers as possible. In this model, the Office of Research will provide informatics and procedural resources for clinical studies and trials. Another axis is the partnership with CHI. CHI is asking BCM to be the academic leaders of their hospital system, and BCM can expand trials that begin at BCM to the entire CHI national network. BCM is working to expand their informatics initiative with CHI clinical data as well as integrating “biobridges” with other academic medical centers by developing tools for connecting data systems. There is a push toward commercial development of discoveries to fulfill the mission of developing new therapies for patients.

Clinical and Translational Science Awards Program (CTSA)—Chris Amos, MD

The NIH CTSA program advances translational research by creating hubs that provide resources, training, and advanced technologies. These grants are platform-oriented and support collaborative initiatives to harmonize efforts. Previous BCM efforts to get this grant were unsuccessful, in part because of a lack of accessible electronic records and linkage to a health system with a large adult population. Improvements since then include the partnership with CHI and the development of data resources. BCM will need to pick partners for the application carefully, because there needs to be a demonstratable history of collaboration between institutions. The areas of interest include workforce development, collaboration and engagement, integration across the lifespan, methods and processes, and informatics. Some initiatives include network Trial Innovation Centers (TICs) and Recruitment Innovation Centers (RICs) to build trial recruitment capacity and streamline trial recruitment, Streamlined Multisite Accelerated Resources for Trials to build central IRBs, and Program Collaborative Awards to support collaborations between CTSA. The maximum award is limited depending of the number of institutions involved, and more than half of the funds must be matched by the institution. There are 11 components to a CTSA. The current application framework has an overarching Administrative Core with sub-cores focused on Informatics (communicating with other CTSA and data warehousing), Community and Collaboration (supporting community engagement and team science), Translational Endeavors (supporting workforce development and pilot programs), Research Methods (providing assistance with research design and regulatory knowledge), Hub Research Capacity (having access to special populations, such as children and minorities) and Network Capacity (integrating with RICs and TICs).

Multi-investigator R01s—Melissa Bondy, PhD
The Department’s goal is to increase multi-investigator R01s, which are large, investigator-initiated grants, often over $500,000 in direct costs. Researchers are encouraged to take advantage of available pilot grants (e.g., cancer, obesity) to expand their collaborative science efforts. Collaborations within the department are especially encouraged, because all co-PIs get credit for these grants, but could certainly be with researchers from other institutions. A single contact PI is required, and it was suggested to use senior personnel as the point person because they have more extensive connections at the NIH. If your budget is over $500,000, the contact PI will need to contact the program officer to obtain Awaiting Receipt of Application (ARA) approval, which takes approximately 8 weeks. Approval requires some information (aims page, abstract, budget, budget justification, data sharing plan, and a cover letter). If the collaboration involves diverse expertise, the Aims will need to dovetail well with one another to justify the larger budget. There will be back and forth with the program officer, but institutional approval is necessary. The approval letter is provided during submission.

U01—Matthew Ellis, MB, PhD

U01s are NIH-initiated projects. These are research project cooperative agreements in which the NIH decides to fund a very specific project and writes a detailed description of its goals. Therefore, the proposal needs to match the program announcement very well. Sometimes experts in a field are invited to the discussion group in which the NIH develops the project, and therefore can shape the requirements to fit their own strengths and resources. U mechanisms require large time investments working with the NIH, including several meetings a year and frequent teleconferences, so that the NIH can carefully monitor spending. Because these are usually multi-institution grants, there are additional time commitments to coordinate between institutions and fulfill administrative functions (e.g., pilot project selection, committees, advisory board). The applications require a lot of time to put together, so plan accordingly. The ICTR is building the capacity to support submitting this type of application. It is helpful to find out what U grants are in the pipeline a year in advance so you can publish papers, put together pilot data, and set up the infrastructure. It would also be helpful to contribute to active U grants, such as through their pilot programs, so you can get in the loop.

Precision Medicine—Richard Gibbs, PhD

There is a desire for genomic medicine, but large numbers of participants are needed for these studies. The best place to get these patients is in the clinic, but the genetic analyses first need to be proven clinically useful. Genetic research of adult diseases is difficult because they are complex. As demonstrated by the work being done in pediatrics, an excellent way to facilitate discoveries is to use the overflow from the genetic diagnostics laboratory. The adult initiative is called the MARS mission, which is an analogy of the relative difficulty applying such methods to adults compared to the Moon Mission in pediatric genetics. One candidate for a clinically useful genetic analysis is a cardiac genetics panel for cardiovascular disease that provides information on high penetrance alleles that inform polygenic risk scores and markers. The pilot study of 1000 patients is currently ready to launch and is looking to expand to 5000 throughout the CHI network. Patients can opt-in to use of their data for additional studies as part of their consent.

Data Initiative—Lee Leiber, MBA, PMP

What was formerly described as a “data warehouse” is now being considered a “data web” because BCM’s affiliates do not all use the same systems, so there will be multiple,
connected data repositories. The data initiative also provides analytical tools and infrastructure to process the data.

The data web is composed of five initiatives.

1) BCM Enterprise Data Warehouse (available today). Baylor St. Luke’s Medical Center (BSLMC) data is in the process of being added to this within about a month.
2) Greater Houston HealthConnect (available in 6–9 months). This is the local Houston healthcare exchange with all the area hospitals in Southeast Texas. The available data and coding are normalized. They will establish a research platform for access to that data with IRB approval on a per-study basis.
3) Deep6AI. This is a pilot that will hopefully be implemented across the entire TMC. It uses natural language processing to access the contents of the notes field.
4) Cosmos (6–9 months). EPIC is trying to build the largest medical data warehouse on the planet. EPIC customers can contribute to the data, and participants can get de-identified data from the warehouse
5) Other affiliates. The warehouse will document the processes for obtaining and using data from other affiliates, like the VA and Harris Health, to assist in your data needs.

The data solution you choose will depend on what you are trying to do. There are ongoing activities to increase the capabilities of these initiatives. To use the data web, submit a request by email. The data retrieval time depends on what data is needed and if IRB approval is needed. Consider what criteria need to be applied and if the data are extractable from the dataset. Data dictionaries are also available.

Advanced Technologies Cores (ATC)—Dean Edwards, PhD

ATC are institutional cores that are available to everybody, falling under the Office of Research. The ATC was designed to create consistency in operations, address financing, and minimize duplications in resources and administration. There are 26 cores providing access to emerging advanced technology and advice on using this technology. Each Core has a scientific advisory group to ensure everything is state-of-the-art, numerous faculty and research staff to run everything, and there is a dedicated IT team. The cores are financed by grants, the institution, and charges to users. There is substantial expense in obtaining and maintaining cutting-edge equipment, but in the end, users pay only 40% of the total cost. The success of the cores is demonstrated by the hundreds of user publications and grants involving the cores in 2017. New cores in the planning stage include zebrafish, glycomics, and epigenetics. For researchers applying for large program grants, you do not have to make your own cores if an ATC Core meets your needs; you can contact Dean or the Core Directors to write it up and provide a budget. There is also a memorandum of use with MD Anderson, so researchers from both institutions can use each other’s technology cores. During this talk it was mentioned in response to a question that there are resources for supercomputing at BCM, although this is outside of the ATC, and BCM is in the process of building up these resources and extending capabilities.

Session I
Room A: Precision Medicine
Melissa Bondy, PhD and Matthew Ellis, MB, PhD
In the first session held in Room A, faculty discussed opportunities for the Department of Medicine in the area of precision medicine. Drs. Matthew Ellis and Melissa Bondy, who moderated the session, defined precision medicine as data-driven approaches to individualized risk, diagnosis, prevention, and therapy. The group discussed many strengths of the department and the institution as a whole, as well as opportunities to apply and expand those strengths. Although no specific funding opportunities were discussed, some practical needs and next steps were identified that would enable the success of future applications.

**Strengths**

The strengths discussed were categorized into technical strengths and areas of clinical and research expertise. Techniques and methodologies related to precision medicine in which the Department of Medicine (or BCM in general) has extensive expertise and success include germline genetics, microbiome/metagenomic analyses, epigenomics, cancer proteogenomics, computational biology and bioinformatics, and gene therapy. These represent tools that can be used to address important questions in precision medicine. Clinical and research strengths represent areas of opportunity for new or additional precision medicine research. These include liver disease, breast cancer, diabetes and metabolic disease, lung health and diseases, environmental health, infectious and tropical diseases, and neuroscience, including Alzheimer’s disease and other age-related diseases.

The individualized nature of precision medicine requires a keen understanding of the differences in medical needs and disease risks at various stages of life and in different populations. One strength of BCM is the ability to study patients across the lifespan. There is strong, successful research being conducted from fetal and maternal health through geriatric care. This also suggests opportunities for collaboration of Department of Medicine researchers with those in pediatrics, such as on the large, multi-investigator R01 grants discussed earlier in the retreat. Additionally, the strong clinical presence throughout the Houston area allows access to patients from many ethnic and socioeconomic backgrounds. This makes Houston an ideal location for both gathering patient data and samples and launching trials that could eventually be expanded to the CHI hospital network, as Adam Kuspa discussed when describing the College vision earlier in the retreat.

Another strength that affects all areas of precision medicine research at BCM is the close integration of research and clinical enterprises. This has bidirectional benefits: research can be more quickly translated into trials and ultimately treatments, and patient samples that are obtained during treatment can be used for research purposes. Most researchers at the session felt that the latter benefit was poorly exploited so far, which will be discussed in the Opportunities section below.

**Opportunities**

The greatest area of opportunity for precision medicine research in the Department of Medicine is the acquisition and use of biospecimens from patients. Many viewed this as an area of “missed opportunities” to date. One such missed opportunity is the collection of samples from patients during clinical treatment. For example, the Alzheimer’s Disease and Memory Disorders Center has extensive patient data from years of clinical care, but sample collection has been very limited. Faculty proposed that better collection efforts should be considered. One option is a “front-door” collection policy in which all patients being seen at a specific location or center provide consent at the beginning of treatment for collection of samples and use of these samples for research. This is done at some other institutions, such as MD Anderson. However, this is expensive and time-consuming to implement, and results in costly “freezer farms” to store samples that may never be used at all. To describe the alternative to this approach, Matthew Ellis proposed the title “precision biobanking.” This would involve careful planning of what
samples are required to allow deep analysis to answer a given research question, and how the samples should be collected and stored. However, this precision approach might limit the utility of these sets of samples for researchers in other areas.

Perhaps more important than the need for more sample collection is the need to know which samples already exist. The faculty seemed to be in strong agreement that they are not adequately informed in this area. Researchers often collect and store their own samples using their own selected laboratory information management system (LIMS), and other researchers are unaware of samples that could be used in their own studies. It was proposed that a department-wide LIMS and shared acquisition platform could enable better collaboration and possibly even save the department money. Regardless of future acquisition and management, faculty felt the need for a way to inventory and report what is currently available, such as in the form of a virtual repository. A virtual repository could also link researchers to resources such as the VA database of clinical information and DNA samples, placental blood collected at Ben Taub, and samples associated with the Atherosclerosis Risk in Communities (ARIC) study.

Opportunities for expansion of existing strengths included biomarker development as well as statistical genetics and informatics. The identification and development of biomarkers is a key aspect of precision medicine. The faculty felt that there was a great deal of expertise in DNA-based biomarkers, but that more support is needed for the development of all types of biomarkers. This support would include statistical advice and assistance creating the most robust biomarkers possible. A gap was identified between statistical genetics in pediatrics versus in adults. This was suggested as an area for expansion and development.

The areas of clinical expertise listed in the Strengths section also represent opportunities to expand or begin precision medicine research, and some specific options were proposed during the session. For example, the ARIC study samples mentioned above could be used to study other diseases, such as cancer. Because cancer and cardiovascular disease share some common prevention and risk factors, the samples could be useful to research more targeted prevention and treatment methods. Cardiovascular biomarker imaging was mentioned. The success in using imaging-based biomarkers to guide cancer treatment suggests this could be effective, and this type of research could become a strength in a clinical area that has historically been only adequate.

**Conclusions**

Going forward, precision medicine researchers would like to see more awareness of existing resources, better planning and collection of new resources, and expansion of precision medicine into existing areas of clinical strength in the department.

**Session II**  
**Room A: Population Health & Disparities**  
Laura Petersen, MD, MPH and Wolfgang Winkelmayer, MD

In the second session in Room A, faculty discussed Population Health and Disparities. Moderators Drs. Laura Petersen and Wolfgang Winkelmayer chose to begin by gathering a few different definitions of population health from the audience. These included the classic definition by Kindig and Stoddard, “the health outcomes of a group of individuals, including the distribution of such outcomes within the group.” Additional responses were health behavior and outcomes through the lens of the population, expanding findings beyond the patients that we see in the clinic, and maintaining or improving health by working with resources outside of the healthcare system. The distinction between public health and population health was discussed. Public health is generally seen as a tool of state and federal governments exercising their authority to
protect and ensure the health, safety, and welfare of the public—often with little coordination with health care providers. Population health is generally broader in scope, assessing and implementing interventions for a diverse range of health determinants, including medical care, education, and housing. One researcher claimed that the definition has shifted so many times during their career that it could be nearly anything you want these days! Regardless of the specific definition, all present had a passion for applying the department’s existing strengths to areas of opportunity to improve health. In addition to general opportunities for collaboration and new research directions, some specific, albeit nontraditional, funding opportunities were suggested.

Strengths

The faculty in the session identified general strengths in the department and BCM as a whole, as well as specific strengths that could be leveraged for funding opportunities. Specific strengths included internationally recognized gastrointestinal research and a strong infectious diseases program; opportunities to use these strengths will be discussed below. The diversity of the population in the Houston area is a significant advantage, but the extension of the CHI hospital network into other parts of the country is also useful for population health research. Specifically, it was noted that there is a network of 300 primary care physicians who interact with populations of patients, separate from the Baylor Faculty Group Practice, which is a new, unexplored asset. Another strength is the cooperation with the TMCx technology accelerator, which could help develop technologies developed through proposed research.

Opportunities

Several specific collaborative public health research possibilities were suggested. First, based on the strength of BCM in infectious disease research and microbiome analyses, a project was proposed exploring antibiotic resistance due to overuse and overprescription in conjunction with the experts in antibiotic stewardship. Another proposed collaboration was between the excellent gastrointestinal researchers and members of the department who study obesity and cardiovascular diseases, to explore connections between these conditions and the gastrointestinal system.

Collaboration was also suggested with the City of Houston Health Department and Harris County Public Health. Working with these departments requires a great deal of bureaucratic effort. However, a few faculty members in the department have experience working successfully with these departments, and could serve as resources to help other researchers. Similarly, the Kinder Institute for Urban Research at Rice University could be an excellent partner for conducting public health research. The understanding of the faculty present was that it had been a few years since any meaningful conversation about collaboration with the Kinder Institute, and this would be a good time to reestablish a connection.

Other opportunities involve data collection and use. The suggestion was made to implement better data collection methods that involve georeferenced data to determine patient locations, as well as collecting more data on socioeconomic factors such as education. Together, these data could be particularly helpful for research into health disparities, which was voted among the top opportunities by the faculty in the session. Furthermore, existing data should be better catalogued so that researchers know what is available to them. This could also extend to creating inventories of the skills of department members, the populations served by various clinical enterprises, and partners such as other institutions and government organizations.

Funding Opportunities
It was suggested that the CHI network might be interested in supporting research into prevention if it aligns with areas of financial loss in the healthcare system, such as preventing early readmissions. Likewise, insurers could be interested in research that involves using healthcare resources more carefully or sparingly, such as incentives to avoid unnecessary tests. Some researchers felt that BCM should provide pilot funding for research using the existing data sets that Dr. Lee Lieber introduced earlier in the evening. Projects based on analysis of large data sets are often difficult to fund because it is impossible to obtain adequate preliminary data without funding, and the institution could seek funding from sources such as philanthropic contributions to enable researchers to use these data sets.

Conclusions

This session identified both specific and general areas of opportunity for public health and disparities research, for which funding could come from the NIH or other, less traditional, sources.

Session I
Room B: CTSA
Chris Amos, MD and Hashem El-Serag, MD, MPH

In the first session held in Room B, faculty discussed the upcoming CTSA proposal. Drs. Chris Amos and Hashem El-Serag, who moderated the session, noted that BCM has applied for the CTSA several times unsuccessfully. The major problems identified were a lack of bioinformatic infrastructure, lack of collaboration history between the individual institutions, and lack of community engagement. However, BCM has improved some of the holes in the original application. UT is willing to continue as a partner, but BCM needs evidence of interaction and collaboration with UT (e.g., publications and grants). The ICTR is targeting to submit a new proposal in September. Discussions centered around the individual Core components of the CTSA that need to be developed for the application.

Informatics

Discussions centered around identifying existing internal inventory and actively soliciting new opportunities. Participants noted that BCM’s informatic resources were spread out and expressed a need to consolidate those resources, such as putting all BCM’s bioinformaticists under one umbrella. BCM is also hiring two new bioinformatics faculty. With regards to documenting partnerships between institutions, some faculty are currently collaborating with UT and have publications, but these individuals need to be identified and leveraged. Additionally, new relationships need to be built with partners such as UT. BCM should also identify the pressing research questions that can be answered using BCM and partner resources to design compelling studies. Dr. Amos proposed starting a working group for the bioinformatics component. With respect to the proposal itself, it should emphasize the unique components of BCM without getting dragged down by the criticisms of the failed UT CTSA. There were several questions that emphasized the need for direction in addressing problems. For example, BCM has strong community-based research, but that was not apparent to reviewers. There needs to be a clear story. One potential direction that was brought up was to apply BCM’s strong genetics program to the complex polygenic diseases found in adults, like the cardiovascular biomarker panel trial that was recently started.

Community engagement

Community engagement is more important than it was in prior applications, and BCM is behind on that aspect. The proposal needs to show how the community contributes to the
project. Maria Jibaja-Weiss, who works in the outreach arm of the Cancer Center, noted that they have built many community relationships; formed a community network for cancer prevention; partnered with Harris Health, American Cancer Society, and cancer clinics; and successfully obtained CPRIT funding for cancer prevention. The Cancer Center has a community board whose activities they are looking to expand. She noted that community engagement is expanding into stakeholder engagement with structured activities and clearly defined roles. A working group for this topic will also need to be established. For BCM’s application, a clinical area needs to be decided upon. BCM research strengths noted included metabolic disorders, obesity, and renal disease. Dr. Petersen noted that they have a veteran engagement board at IQuEST and offered to contribute to developing a plan if a community can be decided upon. Remember that there may be subgroups within community boards. One possible thing that could be leveraged is the Cancer Center focus group on obesity, as the panel includes individuals across the full life span. One CTSA reviewer noted that state institutions fair well because they have access to full state institution data networks. He proposed partnering with a state institution to expand community outreach.

Translational endeavors

BCM was previously penalized because trials rarely make it into Phase II and III where they could reach the community. The funding agency increasingly wants these projects to be compelling and reach a broader provider community to take a discovery past its own faculty. The VA is a good model for implementing discoveries. Now BCM has the Clinically Integrated Network and Joint Venture to build on. The demographics of the network and examples of how it has been used may improve chances of success. One suggestion was that the working group for this Core prioritize what has been done and start working on things that establish a track record (e.g., getting pilot funding with UT to start processing topic-specific data). There is an existing database of data from 40,000 patients with chronic kidney disease assembled from Harris Health and the VA (Baylor Clinic has not provided data yet), and the group is currently proposing a community health worker program for kidney interventions to be implemented with Harris Health.

Pilot and clinical studies program

Pilot programs exist but need to be integrated. Many projects already exist; however, we need to concisely describe these projects and demonstrate that the pilot funds lead to funded R01s. The precision medicine and population health initiatives can be leveraged for this purpose. It was advised to consider adding pilot projects with partners (e.g., UT, Kelsey Seybold, non-competitive departments of state institutions such as engineering, public health, nursing, and sociology) to demonstrate collaboration. Baylor/St. Luke’s medical group has a database with 300 primary care providers linked via EPIC that can be leveraged for the database and community engagement.

Workforce development

BCM is strong on this topic. There is a trend veering away from clinician-heavy applications, so the proposal should include other professions, such as nursing and non-clinician researchers. Mention the Center of Excellence for Diversity.

Conclusions

The major emphases from the session were as follows. (1) To optimize community engagement by identifying clinical focus areas, establishing working groups, and learning from existing areas of excellence (e.g., Cancer Center). (2) To demonstrate that the BCM data warehouse is functional by testing the ability to obtain data and utilize resources within the
targeted project areas. (3) To identify existing informatics staff/resources at BCM, with the option to consolidate them and to develop an informatics working group.

Session II
Room B: Cardio Metabolic/Inflammation
Christie Ballantyne, MD and Dennis Villareal, MD

In the second session in Room B, faculty discussed cardio-, metabolic-, and inflammation-related projects. Moderators Drs. Christie Ballantyne and Dennis Villareal began by discussing cardiometabolic factors across the lifespan and how BCM is poised to take advantage of that topic. BCM has substantial opportunities for investigating diabetes and cardiovascular health in pediatrics; transitional health into adulthood; and the effects of aging with diabetes, hypertension, and/or dyslipidemia, which are known to increase the risk of cognitive decline. Overall, there is a substantial public health crisis associated with these factors.

**Strengths**

The populations at the highest risk of metabolic disorders are primarily minorities (e.g., Indian, Chinese, Hispanic, Black, Middle Eastern), all of which are highly represented in Houston. BCM and TMC have diverse resources for treating cardiometabolic disorders. These resources cover all ages (maternal, pediatric, adulthood, geriatric care). Additionally, there are high levels of obesity, diabetes, hepatic steatosis, cirrhosis, and HIV in the local community. Dr. Ashok Balasubramanyam’s U54 is dedicated to redefining diabetes by exploring atypical diabetes. The metabolic research unit at the Children’s Nutrition Research Center (CNRC) is available for metabolic research in both children and adults. The CNRC can do exercise and body composition studies on adults, but tests must be performed as outpatient because it is not a hospital. There is a large VA population that have well-characterized metabolic profiles and can be tracked over time, and some samples from those patients are accessible. TCH has large population programs in obesity, diabetes, and pediatric cardiology for lipids and prevention. BCM has the resources to look at these issues across the lifespan, which is a major strength.

**Collaborative opportunities**

There were numerous possible projects proposed in this session. One researcher noted that institutions on EPIC could potentially be leveraged for large data sets to look across the lifespan. To make this idea feasible, data exchange between TCH, Baylor Clinic, and BSLMC need to be improved. The feasibility is dependent on the success of the data warehouses that are being implemented. It was noted that there is a critical need for longitudinal data. There is a possibility of extracting the data on an individual across multiple providers, but the data extraction and coordination issues would need to be resolved.

One researcher enquired on the availability of phenotyping data to look at the trajectory of predictors of unhealthy eating and obesity. Dr. Villareal suggested the possibility of instituting a longitudinal cohort study (Houston Metabolic Syndrome Study) that would recruit across the full age spectrum and follow participants over a long period of time. Available longitudinal cohorts available through BCM participation in multicenter trials include the TODAY study (>10 years follow-up), LookAhead (>10 years), and ARIC (30 years). The TODAY study is looking to expand to the children of the participants to make it multigenerational. One researcher has a cohort of participants from multiple cities who are undergoing weight loss and exercise regimens and another cohort at the VA. Many of these cohorts have samples that can be leveraged for
other research purposes. Researchers at the VA are also set up to investigate lifestyle interventions and have access to a large database and specimens for secondary analysis. It was suggested to expand into children and grandchildren of veterans. Phenotyping and genotyping data are available in many studies, and ARIC has stool samples for microbiome research.

Dr. Villareal suggested developing a comprehensive listing of ongoing funded research and repository and databases of cardiometabolic disease at BCM, Harris Health, TCH, the maternal fetal program, geriatrics, and the VA. One researcher suggested taking advantage of the NIH repositories, and this suggestion was extended to taking advantage of samples collected in studies in which BCM was not a participant. It was noted that it is more difficult to be a consumer of data if you did not contribute to the study.

One participant noted there is a cohort of pediatric cancer survivors at the Children’s Cancer Center that are followed annually and could be used to perform a lifespan study to look at outcomes. These patients have an early aging phenotype. There are several biochemical and imaging markers that could be used for tracking outcomes because these markers are typically not detected until later in adulthood. Connecting pediatric cardio-oncology with longitudinal studies into adulthood was strongly encouraged.

A participant noted the possibility for initiating transgenerational studies of families with traits that put them at high risk. This would be an opportunity to get the platforms working together and to develop lifestyle interventions across generations. The genetics of multigenerational studies would be simpler because they would not require as large a sample size.

Dr. Villareal proposed looking at the risk of non-atherosclerotic cardiovascular disease in the context of diabetes, with interventions in type 1 diabetes being directed toward the prevention of metabolic disorder and in type 2 diabetes being directed toward the prevention of cardiovascular outcomes in those who already have metabolic disease. This project has substantial potential for investigating new interventions and surrogates to treat.

One idea posed was combining the numerous databases to look at the spectrum of the phenotypes of disease and look for predictors of obesity and the effects of lifestyle interventions.

It was noted that the bariatric surgery program has been reinstituted and is seeing 35–40 new patients a month, with surgery on half. These patients usually are followed for at least 1 year. This project comes with microbiome opportunities.

Regarding microbiome research, there are numerous opportunities for studies of cardiovascular and metabolic outcomes, but longitudinal sampling is needed. Regarding inflammation research, there were no strong project ideas. Regarding genetics research, there was interest in diabetic and obesity genetic risk scoring. The possibility of flipping the risk scoring from a panel to whole genome sequencing would open new research opportunities because clinicians could report back on phenotype over time, which could identify new research directions. Regarding kidney research, there was discussion about characterizing the risk factors for cardiovascular disease in chronic kidney disease patients because the Framingham criteria do not predict morbidity and mortality well. BCM has a large dialysis patient population to pull from. Another potential project was investigating the pathophysiology and mechanisms leading to cardiovascular disease in chronic kidney disease patients and the role of metabolic changes in this process.

Funding opportunities
One participant brought up the possibility of creating an oncocardiology program investigating metabolic traits in pediatric cancer survivors. A similar program for adults was recently started. This project could potentially be the foundation for a CPRIT grant. There was some discussion on becoming an All of Us contributing site. As a contributing site, BCM would have a head’s up when RFAs are coming out. The Nutrition Obesity Research Center grant P30 will be due in Spring 2019, and none of the existing centers are in Texas. BCM is in a strong position to get that funding. However, a central theme is needed, and a meeting to discuss this RFA is warranted. There is no RFA for a Diabetes Research Center in the near future.

Conclusions

The main conclusions of this session were as follows. (1) BCM should initiate a transgenerational study of patients with a high risk of cardiometabolic issues and investigate interventions among the younger generations. (2) BCM should compile a list of available cohorts, repositories, registries, and databases with cardiometabolic data. (3) Future research should be focused across the lifespan.