

**AN ANALYSIS TO ASSESS THE EFFECTIVENESS OF PRODUCTIVITY AND COST
MANAGEMENT IN MULTIDISCIPLINARY RESEARCH LABORATORIES AND THE
IMPACT ON DIVISION OPERATIONS**

by

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Abstract

The portfolio prepared addresses the significance of cost management and assessing productivity among principal investigators (PIs) in laboratory settings. The portfolio evaluates multiple approaches to analyze the effectiveness and economic impact of strict management over laboratories in a university research facility. The target of the portfolio is to identify financial contributors such as overspending and unregulated PI grant density to mitigate the financial burden pushed on the Division; within specialized centers and individual research laboratories. The 03 Cost Center account model depicts a self-sufficient business operation that is able estimate operating expenses, payroll costs for faculty and staff, and ancillary fixed expenses (rent, overhead, etc.) for the Center of Metabolism and Mitochondrial Medicine (C3M) within the DE&M during fiscal year 2023 (FY23). Management of C3M is crucial to upholding the center's groundbreaking metabolic and mitochondrial medicine research to ensure reliable results of disease diagnosis and prevention methods for public health importance. The Divisional Discretionary Account Projections contributed to creating of an objective understanding of the division's financial situation and projected cash flow of division's discretionary funds. The P&Ls were created in order to evaluate the laboratory's fiscal stability, identify areas of overspending, and determine whether cost-sharing charges through funded sponsored projects were necessary. The P&L results indicated PIs in need of seed funding or new grant activations to offset escalating costs in their laboratories (supplies, animal care fees, salaries, equipment upkeep, computers, etc.).

Table of Contents

Abbreviations x

1.0 Introduction..... 1

1.1 03-Account Cost Model – FY23 Tracker for Center of Metabolism and Mitochondrial Medicine..... 5

1.1.1 Problem Statement.....5

1.1.2 Purpose Statement5

1.1.3 Introduction and Background5

1.1.4 Methodology6

1.1.5 Results and Discussion.....9

1.1.6 Recommendations10

1.1.7 Recommendations11

1.1.7.1 Strategic Orientation 11

1.1.7.2 Professionalism 11

1.1.7.3 Analytical Thinking 12

1.1.7.4 Leadership 12

1.2 Divisional Discretionary Account Projections 13

1.2.1 Problem Statement.....13

1.2.2 Purpose Statement13

1.2.3 Introduction and Background14

1.2.4 Methodology15

1.2.5 Results and Discussion.....16

1.2.6 Recommendations	17
1.2.7 Competency Development	18
1.2.7.1 Financial Skills	18
1.2.7.2 Performance Measurement and Process Management	18
1.2.7.3 Organizational Awareness	19
1.3 PI Productivity and YOY Graphical Analysis.....	19
1.3.1 Problem Statement.....	19
1.3.2 Purpose Statement	20
1.3.3 Introduction and Background	20
1.3.4 Methodology	21
1.3.5 Results and Discussion.....	22
1.3.6 Recommendations	23
1.3.7 Competency Development	24
1.3.7.1 Accountability	24
1.3.7.2 Systems Thinking.....	24
1.4 PI Productivity and YOY Graphical Analysis.....	25
2.0 Figures and Tables.....	27
2.1.1 C3M Personnel by Effort Four Services	27
2.1.2 C3M Personnel by Effort One Service	27
2.1.3 C3M Phenotyping Core Support	28
2.1.4 C3M FY23 Salary and Fringe Four Services	28
2.1.5 C3M FY23 Salary and Fringe One Services.....	29
2.1.6 C3M FY23 Operating Costs Breakdown	29

2.1.7 C3M FY23 Pricing Schedule Four Services.....	30
2.1.8 C3M FY23 Pricing Schedule One Services.....	30
2.1.9 C3M FY23 Sable Systems Usage Log Jul-Oct 2022.....	31
2.1.10 C3M FY23 Sable Systems Usage Log Jul-Oct 2022.....	32
2.1.11 PI Seed Account Projection FY22-FY23- Long Term Tracking	33
2.1.12 PI Seed Account Projection FY22-FY23- Short Term Aggressive Tracking	34
2.1.13 DE&M FY06-FY22 YOY Analysis.....	35
2.1.14 DE&M PI Profit and Loss Statement	36
2.1.15 DE&M CY2016-CY2021 PI/PhD-1 Grant Density Analysis	37
Bibliography	38

List of Tables

Table 1. C3M Personnel by Effort Four Services 27

Table 2. C3M Personnel by Effort One Service..... 27

Table 3. C3M FY23 Salary and Fringe Four Services 28

Table 4. C3M FY23 Salary and Fringe One Services..... 29

Table 5. C3M FY23 Sable Systems Usage Log Jul-Oct 2022..... 32

Table 6. PI Seed Account Projection FY22-FY23- Long Term Tracking 33

Table 7. PI Seed Account Projection FY22-FY23- Short Term Aggressive Tracking..... 34

List of Figures

Figure 1. C3M Phenotyping Core Support.....	28
Figure 2. C3M FY23 Operating Costs Breakdown.....	29
Figure 3. C3M FY23 Pricing Schedule Four Services	30
Figure 4. C3M FY23 Pricing Schedule One Services	30
Figure 5. C3M FY23 Sable Systems Usage Log Jul-Oct 2022	31
Figure 6. DE&M FY06-FY22 YOY Analysis	35
Figure 7. DE&M PI Profit and Loss Statement	36
Figure 8. DE&M CY2016-CY2021 PI/PhD-1 Grant Density Analysis.....	37

Abbreviations

University of Pittsburgh Physicians	UPP
University of Pittsburgh School of Medicine	UPSoM
Department of Medicine	DOM
Division of Endocrinology and Metabolism	DE&M
Vascular Medicine Institute	VMI
Principal Investigators	PI
Center of Metabolism and Mitochondrial Medicine	C3M
Thomas Starzyl Biomedical Science Tower	BST
PI Productivity Analysis	PIPA
Profit & Loss Statements	P&L
University of Pittsburgh Department of Medicine Research Administration	DOMRA
Divisional Discretionary Account Projections	DDAP
Year-over-Year	YOY
Fiscal Year	FY
Calendar Year	CY

1.0 Introduction

The UPSoM is nationally Ranked No. 14 among the best research medical schools and ranked No. 10 among the best medical schools focusing on primary care (U.S. News & World Report, 2019). The UPSoM provides compassionate, comprehensive care that is both easily accessible to patients and responsive to referring physicians. The Department of Medicine (DOM), a subsection of the UPSoM and directed by interim Chair, Mark Geraci, MD, creates a supportive environment where each member of the department has the tools to achieve maximal success, productivity, and efficiency. The Division of Endocrinology and Metabolism (DE&M) is currently under the leadership of Erin Kershaw MD. The DE&M is dedicated to developing and maintaining innovative and integrated research programs that foster fundamental discoveries and bring them into clinical practice and research laboratory settings. The DE&M places a high priority on hiring and retaining scientists and laboratory personnel. The development of scientists' practical knowledge and research skills is heavily influenced by their laboratory training. Depending on the quality of the analysis they produce, laboratory activities might range greatly in cost. "Scientific laboratories have long been a crucial component of secondary and higher education" (Achuthan, Murali, 2015). Across universities nationally, there are huge disparities in the caliber of laboratory education. Laboratory research can face several difficulties, such as poor equipment upkeep, outdated experiments, rising overhead costs, and waste from lab workers (Achuthan, Murali, 2015). Laboratory overhead costs can become considerably expensive, particularly when complex studies are involved. One of the methodologies used within this master's portfolio is to compare the effectiveness and economic benefit for studies conducted in an academic research laboratory;

by assessing expenses incurred to uphold a specialized center compared to billable services and assessing direct and indirect financial contributors in the form of a 03 Cost Center Account Model. The 03 Cost Center account model represents a self-supporting business enterprise that can charge users for research laboratory services provided at the center. The 03-account cost model, (2.1.1 C3M Personnel by Effort Four Services 2.1.2 C3M Personnel by Effort One Service) I put together was used to assess operating expenses, payroll costs for faculty and staff, and ancillary fixed expenses (rent, overhead, etc.) during fiscal year 2023 (FY23) for the Center of Metabolism and Mitochondrial Medicine (C3M) ran by the Director of C3M within the DE&M. Utilizing financial information from previous service agreements and financial statements, I was able to depict a diagnosis for the financial health and viability of the center and identify if current expenses are within reasonable ranges and that the center can be self-sustaining without divisional aid.

When digging deeply into the DE&M, certain process improvement structures necessitate an initial investment, whether financial, time, resources, and vision but ultimately results in a higher payback in efficiency, effectiveness, and execution in subsequent years; essentially keeping a finger on the pulse of the company. The second project in this master's portfolio describes the strategies and methodologies used to derive the Divisional Discretionary Account Projections (DDAP), or Seed Account Projections to stay abreast of changes within laboratories and allocation and utilization of division seed funds. The DDAP helped to cultivate an unbiased view of the division's economic status and financial health of divisional discretionary funds for research PIs (Principal Investigators). I prepared the projections using the DOM monthly, also referred to as Level 1, and year-to-date level reports, also referred to as Level 2, to show true expenses and revenue based on the monthly spending of PIs and financial patterns in the division-wide research spending. The projections are used as a baseline for determining seed packages for research-based

PIs for the divisional seed ask period and help us mitigate excessive spending habits in budgeted accounts. Looking deeper within the realm of successful academic research settings, it is important to measure and assess employee productivity within these spaces and how vital changes can impact division operations. The Division of Endocrinology and Metabolism can streamline processes and increase productivity by helping staff perfect specialized skills and providing training materials or mentors to help bridge any gaps in knowledge. "Some of the large-scale benefits of evaluating productivity include greater resource utilization, waste management through the identification of needless activities, cost reduction, market adaptation, and system performance enhancement" (Olic, 2022). Understanding how your employees work, what software they use, and how they communicate with coworkers can provide primary insight into where resources are underutilized or if something new needs to be introduced. Productivity is all about preserving employees' energy so they can focus on important activities. "By increasing employee productivity, we can better examine the modifications that need to be made and see impacts in the budget" (Olic, 2022). Keeping track of employee productivity through a well-established method helps detect issues far earlier before severe mishandling and waste occur. The third project discussed within this master's portfolio is the PI Productivity Analysis (PIPA). The PIPA was initially developed in the form of profit and loss (P&L) statements for each research-based and clinical-based PI. The P&Ls were derived to assess the financial stability of the laboratories and to assess overspending and if cost-sharing expenses through funded sponsored projects are needed. The findings from the P&L showed PIs who were in jeopardy of needing additional seed funding or new grant activations to help cover rising costs within their laboratories (supplies, animal care charges, salaries, equipment maintenance, computers, etc.) The P&L analysis was then reframed into a graphical analysis to show YOY measurement of grant density for each across the DE&M, (2.3.1 DE&M FY06-FY22

YOY Analysis). The grant density is further dissected between research PIs and clinical PIs with respect to MDs and PhDs (2.3.3 DE&M CY2016-CY2021 PI/PhD-1 Grant Density Analysis). The graphical analysis tracks annual industry-funded sponsored projects and direct funds awarded per calendar year. The P&L analysis and graphs helped us identify PIs who were in jeopardy of not being able to cover expenses, identify potential gaps in funding through the last calendar (CY22 and FY22/FY23), and assess the overall financial health of the division from indirects received off funded grant projects per PI. "Productivity measuring data can quickly detect workflow gaps and precisely pinpoint their causes" (Olic, 2022).

“Knowledge work focuses on quantity and quality equally” (Olic, 2022). Knowledge workers are responsible for their own learning, skill sharing, and innovation. When they leave a company, the knowledge gained goes with them. Throughout my time in the Division of Endocrinology and Metabolism (DE&M), I've been exposed to a variety of projects small scale and larger ones geared at overarching strategic goals of advancing our division and making operations and finance more transparent in communicating the needs to Division Leadership and what's needed from our PIs to ensure mutually beneficial success. I've worked a lot with projects geared towards tracking spending, assessing productivity within research laboratories, and working on projects for cost-cutting initiatives to lower high division expenses. The training I've received here has strengthened me as a young professional to deliver high-quality service and projects as a future leader in this industry. The professional experience I've had within the DE&M has pushed me over the past year and a half to strengthen my analytical and professional skills and become a knowledge worker.

1.1 03-Account Cost Model – FY23 Tracker for Center of Metabolism and Mitochondrial Medicine

1.1.1 Problem Statement

Most of the C3M research services have been rendered for PIs internally to DE&M prompting the Director of C3M to push for the division to bear a portion of the operating costs in exchange for C3M laboratory staff to process services needed. This cost-sharing methodology worked until holes were exacerbated by COVID-19 when the annual division discretionary funds wire was undercut by UPP for CY22.

1.1.2 Purpose Statement

Due to discretionary wire cuts from the UPSoM and DOM in previous years (2020-2021), pursuing a 03-cost center account would identify operating expenses and put a pricing schedule in place for primary users of this center and help quantify the costs impacting the division.

1.1.3 Introduction and Background

The Center for Metabolism and Mitochondrial Medicine (C3M) facilitates and supports ongoing research that addresses the role of metabolism and mitochondria in physiology and its contribution to disease pathology translating the diagnosis into a pathway for the treatment of disease. The platform technologies used for this research are mouse metabolic cage studies¹, mouse body composition², glucose tolerance test³, and exercise testing with clams, exercise testing in the

open air, bomb calorimetry, mitochondrial respiration, and insulin sensitivity by the hyperinsulinemic-euglycemic clamp⁴. The platform technology referenced in the 03-cost model, (2.1.1 C3M Personnel by Effort Four Services) are glucose tolerance test, hyperinsulinemic-euglycemic clamp, mouse metabolic cage studies, and mouse body composition. For the cost model discussion, I will only reference 4 of the services provided. The Center for Metabolism and Mitochondrial Medicine (C3M) has been supported through a contractual agreement with the DOM to invest in the center over three fiscal years, FY22-FY24 (2.1.3 C3M Phenotyping Core Support). During this time, as most of the services rendered were for PIs internally to the division, the Director of C3M saw it best for the division to bear a portion of the operating costs (i.e. service agreements, rent in animal room, supplies) with salaries of staff members cost shared on grant projects in exchange for C3M lab staff to process services needed. The importance behind this project was to bring clarity and quantifiable numbers to an ongoing concern by our Division Chief. In recent months operating expenses for the center have begun to eat away at division discretionary (seed) funds indicating that expenses could be higher than projected and there is a need to identify if this center can be sustained without the financial support of the Division Chiefs. Additionally, the 03-cost center model would put a hard pricing schedule in place for all users of this center and help quantify the costs impacting the division and projected revenue from services rendered.

1.1.4 Methodology

Prior to creating the cost model, I consulted with the Administrative Director for Academic Research about my questions regarding building the model and university cost-accounting policies. With their experience utilizing a 03 account within their division, I set meetings, asked

questions, and discussed recommendations on carrying out the goals of this project. Initially, the goal outcome of using this model was to identify ways to gain more revenue through separate pricing schedules for internal users to the university and external users for the same services (for ex: glucose test: \$45/test for internal DE&M PI users vs. \$65/test for external users). This solution had the goal offsetting expenses, use revenue toward paying rent costs, and minimize the impact of taxes. However, this idea was stopped due to the restriction that price schedules must be the same for all users regardless of internal or external user. Once I had a foundational understanding of the cost center account, I set meetings with the Director of C3M to discuss services offered, faculty, and staff effort allocations, equipment used, fixed expenses, supplies needed, and other ancillary items to factor in running the center. Although C3M provides four separate services, they can overlap with each other depending on the nature of research study conducted. Additionally, due to the composition of users and frequency use of services rendered through C3M, it was best to communicate two scenarios using the cost models; the four services model, (2.1.1 C3M Personnel by Effort Four Services) showing full steam operations for all users to request any of the four services for their studies and one service model, (2.1.2 C3M Personnel by Effort One Service) showing the predominantly used service out of all four services offered. The basic steps of a cost model begin with assembling financial and operational information about the center specifically: identifying the medical faculty, staff positions (technicians/research associates, and administrative support. The medical faculty, Director of C3M is responsible for the oversight of the center, the administrator or financial support person, myself, will maintain account records and bill users for services and the technicians and lab staff who perform the services for C3M (2.1.4 C3M FY23 Salary and Fringe Four Services). I retrieved the salary and fringe rates for FY23 and plugged these amounts into the model to populate the annual salaries (2.1.4 C3M FY23 Salary and

Fringe Four Services and 2.1.5 C3M FY23 Salary and Fringe One Services). Utilizing the information gathered through my previous conversations, with the Director of C3M, I included total amounts for supplies, specifically costs to acquire the mice for the max number of studies to be conducted in year, BST animal room housing costs, annual service contracts fees for Sable Systems' Promethion, and the annual rental rate charged by the University plus tax. The data collected in the depreciation schedule reflects the equipment used for each service, specifically the metabolic cages and echo MRI machine by the percentage of time the equipment is used. Using the purchase price of each piece of equipment, in the acquisition cost column and the year the equipment was purchased, along with the number of years the machine is expected to be used before replacement, I calculated the annual depreciation expense for the equipment used in the center. The totals from the operating costs tab (2.1.6 C3M FY23 Operating Costs Breakdown) populated the subsequent rate (2.1.7 C3M FY23 Pricing Schedule Four Services and 2.1.8 C3M FY23 Pricing Schedule One Services) for each service provided based on expenses and the projected number of studies to be conducted in the year. After finalizing the model, I set a meeting with the Division Chief and presented the cost model and my findings on current usage and total expenses currently backed by the division seed account to operate C3M. We concluded that the volume of external users, as of June 2022, is not at the ideal level to pursue using this service in FY23. The next steps were to use the cost model in a soft launch tracking state assess how many PIs use this center during FY23, up to January 2023. During this 6-month period, The Director was prompted to market the service to increase the number of interested external collaborators and the model would be used to garner more investment from the School of Medicine.

1.1.5 Results and Discussion

The outcome from the meeting with the Division Chief and Division Administrator was to keep secondary books for the Director to track the 03-cost model account in a ‘soft launch’ state with one service. Although the Director had lingering hesitations on using the 03 account, he remained open to using the model to track services conducted within the Center for FY23. Over the latter months of 2022, the Director provided true billing statements for services conducted for July – October 2022 detailing internal or external PI use, the number of studies conducted per month, and the amounts cost-shared for laboratory staff salaries and “billed” for services provided. I input this information in the tracker and found true revenue and expenses for July through October which helped me create the projections for November 2022 through June 2023 (2.1.9 C3M FY23 Sable Systems Usage Log Jul-Oct 2022). As I built these tabs out with data gathered, I also spoke with a post-award specialist from the University of Pittsburgh Department of Medicine Research Administration (DOMRA) to identify the current industry-sponsored grant projects that support C3M. I compiled the grant activation notices to find the salary budgets for the director, staff, supplies, and indirect costs to put in the tracker. From there I was able to identify the anticipated revenue from indirects, expenses incurred monthly from operations, and the projected amounts to be billed using the price schedule. These findings helped me identify that our Division Chief was correct stating that the expenses to sustain C3M were eating into the Chief Divisional Discretionary funds (2.1.10 C3M FY23 One Service Tracker/Projections). The impact of this finding is huge because it brought clarity to a long-standing issue within the division. The 03-cost account model is specifically used for service centers to ensure expenses are zeroed out by revenue resulting in a net 0 month to-month. After identifying the month-to-month projected deficit

through the tracker for the soft launch, it was decided that 03 can you used as a justification for an increase in investment from the next DOM Chair. This investment can help increase exposure for this Center in the midwestern region, have more collaborations with other universities, and increase the number of external users for this center.

1.1.6 Recommendations

The benefit to the DE&M would be to finally put to bed a problem that has existed over the past few years, quantify C3M operating expenses, put a pricing schedule in place for primary users of this center, and mitigate the financial risk to the division. One way to cut costs would be by reevaluating staffing models. A widely adopted staffing model involves a managed services provider (MSP) that will outsource the talent and maintain the end-to-end responsibility for the scientists and technicians placed in the lab. This alleviates the lab manager of direct oversight, while the service level agreement outlines the scope of work expectations, increasing confidence in achieving desired outcomes. Some MSPs greatly expand their value by taking take full accountability of the operational efficiency of all your laboratory instrumentation. Developing a sound marketing plan that is both pragmatic and optimized to deliver a return on investment is particularly important as the world of performance marketing continues to mature. Marketing the C3M center in the Midwestern region is best identified as blue ocean territory for the Director. There are very few other centers operating in this region outside of the Northeastern region at Yale University. This will work in favor for the division because the C3M Director will be seen as a change maker in the industry by bringing a new center studying physiology and strategies to mitigate disease in a region where these types of studies are uncommon.

1.1.7 Recommendations

1.1.7.1 Strategic Orientation

This project helped me by creating the focus area insights involved in going beyond the data, beyond the comparisons, and coming to the big-picture truth for the DE&M. I used my ability to consider realistic outcomes for the division, impact of departmental regulatory cost accounting, and the strategic viability of decisions made on behalf of the Director of C3M and the Division Chief. I demonstrated the ability to assess the competitive market, assess cost accounting principles and regulation from the DOM, UPSoM, and DE&M, public opinion, and technological forces that shape C3M and the division. I identified the strengths and limitations of the center by considering current funded grant budgets that provide financial support and cost sharing methodologies (SPARS) for laboratory against what can feasibly be supported at an accredited institution. I made sure that I developed our project to align with our divisional mission, vision, and corporate values statements. I identified strategic goals and plans for an organization that takes advantage of its strengths addresses its shortcomings, builds on opportunities, and attempts to minimize financial threats.

1.1.7.2 Professionalism

I promote the integrity of the division when communicating, working, and collaborating with division leadership at the director and executive levels. Within this process, I've had to navigate conflicting ideas and strong emotions from major stakeholders that were not initially in support of the cost center account model. I approached each meeting ready to handle conflict-of-interest issues and mistakes with openness, honesty, and fairness.

1.1.7.3 Analytical Thinking

This project helped me break down problems and develops complex analyses based on gathered data and information to better assess situations and move toward a possible solution. I sought out information relevant to the situation to help me distinguish causation from correlation. I identified the cause-and-effect relationship between multiple aspects of a situation and used several analytical techniques to identify potential solutions and weigh the value of each. I was able to project where obstacles may occur while planning several steps in a sequential, multifaceted solution. Ultimately this helped me identify contingencies in the proposed solution.

1.1.7.4 Leadership

I have been able to strengthen my leadership skills by using this project to create a shared vision marrying the ideologies of the Director of C3M and the Division Chief. I successfully manage change to attain the DE&M strategic cost-saving objectives. I applied incipient leadership characteristics when adapting to changing techniques and directions with this model. The intended use of this model was to move the C3M operations to a service center account but during the tracking process, the direction of the project morphed to utilize C3M cost model as a basis for justifying a larger investment from the DOM Chair for FY25. Through my time in DE&M I aligned myself with the organization's corporate values and culture when redesigning business processes. This project required a high level of commitment to the values of the organization, and I felt encouraged and supported by my supervisor while pursuing these projects. I frequently met with the main stakeholders to gain their buy-in and accept risk and support new business ventures. I explored the opportunities for the growth and development of the center within and its impacts on the organization through continuous organizational learning and adaptation. I understand how to

develop and maintain effective relationships among and between the administrative and research staff to support the division's mission.

1.2 Divisional Discretionary Account Projections

1.2.1 Problem Statement

The discretionary funds' wire sent from the University of Pittsburgh Physicians (UPP) to the DE&M was significantly less than expected in CY20. In addition to the surplus of discretionary funds within the DE&M from the UPSoM wire funds, DE&M was pushed to rely on UPSoM funds to cover division expenses making latter years more strenuous and financially dependent on UPSoM funds. The discretionary account projections were devised to track PI spending on division accounts and project the total annual discretionary funds request to UPP for CY23.

1.2.2 Purpose Statement

The University of Pittsburgh Physicians (UPP) provides start-up also referred to as 'seed', package commitments to PIs hired within the DE&M. Due to budgetary issues, UPP requested for divisions within the DOM to undercut their budget requests. The seed wire sent to the DE&M was significantly less than expected from the revised submission; in addition to the surplus of discretionary funds within the DE&M from the UPSoM, DE&M was prompted to rely on UPSoM funds to cover division expenses making latter years more difficult for PIs to cover laboratory expenses and more strenuous on the division to compensate for that lack of coverage. The seed

account projections were devised to better track PI spending, especially for PI's heavily dependent on start-up funds with limited or no sponsored grant projects.

1.2.3 Introduction and Background

Within the DE&M, researched based PIs are granted a 'seed fund' commitment over a contractual period (3 to 5 years). The seed funds, or start-up, can be used to fund their research laboratory. The funds can be allocated towards staff salaries, research or clinical supplies, equipment, and anything else that is needed to sustain their research projects and for items that cannot be charged to a sponsored project. UPP initially requested divisions within the DOM to reduce their 'budget asks' for the calendar year 2020. This issue arose pre-COVID and was further exacerbated by COVID-19 when anticipated seed wire payments were undercut more than expected. UPP requested that the DE&M rely on residual funds from the UPSoM. Due to the timeline of funded grants, many of research-based PIs were facing gaps in funded projects and heavily relied on startup funds (04 accounts/seed accounts) prior to the next award period. These timebound stressors pushed division finances to be under strict supervision, decrease excessive spending, and address prior overspending that would need to end immediately. The seed projections worksheet in excel was used to track monthly expenses from PIs using their startup to fund their research (2.2.1 PI Seed Account Projection FY22-FY23- Long Term Tracking). The purpose of this tracker was to project the full amount needed to sustain monthly operating expenses for each PI's 04 account throughout the next fiscal years (FY22 and FY23). The projections are updated monthly based on the true expenses and balances received in monthly departmental-level reports. Level reports are distributed monthly from the Department of Medicine in the form of

monthly statements (level 1) and year-to-date statements (level 2). During October 2022, the Director of Operations and Finance utilized the projections as a baseline for putting together the Division budget request for UPP for CY23 and will use the projections for Pitt Budget request for FY24.

1.2.4 Methodology

The rationale behind my approach to address this problem was to cultivate an easy-to-use model that provides a real-time year-to-date snapshot of the current financial standing of division seed accounts to better aid the management of seed account spending and develop the seed package requests from the DE&M to UPP and Pitt. I was able to execute creating the projections by first identifying the best way to create this model. As I was starting from scratch, I had to research example projection excel workbooks to provide insight on what categories to include and formatting. I took a similar approach to the Level one reports when creating a month-to month breakdown of expenses based on the categories of salary for medical faculty, staff, students, animal care expenses, research supplies, and equipment acquired during this time. As the months ended, I input the true expenses and checked balances of each account; I was able to project the next month's expenses and the short-term viability for the accounts through CY22 and through June 2023 (FY23). The projections model I created helped take control of cash flow and purposefully direct PIs during seed account review meetings on where to curb spending and develop benchmarks for categorical spending in future months. For specific PIs these projections helped to perform contingency planning during challenging financial times with scarce start-up funds and anticipate the impact of new expenses on overall business operations (2.2.2 PI Seed Account

Projection FY22-FY23- Short Term Aggressive Tracking). Overall, the projections have helped the financial administration create an environment of certainty and stability in terms of knowing the current standing of the division and making future budgeting requests much easier.

1.2.5 Results and Discussion

In recent years with changes in Division leadership, research faculty, and staff there is a need to track spending and expenses carefully to ensure sustainability for the division and strong financial health in the future. I consulted with the Administrative Director for Academic Research from VMI and Cardiology, the Director of Operations and Finance with DE&M, and the Division Administration within DE&M, all who are familiar with creating projections, to get a sense of what it should encompass, and where I can access the necessary information about the history of wire commitments and current laboratory expenses incurred in each research-based PIs laboratory. Using Excel, and the information I gathered, I was able to create a month to month break down that provided a snapshot through the fiscal year and calendar year of current spending, revenue, interest accrued, and identified what accounts were close to being in a projected deficit or had a sufficient balance to carry through to the next months. Once accounts in danger of going into deficit were identified, I worked with my supervisor to identify two approaches: a long-term approach and an aggressive short-term approach. The long-term approach was to continue tracking from the start of FY23 (July 2022) through the end of the year (December 2022) and identify and quantify the financial need for each research-based PI to sustain their lab and put together the amounts for the UPP wire request. The short-term aggressive approach was to implement a payback system to use contingency funds from the divisional chief seed account to bolster

financially weakened accounts. It was meticulous to keep track of the dates, amounts, and account numbers for the internal payback system, and if the repayments weren't timely with projected start dates of sponsored grant projects to offset expenses hitting division accounts, and the contingency accounts would fall into deficit themselves. I was able to highlight the source and magnitude of the issue, which was that our division desperately needed start-up funds from UPP to support all the PIs excluding preidentified account holders with untouched wire. The cut wire from UPP had negatively impacted the financial stability of DE&M in the out years of the decision and ultimately put financial strains and limitations on research-based PIs who had to find other ways to sustain their funding with spending restrictions on their seed accounts.

1.2.6 Recommendations

I suggest that the DE&M complete a competitive analysis of other regional divisions of Endocrinology and Metabolism to understand how these other divisions maintain financial viability and the methods used to promote research programs. The DE&M can better evaluate their power as an industry supplier (C3M center and other notable research PIs), competitive rivalry, and market niches to become a change marker and leading division within the DOM by analyzing what industry competitors are doing to achieve success within their divisions and any specific services provided. Additionally, I recommend for the DE&M to investigate external marketing reporting indexes from U.S. News and World Report marketing campaigns. The best marketing strategies for brands and businesses across different industries are those that combine a variety of channels into a single plan. Many businesses have previously found

success with conventional marketing techniques like paid advertising, social media, content marketing, email marketing, and guerrilla tactics.

1.2.7 Competency Development

1.2.7.1 Financial Skills

I've improved my capacity to generate and assess budgets, interpret, and explain financial and managerial accounting data, and make wise financial management decisions. I was able to put together profit and loss accounts and evaluate income statements to find indicators of financial health and profitability, which I used to drive and measure the organization's success. I am aware of the advantages of managing resources and budgets through the division's expense and revenue management. I can analyze reimbursement and payment system options considering the behavior of industry-sponsored projects and internally financed accounts, as well as to evaluate budget discrepancies, including revisions and corrective actions. I considered the impact of reimbursement and payment systems when assessing management alternatives. I can analyze the return on investment for the division with funded awards and risk-return trade-offs and cost benefit analyses.

1.2.7.2 Performance Measurement and Process Management

I improved my capacity to apply and comprehend financial and statistical techniques, as well as to create metrics for establishing objectives and gauging performance. I improved my capacity for organizational process analysis and improvement, including the incorporation of modern quality management principles. I used a checklist of quantitative and qualitative metrics

to evaluate performance after being able to pinpoint the right research performance metrics to evaluate organizational performance.

1.2.7.3 Organizational Awareness

I proved my capacity to comprehend and pick up on the formal and informal power dynamics and decision-making processes inside the UPSoM, DOM, and DE&M. My capacity to pinpoint important decision-makers and forecast how recent developments will impact significant organizational stakeholders has improved. I am familiar with the fundamentals of corporate governance. I am knowledgeable about the chain of command, positional authority, rules, and regulations (Office of Sponsored Projects, DOMRA), policies, and procedures. I am aware of the value and significance of an organization's informal structure. I recognize the norms and values of the division of endocrinology and metabolism and adjust my behavior accordingly. I considered the priorities and values of multiple stakeholders and recognize the role of power and politics in change management within and across organizations. This project allowed me to practice better defining the roles and responsibilities of providers, administrators, and departments.

1.3 PI Productivity and YOY Graphical Analysis

1.3.1 Problem Statement

The DE&M needed to have a fortified way to assess the productivity of research-based PIs in the form of a graphical analysis to represent productivity in a year-over-year (YOY) snapshot.

This YOY helps division leadership to understand and assess grant density for each research-based PI, the financial health of the division, and overall divisional productivity from funded grant projects.

1.3.2 Purpose Statement

Using the productivity tracker, division leadership can see the upcoming year based on the timeline of funded grant projects to identify “gaps in funding”, when PIs reach a transitional period between funded projects, the current number of funded projects throughout the year, and projected indirect revenue to be received by the division.

1.3.3 Introduction and Background

The DE&M graphical analysis was needed to identify the total number of funded grants each PI has at a given point in time. This data is collected throughout the year and presented annually in the form of a year-over-year (YOY) analysis and graphical representation of divisional indirect revenue received from the funded sponsored project. Using the graphical analysis, (2.3.1 DE&M FY06-FY22 YOY Analysis), division leadership can see previous history of funded grant projects by the DE&M and assess if the how wow the division has been growing per fiscal year. As PIs continue to receive more funded grant projects from industry sponsors, the current number of funded projects and projected indirect revenue received by the division will grow. Tracking the growth of total grant density within the DE&M demonstrates a division's financial health by covering direct costs such as rent, maintenance agreements, equipment maintenance, and other

expenditures that would not have to be accounted for PIs. The PI productivity analysis was a profit and loss (P&L) statement created for each research and clinical-based PI to assess the sustainability of their research laboratories and clinical care settings without support from funded sponsor projects (2.3.2 DE&M PI Profit and Loss Statement). The goal behind creating the P&L was to identify if PI's can cover laboratory or clinical care operating expenses adequately from their seed package and current grant volume as of, year ended, FY22. It is not guaranteed that a PI can be supported solely on grants due to the timeliness of funding, award notification, and account activation within the DOM. By understanding, if a PI can cover their own expenses from their seed allocations division leadership can identify holes or non-sustainable spending that would otherwise be covered with multiple grant budgets.

1.3.4 Methodology

I consulted with an administrator at DOM HVI – Cardiology and Vascular Medicine Institute (VMI) who had a background in finance and previous experience producing P&L statements for VMI and Cardiology. From our conversation, I was able better understand how the graphical analysis should be formatted from an annual standpoint with YOY's depiction of direct revenue and indirect revenue. Utilizing the internal DOMRA website, I was able to locate the DOM 'Medicine Direct/Indirect Costs Monthly Detail Data'. This data represents a breakdown of monthly expenditures per account within every division and highlights the annual indirects received from funded grant projects for each division. I collected the data from FY06 through FY22. Using this data and excel to produce a YOY analysis and trend indirects received to the division, (DE&M FY06-FY22 YOY Analysis). The 'Medicine Direct/Indirect Costs Monthly

Detail Data' helped me with the accuracy of the P&L (2.3.2 DE&M PI Profit and Loss Statement) showing the monthly breakdown of direct costs to each PI within the division on the research side and clinical side. From this point, I was able to drill down further to develop our profit and loss graphical depicts for the research-based PIs and clinical based PIs (2.3.3 DE&M CY2016-CY2021 PI/PhD-1 Grant Density Analysis). These graphs help identify gaps in funding, grant density per PI, and are used to best identify the budget allocations from funded projects and how much of those funds can cover current lab expenses, salaries, rent, supplies, overhead costs, etc., for each PI research lab.

1.3.5 Results and Discussion

The findings of the graphical analysis revealed that from FY06 through FY13, under previous division leadership, the DE&M had a higher rate of funded grant projects which increased the amount of funds available to cover direct costs for the division and allowed finance and operations to manage a healthy portfolio with a large amount of indirect revenue. The excess cash on hand made covering division expenses such as rent, service agreement contracts, and other operational financial obligations easier to fulfill. After the previous division leadership left during FY14, we see a stark decrease in funded grant projects prior to the new/current division leadership coming in place. The growth from FY14 has been slow but constant with minimal impacts of COVID-19 identified in total grant-funded projects. This issue will not be easily fixed as grant projects are tedious to determine which projects will be funded. However, division leadership has a better idea of which funded projects can produce the highest amount of indirect revenue and can cover direct costs that will be beneficial to the division. Additionally, leadership can identify which

PIs may need additional support and to meet industry funded guidelines and requirements for a “likely funded” application.

1.3.6 Recommendations

DE&M leadership can begin benchmarking grant density of other academic-based research institutions in endocrinology and metabolism. Consulting with other divisions within the DOM on how to motivate PIs to apply for grants and the process taken to support PIs during grant submissions can help ensure frequency and timeliness of grant submissions. Getting external consultation on their process can help assess the DE&M's current process of supporting PIs and highlighting key industry sponsors to apply to. This can give the DE&M an objective viewpoint to improve productivity and redesign processes. This change can be implemented over the timeline of 2 calendar years in a step-by-step approach. By focusing on a few priorities' leadership can delegate specific strategic teams to promote deadlines for photograph projects, increase transparency, and have a support team to hold the PIs accountable for timely submission and having all required documents including IRBs, IACUCs, other support documents, etc. ready for timely submissions. Leadership can also look for breakthrough accomplishments. Small improvements can transform into major increases in productivity.

1.3.7 Competency Development

1.3.7.1 Accountability

I'm able to hold myself accountable to the standards of performance in a sure that my personality is perceived appropriately within a professional setting. I prioritized communication with my supervisor and other divisional leadership to ensure that the goals of the project were continuously being met and aligned with divisional strategic objectives in addition to staying on track to produce the desired outcomes. I understand how to communicate requirements and expectations in a reasonably clear manner and explicitly delegate details to focus more time on value-add projects such as PI Productivity and YOY Graphical Analysis valuable or longer-range projects. I also recognize how to firmly decline unreasonable requests or commit to projects outside my scope of work. I communicated my expertise and am held to a high performance of work with suitable resources.

1.3.7.2 Systems Thinking

I can understand and navigate inter-relationships among individuals and collectivities. In the professional setting, I recognize the diversity of interests, goals, and approaches among system participants when identifying healthcare management problems and developing proposed solutions. I can distinguish between individual goals and collective goals, especially as they relate to healthcare policy and healthcare management issues. I can recognize the differences between top-down and bottom-up dynamics among system participants as groups pursue their goals. I account for variations in perspectives when analyzing problems and developing healthcare

management and health policy solutions and have been able to account for indirect unintended consequences when developing solutions.

1.4 PI Productivity and YOY Graphical Analysis

These initiatives have contributed to clarifying long-standing concerns, alleviate the burden of developing divisional budget proposals, and examine total productivity in quantitative terms over a six-year period. This cost-cutting but primarily quality-maintaining tactics for modifying the laboratory operation to stay within present and future budgets were part of laboratory cost management. The overarching objective was to reduce costs while maintaining the caliber, effectiveness, and efficiency of completed investigations. I was able to identify which laboratory costs are fixed those dependent on volume by keeping track of all expenditures, including salaries and benefits paid, supplies, equipment, overhead, services, and fines. By having frequent conversations with DE&M upper level leadership and the Director of C3M to discuss proper laboratory utilization and transparency among stakeholders, I was able to cultivate a way to sustain the Center within the guidelines of the cost account principles for the 03-Account while mitigating the impact on Chief Division discretionary seed account. Over time, track the effects of any cost-cutting methods. A successful cost-cutting plan should reduce the lab's expense ratio or cost per procedure while retaining the caliber of the tests conducted. Cutting expenses is never a pleasant process, but it can be accomplished in a quality-effective manner by thorough investigation and consultation with all stakeholders, including physicians, institutional administration, and relevant departments; in addition to prioritizing highly transparent detailed

communication to all parties. Achieving performance goals can be an effective strategy to boost laboratory productivity and quality. By establishing best practices and comparing them to the benchmark, laboratory managers can make educated decisions about how to run the lab. In the end, this procedure may lead to better productivity, lower expenses, and happier clients. Understanding the workload and how it is distributed among the lab staff is crucial. The team may better concentrate on enhancing quality and efficiency by using the YOY analysis and PI Grant Density Analyses to visualize important laboratory data. I've used innovative techniques to solve the division's operational or financial challenges. I routinely deliver high-quality work and let coworkers know they can count on me to finish assignments and complete projects. I've built a reputation in the division as a talented and dependable young worker. I developed predictions, observed financial trends in the division's overall research spending, and developed tools to serve as a starting point for calculating seed packages and assisting leadership in decreasing excessive spending patterns in allocated accounts. This experience has greatly accelerated my growth as a young professional in terms of my analytical, professional, and interpersonal abilities and has helped me prepare for the working world.

2.0 Figures and Tables

2.1.1 C3M Personnel by Effort Four Services

Table 1. C3M Personnel by Effort Four Services

UNIVERSITY OF PITTSBURGH										
OFFICE OF FINANCIAL INFORMATION - RESEARCH/COST ACCOUNTING										
ENTITY 03 (SELF SUPPORTING & AUXILIARY) ACCOUNTS										
SAMPLE PERSONNEL EFFORT ALLOCATION SCHEDULE										
Name of Person in Each Position	Base Salary	Effort								Total
		Service #1 Glucose Tolerance Test	Service #2 Euglycemic Clamp	Service #3 Managing Metabolic Cages	Service #4 Analyzing Body Composition	Service #5	Service #6	Service #7	Service #8	
Non Med Fac	172,515	1.00%	1.00%	2.00%	1.00%					5.00%
Staff	56,120	1.00%	1.00%	22.00%	1.00%					25.00%
Staff	Leandra Gardner 27,026	1.00%	1.00%	12.00%	1.00%					15.00%
Staff	30,985	1.00%	1.00%	12.00%	1.00%					15.00%

2.1.2 C3M Personnel by Effort One Service

Table 2. C3M Personnel by Effort One Service

UNIVERSITY OF PITTSBURGH										
OFFICE OF FINANCIAL INFORMATION - RESEARCH/COST ACCOUNTING										
ENTITY 03 (SELF SUPPORTING & AUXILIARY) ACCOUNTS										
SAMPLE PERSONNEL EFFORT ALLOCATION SCHEDULE										
Name of Person in Each Position	Base Salary	Effort								Total
		Service #1 Glucose Tolerance Test	Service #2 Euglycemic Clamp	Service #3 Managing Metabolic Cages	Service #4 Analyzing Body Composition	Service #5	Service #6	Service #7	Service #8	
Non Med Fac	172,515	0.00%	0.00%	5.00%	0.00%					5.00%
Staff	56,120	0.00%	0.00%	25.00%	0.00%					25.00%
Staff	Leandra Gardner 27,026	0.00%	0.00%	15.00%	0.00%					15.00%
Staff	30,985	0.00%	0.00%	15.00%	0.00%					15.00%

2.1.3 C3M Phenotyping Core Support



August 19, 2021

Re: C3M Phenotyping Core Support

In recognition of the scientific advancement and success of the C3M Rodent Phenotyping Core led by [REDACTED] the Department of Medicine (DOM) and the Division of Endocrinology will provide financial support over the next three (3) years. The transfer schedule will be as follows:

Fiscal Year	Amount	Support Provided By
FY22	[REDACTED]	DOM
FY23	[REDACTED]	Division of Endocrinology
FY24	[REDACTED]	DOM

Figure 1. C3M Phenotyping Core Support

2.1.4 C3M FY23 Salary and Fringe Four Services

Table 3. C3M FY23 Salary and Fringe Four Services

	Costs								Total	Fringe Benefits	Total Comp
	Service #1	Service #2	Service #3	Service #4	Service #5	Service #6	Service #7	Service #8			
FB Med Fac	1,725	1,725	3,450	1,725	0	0	0	0	8,626	2,717	11,343
	543	483	966	483	0	0	0	0	2,476		
FB Staff	561	561	12,346	561	0	0	0	0	14,030	5,275	19,305
	211	211	4,642	211	0	0	0	0	5,275		
Leandra Gardner	270	270	3,243	270	0	0	0	0	4,054	1,524	5,578
	102	102	1,219	102	0	0	0	0	1,524		
FB Staff	310	310	3,718	310	0	0			4,648	1,748	6,395
	117	117	1,398	117	0	0			1,748		

2.1.5 C3M FY23 Salary and Fringe One Services

Table 4. C3M FY23 Salary and Fringe One Services

Costs								Total	Fringe Benefits	Total Comp
Service #1	Service #2	Service #3	Service #4	Service #5	Service #6	Service #7	Service #8			
0	0	8,626	0	0	0	0	0	8,626	2,415	11,041
0	0	2,717	0	0	0	0	0	2,717		
0	0	14,030	0	0	0	0	0	14,030	5,275	19,305
0	0	5,275	0	0	0	0	0	5,275		
0	0	4,054	0	0	0	0	0	4,054	1,524	5,578
0	0	1,524	0	0	0	0	0	1,524		
0	0	4,648	0	0	0			4,648	1,748	6,395
0	0	1,748	0	0	0			1,748		

2.1.6 C3M FY23 Operating Costs Breakdown

2. Non-Compensation:									
a. Supplies & Office Furniture	w/ overhead	6000-6099							\$ 47,600.00
	w/o overhead	6081,82,88,92-97							
b. Equipment Rental/Leasing		6200-6299							
c. Travel & Business		6300 - 6399							
d. Professional Services & Consu	w/o overhead	6400 - 6499							\$ 21,815.04
e. Telecommunications		6600 - 6698							
f. Mail & Postage		6700-6799							
g. Printing & Publications	w/ overhead	6800-6889, 6896-99							
	w/o overhead	6890-6895							\$ -
h. Dues, Memberships & Subscriptions		6900-6999							
i. Equipment Repairs & Maintenance		7100 - 7199							\$ 11,760.00
j. Moving & Relocation		7200-7299							\$ -
k. Space Rental ³		7300-7399							\$ 9,000.00
l. Purchases for Resale		7400-7499							\$ -
m. Other Operating		8100-8199							\$ -
n. Depreciation ¹		--							\$ 14,512.72
	Total Non-Compensation								\$ 104,687.76
3. Total Operating Costs before Adjustments (add lines 1 and 2)									\$ 147,007.47
4. Adjustments:									
a. Subsidy/Transfer In									\$ -
b. Prior Years (Surplus)/Deficit									\$ -
	Total Adjustments								\$ -
Projected Operating Costs for Entire Service Center (add lines 1, 2 and 3)									\$ 147,007.47
Less Exclusions for Modified Operating costs									\$ 42,575.04
Modified Total Operating Costs, Less Subsidy									\$ 104,432.43
Overhead at (2)	9.80%								\$ 10,234.38
Total Projected Operating Costs									\$ 157,241.85

Figure 2. C3M FY23 Operating Costs Breakdown

2.1.7 C3M FY23 Pricing Schedule Four Services

UNIVERSITY OF PITTSBURGH													
OFFICE OF FINANCIAL INFORMATION - RESEARCH/COST ACCOUNTING													
ENTITY 03 (SELF SUPPORTING & AUXILIARY) ACCOUNTS													
					Glucose Tolerance Test		Clamp		Metabolic Cage		Body Comp		
					% of Effort to	Allocated	% of Effort to	Allocated	% of Effort to	Allocated	% of Effort to	Allocated	
					Service #1	Costs	Service #2	Costs	Service #3	Costs	Service #4	Costs	
Base Salary	Fringe	Base salary	Overall	Total									
Benefit Rate	Plus FB	Effort	Costs										
6. Charge Rate Per Unit for Each Service					\$ 802.42		\$ 800.52		\$ 2,091.06		\$ 800.52		

Figure 3. C3M FY23 Pricing Schedule Four Services

2.1.8 C3M FY23 Pricing Schedule One Services

UNIVERSITY OF PITTSBURGH													
OFFICE OF FINANCIAL INFORMATION - RESEARCH/COST ACCOUNTING													
ENTITY 03 (SELF SUPPORTING & AUXILIARY) ACCOUNTS													
					Glucose Tolerance Test		Clamp		Metabolic Cage		Body Comp		
					% of Effort to	Allocated	% of Effort to	Allocated	% of Effort to	Allocated	% of Effort to	Allocated	
					Service #1	Costs	Service #2	Costs	Service #3	Costs	Service #4	Costs	
Base Salary	Fringe	Base salary	Overall	Total									
Benefit Rate	Plus FB	Effort	Costs										
6. Charge Rate Per Unit for Each Service					#DIV/0!		#DIV/0!		\$ 4,046.81		#DIV/0!		

Figure 4. C3M FY23 Pricing Schedule One Services

2.1.9 C3M FY23 Sable Systems Usage Log Jul-Oct 2022

SABLE SYSTEM usage log		BST W1007-A		Animal Imaging and Environment	
Date	Duration(hrs)	Animal #	PI	Div/Center	Study ID/notes
7/5/2022	72	16		ENDO	MMP14/GFP
7/11/2022	72	16		ENDO	MTk
7/26/2022	96	14		ENDO	NA
8/1/2022	96	5		C3M/PHARM	Obsk
8/5/2022	120	7		ENDO/AI	72hr dark cycle
8/22/2022	72	14		ENDO/AI	MetR/Meth/Nit/Jnj
8/25/2022	96	11		ENDO/AI	MetR/Meth/Nit/Jnj
8/30/2022	96	13		ENDO/AI	MetR/Meth/Nit/Jnj
9/16/2022	72	10		ENDO	GFP/Cre
9/20/2022	96	6		C3M/PHARM	Obsk
9/26/2022	96	8		GERI/AI	Flx/Cre
10/10/2022	264	10		ENDO	Tg/Wt
10/21/2022	144	12		ENDO/AI	72hr dark cycle

Figure 5. C3M FY23 Sable Systems Usage Log Jul-Oct 2022

2.1.10 C3M FY23 Sable Systems Usage Log Jul-Oct 2022

Table 5. C3M FY23 Sable Systems Usage Log Jul-Oct 2022

	CY22						CY23					
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
Na/H Exchanger-138315 IND	\$ 373.58	\$ 373.58	\$ 373.58	\$ 373.58	\$ 373.58	\$ 373.58	\$ 373.58	\$ 373.58	\$ 373.58	\$ 373.58	\$ 373.58	\$ 373.58
MDMD-138794 IND	\$ 1,047.08	\$ 1,047.08	\$ 1,047.08	\$ 1,047.08	\$ 1,047.08	\$ 1,047.08	\$ 1,047.08	\$ 1,047.08	\$ 1,047.08	\$ 1,047.08	\$ 1,047.08	\$ 1,047.08
VINYL CHLORIDE-138247 IND	\$ 587.67	\$ 587.67	\$ 587.67	\$ 587.67	\$ 587.67	\$ 587.67	\$ 587.67	\$ 587.67	\$ 587.67	\$ 587.67	\$ 587.67	\$ 587.67
BETA-CATENIN-135645 IND	\$ 304.25	\$ 304.25	\$ 304.25	\$ 304.25	\$ 304.25	\$ 304.25	\$ 304.25	\$ 304.25	\$ 304.25	\$ 304.25	\$ 304.25	\$ 304.25
TARGETING ACID-134387 IND	\$ 295.67	\$ 295.67	\$ 295.67	\$ 295.67	\$ 295.67	\$ 295.67	\$ 295.67	\$ 295.67	\$ 295.67	\$ 295.67	\$ 295.67	\$ 295.67
ROLE OF CALCIUM-132393 IND	\$ 977.00	\$ 977.00	\$ 977.00	\$ 977.00	\$ 977.00	\$ 977.00	\$ 977.00	\$ 977.00	\$ -	\$ -	\$ -	\$ -
NOVEL STRATEGIES-134152 IND	\$ 1,325.50	\$ 1,325.50	\$ 1,325.50	\$ 1,325.50	\$ 1,325.50	\$ 1,325.50	\$ 1,325.50	\$ 1,325.50	\$ 1,325.50	\$ 1,325.50	\$ 1,325.50	\$ 1,325.50
MITOPHAGY-132027 IND	\$ 9,743.83	\$ 9,743.83	\$ 9,743.83	\$ 9,743.83	\$ 9,743.83	\$ 9,743.83	\$ 9,743.83	\$ 9,743.83	\$ 9,743.83	\$ 9,743.83	\$ 9,743.83	\$ 9,743.83
ROLE OF FBOX-132388 IND	\$ 9,355.17	\$ 9,355.17	\$ 9,355.17	\$ 9,355.17	\$ 9,355.17	\$ 9,355.17	\$ 9,355.17	\$ 9,355.17	\$ 9,355.17	\$ 9,355.17	\$ 9,355.17	\$ 9,355.17
SALARY MED FACULTY	\$ 920.08	\$ 920.08	\$ 920.08	\$ 920.08	\$ 920.08	\$ 920.08	\$ 920.08	\$ 920.08	\$ 920.08	\$ 920.08	\$ 920.08	\$ 920.08
SALARY STAFF	\$ 1,608.77	\$ 1,608.77	\$ 1,608.77	\$ 1,608.77	\$ 1,608.77	\$ 1,608.77	\$ 1,608.77	\$ 1,608.77	\$ 1,608.77	\$ 1,608.77	\$ 1,608.77	\$ 1,608.77
SALARY STAFF	\$ 464.85	\$ 464.85	\$ 464.85	\$ 464.85	\$ 464.85	\$ 464.85	\$ 464.85	\$ 464.85	\$ 464.85	\$ 464.85	\$ 464.85	\$ 464.85
SALARY STAFF	\$ 532.94	\$ 532.94	\$ 532.94	\$ 532.94	\$ 532.94	\$ 532.94	\$ 532.94	\$ 532.94	\$ 532.94	\$ 532.94	\$ 532.94	\$ 532.94
MDMD-138794	\$ 1,774.75	\$ 1,774.75	\$ 1,774.75	\$ 1,774.75	\$ 1,774.75	\$ 1,774.75	\$ 1,774.75	\$ 1,774.75	\$ 1,774.75	\$ 1,774.75	\$ 1,774.75	\$ 1,774.75
Na/H Exchanger-138315	\$ 633.25	\$ 633.25	\$ 633.25	\$ 633.25	\$ 633.25	\$ 633.25	\$ 633.25	\$ 633.25	\$ 633.25	\$ 633.25	\$ 633.25	\$ 633.25
VINYL CHLORIDE-138247	\$ 996.08	\$ 996.08	\$ 996.08	\$ 996.08	\$ 996.08	\$ 996.08	\$ 996.08	\$ 996.08	\$ 996.08	\$ 996.08	\$ 996.08	\$ 996.08
BETA-CATENIN-135645	\$ 515.67	\$ 515.67	\$ 515.67	\$ 515.67	\$ 515.67	\$ 515.67	\$ 515.67	\$ 515.67	\$ 515.67	\$ 515.67	\$ 515.67	\$ 515.67
TARGETING ACID-134387	\$ 523.33	\$ 523.33	\$ 523.33	\$ 523.33	\$ 523.33	\$ 523.33	\$ 523.33	\$ 523.33	\$ 523.33	\$ 523.33	\$ 523.33	\$ 523.33
NOVEL STRATEGIES-134152 F	\$ 1,742.08	\$ 1,742.08	\$ 1,742.08	\$ 1,742.08	\$ 1,742.08	\$ 1,742.08	\$ 1,742.08	\$ 1,742.08	\$ 1,742.08	\$ 1,742.08	\$ 1,742.08	\$ 1,742.08
NOVEL STRATEGIES-134152 S	\$ 603.92	\$ 603.92	\$ 603.92	\$ 603.92	\$ 603.92	\$ 603.92	\$ 603.92	\$ 603.92	\$ 603.92	\$ 603.92	\$ 603.92	\$ 603.92
ROLE OF CALCIUM-132393	\$ 1,729.25	\$ 1,729.25	\$ 1,729.25	\$ 1,729.25	\$ 1,729.25	\$ 1,729.25	\$ 1,729.25	\$ 1,729.25	\$ -	\$ -	\$ -	\$ -
ROLE OF FBOX-132388 F	\$ 4,746.33	\$ 4,746.33	\$ 4,746.33	\$ 4,746.33	\$ 4,746.33	\$ 4,746.33	\$ 4,746.33	\$ 4,746.33	\$ 4,746.33	\$ 4,746.33	\$ 4,746.33	\$ 4,746.33
ROLE OF FBOX-132388 S	\$ 8,313.00	\$ 8,313.00	\$ 8,313.00	\$ 8,313.00	\$ 8,313.00	\$ 8,313.00	\$ 8,313.00	\$ 8,313.00	\$ 8,313.00	\$ 8,313.00	\$ 8,313.00	\$ 8,313.00
SUPPLIES ROLE OF FBOX-132388	\$ 2,915.08	\$ 2,915.08	\$ 2,915.08	\$ 2,915.08	\$ 2,915.08	\$ 2,915.08	\$ 2,915.08	\$ 2,915.08	\$ 2,915.08	\$ 2,915.08	\$ 2,915.08	\$ 2,915.08
MITOPHAGY-132027 F	\$ 7,111.67	\$ 7,111.67	\$ 7,111.67	\$ 7,111.67	\$ 7,111.67	\$ 7,111.67	\$ 7,111.67	\$ 7,111.67	\$ 7,111.67	\$ 7,111.67	\$ 7,111.67	\$ 7,111.67
MITOPHAGY-132027 S	\$ 4,647.00	\$ 4,647.00	\$ 4,647.00	\$ 4,647.00	\$ 4,647.00	\$ 4,647.00	\$ 4,647.00	\$ 4,647.00	\$ 4,647.00	\$ 4,647.00	\$ 4,647.00	\$ 4,647.00
SUPPLIES MITOPHAGY-132027	\$ 5,153.67	\$ 5,153.67	\$ 5,153.67	\$ 5,153.67	\$ 5,153.67	\$ 5,153.67	\$ 5,153.67	\$ 5,153.67	\$ 5,153.67	\$ 5,153.67	\$ 5,153.67	\$ 5,153.67
RENT	\$ 750.00	\$ 750.00	\$ 750.00	\$ 750.00	\$ 750.00	\$ 750.00	\$ 750.00	\$ 750.00	\$ 750.00	\$ 750.00	\$ 750.00	\$ 750.00
MICE	\$ 3,966.67	\$ 3,966.67	\$ 3,966.67	\$ 3,966.67	\$ 3,966.67	\$ 3,966.67	\$ 3,966.67	\$ 3,966.67	\$ 3,966.67	\$ 3,966.67	\$ 3,966.67	\$ 3,966.67
SERV. CON	\$ 1,817.92	\$ 1,817.92	\$ 1,817.92	\$ 1,817.92	\$ 1,817.92	\$ 1,817.92	\$ 1,817.92	\$ 1,817.92	\$ 1,817.92	\$ 1,817.92	\$ 1,817.92	\$ 1,817.92
TOTAL REVENUE	\$ 24,009.75	\$ 24,009.75	\$ 24,009.75	\$ 24,009.75	\$ 24,009.75	\$ 24,009.75	\$ 24,009.75	\$ 24,009.75	\$ 23,032.75	\$ 23,032.75	\$ 23,032.75	\$ 23,032.75
TOTAL EXPENSES	\$ 51,466.31	\$ 51,466.31	\$ 51,466.31	\$ 51,466.31	\$ 51,466.31	\$ 51,466.31	\$ 51,466.31	\$ 51,466.31	\$ 49,737.06	\$ 49,737.06	\$ 49,737.06	\$ 49,737.06
BILLED	\$ 12,140.43	\$ 20,234.05	\$ 12,140.43	\$ 8,093.62	\$ 12,140.43	\$ 6,460.00	\$ 12,140.43	\$ 12,140.43	\$ 12,140.43	\$ 12,140.43	\$ 12,140.43	\$ 12,140.43
C3M Net Income (Pre-Commitment)	\$ (15,316.13)	\$ (7,222.51)	\$ (15,316.13)	\$ (19,362.94)	\$ (15,316.13)	\$ (20,996.56)	\$ (15,316.13)	\$ (16,293.13)	\$ (14,563.88)	\$ (14,563.88)	\$ (14,563.88)	\$ (14,563.88)
Monthly Wire FY23	\$ 10,750.00	\$ 10,750.00	\$ 10,750.00	\$ 10,750.00	\$ 10,750.00	\$ 10,750.00	\$ 10,750.00	\$ 10,750.00	\$ 10,750.00	\$ 10,750.00	\$ 10,750.00	\$ 10,750.00
NET	\$ (4,566.13)	\$ 3,527.49	\$ (4,566.13)	\$ (8,612.94)	\$ (4,566.13)	\$ (10,246.56)	\$ (4,566.13)	\$ (5,543.13)	\$ (3,813.88)	\$ (3,813.88)	\$ (3,813.88)	\$ (3,813.88)
Total												
Rate per Study	\$	4,046.81										
Total Studies Conducted Annually												35
Average Studies per Month												3

2.1.11 PI Seed Account Projection FY22-FY23- Long Term Tracking

Table 6. PI Seed Account Projection FY22-FY23- Long Term Tracking

	FY22		FY23					
	<i>(May as per levels)</i>	<i>(Jun as per levels)</i>	<i>(Jul as per levels)</i>	<i>(Aug as per levels)</i>	<i>(Sep as per levels)</i>	<i>(Oct as per levels)</i>	<i>(Nov as per levels)</i>	<i>(Dec as per levels)</i>
	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
BEG BALANCE	\$ 85,158.17	\$ 90,232.93	\$ 97,644.68	\$ 104,578.15	\$ 101,915.96	\$ 97,494.18	\$ 94,956.97	\$ 89,860.53
REVENUE- UPP	\$ 8,062.50	\$ 24,187.50	\$ 8,062.50	\$ 8,062.50	\$ 8,062.50	\$ 8,062.50	\$ 8,062.50	\$ 8,062.50
INTEREST	\$ 23.03	\$ 150.87		145.56	207.8	218.1	254.67	303.55
TOTAL REVENUE	\$ 93,243.70	\$ 114,571.30	\$ 105,707.18	\$ 112,786.21	\$ 110,186.26	\$ 105,774.78	\$ 103,274.14	\$ 98,226.58
SALARY MED FACULTY		\$ 5,134.76	\$ 868.01	\$ 868.00	\$ 4,062.20	\$ 920.07	\$ 920.08	\$ 920.08
SALARY STAFF		\$ 1,798.78	\$ 1,517.73	\$ 789.22	\$ 3,254.05	\$ 1,287.04	\$ 6,095.38	\$ 2,136.01
SALARY TEMP		\$ 1,180.80	\$ (1,582.79)	\$ 960.33	\$ 4,170.00	\$ 4,170.00	\$ 4,170.00	\$ 4,170.00
SALARY STAFF O/C								\$ 1,323.61
SALARY STUDENTS	\$ 480.00			\$ -				
SUPPLIES	\$ 591.00	\$ 742.84	\$ (636.74)	\$ 8,020.00	\$ 492.95		\$ 65.98	\$ 2,174.25
ANIMAL CARE	\$ 1,898.06	\$ 80.85	\$ (48.96)	\$ 22.87	\$ 6.48	\$ 3,333.70	\$ 1,861.48	\$ 1,367.52
TRAVEL		\$ 7,507.08	\$ 842.69					
FED EX	\$ 41.71	\$ 68.52		\$ 102.73				
O/H		\$ 131.69	\$ 169.09	\$ 107.10				\$ (375.00)
PUBLICATIONS		\$ 281.30						
MISC					\$ 706.40	\$ 1,107.00	\$ 300.69	\$ 53.49
TOTAL EXPENSES	\$ 3,010.77	\$ 16,926.62	\$ 1,129.03	\$ 10,870.25	\$ 12,692.08	\$ 10,817.81	\$ 13,413.61	\$ 11,769.96
ACCT BALANCE	\$ 90,232.93	\$ 97,644.68	\$ 104,578.15	\$ 101,915.96	\$ 97,494.18	\$ 94,956.97	\$ 89,860.53	\$ 86,456.62

2.1.12 PI Seed Account Projection FY22-FY23- Short Term Aggressive Tracking

Table 7. PI Seed Account Projection FY22-FY23- Short Term Aggressive Tracking

	FY22		FY23						
	<i>(Apr as per levels)</i>	<i>(May as per levels)</i>	<i>(Jun as per levels)</i>	<i>(Jul as per levels)</i>	<i>(Aug as per levels)</i>	<i>(Sep as per levels)</i>	<i>(Oct as per levels)</i>	<i>(Nov as per levels)</i>	<i>(Dec as per levels)</i>
	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
BEG BALANCE	\$ (38,508.50)	\$ (48,543.61)	\$ (20,540.08)	\$ 8,380.44	\$ (5,878.04)	\$ 20,799.36	\$ 29,672.84	\$ 36,888.89	\$ 43,861.78
UPP Holdback 25%		-	\$ 60,338.25	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
NET 0 TSF									
INTEREST CHARGED	\$ (5.27)	\$ (12.09)	\$ (28.43)		\$ 1.80	\$ 15.02	\$ 55.20	\$ 88.08	\$ 132.63
REVENUE- UPP	\$ 16,750	\$ 16,750		\$ 16,750	\$ 16,750	\$ 16,750	\$ 16,750	\$ 16,750	\$ 16,750
TOTAL REVENUE	\$ (21,763.77)	\$ (31,805.70)	\$ 39,769.74	\$ 25,130.44	\$ 10,873.76	\$ 37,564.38	\$ 46,478.04	\$ 53,726.97	\$ 60,744.41
SALARY MED FACULTY	\$ 12,491	\$ 12,491.28	\$ 12,491.28	\$ 12,669.44	\$ (258.56)	\$ 7,094.26	\$ 6,674.09	\$ 6,674.08	\$ 6,674.09
SALARY STAFF	\$ 5,483	\$ 5,482.86	\$ 6,031.11	\$ 6,106.55	\$ (6,106.55)				
ANIMAL CARE	\$ 5,400	\$ 3,682.48	\$ 4,676.00	\$ 6,098.84	\$ (5,139.11)		\$ (311.75)	\$ 18.36	\$ 19.44
TRAVEL		\$ -	\$ 749.00	\$ 2,180.64					
STUDENTS	\$ 1,026	\$ 90.00	\$ 1,583.14	\$ 266.50	\$ 280.84	\$ 381.29	\$ 309.60	\$ 553.50	\$ 391.50
CORE		\$ 165.00					\$ 142.50	\$ 290.00	
EQUIP			\$ 175.00						
DUES/MEMBERSHIP			\$ 349.00		\$ 2,985.00				
PROFESSIONAL SERV	\$ 40		\$ 3,492.45						
FED EX		\$ 21.45	\$ 80.40	\$ 25.31	\$ 193.49	\$ 13.67			
MISC						\$ 706.40	\$ 553.50		
SUPPLIES	\$ 2,339	\$ 801.31	\$ 1,761.92	\$ 3,661.20	\$ (1,880.71)	\$ (304.08)	\$ 2,221.21	\$ 2,329.25	\$ (2,074.25)
TRANSFERS		\$ (34,000.00)					\$ 34,000.00		\$ 34,000.00
TOTAL EXPENSES	\$ 26,779.84	\$ (11,265.62)	\$ 31,389.30	\$ 31,008.48	\$ (9,925.60)	\$ 7,891.54	\$ 9,589.15	\$ 9,865.19	\$ 39,010.78
ACCT BALANCE	\$ (48,543.61)	\$ (20,540.08)	\$ 8,380.44	\$ (5,878.04)	\$ 20,799.36	\$ 29,672.84	\$ 36,888.89	\$ 43,861.78	\$ 21,733.63

2.1.13 DE&M FY06-FY22 YOY Analysis

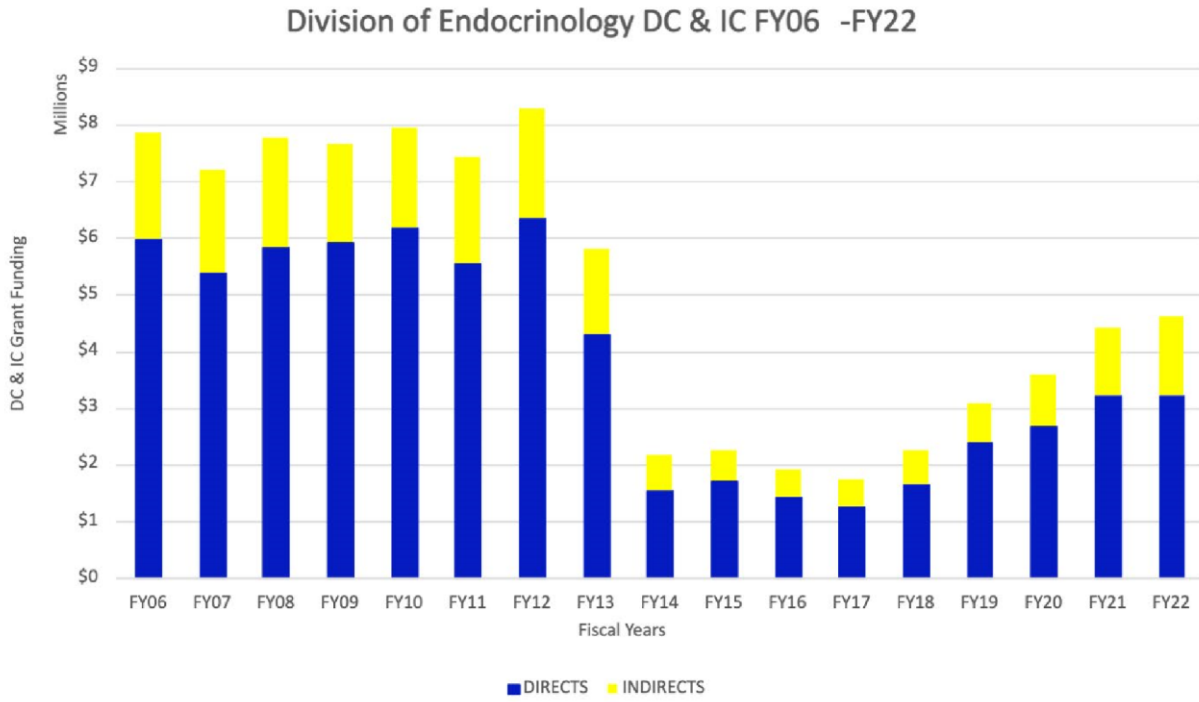


Figure 6. DE&M FY06-FY22 YOY Analysis

2.1.14 DE&M PI Profit and Loss Statement

<i>Statement for MD-1</i>	
<i>Division of Endocrinology and Metabolism</i>	
<i>Revenue</i>	June 2022 YTD
<i>Total Indirects from Sponsored Grant Projects</i>	\$ 4,956
<i>Total Directs from Sponsored Grant Projects</i>	\$ 106,885
<i>Seed (UPP Wire FY22)</i>	\$ 113,250
<i>PY Carryover FY21</i>	\$ 187,643
<i>Total</i>	\$ 412,735
Revenue Total	\$ 412,735
	<i>Seed</i>
<i>Expenses</i>	June 2022 YTD
Salaries	\$ 169,525
Salary (05-417***)	\$ 9,554
Salary (05-133***)	\$ 135,938
Supplies Expense (Seed)	\$ 2,268
Supplies Expense (05-133***)	\$ 9,543
Equipment (05-133***)	\$ 5,150
Travel (05-133***)	\$ 3,391
Participant Payments (05-133***)	\$ 2,531
Professional Services (05-133***)	\$ 7,519
DLAR Tax on Indirects	\$ 11,043
<i>Total</i>	\$ 345,420
Expenses Total	\$ 345,420
Net Income	\$ 67,315.41

Figure 7. DE&M PI Profit and Loss Statement

2.1.15 DE&M CY2016-CY2021 PI/PhD-1 Grant Density Analysis

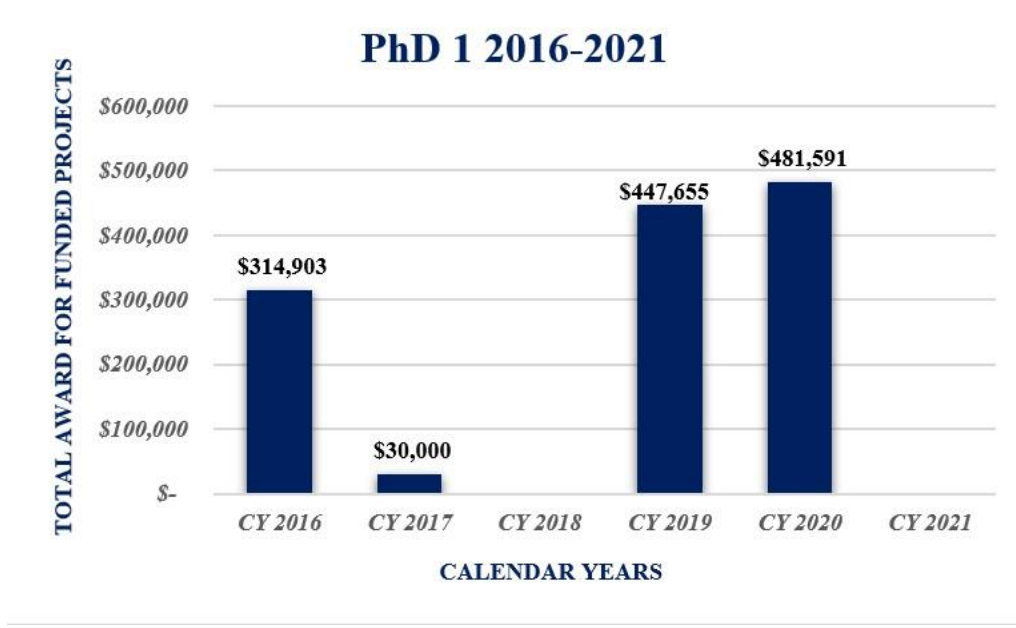


Figure 8. DE&M CY2016-CY2021 PI/PhD-1 Grant Density Analysis

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