



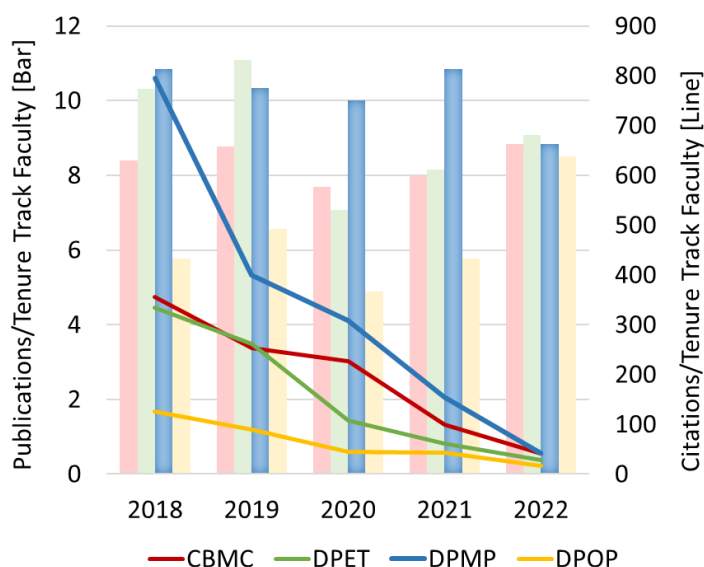
ESHELMAN SCHOOL  
OF PHARMACY

# **Division of Pharmacoengineering & Molecular Pharmaceutics Strategic Plan**

July 2023

## Preamble

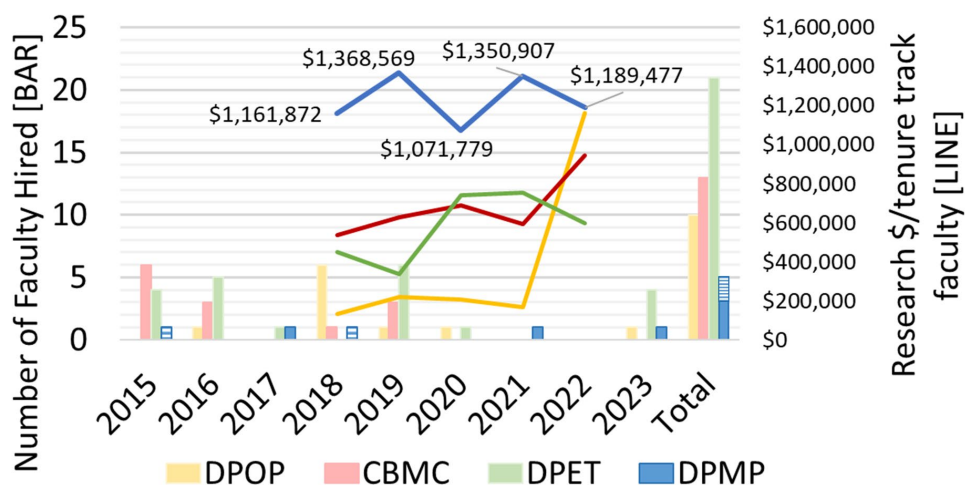
Since 2006, the Division of Pharmacoengineering & Molecular Pharmaceutics (DPMP), formerly known as the Division of Molecular Pharmaceutics (MOPH), has stood uniquely as the pinnacle academic entity for research and education centered on formulation and drug delivery; this includes a variety of diagnostic and therapeutic agents such as antibodies, vaccines, genes, nanoparticles, and cells. Our division draws a clear distinction from Pharmaceutics or Pharmaceutical Sciences units at other schools and colleges of pharmacy and engineering because the focus of our research endeavor and curriculum is drug delivery, whereas other schools incorporate pharmacokinetics, pharmacology and/or other research areas in their programs. This distinction results in attracting and producing students that are coveted by big and small Pharma, with placement of a vast majority of our graduates immediately upon graduation in these positions. For graduates that wish to pursue academia and are placed in a postdoctoral position, many ultimately advance to tenure track faculty positions.



**Figure 1.** Publications and citations normalized to number of tenure track positions per a division. Data collected via *Operation Clarity*.

This unique training environment is supported by our world-class faculty in drug delivery areas such as biologics, nanotechnology, immunotherapy, and gene therapy. These faculty are at the forefront of their field as illustrated by their peer-review publications and total research funding. Indeed, our number of publications per tenure track position has been at the top of the school for the last five years (bars Figure 1). Further, these publications are highly cited, underscoring their

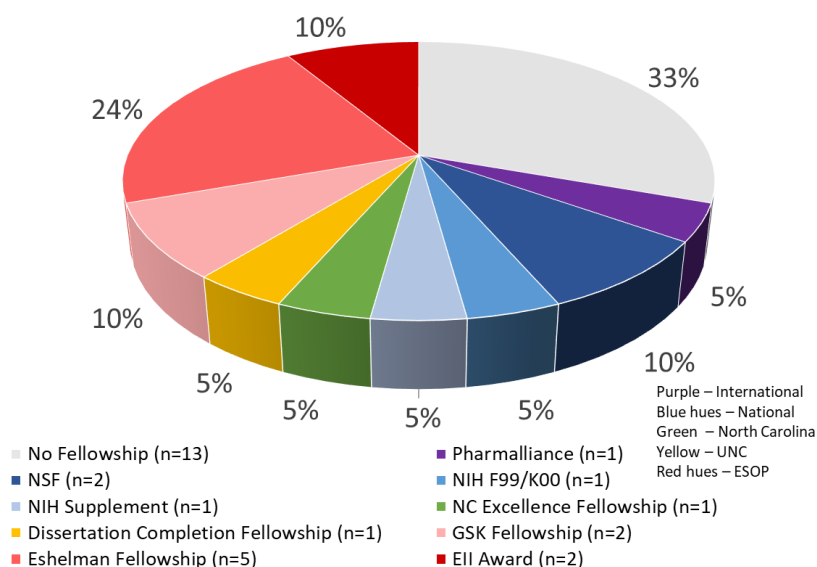
impact in the field (lines Figure 1). DPMP faculty have also been very successful in obtaining federal grants and private foundation funding, averaging \$1.23M and  $41 \pm 3.3\%$  salary offset per tenure track faculty per year, for the last five years (Figure 2 lines). These figures are even more impressive in light of the fact that since 2015 four faculty have retired [Juliano, Xiao, Smith, Jay] and three faculty have moved on to other positions [Mumper, Anselmo, Greene] yet we have only hired three tenure track [Nguyen, Anselmo, Fenton] and two other track faculty [Fallon, Greene] during that time (Figure 2 bars). The success of our faculty, students and staff in publications and research grants has translated in the generation of new intellectual property and formation of startup companies founded or co-founded by DPMP faculty. Moreover, the impact of our division faculty is illustrated in a number of other achievements. Several of our DPMP faculty over the years have served and are serving as standing members on NIH study sections. Their exceptional contributions have garnered them recognition through prestigious national and international awards, and several of our faculty have assumed key roles as editors and/or editorial board members of leading journals in our field.



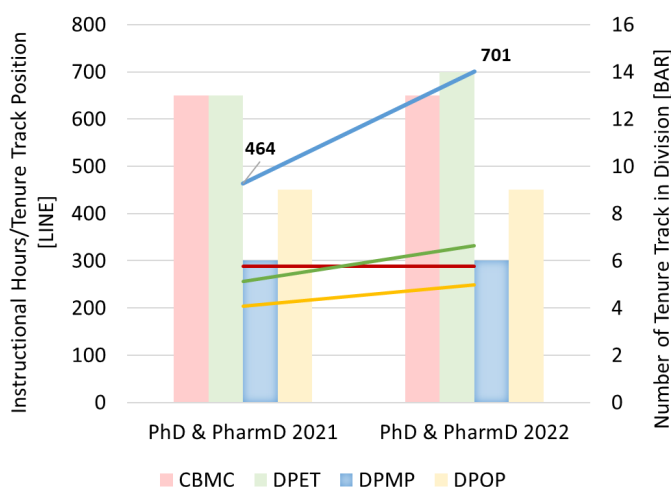
**Figure 2.** Number of faculty hired and still present in the school in 2019 [bar]. The blue bars with white lines represent faculty attrition in DPMP. Attrition in other divisions is largely unknown and therefore unaccounted for in the other divisions since faculty who may have been hired after 2015 and left before 2019 would not be incorporated in this data. Grant dollars per tenure track position [line] by division. Data collected via *Operation Clarity* and collected from the ESOP website.

Our unparalleled focus on drug delivery has attracted the attention of outstanding graduate students from multiple disciplines. The largest fraction of our graduate student population comes from bachelors of science degrees in chemical engineering (36%), biomedical engineering (BME; 20%), chemistry (16%) and pharmaceutical sciences (16%). Of the students we extend offers to enter our PhD

program, very few turn us down (0-1 a year). For the 2023 incoming year, students turned down offers from #1 ranked Johns Hopkins BME, #3 ranked Georgia Tech BME, and other highly ranked programs at universities in other disciplines. The strength of our students is also illustrated in their receipt of competitive fellowships (Figure 3). Approximately one-fifth of our students are supported by a national level fellowship (e.g. NSF, NIH), with a significant fraction of the remaining (47% of total) receiving Pharmalliance, North Carolina, UNC, and ESOP fellowships.



**Figure 3.** Percentage of DPMP graduate students enrolled July 2023 who have received fellowships or funded research awards.



**Figure 4.** Number of instructional hours reported per a division for 2021 and 2022. Data collected via *Operation Clarity*.

Average Effective Teaching Score	
DPET	4.81
<b>DPMP</b>	<b>4.68</b>
DPOP	4.60
PACE	4.59
CBMC	4.58

**Table 1.** Average Effective Teaching Score for 2018-22 for all divisions. Data collected via *Operation Clarity*.

The DPMP faculty are responsible for mentoring PhD students and postdoctoral researchers, and didactic training of PhD and PharmD students. Our faculty have exhibited innovative approaches in their teaching activities in the professional (PharmD) and graduate (PhD) curricula by introducing the flipped classroom model (now employed by the entire PharmD curriculum), EI Lab, matrix grading evaluations for research credits, and the undergraduate minor. Further, per tenure track position, our division has the highest number of self-reported teaching hours (Figure 4 – lines) despite having the lowest number of tenure-track faculty (Figure 4 – bars). Moreover, our average effective teaching score is second in the school behind DPET. This illustrates the division’s commitment to effective teaching and mentoring of students in our laboratories and classrooms.

As we look to the future, we have developed this strategic plan to align with the BEYOND Strategic plan of the Eshelman School of Pharmacy and to ensure the continued success of our Division. The DPMP faculty has approved the strategic initiatives that compose the plan and, as such, we are committed to the resources that are required to implement them.

## **Our Vision**

To be leaders in discovery of innovative drug delivery systems, and to share these experiences in our teaching programs.

## **Our Core Values**

In DPMP we value inclusivity, equity, accountability, commitment to society, respect for each other, and excellence. Our values are in complete alignment with the “WE CARE” values of the Eshelman School of Pharmacy and include the following:

- Welcoming: Creating an environment of inclusion and belonging
- Equity: Opportunity for all
- Commitment: Relentless passion for impact to society
- Accountability: Ownership and responsibility
- Respect: Appreciate and value others
- Excellence: Preeminence in everything we do

## Our Mission Statement

DPMP is uniquely poised to advance medicines for lives worldwide by continuing its translation of transformative dosage form technologies to significantly improve pharmaceutical safety and efficacy. Our mission is to prepare leaders and innovators to solve the world's most pressing health care challenges through innovation in drug delivery. The metrics of success for the fulfillment of this mission are as follows:

- The ability of the PharmD graduates that we teach to exhibit skill in the selection of dosage forms and in applying pharmaceuticals principles in clinical practice as measured by their performance on the relevant sections of the NAPLEX exam and the number who are offered related positions in the pharmaceutical industry, academic research or at leading health centers.
- The success of our graduate students and postdoctoral fellow alumni as measured by the number in leadership positions and success in securing desired positions post-graduation.
- The number of our faculty taking leads on multidisciplinary collaborative studies.
- Total funding received through both principal and collaborative studies.
- The number of peer-reviewed publications with faculty as senior or corresponding author.
- The number of patents awarded, and financial support obtained for startup endeavors.
- Illustration of faculty expertise by being sought after by funding agencies, organizations, and academic institutions.

To understand how to advance these metrics successfully, we have performed a SWOT analysis on our division (Appendix A).

To position our Division to take advantage of the opportunities before us and to address our weaknesses we founded a board of advisors in Spring of 2022. After our initial meeting, the board drafted letters of support for our program, underscoring our productivity and uniqueness, but also indicating concern for our decline in faculty numbers (Appendix B). Our 2023-24 board of advisors consists of the following individuals:

- **Dr. Tejal Desai** - Sorensen Family Dean of Engineering at Brown University; Adjunct UCSF School of Pharmacy.

- **Dr. Lola Eniola-Adefeso** - Associate Dean for Graduate and Professional Education at University of Michigan College of Engineering; University Diversity and Social Transformation Professor of Chemical Engineering; Miller Faculty Scholar.
- **Dr. Dylan Glatt** (alumni) - Development Scientist, PK/PD and Clinical Pharmacology 23&Me.
- **Dr. Junghae Suh** - Vice President, Gene Therapy Accelerator Unit; Executive Director, Gene Therapy Accelerator Unit at Biogen.
- **Dr. Martin Telko** (alumni) - Global Public Affairs Director for Biomedical Innovation at Novartis.
- **Dr. Peter Wuelfing** - Executive Director Merck.

They have helped us to focus on three strategic initiatives in consultation with the division faculty:

### **Strategic Initiative 1: Sustain a world-renowned research program in drug delivery to accelerate innovation and transformational changes in Pharmaceutical Sciences**

- **Priority 1.1**: Recruit and hire faculty in the areas described in the university's *Strategic Research Priorities* that relate to Pharmacoengineering, and molecular pharmaceuticals.
  - Data science and machine learning
  - Cancer (particularly immunoengineering)
  - Precision Health (particularly viral vectors, cell therapy and gene therapy)
- **Priority 1.2**: Foster collaborations with the School's PharmAlliance partners and other international leaders to promote the global impact of research in drug delivery.
- **Priority 1.3**: Increase visibility of our Division's cutting-edge research activities.
  - Focus on publishing articles in journals with high Impact Factors.
  - Engage and disseminate publications and events via social media (e.g. LinkedIn, Twitter) and encourage investigators to create and maintain social media accounts if not already established.
  - Disseminate the significant research findings of DPMP faculty
- Create a bi-annual Division Newsletter.
- Update the Division webpage as well as the webpage for each DPMP faculty member.



- Contribute to development of individual lab websites.
  - Enhance the dissemination of our expertise in drug delivery and pharmaceuticals to both industry and academia.
- **Priority 1.4:** Maintain a Board of Advisors composed of a select group of alumni and associates in academia and industry. The board will continue to provide advice, guidance, and resources to advance the research, learner development and the mission of the Division.
- **Priority 1.5:** Promote the efforts of the Center for Nanotechnology in Drug Delivery (CNDD) to meet the needs of the faculty in the School and the university for characterization of nanomaterials, and in providing information on current trends in nanotechnology-based research in the drug delivery field.

## **Strategic Initiative 2: Provide a first-class educational environment for students in the professional (PharmD), and graduate (PhD) programs.**

- **Priority 2.1:** Provide training for writing fellowship applications and grants with the goal of each student in the graduate program submitting an NIH (F31 or F32 if appropriate) and/or NSF (Graduate Research Fellowship Program) fellowship application.
- **Priority 2.2:** Increase involvement of DPMP alumni to enrich graduate student and post-doctoral training.
- **Priority 2.3:** Maintain a productive, inclusive, and student-forward mentoring atmosphere for research-focused faculty in order to train the next generation of graduate students at the highest level.
  - Focus DPMP faculty teaching efforts in areas where they are subject matter experts.
  - Continue graduate student feedback via GSO and AAPS discussions with the chair.
  - Provide mentoring and implementation plans for PIs who need development in successfully mentoring graduate students and postdoctoral fellows.

## **Strategic Initiative 3: Create and engaging culture for the well-being of our faculty, staff and trainees.**

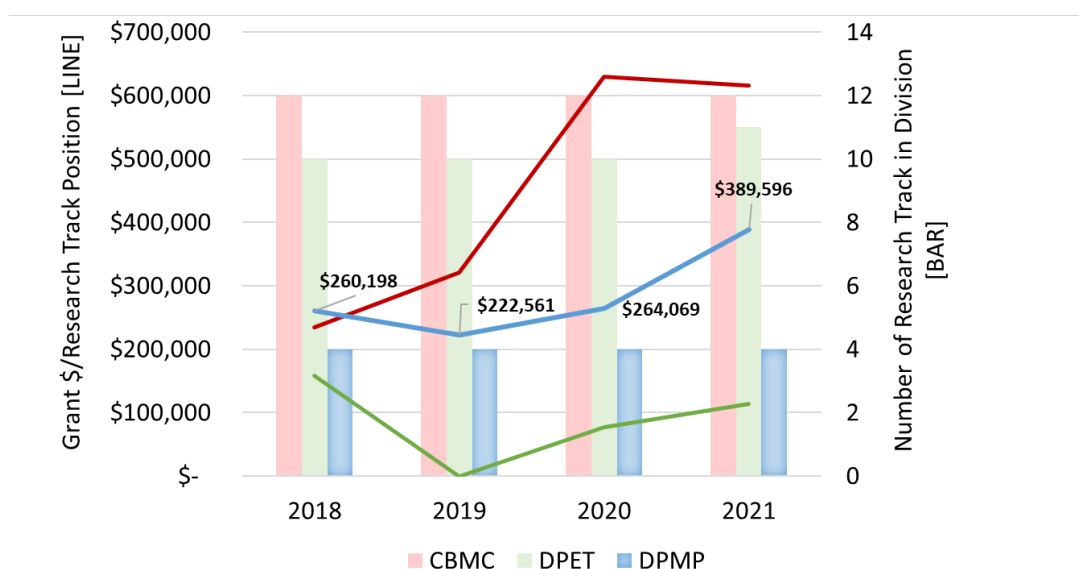
- **Priority 3.1:** Pursue faculty hiring which fosters diversity, equity, and inclusion.
  - Recruit and retain diverse faculty that represent the diversity of North Carolina's population.
  - Use the *Valuing Inclusion To Attain Excellence (VITAE)* initiative for the pursuit of highly-qualified diverse hires.



- Promote internal candidates from our outstanding graduate students through programs like the Carolina Post Doc Fellowship program.
- **Priority 3.2:** Recruitment and training of graduate students from diverse groups.
  - Provide an online informational PhD recruitment event that is publicized at Historically Black Colleges and Universities (HBCUs) and Minority Serving Institutes across the nation.
  - Support faculty travel to nearby HBCUs (e.g. NC A&T) and Minority Serving Institutions (e.g., NC Central) to present and discuss our program.
  - Create a pre-doctoral T32 training program to attract and support diverse students.
- **Priority 3.3:** Support undergraduates research from diverse undergraduate students.
  - Partner with the Chancellor's Scholars Program on campus to support undergraduate students in research training.
  - Support summer (e.g. SOLAR, SROP) and Postbaccalaureate Research Education Program (PREP) students from programs across campus in research training in our labs.

## Our Strategic Goal

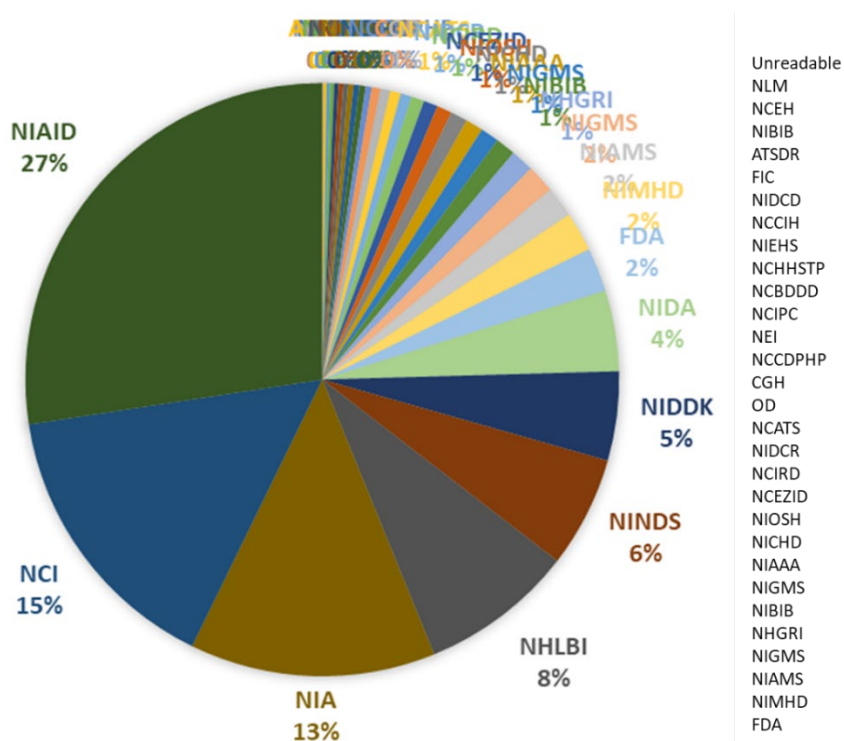
Our division excels at pursuing and being awarded funding for our research endeavors, in part because we bring a flexible toolset that can be applied across disease states. Our faculty lead the school in grant awards with an average of \$1.2M in funding per tenure track individual per year (Figure 2). Further, our research track faculty average \$0.25M each per year over the last four years with a steady increase since 2019 (Figure 5). In addition, our research has contributed significantly to the School's Intellectual Property portfolio (Xiao, Nguyen, Hingtgen) as well as generated start-ups (Ainslie, Lai, Hingtgen, Kabanov).

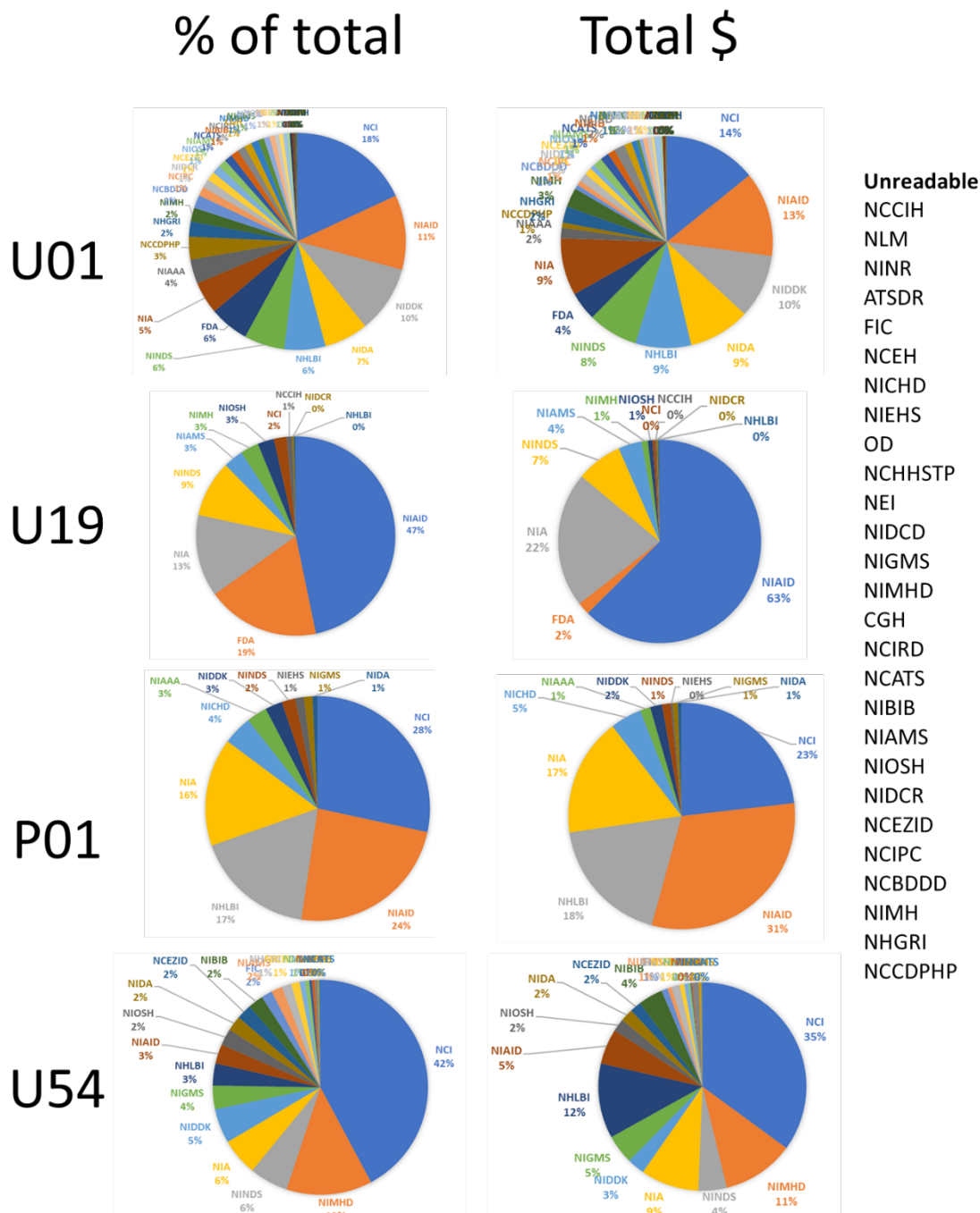


**Figure 5.** Number of research track faculty per year [bar]. Grant dollars per research track position [line] by division. Data collected via *Operation Clarity* and collected from the ESOP website.

**Therefore, our strategic goal as a division is to lead the Eshelman School of Pharmacy in becoming the number one school of pharmacy in annual NIH dollars.** Our approach to this is three fold: 1. Encourage and facilitate our faculty to continue to pursue and secure NIH funding opportunities, including large grants (e.g. P01, U01, U54, U19). 2. Hire faculty with innovative and complementary drug delivery technologies who can or already have acquired significant funding from the NIH as well as synergize with existing strengths at UNC-CH. 3. Encourage our faculty to pursue intellectual property and commercialization of their technologies to secure STTR/SBIR funding.

To identify the areas of interest to pursue NIH funding, we analyzed the funding

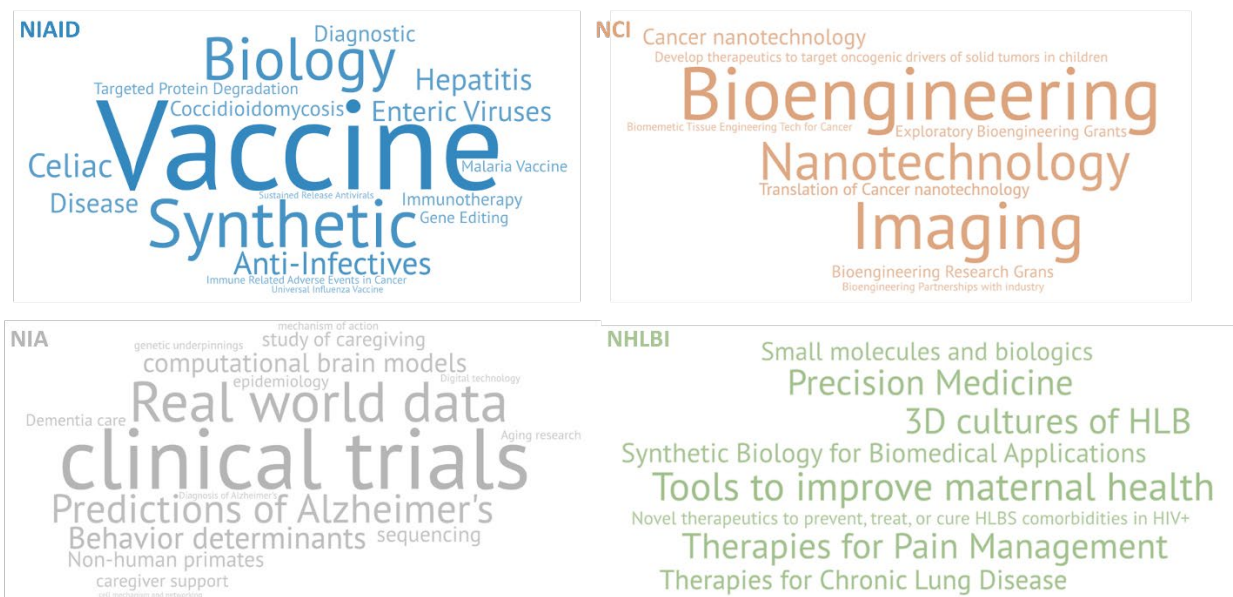




**Figure 7.** Percentage of total number of grants awarded (left) next to total grant dollars awarded for P01, U01, U19 and U54 grants in the last 10 years as reported by NIH Reporter.

Therefore, we will encourage our faculty to continue to pursue large grants and notable grants (e.g. T32) by connecting DPMP faculty with RFAs and grant leaders across the school and university, in these areas. It should also be noted that many of these areas are current strategic research priority areas for UNC (cancer,

infectious disease, and related to brain, data science and precision health). Additionally, it draws on the strengths of the Lineberger Comprehensive Cancer Center, the very rich infectious disease and immunology communities at UNC and the new School of Data Science and Society.



**Figure 8.** Word clouds of notices of special interest (NOSIs) and requests for applications (RFAs) available August 2023 for NIAID, NCI, NIA and NHLBI. These include topics of interest for the given institute for R, U and P grants. When available key words most pertinent to DPMP were selected, except for NIA where no pertinent words really correlated to research areas in the field, whether they be researchers at UNC or elsewhere.

Based on our analysis, researchers with the potential for or active funding from NIAID, NCI, and NHLBI areas will be of particular focus. This includes our indicated areas in Priority 1.1: (1) Data science and machine learning; (2) Cancer (particularly immunoengineering and vaccines); (3) Precision Health (particularly viral vectors, cell therapy, living pharmacy, and gene therapy). Of note, we will not preclude successful researchers in other areas, particularly if they help to further our goals of diversity and inclusion (Priority 3.1). Additionally, we recognize that established researchers in other institutes may not have the rich research environment present at UNC, and that their platforms may have the potential to synergize with existing researchers at UNC to establish greater funding.

We believe that this strategic goal will also contribute to the school and its global rankings by persistently generating a high number of publications, a strong history of highly cited publications having already been demonstrated (Figure 1). Additionally growing DPMP's world class research program would also contribute

to the training of graduate students at a high level (Figure 3, 4; Table 1). This in turn would significantly contribute to the prestige of our program. Overall, by advancing the DPMP research program, we have the opportunity to achieve several positive outcomes. This includes a notable increase in the acquisition of grant funding for the school, an increase in the number of citations for published work, and the graduation of highly skilled and accomplished trainees, all of which collectively contribute to enhancing the school's prestige, reputation and mission.

## Timetable of Outlined Goals

Priority	2022				2023				2024				2025			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Priority 1.1:</b> Recruit and hire faculty							o				o				o	
<b>Priority 1.2:</b> Foster collaborations through PharmAlliance		.					o				o				o	
DPMP Faculty presenting at PharmAlliance Meeting		.					o				o				o	
DPMP Graduate Students supported on fellowships and attending meeting							o				o				o	
<b>Priority 1.3:</b> Increase visibility of our Division's cutting-edge research activities.	.	.	.	.	.	.	o	o	o	o	o	o	o	o	o	o
Publish in high end journals	.	.	.	.	.	.	o	o	o	o	o	o	o	o	o	o
Engage on social media	.	.	.	.	.	.	o	o	o	o	o	o	o	o	o	o
Create a bi-annual Division Newsletter.		.		.	.	.										
Update the Division webpage as well as the webpage for each DPMP faculty member.	.	.	.	.	.	.	o	o	o	o	o	o	o	o	o	o
Contribute to development of individual lab websites.		.	.							o	o			o	o	
<b>Priority 1.4:</b> Maintain a Board of Advisors		.				.				o				o		
<b>Priority 1.5:</b> Promote CNDD	.	.	.	.	.	.	o	o	o	o	o	o	o	o	o	o
<b>Priority 2.1:</b> Provide training for writing fellowship applications		.	.			.	o			o	o			o	o	
<b>Priority 2.2:</b> Increase involvement of DPMP alumni		.	.			.	o			o	o			o	o	
<b>Priority 2.3:</b> Maintain a productive, inclusive, and student-forward mentoring atmosphere	.	.	.	.	.	.	o	o	o	o	o	o	o	o	o	o
<b>Priority 3.1:</b> Pursue faculty hiring which fosters diversity, equity, and inclusion.					.		o				o				o	
Recruit and retain diverse faculty							o				o				o	
Promote internal candidates from our outstanding graduate students through programs like the Carolina Post Doc Fellowship program.					.											
<b>Priority 3.2:</b> Recruitment and training of graduate students from diverse groups.			.				o	o	o	o	o	o	o	o	o	o
Online PhD recruitment event promoted at HBCUs and Minority Serving Institutes across the nation.			.				o				o				o	
Support faculty travel to nearby HBCUs (e.g. NC A&T) and Minority Serving Institutions							o				o				o	
Create a pre-doctoral T32 training program							o	o	o	o	o	o	o	o	o	o
<b>Priority 3.3:</b> Support undergraduates research from diverse undergraduate students.	.	.	.	.	.	.	o	o	o	o	o	o	o	o	o	o
Partner with the Chancellor's Scholars Program to support undergraduate students	.	.	.	.	.	.	o	o	o	o	o	o	o	o	o	o
Support Summer and PREP program students	.	.	.	.	.	.	o	o	o	o	o	o	o	o	o	o

Tasks are indicated a "O" for planned and "." for completed.



## Appendix A. SWOT Analysis

S Strengths	W Weaknesses	O Opportunities	T Threats
<ul style="list-style-type: none"> <li>• Training of much sought after formulation/drug delivery scientists on established and emerging technologies.</li> <li>• Unparalleled focus of researchers and curriculum on drug delivery</li> <li>• Internal resources including the Center for Nanotechnology in Drug Delivery (CNDD), Cancer Nanotechnology T32, and Eshelman Institute for Innovation.</li> <li>• External resources in Research Triangle Park for entrepreneurial activities and collaboration.</li> <li>• Entrepreneurial faculty with numerous patents and start-ups.</li> <li>• Faculty successful in achieving competitive NIH, NSF, and other funding.</li> <li>• Top students and post docs who are attracted to our unique program.</li> <li>• Alumni who have indicated desire to participate more in Division activities.</li> <li>• Collaborations through PharmAlliance.</li> <li>• NanoDDS and Carolina Nanoformulation Workshop led by Division/CNDD faculty.</li> <li>• Contributing board of advisors formed from alumni and other leaders in the field.</li> </ul>	<ul style="list-style-type: none"> <li>• A severely limited number of faculty with an additional planned retirement.</li> <li>• Laboratory space and funding for new faculty positions.</li> <li>• Increasing gaps in traditional areas of research strengths including viral vectors.</li> <li>• Lack of an engineering school at UNC.</li> <li>• Inability to attract competitive faculty because of lack of endowed chairs for Asst. and Assoc. level professors.</li> <li>• Faculty that do not represent the diversity of the students in the division.</li> <li>• Attraction of engineering faculty candidates who require higher salary than generally given in Pharmacy.</li> <li>• Lower pay for ESOP faculty in comparison with faculty in similar fields at UNC (e.g. BME).</li> </ul>	<ul style="list-style-type: none"> <li>• We are uniquely positioned between pharmacy and engineering which allows us to pull talent from both disciplines.</li> <li>• Intra-institutional collaborations with investigators in other divisions in the School as well as in the Schools of Medicine, Dentistry and Arts &amp; Sciences.</li> <li>• The newly started UNC School of Data Science and established UNC/NC State Biomedical Engineering and Applied Science department opens opportunity for collaboration, shared resources, and joint faculty positions.</li> <li>• Ongoing collaboration with other departments in the College of Engineering at NC State.</li> <li>• Carolina Nanomedicine Institute has been established but there have been no new recruits to offset the outstanding faculty departure in the last several years.</li> </ul>	<ul style="list-style-type: none"> <li>• The stagnant number of faculty over the last 5 years is not sufficient to support the number of graduate students.</li> <li>• Increasing partnerships of engineering departments with schools of pharmacy.</li> <li>• Alumni who are primarily focused on transitioning to careers in industry instead of academia, leaving a small pool in which to fill faculty vacancies.</li> </ul>

## Appendix B. Letters from Board of Advisors Members



University of California  
San Francisco

**Schools of Pharmacy and Medicine**  
Department of Bioengineering and Therapeutic Sciences

**Tejal Desai, PhD**  
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July 18, 2022

Dear Angela-

As you may know, I was one of six members of the DPMP Board of Advisors that met in May. When Kristy approached me to serve on the board, I immediately accepted because as former Chair of the Department of Bioengineering and Therapeutic Sciences (BTS) in the UCSF Schools of Pharmacy and Medicine, I knew the challenges and opportunities that can come from leading a unit that produces both high level research and teaching. Furthermore, as the incoming Dean of Engineering at Brown University, I have been engaged in strategic planning for multiple departments and units. Also, I know from its reputation that DPMP has a similar entrepreneurial spirit that I helped to develop at UCSF when I put together the Health Innovative via Engineering (*HIVE*) program. Although DPMP has a lot of similarities to BTS in that it houses engineers and scientists, DPMP is very uniquely focused on Drug Delivery technologies which contributes significantly to its world-wide reputation and stature. Moreover, it is apparent that DPMP contributes significantly to UNC Eshelman School of Pharmacy's #1 ranking due to its high impact scholarship and visibility.

When the board met with Kristy, Julianne, Leaf, and Owen, Kristy did a fantastic job presenting the highly notable accomplishments of the division. For such few tenure track faculty members as there are in DPMP, the board was really impressed that as a unit they had over \$70M in active total funding and nearly 80 publications in 2021. It is hard to imagine other divisions at UNC having such potent activity from faculty who are able to so effectively secure funding and push their cutting-edge research forward. Certainly this translates to the reputation the division holds as world leaders in drug delivery and undoubtedly contributes significantly to the total grant dollars of the school.

Looking towards the promising future of DPMP, there was a significant concern by all the board members related to recent and planned retirements. Although the recent hire of Dr. Fenton was noteworthy, it was clear that the hires by the division have not kept up with the retirements and faculty leaving for the past several years. This is concerning because many faculty critical to the success of DPMP and its worldwide reputation (such as Leaf) are edging closer to retirement and although many of the current faculty members are wonderfully growing their reputation in the field, I know as a former chair their trajectories can be easily shifted to meet the service and teaching needs of a shrinking division. Kristy discussed the clear need to focus and grow the diversity of faculty as well but securing funding for startups and salary will be critical for her to accomplish this. She discussed the planned additional hiring of two faculty in the neuroscience field and this will certainly aid in the shrinking division, but not solve the problem at hand as in 2021 alone two faculty members left

and two more are near retirement in the short term. Continued support to grow the ranks of DPMP is needed, and support which can competitively attract diverse faculty is desperately required to maintain the world-class stature and reputation of research DPMP carries.

I can speak for the board when I say that Kristy and Juliane are leading DPMP in the right direction. DPMP is a shining example of a productive and highly impactful department, but I am concerned they will be unable to continue this trajectory without the resources they need from the school. Support for hiring multiple tenure track faculty is critical, as the division is shrinking considerably in size. The division clearly has the environment to grow leaders in the field of drug delivery but to continue its reputation, proper support in this critical time is needed, else DPMP may drop in stature and grant support.

Thank you for the opportunity to participate in this review and I am happy to discuss any questions you may have.

Sincerely,



Tejal Desai



Dylan Glatt, PhD  
Scientist, Preclinical and Translational  
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Dear Dean Kashuba,

I am one of six members of the DPMP Board of Advisors (BOA or "Board") that met with Kristy's team and invited guests in May 2022. I graduated from the UNC Eshelman School of Pharmacy 6 years ago with my PhD, and have worked in industry since that time – first, at Gilead for nearly 4 years and now on the Therapeutics team at 23andMe for the last 3 years. **My position as a DPMP Board member has given me visibility into the Division's impact and achievements, and I am inspired to support my alma mater and foster the development of leaders and leading research in our industry.**

I was particularly struck by the Division's productivity and output that Kristy highlighted during our first meeting. Given the few tenure track faculty in DPMP (< 10), it is incredible to see that they have been awarded \$70M in active total funding (nearly \$10M/faculty), and produced an enormous body of work, including 80 publications in 2021 (around 10/faculty), multiple startups, and dozens of patents. This output, in number and quality, has by no surprise resulted in **numerous recent awards for DPMP faculty from global societies and organizations**, like the Founders Award to Sasha from the Controlled Release Society, College of Fellows inductees for Kristy and Leaf, and numerous others for Julianne, Shawn and Sam. The Division has established and continued its reputation as world leaders in drug delivery, and these accolades significantly contribute to reputation, standing, and influence of the School.

While the accomplishments and productivity of DPMP are outstanding, **I am concerned about the impact that recent and planned retirements from DPMP will have on the number of tenure track faculty in the division**, and as a result, on maintaining the impressive productivity and influence of DPMP and the School overall. **I am writing today to request that the School immediately increase the number of DPMP tenure track faculty**, and moreover, to provide the resources, tools, and infrastructure to attract **and retain** key faculty hires.

The decrease in tenure track DPMP faculty following these retirements will increase the administrative and teaching burden on current faculty. Although many of the current faculty members are wonderfully growing their reputation in the field and their contributions to the Division can be shifted to meet the service and teaching needs of a shrinking Division, **not acting now to increase faculty numbers could impact research funding, output, Division reputation, and the School's standing in both near and long term.** Meeting this moment must be a priority.

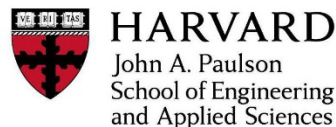
Kristy discussed the clear need to focus and grow the diversity of faculty, but securing funding for startups and salary will be critical to attract candidates. In this context, Kristy discussed the planned additional hiring of two faculty in the neuroscience field. In industry, salaries have risen exceptionally sharply over the past 2 years; for example, **entry level salaries in industry today are equivalent to what would be garnered after 5-10 years of experience compared to when I began in industry in 2016, representing a 30-40% increase.** Given the competition and the buying power of industry and institutions alike, I would fully anticipate **these key talent hires will require substantial startups and salaries to ensure they will join DPMP's ranks.**

Success securing these two-neuroscience faculty will aid in the shrinking division problem, but it is not a near or long term solution, as in 2021 alone two faculty members left and two more are near retirement in the short term (**reducing DPMP tenure track faculty by nearly 50%**). Although the recent hire of Owen was noteworthy, it is clear that the hires by the Division have not kept up with the retirements. This situation underscores that continued support to grow the ranks of DPMP is needed, and support which can competitively attract diverse faculty is particularly important to maintain the globally-recognized stature and reputation of research DPMP carries.

In summary, **the upcoming DPMP faculty shortfall presents a very real chance that the Division could fall behind at a moment when the field is burgeoning, and investment is growing.** Consider the role drug delivery has played in society recently. The speed and success of commercially-available lipid-based nanoparticle mRNA vaccines for COVID-19 is a testament to the impact of drug delivery as a field and tremendous opportunities ahead. Increasing the number of tenure-track faculty is no doubt the foremost headwind for DPMP. I encourage the School to immediately prioritize investing in additional DPMP tenure track faculty, preferentially with diverse and underrepresented backgrounds, to fortify the Division's reputation, influence, and ultimately, the School's standing.

Thank you,  
Dylan Glatt, PhD  
DPMP Board and 2016 UNC ESOP alumnus





August 13, 2022

Dr. Angela Kashuba  
Dean, John A. and Margaret P. McNeill, Sr. Distinguished Professor  
University of North Carolina, Chapel Hill

Dear Dr. Kashuba,

We have not met before, but it is my pleasure to write to you today. I am a member of the Advisory Board of the DPMP division in your school. When Prof. Kristy Ainslie approached me to serve on the Board, I immediately accepted because as a past chair of Bioengineering at Harvard, I know the value of external advisors. In addition, I am a long-time admirer of so many of the DPMP faculty and was the PhD advisor for Aaron Anselmo. Through these relationships and my related research interests, I know that DPMP is recognized as a world leader in drug delivery, not only because of its world-class researchers, but also because of its unique position focused solely on the training of students and postdocs in drug delivery technologies. I believe that the reputation of DPMP and its researchers contributes significantly to the UNC Eshelman School of Pharmacy's #1 ranking.

In May this year, I met with Kristy and DPMP members as part of the Board of Advisors. During the board meeting, we discussed many of the notable accomplishments of the division. We were all impressed that such a small division had over \$70M in active total funding and nearly 80 publications in 2021. This is a truly impressive accomplishment.

During the meeting, Kristy also discussed aspects of future faculty hires. While I completely understand that faculty hires are contingent on multiple determining factors and that this is an internal matter to DPMP and your office, I wanted to take this opportunity to express my opinion as a member of the Advisory Board in case you find it helpful. Kristy told the board that only two additional hiring slots have been allocated to DPMP to secure future faculty. The addition of Owen is significant; however, there was a concern that two hires may not support continued future excellence, especially given the upcoming retirements and recent departures. The decrease in faculty members will undoubtedly impact current members' ability to maintain such a high level of research funding, which may pose a hurdle to maintaining DPMP's world-wide standing as leaders in drug delivery. The board agrees that Kristy and Julianne are pushing the division forward in a positive direction. However, the size of the faculty will contribute, in addition to the quality, to the standing and ranking of the division and the school at the national and international level. As many institutions seek to build future plans around their existing strengths, DPMP, a crowning jewel of your school, certainly comes to mind as a key strength to build on. I thought you might find my comments helpful. I am happy to provide any additional comments and I look forward to meeting you some day in the future.

Sincerely,



Prof. Samir Mitragotri, Ph.D.

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