MATTHEW R. GRENNAN
ASSISTANT PROFESSOR, HEALTHCARE MANAGEMENT
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March 29, 2015

Thomas Hellmann
Professor of Entrepreneurship and Innovation
Saïd Business School, University of Oxford
Research Associate, NBER

Dear Professor Hellman:

I am writing to recommend Kyle Myers for the NBER Entrepreneurship Research Boot Camp 2015. Kyle is a current PhD student in Health Care Management and Economics at the Wharton School, University of Pennsylvania, whose research focuses on innovation in health care and the biological sciences. I have known Kyle since 2012 when he entered the PhD program, but have come to know him well over the last six months while he has worked as a Research Assistant on a project on the effects of physician-industry interactions on treatment patterns and scientific output.

Through my work with him, I can certify that Kyle has excellent core research skills as an economist, but I have been particularly impressed with his ability and initiative in obtaining data, developing institutional knowledge, and performing independent data analysis. Because of his demonstrated skill and contributions, I am almost certain we will invite Kyle to be a full co-author as we begin to develop the first paper from this project.

In addition to his work with my team, Kyle has several projects of his own and with other professors, including: demand and supply effects on pharmaceutical innovation with Mark Pauly; the role of the public sector in scientific productivity and commercialization with David Hsu; and management of innovation with John Kimberly and solo. These projects demonstrate the high esteem with which the Wharton faculty hold Kyle as well as his own energy and enthusiasm for innovation research in areas that have clear links to entrepreneurship.

Strengthening these links to entrepreneurship is where I believe the ERBC will most benefit Kyle. He has already dipped his toe into the space in a PhD course with David Hsu, but I think the ERBC could be an experience that helps Kyle to solidify his research path and how he wants to contribute in the entrepreneurship and innovation space as he begins his academic career.

More generally, I think Kyle will be a positive addition to the ERBC experience for his classmates. He is smart, friendly, and mature. He compares favorably to recent ERBC alums who I know well and have done the program proud over the last few years (Christian Catalini, MIT; Hong Luo, HBS). I expect that Kyle would follow in their footsteps.

Sincerely yours,



Matt Grennan

Management Department

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David H. Hsu
Richard A. Sapp
Associate Professor of Management

March 30, 2015

Prof. Thomas Hellmann
Saïd Business School, University of Oxford
Park End Street, Oxford OX1 1HP, UK

Dear Thomas,
While my colleague Matt Grennan is writing a formal letter of recommendation on behalf of **Kyle Myers** for this summer's NBER Entrepreneurship boot camp, I wanted to quickly add my endorsement of Kyle's application. Kyle, a doctoral student in Wharton's Health Care Management area, is a highly promising candidate. I offered a PhD class on the topic of Innovation and Entrepreneurship, and Kyle was one of the top students in the class. When I was contacted about a research opportunity that fell in the domain of program evaluation of a public initiative in the health sciences space, I immediately thought about Kyle. Although I am not at liberty right now to publicly describe too much detail about this program evaluation, I think it will be very exciting, as it lends itself to a regression discontinuity type analysis regarding scientific and commercial trajectories in public-funded vs. unfunded basic health sciences research. I have recruited Kyle to be the primary research assistant for this project, and my expectation is that we will become co-authors on this research effort.

I think Kyle is starting to hit the sweet spot for the boot camp, which is far enough along in the program to be able to dig into the research papers in the boot camp, but with still plenty of time left in his doctoral studies to benefit from systematic coverage of the entrepreneurship and innovation literatures to shape his dissertation research. This would supplement the instruction he has received at Wharton. In summary, Kyle has a capacity to learn a great deal from and contribute to the program. For that reason I strongly endorse Kyle's candidacy. Thanks for your consideration, and please let me know if you would like to clarify or discuss the above.

Best wishes,



David Hsu

Application to the 2015 NBER Entrepreneurship Research Boot Camp, Kyle R. Myers

Enclosed is my application for the 2015 NBER Entrepreneurship Research Boot Camp including my Curriculum Vitae with completed coursework, and a two-page essay on my motivation for attending and descriptions of my current and future research directions. A letter of recommendation from one of my advisors, Professor Matt Grennan, will also be submitted separately.

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Kyle R. Myers, MS

PhD Student, Department of Health Care Management and Economics, The Wharton School, University of Pennsylvania

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Kyle R. Myers, M.S.

Ph.D. Student
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myersky@wharton.upenn.edu | 301.639.3452

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Pennsylvania State University, Schreyer's Honors College
M.S., Health Policy & Administration, 2010
B.S., Biology, 2010

Research Interests

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Department of Health and Human Services Emerging Leader Fellow, Public Health Analyst, 8/10 – 7/12

Booz Allen Hamilton Inc.
Research Assistant, Global Information Technology Team, 5/08 – 8/08

Dynport Vaccine Company
Assistant Senior Manager, Regulatory Affairs, 5/07 – 1/08

National Cancer Institute – Lab of Genomic Diversity
Cancer Research Training Award Fellow, 7/04 – 8/05, 5/06 – 8/06

Projects in Progress

"Supply and Demand Determinants of Innovation in the Pharmaceutical Sector", with Mark Pauly

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Motivation and Research Directions

I am very excited by the potential opportunity to attend NBER's Entrepreneurship Research Boot Camp. It is a rare occasion to be able to learn the seminal work in a field from the authors themselves, and I would surely make good use of this chance. My interests in entrepreneurship strategy and policy are what initially pulled me out of the biology labs and into the social sciences – I was often more interested in brainstorming commercial applications of findings than the findings themselves. Now that I have become quite comfortable with my theoretical and empirical fundamentals, I would appreciate this opportunity to take the deep dive into this literature so that I may enrich my understanding of the field and make my own contributions. Below are the questions that I foresee steering my future research pursuits, some of which I have begun preliminary work on and hope to develop into my dissertation:

What factors underlie the knowledge production function and how are gains achieved in managing this discovery process (or are they)? A classic tension in the management of innovation and entrepreneurial behavior is determining the extent to which management should be "top down" by the manager or planner, or "bottom up" by the scientists and experimenters. The optimal balance of these schemes will be largely driven by the extent to which management and scientists have (a) different preferences for types of potential outcomes, and (b) private information as to the potential for success. Examining this tradeoff and the effects on productivity empirically has been quite difficult, because not only are the parameters involved complex and difficult to measure (e.g. scientific outputs, research field), but most events observed in the real world are endogenous outcomes from systems that have taken this tradeoff into consideration – results observed in these circumstances are likely to overstate the benefits of either scheme. In order to overcome this difficulty, I am currently developing a research proposal that would utilize administrative data from the NIH along with plausibly exogenous variations in funding opportunities to identify determinants of scientific productivity and commercialization and the mediating role of different management schemes. I am especially encouraged by recent advances by researchers such as Pierre Azoulay and colleagues on the quantification of typically imprecise concepts such as a research "field" and the "relatedness" of research efforts. I wish to combine these new tools with the increasingly detailed datasets on scientific outputs and business outcomes in order to further explore the role of the scientist-entrepreneur.

What are the demand- and supply-side determinants of innovation in the pharmaceutical and health care sectors? Understanding the key demand- (i.e. market size) and supply-side (i.e. scientific opportunities) determinants of innovation in these sectors has important implications for a number of public policies including IP rules, insurance regulations, and the funding of biomedical research. While a number of papers have estimated the elasticity of innovation with respect to (potential) market size, few have been able to reasonably incorporate considerations for time-variant supply-side factors, in particular, research funded by the NIH. In current work along with Mark Pauly, I am investigating trends in the elasticity of pharmaceutical innovation with respect to potential market size and NIH funded research. Our preliminary findings indicate no significant drop in market responsiveness when appropriately accounting for differences across drug classes in contrast to the "crisis" warned of by many industry observers. The secular stagnation in output post-2000 across all classes appears to be driven by a shift towards the development of first-in-class and specialty drugs that have fewer therapeutic substitutes, which often facilitates larger markups in an

industry increasingly reliant on reference pricing. Furthermore, NIH research is correlated with new drug approvals with estimates that are insensitive to a variety of empirical specifications. I am particularly interested in expanding on this work to investigate the role of entry and young firms and the strategies taken by incumbents in this sector (and other industries), which has historically been defined by high barriers to entry, but has seen an increasing rate of disruptive entrepreneurs. Namely, are smaller and/or newer firms more responsive to certain types of markets or scientific opportunities?

What role do public R&D grants play in scientific productivity and generating commercial opportunities? Although a large body of literature has examined the crowd-out (or crowd-in) phenomenon in settings such as social insurance and state budgets, I am particularly interested in the role of public R&D subsidies. While traditional theories in this realm have focused on the appropriability of rents as the chief factor delineating when to subsidize R&D, interesting new work has highlighted the role of public grants in funding very risky "proof-of-concept" work for startups. I am very interested in examining these public-private interactions in other high-risk fields such as applied biomedical research. I have recently began working with David Hsu on a project in this vein, where we plan to make use of administrative data on R&D awards to examine the behavior of scientists that experience shocks to their funding environment.

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