January 20, 2022

To the selection committee:

Please find below the application materials to the NBER Summer 2022 Innovation Bootcamp for Matt Clancy. A recommendation letter from Heidi Williams will also be submitted separately. As I expressed to her, there is a chance that I may not be able to attend the bootcamp, if I am selected and it is held in-person. That said, I am applying in the hope that, if selected, I will in fact be able to attend (in person).

My contact details are below.

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University email: mclancy@iastate.edu
Mobile: (319) 530-8099

Address:
0030B Curtiss Hall
513 Farmhouse Lane
Ames, Iowa 50011

Sincerely,
Matt Clancy
Iowa State University

Matthew S. Clancy

515-294-1802
mclancy@iastate.edu
websites: matt-clancy.com, newthingsunderthesun.com
Twitter: @mattsclancy

Employment

Iowa State University – Department of Economics 2018-Present
Assistant Teaching Professor – Agricultural Entrepreneurship Initiative
Associate Member of the Graduate Faculty (Department of Economics)

Economic Research Service – United States Department of Agriculture 2015-2018
Research Economist

Research Interests

Economics of Innovation, Industrial Organization, Agricultural Economics, Remote Work

Education

PhD (Economics)	*Iowa State University*	2015
MSc (Economics)	*London School of Economics, U.K.*	2010
Diploma (Economics)	*University of Cambridge, U.K.*	2007
BS (Physics)/BA (Religious Studies)	*Iowa State University*	2006

Digital Projects

NewThingsUnderTheSun.com – A living literature review on social science research related to innovation. Over 4,400 subscribers to the associated newsletter (January 2022). Site launched in August 2021. Supported by a grant from Emergent Ventures in 2021, a forthcoming grant from the Institute for Progress in 2022.

301.withorbit.com – Online intermediate microeconomics course mixing short video lectures with personalized review questions built on the Orbit platform. Launched February 2021 with Andy Matuschak.

Publications

Clancy, Matthew, Paul Heisey, Yongjie Ji, and GianCarlo Moschini. Forthcoming. The Roots of Agricultural Innovation: Patent Evidence of Knowledge Spillovers. Chapter in *The Economics of Research and Innovation in Agriculture*, ed. Petra Moser. *National Bureau of Economic Research.*

Sneeringer, Stacy, and Matt Clancy. 2019. Incentivizing New Veterinary Pharmaceutical Products to Combat Antibiotic Resistance. *Applied Economic Perspectives and Policy* ppz022.

Sneeringer, Stacy, Maria Bowman and Matthew Clancy. 2019. The Animal Pharmaceutical Industry in the Age of Antibiotic Resistance: Trends in Demand and Supply of Antibiotics for Food Animal Production. *USDA Economic Research Service Economic Research Report 264.*

Gold, Richard E., et al. 2019. An Open Toolkit for Tracking Open Science Partnership Implementation and Impact. Outcome of the Designing Indicators for Open Science Performance Workshop, London UK, 2018

Clancy, Matthew. 2018. Combinations of Technology in US Patents, 1926-2009: A Weakening Base for Future Innovation? *Economics of Innovation and New Technology*.

Clancy, Matthew, and GianCarlo Moschini. 2018. Mandates and the Incentive for Environmental Innovation. *American Journal of Agricultural Economics* 100(1): 198-219.

Clancy, Matthew. 2017. Inventing by Combining Pre-Existing Technologies: Patent Evidence on Learning and Fishing Out. *Research Policy* 47(1): 252-265.

Clancy, Matthew, and GianCarlo Moschini. 2017. Intellectual Property Rights and the Ascent of Proprietary Technology in Agriculture. *Annual Review of Resource Economics* (9): 53-74.

Fuglie, Keith, Matthew Clancy, Paul Heisey, and James MacDonald. 2017. Research, Productivity, and Output Growth in U.S. Agriculture. *Journal of Agricultural and Applied Economics*: 1-41.

Fuglie, Keith O., Matthew S. Clancy, and Paul W. Heisey. Forthcoming. Private Sector Research and Development. Chapter in *Handbook of Agriscience and Agribusiness*, ed. N. Kalaitzandonakes.

Clancy, Matthew, and GianCarlo Moschini. 2013. Incentives for Innovation: Patents, Prizes, and Research Contracts. *Applied Economic Perspectives and Policy* 35(2): 206-241.

Working Papers

Clancy, Matthew. 2021. Citation Games in Science. Invited seminar at Drake University.

Clancy, Matthew. 2021. Is technological progress in agriculture slowing down? OECD Conference on AI and the Productivity of Science.

Clancy, Matthew. 2018. How Deep are the Roots of Agricultural R&D? Evidence from Patents. Selected presentation at 2018 AAEA Annual Meeting.

Clancy, Matthew, and Stacy Sneeringer. 2018. Eating the Seed Corn? The Impact of Generic Drug Entry on Innovation in Animal Health. Forthcoming selected presentation at 2018 AAEA Annual Meeting.

Clancy, Matthew, and Stacy Sneeringer. 2018. How Much Does it Cost to Induce R&D in Animal Health? Forthcoming selected presentation at 2018 AAEA Annual Meeting.

Clancy, Matthew, and GianCarlo Moschini. 2016. Pushing and Pulling Environmental Innovation: R&D Subsidies and Carbon Taxes. Prepared for 2016 AAEA Annual Meeting in Boston, MA. http://purl.umn.edu/235710.

Presentations

"Citation games in science." 2021. Invited seminar. Drake University.

"Is technological progress in agriculture slowing down?" 2021. OECD conference on AI and the productivity of Science.

"Putting the studies in progress studies." 2021. Progress Studies Summit. San Francisco, CA.

"The State of Private Agricultural R&D in the States: New Data from Patents." 2021. USDA ERS Brown Bag lunch series.

"The Case for Remote Work" 2021. NASA Langley Future of Work Seminar Series; 2021 Work From Anywhere Event; 2021 NorthernLands 3 conference; 2020 Challey Institute for Global Innovation and Growth at North Dakota State University; 2020 Northernlands 2 conference.

"The Roots of Agricultural Innovation: Patent Evidence of Knowledge Spillovers." 2020 AEA ASSA Annual Meeting (session on "Studying Innovation in Agriculture – New Data and New Tools"). San Diego, CA; 2019 NBER Conference on the Economics of Research and Innovation in Agriculture (with GianCarlo Moschini, Paul Heisey, and Yongjie Jie), Washington, DC

"The Economics of Innovation in Animal Health." 2019 Anivive company retreat. Los Angeles, CA.

"Does Regulation Hurt Innovation in Animal Pharma? The Case of New Animal Antibiotics." Poster (with Stacy Sneeringer) at 2017 AAEA Annual Meeting, Chicago, IL.

"Private R&D: Structure, Competition, and Incentives for Agricultural Biotechnology." Presentation at 2017 International Consortium on Applied Bioeconomy Research, Annual Meeting, Berkeley, CA.

"US Agricultural R&D in an Era of Falling Public Funding." Presentation at 2017 Aquaculture America Conference, San Antonio, TX.

"Pushing and Pulling Environmental Innovation: R&D Subsidies and Carbon Taxes." Paper presented at the 2016 AAEA Annual Meeting, Boston, MA.

"Incentivizing R&D for New Products for Use in Food Animal Agriculture." Presentation (with Stacy Sneeringer) to June 21 2016 Public Meeting of the Presidential Advisory Council on Combating Antibiotic-Resistance Bacteria, Washington, DC.

"Mandates and the Incentives for Innovation." Paper presented at the 2014 AAEA Annual Meeting, Minneapolis, MN.

Non-Peer Reviewed Publications

Clancy, Matthew and Adam Ozimek. 2021. The Case for a More Distributed Federal Workforce. Report for *The Progressive Policy Institute.*

Clancy, Matthew. 2021. What Ails the Social Sciences? Work in Progress Issue #3

Clancy, Matthew. 2020. The Case for Remote Work. Report for *The Entrepreneur Network*.

Clancy, Matthew. 2020. Remote Work's Time Has Come. City Journal.

Clancy, Matthew. 2020. Remote Work is Here to Stay. The Economist Intelligence Unit Blog.

Clancy, Matthew, Keith Fuglie, and Paul Heisey. 2016. U.S. Agricultural R&D in an Era of Falling Public Funding. USDA Amber Waves.

Grants

Emergent Ventures Progress Studies Fellow, 2020
USDA Economic Research Service Cooperative Grant, 2018-2020

Awards and Honors

Amber Waves Best Feature, *USDA Economic Research Service,* 2016.
Best Dissertation, *Center for Agricultural and Rural Development*, 2016
Outstanding Dissertation, *Agricultural and Applied Economics Association*, 2016
Outstanding AEPP Article Award, *Agricultural and Applied Economics Association,* 2014
Brown Graduate Fellowship, Iowa State University, 2014
USDA National Needs Graduate Fellowship, 2011-2014
Nils Olsen Graduate Fellowship, Iowa State University, 2010
MSc with distinction, London School of Economics, 2010

BS/BA with distinction, Iowa State University, 2006
Phi Beta Kappa, 2005
National Merit Scholar, 2002-2006

Teaching

Iowa State University, *Instructor*

Economics 383X – Economics of Innovation	2019
Economics 416 – Industrial Organization	2019, 2020
Economics 301 – Intermediate Microeconomics	2021, 2020, 2019, 2018
Economics 101 – Principles of Microeconomics	2014, 2018

Professional Activities

Membership: Presidential Advisory Council on Combatting Antibiotic-Resistant Bacteria (PACCARB) Strategic Planning Working Group (2016-2018), American Economic Association, Agricultural and Applied Economics Association

Invited Participant: Designing Indicators for Open Science Performance, London UK, 2018

Referee: *American Journal of Agricultural Economics, Agricultural and Resource Economics Review, Applied Economic Perspectives and Policy, BE Journal of Economic Analysis and Policy, Canadian Journal of Agricultural Economics, Economics of Innovation and New Technology, Journal of Economic Management and Strategy, Journal of Economic Teaching, PLOS ONE, Research Policy*

President: Iowa State University Economic Graduate Student Association, 2011-2012

Non-Academic Experience

Business Monitor International, U.K.

Sub-Saharan Africa Economic Analyst, 2007-2009

Other

ChangeMaker Academy (Co-head): extracurricular program for undergraduates interested in entrepreneurship, run through the Agricultural Entrepreneurship Initiative

Programming – Python, R, Matlab

Citizenship – Dual US/Irish

Statement of Interest
Matt Clancy

I'm a bit of an atypical innovation scholar. For the last two years, my primary scholarly output has been a series of 44 (and counting) syntheses of recent academic research that I self-published, originally on a substack newsletter and now on a dedicated website called New Things Under the Sun. This project has been quite successful – starting from under 100 subscribers in December 2019, the number of subscribers to the (free) newsletter now exceeds 4,000 and continues to grow. Subscribers include many academics and policymakers. For 2021, this project was supported by a grant from Emergent Ventures at the Mercatus Center, and for 2022 it is supported by the Institute for Progress, a new nonpartisan think tank with one of its core focuses in metascience. This support has reduced my teaching load which has made it possible for me to devote significant ongoing time to this project.

The mission of New Things Under the Sun is to be an accessible but rigorous living literature review on social science research related to innovation, science, and creativity. The primary focus is the economics of innovation. While I remain active in original research (as described below), it's my ambition to make New Things Under the Sun my professional life's work.

My reason for wanting to attend the bootcamp is in support of this ambition. The bootcamp will provide a useful alternative perspective on what the core questions of the field are at this time, which will inform future coverage of it. Moreover, synthesizing recent academic work in an honest and rigorous way requires the ability to critically examine and evaluate new research. It's my hope that participation in the workshop will help me remain fluent with the current knowledge frontier.

Besides all that, I do conduct original research as well. I currently have three projects underway.

First, I have an applied theory paper modeling the credit economy in science. In the model, scientists work to determine whether "claims" are true or false, by generating signals via research that they use to update beliefs. The key challenge is that scientists cannot investigate individual claims on their own. Instead, scientists must bundle together multiple claims to form a hypothesis – think of how an economics paper might draw on claims from a theoretical model, claims about a dataset, and claims about the efficacy of various econometric techniques. In the model, scientists follow a priority norm, citing the first scientist to investigate any claim they include in their hypothesis, and are motivated to maximize the citations their own work receives. The core result is a Nash equilibrium wherein the optimal strategy is to form a hypothesis consisting of a single novel claim (for which the scientist can claim priority) coupled with other claims that have the maximum probability of being true. Given the model of interdependent signals, this turns out to be the way to send the strongest possible signal about the truth status of a novel claim. This, in turn, is desirable because scientists in future periods will prefer to use claims that they have the highest confidence are true.

My second project is empirical and extends earlier work that resulted in the NBER conference chapter "The Roots of Agricultural Innovation: Patent Evidence of Knowledge Spillovers." This

project developed a new dataset of patents for primarily agricultural technology, and attempted to measure, in a variety of ways, the extent to which agriculture drew on ideas developed from within agriculture versus from without. For example, we looked at citations to patents, citations to academic journals, and developed a novel method of text analysis.

My ongoing work on this topic is funded by a cooperative agreement with the USDA to develop for them a set of state-level agricultural knowledge stocks, based on this patent dataset. USDA eventually hopes to use this to study linkages between private sector agricultural R&D and agricultural productivity. These datasets have been developed, including some novel proxies of total private sector agricultural R&D, measured in dollars, at the level of individual states. I also used patent citations to try and develop improved estimates of the rate of knowledge depreciation. This cooperative grant is set to expire soon, culminating in a chapter describing this work. Going forward, I am considering some new projects with this dataset.

My third current project is in its earliest stages and is coauthored with Joel Chan (and potentially others). The goal is to assess how the "legibility" of a scientific contribution affects researchers' appetite for novelty. In some domains, it may be more difficult to assess the quality of highly novel work; in these domains, it may be that novel work is less highly cited and consequently, less highly novel work is attempted. In other domains, it may be that it is easy to assess the quality of work, irregardless of its novelty; in these domains, it may be that novel work is not penalized and therefore more highly novel work is attempted.

We hope to test this empirically in two ways. First, we plan to use the field of machine-learning and the corpus of papers submitted to arXiv as an empirical test of these ideas. Research in machine learning is characterized by the use of benchmark tests, such as how accurately an algorithm can classify a standard set of images. This means research in this field can be explicitly scored based on how well algorithms perform at standardized tasks. We hope to use a difference-in-differences approach to study how research changes when these benchmark tests are created across different subdisciplines of machine learning.

Second, we hope to complement this with a broad cross-sectionally study of science in general, correlating differences in the legibility of fields or sub-disciplines with researcher appetite for novelty. Various metrics have been proposed for ordering fields by their "legibility", but a major hurdle is the definition of a coherent measure of novelty that is consistent across fields.

As the above makes clear, my research interests span several domains: applied theory, descriptive empirical work, and causal inference research designs, using patents and papers. This strategy is probably sub-optimal for a traditional tenure-track academic, who might do better by specializing a bit more. Fortunately, I am not on the tenure track though. Besides my intrinsic interest in these questions, my main motivation to do this work is so that it can elevate my work as a careful reader and synthesizer of academic research across multiple domains. Active research and collaboration across domains is one way I can retain some of the tacit knowledge that goes into synthesizing research and writing accessibly about it.

Cover letter

I am writing letters for several PhD students and recent PhDs for the Innovation Research Boot Camp. So far, 2022 has been a bit of a disaster as our kids' school delayed their opening and has then been remote due to COVID. Given my reduced work hours, I hope that you will forgive me for sending letters when available that I have written for other purposes, or short letters when I have not previously written a letter for the student previously. This in no way reflects on the students, but rather just reflects the disaster of my 2022 schedule. Thank you for your understanding.

Heidi Williams (hlwill@stanford.edu)

Stanford University

HEIDI WILLIAMS
Charles R. Schwab Professor of Economics

Dear all,

I am delighted to be writing with my very strong recommendation of **Matt Clancy** for the NBER Innovation Research Boot Camp.

Matt is probably the person I know who would benefit most from attending the boot camp. He has a very non-traditional career path – he did his PhD at Iowa State and is now an assistant "teaching professor" there. Most of us know him for his newsletter NewThingsUnderTheSun.com, which beautifully synthesizes literature related to the economics literature. He is amazingly knowledge, a huge public goods provider, but is – self-described – not very "well-connected" to researchers in the field. Everyone else would tremendously benefit from having him attend the boot camp, and vice versa.

This letter is very short because I think the case for accepting him is incredibly clear.

Sincerely,



Heidi L. Williams

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