



A Field Experiment on
Search Costs and the
Formation of Scientific
Collaborations

Ina Ganguli
Dept of Economics
University of
Massachusetts Amherst

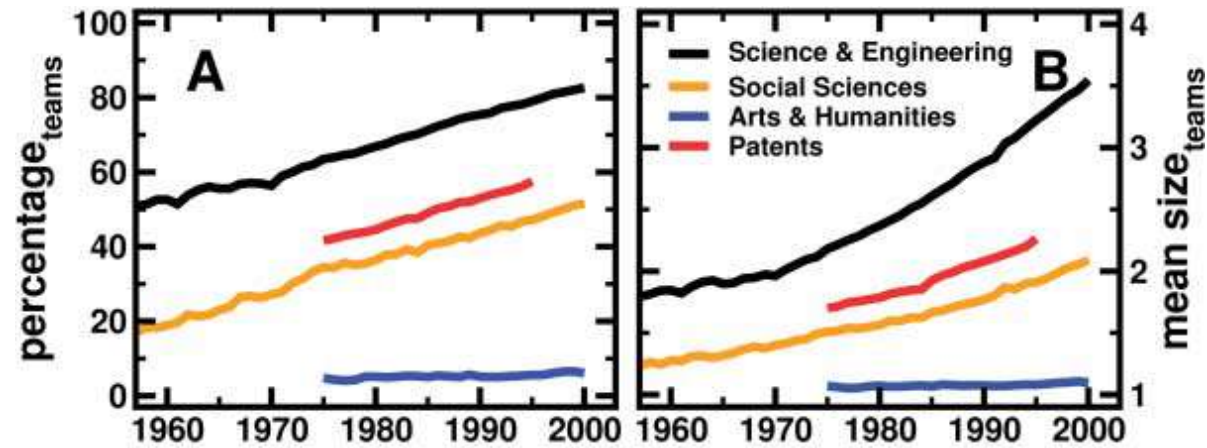
IGL 2018 Global Conference
June 13, 2018



I. How Do Collaborations Form?



Dominance of Teams in Production of Knowledge



Source: Wuchty, Jones, Uzzi (2007)

Most Collaborators Are Close

- Geographic proximity and pre-existing social ties dominate the formation of collaborations
- Acquiring information about potential collaborations may be costly and lead to search frictions



Setting: Harvard Medical School

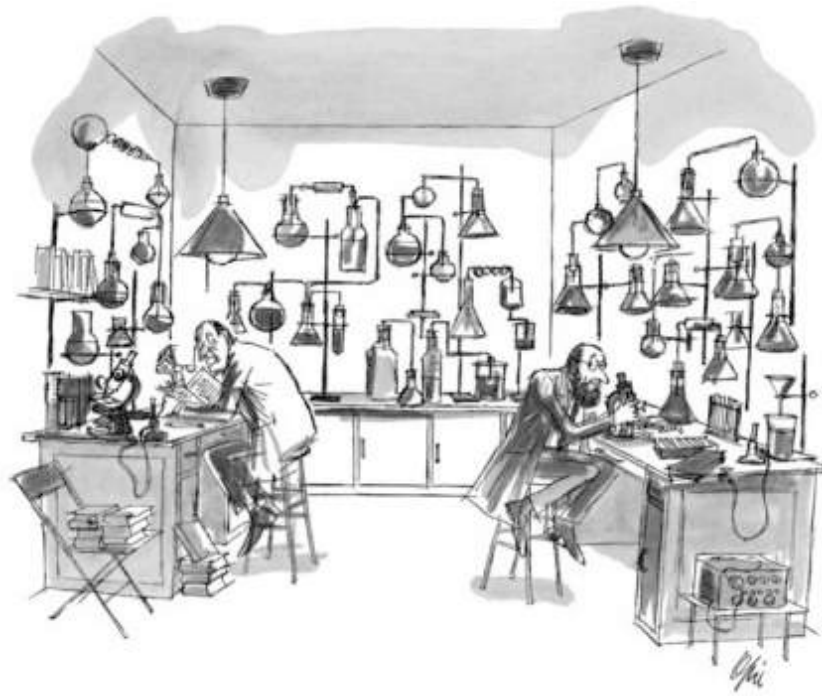
17 affiliated hospitals and
research institutes

More than 11,000 faculty
Receives more than \$1.5
billion/year in NIH Funding

Accounts for approx. 5% of
scientific articles published in
top four medical journals; Nine
Nobel prizes



*I see by the current issue of 'Lab News' Ridgeway,
that you've been working for the last 20 years on the
same problem I've been working on for the last 20 years.*



Source: New Yorker



Experimentally Reducing Search Costs

- Collaborators need information about many things (e.g. personal chemistry, resources, skills) -> this can lead to search frictions
- If we **reduce search costs** for some pairs of potential collaborators by facilitating face-to-face interactions, will we **increase collaboration**?



II. A Field Experiment at Harvard Medical School

Published Paper:

Boudreau, Kevin, Tom Brady, Ina Ganguli, Patrick Gaule, Eva Guinan, Anthony Hollenberg, and Karim Lakhani, 2017.
“A Field Experiment on Search Costs and the Formation of Scientific Collaborations.” *Review of Economics and Statistics*, 99(4): 565-576, October 2017.



Research Collaboration Included Economists and Medical Researchers



KEVIN BOUDREAU
London Business School



TOM BRADY
MGH & Harvard Medical
School



PATRICK GAULE
CERGE-EI



EVA GUINAN
DFCI & Harvard Medical
School



ANTHONY HOLLENBERG
BIDMC & Harvard Medical
School



KARIM LAKHANI
Harvard Business School



Field Experiment

Layered onto an internal grant funding opportunity for Harvard biomedical researchers

Eligibility for funding conditional on participation in an interactive research symposium – here we randomized individuals to breakout rooms

Collaboration measured as appearing as a co-applicant on a grant application



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The Treatment

- Treated pairs: same night & same breakout room
- Control pairs: same night & different breakout room





A View of the Sessions

Post-event Process

- After event participants received an invitation to submit applications
- Applications had to have at least 2 collaborators; at least 1 co-applicant had to have attended the event



Estimating the Impact on Colocation

$$Collaboration_{ij} = \alpha + \beta SameRoom_{ij} + \delta X_{ij} + \varepsilon_{ij}$$

- 402 total participants across 3 nights
- 224 grant applications
- 26,789 pairs
- Match individuals to biographical info, publications, grant applications



III. Results



DV = Collaboration	(1)	(2)	(3)
Same Room	0.0012 ⁺ (0.0007)	0.0012 ⁺ (0.0007)	0.0014 ⁺ (0.0007)
One postdoc			-0.0008 (0.0005)
Both postdocs			-0.0015 [*] (0.0007)
One is female			0.0001 (0.0006)
Both are female			0.0010 (0.0011)
Same hospital			0.0044 ^{**} (0.0010)
Both Longwood			-0.0002 (0.0006)
One imager + one clinician			0.0008 ⁺ (0.0005)
Both imagers			0.0026 ^{**} (0.0010)
Same clinical area (SOI)			0.0040 ^{**} (0.0014)
Previous coauthor			0.1126 (0.0451)
Constant	0.0016 ^{**} (0.0003)	0.0012 (0.0004)	-0.0010 (0.0007)
Night fixed effects	No	Yes	Yes
R2	0.000	0.000	0.017
Nb. of Obs.	26.789	26.789	26.789

Reducing Search Costs Increases Collaboration



Reducing Search Costs

- Being (randomly) assigned to the same breakout room significantly increases the probability of collaboration
 - Being in the same breakout room **increases probability of collaboration by 75%**
 - Impacts those with same clinical areas (scientific space)



Which Pairs Did It Matter More For?

- **Conclusive:** Pairs in the same clinical area (scientific space) with lower search cost more likely to form
- **Inconclusive:**
 - Coordination costs (geographic distance: same hospital, Both Longwood)
 - Social proximity (prior co-authorship)
 - Gender ($p=0.093$ in probit; $p=0.133$ OLS)



Search Costs Shape Collaboration

- Acquiring information about potential scientific collaborators is costly and related search frictions impact collaboration



Face-to-Face Matters

- Face-to-face contact is a highly efficient form of communication - rapid feedback; trust and chemistry; aligning incentives; screening

