Insights from a survey-based analysis of the academic job market

<u>Supplementary File</u>

Consists of <u>two figures</u> and <u>37 Tables</u> referenced in the main text and draft of the <u>two surveys</u> conducted for this study.

Jason D. Fernandes[1†], Sarvenaz Sarabipour[2†], Christopher T. Smith[3], Natalie M. Niemi[4], Nafisa M. Jadavji[5], Ariangela J. Kozik[6], Alex S. Holehouse[7], Vikas Pejaver[8], Orsolya Symmons[9], Alexandre W. Bisson Filho[10], Amanda Haage[11]*

[1]Department of Biomolecular Engineering, University of California, Santa Cruz, California, United States
[2]Institute for Computational Medicine & Department of Biomedical Engineering, Johns Hopkins University, Baltimore, Maryland, United States
[3]Office of Postdoctoral Affairs, North Carolina State University Graduate School, Raleigh, North Carolina, United States
[4]Morgridge Institute for Research, Madison, Wisconsin, United States; Department of Biochemistry, University of Wisconsin-Madison, Madison, Wisconsin, United States
[5]Department of Biomedical Sciences, Midwestern University, Glendale, Arizona, United States
[6]Division of Pulmonary & Critical Care Medicine, Department of Internal Medicine, University of Michigan, Ann Arbor, Michigan, United States
[7]Department of Biochemistry & Molecular Biophysics, Washington University School of Medicine, St. Louis, Missouri, United States
[8]Department of Biomedical Informatics & Medical Education & The eScience Institute, University of Washington, Seattle, Washington, United States
[9]Max Planck Institute for Biology of Ageing, Cologne, Germany
[10]Department of Biology, Rosenstiel Basic Medical Science Research Center, Brandeis University, Waltham, Massachusetts, United States
[11]Department of Biomedical Sciences, University of North Dakota, Grand Forks, North Dakota, United States

[†]These authors contributed equally
*corresponding author: amanda.haage@und.edu

Supplementary File

Consists of <u>two figures</u> and <u>37 Tables</u> referenced in the main text and draft of the <u>two surveys</u> conducted for this study.

Table S1. Common resources for finding academic jobs	
General job search	**Functionality**
https://academicjobsonline.org/ajo	Can search by discipline & location
https://jobs.sciencecareers.org/	Jobs in Science & Technology from Science Careers
https://www.indeed.com/	General job search from Indeed.com
https://www.higheredjobs.com/	Higher Education Job search by Institution, job type, by category, school & location
https://www.hercjobs.org/	Higher Education jobs by state & job type
https://academicpositions.com/	Academic job search by employer
https://www.timeshighereducation.com/unijobs/en-us/	Academic job search by keyword & location
https://chroniclevitae.com/	Higher Education Job search by location, institution type, & field/keywords
https://www.interfolio.com/	Interfolio Faculty Search is a faculty hiring platform, covering every detail of the recruitment process, from confidential letters to 100% compliance on EEO forms.
Field-specific job search	**Functionality**
https://jobs.ascb.org/	Cell Biology jobs
http://psychjobsearch.wikidot.com/	Psychology jobs
http://neurorumblr.com/	Neuroscience jobs
http://chemjobber.blogspot.com/	Chemistry jobs
http://ecoevojobs.net	Ecology & Evolution Biology jobs

Table S1. Resources for applicants for finding academic jobs.

Table S2. Applicants by their Field of Research & Gender				
Theme	**Total Applicant number (total n=317)**	**Female Applicant number (total n=153)**	**Male Applicant number (total n=160)**	**Non-Binary/did not disclose gender (total n=4)**
Total Number of respondents to this question	100% (317 out of 317)	48.3% (153 out of 317)	50.5% (160 out of 317)	0% (0 out of 4)
Biomedical or Life Sciences	52.4% (166 out of 317)	54.2% (83 out of 153)	50.6% (81 out of 160)	50% (2 out of 4)
Biology (other)	19.6% (62 out of 317)	23.5% (36 out of 153)	16.3% (26 out of 160)	25% (1 out of 4)
Chemistry	8.8% (28 out of 317)	5.9% (9 out of 153)	11.9% (19 out of 160)	0% (0 out of 4)
Bioengineering	3.8% (12 out of 317)	2.6% (4 out of 153)	5% (8 out of 160)	0% (0 out of 4)
Earth Sciences	2.5% (8 out of 317)	3.3% (5 out of 153)	1.3% (2 out of 160)	25% (1 out of 4)
Physics	2.2% (7 out of 317)	1.3% (2 out of 153)	3.1% (5 out of 160)	0% (0 out of 4)
Chemical Engineering	2.2% (7 out of 317)	2% (3 out of 153)	2.5% (4 out of 160)	0% (0 out of 4)
Psychology	2.2% (7 out of 317)	2% (3 out of 153)	2.5% (4 out of 160)	0% (0 out of 4)
Engineering	1.9% (6 out of 317)	1.3% (2 out of 153)	2.5% (4 out of 160)	0% (0 out of 4)
Social Sciences	1.3% (4 out of 317)	2.6% (4 out of 153)	0% (0 out of 160)	0% (0 out of 4)
Computer Sciences	1.3% (4 out of 317)	1.3% (2 out of 153)	1.3% (2 out of 160)	0% (0 out of 4)
Other Fields: Health Sciences + Cognitive Sciences + Materials Science + Mathematics	1.9% (6 out of 317)	Less than 1% (1 out of 153)	3.1% (5 out of 160)	0% (0 out of 4)

Table S2. Overview of job application survey respondents' (total & by gender) field of study. Fields which had fewer than 3 respondents in our job applicant survey were aggregated as "Other Fields" in the table. All percentages are calculated out of the total number of respondents.

Table S3. Applicant Demographics: Country of Research Origin (Applicant Location)	
Applicant Origin (country in which the applicant conducted research while applying for a faculty position)	**Number of Applicants**
United states	72% (214 out of 297)
Canada	10.1% (30 out of 297)
United Kingdom	9.1% (27 out of 297)
Germany	2.4% (7 out of 297)
France	1.7% (5 out of 297)
Other countries: Spain + Sweden + India + Norway + Singapore + Japan+The Netherlands+Switzerland	4.7 % (14 out of 297)
Number of applicants who indicated country of research origin (not blank)	93.7% (297 out of 317)
<u>Did not respond</u> to this survey Question	6.3% (20 out of 317)

Table S3. Overview of candidates' country of research origin. Regions which had fewer than 5 respondents in our job applicant survey were aggregated as "Other countries" in the table. All percentages are calculated out of the total number of respondents to this particular survey question (297) not total number of overall survey respondents (n=317).

Table S4. Country to which faculty application was made (Job Location)	
Application destination (country to which the applicant applied for a faculty position)	**Number of Applicant**
United states	81.7% (259 out of 317)
Canada	33.1% (105 out of 317)
United Kingdom	24.3% (77 out of 317)
Germany	10.4% (33 out of 317)
France	7.8% (24 out of 317)
Switzerland	7.8% (24 out of 317)
Australia	5 % (16 out of 317)
The Netherlands	4.1% (13 out of 317)
Austria	4.1% (13 out of 317)

Spain	1.9% (6 out of 317)
Sweden	1.9% (6 out of 317)
Belgium	1.9% (6 out of 317)
Finland	1.6% (5 out of 317)
Other countries & regions: Taiwan + Ireland + Turkey + United Arab Emirates + China + Fiji + Grenada + Jamaica + St.Lucia + Singapore + Norway + New Zealand + Japan + Israel + Portugal + Denmark + Hong Kong	11% (35 out of 317)
Number of applicants who responded to this survey question (not blank)	100% (317 out of 317)

Table S4. Applicant Survey Demographics: Overview of the countries to which the faculty candidates applied to, for faculty positions. Note: most candidates applied to more than one country. Regions which had fewer than 5 respondents in our job applicant survey were aggregated as "Other countries & regions" in the table. All percentages are calculated out of the total number of respondents to this particular survey questions (n=317).

Table S5. Applicants' current research/academic position	
Theme	**Applicant number (n=317)**
Postdoctoral Researcher	96% (304 out of 317)
Doctoral researcher (PhD)	less than 1% (2 out of 317)
Principal Investigator (PI)	1.3 % (4 out of 317)
Other Research Position	2.2% (7 out of 317)
Did not respond to this survey Question	0% (0 out of 317)

Table S5. Overview of current academic position of our job applicant survey respondents. All percentages are calculated out of the total number of respondents to this particular survey questions (n=317).

Table S6. Applicants' Postdoctoral training time statistics	
Theme	**Postdoctoral Training (in years)**
time spent in postdoctoral training by all	Average = 4.35 years; Median = 4 years
time spent in postdoctoral training by Male candidates	Average = 4.39 years; Median = 5 years
time spent in postdoctoral training by Female candidates	Average = 4.20 years; Median = 4 years
Minimum time spent in postdoctoral training by any candidates	1 year
Maximum time spent in postdoctoral training by any candidates	13 years

Table S6. Overview of time spent in postdoctoral training by our job applicant survey respondents.

Table S7. Applicant Demographics: Applicants with first or multiple postdoctoral position	
Theme	**Number of applicants**
Applicants who applied while in their first postdoctoral position (out of applicants who responded to this question)	68.2% (191 out of 280)
Female applicants who applied while in their first postdoctoral position	76% (116 out of 153)
Male applicants who applied while in their first postdoctoral position	63% (101 out of 160)
Applicants who applied while in their second postdoctoral position	25.4% (71 out of 280)
Applicants who applied while in their third postdoctoral position	6.4% (18 out of 280)
Applicants who applied while in their 2nd-3rd postdoctoral position (out of applicants who responded to this question)	31.8% (89 out of 280)
Responded to this survey Question	88.3% (280 out of 317)
Did not respond to this survey Question	11.7% (37 out of 317)

Table S7. Overview of number of postdoctoral positions that the candidates held at the time of their faculty job application. All percentages are calculated out of the total number of respondents to this particular survey questions.

Table S8. Applicants' Scholarly metrics				
Theme	**Metrics for All applicants (n=317)**	**Metrics for Female applicants (n=153)**	**Metrics for Male applicants (n=160)**	**Metrics for applicants who did not disclose gender (n=0)**
Number of peer-reviewed papers	Average=15; Median=13	Average=13.4; Median=11	Average=16.4; Median=14	Average=11.3; Median=11
Number of all preprints ever posted	Average=1.57; Median=1	Average=0.9; Median=0	Average=2.1; Median=1	Average=1.6; Median=1
Number of all preprints not peer-reviewed yet	Average=0.7; Median= 0	Average = 0.6; Median = 0	Average=0.8; Median= 0	Average=1; Median=1;
Number of first-authored papers	Average=7; Median=6	Average=6.1; Median=7	Average=7.8; Median=5	Average=0; Median=8
Number co-authored "CNS" papers	Average=0.2; Median=0	Average=0.1; Median=0	Average=0.2; Median=0	Average=0.3; Median=0
Number of corresponding-authored "CNS" papers	Average=0.022; Median=0	Average=0; Median=0	Average=0.044; Median=0	Average=0; Median=0
Number of all CNS papers (first author + corresponding-author + co-author)	Average=0.405; Median=0	Average=0.24; Median=0	Average=0.54; Median=0	Average=0.46; Median=0
Number of citations	Average=426.1; Median=282	Average=397; Median=228	Average=455.6; Median=343	Average=145.5; Median=145.5
Applicants who had published "CNS" papers	83	31	52	0
h-index	Average = 8.5; Median =8	Average = 7.9; Median =7	Average = 9.0; Median=9	Average = 6; Median =6
Number of Applications	Average = 24.1; Median = 15	Average = 21.4; Median = 13	Average = 26.6; Median = 16.5	Average = 30; Median = 16
Number of off-site interviews	Average = 2.5; Median = 1	Average = 2.9; Median = 2	Average = 2.2; Median = 1	Average = 2.3; Median = 1.5
Number of on-site interviews	Average = 2.6; Median = 2	Average = 2.8; Median = 2	Average = 2.4; Median = 2	Average = 3.8; Median = 2
Number of all offers	Average = 1.1; Median = 1	Average = 1.3; Median = 1	Average = 1; Median = 1	Average = 2.5; Median = 0.5
Number of applicants with One or more offers	58.3% (183 out of 317)	60% (92 out of 153)	56.9% (91 out of 160)	50% (2 out of 4)

Number of NO offers	41.6% (132 out of 317)	40% (61 out of 153)	43.1% (69 out of 160)	50% (2 out of 4)
Number of applicants with One or more on-site interviews	77.6% (246 out of 317)	75.8% (116 out of 153)	79.4% (127 out of 160)	75% (3 out of 4)
Number of NO on-site interviews	22.4% (71 out of 317)	24.1% (37 out of 153)	20.6% (33 out of 160)	25% (1 out of 4)
Number of applicants with One or more off-site interviews	70% (220 out of 317)	71.9% (110 out of 153)	68.1% (109 out of 160)	75% (3 out of 4)
Number of NO off-site interviews	30% (95 out of 317)	28.1% (43 out of 153)	31.9% (51 out of 160)	25% (1 out of 4)

Table S8. Overview of the job applicant publication metrics (average citation number, average h-index, average number of peer-reviewed papers, average number of preprints, average number of peer-reviewed first-author papers, number of Cell/Nature/Science journal publications or "CNS" papers of any type meaning 1st author, co-author or corresponding author) of our survey respondents by gender breakdown.

Table S9. Applicant Fellowship type Funding Record						
Theme	**Pre-doctoral Fellowship**	**Post-doctoral Fellowship**	**Both types of fellowships**	**Received any type of fellowship**	**Received None**	**Did not Respond to this question**
All Applicants (n=317)	14.9% (47 out of 315)	26.7% (84 out of 315)	37.8% (119 out of 315)	80% (252 out of 315)	20% (63 out of 315)	less than 1% (2 out of 317)
Applicants who applied to PUIs	19.2% (20 out of 104)	28.8% (30 out of 104)	26.9% (28 out of 104)	77.9% (81 out of 104)	22.1% (23 out of 104)	~1% (1 out of 104)
Female Applicants(n=153)	15.8% (24 out of 152)	23% (35 out of 152)	48.7% (74 out of 152)	87.5% (133 out of 152)	12.5% (19 out of 152)	less than 1% (1 out of 152)
Female applicants who applied to PUIs	15.5% (9 out of 58)	27.6% (16 out of 58)	37.9% (22 out of 58)	82.8% (48 out of 58)	17.2% (10 out of 58)	1.7% (1 out of 58)
Male Applicants(n=160)	13.8% (22 out of 159)	30.2% (48 out of 159)	27.7% (44 out of 159)	72.3% (115 out of 159)	27.7% (44 out of 159)	less than 1% (1 out of 159)

Male applicants who applied to PUIs	25% (11 out of 44)	31.8% (14 out of 44)	13.6% (6 out of 44)	70.5% (31 out of 44)	29.5% (13 out of 44)	0% (0 out of 44)
Non-Binary Applicants(0)	0	0	0	0	0	0
Preferred not to disclose gender(4)	25% (1 out of 4)	25% (1 out of 4)	25% (1 out of 4)	0	0	0
Preferred not to disclose gender who applied to PUIs	50% (1 out of 2)	0% (0 out of 2)	0% (0 out of 2)	100% (2 out of 2)	0% (0 out of 2)	50% (1 out of 2)

Theme	Responded PhD+Both PhD & Postdoc Fellowships	Responded Postdoc+Both PhD & Postdoc Fellowships
Female Applicants	65% (98 out of 152)	71.7% (109 out of 152)
Male Applicants	41.5% (66 out of 159)	57.9% (92 out of 159)
Preferred not to disclose gender	50% (2 out of 4)	50% (2 out of 4)

Table S9. Overview of the types of funding held by our job applicant survey respondents. Percentages are calculated out of the total number of respondents to this particular survey questions. All percentages are calculated out of the total number of respondents to this particular survey questions.

Table S10. Applicant Independent Funding Record					
Theme	**Postdoctoral-to-faculty transition award (e.g. K99, K01)**	**Co-PI grants**	**Total applicants who held a transition award or a co-PI grant**	**None (No independent funding)**	**Did not Respond to this question**
All Applicants (n=317)	15.9% (50 out of 314)	10.5% (33 out of 314)	25.1% (79 out of 314)	74.8% (235 out of 314)	Less than 1% (3 out of 317)
Female Applicants (n= 153)	17.1% (26 out of 152)	12.5% (19 out of 152)	28.3% (43 out of 152)	71.7% (109 out of 152)	Less than 1% (1 out of 153)
Male Applicants (n=160)	15.2% (24 out of 158)	8.2% (13 out of 158)	20.9% (33 out of 158)	79.1% (125 out of 158)	1.2% (2 out of 160)
Non-Binary Applicants (n=0)	0	0	0	0	0
Preferred not to disclose gender (n=4)	0	25% (1 out of 4)	75% (3 out of 4)	25% (1 out of 4)	0

Table S10. Overview of the types of transition/independent type funding held by our faculty candidate (applicant survey) respondents. Percentages are calculated out of the total number of respondents to this particular survey questions. Being a "Co-PI" of a grant as a postdoctoral researcher or research scientist means co-writing a grant with a PI(an independent investigator). The co-writer may or may not be explicitly mentioned as Co-PI.

Table S11. Application statistics				
Theme	**Total Applicant number (n=317)**	**Female Applicants responded to this Q (n=131)**	**Male Applicants (n=160)**	**Applicants who Did not disclose gender (n=4)**
Total Number of Applications made	7,644	3,268	4,256	120
Total Number of off-site interviews	805	437	359	9
Total Number of on-site interviews	832	431	386	15

Total Number of offers	359	196	153	10
Approximate Number of rejections	2,920	1,118	1,742	60
Total number of No Feedbacks (did not hear anything back)	4,365	2,150	2,514	60
Did not respond to this survey Question	0	22	0	0
Mean Number of Applications made	Average = 24.1; Median = 15	Average = 21.4; Median = 13	Average = 26.6; Median = 16.5	Average = 30; Median = 16
Number of applicants with at least one off-site interviews	70% (220 out of 317)	71.9% (110 out of 153)	68.1% (109 out of 160)	75% (3 out of 4)
Number of applicants with at least one on-site interviews	77.6% (246 out of 317)	75.8% (116 out of 153)	79.4% (127 out of 160)	75% (3 out of 4)
Number of applicants with at least one offer	58.3% (185 out of 317)	60% (92 out of 153)	56.9% (91 out of 160)	50% (2 out of 4)

Table S11. Overview of application statistics: total number of applications made, offsite (remote via phone or online via Skype) interviews, onsite interviews, offers made, approximate number of rejections and total number of no feedbacks received from faculty job committees to our survey respondents.

Table S12. Twitter Poll #1: Number of offers current faculty received				
Theme	**1**	**2-3**	**4+**	**Just show me the poll results**
Number of Respondents (n=749)	21% (167)	20% (160)	8% (63)	51% (404)

Table S12. Overview of the responses to a twitter poll with the question: "Faculty, when you accepted your first position, how many offers did you have?".

Table S13. Applicants who also applied to *Non-faculty jobs*	
Theme	**Applicant number**
Total Number of Applicants who responded to this question	99.4% (315 out of 317)
<u>Yes</u> applied to non-faculty jobs	28.6% (90 out of 315)
Research scientist in federal government	1.3% (4 out of 315)
R&D positions in biotech companies	1.6% (5 out of 315)
Non-Governmental Organizations (NGO)	Less than 1% (1 out of 315)
National Institutes of Health (NIH)	Less than 1% (1 out of 315)
Science communication job	Less than 1% (2 out of 315)
Community involvement job	Less than 1% (1 out of 315)
Non-profit organizations	Less than 1% (1 out of 315)
Museum Curation (non-profit, government)	Less than 1% (2 out of 315)
Geophysical Laboratory of a research Institution of Science(Non-profit)	Less than 1% (1 out of 315)
Private laboratories	Less than 1% (1 out of 315)
Zoos	Less than 1% (1 out of 315)
No <u>did NOT apply</u> to non-faculty jobs	71.4% (225 out of 315)
<u>Did not respond</u> to this survey Question	Less than 1% (2 out of 317)

Table S13. Overview of candidates who also applied for non-faculty jobs (e.g. Industry positions, government jobs, etc). Percentages are calculated out of the total number of respondents to this particular survey questions (n=315 applicants).

Table S14. Applicant responses on Cell/Nature/Science or "CNS" journal publications				
Theme	**Metrics for All applicants (n=317)**	**Metrics for Female applicants (n=153)**	**Metrics for Male applicants (n=160)**	**Metrics for applicants who did not disclose gender (n=4)**
Number of applicants who responded to this survey question who <u>had published at least one </u>"CNS" papers	26% (81 out of 311)	20.1% (30 out of 149)	32.1% (50 out of 156)	33.3% (1 out of 3)
Published One "CNS" paper <u>of any</u> authorship type out of those applicants who published CNS	77.8% (63 out of 81)	86.7% (26 out of 30)	74% (37 out of 50)	0% (0 out of 1)
Published any 1st author "CNS" paper out all applicants	16.1% (50 out of 311)	5.8% (18 out of 311)	10% (31 out of 311)	Less than 1% (1 out of 311)
Published <u>more than one</u> "CNS" paper of any authorship type	23.4% (19 out of 81)	13.3% (4 out of 30)	28% (14 out of 50)	100% (1 out of 1)
Number of applicants who responded to this survey question and <u>had Not published</u> "CNS" papers	73.3% (228 out of 311)	79.9% (119 out of 149)	67.9% (106 out of 156)	66.7% (2 out of 3)
<u>Did not respond</u> to this survey Question	2.5% (8 out of 317)	2.6% (4 out of 153)	2.5% (4 out of 160)	25% (1 out of 4)
Applicants who published <u>One</u> 1st author "CNS" paper	51.8% (42 out of 81)	53.3% (16 out of 30)	52% (26 out of 50)	0% (0 out of 1)
Applicants who published <u>Two</u> 1st author "CNS" paper	9.9% (8 out of 81)	6.7% (2 out of 30)	10% (5 out of 50)	100% (1 out of 1)
Applicants who published <u>One</u> co-author "CNS" paper	42% (34 out of 81)	50% (15 out of 30)	36% (18 out of 50)	100% (1 out of 1)
Applicants who published <u>more than one </u>co-author "CNS" paper	7.4% (6 out of 81)	3.3% (1 out of 30)	10% (5 out of 50)	0% (0 out of 1)
Applicants who published <u>One</u>	2.5% (2 out of 81)	0% (0 out of 30)	4% (2 out of 50)	0% (0 out of 1)

corresponding author "CNS" paper				
Applicants who published <u>more than one </u>corresponding author "CNS" paper	2.5% (2 out of 81)	0% (0 out of 30)	4% (2 out of 50)	0% (0 out of 1)

Table S14. Overview of the number of Cell/Nature/Science ("CNS") journal publications of our job applicant survey respondents by gender breakdown. Percentages are calculated out of the total number of respondents to this particular survey questions.

Table S15. Applicant responses to the question on number of Active Preprints (all preprints online not peer-reviewed yet) at the time of application				
Theme	**Applicant number (All n=317)**	**Female Applicants (n=153)**	**Male Applicants (n=160)**	**Did not disclose gender applicants (n=4)**
<u>**Applicants who respond** to this</u> **survey Question**	94% (298 out of 317)	45.4% (144 out of 317)	47.6% (151 out of 317)	Less than 1% (3 out of 317)
Yes Had posted unpublished Preprints	39.6% (118 out of 298)	36.8% (53 out of 144)	41.7% (63 out of 151)	66.7% (2 out of 3)
Posted 1 unpublished preprint	21.5% (64 out of 298)	20.8% (30 out of 144)	21.9% (33 out of 151)	33.3% (1 out of 3)
Posted 2 unpublished preprint	12.1% (36 out of 298)	10.4% (15 out of 144)	13.2% (20 out of 151)	33.3% (1 out of 3)
Posted 3 unpublished preprint	2.7% (8 out of 298)	4.2% (6 out of 144)	1.3% (2 out of 151)	0% (0 out of 3)
Posted more than 3 unpublished preprint	3.4% (10 out of 298)	1.4% (2 out of 144)	5.3% (8 out of 151)	0% (0 out of 3)
No Had NOT posted unpublished Preprints	60.4% (180 out of 298)	63.2% (91 out of 144)	58.3% (88 out of 151)	33.3% (1 out of 3)
<u>**Did not respond** to</u> **this survey Question**	6.0% (19 out of 317)	5.9% (9 out of 153)	5.6% (9 out of 160)	25% (1 out of 4)

Applicant responses to question on Total number of all Career Preprints published				
Theme	**Applicant number (All n=317**	**Female Applicants (n=153)**	**Male Applicants (n=160)**	**Did not disclose gender applicants (n=4)**
Applicants who respond to this survey Question	85.1% (270 out of 317)	39.4% (125 out of 317)	44.8% (142 out of 317)	Less than 1% (3 out of 317)
Yes Had posted Preprints throughout career	54.8% (148 out of 270)	48% (60 out of 125)	60.6% (86 out of 142)	66.7% (2 out of 3)
Posted 1 preprint	20% (54 out of 270)	24% (30 out of 125)	16.2% (23 out of 142)	33.3% (1 out of 3)
Posted 2 preprint	14.8% (40 out of 270)	13.6% (17 out of 125)	16.2% (23 out of 142)	0% (0 out of 3)
Posted 3 preprint	6.3% (17 out of 270)	4.8% (6 out of 125)	7.7% (11 out of 142)	0%(0 out of 3)
Posted more than 3 preprint	13.7% (37 out of 270)	5.6% (7 out of 125)	20.4% (29 out of 142)	33.3%(1 out of 3)
No Had NOT posted Any Preprints	45.2% (122 out of 270)	52% (65 out of 125)	39.4% (56 out of 142)	33.3%(1 out of 3)
Did not respond to this survey Question	13.9% (47 out of 317)	18.3% (28 out of 153)	11.3% (18 out of 160)	25%(1 out of 4)

Table S15. Overview of candidates who had unpublished preprints at the time of their job application. Percentages are calculated out of the total number of respondents to this particular survey question.

Table S16. Applicant responses on Patenting their research				
Theme	**Applicant number**	**Female Applicants (n=153)**	**Male Applicants (n=160)**	**Did not disclose gender applicants (n=4)**
Total Number of Applicants who responded to this survey question	94% (298 out of 317)	94.1% (144 out of 153)	94.4% (151 out of 160)	75% (3 out of 4)
Yes Had had approved or pending patents	21.8% (65 out of 298)	15.3% (22 out of 144)	28.5% (43 out of 151)	0% (0 out of 3)
had 1 approved or pending patents	12.1% (36 out of 298)	11.8% (17 out of 144)	12.6% (19 out of 151)	0% (0 out of 3)
had 2 approved or pending patents	4% (12 out of 298)	2.1% (3 out of 144)	6% (9 out of 151)	0% (0 out of 3)
had 3 approved or pending patents	less than 1% (2 out of 298)	1.4% (2 out of 144)	0% (0 out of 151)	0% (0 out of 3)
had more than 3 approved or pending patents	2% (6 out of 298)	0% (0 out of 144)	4% (6 out of 151)	0% (0 out of 3)
No did NOT hold any pending or approved patents	81.2% (242 out of 298)	84.7% (122 out of 144)	77.5% (117 out of 151)	100% (3 out of 3)
Preferred Not to disclose information	6.4% (19 out of 317)	6% (9 out of 153)	6% (9 out of 160)	25% (1 out of 4)

Table S16. Overview of Candidates who had approved or pending patents from their research at the time of their job application. Percentages are calculated out of the total number of respondents to this particular survey questions.

Table S17. Applicants by their application type (R1 Universities, PUIs or both) & Gender				
Theme	**Total Applicant number**	**Female Applicant number**	**Male Applicant number**	**Did not disclose gender Applicant number**
Total Number of Applicants	100% (317 out of 317)	48.3% (153 out of 317)	50.5% (160 out of 317)	1.3% (4 out of 317)
R1 universities	67.2% (213 out of 317)	62.7% (96 out of 153)	72.5% (116 out of 160)	50% (2 out of 4)
PUIs only	7.9% (25 out of 317)	9.8% (15 out of 153)	6.3% (10 out of 160)	0% (0 out of 4)
Both R1 & PUIs	24.9% (79 out of 317)	13.6% (43 out of 317)	11% (34 out of 317)	50% (2 out of 4)
Did not respond to this survey Question	0% (0 out of 317)	0% (0 out of 153)	0% (0 out of 160)	0% (0 out of 4)
PUI Applicants' First Author paper record				
Total Number of Applicants	**Total Applicant number**	**Female Applicant number**	**Male Applicant number**	**Did not disclose gender Applicant number**
Applicants who applied to PUIs only	Max = 9; Average = 4; Median = 4; Min = 1	Max = 7; Average = 3.4; Median = 4; Min = 1	Max = 9; Average = 4.2; Median = 4; Min = 1	Max = 0 ; Average = 0; Median = 0; Min = 0
Applicants who applied to Both R1 & PUIs (PUI only + both responses)	Max = 25; Average = 6.3 ; Median = 6; Min = 1	Max = 20; Average = 5.6; Median = 5; Min = 1	Max = 25; Average = 7.3; Median = 6.5; Min = 1	Max = 5; Average = 5; Median = 5; Min = 5
Applicants who applied to PUIs & both R1 + PUI & Did not respond to this survey Question on their 1st author papers	0% (0 out of 104)	0% (0 out of 58)	0% (0 out of 44)	50% (1 out of 2)

Table S17 Overview of job application survey respondents' (total & by gender) applications to R1 Universities (high-activity Research Universities), PUIs (Primarily Undergraduate Institutions) (Box1) or applied to both types of institutions. Percentages are calculated out of the total number of respondents to this particular survey questions.

Table S18. Applicant Teaching experience			
Theme	**No teaching experience**	**Yes-Teaching Assistantship (TA)**	**Yes-Beyond TA**
All Applicants (n=317)	~1% (3 out of 317)	45.1% (143 out of 317)	53.9% (171 out of 317)
Applicants who applied to PUIs	0% (0 out of 102)	42.2% (43 out of 102)	57.8% (59 out of 102)
Female Applicants(n=153)	Less than 1% (1 out of 153)	42.5% (65 out of 153)	56.9% (87 out of 153)
Female Applicants who applied to PUIs	0% (0 out of 58)	43.1% (25 out of 58)	56.9% (33 out of 58)
Male Applicants(n=160)	1.3% (2 out of 160)	48.8% (78 out of 160)	50% (80 out of 160)
Male Applicants who applied to PUIs	0% (0 out of 44)	40.9% (18 out of 44)	59.1% (26 out of 44)
Non-Binary Applicants(n=0)	0	0	0
Preferred not to disclose gender(n=4)	0	0	1.3% (4 out of 317)

Table S18. Overview of the teaching experience (Teaching Assistantship for a course (lecture based and/or lecture+laboratory based) for the course instructor only versus beyond teaching assistantship which is independently designing and instructing undergraduate and/or graduate courses) of our applicant survey respondents. Percentages are calculated out of the total number of respondents to this particular survey questions.

Table S19. themes from applicant written responses to specific types of teaching experiences they had beyond teaching assistantship		
Theme	**Example Survey Responses**	**Frequency of the response *n***
Instructed Undergraduate Courses	Taught undergraduate course as instructor of record	(55)
Co-Instructed Undergraduate Courses	I have been a primary or co-instructor for several undergraduate classes	(10)
Guest lectured Undergraduate courses	Guest lecturing undergraduates, mentoring undergraduates.	(8)

Instructed Graduate Courses	Lectured medical school graduate school ~20 contact hours in first year, large multi-lecturer courses	(28)
Co-Instructed Graduate Courses	co-taught course as a software and data carpentry instructor	(7)
Guest-Lectured Graduate Courses	Guest lecturing undergraduates, mentoring undergraduates	(5)
Independent Instructor/Lecturer (type of course not specified)	I taught two 1-year lectures.	(22)
Co-Instructor/Lecturer (type of course not specified)	Lecture an undergrad stats class for 2 years as an invited lecturer	(2)
Guest-Lecturer (type of course not specified)	Multiple guest lecturing occasions	(14)
Lab Course Instructor	Laboratory instructor for 5 years,3 years as Lab course teacher as a postdoctoral fellow.	(2)
Lecturing for Workshops	leading domain workshops at my university and others	(8)
Instructor for High School Courses	High school teacher for 1 year, taught college level summer courses for high school students.	(2)
Visiting Assistant Professorship	Visiting Professor at a liberal arts college	(2)
Adjunct Teaching Instructor for Undergraduate Courses at a Community College or PUI	Adjunct faculty for one year, taught two undergraduate courses as faculty of record and prepared all the materials for both courses.	(16)
Adjunct Teaching Instructor for Undergraduate courses at an R1 University	Adjunct faculty, designed graduate course for 1 semester.	(2)
Total Adjunct teaching positions (i.e. all college level teaching counts)	College level teaching experience (Adjunct undergraduate instructor or lecturer)	(29)
Teaching Certificate	Graduate student teaching certificate	(4)
Teaching Assistant for Undergraduate or Graduate Courses	1 semester as TA as a graduate student.	(2)

Table S19. Overview of specific types of teaching experience of our job applicant survey respondents detailed in a comment question. The "Adjunct Teaching Instructor for Undergraduate Courses at a Community College or PUI" and "Adjunct Teaching Instructor for Undergraduate Courses at an R1 University" were explicitly mentioned comments by our applicant survey respondents. The "Total Adjunct teaching positions" were the total head-count of "adjunct type" college teaching performed by our job applicant survey respondents. A total of n=162 applicants responded to this comment type long answer question.

Table S20. Applicants' use of resources that offered information about the application process			
Got help from	**Said Yes Used/Yes Useful**	**Number of applicants who received at least Offers**	**Said No**
Future PI Slack	9.5%/8.5% (30 out of 317/27 out of 317)	66.7% (20 out of 30)	10.7% (34 out of 317)
Chemblogger	1.6% (5 out of 317)	40% (2 out of 5)	-
EcoEvoJobsWiki	1.3% (4 out of 317)	75% (3 out of 4)	-
PsychJobsWiki	Less than 1% (1 out of 317)	100% (1 out of 1)	-

Table S20. Overview of candidates who were familiar with the Future PI Slack resource and other resources during their application process. Responses to "Did you find the Future PI google sheet/Slack helpful? Yes/No" Survey participants were able to provide long answer to this comment question (Future PI Slack or FPI Slack is a slack group comprised of postdoctoral researchers aspiring to apply for faculty positions).

Table S21. Summary of the Statistical Analysis in this paper			
Context	**p-value**	**Statistical test used**	**Corresponding section, Figure & Table**
Demographics of our applicant survey respondents: years of postdoctoral training	Life sciences vs Other fields p-value=6.5×10^{-6}, Years as Postdoc Male vs Female Applicants p-value=0.2(ns)	Two-tailed Wilcoxon rank sum test	Results, Figure 1D, Table S6
Number of applicant first-author papers by gender	p-value = 1.4×10^{-4}	Two-tailed Wilcoxon rank sum test	Results, Figure 2B, Table S8
Total Publications by gender	p-value = 0.003	Two-tailed Wilcoxon rank sum test	Results, Figure 2B, Table S8
All Citations by gender	p-value = 0.015	Two-tailed Wilcoxon rank sum test	Results, Figure 2B, Table S8
Applicant h-index by gender	p-value = 0.0054	Two-tailed Wilcoxon rank sum test	Results, Figure 2B, Table S8
Number of first-author CNS papers	Life sciences vs Other fields p-value=0.0123, Years as Postdoc Male vs Female Applicants p-value=0.0454	Two-tailed Wilcoxon rank sum test	Results, Figure 2C, Table S14
Percentage of PhD & Postdoctoral Fellowships received by gender	p-value = 0.0024	Chi-squared test (χ^2 =0.01)	Results, Figure 2D, Table S9
Number of off-site interviews by gender	p-value = 4.1×10^{-24}	Two-tailed Wilcoxon rank sum test	Results, Figure 3D, Table S8
Number of on-site interviews by gender	p-value = 1.2×10^{-13}	Two-tailed Wilcoxon rank sum test	Results, Figure 3D, Table S8
Number of offers that applicants received by gender	p-value = 5.0×10^{-5}	Two-tailed Wilcoxon rank sum test	Results, Figure 3D, Table S8

Percentage of applicants that applied for faculty jobs vs applicants that applied to other jobs	p-value = 0.0019	Two-tailed Wilcoxon rank sum test	Results, Figure 3E, Table S13
Percentage of applicants that had CNS publications and received off-site, on-site interviews or offers	Off-site interviews p-value = 0.33, On-site interviews p-value = 2.7×10^{-4}, Offers p-value = 1.5×10^{-4}	Two-tailed Wilcoxon rank sum test	Results, Figure 4A, Table S14
Correlational Analysis of scholarly metrics & offers received	CNS 1st authors Papers p-value = 0.0017, Independent Funding p-value = 0.0250, Total Citations p-value = 0.0292, Years on the Job Market p-value = 0.0345, Postdoc Fellowship p-value = 0.1690, Total Publications p-value = 0.1904, CNS co-authorship papers p-value = 0.3353, H-index p-value = 0.5724, Years as Postdoc p-value = 1.0, 1st Author papers p-value = 1.0, Patents p-value = 1.0, PhD Fellowship p-value = 1.0	Two-tailed Wilcoxon rank sum test with Holm correction	Results, Figure 4B, Tables S6, S9, S14, S15, S16
Breakdown of respondents by significant criteria: citation	citation count (all publications)	Two-tailed Wilcoxon rank sum test	Results, Figure 4C

count, independent funding, and offers	distributions for groups broken down by CNS 1st Authors p-value = 0.04 independent funding, and offers (no offer in blue, offer in gold) p-value = 0.04		
Pie-charts: Breakdown of respondents with independent funding into groups with/without CNS papers and offers	Applicants with CNS p-value = 0.5587	Chi-squared test (χ^2 = 0.34188, df = 1),	
	Applicants without CNS p-value = 0.166	Chi-squared test (χ^2 =1.9183, df = 1),	
Teaching experience & R1/PUI type application	p-value = 0.5592	Chi-squared test (χ^2 = 0.410)	Results, Figure 5C, Table S18
Teaching experience & offer percentage	p-value = 0.1633	Two-tailed Wilcoxon rank sum test	Results, Figure 5D, Table S18
Percentage of 1st authored papers by PUI applicants by gender	p-value = 0.8882	Two-tailed Wilcoxon rank sum test	Results, Figure 6B, Table S18
Percentage of Applicants that had adjunct lectureship teaching experience	p-value = 0.0004997501	Chi-squared test (χ^2 = 27.515)	Results, Figure 6F, Table S19
Applicants who applied to PUI only or R1 or both by adjunct teaching experience	PUI only p-value=0.5538, R1 or Both R1 & PUI p-value=0.9896	Two-tailed Wilcoxon rank sum test	Results, Figure 6G
Median numbers by gender: application, remote(off-site) & on-site interviews, offer of a faculty position	p-values: gender=0.0725, off-site=0.1479, on-site=0.5813, offer=0.1775	Two-tailed Wilcoxon rank sum test	Results, Page 10
CNS publications with at least one offer	p-value=0.033	Chi-squared test (χ^2 = 4.4871)	Results, Page 14

Table S22. Themes from applicant survey written responses to what general perception of the application process was		
Theme	**Survey Responses**	**Frequency of the response n**
Lack of Feedback	Very little feedback about why my application was unsuccessful. We never get feedback on our application material, so it is very hard to understand how to improve.	(13)
Lack of Mentorship	I didn't really have a mentorship on how to handle the on-site interview and structure my proposed work talk.	(1)
Biased	I feel that the process is very biased and racist.	(1)
Unhealthy	I thought the application process was incredibly stressful to the point of it being unhealthy.	(1)
Despair	I found the process very frustrating.	(1)
Time-Consuming	Ultimately, the process did take an enormous amount of time and effort and caused me a great deal of anxiety.	(2)
Lack of a single centralized system	I would love to have a single centralized system, where you upload a single application and choose a (limited) number of schools to apply to. It was also painful because many schools use different application portals with different requirements.	(2)
Difficult	My health has significantly deteriorated from this process.	(3)
Awful	The process was awful.	(1)
Futile	The application process was an awful exercise in futility.	(2)
System not working	It makes you feel like the system is not working, that something has to change.	(1)
Tough	The process is tough.	(1)
Painful	It was also painful because many schools use different application portals with different requirements.	(3)
Stressful	It is a ridiculously stressful process. I never realized that so many people have similar anxieties, insecurities, and questions as me.	(4)

Depressing	I found the process very depressing.	(1)
Arduous	The application process was hard.	(1)
Demoralizing	I really enjoyed the one interview that I had but otherwise I found the process fairly demoralizing.	(1)
Terrible	The whole process is terrible. The Skype interviews are terrible.	(2)
Demeaning	The Skype interviews are demeaning, and the poor connections involved seem designed to make understanding difficult. I had one Skype interview in which the point was for the selection committee to get to laugh at me and ridicule my work.	(1)
Isolating	Applying for a faculty job is a very isolating process, only few postdocs that I personally knew were sailing in the same boat.	(1)
Frustrating	It was a little frustrating to no receive rejection letters from the majority of institutions. - I was really frustrated when I didn't hear from a place after I did an in-person interview for 2 & 1/2 months	(1)
Unpredictable	I found it very unpredictable whether the institutes were interested in my profile or not. Also the application procedures varied a lot, in terms of the number of rounds, time frame and information updates.	(1)
Information-Sparse	Most places do not indicate how many pages they want each of the documents they are requesting.	(2)
Non-ordinary requests	Some schools made it particularly difficult by having non-ordinary requests, such as personal statements, 5 reference letters (instead of 3), 3 separate research proposals etc.	(1)
Black-box	The community of other postdocs on the market helping each other deal with questions and anxieties really helped to demystify the black box that is the faculty search.	(1)
Burden-on-research	The application process was extremely time-consuming during my postdoctoral research.	(1)

Table S22. Overview of candidates who commented on their view in general of the application process. Responses to "Do you have any comments that you would like to share? For example, how did you experience the application process?" Survey participants were able to provide long answers to this comment question. A word cloud referring to this table of comments is provided in Figure 7C.

Table S23. Candidate responses to "Why did you find the Future PI Google Sheet helpful?	
Theme (frequency of responses)	**Survey Responses**
Very Helpful or helpful (30)	The Future PI slack channel/spreadsheet was really helpful to guide me during the process providing real time feedback of what's going on in the job market in comparison to advice from PIs that experienced years ago (or that experienced in a completely different way that I did).
	It helped me realize my status with more than 70% of the universities that I had applied to. This is a much better approach (quick painless death to a school I have not been called for, but others have) than patiently waiting, hoping against hope as the months drag by.
	Did not find the Future PI google sheet particularly helpful because there is almost no one else on there in my field. But I did find the Future PI slack discussions helpful. The future PI google sheet was super helpful to ask questions, vent, cross out schools that ghosted me but others have heard back from, and just overall learn a ton of tips on navigating this process.
	Found it useful to keep track of whether other people had heard back from schools I applied to or not.
	Used Future PI google sheet helpful but also stressful. I also think it's heavily biased towards those who are successful on job market- thus not a good picture of the actual process. I think >90% of people who filled out the application stats had at least one onsite visit. I do not think this is indicative of most people success rate.
	The Future PI Slack and spreadsheet was very helpful for tracking interviews and asking advice.
	Checked the future PI spreadsheet almost every day. It was almost like a soulmate during the ridiculously stressful process. I never realized that so many people have similar anxieties, insecurities, and questions as me. Applying for a faculty job is a very isolating process, only few postdocs that I personally knew were sailing in the same boat. Access to the information & comments posted there is precious. It was a true collaborative effort by many anon. contributors, I hope it stays that way, and no one takes control or credit for the resources posted there.
	Future PI google sheet and slack group were both extremely helpful.
	Really useful because at least you know if someone got selected for the position.
	The Future PI google sheet was a great resource for understanding the timing of things, how many applications people submitted, and general advice/feedback.

	It was helpful to know if others had heard from places I ad not as well as get a sense of the general competitiveness of the market.
	Found the Future PI google sheet very helpful to know when other people heard back from jobs I had applied to.
	Found the google sheet very helpful, though not many of the listings were in my field it was nice to see the expected timings from one step to the next, and see where my search landed in terms of response rates.
	The FuturePI google sheet and it was incredibly helpful. The community of other postdocs on the market helping each other deal with questions and anxieties really helped to demystify the black box that is the faculty search.
	Future PI google sheet was extremely useful to track the status of jobs and to ask for advice.
	It was great for moral support.
	It was extremely helpful to not feel so alone in the process.

Table S23. Overview of candidates who were familiar with the Future PI Slack resource and other resources during their application process. Responses to "Why did you find the Future PI google sheet/Slack helpful?" Survey participants were able to provide long answer to this comment question (Future PI Slack of FPI Slack is a slack group comprised of postdoctoral researchers aspiring to apply for faculty positions).

Table S24. Twitter Poll #2: Researcher Time Spent on faculty job applications				
Theme	**Less than 1 hour**	**1-2 hours**	**2-3 hours**	**Greater than 3 hours**
Number of Respondents (n=234)	6% (14)	15% (35)	16% (37)	63% (147)

Table S24. Overview of the responses to a Twitter poll with the question: "How long on average did you, the applicant, spend preparing each faculty job application?".

Table S25. Twitter Poll #3: Effect of time spent on faculty applications on research			
Theme	**Yes**	**No**	**Just show me the poll results**
Number of Respondents (n=164)	58% (95)	8% (13)	34% (56)

Table S25. Overview of the responses to a Twitter poll with the question: "Do you feel like time spent preparing your faculty job applications impaired your ability to push other aspects of your career forward? (pubs, grant apps, research goals)".

Table S26. Themes from job applicant survey written responses to helped your application		
Theme	**Survey Responses**	**Frequency of the response *n***
Networking	Built an extensive network of colleagues and collaborators: future colleagues lobbied heavily for me	(4)
	Attending many meetings, hugely important in my success	(4)
	Personal connections seemed helpful and fit seemed really important	(4)
Preprints	Preprints were enormously helpful: interview based on pre-print, offer based on preprint, helpful to show adopting new techniques and productivity, was looked favorably upon much before paper published	(4)
Publications	Paper being accepted was important	(5)
	High-impact non-CNS publications	(1)
	CNS publications helped get my position	(2)
Research Field	Performing interdisciplinary research	(1)
	Learning a new research technique	(1)
	Research area being perfect fit for department: asking hiring departments what/which field/expertise they are looking for	(4)

Mentoring	Mentoring goals align well with those of the university	(3)
	Having mentors helps you get through this process	(1)
	Having colleagues/mentors (both early career and senior) review and comment on application	(3)
	Significant amount of leadership experience: through helping to start an internship for underrepresented minority undergraduates	(1)
Teaching	Teaching experience being perfect fit for department	(1)
	Teaching certificate was immensely helpful for teaching focused positions.	(1)
Funding	Having funding in the past: e.g. Postdoctoral Fellowship (NIH F31 fellowship) and K awards, Marie Curie fellowship, Human Frontier fellowship were looked favorably upon	(12)
	Institutional Research and Academic Career Development Award	(1)
	Experience of writing grants: co-written with PI, scored not funded	(1)
Pedigree	PhD and/or Postdoctoral lab pedigree	(3)
Service	Serving as a reviewer for journals	(1)
Other Skills	Other skills are also important not just research skills	(1)
Randomness	The process of applying and finding a job seems completely up to luck/lottery, that there is no magic formula to this, **but having amazing mentors helps you get through this process**.	(3)

Table S26. Candidate responses to "Was any aspect of your career particularly helpful when applying (preprints, grants etc.)?" Survey participants were able to provide long answers to this comment question. A word cloud referring to this table of comments is provided in Figure 7A.

Table S27. Themes from written applicant responses to obstacle in the way of your application		
Theme	**Survey Responses**	**Frequency of the response *n***
No application feedback	Hard to say because I got no feedback, More transparency from the search committee would have been great.	(5)
Nepotism	Nepotism based on advisor name	(3)
	Nepotism based on institution pedigree	(1)
	Same finalists invited everywhere: all the top schools only invited these anointed candidates for site interviews, Lack of breadth and diversity in the pool of on-site candidates	(1)
Personal Life concerns	Maternity leave	(3)
	Two-body problem (partners finding jobs in the same vicinity)	(1)
	Work-Family balance (balancing care for children with time-consuming and stressful faculty job applications)	(2)
Poor Mentorship	No mentor that gave feedback on writing grants	(8)
	Lack of mentorship on how to handle the on-site interview and structure my proposed work talk.	(1)
Publications	Lack of postdoc papers being accepted	(3)
	lack of CNS papers	(4)
	harmful was not having postdoc papers all in preparation and not published yet	(1)
	publication gap following the birth of my first child was a problem	(2)
	Maintaining productivity in the lab while preparing applications was difficult.	(1)
Preprints	Lack of Preprints	(1)

Citizenship	Not being a US citizen made it hard to have K or F award	(3)
Language Skills	Level of speaking English is a big hurdle.	(1)
Research Field	No offers due to *in vitro* work instead on *in vivo* research (lack of fit)	(1)
	Interdisciplinary research was underappreciated	(6)
	Not Moving Institutions from PhD to postdoc	(1)
	Working in industry for a few years before applying to academic position (questioned about this on off-site interviews)	(1)
Teaching	Lack of teaching experience that would have also helped with writing teaching statements	(2)
Funding	Lack of Funding: No funding, ability to procure outside funding	(8)
Randomness/Chaos	The academic market is 90% chaos and privilege. It's like the lottery, but worse.	(1)

Table S27. Candidate responses to "Was any aspect of your career particularly an obstacle when applying?" Survey participants were able to provide long answers to this comment question. A word cloud referring to this table of comments is provided in Figure 7B.

Table S28. Frequency of Job applicant comments who received an offer		
Type of Candidates	**Percentage of Candidates**	**Comments**
All Candidates	100% (317 out of 317)	-
Candidates with at least one offer	58.3% (185 out of 317)	-
Candidates with at least one offer who wrote a comment about the application process	9.3% (17 out of 183)	-
Candidates with offers who wrote a comment and had **positive** perception of the application process	Less than 1.8% (2 out of 17)	e.g. Fine, Smooth
Candidates with offers who who wrote a comment and	88.2%	e.g. Terrible,

had **negative** perception of the application process	(15 out of 17)	Stressful
Candidates <u>with offers </u>who had **positive** perception of the application process	Less than 1% (2 out of 317)	-
Candidates <u>with offers </u>who had **negative** perception of the application process	4.7% (15 out of 317)	-
Candidates <u>with offers </u>who made **no comments**	35.6% (113 out of 317)	-
Candidates <u>with or without offers </u>who made **no comments**	63.4% (201 out of 317)	-

Table S28. Overview of candidates who commented on their view in general of the application process. Responses to "Do you have any comments that you would like to share? For example, how did you experience the application process?" Survey participants were able to provide long answer to this comment question. A word cloud referring to this table of comments is provided in Figure 7C. Percentages are calculated out of the total number of respondents to this particular survey questions.

Table S29. themes from search committee written responses to any Other comments or thoughts about the state of hiring for tenure track positions?		
Theme	**Survey Responses**	**Frequency of the response *n***
Extending a faculty job offer is not trivial.	If you took the probability of an offer an applied it blindly to the number of applicants, you would conclude that it is nearly hopeless to apply. The reality is that a small number of folks end up with multiple offers. So it is either more or less hopeless, depending on whether you're one of that small number. In my experience, it is easy to imagine that it's all luck or whose lab you come from or whether you got a CNS paper, this attitude evaporates when you experience an actual faculty hiring process. Applicants' track records are nontrivially long, and they are subjected to many forms of poking and prodding to see if they're for real before an offer is extended.	(1)
Quality of publications are most important.	The quality of the candidate's published research is the most important thing we try to evaluate.	(1)
Candidate perceptions of the hiring process are unreal.	The perception gap between what trainees think matter and what actually matters is rather large due to a number of correlations. There are many	(1)

	problems with academic hiring processes, but they are typically not the ones trainees think they are.	
Too many candidates do not aim for a fit with their ability.	Too many candidates don't aim correctly for where they actually fit with their record and ability - aiming either too high or too low. We have limited slots for interviews, and often don't bring in our very top applicants since they invariably turn us down for a top 5 place.	(1)
Too many candidates apply for faculty positions.	There are too many people applying for tenure track jobs. Postdocs should think more carefully about what it is they truly like about research and look for jobs that allow them to do that.	(1)
Finding a fit between candidate and the department is key.	Most find a home. Process is about connecting with a community that makes sense.	(1)
Candidates apply to too many positions	Social media has amplified the crazy nature of the process. People apply to too many positions.	(1)
Finding a faculty job requires persistence	It is not easy and requires persistence.	(1)
Challenges in Finding a Fit	Although we have many fantastic applicants each cycle, it remains challenging to and someone who is an excellent intellectual fit for our department AND has superlative credentials.	(1)
The hiring process is not as bleak as portrayed.	It's not as bleak as the scientific press or many postdocs think.	(1)

Table S29. Overview of search committee members who commented on "Do you have any other comments or thoughts about the state of hiring for tenure track positions?" Survey participants were able to provide long answer to this comment question.

Table S30. Applicant Demographics: Number of times (cycles/years) that the candidates had applied for faculty positions	
Theme	**Applicant number**
Total Number of Applicants	100% (317 out of 317)
Applied 0 cycles	Less than 1% (1 out of 314)
Applied 1 cycle only	56.7% (176 out of 314)
Applied for 2 cycles so far	29.3% (92 out of 314)

Applied for 3 cycles so far	10.5% (33 out of 314)
Applied for 4 cycles so far	3.2% (10 out of 314)
Applied for 5 cycles	Less than 1% (2 out of 314)
Did not respond to this survey Question	Less than 1% (3 out of 317)

Table S30. Overview of number of times job candidate survey respondents applied for a faculty (PI) position (Box 1). This is in response to the survey question :"How many times have you applied for PI positions? i.e. if the 2018-2019 cycle was the first time, please enter "1", if you also applied last cycle, enter "2", etc. Percentages are calculated out of the total number of respondents to this particular survey questions (n=314).

Table S31. Statistics from the Search Committee Survey	
Theme	Faculty Responses (n=15)
Typical number of applications committees received each cycle	100-199 applications (n=5) 200+applications (n=10)
Typical number of applicants making through the first round of cuts	1-19 candidates (n=5) 20-39 candidates (n=4) 40-50 candidates (n=3) 60+ candidates (n=3)
Typical number of applicants invited for offsite interview (Skype/phone)	0 candidates (n=4) 5 or fewer candidates (n=1) 6-8 candidates (n=1) 5-10 candidates (n=1) 8-10 candidates (n=1) 10 candidates (n=2) 10-15 candidates (n=1) 12-15 candidates (n=2) 16 candidates (n=1) NA (n=1)
Typical number of applicants invited for onsite (on campus) interview	5 candidates (n=5) 6 candidates (n=4) 8 candidates (n=5) 10 candidates (n=1)
Typical number of offers committees make per job posting	0-1 candidates (n=11) 2-3 candidates (n=4)
Number of openings at your department in the last five years	2-3 openings (n=5) 4-5 openings (n=6) 6+ openings (n=4)

Length of faculty involvement with department's search committee	1-4 years (n=1) 5-10 years (n=3) 11-19 years (n=8) 20-29 years (n=2) 30+ years (n=1)

Table S31. Overview of the search committee survey responses to "Approximately how many applicants for a posted position do you get?", "Approximately how many applicants make it through the first round of cuts?", "Approximately how many applicants are invited for off-site interview (Skype/phone)?", "Approximately how many offers does your committee make per job posting?", "Approximately how many openings has your department had in the last five years?", "Approximately how many applicants are invited for on-site interview?", "How long have you been involved in academic search committees?".

Table S32. Search committee survey demographics	
Theme: Faculty field and institution type	**Faculty number**
Total Number of Faculty responses received	**(All faculty were based in the United States n=15)**
Number of Faculty involved with search committees in the past 10 years	60% (9 out of 15)
Faculty in Engineering	6.7% (1 out of 15)
Faculty in Life Sciences	87% (13 out of 15)
Faculty in Chemistry	6.7% (1 out of 15)
Work at D/PU: Doctoral/Professional Universities	6.7% (1 out of 15)
Work at R1: Doctoral Universities	93.3% (14 out of 15)

Table S32. Overview of the search committee faculty demographics of our faculty survey respondents. Percentages are calculated out of the total number of respondents to this particular survey questions (n=15).

Table S33: Statistics from the Search Committee Survey on Preprints					
Theme	**Depends on the faculty member. Some love preprints, others do not.**	**Yes (preprints are appreciated and considered a demonstration of productivity)**	**No (preprints are largely ignored)**	**We have not searched in the last 2 years**	**Appreciated and used but not as heavily weighted as peer-reviewed published work.**
Does your committee look favorably upon preprints? (15)	6.6% (1 out of 15)	66.7% (10 out of 15)	13.3% (2 out of 15)	6.6% (1 out of 15)	6.6% (1 out of 15)

Table S33. Overview of the search committee survey responses to "Does your committee look favorably upon preprints?".

Table S34. Statistics from the Search Committee Survey on Perception of the job market	
Theme	**Faculty perception of the job market for tenure-track faculty as someone involved in the search process (please tick all that are true) (n=15)**
Candidates fall below expectations during interviews	66.7% (10 out of 15)
Too few good applicants	13.3% (2 out of 15)
Hard to identify good candidates from applications	13.3% (2 out of 15)
Easy to identify good candidates from applications	73.3% (11 out of 15)
Too many good applicants	66.7% (10 out of 15)
Candidates surpass expectations during interviews	626.6% (4 out of 15)
Skype interviews have helped reduce mismatch	6.6% (1 out of 15)
The Market has changed alot since I applied for a faculty position	20% (3 out of 15)

Table S34. Overview of the search committee survey responses to "What is your perception of the job market for tenure track faculty as someone involved in the search process (please tick all that are true)". Percentages are calculated out of the total number of respondents to this particular survey questions (15)

Table S35. Statistics from the Search Committee Survey on weighting of applicant materials	
Theme	**Faculty evaluation (on a scale of 1-5) of the various tenure track application materials (total committee members n=15)**
Weight of prior teaching experience?	0% (0 9 out of 15) said 5 0% (0 out of 15) said 4 20% (3 out of 15) said 3 53.3% (8 out of 15) said 2 26.7% (4 out of 15) said 1
Weight of good mentorship in the candidate's postdoctoral/graduate student lab explicitly on selection process (e.g. "This candidate's mentor is known to produce good trainees")?	6.7% (1 out of 15) said 5 20% (3 out of 15) said 4 26.7% (4 out of 15) said 3 40% (6 out of 15) said 2 6.7% (1 out of 15) said 1
Weight of the research proposal weigh on the selection process (e.g. "This candidate's research statement is incredibly compelling!")?	60% (9 out of 15) said 5 33.3% (5 out of 15) said 4 0% (0 out of 15) said 3 6.7% (1 out of 15) said 2 0% (0 out of 15) said 1
Weight of the graduate student fellowships or awards (e.g. NSF GRF, NIH F30, etc.)?	6.7% (1 out of 15) said 5 20% (3 out of 15) said 4 33.3% (5 out of 15) said 3 33.3% (5 out of 15) said 2 6.7% (1 out of 15) said 1
Weight of the non-transitional postdoctoral fellowships or awards (e.g. NIH F32, AHA etc.)?	20% (3 out of 15) said 5 33.3% (5 out of 15) said 4 33.3% (5 out of 15) said 3 13.3% (2 out of 15) said 2 0% (0 out of 15) said 1
Weight of the transition awards as a positive factor (i.e. K99/R00 award, Burroughs Wellcome Career Award, or some award that provides the applicant with money as a new faculty member)?	33.3% (5 out of 15) said 5 20% (3 out of 15) said 4 33.3% (5 out of 15) said 3 13.3% (2 out of 15) said 2 0% (0 out of 15) said 1
Weight of the Cell, Science, or Nature papers above papers in other journals	0% (0 out of 15) said 5 26.7% (4 out of 15) said 4 13.3% (2 out of 15) said 3 26.7% (4 out of 15) said 2 33.3% (5 out of 15) said 1
Weight of the journal impact factor explicitly in to the selection process (e.g. does the word 'impact factor' come up in discussions around applicants)?	0% (0 out of 15) said 5 13.3% (2 out of 15) said 4 6.7% (1 out of 15) said 3 26.7% (4 out of 15) said 2 53.3% (8 out of 15) said 1

Table S35. Overview of the search committee survey responses to evaluation of a number of the tenure-track application materials: 1) "To what extent does the research proposal weigh on the selection process (e.g. "This candidate's research statement is incredibly compelling!", 2) "To what extent does good mentorship in the candidate's postdoctoral/graduate student lab explicitly weigh on selection process (e.g. "This candidate's mentor is known to produce good trainees", 3) "How heavily does the committee weigh graduate student fellowships or awards (e.g. NSF GRF, NIH F30, etc.)", 4) "How heavily does the committee weigh non-transitional postdoctoral fellowships or awards (e.g. NIH F32, AHA etc.)", 5) "Does your committee weigh Cell, Science, or Nature papers above papers in other journals?", 6) "To what extent does journal impact factor explicitly weigh in to the selection process (e.g. does the word 'impact factor' come up in discussions around applicants)?", 7)"How heavily does the committee weigh transition awards as a positive factor (i.e. K99/R00 award, Burroughs Wellcome Career Award, or some award that provides the applicant with money as a new faculty member)?", 8) "How heavily does the committee weigh prior teaching experience?". In the survey, a 5-level Likert scale was used to record faculty impressions where a response of 1=not at all and 5= heavily. Percentages are calculated out of the total number of respondents to this particular survey questions (n=15).

Table S36. Themes from the Search Committee Survey written responses to: What information do you wish more candidates knew when they submit their application?		
Theme	**Survey Responses**	**Frequency of the response**
Importance of Research Proposal	In a useful sense, no one cares about your particular interests in the way that you do. Write your application to engage a broad group of scientists. We care about the impact of what you propose to do (research blurb).	(5)
Importance of publications	That your research and your papers are the main thing we look at, and we actually do read and evaluate your work. Where it's published (bioRxiv vs. C/N/S) does not matter. We're looking for leading indicators of success, not lagging ones.	(2)
Importance of the Chalk-Talk	We care about whether you can tell us how and why this matters (chalk talk).	(3)
Importance of the Impact of your work	We care about the impact of what you have done	(2)
Importance of being a great & creative colleague	I wish candidates better understood that we are looking for an interesting colleague.	(3)
Importance of being independent	Evidence for independence innovative and creative research plans are good.	(1)
Importance of being authentic	Making authentic personal connections when interviewing is always crucial.	(1)

Table S36. Overview of Search Committee who responded to "What information do you wish more candidates knew when they submit their application?" Survey participants were able to provide long answer to this comment question. A word cloud referring to this table of comments is provided in Figure 9a.

Table S37. Themes from search committee write in responses to any changes in the search process since the first search you were involved in?		
Theme	**Survey Responses**	**Frequency of the response *n***
No Change	Not much/Nothing fundamental	(3)
Has changed	Yes	(2)
Negative publicity	There is a lot more negative publicity and discussion.	(1)
Higher credentials required	The credentials required to pass the first cut are getting higher and higher.	(1)
Stronger Candidates	The candidates are stronger/more savvy now	(2)
Addition of online interviews	The Skype/Zoom off-site interview component is new compared to six years ago when I interviewed.	(3)
Recommendation Letters	Letters have become more hyperbolic	(1)
Chalk-Talks	The chalk talk is a bigger deal now	(2)

Table S37. Overview of search committee faculty members who commented on "Have you noticed any changes in the search process since the first search you were involved in?" Survey participants were able to provide long answer to this question. A word cloud referring to this table of comments is provided in Figure 9.
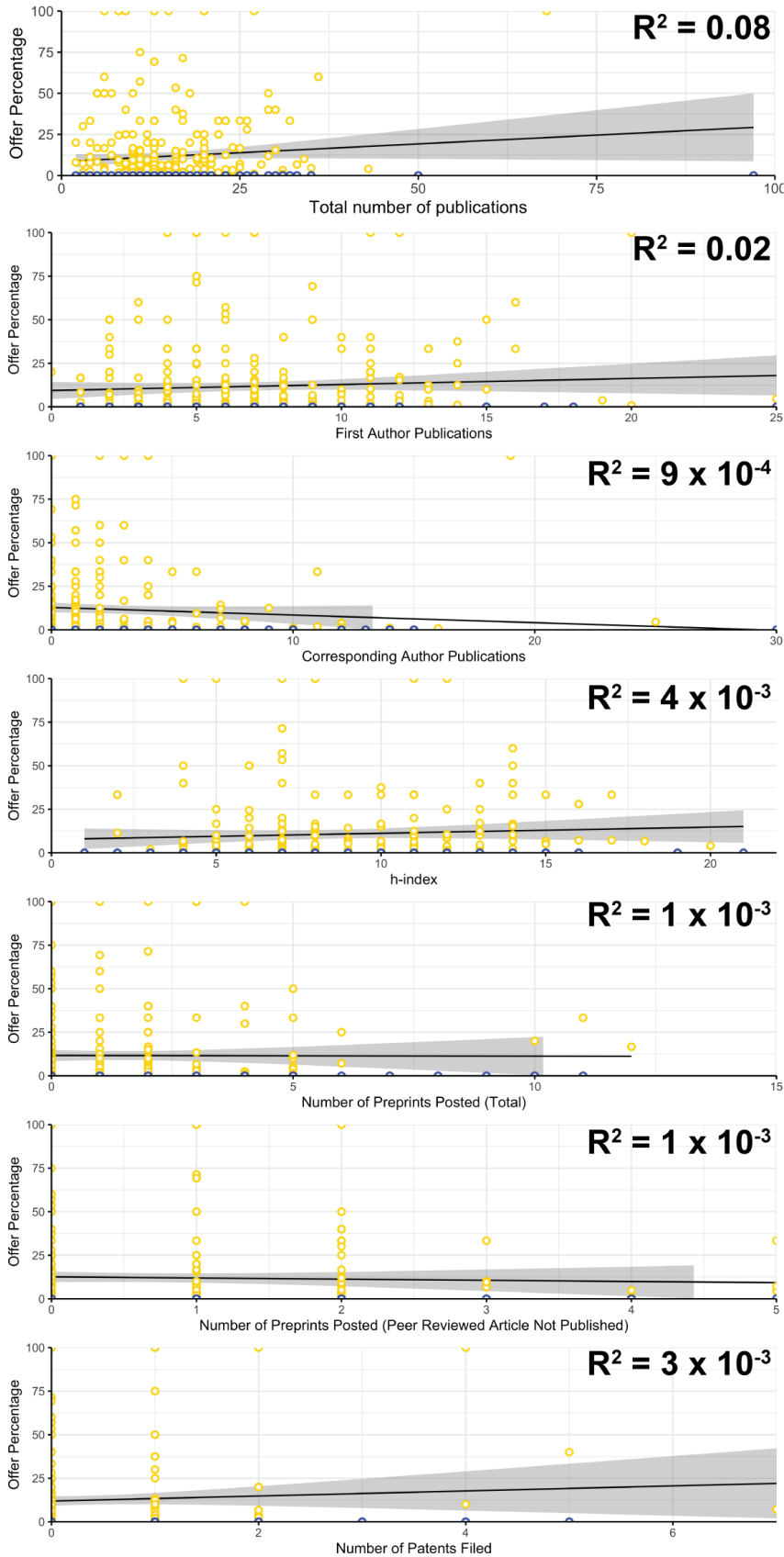
Figure S1. Correlation (R^2 = Pearson correlation coefficient) between offer percentage and a number of traditional metrics: total number of publications (top), number of first author publications (2nd graph), number of corresponding author publications (3rd graph), h-index (4th graph), preprints posted (overall total, 5th graph; as well as those in which the peer-reviewed article was not published at the time of application, 6th graph), and number of patents filed, bottom graph). Yellow dots represent candidates with an offer, blue dots received no offers; black line represents linear best-fit and grey fill represents the 95% confidence interval for that fit.

Impressions of Candidates

- Easy to identify good candidates from applications
- Too many good applicants
- Candidates surpass expectations during interviews
- Candidates fall below expectations during interviews
- Hard to identify good candidates from applications
- Too few good applicants
- The market has changed a lot since I applied for a faculty position
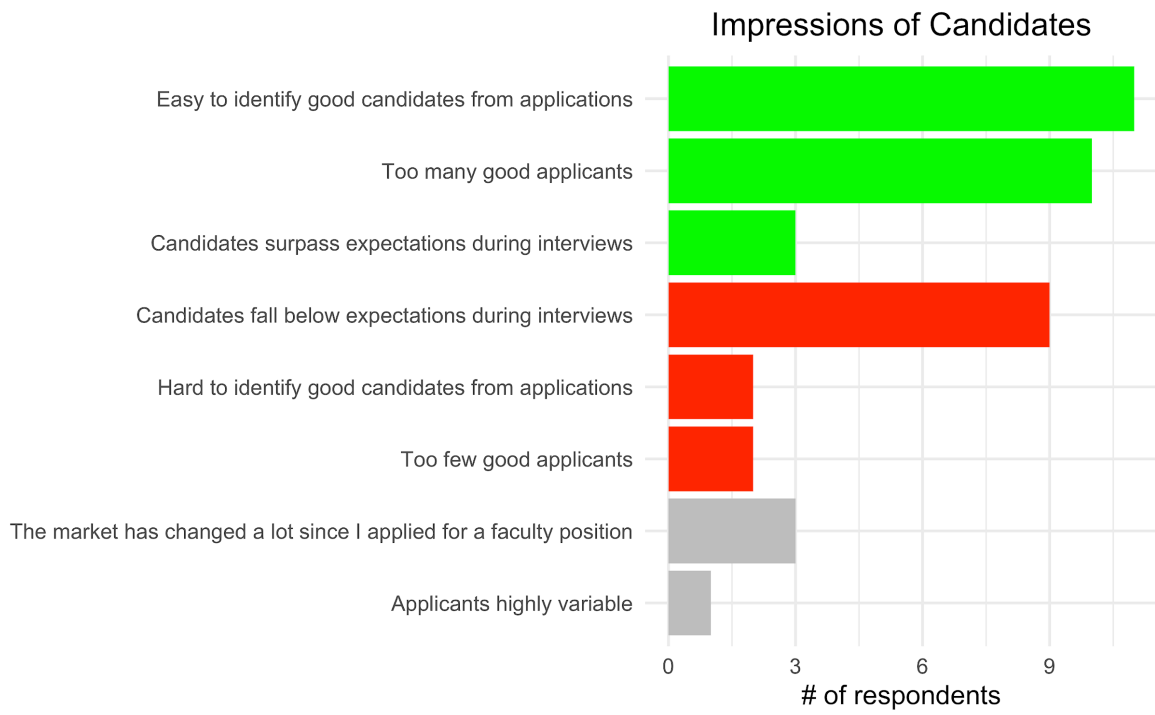- Applicants highly variable

# of respondents

Figure S2. Overview of the search committee impressions of the candidates.

The Applicant survey

Survey of the applicants to the tenure-track jobs

Please answer in as much detail as you can. All responses will be treated fully anonymously.
*Required

1. Where (which country) did you apply for faculty positions?*
    United States
    Canada
    United Kingdom
    Germany
    Switzerland
    Australia
    Singapore
    Other

    If "other", or if you applied to multiple countries, please specify here:
    Short Answer---------------

2. Your field (broadly defined)*
    Biomedical or life sciences
    Bioengineering
    Biology (other)
    Chemistry
    Chemical engineering
    Computer Science
    Mechanical engineering
    Physics
    Other

    If "other", please specify: Short answer----------------

3. Did you apply primarily to research (R1) or teaching-focused (PU) institutions?
    R1 Institutions
    PUIs
    Both R1 & PUIs
    Other

    If "other", please specify: Short answer----------------

4. Total Number of applications submitted June 2018-April 2019*
    Short Answer:---------------------
5. Number of remote/offsite (e.g. phone, Skype...) interviews*

Short Answer:---------------------

6. Number of onsite interviews*
   Short Answer:---------------------

7. Number of offers*
   Short Answer:---------------------

8. Approximate Number of rejections
   Short Answer:---------------------

9. Do you have any comments that you'd like to share? For example, how did you experience the application process? Did you use the Future PI google sheet? Did you find it helpful? If yes, why?
   Long Answer:---------------------

10. Where are you currently working (country)?
    Short Answer---------------

11. What's your gender?
    Male
    Female
    Non-Binary
    Prefer not to disclose
    Other

12. What is your current position?
    Postdoc (or equivalent, if it is a postdoc position with a different title)
    PhD student
    Other

    If you replied "Other" in the previous question, please explain here:
    Long Answer------------------

13. If postdoc, how many years have you been a postdoc? (TOTAL number of years, if you've had multiple appointments.)
    1st postdoc
    2nd postdoc
    >2nd postdoc

14. If postdoc, is this your first postdoc position?
    Yes

No

15. How many times have you applied for PI positions? I.e. if the 2018-2019 application cycle was the first time, please enter "1", if you also applied last cycle, enter "2", etc.
Short Answer:---------------------

16. If you have a Google Scholar account, what is your number of citations (all; since 2014), and h-index (all; since 2014)
Short Answer:---------------------

17. How many papers have you published? (ALL papers: as co-author, first author and last author. If conference abstracts count towards publications in your field, please include those as well.)
Short Answer:---------------------

18. How many first author papers have you published?
Short Answer:---------------------

19. How many papers have you published as corresponding author?
Short Answer:---------------------

20. What is your highest impact-factor publication (IF or journal)? Was this as first author, a co-author, or as corresponding author? (Suggested format for answer: journal name, author description) [e.g. eLife, first author]
Short Answer:---------------------

21. Did you have any Cell/Nature/Science publications? If yes, how many and were you first author, a co-author, or corresponding author on them? (Suggested format for answer: number, author description) [e.g. 2, first author, 1 corresponding author]
Short Answer:---------------------

   If your response to previous question was "No", which journals have you prominently published in? Please name no more than 5. Please avoid ambiguous abbreviations.

22. Did you have any preprints (which were not yet accepted/published at the time of application)? If yes, how many? (Suggested format: yes/no, number)
Short Answer:---------------------

23. How many preprints have you posted throughout your career?
Short Answer:---------------------

24. Do you have any patents filed (approved or pending)? If yes, how many? (Suggested format: yes/no, number)
Short Answer:---------------------

25. Do you have any teaching experience?
    No
    Yes TA position(teaching assistantship)
    Yes experience beyond TA

26. If "yes, beyond TA", please elaborate: (e.g. What type of experience? How many years? Was it an undergraduate or graduate course? Was the course designed by you?)
    Long Answer:----------------------

27. Did you have a PhD or postdoc fellowship?
    No
    Yes, PhD fellowship
    Yes, postdoc fellowship
    Yes, both
    Yes

28. Have you ever been a PI or co-PI on a grant (such as K99/K01/R01 in the US, i.e. not postdoc/training fellowships)?
    No
    Yes, PI
    Yes, co-PI
    Other

29. If you said "Other" to previous question or would like to name the type of grant please explain.
    Long Answer:----------------------

30. Did you also apply for non-faculty positions such as Industry or Government or other jobs)?
    No
    Yes, non-faculty positions in academia
    Yes, positions outside of academia

31. If you said "Other" to the previous question or would like to explain your answer please elaborate. Long Answer:----------------------

32. Do you have any comments? For example, was any aspect of your career particularly helpful/an obstacle when applying (preprints, grants etc...)?
    Long Answer:----------------------

The Search committee survey

Survey of faculty members involved in tenure-track searches

Please answer in as much detail as you can. All responses will be treated fully anonymously.
*Required

1. How would you broadly define the field of the search(es) you've been involved in? *
    Biological and/or biomedical/life sciences
    Engineering
    Computer Science
    Mathematics
    Physics
    Chemistry
    Psychology
    Social Sciences
    Other

2. In what country are you based at?   Short Answer:---------------------

3. How would you describe your institution? *
    PUI (Primarily Undergraduate Institution)
    D/PU: Doctoral/Professional Universities
    R1: Doctoral Universities
    R2: Doctoral Universities
    Independent research institute
    Prefer not to disclose
    Other:

4. Approximately how many applicants for a posted position do you get? *
    1-19
    20-49
    50-99
    100-199
    200+
    Prefer not to disclose

5. Approximately how many applicants make it through the first round of cuts? *
    1-19
    20-39
    40-59
    60+
    Prefer not to disclose

6. Approximately how many applicants are invited for off-site interview (Skype/phone)? *

7. Approximately how many applicants are invited for on-site interview ? *

8. Approximately how many offers does your committee make per job posting? *
   0-1
   2-3
   4+
   Prefer not to disclose

9. Approximately how many openings has your department had in the last five years? *
   0-1
   2-3
   4-5
   6+

10. Does your committee weigh Cell, Science, or Nature papers above papers in other journals? *

   Not at all   Heavily

              1   2   3   4   5

11. To what extent does journal impact factor explicitly weigh in to the selection process (e.g. does the word 'impact factor' come up in discussions around applicants)? *

   Not at all   Heavily

              1   2   3   4   5

12. To what extent does good mentorship in the candidate's postdoctoral/graduate student lab explicitly weigh on selection process (e.g. "This candidate's mentor is known to produce good trainees")? *

   Not at all   Heavily

              1   2   3   4   5

13. To what extent does the research proposal weigh on the selection process (e.g. "This candidate's research statement is incredibly compelling!")? *

Not at all   Heavily

        1   2   3   4   5

14. Does your committee look favorably upon preprints? *
    Yes (preprints are appreciated and considered a demonstration of productivity)
    No (preprints are largely ignored)
    Other:-----------------------

15. How heavily does the committee weigh graduate student fellowships or awards (e.g. NSF
    GRF, NIH F30, etc.)? *
              Not at all   Heavily

        1   2   3   4   5

16. How heavily does the committee weigh non-transitional postdoctoral fellowships or awards
    (e.g. NIH F32, AHA etc.)? *
              Not at all   Heavily

        1   2   3   4   5

17. How heavily does the committee weigh transition awards as a positive factor (i.e. K99/R00
    award, Burroughs Wellcome Career Award, or some award that provides the applicant
    with money as a new faculty member)? *
              Not at all   Heavily

        1   2   3   4   5

18. How heavily does the committee weigh prior teaching experience? *
              Not at all   Heavily

        1   2   3   4   5

19. What is your perception of the job market for tenure track faculty as someone involved in
    the search process (please tick all that are true). *
    Easy to identify good candidates from applications
    Hard to identify good candidates from applications

Too many good applicants
Too few good applicants
Applicants lack sufficient teaching experience
Candidates surpass expectations during interviews
Candidates fall below expectations during interviews
The market has changed a lot since I applied for a faculty position
Other:-----------------------------

20. What information do you wish more candidates knew when they submit their application?
    Long Answer:---------------------

21. How long have you been involved in academic search committees? *
    1 - 4 years
    5 - 10 years
    11 - 19 years
    20 - 29 year
    30+ years
    Prefer not to disclose

22. Have you noticed any changes in the search process since the first search you were involved in?
    Long Answer:---------------------

23. Do you have any other comments or thoughts about the state of hiring for tenure track positions?
    Long Answer:---------------------