IndiaBioscience

YI SURVEY

A Survey to Assess Issues Faced by Independent Life Science Researchers in India

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YI SURVEY
A SURVEY TO ASSESS ISSUES FACED BY INDEPENDENT LIFE SCIENCE RESEARCHERS IN INDIA

INTRODUCTION

IndiaBioscience believes that to continue serving the Indian scientific community, it is imperative to make an effort to understand the critical needs and gaps that independent scientists in the Indian life science system currently face. For this, we conducted a long-form survey to be circulated to Young Investigators (YIs) in the life sciences within our network as well as outside of it, which will help us assess the current status of the opportunities as well as provide us with clues on what might be some pressing issues and gaps that science governance in India, including IndiaBioscience, can help address in the coming years.

PROPOSED OBJECTIVES OF THE YI SURVEY

- To understand the issues/gaps faced by independent researchers/faculty/scientists in the current scientific ecosystem.
- To gather suggestions on what can be done to fill these gaps.
- To understand how IndiaBioscience can continue to serve as a platform to provide a voice to the scientific community.

MODE OF THE YI SURVEY

The YI survey was developed and disseminated across institutions/universities/organisations/ colleges working in the life sciences in India in 2021-2022. Publicity and outreach for the survey was done via email/social media/WhatsApp and physical posters were also sent to institutes across India. The survey was conducted via a Google form and the survey results were analysed in an anonymous manner. The survey results and recommendations have been collated into this report, with graphical and descriptive recommendations.
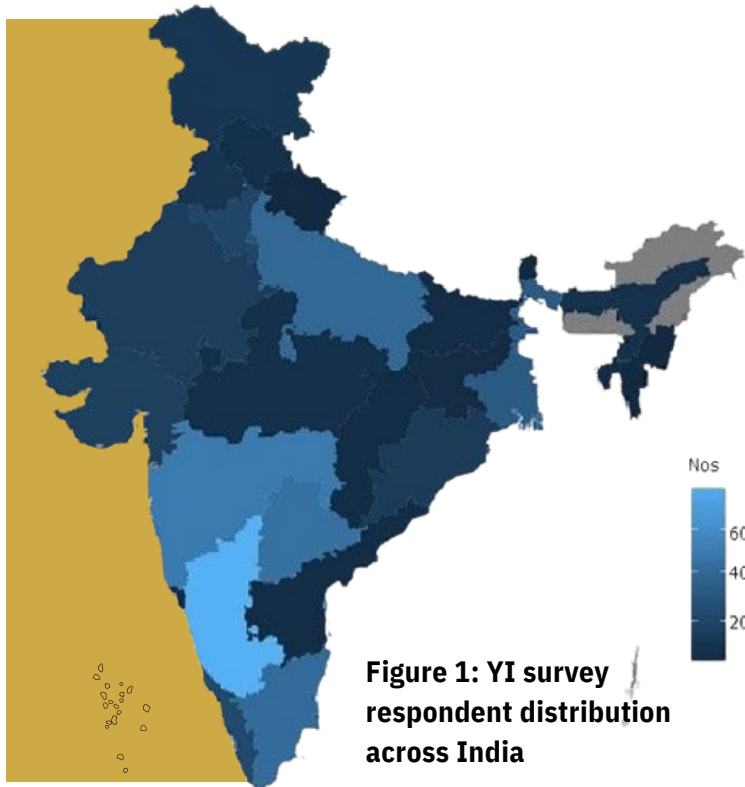
YI SURVEY:
CURRENT STATUS OF CHALLENGES FOR INDEPENDENT LIFE SCIENCE RESEARCHERS IN INDIA

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SECTION 1: **DEMOGRAPHICS**

SNAPSHOT

Figure 1: YI survey respondent distribution across India

From February to September 2022, the YI survey received **374 unique respondents**.

- There was a concentration of respondents from select states (Karnataka, Maharashtra, Telangana, Tamil Nadu, Uttar Pradesh) (Figure 1). *This could be owing to these states being S&T hubs, and likely points to a strong bias of respondents from these hubs.*
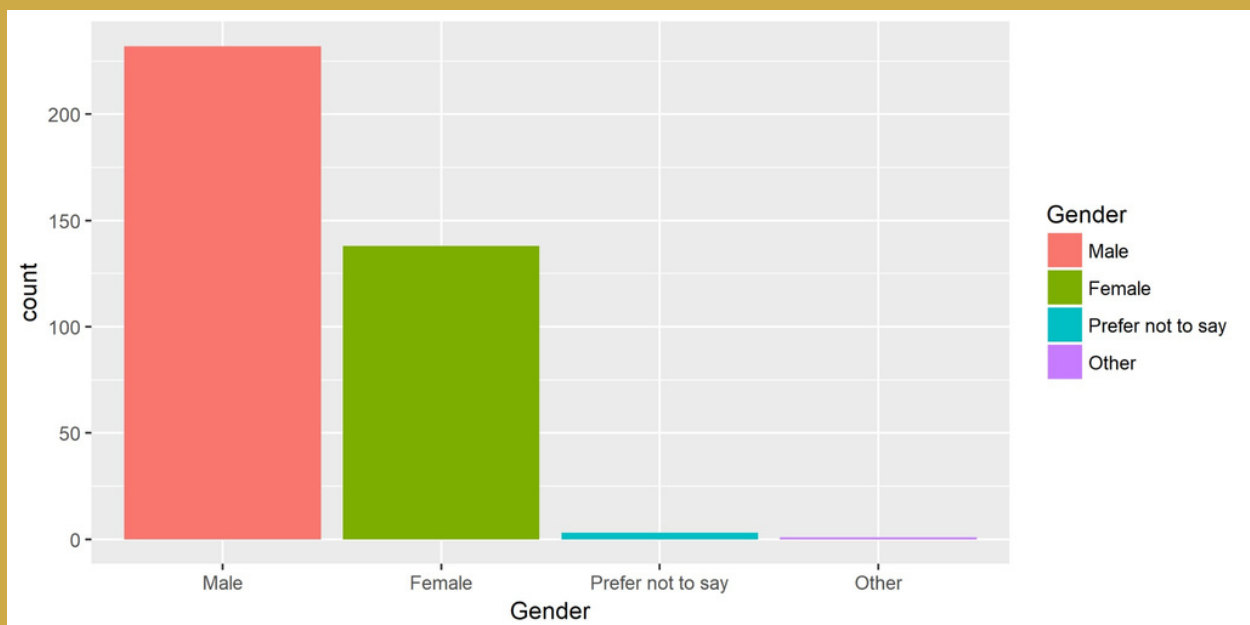

Figure 2: Gender distribution of YI survey respondents

- Of the total respondents, 62% self-identified as male and 37% as female and <1% as 'prefer not to say' or 'other' (Figure 2). *Given this, the survey shows a clear predominance of male respondents, with underrepresentation of marginalised groups such as female/non male/non-binary genders.*
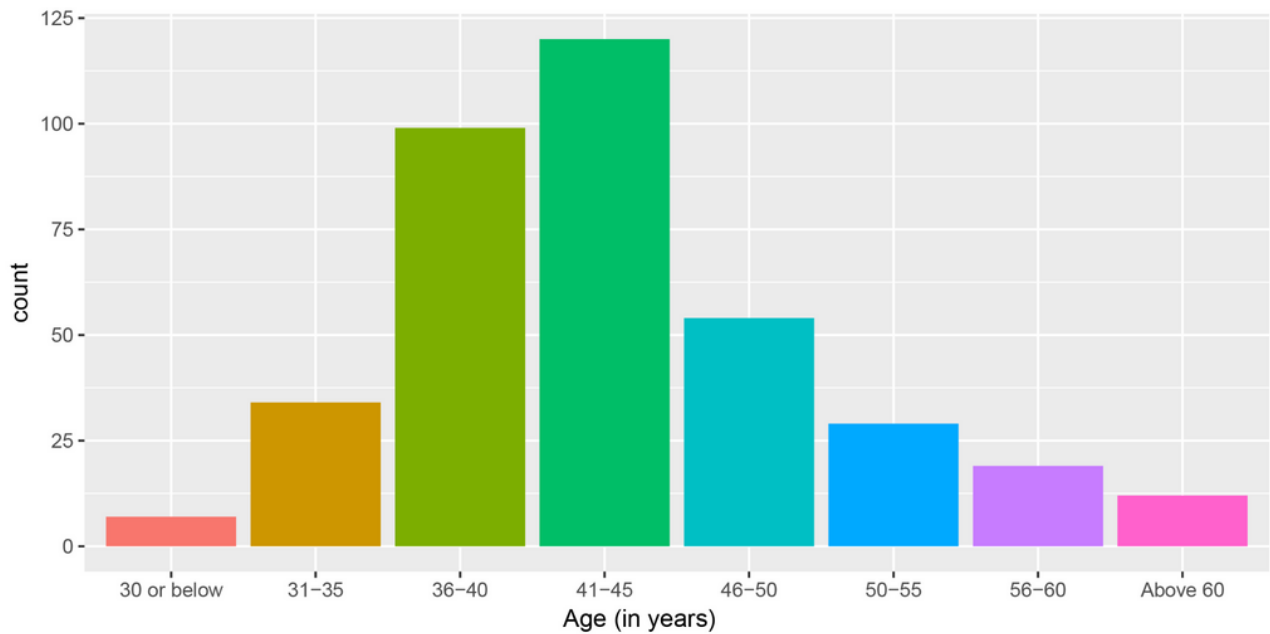
Figure 3: Age distribution of YI survey respondents

- The predominant age group of the YI survey respondents was 36-45 years (58.5%) (Figure 3).
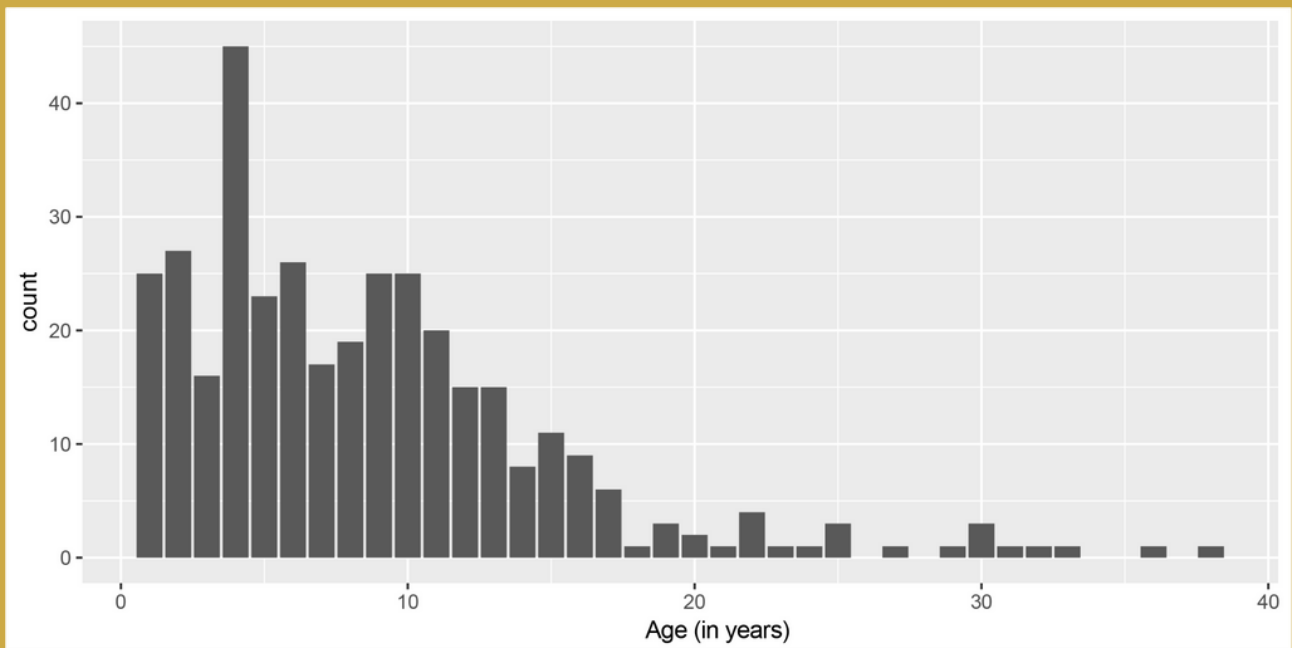
Figure 4: YI survey respondents based on years since starting an independent research group (responses up to 40 years shown)

- The majority of respondents started their labs within the last 15 years, which is important as it represents a largely early-career group of researchers in India (Figure 4). *This is also notably relevant given that the survey aimed to outline the challenges and opportunities of young investigators' in the country.*

Figure 5: Affiliations of the YI survey participants (at the time of the survey)

- Further, the YI survey respondents showed fairly diverse representation with respect to their current institutional affiliation (Figure 5), with the majority of respondents from MHRD/DAE institutions and private universities or colleges.
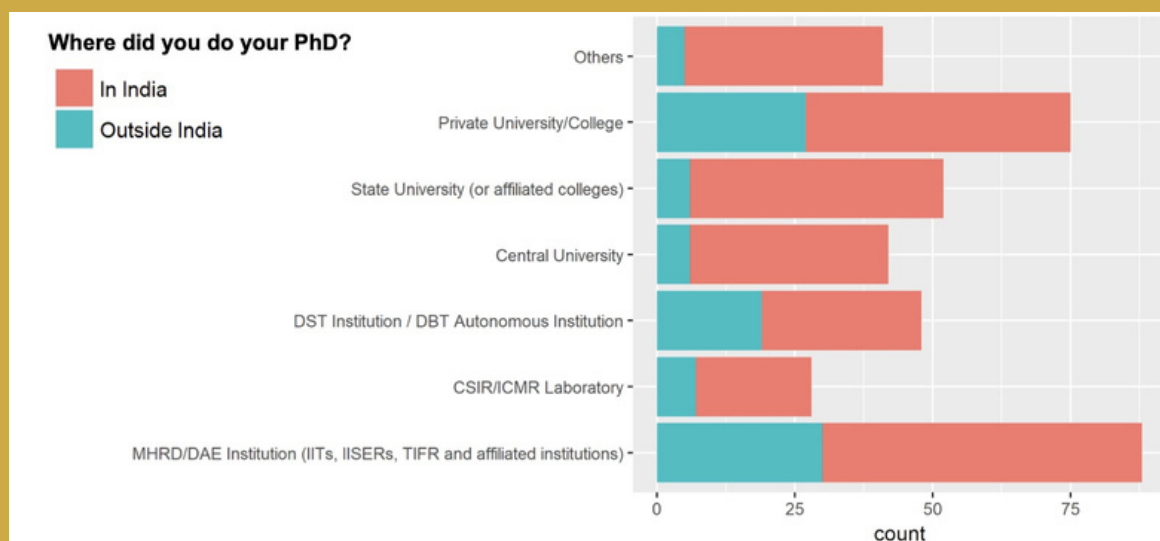
Figure 6: Location of PhD training of YI survey participants

- The majority of the YI survey respondents reported doing their PhD training in India (~73%) from a diverse range of government and private educational institutions (Figure 6). Interestingly, this was observed across YI survey respondents currently employed at MHRD/DAE institutions, CSIR/ICMR laboratories, DBT institutes as well as central, state and private universities.

- *While this survey represents a relatively small sample size, this indicates that the majority of early-career faculty in institutes and universities in India have obtained their doctoral training from within the country.*

Figure 7: Location of postdoctoral training of YI survey participants

- Based on the responses, the majority of the YI survey respondents obtained their postdoctoral training out of India (Figure 7), and this is particularly notable among those who were currently affiliated to MHRD/DAE institutes, CSIR/ICMR laboratories, Autonomous DBT institutes and central universities. *This underscores a well-known fact that a large segment of newly-minted PhD researchers in India typically seek postdoctoral training out of the country, after which some of them return to India to start independent faculty positions.*

- Notably, ~18% reported to have had no postdoctoral training, and this group was observed in higher numbers at state universities and private universities/colleges. *This is important as it highlights the fact that among the different institutions in India, state universities and private institutions are more likely to have or hire independent faculty with no postdoctoral training.*

KEY TAKEAWAYS

- *A large majority of the YI survey respondents were from states that are S&T hubs, and likely points to a strong bias of respondents from these hubs.*

- *The survey shows a clear predominance of male respondents, likely reflective of more male faculty in the life sciences in India, with underrepresentation of marginalised groups such as female/non male/non-binary genders.*

- *The survey respondents are largely early-career researchers in India; this is notably relevant given that the survey aimed to outline the challenges and opportunities of young investigators' in the country.*
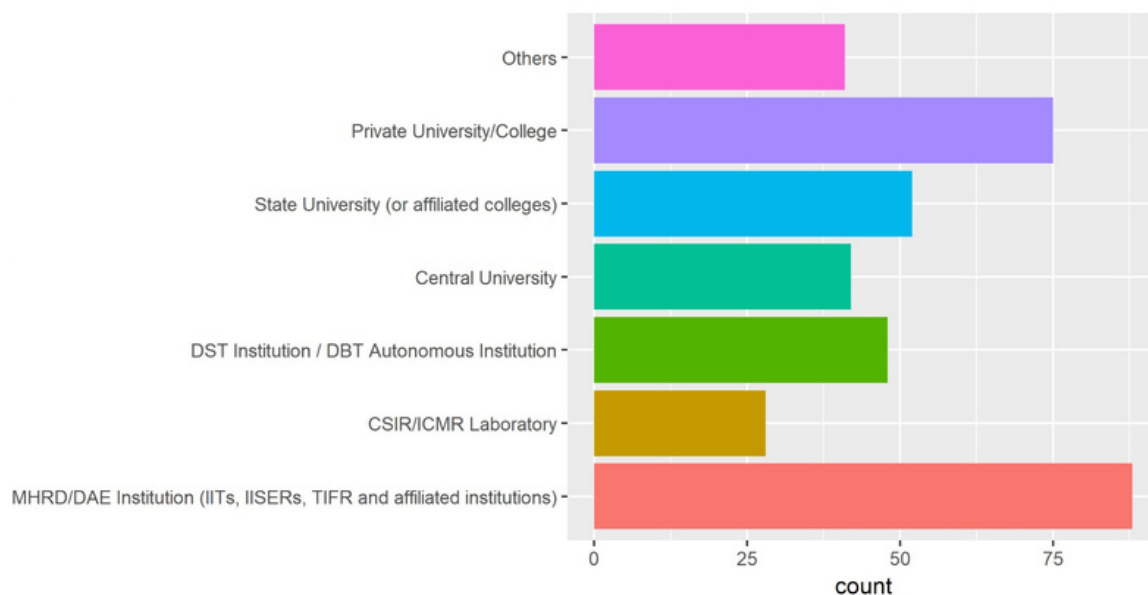
- *The YI survey respondents showed fairly diverse representation with respect to their current institutional affiliation.*

- *The majority of the YI survey respondents did PhD training in India, indicative of the fact that the majority of early-career faculty in institutes and universities in India have obtained their doctoral training from within the country.*
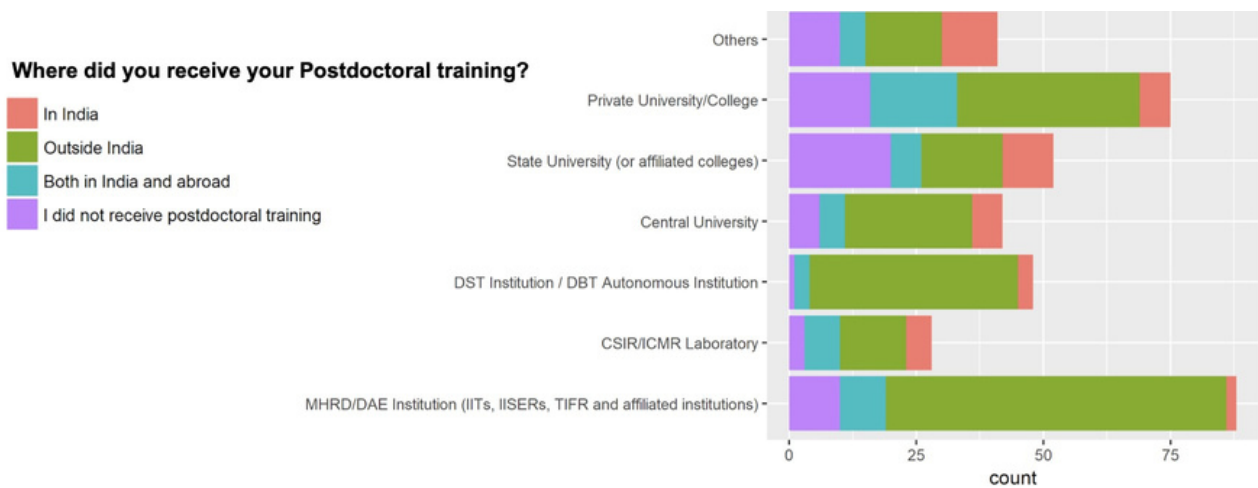
- *The majority of the YI survey respondents obtained their postdoctoral training out of India, indicative of the fact that newly-minted PhD researchers in India typically seek postdoctoral training out of the country, after which they return to India to start independent faculty positions.*

SECTION 2: **MENTORSHIP IN LIFE SCIENCE RESEARCH IN INDIA**

A. MENTORSHIP RECEIVED BY LIFE SCIENCE RESEARCHERS IN INDIA

SNAPSHOT
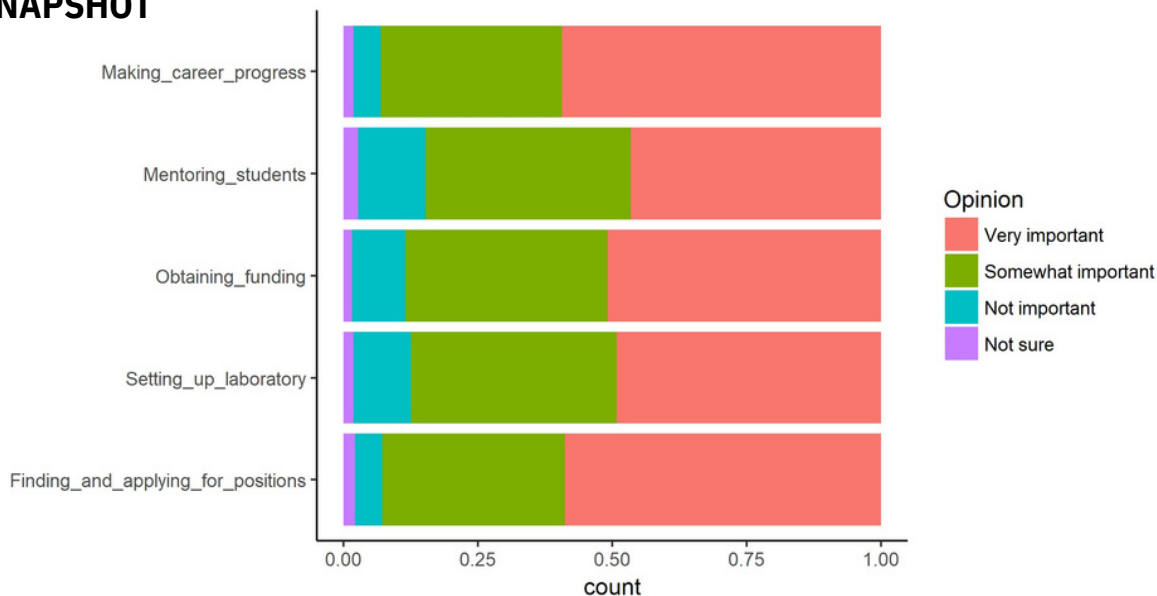
Figure 8: Importance of mentorship across various professional aspects

- In the 'Mentorship' section of the YI survey, the majority of the respondents (>80%; 93, 84, 89, 87, and 93% respectively for all the above categories) stated that mentorship was 'Very important' or 'Somewhat important' across various professional aspects (Figure 8).
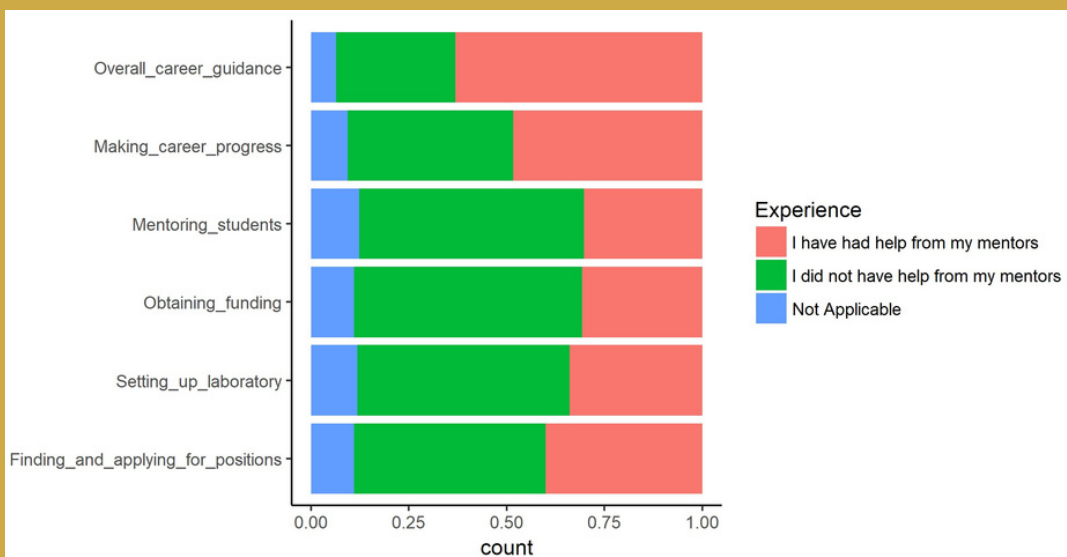
Figure 9: Experience with receiving mentorship across various professional aspects

- While a large segment of the survey respondents reported mentorship to be important, nearly half of the respondents (42-58% across various professional aspects) stated that they did not have help from mentors (Figure 9). Further, mentorship, if obtained, was most often related to overall career guidance (63% reported they received help from mentors for overall career guidance).
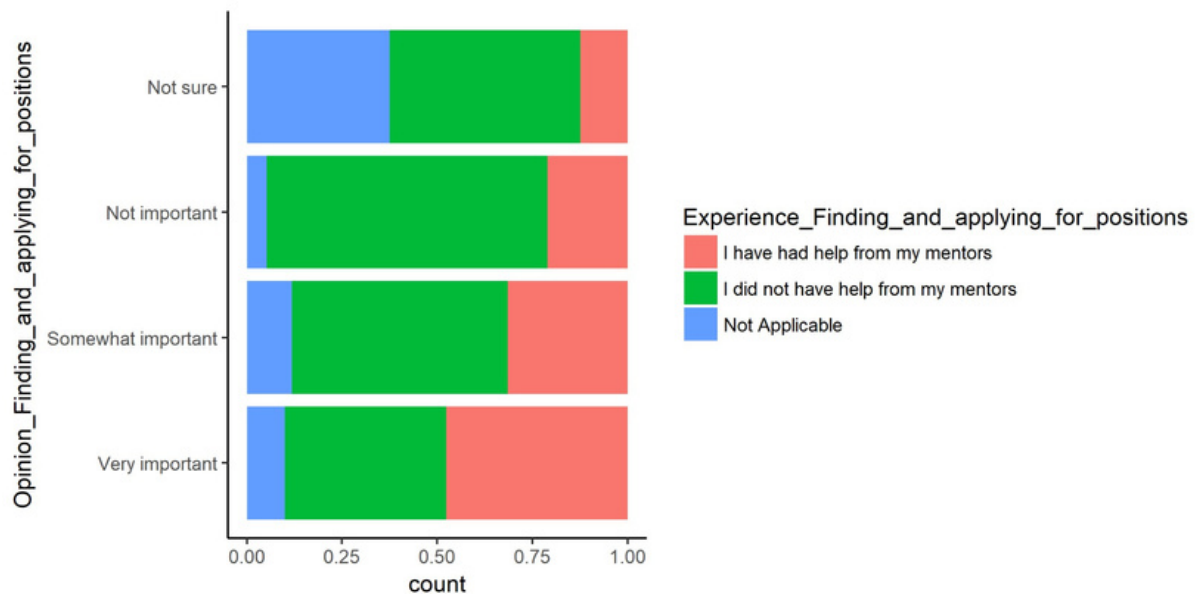
Figure 10: Need for mentoring versus experience receiving mentorship with respect to finding and applying for independent faculty positions

- When the need for mentoring was analysed with respect to the experience with receiving mentorship for **finding and applying for independent faculty positions**, the majority of respondents who stated that mentorship was 'Not important' had not received help from mentors (Figure 10).

- Of the respondents who stated that mentorship for finding and applying for positions was 'Very important', nearly equal numbers had and had not received help from mentors (Figure 10).

Figure 11: Need for mentoring versus experience receiving mentorship with respect to obtaining funding

- When the need for mentoring was analysed with respect to the experience with receiving mentorship for **obtaining funding**, the majority of the respondents who stated that mentorship for obtaining funding was 'Not important' had not received help from mentors. Overall, a lesser number of respondents reported that they had received help from mentors for obtaining funding during their careers (Figure 11).
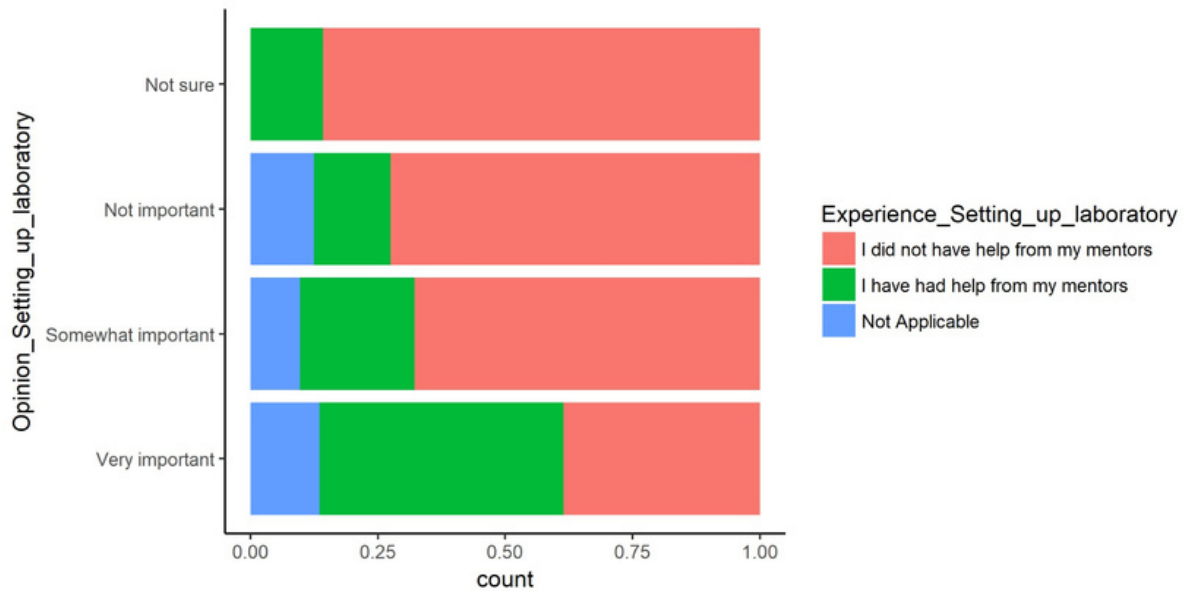
Figure 12: Need for mentoring versus experience receiving mentorship with respect to setting up a laboratory

- Of the respondents who stated that mentorship for **setting up a laboratory** was 'Not important', the majority had not received help from mentors (Figure 12).

- Of the respondents who stated that mentorship for setting up a lab was 'Very important', a large segment had received help from mentors (Figure 12).

Figure 13: Need for mentoring versus experience receiving mentorship with respect to mentoring students

- Of those who stated that mentorship for **mentoring students** was 'Not important', or 'Not sure' no respondents reported receiving help from mentors (Figure 13).

- Of those who stated that mentorship for mentoring students was 'Very important', nearly equal numbers had and had not received help from mentors (Figure 13).

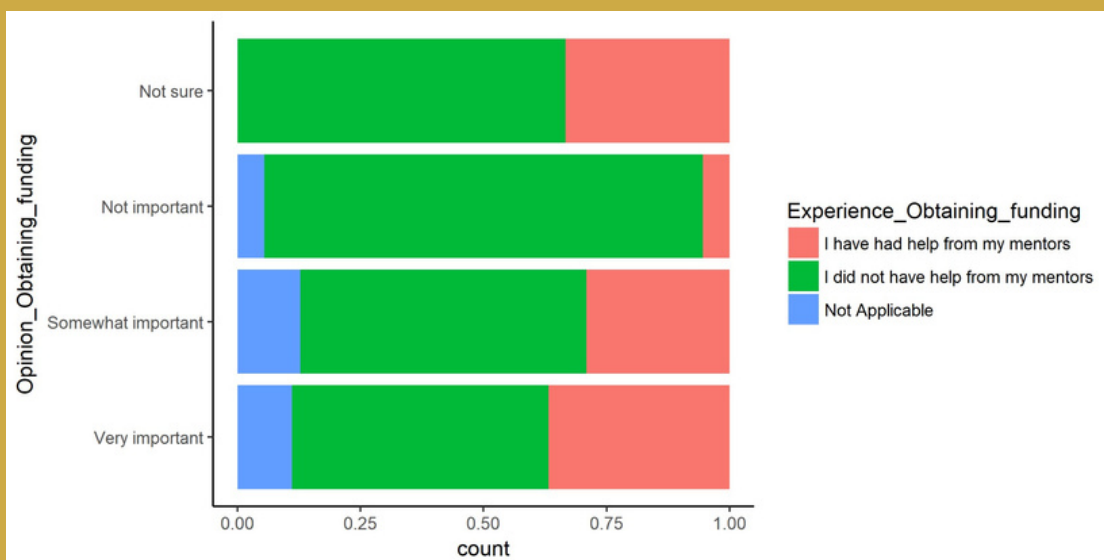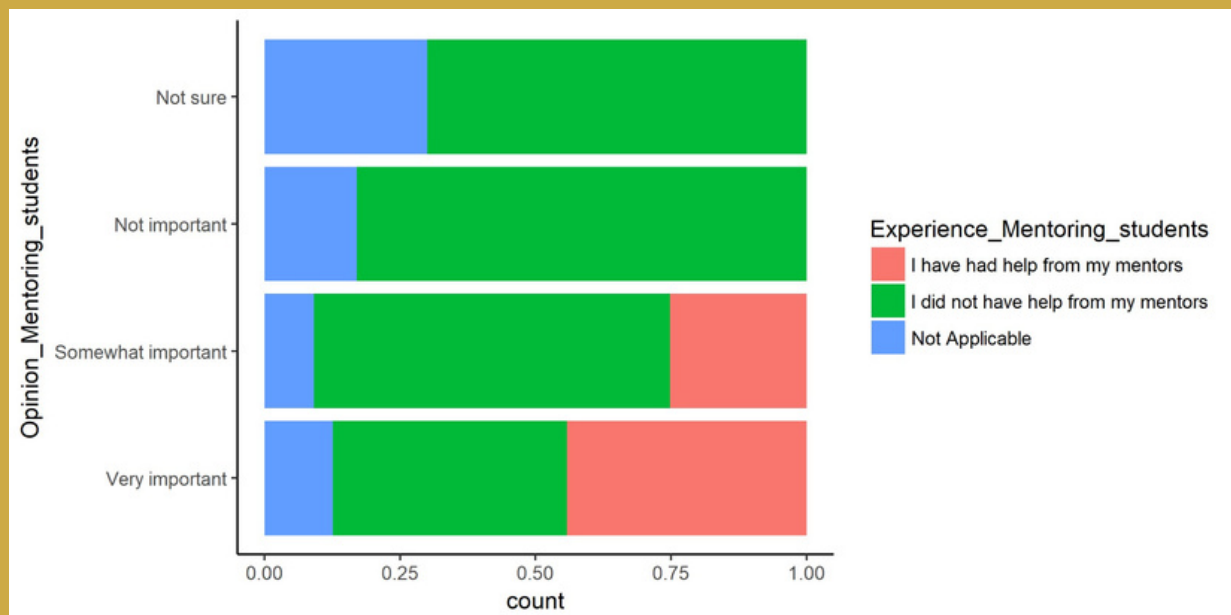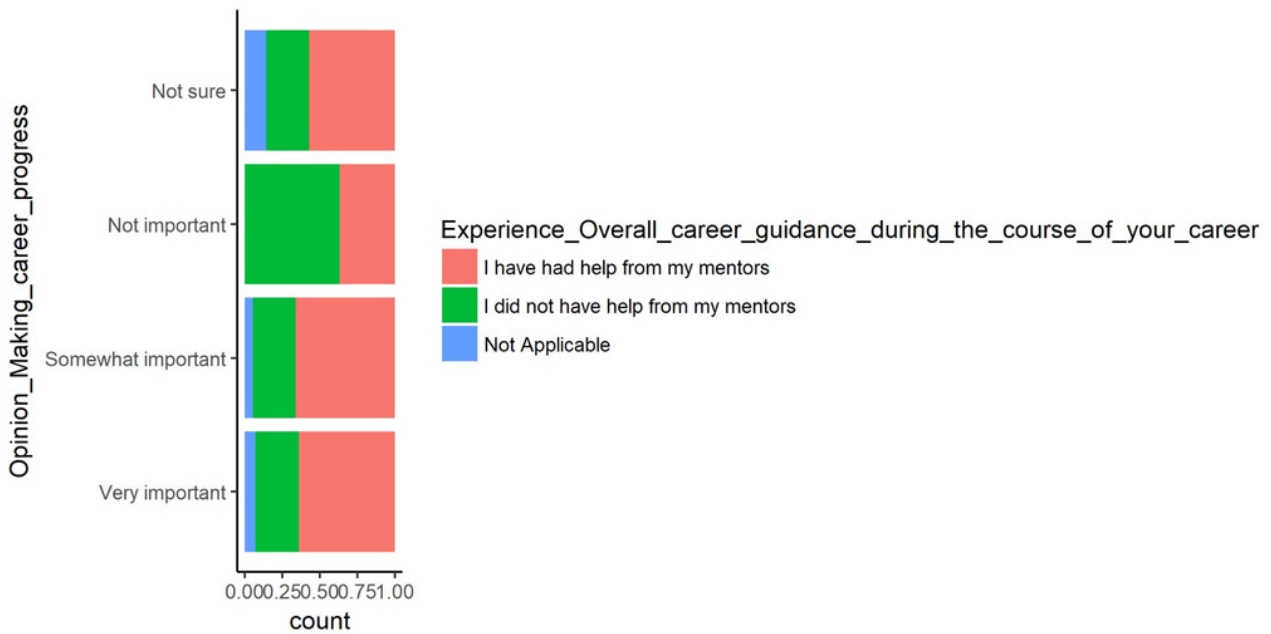**Figure 14: Need for mentoring versus experience receiving mentorship with respect to overall career guidance**

- Of those who stated that mentorship for **overall career guidance** was 'Not important', the majority had not received help from mentors (Figure 14).

- Of those who stated that mentorship for overall career guidance was 'Very important', the majority had received help from mentors (Figure 14).

ANECDOTAL FEEDBACK ON MENTORSHIP

Need for mentorship for young investigators in the life sciences in India

"Yes, there is definitely a gap in finding a mentor in India for a researcher who is trying to establish himself as an independent faculty. While looking for help from seniors (in the field) we try to randomly contact people. But most of the time, the response is not encouraging. One has to be lucky to get in touch with nice people who indeed provide their guidance to support the seeker."

"I especially missed senior women mentors during my journey."

"Active scientists need to be available as mentors at state universities."

Types of mentorship received by young investigators in the life sciences in India

"I have had very informal interactions with a couple of people whom I consider as mentors. I have had the freedom to meet, contact and discuss any professional issues as per my needs rather than any formal structured process. My mentors have no competitive interest in my research projects. Therefore, I never had to think before disclosing research data or discussing any other issues related to work. They have never asked me anything in return."

"I was fortunate enough to get in contact with a senior professor who genuinely helped me in settling down in India."

"Most mentoring" I have received is to reveal the "un-said" ways of getting the job done in the institution setting or how to handle office politics."

"You can have one or more person(s) that can help you progress through your career with specific inputs at specific stages. All of these will be your mentors. This needs to be clearly understood by all the young researchers. The bottom line is that you need to network."

Expectations from mentorship

"Mentorship should be sought by the mentee- not offered by the mentor. Independent researchers should have the confidence to view former mentors as peers. Mutatis mutandis, the primary job of a mentor should be to enable the mentee to transit from a position of 'receiver' (of skills/ knowledge/ wisdom)- to his/her own equal (peer) in the field of interest. Mentors should conscientiously abstain from 'empire building'- i.e., jockeying their pet students or loyalists into positions of employment; or promoting their own views in scientific debate. The huge 'gap' in the mentorship available to young independent researchers is that senior researchers are unfamiliar with (if not actually clueless about) the methodology and technology that younger researchers propose to deploy in pursuit of research objectives."

"Mentors should understand the research area and then give personalised and bespoke advice. Many senior mentors tend to give generic advice which may not be very helpful. Mentors or a small panel should sit down regularly with new PI to discuss their daily struggle rather than give birds eye view. If there are any issues in setting up the lab, mentors should facilitate the PI with admin work."

ANECDOTAL FEEDBACK ON MENTORSHIP

"Mentorship in India would eat up the tiny little space left for young researchers, and mentors would rather use the program to get their names on the papers they haven't contributed to. Already, it is difficult to survive for a young scientist in India due to so-called seniors, as they have all the controlling powers. In the current scenario, one needs to keep the so-called seniors pleased to get the lab space, departmental funding, promotion, etc.!"

"Training on good practices on Mentorship should be made compulsory to all the faculty and scientists, during their recruitment and every two years. Until we have a healthy relationship between Mentor and Mentee, science in India will not reach its full potential, and will remain at a third world level only."

"For a starting independent PI in an institute funded by public funds, comprehending and navigating administration, purchase, accounting procedures requires some hand-holding, which should be offered in a structured manner from within the institute. However, structured institutional mentorship in soft skills such as grant writing, and mentoring students may end up being more limiting than liberating for a new PI if it is not done properly. For example, it should not become mandatory for each grant application by a new PI to pass through a mentoring committee before being forwarded to the funding agency - there is scope for abuse of power there."

"Mentorship and mentoring is a tricky issue. Too much mentoring will lead to a large influence into the scientific thinking of the mentor. On the contrary, not having any mentorship might lead to the downfall of a new investigator. Finding the right mentor is the most challenging thing. Most investigators want to be good mentors but not good mentees. Wearing a mentoring hat brings in other issues. This may also kill the risk appetite and novelty of science of a mentee. Mentoring in all other activities of lab management is fine but in scientific areas might be tricky and sticky. Some mentors want their names in publications thus leading to new challenges. According to me, mentoring should be for lab management and for overall scientific approach but not hand holding and discussing approaches to a scientific problem."

Role and need of a structured mentorship program for young investigators in the life sciences in India

"I would rather suggest Faculty Development Programme in which the entry level faculty can be mentored by the next level, as well as, senior level faculty for obtaining funds, setting up labs, finding and retaining quality students."

"A formal mentor network would certainly help in nurturing young researchers. India has a lot of country-specific challenges. Often local solutions for these exist and mentors can help by preventing the need to 'reinvent the wheel'."

"In my personal experience, there is a gap existing in India between the experienced mentors and mentees who are in need of definite support. The distance in the availability can be brought down to zero if there is any digital connectivity/platform...If in case an app or website gives the platform this would help a lot of interested researchers to collaborate and begin a new innings in their research."

"Structured Mentorship is particularly important during the initial phase of the career. Mentorship will be helpful for setting up a lab, research facilities, establishing collaborations and contacts with scientists within the institute and outside, obtaining initial support in terms of research facilities and seed grants, students and so on. However the faculty should have his own freedom of choice and should be able to execute his own ideas during the mentoring process. Overall guidance and support will be very helpful."

KEY TAKEAWAYS

- *An interesting theme that emerged from this section is that while the YI survey respondents stated that mentorship was important for career progress, nearly half of the respondents stated that they did not have help from mentors across various professional aspects.*

- *Another theme that emerged was that while YI survey respondents say that they have received career guidance, when probed on individual themes they reported that they have not received mentorship.*

- *Importantly, based on anecdotal feedback it was evident that while there is a need for mentorship for young investigators in the life sciences in India, there is a need for clarity on what constitutes mentorship and the expectations from the mentor-mentee relationship.*

- *This possibly indicates the need of a structured mentorship program in the life sciences in India, whereby young investigators could reach out to a range of mentors for specific and varied aspects of professional growth and guidance. This could also help set expectations on the fundamental premise and nature of mentorship and frame the mentor-mentee relationship in the context of professional inputs and guidance for the young investigator.*

SECTION 2: **MENTORSHIP IN LIFE SCIENCE RESEARCH IN INDIA**

B. MENTORSHIP TRAINING FOR LIFE SCIENCE RESEARCHERS IN INDIA

SNAPSHOT

- When it came to mentorship training for life science researchers in India, *an overwhelming 65% of respondents reported to not having received any formal mentorship or leadership training.*

- However, even in the absence of formal mentorship training, less than 10% of the YI survey respondents reported that they were lacking in the various skills essential for a group leader.

- Further, only 4.5% respondents felt that their day-to-day mentorship skills were lacking and only 6% felt that their conflict resolution skills were lacking.

- Further, 62% respondents felt that leadership or personnel management training would be helpful.

- *This possibly points to a lack of awareness of the vast scope of, and challenges with, developing and displaying mentorship skills, and indicates the need for an India-specific laboratory leadership or management course or workshop.*

- Despite reporting no difficulty in conflict resolution, survey respondents faced the following difficulties in managing and building a research group: helping mentees work through failure, helping mentees towards their career goals, dealing with different personality types and maintaining communication in the team.

- In spite of these difficulties, *63% of the survey respondents felt that their lab environment is healthy, many agreeing with terms such as stress-free, fun, supportive, friendly, collaborative and interactive* (Figure 15).
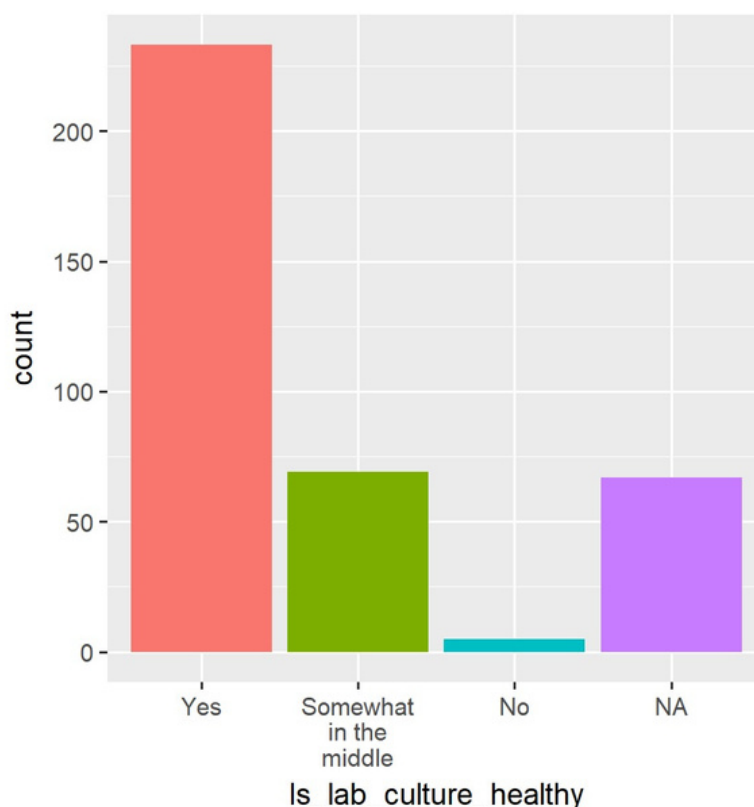
Figure 15: Responses related to lab atmosphere in the YI survey

KEY TAKEAWAYS

- *The key takeaway from this section was that life science researchers in India report a lack of formal mentorship or leadership training.*

- *In spite of this, the majority of the respondents stated that they did not perceive their day-to-day mentorship skills and conflict resolution skills to be lacking.*

- *However, the respondents reported challenges with specific mentorship roles such as helping mentees work through failure, helping mentees towards their career goals, dealing with different personality types and maintaining communication in the team.*

- *Finally, in spite of reporting these challenges, the majority of the respondents reported their lab environment to be healthy.*

- *Overall, this points to a lack of awareness of the vast scope of, and challenges with, developing and displaying mentorship skills, and indicates the need for an India-specific laboratory leadership or management course or workshop.*

SECTION 3: **HIRING PRACTICES IN THE ACADEMIC LIFE SCIENCES IN INDIA**
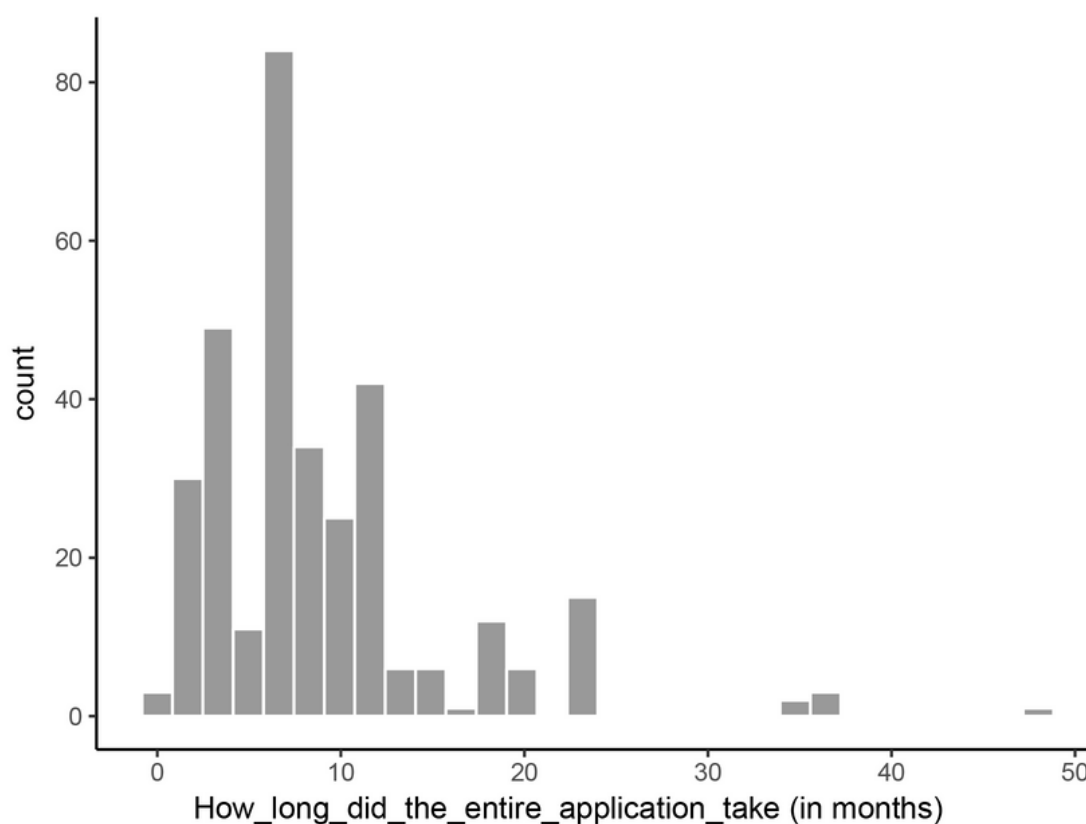
SNAPSHOT

Figure 16: Time (in months) for the entire application and hiring process for the current position (responses up to 50 months shown)

- In the 'Hiring' section of the YI survey, the majority of the respondents stated that it took them 1-6 months in the application and hiring process, some said upto 1 year. Only around 10% respondents reported a time greater than 1 year (Figure 16). The median time duration for the application and hiring process was 6.5 months.

- Further, 51% of the respondents reported their hiring process times to be just right, whereas 35% reported their hiring process times to be too long.

- Nearly 40% of the survey respondents reported the **communication during the application and hiring process** to be 'Very good' or 'Excellent', whereas 20% stated that the communication was 'Good'.

- Of the respondents, 56% stated that the process was clearly outlined on the website and 60% mentioned that the specific subject areas for recruitment were clearly mentioned.

- When asked '**In your opinion, were the selection committees diverse and unbiased?**', a large number of respondents stated that 'I did not have enough information about selection committee members' (36%), and only 4.8% clearly reported that the section committee was NOT unbiased.
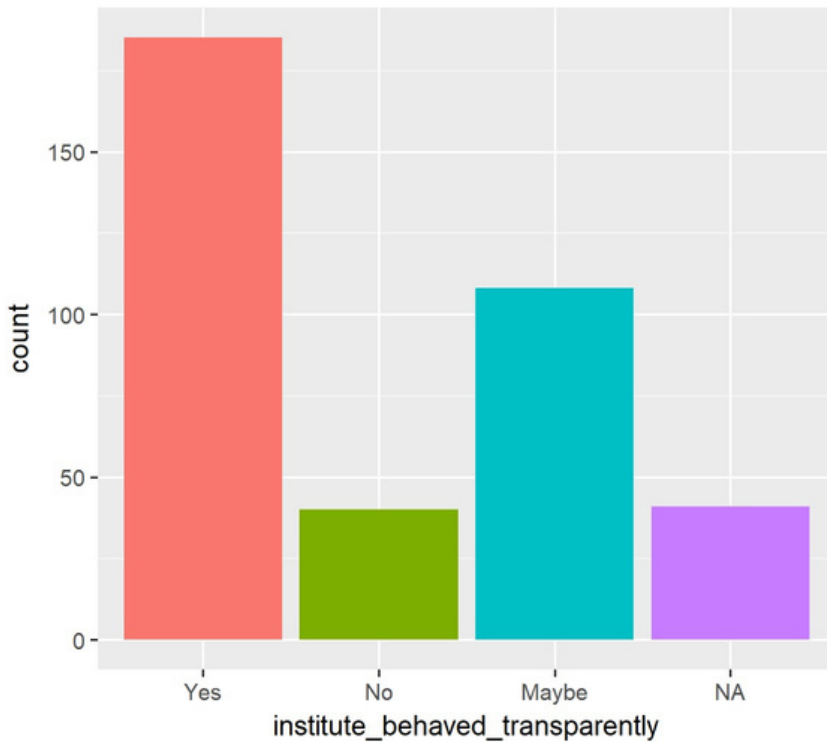
Figure 17: Responses to 'As a prospective faculty applicant, do you think the institution behaved transparently while scrutinising your application?'

- Further, when asked '**As a prospective faculty applicant, do you think the institution behaved transparently while scrutinising your application?**' 49% of respondents answered 'Yes', 11% answered 'No', and 29% answered 'Maybe'.
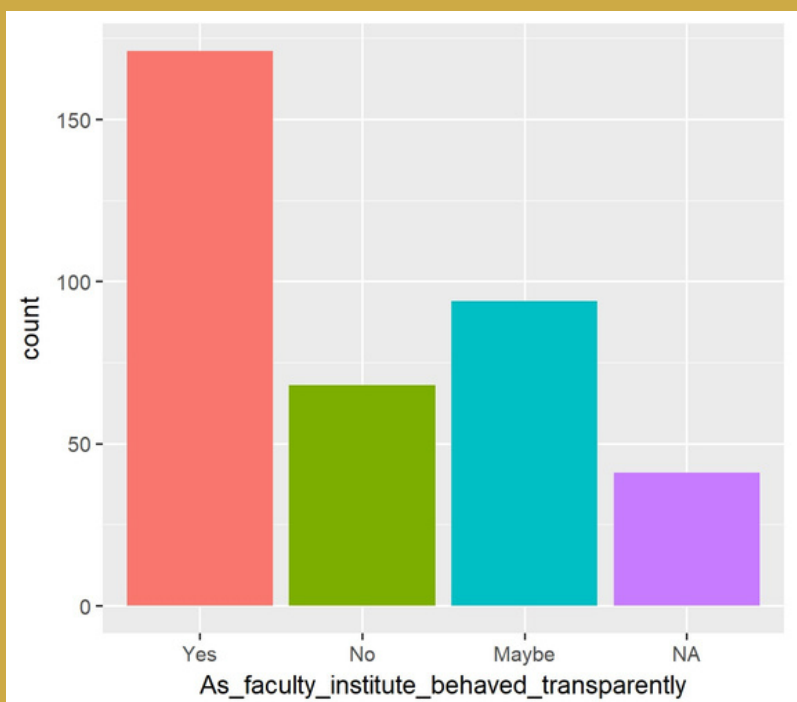
Figure 18: Responses to 'As a present faculty member who may/may not serve on hiring committees, do you feel that your institution behaves transparently while scrutinising faculty applications?'

- Interestingly, when asked '**As a present faculty member who may/may not serve on hiring committees, do you feel that your institution behaves transparently while scrutinizing faculty applications?**' the respondents who answered 'Yes' dropped to 46% and 'No' went up to 18%.
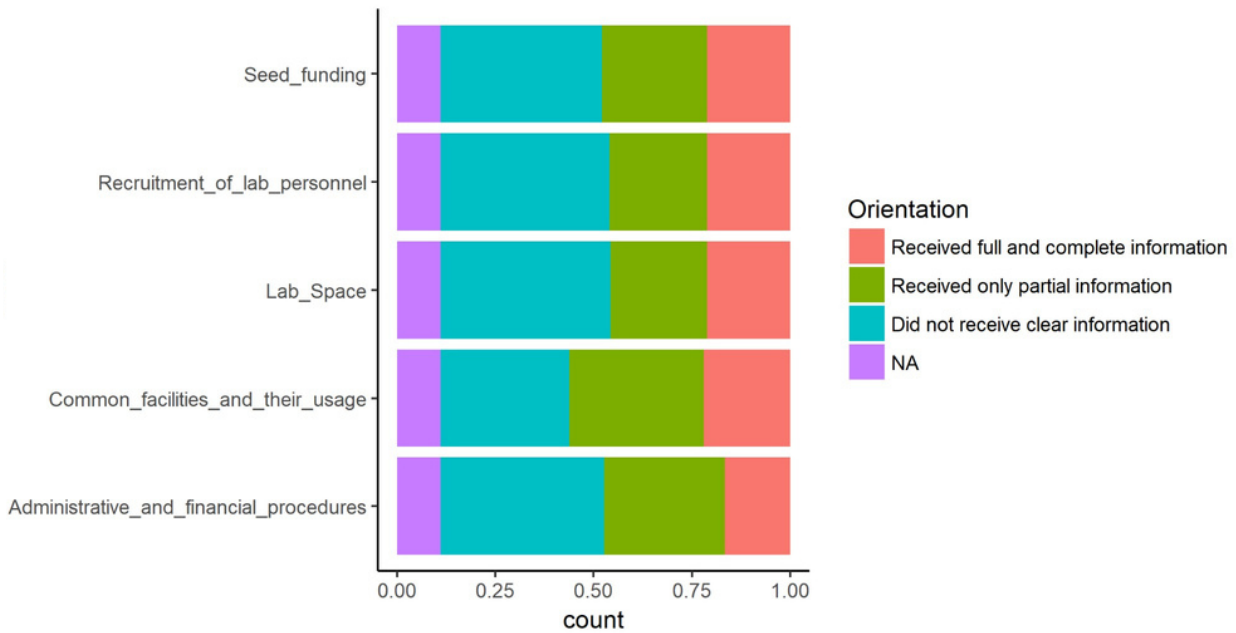
Figure 19: Information provided on various aspects of starting a research group at the time of joining the current institute.

- Finally, when survey respondents were asked for information provided at the time of hiring, *the large majority stated that important information (68, 67, 67, 67 and 73% respectively across different topics for 'partial information' and 'no information' responses) was not given or only partially given at the time of joining.* This covered lab space, seed funding, recruitment of personnel, and administrative and financial procedures (Figure 19).

- Interestingly, 43% of respondents did NOT receive any formal orientation, and 27% received an informal one.

- *Taken together, the dual lack of complete information on important aspects related to starting a research group and the absence of formal orientation programs at the time of hiring, could indicate the need to develop basic information, orientation or induction programs for candidate and newly-recruited faculty to provide important information on lab space, seed funding, recruitment of personnel, and administrative and financial procedures.*

ANECDOTAL FEEDBACK ON THE HIRING PROCESS

Timelines and Communication

"Speed up the hiring process. Currently, it takes about a year to hire faculty while abroad, it takes 5-6 months for hiring."

"Hiring process is taking too much time in India. Many universities cancel the process without informing the applicants and also do not give back the application fees (Delhi University did thrice with me, Amarkantak, Tribal University did twice with me), neither adjusting in next applications. Along with online application many Universities asked for hard copy too which is illogical."

"Communication is a must at different stages of the application process; it gets extremely stressful for candidates who are abroad to reach out to the institute hiring contact person if they stop responding."

"If an individual is not being hired, the person must be informed at the earliest so that the individual can apply or take up positions in other places."

"Respond to the applicant even if they are not called for interviews after processing their applications."

"It will be encouraging if we get frequent intimations on application status like, applications were scrutinised and shortlisted for interview, or not shortlist for interview."

Transparency in the hiring process

"In fact, in my institute, the director screens all the CVs of new applicants and takes a decision on her own without involving other faculties. A formal interview process is many times a fake show off, just for documentation purposes. The members in the interview panel are most of the time, not appropriate ones and go with the monopoly of the director."

"Universal transparent portal should be there where we can track all the posts we have applied for and not need to send so many documents again and again."

"There should be involvement of all existing faculty members, the candidate should meet with everyone, there should be prior discussion on what areas we are expanding into and opinions sought from existing faculty. The candidate should be assigned one point of contact for understanding the institute's requirements and to get a realistic idea of their chances and institute's interest. There should be clear communication of what the expectations are from both sides."

Diversity in the hiring process

"One of the key suggestion, that the composition on interview committee members should have a mixed ratio of experience vs expertise i.e. at least two member should below age of 45 years having special expertise with modern tools & techniques, while senior members should be active researchers having demonstrated ability to critical review and understand the need of required nature of expertise in the Institution."

"Institute should discourage inbreeding (hiring its own graduates) to make the institute more academically stronger. Institute should hire personnel who graduated from different institutes so that the institute gets diverse people with various exposure to run the show."

"Institutions need to encourage women applicants to apply without inhibitions and have more women experts on evaluation and selection committee panels."

Hiring with a long-term vision for the institute and life science ecosystem in India

"The most important thing is that when an institute hires a researcher, do not hire a person just because the candidate has been tagged with some outside India doctorate. Look if that person is capable of conducting similar cutting edge research in India or not. Sometimes, people are hired because they have papers in Nature/Science/PNAS etc. and then the institutes forget that these papers are because there is an advanced lab setup and quite a legacy of collaborative work that made that research possible."

"Each new faculty should be provided with basic amenities like lab space, office furniture and a computer with working internet. Additionally, each faculty should have the option to receive seed money upon submission of a proposal for next three years which can be reviewed by a committee. A new faculty should not have to send an application to the director to get any of the above. Overall, the welcoming environment was missing when I joined my institute as a faculty."

"First, Institutions should value the faculty as their foremost asset. A clear vision on why a faculty is hired is missing in most Indian institutions (especially government). A plan should be made for any position being filled. This includes (1) what is the role of the new faculty with respect to teaching and research (2) where is the lab space (3) what will be the start-up funds (4) How will the institute help in applying for grants (5) Hiring students etc."

"There should be involvement of all existing faculty members, the candidate should meet with everyone, there should be prior discussion on what areas we are expanding into and opinions sought from existing faculty. The candidate should be assigned one point of contact for understanding the institute's requirements and to get a realistic idea of their chances and institute's interest. There should be clear communication of what the expectations are from both sides."

KEY TAKEAWAYS

- *There is a clear need to speed up the hiring process in academic life science institutions in the country. Further, transparency, regular communication, diversity in committee and faculty selection are areas that hiring committees in India should bear in mind.*

- *Candidate or newly-recruited faculty should be provided with important information related to starting a research group early on, and this could be done via a formal induction or orientation process.*

- *Finally, it is important to base hiring decisions on the current landscape of science in India, including on-ground challenges, and align decisions on hiring to better serve the larger life science ecosystem in the long run.*

SECTION 4: **FUNDING IN THE ACADEMIC LIFE SCIENCES IN INDIA**

SNAPSHOT

- In the 'Funding' section of the YI survey, only ~32% of the respondents stated that they had formal training in writing grant applications.

- Further, a large segment of survey respondents stated that their institutions do not provide any formal training in grant writing; training, if obtained, was from external agencies.

- Respondents reported that information about grants and funding was obtained from diverse sources, with social media only being used by ~28%.

- Further, 25-32% stated that they found it 'Difficult' or 'Very difficult' to look for grants.

- Of the respondents, 60% stated that they found grants management challenging and 47% responded that their institutes did have a grant management office.

- An overwhelming majority (85%) said they would appreciate the help from a grants management office.

- On the release of extramural grant funding (once awarded the grant), 43% stated that they received funding within 6 months of obtaining the grant, 38% within 6-12 months, and 18% within 1-2 years. A small (2%) took over 2 years to receive the funds.

- The timeline in the receipt of funds from funding agencies in India is particularly important in the context that ~70% of respondents stated that they did not have international funds, with reasons ranging from lack of awareness, institutional support, and mentorship.

- Finally, the majority of the respondents (~70%) reported a lack of overall satisfaction with the grants and funding system in life science research in India (Figure 20). On a scale of 1 (not satisfied) - 5 (Satisfied), 1: 12.8%, 2: 24%, 3: 32%, 4: 8.6%, 5: 1.8%.
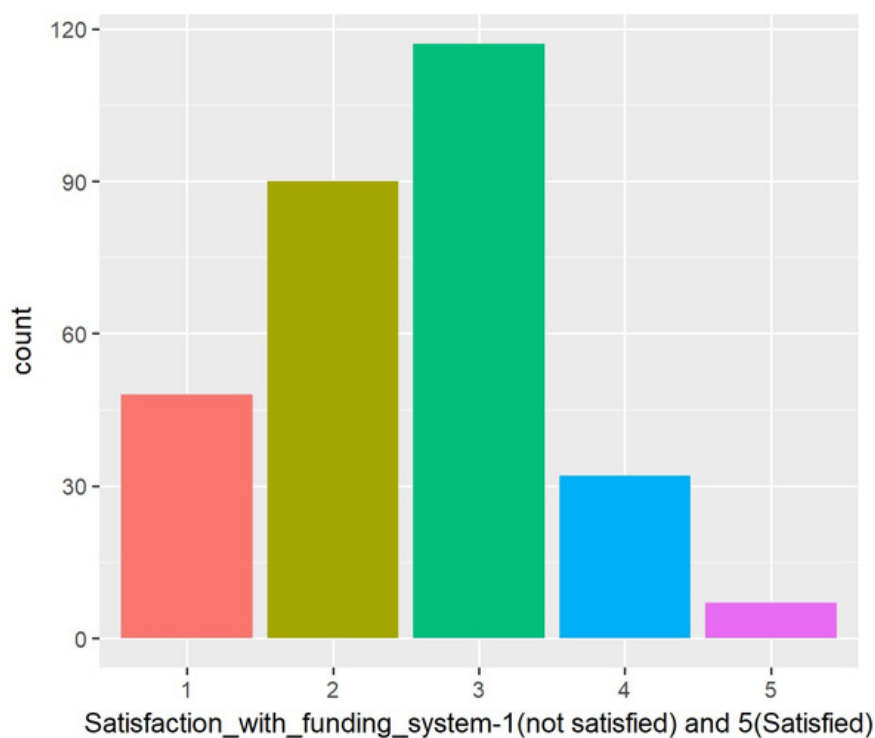

Figure 20: Responses to overall satisfaction with the grants and funding system of life science research in India.

KEY TAKEAWAYS

- *With respect to funding in life science research in India, most researchers reported a lack of formal training in grant writing. This is important given that securing extramural funding is an essential aspect of building a research group in India.*

- *Further, supporting life science researchers on aspects involved in obtaining grants and funding, such as information on grants and grants management are areas of need in India.*

- *The timeline in the receipt of funds from funding agencies in India is particularly important in the context of researchers reporting delays in the receipt of funds. Further, given the lack of diverse sources of funding, extramural funds from funding agencies in India are critical to supporting continuous research programs.*

- *Finally, there is a clear need to augment the number of researchers with international funding in India, not only because India often contributes to these funding sources, but also to diversity both, the type of research and research funding in the country.*

SECTION 5: **INFRASTRUCTURE IN THE ACADEMIC LIFE SCIENCES IN INDIA**
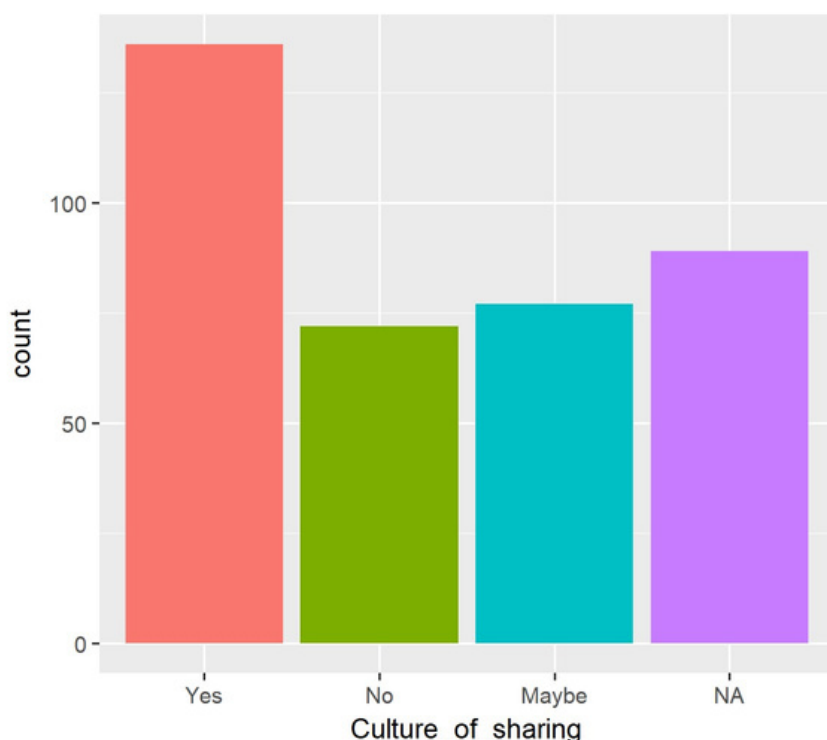
SNAPSHOT

Figure 21: Responses to culture of open sharing of equipment, reagents and personnel at the institution

- In the 'Infrastructure' section of the YI survey, 65% of the respondents stated that they did have common research facilities at their institute.

- However, only around 36% respondents reported that there was a culture of openly sharing equipment, reagents and personnel at the institution (Figure 21).

- Further, only 17.6% respondents reported that they have adequate and trained personnel to manage the infrastructure at the institute, while 23% reported that, while the institute did have trained personnel to manage the equipment an increase was needed.

- This lack of trained personnel is likely reflected in the quality of maintenance of the shared equipment and core facilities, with 40% of respondents stating that the maintenance of shared facilities is 'Poor' or 'Average'.

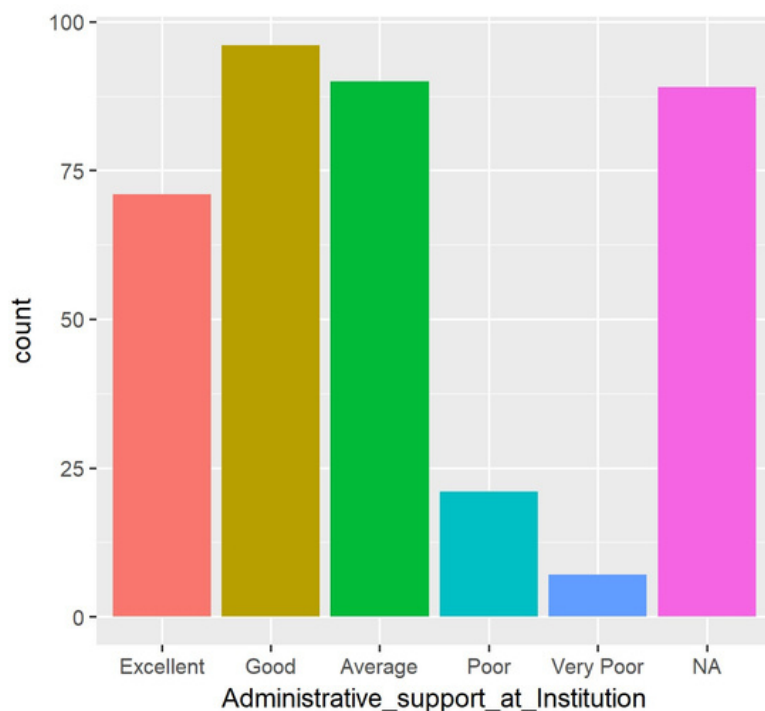**Figure 22: Responses to quality of shared resources and core equipment**
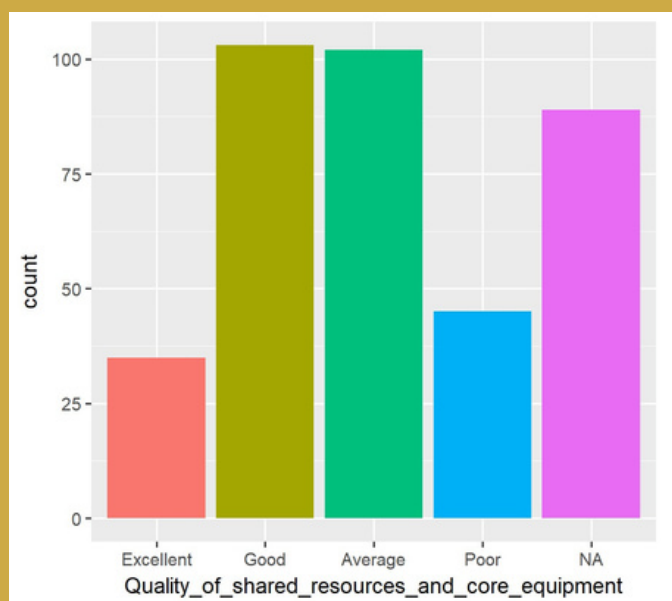
Figure 23: Responses to administrative support at the institution

- Along the same lines, 42% of respondents stated that the administrative support at the institute was 'Poor' or 'Average' or 'Very poor'.

- Notably, 70% of the respondents stated that (including 'Yes' and 'Maybe' respondents) a structured training program to help independent researchers navigate the scientific and administrative facilities will be useful.

- Finally, only 26% of respondents report using a core or regional facility for their research work.

- Interestingly, the ease of using the facility is not the main reason for this lack of use, as only ~8% respondents stated that they found the process of using the facility difficult.

Some of the reasons for not using core or regional facilities ranged from:

'The facilities provided by my own Institution are sufficient for our projects': 13%
'I have never needed to do experiments that require these facilities': 18%
'There were administrative issues involved in accessing these facilities': 8%
'The process of accessing the facility was technically challenging': 11%

KEY TAKEAWAYS

- *The lack of trained personnel and state of maintenance or institutional shared facilities is a matter of concern for the larger ecosystem of life science research in India; equipment and infrastructure are large capital investments and it is important for institutions to have personnel and processes in place to maintain the facilities.*

- *The presence of trained personnel to maintain large equipment and facilities would not only enable better usage of the shared infrastructure, but could also open avenues for the institute to provide services or access to usage of the equipment or facilities to researchers and institutes outside the institution, including as a means for revenue generation.*

- *Finally, given the growth of incubation parks, innovation centers and biotechnology clusters, across the country, it is important to proactively inform and educate YIs on the ways in which they can leverage these regional facilities for their research.*

SECTION 6: **COLLABORATIONS IN THE LIFE SCIENCES IN INDIA**
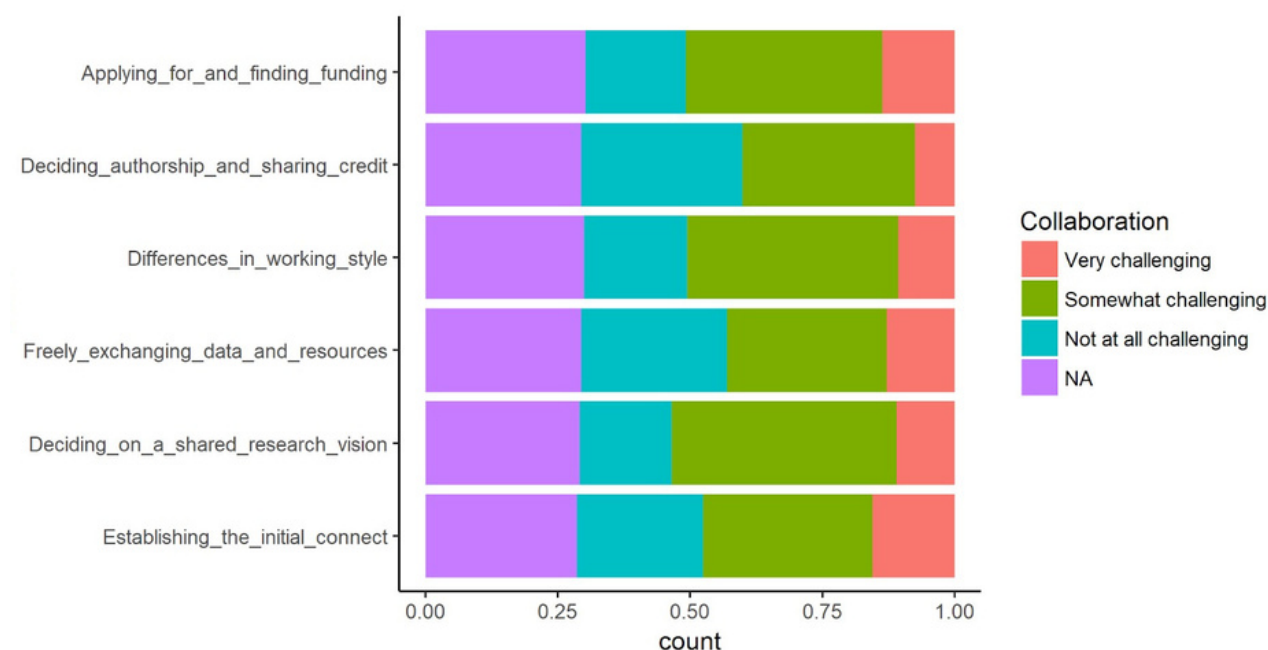
SNAPSHOT

Figure 24: Survey responses to challenges in establishing collaborations

- Based on responses to the 'Collaborations' section of the YI survey, there was a majority recognition of the value of collaboration with 70% respondents stating that collaborations in life science research were important and 70% of researchers engaged in collaborations for their work.

- Interestingly, respondents who stated that they had collaborations, had multiple collaborations including those within their institution, with other Indian institutions and institutions outside of India.

- Respondents who stated that they had collaborations met their present collaborators through a range of means, that included (the survey allowed for multiple responses):

  Through a shared connection or mutual acquaintance: 46%
  At a conference/workshop: 27%
  By being approached directly by the collaborator: 35%
  By coming across their website/publications in the course of your research: 20%

- Interestingly, only 3.6% survey respondents stated that they found it 'Very challenging' to establish a collaboration, and 23.5% found it 'Somewhat challenging' to establish a collaboration (Figure 24).

ANECDOTES

Opinions on collaborations

"Collaborations cannot be forced. The collaborators who trust you will definitely work with you."

"Scientific collaborations within India have to be encouraged and improved. Internationally, bottlenecks should be reduced."

"Some are good to work with; Some are absolutely terrible at communicating and doing the promised work."

"Some collaborations are very difficult, especially if one party is not interested after the project begins. It becomes a nightmare."

"Clinicians and basic researchers need to interact more for meaningful collaborative work."

Biases associated with collaborations

"I have been also collaborating with my wife - and to that I was told on my face by a so-called senior, not to collaborate with your wife, and close all your projects with your wife, if you want to be promoted. I did not pay any heed, and was not promoted."

Interpersonal challenges related to collaborations

"The major hurdle which I had faced with some of my collaborations is swindling of ideas and concepts and jeopardising my projects."

"Sometimes collaborators are too busy, and seniors may not respond in time."

"Sustaining the collaboration seems to be more challenging once the jointly-funded project is over."

"Senior PIs tend to not collaborate with young researchers."

"People do not have a give and take attitude; inter-ministerial collaborations are extremely difficult."

"It took me a long time to find a medical doctor interested in my work and willing to collaborate. Having found one, there were no issues."

Administrative challenges related to collaborations

"Establishing institute level MoU's."

"Slow official sanctioning."

"Current FCRA regulations are making it very very difficult to have foreign collaborations, get mice and novel drugs for further research."

"Finding new collaborators with niche expertise would get easier if databases are available."

"Most grant applications nowadays need a Co-PI; and often collaborations do not work out unless both parties are invested in a project. It might be useful to have a counseling forum or workshop for discussing how to initiate collaborations etc. in a new setting (considering many young personalities may not be extremely outgoing and extroverted in nature)."

KEY TAKEAWAYS
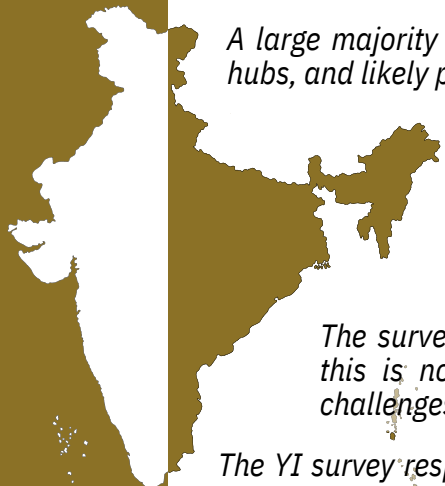
- *Based on the survey, there is a clear understanding and recognition of the importance of collaborations in life science research in the academic ecosystem in India.*

- *While the exact nature of the challenges may vary, open houses/meetings/workshops/brainstorming sessions could introduce researchers across various fields and foster crosstalk, that could eventually lead to collaborations.*

AT A GLANCE

YI SURVEY: CURRENT STATUS OF CHALLENGES FOR INDEPENDENT LIFE SCIENCE RESEARCHERS IN INDIA

1. DEMOGRAPHICS

A large majority of the YI survey respondents were from states that are S&T hubs, and likely points to a strong bias of respondents from these hubs.

The survey shows a clear predominance of male respondents, likely reflective of more male faculty in the life sciences in India, with underrepresentation of marginalised groups such as female/non male/non-binary genders.

The survey respondents are largely early-career researchers in India; this is notably relevant given that the survey aimed to outline the challenges and opportunities of young investigators' in the country.

The YI survey respondents showed fairly diverse representation with respect to their current institutional affiliation.

The majority of the YI survey respondents did PhD training in India, indicative of the fact that the majority of early-career faculty in institutes and universities in India have obtained their doctoral training from within the country.

The majority of the YI survey respondents obtained their postdoctoral training out of India, indicative of the fact that newly-minted PhD researchers in India typically seek postdoctoral training out of the country, after which they return to India to start independent faculty positions.

2.A. MENTORSHIP RECEIVED BY LIFE SCIENCE RESEARCHERS IN INDIA

An interesting theme that emerged from this section is that while the YI survey respondents stated that mentorship was important for career progress, nearly half of the respondents stated that they did not have help from mentors across various professional aspects.

Another theme that emerged was that while YI survey respondents say that they have received career guidance, when probed on individual themes they reported that they have not received mentorship.

Importantly, based on anecdotal feedback it was evident that while there is a need for mentorship for young investigators in the life sciences in India, there is a need for clarity on what constitutes mentorship and the expectations from the mentor-mentee relationship.

*This possibly indicates the need of a **structured mentorship program** in the life sciences in India, whereby young investigators could reach out to a range of mentors for specific and varied aspects of professional growth and guidance. This could also help set expectations on the fundamental premise and nature of mentorship and frame the mentor-mentee relationship in the context of professional inputs and guidance for the young investigator.*

2.B. MENTORSHIP TRAINING FOR LIFE SCIENCE RESEARCHERS IN INDIA

The key takeaway from this section was that while life science researchers in India report a lack of formal mentorship or leadership training.

In spite of this, the majority of the respondents stated that they did not perceive their day-to-day mentorship skills and conflict resolution skills to be lacking.

However, the respondents reported challenges with specific mentorship roles such as helping mentees work through failure, helping mentees towards their career goals, dealing with different personality types and maintaining communication in the team.

Finally, in spite of reporting these challenges, the majority of the respondents reported their lab environment to be healthy

Overall, this points to a lack of awareness of the vast scope of, and challenges with, developing and displaying mentorship skills, and indicates the need for an India-specific laboratory leadership or management course or workshop.

3. HIRING

There is a clear need to speed up the hiring process in academic life science institutions in the country. Further, transparency, regular communication, diversity in committee and faculty selection are areas that hiring committees in India should bear in mind.

Candidate or newly-recruited faculty should be provided with important information related to starting a research group early on, and this could be done via a formal induction or orientation process.

Finally, it is important to base hiring decisions on the current landscape of science in India, including on-ground challenges, and align decisions on hiring to better serve the larger life science ecosystem in the long run.

4. FUNDING

With respect to funding in life science research in India, most researchers reported a lack of formal training in grant writing. This is important given that securing extramural funding is an essential aspect of building a research group in India.

Further, supporting life science researchers on aspects involved in obtaining grants and funding, such as information on grants and grants management are areas of need in India.

The timeline in the receipt of funds from funding agencies in India is particularly important in the context of researchers reporting delays in the receipt of funds. Further, given the lack of diverse sources of funding, extramural funds from funding agencies in India are critical to supporting continuous research programs.

Finally, there is a clear need to augment the number of researchers with international funding in India, not only because India often contributes to these funding sources, but also to diversify both the type of research and research funding in the country.

5. INFRASTRUCTURE

The lack of trained personnel and state of maintenance or institutional shared facilities is a matter of concern for the larger ecosystem of life science research in India; equipment and infrastructure are large capital investments and it is important for institutions to have personnel and processes in place to maintain the facilities.

The presence of trained personnel to maintain large equipment and facilities would not only enable better usage of the shared infrastructure, but could also open avenues for the institute to provide services or access to usage of the equipment or facilities to researchers and institutes outside the institution, including as a means for revenue generation.

Finally, given the growth of incubation parks, innovation centers and biotechnology clusters, across the country, it is important to proactively inform and educate YIs on the ways in which they can leverage these regional facilities for their research.

6. COLLABORATIONS

Based on the survey, there is a clear understanding and recognition of the importance of collaborations in life science research in the academic ecosystem in India.

While the exact nature of the challenges may vary, open houses/meetings/workshops/brainstorming sessions could introduce researchers across various fields and foster crosstalk that could eventually lead to collaborations.

For more information, visit: **bit.ly/Yisurveyreport**

ACKNOWLEDGMENTS

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We hope the results of this survey can better inform the current status and future initiatives related to the opportunities and challenges of life science researchers in India.

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