Climate Report | Department of Systems Biology, Harvard University | 2022

Preface

The following report originated from a Howard Hughes Medical Institute (HHMI) award to a graduate student and Principal Investigator (PI) team to develop a departmentally based project pertaining to diversity, equity, and inclusion. While we document constituents' experiences in aggregate, we structure the report such that the department sees clear opportunities where their areas of growth are. Building on preliminary data on social belonging from similarly structured STEM departments at Harvard University, the department of Systems Biology decided to use the initial funding source as a seed grant to support a larger more in-depth initiative to comprehensively determine the social climate experienced by all of its constituents. Additional funding was provided by the department. We used a semi-structured interview protocol to provide interview participants the opportunity to expound on the totality of their experience, which in turn provided the interviewers avenues ot understand what has been working well, and what areas are prime for greater attention and improvement. This allows pathways forward to be more targeted and aligned with the problems identified increasing their chances of success. In general, participants believe that there are clear examples where the department puts significant effort into community building. Individual labs have shown that they are mindful of the need for an environment where all participants feel a sense of community. Efforts in all of these areas however are somewhat inconsistent, and in this report we highlight specific areas where the department can focus their efforts to improve the climate. Understanding the current climate, situating that understanding within the literature on climate and belonging is eventually followed by strategies to act on the suggestions made. To the latter, Systems Biology will conduct educational sessions which aim to help all of the department understand the scholarly context of the report, which will better position the collective design more effective solutions. Consequential listening sessions will be used to co-design approaches for the department to meaningfully address the concerns raised.

Background and Aims

During the summer of 2021 the departments of Systems Biology and Human Stem Cell and Reproductive Biology (SCRB) were collectively interested in an in-depth look at their respective community climate. This interest came on the heels of a previous survey effort (in the case of HSCRB) that captured broad community sentiments pertaining to belonging and a general sense in both departments that a better understanding of the ways in which the communities' constituents navigate their daily experiences was needed. The current effort was supported financially by the Howard Hughes Medical Institute (HHMI) Gilliam Fellows recipients in both Systems Biology and SCRB, and the leadership (Chairs and Executive Director) of both departments. Committees from both departments engaged in justice, equity, diversity and inclusion (JEDI) work were instrumental in communicating the importance of the process to departmental members and encouraging individuals to participate in the interviews.

This report aims to capture the relatively unfiltered voices of departmental members and describe as comprehensively as possible the varied ways in which the departmental climate is experienced by its members. In doing so, this report provides a touch point to support open dialogue that focuses on the specific things departments need to engage in to create equity-minded environments. The themes we've identified from the voices of the participants represent structural, interpersonal and systemic experiences that collectively define and shape the climate. In this thematic representation, the specific details of some experiences were deliberately left out in order to protect the identity of participants and to better articulate a common arc that accurately describes the collective experience. These omissions do not impact the gravity of the narrative and the recommendations made as a result of what has been shared. Through the voices of the interviewees, this report identifies areas of strength and challenge. A careful consideration of each can help determine the immediate and long-term actions needed to cultivate an equitable scientific environment.

What these data CAN do

- *Raise subtle and overarching trends from those in your community* – This report can serve as a reference point that elucidates trends associated with how climate plays out in the department. It can encourage open conversation on how small moments collectively shape general norms of belonging and community within academic departments.
- *Echo feedback from those who participated* – This report represents the voices of those who responded to the interview requests through different modalities. It is an echo of those participants and care was taken to not extrapolate beyond those voices. Expressed here are individual's experiences all of which are valid even in circumstances where they are not necessarily generalizable.
- *Demonstrate how experiences can have reaching impacts* – Frequency and impact are not necessarily completely correlated. Infrequent events may still resonate through a cohort and redefine a relationship with a person or department. For this reason, we do not rely on exact counts as a proxy for impact in our report.
- Challenge your assumptions – The data embedded in this report is representative of a collective voice. Therefore, items will emerge that are likely to challenge assumptions you may have had pertaining to departmental climate. In the event this happens, it is worth pausing to consider the nature of your reaction and reflect on the expectations you may have had from this data set.

What these data CANNOT do

- *Identify events that could directly or indirectly identify someone involved* – Care was taken to redact all names, even before thematic analysis occurred. In addition to this, decisions were made during the coding and trustworthiness process to not report certain specific quotes and anecdotes in order to minimize the possibility of tracing any information back to a specific interviewee.
- *Speak to one person's whole experience* – People have different experiences of the department. Individuals may not find all aspects of their individual experience represented within the report. Similarly, individuals will read about the experiences of others that might be diametrically opposed to their own. The ways in which individuals experience climate, though different, in no way indicates that someone else's experience is invalid.
- *Identify every systemic pressure that gives rise to these findings* – Negative externalities on equitable scientific practice are extensive and contextual. This report does not claim to identify all possible systemic pressures and we maintain here fidelity to the pressures identified in the context of this particular department.
- *Change the culture* – This report can serve as a catalyst for change but is not change itself. Without subsequent action this report's value risks being minimized such that its transformative potential goes unused in promoting real change. Its benefits can only be realized if meaningful, beneficial responses are enacted.

Common reactions to these data

"Take us very far out of our comfort zones, and our brains stop paying attention to anything other than surviving the experience." When we feel more comfortable, we are "most open to possibility, most creative, insightful, and productive. That's where feedback must meet us." (Buckingham & Goodall, 2019[1])

What to expect

- *Availability heuristic* – This is defined as the tendency to believe what comes to our mind faster than what is more common in reality. This is a bias that can affect our decision making and the ways in which we interpret elements of this report.
- *False consensus effect* – This is defined as the tendency to believe that there is common agreement on our perspective than is actually the case.

- *Confirmation bias* – In his bias, readers favor information that more clearly aligns with their worldview and expectations. This bias tempts the reader to be dismissive of worldviews elucidated outside of their own.
- *Blind-spot bias* – This bias privileges our own perspective as objective while others are assumed to be biased. Similar to confirmation bias, it can lead to a dismissing of other views because of an assumption of greater subjectivity.
- *Fundamental attribution error* – Here, readers assume that the behavior of others is driven by their internal character while ours is more informed by circumstances.
- *Affinity bias* – In this bias, readers gravitate towards the opinions and experiences that remind them of themselves. Here, more validity is ascribed to these experiences because of their proximity to the reader's own.

How to respond

A key reflection here is to first interrogate what assumptions you may bring to this process – both the reading of the report and the conversations that will occur afterwards. What knowledge do you bring to this process? What are the ways in which that knowledge was derived? Sufficient reflection time should help identify the limitations surrounding the knowledge one brings, and the degree to which that knowledge may not be a full reflection of everyone's lived experience. To this end, engaging new knowledge may elicit some discomfort or defensiveness. It is worth asking oneself where that defensiveness may have come from. The feelings of discomfort and/or defensiveness are relatively natural, but in order for those feelings to not hamper a productive engagement of the report and subsequent conversations a few intentional actions may be helpful.

- Repeat or rephrase someone's point to ensure that you have a full understanding of it. A first pass at reading or hearing a viewpoint might trigger any of the biases listed above. Giving oneself time to sit with each view, especially different ones, can be useful in mitigating the effects of them.
- As a longer-term action, seek out community with individuals whose lived experience is different to one's own. There is some balance that would need to be observed here, because it would not be fair to have that individual be one's sole education source on any particular topic. However, making time to hear other's perspectives is a useful way to expand our worldview such that conversations around reports like these become more fruitful.
- Allow for multiple modalities to engage in conversation with the report and its subsequent discussions. Longer, more intentional engagements prevent the short circuiting that sometimes occurs with cursory approaches. Time allows for the recognition and interrogation of biases, and resist the temptation to rest and rely on default assumptions.

Methods

During the Fall of 2021, the team – Dr. Bryan Dewsbury, Dr. Meghan Bathgate and Dr. Becky Wai-Ling Packard – met with the Gilliam Fellows and the administrators of the Systems Biology and SCRB department to determine the interview process. In several meetings, we reviewed existing data (mostly from SCRB) pertaining to current sentiments of departmental climate in both departments. Personal observations from departmental leaders were also shared both identifying the need to get a clearer picture of how the departments' constituents navigated belonging and mattering on a daily basis. The evaluation team proposed an individual interview process with as many members of both departments using a semi-structured question protocol, whose aim was to extract as much information as possible from department members on their experience. Historical precedents pertaining to involvement in projects like these from constituents with less political power meant that a proactive and persistent recruiting strategy was needed. To this end, several informal social events and listening sessions were held on both the Longwood and the Cambridge campuses. A brief summary of the project and its intentions was also shared during a town hall meeting. At the listening sessions, the broad aims of the project, its potential

impact on general department functions and individuals was explained. Questions from attendees were fielded to address concerns any individual may have had about the process.

A recruiting email was sent out to both departments along with a consent form with language carefully worded with input from personnel from Harvard University's Institutional Review Board. Registration to be interviewed was done such that interview participants had no knowledge of who else volunteered for the process. Interviewees were given three options for engagement – 1) an in-person interview, 2) a Zoom interview, or 3) a written response where they would write answers to the same questions used in the oral interviews. In total 63 were interviewed using one of the modalities for Systems Biology. In-person interviews were conducted on the Longwood campus, spacing them out so that overlap between sequential interviews could be avoided. Interviews were recorded using a handheld recorder and uploaded to a shared Microsoft Teams folder accessible only to other members of the interview team and the project's transcriber. Zoom interviews were recorded using Zoom's recording function. The audio-only recording was then placed in the same Microsoft Teams folder. Written responses were retrieved from the linked Google spreadsheet connected to the Google Form which was used for the written response. In the oral interviews, all participants were asked the same set of questions (Appendix I) but were allowed to riff off their main themes to unpack their ideas in any way they saw fit. The semi-structured nature of the interview process allowed for the authentic ideas of participants to unfold in ways that did not require them to stick to the specifics of the original question. Participants were reminded of the confidentiality process before recording began, and explicitly asked to avoid mentioning names (including their own) during any part of the conversation. If names came up accidentally, they were removed during the redaction process (see below). All recorded responses were transcribed using TranscribeMe ®. The transcriber then redacted any explicit mention of names or references to people or positions that can be used to identify people. The anonymized transcripts were then uploaded into a separate folder within Teams for thematic coding.

We used an inductive coding process where we read through transcripts and identified themes that emerged from the text, highlighting areas of the text that were representative of those themes. After reading a small sample of texts, the coding team met to discuss the emergence of specific themes, using a flat coding frame and the anecdotes that were representative of them. Once agreement was reached, the raw data was divided among the coding team to complete the analysis. This report outlines the major themes that were derived, and the supporting details that fell under the general umbrella. Where appropriate, anecdotal information and quotations were used to further illustrate the nature of the theme described.

The Starting Point: Primary Themes

Community

Approaches, practices, interactions, or events that led to increased or decreased sense of community within the department.

Contribution

A sense of one's value, competence, autonomy, and respect in the department. Lack of contribution may be characterized by examples of feeling dispensable or micromanaged.

Commitment to JEDI

Improving organizational structures, personnel/hires for DEI. Lack of commitment may be characterized by changes in language apart from action.

Expectations for well-being

Perspectives on the department's role in supporting professional and personal well-being.

Department cultural norms

Stable supports or barriers that reinforce who belongs in the department, often signaling a sink-or-swim mentality.

Community

Participants generally suggested that ‘sense of community’ fluctuates in Systems Biology and tends to be tighter within labs than in the department as a whole. Individual labs develop their own norms that provide ambient norms much of which can elevate the negative *or* positive aspects of daily interactions. Left unevaluated, ambient lab norms can evolve into cultures that run diametrically counter to the norms of other labs. Some elements of this are normal, in that lab norms are usually a confluence of several factors much of which are unique to each lab. This however is where a department can exhibit some intentionality around *departmental* community. Interviewees reflected in general on events that lacked ‘social cohesion’ or whose vibe felt perfunctory and/or sterile. The difference between social events that are reflective of a department where social cohesion is a goal, versus the creation of events so that they simply exist is palpable to its attendees. That said, there was still good appreciation for the fact that those events existed. It was noted by many that COVID severely impacted the frequency and quality of those events, and they were looking forward to when said events would return to their pre-COVID frequency. Suggestions were made however to (in addition to clearer intentionality around social cohesion) consider providing more alcohol-free options and to vary the noise-nature of the event to accommodate people with different sensory needs. Events that assume the same social drinking levels and tolerance for loud music can unintentionally exclude people who might be interested in engaging in a different form. Outside of social events however, interviewees identified several things that the department currently does to build community, as well as things that make creating a sense of community difficult.

Building community

Several micro moments when accumulated combine to help build community and interviewees articulated how appreciative they were of their presence. Daily interactions be it around spontaneous breakfast meetings and/or hallway conversations with and without coffee provided light but meaningful ways to engage each other. These conversations (and others) provide valued opportunities for departmental members to have a full awareness of each other’s ongoing work in more than superficial ways. This awareness, perhaps even in its more tacit forms contribute to a sense of belonging and value for departmental members. A general sense of the department as being a strong network which for some provides the feeling of safety is emblemized by the opportunities to have meaningful conversations that reinforce the awareness of each other’s experiences and intellectual contributions. The more structured departmental social events (mentioned above) also contribute to the building of community. Though most of these events were negatively impacted by COVID, they historically varied in type and location. The list of appreciated events included coffee breaks, departmental seminars with food, parties in the quad, department happy hours, department retreats and fireside chats. It was not entirely clear if all events were attended by all people, but there was gratitude that those events existed. Several interviewees reported feeling very supported from a funding and infrastructure perspective in that they had all that they needed to be successful in that environment. Knowing that those resources were there certainly messaged that the department was willing to continue to invest in them and their ideas. The positive messaging is further enhanced by the affirmative communications and high level of responsiveness that some interviewees experience from PIs and administrators. The availability of several affinity groups is particularly helpful because it offers departmental members opportunities for cultural commiseration that is crucial to their feeling of community within Systems Biology.

Example quote

"*That was a good effort. But I guess the cold drove them away? I think that was a good attempt at trying to bring back some of that energy. The happy hours were planned. They were every Friday at 4:30, kind of the same schedule as the [parties in the quad?]. And everybody would go there and then they would hang out a little bit. And then some people go back to their labs, keep working. Some people go home. Some people stay and [have?] some more fun. But it was a lot more common to just take a coffee break. Go to the kitchen, just have a cup of coffee, and you'd also find a lot of people having coffee anytime. That was great*."

Inhibit community

A range of items work to inhibit community within Systems Biology. A key issue brought up several times was the intellectual separation between those from more biological or computational experiences. There was a palpable sense in which those with quantitative skills perceived themselves as having more intellectual capital. A commonly held view is that those with quantitative skills can easily 'pick up' the biology, but those with a more classic biological background would not become as proficient in quantitative work. Deep frustration was also expressed that most of the efforts at creating and maintaining community was driven by graduate students and postdocs. The message communicated by the lack of departmental leadership (department administration) being more directly involved in these efforts is that they (leadership) do not view these efforts as important, or central to core functions of Systems Biology. On top of the lack of leadership involvement is a sometimes dismissing of the community efforts that the committees engage in by the very leadership who choose not to become involved. To the extent that building community should be a shared responsibility, leaving the organizing and advocating to the constituents with less political capital sends a strong negative message about its importance. While some participants appreciated the *presence* of some affinity groups, many (including those who were grateful for their presence) lamented the *paucity* of affinity groups. This was also connected to the general sparseness of people of color in the department as a whole. In the same way culturally commiserating spaces help improve sense of community, lacking them causes the reverse effect. Depending on the lab structure, some interviewees reported feeling a lack of autonomy and limited decision-making powers with respect to the research ideas they wanted to pursue, and their ability to network in their field. Connected to this sentiment was a sense of being dispensable or replaceable. This sentiment was expressed by both graduate students and staff members. A major disruptor and inhibitor of community however was the onset of the pandemic. The mask requirements made communication more difficult particularly for international students for whom English either may not be a primary language or who may accent it differently. The mandatory schedule changes to shift work resulted in more isolation and personal life disruption that then made community hard to attend to in the physical department. Though some cohesion events were attempted on Zoom, it simply could not replace the activities that occurred before the pandemic.

Example quote

"*Okay. Yeah. That was really great for everyone who enjoyed alcohol and loud noises. And I'm not sure--" you were in our space. So across from ___ where the room you were in, 100 people were in that kitchen if you saw it. So it was incredibly loud and incredibly disruptive for anyone with any type of sensory issues. And just in general, if you just don't like loud noises or if you have any type of mobility issues, there was no universe where you were going to felt like you had a community at our social hours. And also, if you didn't drink for religious or practical or personal reasons, that's going to be a bad place for you. We didn't really have any event for you if you were any of those parameters. And so I think in 2019, if you had asked me this, I would have been like, "Yeah. We have a great community. We have a great sense of-- everyone feels great here." And I no longer think that's the case*"

Contribution

There was a generally articulated sentiment that good communication that was clear and specific created a sense that an individual's contributions were valued in the department. The degree to which people

wanted to be part of something aspirational and inspirational impacted how much they wanted their contribution valued. Interviewees' sense of this varied somewhat, and personal interpretations of how contributions were valued came down to tone, both directly in terms of how feedback is given by superiors, but also relating to the cultural norms of how feedback writ large is given in that particular lab. Attention given to some labs or individuals over others also communicated intentionally or otherwise whose contributions were valued and whose were not. The quality and nature of communication could help shed light on individual preferences though since the same feedback style could elicit different reactions. Preferences also varied depending on career stage. Some individuals wanted frequent check-ins as it was an indication of support while others felt that high frequency check-ins were more typical of a micromanaging managerial style that signaled a lack of trust. We discuss below several items identified as helping to build or inhibit a sense of contribution.

Build contribution

Trust and respect for individual contributions were demonstrated by granting autonomy and choice for individuals to make decisions that align with their professional interests. Interviewees for whom this was their experience did feel that their contributions were valued. Again, reported micro moments reinforced this sentiment. In times where the consideration of ideas and perspectives were authentic interviewees felt that their contribution was valuable. Reinforcement of contribution value also came from the intentionality surrounding including people in conversations, meetings, emails and events relating to the unfolding of an idea or project. Situations where department members were given opportunities to lend expertise and skills to the department in several capacities helped affirm that their unique skill sets were valued and necessary. Specific feedback on work done identifying clear areas for growth and improvement was also emblematic of the attention to detail given to the product indicating its value to the reader. A key area where contribution value was demonstrated was the ways in which credit was given for work done. In cases where interviewees felt that appropriate credit was distributed in ways that reflect their contribution to the project, they articulated their appreciation. Graduate students and postdocs felt value for their contributions in cases where a clear acceptance of null results or failed projects was inherent to the scientific process.

Example quote

"*Anytime I get feedback from my bosses, it's been really positive. Yeah. So every time they communicate back to me that I'm doing a good job or they'll say, "Oh, thank you, you did this and that was good." Those times help me feel valued and respected*"

Inhibit contribution

The chief challenge that helps to inhibit the degree to which department members feel that their contributions are valued has to do with the artificial separation between human experiences and requirements associated with work. This separation manifests in how departmental and individual labs, particularly lab leadership respond to issues pertaining to mental and physical health, when those issues become barriers to lab work. Because the existence of those conditions do not appear to be on the radar of lab leadership, their emergence leads to feelings of awkwardness and discomfort when they are forced to be unearthed. A similar dismissive sentiment is often observed as it pertains to the efforts in the department around JEDI. People with non-marginalized identities 'other' JEDI efforts see it as the responsibility of those most vocal about it, and demonstrate a general unwillingness to lend their time, resources, and vulnerability to the improvement process. The lack of support from these individuals, particularly when they occupy positions in leadership, severely limit the extent to which JEDI efforts can permeate the department. Here, as well as in issues relating to sexual harassment and other types of conflict there is strong evidence of an affinity bias. Perspectives that are outside of the worldview of the non-marginalized are dismissed, or not handled with the degree of alacrity it deserves given the gravity of the incident(s). Collectively, this creates a culture where even reporting and navigating the established process to handle conflict becomes unnecessarily burdensome for the aggrieved, constantly putting the

burden of responsibility on them to educate and prove their victimhood further isolating them from the knowledge generation production process in the department. The separation of the academic functions of the department from the reality that those functions are carried out by humans with lives naturally impacted by its various externalities is seen in how project responsibilities are parsed out. Graduate students and postdocs in particular identified the ways in which assumptions would be made about their availability, time, interest level and capability when life events happen.

Example quote

"*Okay, they really don't know-- they don't know how many letters of rec we have to upload in the process for that. And they don't really realize the financial reconciliation if they have a corporate card thing like the time that [inaudible]." Just stuff like that. And I know on the administrative level, people get it. But for the scientists, I think they just don't know what they don't know. [crosstalk]. So it can be a little annoying, but you kind of have to take it in stride sometimes*."

Commitment to JEDI

Interviewees reported an inconsistent if not unsatisfactory commitment to JEDI work, particularly in the follow-through aspects needed for the full enactment of change. In general, people appear overall supportive or appreciative of JEDI work, particularly in the wake of the murder of George Floyd in the summer of 2020. However, the work to turn appreciation into concrete steps generally fell to those in the department with the least political capital. Additionally, once forward motion steps placed professional and personal risks to the forefront, fewer individuals were willing to engage the process. This timidity only served to reinforce the problematic elements of the JEDI culture that urgently needed addressing. Below we describe the activities, processes and exchanges that signified or undermined commitment to JEDI efforts in Systems Biology. It was notable how much more elements undermining commitment were reported by interviewees compared to elements signifying commitment, indicating that the current culture is mostly negative pertaining to this topic.

Signify commitment

Interviewees reported some positive intentions to generally promote JEDI initiatives and clear demonstrations of willingness to do the work involved, even if not all were fully cognizant of what the work entailed. Examples of PIs and their colleagues supporting each other through difficult life situations (illnesses, injuries etc.) suggest that at least among this constituency there is a recognition that equity-minded behavior through the lens of humanism is a crucial part of professional happiness. Cursory leadership interest in JEDI has led to some structural changes and programming, and there has been some mention of raising JEDI issues to upper administration. However, behaviors signifying commitment to JEDI has unfortunately largely stopped at this level.

Example quote

"*I think having a chair who's very invested and at least in words. I have not really seen it in practice quite yet, but has the words and seems to-- wanted us to set up these working groups and wanted people to kind of get invested. I think having those things makes it feel like they do care, and I think that's helpful*."

Undermine commitment

Several elements have combined to critically undermine JEDI efforts, in some cases putting into question whether said efforts have any real chance of success, given the paucity of their support. There appears to be a stark contrast between 'interest and appreciation' and the bravery required to see the JEDI needs actualized into actual solutions. Interest finds itself quickly victim to frustration and burnout (since the knowledge production machine continues unhindered) leading to individual backsliding and initiatives fizzling out. The time and attention needed to focus on JEDI initiatives is generally unavailable, limiting what could reasonably be expected from the initiatives themselves. Interest and appreciation do not

necessarily translate into actual skills pertaining to inclusive practices. Once interest runs up against the lack of expertise to enact sophisticated responses, initiatives fizzle or default to surface solutions. The lack of experience supporting marginalized groups means that individuals in key positions of power and privilege do not have credible experience to rely on to consider for handling the issues of their marginalized populations. Lack of awareness both of the depth of the work needed, and the degree to which the privileges that individuals have can be psychological barriers creates problems for people who may have interest but may not be currently best positioned to implement the solutions needed. A general lack of accountability, particularly for people in power, means that when behaviors run afoul of JEDI efforts, there are no consequences available that can reflect new standards associated with an improved environment with respect to JEDI. Some JEDI events have unfortunately had negative incidents occur, the lack of accountability around those incidents meant that attendees were dissuaded from attending or being involved in future JEDI events. Concerns were expressed about the legal ramifications of some of the solutions proffered to address JEDI-related issues. These concerns resulted in a 'slowing down' or reduced interest in sticking with JEDI programs. There were differences as well in the level of commitment that individuals displayed in more public meetings and what they say in private company. The inconsistency means that it would be inherently difficult to trust the sincerity of the efforts of 'interested' individuals, partly because it would not be possible to determine if their public facing statements are genuine or calculatingly political. Inconsistencies with statements and uncertainty pertaining to the depth of leadership's true commitment to the JEDI effort leaves the process diffuse and exhausting for the individuals who have committed their time to seeing it through to completion.

Example quote

"..there were a lot of people with really good intentions, but I think the lack of representation in the department has created a situation where, although people are really well-intentioned with how they want to make changes, I don't know how much practical experience they have in dealing with people who are very different. And so I think that it can be a little bit easier for slip-ups, mishaps, the wrong things, wrong interpretations to be made, because there just isn't that experience."

Expectations for Well-being

While people may differ in the specifics of what they need for well-being, being heard, feeling valued, having flexibility, and seeing well-being modeled can be foundational. Expectations of well-being differed between interviewees. Some saw the department as a place simply to come and 'do science', and in this context did not hold any particular expectations for the department to be attentive to personal wellbeing. However, implicit in several comments was the notion that doing science well requires support and safety which is inequitable across people and roles for various systemic reasons. The external factors that affect well-being were not the same for everyone, and navigating the COVID pandemic brought several of those inequities to light. These inequities include differences in access to materials, available time, unseen labor, and costs incurred simply by going about the business of doing research. Interviewees identified several things that either promoted well-being or inhibited well-being.

Promote well-being

Interviewees expressed gratitude when they were able to recount examples of where PIs displayed honesty about the nature of research work, its associated challenges and accepted that these challenges would lead to expected frustrations for its participants. Vulnerability in admitting failures, especially when the admittance comes from those with power and privilege in the department can be a powerful example for beginning scientists in the department. PIs and leadership (in this case we mean administrators AND lab PIs) demonstrating an acute awareness of the resources available to support struggling individuals is in itself indicative that there is an expectation that well-being only occurs when these resources are marshaled. Small decisions have been made that promote well-being. Granting flexibility to work from home has been powerfully supportive, particularly for those priced out of living in the city of Boston. The empathy associated with doing that has meant a lot. Empathy also extends to the ways in which PIs

consider the reality that many graduate students and postdocs may choose to matriculate into non research institution careers. Awareness of those careers and encouraging students and postdocs to take advantage of opportunities for diverse career preparation was also emblematic of this empathy.

Example quote

"*The team and the leadership within the team and above, my direct manager has always been like, "Where do you want to see yourself? What do you want to do at Harvard? Do you want to stay at Harvard?" Because that's always an awkward question like, "Do you even like it here?"*

Inhibit well-being

Several factors work independently or in concert to inhibit wellbeing. Part of this, similar to issues related to JEDI efforts, stems from a lack of knowledge on the part of key stakeholders on what measures to enact to fully value wellbeing. This lack of knowledge leads to several unfortunate outcomes. There is sometimes a 'pretending' that personal struggles and challenges are not in fact happening. Several times support is verbally offered without the person making the offer having any clear idea of how to enact that support in tangible ways. Colorblind policies are often laid out under the guise of equality, without realizing that equal impact does not lead to equitable outcomes. A failure to fully reconcile the cost-of-living issue associated with living in the city of Boston means that a lack of access to the city for living purposes impacts the well-being of many of the lower salaried members of the department. Well-being is also negative for people who have added layers of complexity associated with their presence in Boston. Requirements regarding VISAs, their procurements and renewal often brings with it several layers of bureaucracy. When internal staff at Systems Biology are ignorant of its mechanics, the additional stress associated with them having to navigate and re-navigate the system severely affects their well-being in the department.

Example quote

"…*our department definitely has some toxic PIs and kind of having to skirt around and talk about it without a way that makes them feel-- that makes you think that they're going to then retaliate against you in some way.*."

Department Cultural norms

Systemic impacts of the cultural norms throughout science are evident in the Systems Biology department as well. These norms particularly impact the perception and thus implementation of JEDI-related efforts. One norm views these efforts as external to the department's core functions (passive support), while others are more active in their support by pressing and advocating for substantive change. Passive support unfortunately leaves the burden of action on the marginalized, broadening their cultural tax in some cases precluding them from full engagement in their academic pursuits. This is especially unfortunate because these cultural norms not only leave the marginalized with the workload of advocacy but continues to leave them vulnerable to the problematic practices and policies against which they are trying to mobilize. Interviewees expressed concerns that the depth of the structural changes needed are so enormous that inattention to them will lead to constant disappointment for new scientists coming through the pipeline with expectations of work-life balance. Below we discuss interviewees' reflections on items that supported norms that were JEDI related and inhibited or discourage JEDI related norms.

Supportive norms

A relatively major source of support for affirmative JEDI norms comes from the fact that there are relatively few active inhibitions present for JEDI work. Perhaps in an environment where there exists passivity, not having openly hostile agendas toward JEDI work counts as a win. Interviewees also report that there are key influential colleagues who are supportive of and invested in JEDI work. This support was emblematic throughout the interview process by virtue both of their participation and their

encouragement of others to partake in the project. Postdocs and graduate students felt that the department was forthcoming with the resource structure needed for them to pursue prestigious impactful projects.

Example quote

"*Lots of professors came to the town halls and things like that. People were very responsive. In terms of actually doing things, it pretty much fell to postdocs and grad students, It was, I would say, very, very permissive. There was no pushback at any point*"

Inhibitive norms

The normative behaviors that were inhibitive spanned the range of specific things that stymied JEDI efforts to more generic items that fed and promoted the primacy of burnout culture. JEDI was seen as outside the bounds of scientific conversations. The lack of seriousness toward JEDI being a credible departmental focal point was seen in the lack of time, attention and space to move from issue identification to action. Fear of litigation and negative publicity silenced the voices of people who perhaps for other issues may have been willing to demonstrate some bravery. The lack of bravery was seen to be tied to an assumption of the value of the status quo currency of academia – publications, publicity and tenure – as meaning substantially more than cultivating an equity-minded environment. The devaluing of JEDI work was further exampled by the fact that clear roles were not given for JEDI work to those with power, meaning that the mechanics of the implementation step was always going to be left with those who organically advocated for change. The lack of roles also means that those wishing to engage in this work were taking some professional risk, because lack of allocated time meant that the time they devoted to JEDI work was going to be sacrificed from somewhere else. Other types of deficit thinking permeated cultural norms. The disciplinary silos associated with the quantitatively focused versus the biologically focused set up unfortunate binaries where people feel compelled to choose a side. Without being particularly explicit, norms were being communicated that the level and pace of work associated with the department was fundamentally incompatible with what is required to have a family with whom one can spend time with. All of these 'work first' norms unfolded as pressure to conform with the work first culture, and the display of any kind of struggle being interpreted as an inability to handle the rigors of the Harvard climate.

Example quote

"*Look, if you want to succeed at this university, especially the faculty level, you really do need to eat, breathe, sleep this. So you might as well just make this your friend group and your social group, because if you're trying to compartmentalize and you're also trying to carve out territory for your kids and your family, I'm just going to tell you right now, it's not going to work."*

Emergent themes by role

Postdocs

- Desired community. *Some desire a sense of connection with other postdocs. Others feel they receive social needs outside of department.*
- Balance of support and autonomy. *Value balance of faculty support and room to be creatively independent.*
- Unclear role when interacting outside of lab. *Not often introduced to department, leading to default assumptions about their role in the department*.
- Access to campus. *Salary prohibits proximity to campus, especially when salary is providing for more than one person. Housing and childcare costs press people farther away from campus*.

Graduate Students

- Disciplinary silos and assumptions between quant vs. bio. *Perceived value placed on quantitative skills may lead some students having an easier initial experience*
- Uncertainty in the next career step. *Additional support to navigate options & logistics for considering next steps.*
- Better articulated expectations for advising relationships. *Ideally, these expectations are not only on the student to build. They can be decided upon using an existing models or active collaboration to build them.*
- Feedback on areas of success and challenge. *Students desire more informal input from their advisors about how their graduate research is going well and where there are challenges*.
- Consider the role of the qualifying exam. *Seems necessary but not highly regarded*.
- Framing failure. *Framing how failure is common in graduate school and reactively supporting each other when projects do not work out*.
- Structure within early grad school helps build community. *Talks, classes, cohorts, and access to faculty. Harder to sustain in later years as people focus more within labs*.

Staff

- Being excluded from social events. *Not receiving invitations to department social events, including events staff have been asked to coordinate*.
- Depersonalization. *Some feel staff are treated as a singular category and not valued as individuals.*
- Feeling dismissed. *Lack of knowing the effort administrative work takes and the obstacles that are out of staffs' hands to dismantle*.
- Greater inclusion would help everyone reach goals. *Knowing the goal behind a request can help staff better understand, meet, and advocate for that request*.
- Access to Campus. *Salary prohibits proximity to campus, especially when salary is provided for more than one person. Housing and childcare costs press people farther away from campus*.

Faculty

Few faculty participated in this request. Dividing faculty responses by subthemes is somewhat unreasonable, given so few participated in face to face, Zoom, or written requests. We encourage faculty who opted not to participate to listen and reflect on what is being raised throughout the report, as many of these findings may not be obvious from formal interactions.

Recommendations

The following are recommendations based on our interpretation of the themes that emerged from the interviews, our own expertise in the area of belonging and cultivating community, and positive examples we have seen on the national front on how equity-minded academic environments are created. Ultimately, the degree to which recommendations are implemented depends on local bravery and a dialogic process where all stakeholders are able to contribute to the decision-making needed to carve a path forward. This collective approach should build on the department's existing strengths, but display the humility and vulnerability to fully engage in areas of growth. Lastly, this is not an exhaustive list, at least from the standpoint that very specific incidents, to protect individual identities, are not responded to. However, some of those specific incidents did stem from an accretion of toxicity associated with some of the themes described above. As a result, careful attention to the scope of what is being recommended will be important if authentic progress is to be made from this JEDI effort.

Incorporate JEDI goals/activities into leadership responsibilities with clear assessable outcomes.

Too often JEDI work has fallen on the backs of those who stand to be personally affected by inequities and microaggressions. Issues relating to JEDI need to be built into leadership and administrative

responsibilities not simply as an area of interest, but with project area goals that can be met with key performance indicators similar to any other function of the position. Potential goals can be derived from this list, making determination about timelines, resources needed and personnel needing to be mobilized in order for the goals to be met. If JEDI work remains at the committee level, especially if said committee does not have real political power, then the outputs of their work will also remain at the suggestions level.

Intentionality behind social events with the clear aim of social cohesion.

There is a difference between social cohesion as a stated goal versus hoping that social cohesion occurs as a side effect of having social events. The latter perhaps seems harmless – a normal, if not tangential activity most departmental units engage in periodically. While in theory it is not a bad idea, having social cohesion as an explicit aim asks a different set of questions. What if the default structure of most social events (alcohol-filled, high sensory) makes it difficult for people of certain backgrounds, cultures, social preferences to meaningfully connect? Social cohesion as an explicit aim preludes social event planning with questions that explore what exactly might make this unique community socially connect. This means that one would have to know the community on some level to design something that reflects what might work for them. Simply polling the department on event preferences can be a start, as this can get the ball rolling on some more creative thinking of what unique events can bring people together in new ways. An example of an event we have witnessed that is more naturally inclusive is a potluck style international food festival. Here department members bring dishes that represent where they are from (grad students and postdocs are subsidized) with a label for the dish and given an opportunity to describe it. This is just an example but a key thing in this approach is the intentionality of bringing in the individuals' identity. Other consequences of making social cohesion an aim may mean creating events that are not necessarily department-wide or prioritizing extraverts.

Address financial strain.

Boston, MA is one of the most expensive cities in the United States to live in, including its neighboring communities. The high cost of living means that those in the department on the lower end of the economic ladder are facing daily difficulties to meet basic cost of living expenses. The problem is multiplied for those who have families, and in some cases may be the chief breadwinner. Compounding the inequity issues is the chasm that exists between how some in this area of the economic ladder are compensated when compared to the compensation of faculty. The suggestion here is to explore ways in which to update the compensation model for graduate students, staff and postdocs so that it at minimum matches the increasing cost of living in the area. The lack of attention to this by departmental leadership (administrators and PIs) implicitly messages to the lowest paid constituents that they have little to no concern for their everyday economic realities.

Create a *local* ombudsperson – an individual who can independently field concerns with a politically clear line to leadership to meaningfully contribute to the change process.

While there is a university -wide office Ombudsperson office, having that resource centrally located potentially creates bandwidth issues for that office. Having someone local who is more familiar with department and college culture can be beneficial. A key organizing factor of the ways in which sense of belonging and community is felt is the presence and distribution of power. Some of this organization stems from more broad academic structures where technicians, graduate students, postdocs and faculty exist in an unspoken hierarchy. Staff fit in potentially at several different points but it might depend on the staff member's particular position. The hierarchy however creates barriers for individuals who need to report concerns – especially egregious ones out of fear that their professional trajectory will be negatively impacted. Little is present to hold those with the most power accountable for things like a) lack of willingness to act on departmental JEDI agendas, b) inaction on toxic incidents and behaviors in their labs and c) their own (faculty) inappropriate behaviors. An ombudsperson-type position is not simply a complaints desk. It is an individual who hears concerns objectively, and has enough of a depth of knowledge of the department and its machinations that they can make substantive suggestions. Similarly,

a process should be in place to ensure that these suggestions (like this report) are departmentally public, with reasons indicating why certain things were or were not acted on. Creating an independent pathway in this way means that affected employees are not stuck potentially reporting critical incidents to either individuals who do not have power to help make change or to individuals who also hold the keys to their successful attainment of their next professional step.

Explicitly address disciplinary boundaries, and the ways in which the disciplines complement each other and bring in their own unique excellence.

Systems Biology is unique in the way in which it brings together individuals with quantitative backgrounds and biology training in the same place. While there are certainly intellectual advantages to this model it also seems to result on some level with identity confusion. It was interesting to hear mostly grad students try to sort themselves in terms of what aspect of the department or program or major or campus or specialization they belong to. A greater sense of community might be achieved if there is clarity on some of these overlapping program structures. More importantly, honest open discussions on what each discipline brings, how they complement each other in a non-hierarchical way are critical if subliminal messages are not continue particularly about the primacy of Math. In theory this should not be difficult, but left unaddressed individuals can continue to narrow their identity to only their single field of specialty.

Normalize failure and develop activities that message failure, challenge and struggle as normative to the scientific process.

In a high-pressure environment such as what exists in this department, it is very easy for students and postdocs in particular to attribute any misstep or failed experiment to being an impostor in that environment. Several interviewees did feel very supported, and it would be important to draw on the experiences of those who have had this experience and normalize it as expected mentor-mentee behavior throughout. These do not necessarily need to be grand gestures, and can simply be the ways in which PIs and senior lab members condition themselves to respond to lab members, give feedback and critique science. The COVID-fueled pandemic also brought to light the mental health struggles that several departmental members are dealing with. Without adequate training, other individuals can view colleagues and students' mental health-related struggles as a sign of poor work or worse incompetence. Mentor training should be required, with an assessment model that documents the impact of the training on lab culture and dynamics.

Engage in training on a) identity contingencies in STEM, b) mental health in STEM, c) the experiences of marginalized identities in STEM and d) the economics of Boston housing as it correlates to identity

Lastly, the themes that have emerged from these interviews tie to well-studied topics that in one way or the other tie to the social context of the academic experience. Actions on any of the above should come from a place of beyond cursory knowledge. Any serious approach to improve the departmental climate and build on its strengths would be to commit time to engage in the literature on how social externalities come to impact the academic experience. The four areas identified above are a worthy start, but fellowship over this material will naturally rabbit hole into several equally important areas. To a large extent, the more there is a collective understanding of how these externalities work, the easier it would be to identify what behavioral and structural changes are needed to ensure they do not become or remain contingencies. Most recommendations stated here in some way connect to these social problem areas.

References

1 - Buckingham, M. and Goodall, A., 2019. The feedback fallacy. Harvard Business Review, 97(2), pp.92-101.

Appendix I

We are here to learn more about the climate of SysBio. Climate can mean a lot of things. For our purposes, we are interested in learning more about your daily experiences.

We are interested in the good and the bad- we do not know what your particular experience will be, so it is important to speak from your own perspective. There isn't anything that we expect you to say or want you to say. Please speak your own truth.

We also want to say that it is ok to share things that may not have happened directly to you but experiences you have heard about, and affect how you feel about the climate of the department or Harvard.

No one's real name will be used in any reporting. If you share something very specific that could identify you, we plan to remove the identifying details but retain the sentiment of the story.

We will be sharing back the draft findings with all who participate to ask for feedback before revising the report and including our recommendations. This means you will get a chance to weigh in before the report gets finalized.

Do you have any questions before we begin recording?

I have a few pre-questions before the interview.

- Will you clarify your role here at Harvard?

- Which department are you part of?

- How long have you been in that role? At Harvard?

I am going to start with a broad question. What does your daily experience in SysBio looks like— in particular how central or peripheral is the department experience is for you in terms of how you think about your daily experience at Harvard?

What do you see as your relationship with the department/school?

We are interested in learning more about your sense of belonging in relation to SysBio. For some people this refers to their sense of connection or community. For others this might extend to how valued or respected you feel.

Probes, if needed:

Where (or how) does your sense of belonging show up?

What does being part of (or not being part of) community look like for you?

Critical incident(s)- is there a moment that stands out that you recall feeling a strong sense of connection or on the flip, exclusion or isolation?

How often did something like this (positive or negative) happen? Put another way: How common do you think the experience you have had is and/or how unusual it is?

Is there anything that is standing in the way of your flourishing here-- being the best

[graduate student/faculty/postdoc/staff] that you can be?

Or if nothing is standing in the way, what has been an essential facilitator for your flourishing here? Describe.

Probe:

We are interested in any comment about equity in your department, such as resource distribution, mentoring, or other key barriers/facilitators.

We are interested in sense of belonging or community – or lack thereof that you have witnessed in the lives of others here in SysBio or stories that have been passed along. Could you take a minute and reflect on any moments that stand out to you or that you recall – either that you saw or heard about.

If not already mentioned and if time, in what way did you see the pandemic as impacting your experience of the climate here?

Probe: Was there a sense of this department *before* the pandemic that contrasts to now?

This question may not be relevant to everyone if they started during the pandemic.

Finally, I have some demographics if you are comfortable with sharing.

How do you identify…

- Gender
- Race or Ethnicity
- Anything else?

Thank you so much for your contribution to this important project! We will be back in touch during the Spring when we have more information in aggregate.