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Editorial

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A large 'discovery' experiment: Gender Initiative for Excellence (Genie) at Chalmers University of Technology

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Sweden tops gender equality rankings, but Swedish academia is still lacking women in top positions. To address gender inequality in its faculty, Chalmers University of Technology has invested 300 million SEK (30 million Euros) over 10 years in Gender initiative for Excellence (Genie). Genie aims to increase the university's success and excellence via gender equality efforts. In this editorial, we want to share insights on explicit efforts during Genie's first 2.5 years with the goal to inspire and advise other universities and researchers.

Why?

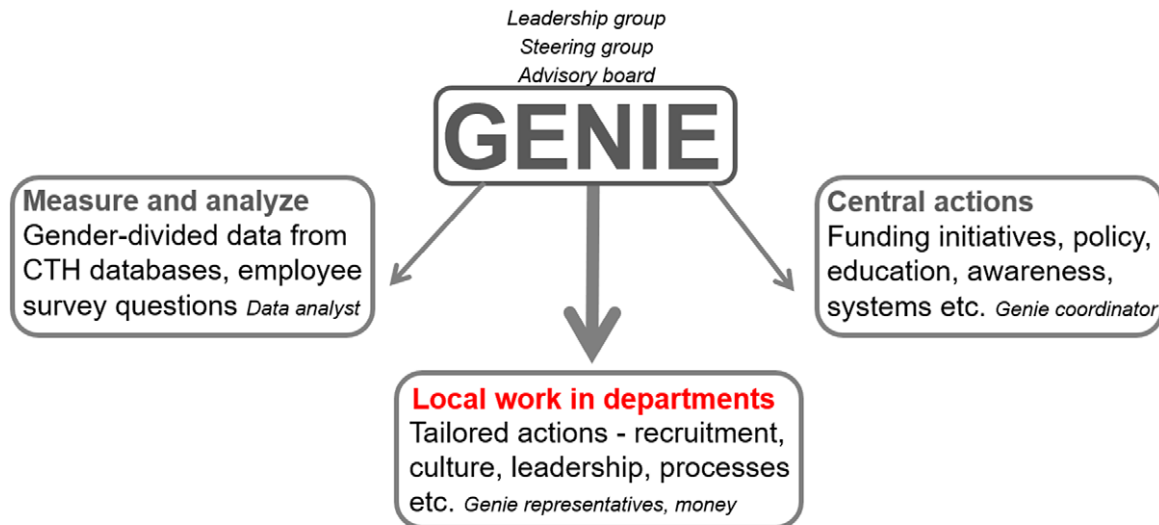
Female researchers in academia still experience unconscious bias and sometimes even harassments that hamper their careers (Kamerlin and Wittung-Stafshede, 2020). Many scientific studies demonstrate bias against women in academia when it comes to for example funding (Wenneras & Wold, 1997; Johnson and Kirk, 2020), publications (Day et al., 2020) and hiring (Moss-Racusin et al., 2012) although it has also been shown that more diversity leads to greater scientific success (Nielsen et al., 2017; Hofstra et al., 2020) and a better working environment, for both men and women (Freeman and Huang, 2014; AlShebli et al., 2018). Sweden is one of the world's most gender equal countries, but the fraction female professors at Swedish universities remains low, like in most of the world. At Chalmers University of Technology in Gothenburg, Sweden, 17% of the professors were female in 2018, which was (and still is) the lowest fraction among Swedish universities (in 2018 the average was 29% females among professors at Swedish universities; Statistics Sweden www.scb.se). Realising this as a hindrance to success in the future, in part actualised by the 2017 #MeToo movement, Chalmers decided in 2018 to increase the proportion of women among its faculty through an initiative named Gender Initiative for Excellence or Genie for short. Genie is funded by the Chalmers Foundation (<https://www.chalmers.se/en/foundation>) with 300 million SEK (30 million Euros) over 10 years and was launched on 1 January 2019. As far as we know, this is the largest individual investment in gender equality made by any university in the world and thus, everything we learn, may be of interest to others. Nonetheless, there are many other efforts out there to learn from and we want to specifically highlight the ADVANCE institutional transformational grants funded by NSF in the United States (https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5383) and the Athena SWAN accreditation programme in the UK (<https://www.advance-he.ac.uk/equality-charters/athena-swan-charter>).

What?

Compared to other gender equality initiatives, Genie stands out in that it is well-funded, long term, spans the whole university, and is led by faculty. Pernilla Wittung-Stafshede leads this initiative together with Mary Sheeran, and both are full professors. We find this leadership arrangement to be highly important to gain trust and respect among the other faculty. Pernilla and Mary are paid 40 and 30%, respectively, of their time to work with Genie, and together with Maria Saline, acting as Genie's coordinator full time, they constitute the core of the Genie leadership. In addition to the three leaders, Genie has a steering group (where large funding decisions are taken; importantly, the vice-chancellor chairs this group) and an advisory board with external experts (Figure 1 for names). The overall goals of Genie are:

1. Increase the proportion of female faculty to at least 40% at each career level.
2. Remove the structural and cultural obstacles that hamper women's careers.
3. Create a working environment that is diverse, inclusive, and supportive of excellence in research and teaching.

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Leadership group Professor Pernilla Wittung-Stafshede *head*, Professor Mary Sheeran *vice head*, Maria Saline *coordinator* + support from two department chairs, finances, communication and HR

Steering group Chalmers President Stefan Bengtsson (chair), Professor Lena Gustafsson, Professor Ann-Sofie Sandberg, Head of student union, and Head of HR

Advisory board Professor Paul Walton (York University, UK), Professor Agnes Wold (Gothenburg University, Sweden), Professor Liisa Husu (Örebro University, Sweden), Anders Linder (RUAG Space), and Ann-Marie Holmes (Intel, Ireland)

Fig. 1. *Genie in a 'nutshell'*. Genie's efforts are divided into three parts although there is a lot of overlap. The organisation of Genie includes the leadership group, steering group and an advisory board. Appointed members of these groups for 2019–2021 are given at the bottom. In addition, each department has a Genie representative.

To make a real difference in a sustainable way, we (and others) believe there needs to be systemic change of the academic culture, systems and processes, in parallel with the recruitment of more women to the faculty (Laursen and Austin, 2020). Within goals 2 and 3 above, many aspects of the academic system come in: leadership, policy, accountability, mentorship, individual support, climate, education, and so on (Laursen and Austin, 2020). Genie aims to go from abstract words to concrete action via a range of merit-based efforts on all levels. To be successful, we must get the majority of faculty and staff onboard; both informal and formal leaders must commit. To reach this, we think it is helpful to support many bottom-up ideas in addition to top-down efforts. Importantly, Genie will not force anyone to do gender equality work as that only backlashes; instead we want to act as a catalyst and provide help where it is wanted. Genie's initial efforts can be divided into three major parts (Figure 1). First, we do *central actions*, such as support female faculty and students, fund recruitment of new female faculty, increase awareness, provide information and training, as well as amend policies. Second, we *measure and analyse* data on our employees and around systems and processes. As many universities do, Chalmers collects a lot of information and we can use that to analyse different parameters with gender-glasses. Third, and most important, we *work with the departments* to support the departments to take responsibility and engage faculty and students locally. Each department is different with respect to possibilities and challenges, so tailored work is needed.

To better understand the context of Genie, we want to begin with some information about Chalmers. It is a prominent semi-private Swedish technical university with over 3,100 employees in total of which 40% are female. Chalmers has about 9,000 undergraduate students, 850 PhD students, and 650 base-funded (tenured) faculty (<https://www.chalmers.se/en/about-chalmers>). The

tenure-track ladder includes an additional title/position between associate professor and full professor that we here call professor ('*biträdande professor*' in Swedish). In Figure 2, we show the percentages of women among PhD students, postdocs, assistant professors, associate professors, professors and full professors for the last 4 years. As can be observed, when we started Genie, there was a lack of women at all levels. Chalmers, like Sweden overall and other countries, has a pay gap between men and women (mean difference of 11% in 2018), and sick leave data for Chalmers show higher sick leave for women than for men in most categories (Figure 2), although these numbers are likely flawed as many academics never take sick leave even when sick. At the organisational level, Chalmers has 13 departments that span from applied to basic science (department names given in Figure 3) that report directly to the vice-chancellor and the university's central leadership. One department, with the name Communication and Learning Science (affiliated with the university library), is not in Figure 3 as there are no full professors. In 2018, before Genie started, 2 of the 13 department heads were women (today, in 2021, this number is up to 5) and 7 departments had 2 or fewer women full professors (Figure 3). Unfortunately, in 2021, eight departments have two or less women full professors. As can be seen in Figure 3, three departments stand out (Biology and Biological Engineering, Technology Management and Economics and Architecture and Civil Engineering) with around 50:50 balance among full professors. This data, together with additional information, makes it clear that Chalmers is not a gender equal place and additional efforts, such as Genie, are needed.

How?

With respect to central actions, we started out brave and paid for assistant professor packages for five extra hires in Chalmers bi-annual university-wide call. Here, we had high competition

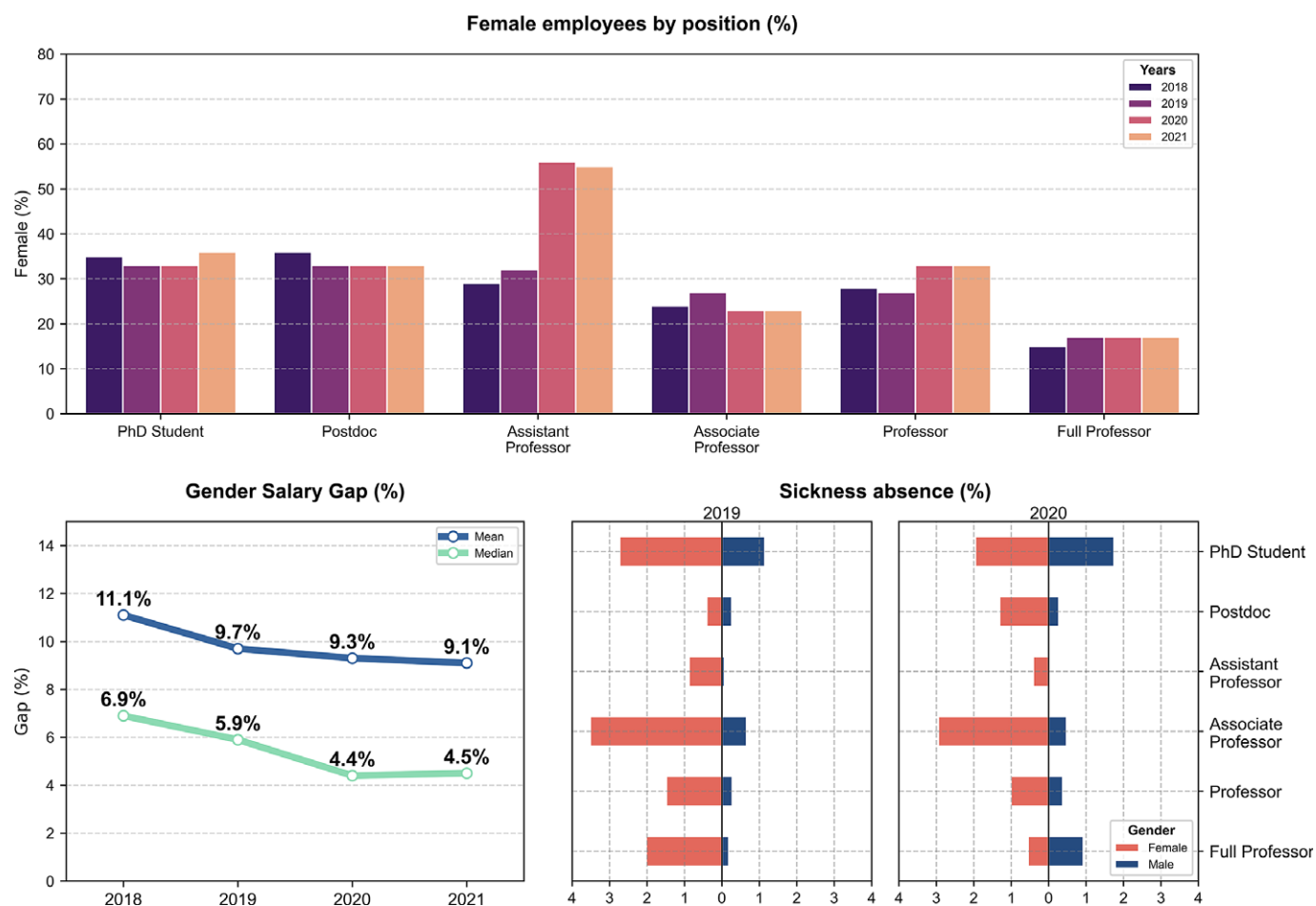


Fig. 2. Gender-divided data for Chalmers 2018–2021. Upper panel: % female by role below 67 years old (typical retirement age) at Chalmers during March of the respective year. Lower left panel: Gender salary gap of all employees (all ages included) at Chalmers. Salary gap is obtained using the employees' monthly salary corresponding to a full-time position (monthly salary from March of the respective year). Lower right panel: Sick leave (% sick leave hours of total ordinary working hours) by gender and role (all ages included).

(over 1,000 applicants for 10 positions) and several highly ranked candidates were females. This effort is clearly seen in the assistant professor data in Figure 2, where we have around 50% female in 2020 and 2021. Since then, we have made general guidelines for how departments can get start-up packages from Genie when recruiting a female assistant professor (1 so far). To add senior role models, Genie can support direct hires of top female faculty, on associate and professor levels, by providing competitive packages (two so far). To help women in externally funded positions that do base-funded faculty work, Genie can provide support funding to transfer an externally funded female scientist to a base-funded (tenured) faculty position (four so far). Importantly, with respect to new hires or internal transfers, Genie does not select candidates for this. The departments provide suggestions and the central hiring committee considers merits according to normal procedures; then, Genie simply adds in money. To stimulate bottom-up ideas early on, and get activities going in the departments, we had an open call in 2019 for internal projects which in a broadly defined way combined gender with research or education. We got many applications (over 70) and after thorough evaluation, we funded 30 proposals (at least one in each department). To get more female faculty on campus quicker than via permanent hires, we also opened a visiting researcher programme (with rolling deadlines) and we have already approved 10 visiting female faculty. In Supplementary Table S1, we list Genie open call projects, visiting faculty, new hires,

as well as other Genie funded initiatives. We also decided to pay for anyone that wants to attend a gender-equality conference within their research area, which unfortunately has not been much used yet, in part because of the pandemic.

In terms of data analysis, we have started to publish yearly reports of men *versus* women at different positions, in total and per department, salary gaps, sick leave data, and so on that we post on the university website available to everyone. See examples of this in Figure 2; we derived 2018 data to use as our pre-Genie baseline. To aid in this work, Genie pays 50% of the salary for a data analyst. This person is also investigating other aspects of the data Chalmers has, such as promotion time, money flow and division of labor. As one way to probe the academic culture, which is tricky, we developed additional questions for the annual Chalmers employee survey that got included in 2019 and 2020 surveys so far (Table 1). The idea with these new questions is to get a sense for how men and women view the academic environment and have a metric to follow with time. One can also use these data to look at different employment categories or selected departments, to reveal problematic environments to specifically target.

Most important!

The third part of Genie focuses on local work in the departments. In terms of getting the departments to engage, Genie started in 2019 to

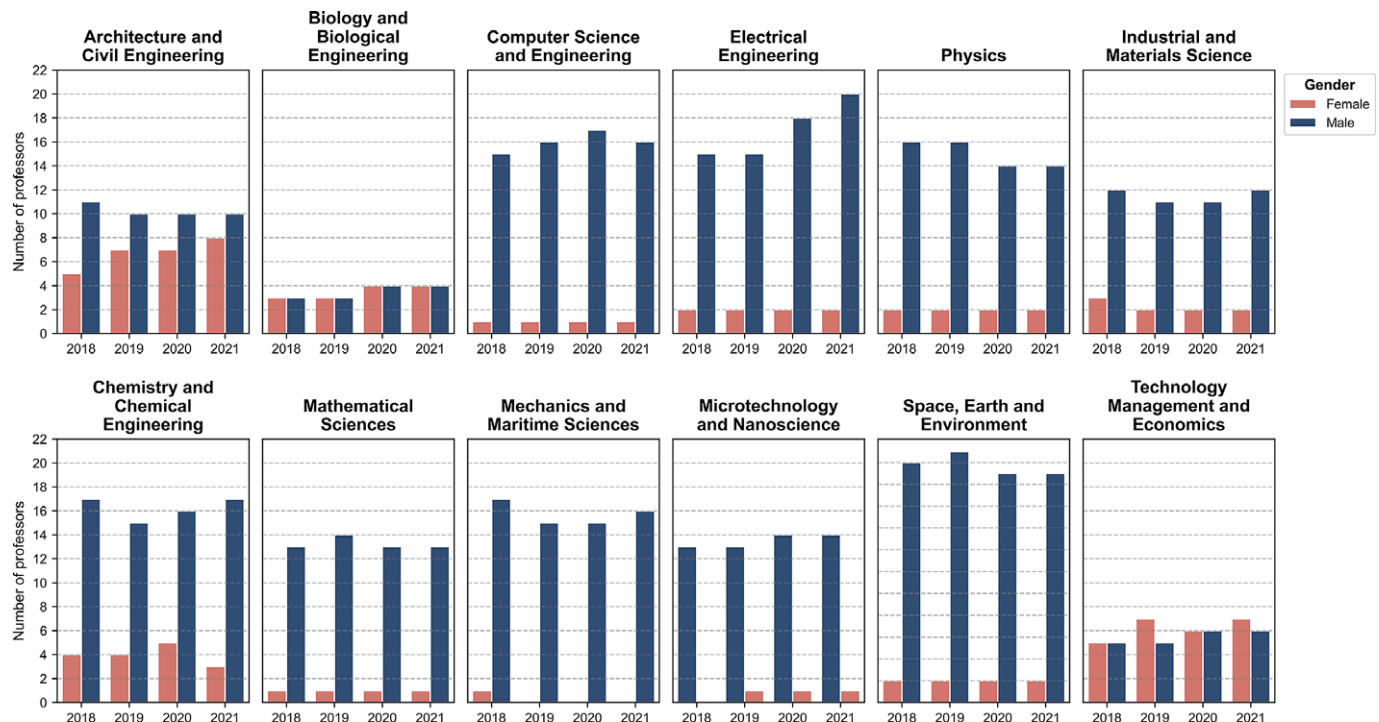


Fig. 3. Distribution of female full professors in the different departments 2018–2021. Number of female and male full professors at Chalmers' departments (12 as one department has no full professors at all) using data from March of respective year for employees below 67 years old.

Table 1. Five questions Genie added to the annual employee survey were combined into a *gender equality index* running between 0 and 100%, where 100% means that respondents agree fully, and 0% means that respondents do not agree to the given statement.

Question	Scores 2019		Scores 2020	
	M (%)	W (%)	M (%)	W (%)
<i>I experience that colleagues find my research interesting.</i> Answer: No not at all (1), Yes, absolutely (6)	74	74	74	75
<i>I feel that colleagues in my department have tried hard to help me professionally during my career, beyond what is formally required of them.</i> Answer: No they have not tried to help me at all (1), Yes they have tried hard to help (6)	67	65	67	68
<i>I am or can see myself as a successful researcher in academia.</i> Answer: No not at all (1), Yes, absolutely (6)	67	62	67	65
<i>I find my department to be a workplace free from discrimination, regardless of ethnicity, disability, gender, transgender identity, sexual orientation, religion or age.</i> Answer: Completely disagree (1), Completely agree (6)	85	79	85	80
<i>I feel that processes at my department are fair (e.g. recruitment and promotion of academic staff, including specialists, assignment of tasks, distribution of resources).</i> Answer: No not at all (1), Yes, absolutely (6)	68	68	66	66
Gender equality index (average for above questions)	72.2	69.6	71.8	70.8

Each question was answered on a scale between 1 and 6 in the survey and then converted to percent for this analysis. So far, data have been collected for 2019 and 2020. Abbreviations: M, men; W, women.

request gender equality plans in the annual operational plans. This has made all departments think and begin to set goals around gender. Also, to get real action, Genie has given each department 2 million SEK over five years to use freely towards gender work. Initially, we visited each department and independently talked to various groups and individuals, such as heads, female faculty, male faculty and students. We have learnt so much about the university and how different the various departments are. Early on, we realised that heads of departments do not have time to be our department contact so, instead, we appointed a Genie representative per

department. This is most often a senior faculty and acts as our way into the department. The Genie representatives as a group connects all departments to Genie, and by meeting each other they also create connections between the departments. We strongly believe that by sharing ideas and problems, the departments can help each other. To facilitate concrete actions, we made a toolbox (SI Toolbox) with a long list of small and large actions one can take to improve gender equality (focusing on community and academic culture, career development, progressive recruitment and leadership towards change). We also want to highlight the extensive

toolkit based on experiences in ADVANCE programmes in the United States: <https://www.colorado.edu/eeer/research-areas/women-science/strategic-toolkit>. Based on our interactions with all the departments, we could prepare a list of local gender-equality efforts that are or have been ongoing in different departments. This list has now been circulated to make it is easy for a department to copy a successful effort from another department. The work within the departments is most important, and also the hardest to get going and a pandemic does not help. To promote increased engagement, we recently (spring 2021) visited every department's faculty colloquium for open discussions. There are positive people out there but also faculty that show resistance. Many times, faculty are stressed for other reasons, such as teaching demands and funding, and it is hard to get attention around gender equality issues.

And, more?

On top of the things noted above, Genie has provided support for a number of bottom-up initiatives (Supplementary Table S1) including for example a bibliometric study, outreach activities, a mentorship programme, a 'Why women leave' study, and funding to individuals to complement external grants to allow for postdoc hires. For increased awareness, we regularly arrange gender-equity related seminars on campus; for example, Paul Walton, Liisa Husu and Frank Dobbin have been invited speakers. For International Women's Day 2021, we arranged a panel discussion around the movie *Picture A Scientist* (<https://www.pictureascientist.com/>). As a parenthesis, we recommend this movie to everyone as it contains basic facts and data together with personal stories. This event was followed up on with a workshop on how to deal with microaggressions and, for further networking and outreach nationally and internationally, the setup of a 'Gender Equality In Academia' Facebook group that already has over 1,200 members (<https://www.facebook.com/groups/980554622474685/>). To get feedback and educate employees at Chalmers about Genie, we have over the years arranged several informal lunch gatherings as well as, lately, zoom meetings. We have also spent lots of time educating ourselves about cultural/organisational change work, and we seek advice from external experts and our advisors as needed. University communication is somewhat difficult, but we know transparency and visibility are important for progress. In addition to an internal website, we have an external website (www.chalmers.se/genie) where we post news, data and provide a library of scientific resources. We want to improve here in the future.

Gender inequality is not a problem unique to Chalmers and solving this will require the whole society to change eventually. Pernilla and Mary therefore have been out giving 'women in academia' talks at many other universities in Sweden and abroad, as well as at conferences (e.g. <https://youtu.be/XVAFyuglVeQ>). These talks are often about the problem itself including a lot of scientific data, but we also spread the word about Genie at these events. We also attend gender/diversity conferences (e.g. 11th European Conference on Gender Equality in Higher Education in September, 2021) to both learn and share knowledge. In addition, we seek connections with gender equality champions at other universities and we try to influence funding agencies and the government.

Going forward?

Genie's first 2.5 years have included building trust among faculty, setting up of an functional organisation, and connecting with

different stakeholders inside and outside the university. For lasting, systemic change we need to continue to work with other entities at Chalmers, such as HR, the hiring committee, and the faculty senate. So far, we have significantly improved awareness among the faculty at Chalmers and we have brought in many new women researchers to Chalmers although this cannot be seen in the overall numbers yet (Figures 2 and 3) except for the assistant professor level. But there is much more to do. Structural/systematic change is slow. We realise several key aspects of our near future work: (1) We need to be much more concrete in how to get the departments to act. (2) We need to educate members of hiring and leadership groups around unconscious bias, microaggressions and best practices. (3) We need to get the Chalmers central leadership more actively involved. And, we see a need for more mentorship programmes, leadership programmes that include discussions on diversity and inclusion, and the importance of institutionalisation of all changes that we make. Although Genie got a lot of money, its annual budget corresponds to only 0.75% of Chalmers total annual budget (<https://www.chalmers.se/en/about-chalmers/annual-report>). Thus, Chalmers cannot rely on Genie alone to do the work around gender equality; inclusion and fairness must become central in every decision made on recruitment and funding all around Chalmers. This is important to point out as there is a risk that people naively believe Genie takes care of the gender aspect, and the rest of the university can go on as normal.

Running Genie takes a lot of energy and time. Our own academic track records are negatively affected. We have spoken to many women with problems and we see the structural problems more clearly now; the work can get very emotional at times. Still, this may be the most important task we have ever had. There is no alternative; to be a successful university in the future, the academic culture must change. We do not want to repeat failed efforts from the past; we want Chalmers to pioneer new 'discoveries' that transform the university and, by the extension, universities all over the world.

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Supplementary Materials. To view supplementary material for this article, please visit <http://dx.doi.org/10.1017/qrd.2021.3>.

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