Letter

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Do Networking and Diversity Elements Impact the Development of Innovation Leaders? A Climate Analysis in the Pharmaceutical Industry

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Abstract

There is compelling evidence that professional networks play a key role in career advancement through provision of mentoring experiences and the additive impact of domain-based expertise. It is also postulated that women and men often form different types of networks as defined by their structure (number of nodes, inner circles), how they function (cooperative, hierarchical) and are utilized (counselling, sociopolitical). In this climate analysis we investigated network dynamics of a representative cross section of women in various career stages across innovation, scientific, and engineering roles in a global pharmaceutical company (WISE). Through a combination of quantitative (anonymous survey) and qualitative (interview based) measures we highlight differences in approach which were largely driven by career aspirations among respondents. Among individuals reporting rapid career advancement through verticals, rather than identifying mentoring interactions they highlighted diversity of experiences as a major factor. These include cross domain and cross-cultural experiences, job rotations, and experience in multi-disciplinary projects. Comparable findings were observed in surveys of male colleagues in similar roles in the organization. The findings may have value in coaching and mentoring programs and in new employee onboarding programs.

Keywords: diversity, culture, innovation, mentoring, career advancement.

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1 Introduction

Employee career development is a critical feature of global corporations, enabling progression of high performing individuals who are seasoned in company operating models and reducing the

need for more costly external searches to fill vacant roles. The pharmaceutical industry is no exception, where the constant need for innovation and redirection creates considerable turnover and resourcing challenges.[1] For this reason companies typically deploy structured and regimented onboarding and mentoring programs for employees, augmented by technical training and work rotations to allow individuals to develop and ultimately advance. Within this framework we have been actively assessing the performance of individuals and teams in our innovation program, and previously reported on the impact of cultural diversity elements and residence time.[2,3] In an extension of these studies we wished to examine more closely the impact if any of gender on career advancement along with contributing elements that accelerate successful development.

2 The TRD innovation group

Novartis' Technical Research and Development (TRD) is home to an enterprise innovation group which facilitates innovation challenges and mentoring programs across 3000 employee unit of the parent organization. There is a declared corporate goal to achieve gender parity and equity across management roles in line with the United Nations Equal Pay International Coalition (EPIC) and this has led to a number of appointments of senior women leaders within the past three years.[4] Within the TRD sub-group, parity has been achieved across a number of ranks (scaled on a numerical system 1-8) and in the higher ranks (1-5) there is a mean lag of approximately 16% against the target goal of 50%+ (Figure 1). Within the innovation community there is additional impetus for gender diversity in teams in addition to across ranks as diversity elements have been noted to improve outcome measures in complex multi-disciplinary projects.[2]

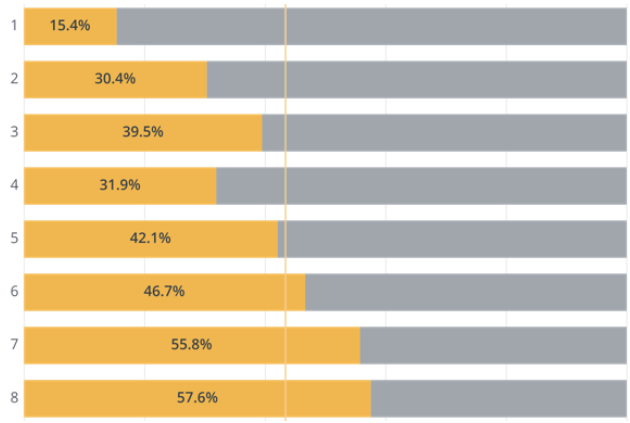

Figure 1. Female associate percentages against (ascending) rank as of 9/23

One near term solution is to hire externally into open roles however a more sustainable approach is through career development of associates with high potential for advancement, supported by the robust pipeline numbers in the ascending ranks. One of the numerous programs supported by the TRD innovation program is the women in innovation, science and engineering group (WISE). Over the period 2022-2024 this group has hosted several workshops and discussion forums, supported active mentoring programs, and due to popularity opened up programming to male colleagues. In an effort to help close the gender gap in senior ranks and achieve higher levels of diversity in team science endeavors the group has sought to understand and identify potential impediments to career advancement and gathered data through qualitative and quantitative surveys (appendix).

3 Findings

Among the more illuminating responses from the surveys are the following:

Where do female associates turn to for career advice and insights?

Responses from 46 respondents identified multiple touch points including colleagues, line managers, family members and formal mentors (representative data shown in Figure 2) with similar responses obtained from 28 male colleagues.

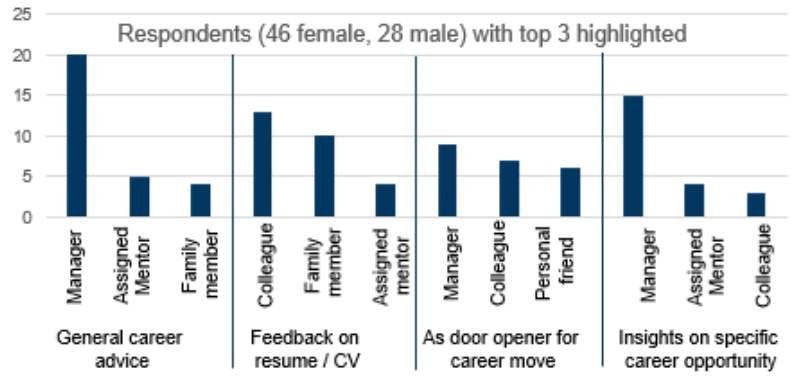

Figure 2. Representative responses on self-solicited career mentoring inputs

Initial expectations were that the role of the line manager would feature more prominently, but the holistic approaches recorded points to a diversity of inputs. While regional variations were observed (see country specific data in appendix) this nonetheless points to a need to ensure mentoring programs adapt messaging to ensure associates are receiving accurate advice relative to corporate functions and objectives.

Does the relative lack of female leaders at higher rank impact mentoring and career development activities?

Through multiple formats this problem was interrogated through interaction with female associates from 8 countries at ranks 3-5. Some of the principal summary findings from these endeavors are as follows (Figure 3):

- Female associates are gender ambivalent when it comes to seeking career advice and mentoring from senior colleagues and peers. The only exceptions to this trend were in connection to health-related matters (shared during face to face interviews)
- Findings correlated well across all international sectors where the group operates (Europe, Asia, North America)
- Role modeling had a major impact on career choices and tactics deployed by associates

These observations were challenged by quantitative anonymous surveys which confirmed at scale the findings obtained through confidential interviews. Bullet 1 was of significance since it has been reported that men and women rely on dramatically different career networks, and root analysis point to gender specific actions.[5-10]

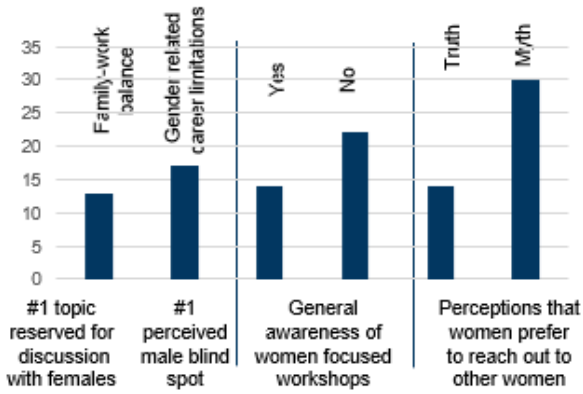

Figure 3. Perceptions and communication preferences of female associates

What are the primary factors associates attribute their career advancement to higher rank?

Intrigued by significance of role modelling behaviors and career tracking, the innovation leadership team identified a representative number of female associates who have successfully advanced one or more rank in the past two years or have been promoted into an acknowledged leadership role within rank. Confidential in-depth interviews were conducted with each of the individuals where they were asked to identify factors they attributed to their success through engagement in innovation initiatives. Among numerous responses, four were identified *by every respondent* and cited as of primary importance:

- Cultural adaptation [workplace, family, cross-border assignment, education]
- Experience working in cross functional teams
- Sustained activity working in culturally diverse teams
- Job rotations [sabbatical, temporary assignment] or role change

The same tactics were also applied to male colleagues with similar profiles, and resulted in near identical responses. One possible inference is that in order to succeed in a global organization the cultural elements will become prioritized and lead to cross-border opportunities. Interestingly however, though the majority of respondents had worked or studied in multiple countries, the results were similar for those who had not.

4 Analysis

The significance of diversity elements (cultural, projects, roles) and cross-functional experience in rapid career advancement may derive from the nature of innovation-based roles, where adaptability to change is at a premium. Significantly, these attributes were highlighted equally by both male and female associates, suggesting a uniform approach can be deployed in future career development programming. Given the robust pipeline of female associates there is optimism that mentoring approaches which provide support, resources and opportunities to facilitate and develop these experiences can contribute to the goal to establish gender parity across different ranks. The traits might also form the basis for interview screening criteria for internal and external searches. In

terms of implementation steps, the TRD innovation program administers a pilot award program, where teams of innovators are supported to conduct cross-functional research projects and this would seem a fertile ground to develop some of the skills highlighted. This, coupled with strategic approaches to job rotations, sabbatical type opportunities and exposure to cross-border and cross-cultural environments are all implementable in the near-term. Opportunities for such can be highlighted through internal networking events and also through web based portals such as Talent Match and Globe Smart. A next step will be to track these interventions over a defined period (5 years) to assess the cumulative impact on career development and efforts to achieve gender parity across all ranks.

5 Conclusions and future directions

Diversity elements [job function, cultural, team composition] play a commanding role in career advancement for female and male associates in innovation-based roles. Based on our observations any climate surveys intended to interrogate the impact these drivers should be deployed across both genders. Networking, along with active fostering of opportunities to broaden and deepen these diversity elements is expected to directly impact career development and advancement. Such approaches present a viable opportunity to help drive gender parity across ascending leadership ranks and improve innovation performance. To that end we anticipate active deployment of the tactics outlined herein by line managers as part of the professional development plans for all associates. Such an approach can be expected to sustain and enrich the pipeline of women leaders in ascending ranks (Figure 1) and postively impact the drive for gender parity across each.

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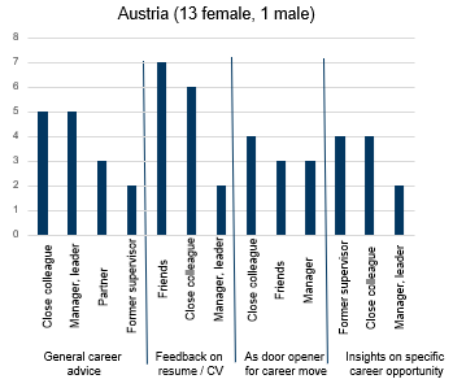
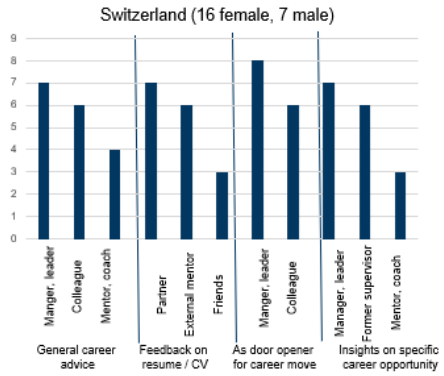
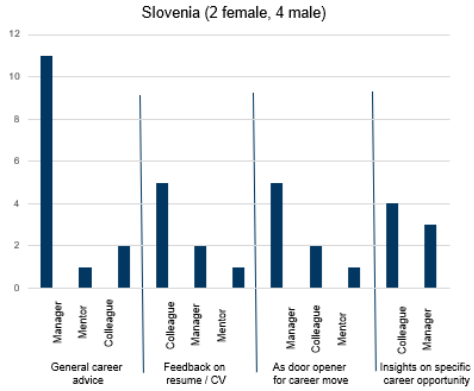
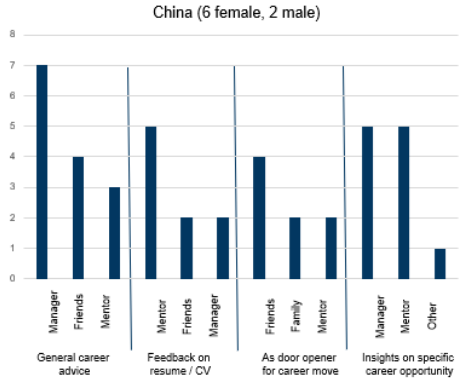
7 Appendix: Country specific responses









Biographies

Nadia Laouar. Nadia Laouar has more than 20 years' experience in the pharmaceutical industry, encompassing research chemistry, drug development, strategic partnership, portfolio management, and organizational leadership. She started her career at Novartis Technical Research & Development (TRD) in 2009. Throughout her tenure, she has held several managerial and leadership roles in TRD and Global Clinical Supplies (GCS), including Portfolio Leadership and External Operational Management. In her current role as Head Global Clinical Supply, Nadia oversees the global GCS organization responsible for the clinical supplies enabling Novartis clinical trials for early and late phase and across all modalities platforms encompassing Small Molecules, Biologics, Cell & Gene Therapies, as well as emerging therapeutic modalities such as xRNA, and radioligand therapeutics (RLT). The GCS team comprises portfolio leadership, supply chain and trial manager, and also includes well-established internal and external operations from across Europe and India. They focus on developing a robust and efficient program and trial specific forecast and planning leading to agile and efficient packaging, labeling and distribution to all investigators

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CRediT Statement: Conceptualization, Formal analyhsis, Methodology, Writing - original draft, Writing - review & editing

Mateja Kramer. Mateja Kramer received her BS, MS and PhD from the University of Ljubljana, Faculty of Pharmacy, Slovenia. In 2002 she was appointed as a research fellow in Microbiology Analytical Science & Technology (AS&T) at Novartis and in 2010 became Head of AS&T. In 2015, she joined Novartis solid dosage forms and in 2018, she joined Technical Research Development Biologics and Cell & Gene Therapies where she was responsible for managing innovation projects. Currently, she is a Global Head of Innovation in Technical Research Development responsible for leading the global enterprise innovation system across the drug development process for both biologics and chemical molecules. She has authored and co-authored 16 publications and mentored over 10 graduate students and research fellows. For 13 years she was an Expert in Water for pharmaceutical purposes nominated by European Directorate for the Quality of Medicines & HealthCare (EDQM), Council of Europe. She received the Best of the Best business practice award 2022 granted by the American Chamber of Commerce. Under her leadership, the TRD Innovation Council received the 2024 Innovation Leader Impact Award for the best sustainable innovation program.

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Fabrice Gallou. Fabrice Gallou received his Ph.D. from The Ohio State University (2001) in the field of natural products total synthesis. He then joined Chemical Development at Boehringer Ingelheim, USA, working as a process chemist responsible for route scouting and supply of early phase programs. He subsequently moved in 2006 to the Chemical Development group at Novartis, Switzerland, as a process development chemist, and in 2008 became responsible for global scientific activities, overseeing development and implementation of practical and economical chemical processes for large scale production of APIs. His research interests are in the research and development of sustainable synthetic methodologies intended for large scale implementation. He has published more than 220 peer-reviewed papers, book chapters, and patents, and won multiple awards, most recently the 2019 Swiss Chemical Society Senior Industrial Award, and the 2019 Yves Chauvin Award from the French Chemical Society. At Novartis he played a key role in establishing a seed funding mechanism in the Technical Research and Development group, which allows cross functional teams to pursue innovative ideas and concepts.

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Bozena Duleba-Satz. Bozena Duleba-Satz is currently a Global People & Organization Business Partner based in Switzerland who is passionate about working with scientists and clinicians in their pursuit of developing life changing medicines and treatments. Bozena has more than 15 years' experience in the human resources field. She started her career in the US where she was heading a small HR unit with a dynamically growing start-up company. She joined Novartis in 2013 holding roles of increasing responsibility in Talent Acquisition & Rewards and Business Partnering. For

the last seven years she has supported various business units within Novartis Development including Oncology Hematology, Precision Medicine, Neuroscience, and Immunology, Technical Research & Development. By driving culture initiatives, implementing new Team Effectiveness approaches and delivering Team interventions, & talent management she has made a significant influence on how teams collaborate & innovate better together. Bozena draws on her human resources background gained though Masters programs in Poland and the US including her Masters in Social Psychology with research focused on leadership Styles and Innovative Behavior. She is also a certified Coach.

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Bernardita Chirino-Chace. Bernardita Chirino-Chace was awarded BS and MS degrees in biochemistry from the University of Chile, and an MS in Management of Technology & Entrepreneurship from EPFL Switzerland. Her research work led to recognition as the first Chilean environmental biochemist to work on extremophiles (extreme microbes) from Antarctica, conducted in collaboration with a non-profit research institute and the US government. Since joining Novartis as Innovation Manager in 2019, Bernardita has played a key role in activating and evolving the Technical Research & Development enterprise innovation program which was recognized in 2020 by Innovation Leader with a Best New Initiative Award and subsequently the 2024 Innovation Impact Award. She has been heavily engaged in the Novartis cultural transformation, promoting diversity and inclusion initiatives across the innovation ecosystem. She catalyzed a number of signature events and workshops highlighting how diversity and inclusion impacts innovation performance for the Novartis community and has authored a number of research manuscripts on the topic. She is certified Innovation Coach and is a team member for numerous internally funded innovation programs within Novartis.

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Graham Jones. Graham Jones received BS and PhD degrees in chemistry from the UK, then moved to Harvard University as a NATO Fellow working with Nobel Laureate EJ Corey. Over the next two decades he was appointed to tenured full professorships at several Universities in the USA and UK, most recently as Professor of Medicine and Director of Translational Research at Tufts University Medical Center in Boston, USA. In 2018 he was recruited by Novartis Pharmaceuticals as Director of Innovation and in 2024 appointed Distinguished Scientist in the Clinical Innovation group. He has authored 190 publications, attracted >$100M in federal research funding and mentored over 150 graduate students and research fellows. He is listed in the Stanford index of the top 1% most influential scientists in the world based on impact and has served as an advisor to US, Anglo and APEC governments on innovation, technology transfer and biopharmaceuticals. He has also served as an advisor to startups who have gone on to raise >$4Billion in capital. He was awarded the DSc in 2006 for career contributions to science and is a founding member of the International network for the science of team science (INSciTS).

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