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The Swiss National MD-PhD Grants Programme: an analysis of the career trajectories of grant recipients between 1992 and 2021

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Summary

AIM OF THE STUDY: The aim of this study is to provide an analysis of the career trajectory of the recipients of a Swiss National MD-PhD grant thirty years after the creation of the Swiss interuniversity MD-PhD programme.

METHODS: The study surveyed 277 recipients of a Swiss National MD-PhD grant using an online questionnaire in April 2022. There were twenty questions about participants' demographics, the duration of their MD-PhD training, their career trajectory, current position, research and clinical activity, the impact of the support on the recipients' careers, and their satisfaction with various aspects of the grant.

RESULTS: The study showed that 141 out of the 277 grant recipients contacted returned the survey (51% response rate). The gender distribution of the participants was 33% women, 63% men, 4% unknown, which is almost the same as that of all grantees (35% women, 65% men). One hundred and fourteen (81%) respondents had completed their MD-PhD thesis and were graduates, while 27 (19%) were still MD-PhD students. The mean duration of the MD-PhD training was 4.27 years, with a slight upward trend over time. A large proportion of graduates, 81%, remained scientifically active after the grant, most of them in academic settings. Of the grantees who had completed their MD-PhD at least eight years before the survey, 55% had a paid research position with 40% combining research and clinical roles, and 15% doing research only. Seventy-six per cent remained clinically active, 54% occupied leadership positions, and 25% were professors. Most grantees believed that the grant had had a positive impact on their career trajectory. The main challenges included a delay in clinical training, a limited number of clinical positions with dedicated research time after the MD-PhD period, and sub-optimal recognition by hospital hierarchies.

CONCLUSION: The data collected for this study confirm that the competitive Swiss National MD-PhD Grants Programme excels in supporting promising physician scientists who remain active in both research and clinical contexts in the long term. The individual grants are perceived as a distinction that acts as the basis for a successful career in academic medicine. Continued support and alternative funding sources, however, will be essential to ensure the programme's sustainability.

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Introduction

Since 1992, research-oriented physicians have had access to graduate training in experimental biomedical sciences to perform original research at a Swiss university leading to a PhD or a combined MD-PhD degree. Inspired by the Medical Scientist Training Programme (MSTP) in the United States, initiated in 1964 by the National Institute of General Medical Sciences (NIGMS) at the National Institutes of Health [1], the Swiss interuniversity MD-PhD programme was created on the initiative of the Swiss Academy of Medical Sciences (SAMS) and the Swiss National Science Foundation (SNSF). It was one of the first MD-PhD training programmes in Europe [2]. The programme aimed to train physician scientists, equipped with both clinical understanding and the scientific skills to conduct state-of the-art-research. MD-PhD trainees are indeed ideally positioned to identify unmet clinical needs, decipher the pathophysiological mechanisms of diseases and translate scientific findings into medical applications and clinical practice.

To make the demanding MD-PhD career path attractive, competitive scholarships were financed by private foundations associated with the national programme to be awarded to the most promising candidates. The impetus given by the national program encouraged the development of local graduate schools and structured MD-PhD curricula at partner universities. Over the years, the Swiss interuniversity MD-PhD training program has thus evolved into a purely career funding program. Every year, it supports up to 12 MD-PhD trainees with outstanding credentials and potential with individual grants. Originally restricted to the biomedical experimental sciences, the (now called) National MD-PhD Grants Programme opened to other fields of academic medicine, including public health, biomedical ethics, and clinical research.

Initially, the five Swiss universities with a medical faculty (Basel, Bern, Geneva, Lausanne and Zurich) have been associated with the national programme from its start. One of the universities that newly offer a complete Master's degree in medicine – the Università della Svizzera Italiana (USI) – set up its own training for MD-PhD students and, at the end of 2022, joined the National MD-PhD Grants Programme.

The National MD-PhD Grants Programme focuses on scientifically and clinically junior applicants (physicians, veterinarians and dentists) sourced primarily from the Swiss education system – candidates must have been resident in Switzerland for at least two years to be eligible. The grant covers a salary for two or three years, but the salary for the 4th year, and the full research costs, must be guaranteed by the host institution. At least 80% of the recipient's working time must be dedicated to the PhD project. If desired, up to 20% of their time can be devoted to clinical work or other academic activities, e.g., teaching, in parallel with the PhD research [3].

The evaluation of applications takes place in two steps. The local MD-PhD commissions at partner universities preselect qualified candidates and nominate them for final evaluation to the national MD-PhD committee, which is composed of distinguished researchers and representatives of the foundations supporting the national programme. On average, between eight and 12 grants were available per year since the start of the programme in 1992. Some of these, depending on the source of funding, may be restricted to specific research fields. Supported by various foundations since its launch [2], the Swiss National MD-PhD Grants Programme is currently funded by the SNSF (main funder), the SAMS, Krebsforschung Schweiz (cancer research), the Théodore Ott Fund (neuroscience), the Zinkernagel Research Foundation, the Monique Dornonville de la Cour Foundation and the Synapsis Foundation Switzerland. The SNSF has announced its withdrawal from the programme as of 2025, making the programme's future unclear.

Background and rationale for the study

This study was undertaken to provide a snapshot of the career trajectory and outcomes of MD-PhD grantees thirty years after the creation of the Swiss interuniversity MD-PhD programme. With the evolution of the academic landscape and a growing number of doctoral programmes open to research-oriented physicians in various disciplines, we wanted to assess the success of the National MD-PhD Grants Programme in reaching its goals of training physician scientists who remain active in both research and clinical contexts. We were also interested in ascertaining whether grantees believed that their receiving competitive individual funding at the doctoral level had added value to their academic career, and how many grantees had reached leadership positions.

A glimpse of the MD-PhD curriculum landscape and trends

Today, the international MD-PhD curriculum landscape is diverse and offers prospective students various career paths. Figure 1 shows a comparison between typical Swiss and North American MD-PhD curricula. Key differences are the entry time and the obligatory intercalated nature of the MD-PhD curriculum in the USA and Canada. There, where MD-PhD training had already started in the 1950s [1], students have to first complete a bachelor's degree in a field of their choice to which they add basic scientific training in biology, chemistry and physics before entering medical undergraduate training. In Switzerland, by contrast, students go straight to medical school after completion of secondary education.

The programmes in North America have, generally speaking, a three-part structure consisting of undergraduate medical training, research combined with PhD graduate coursework, and re-entry into the clinic. The programmes in Switzerland are quite heterogeneous in their organisation but offer two main models: An intercalated curriculum, similar to the US model, in which the coursework for the PhD starts in parallel with the undergraduate medical education, followed, after graduation, by the PhD research work (track 1), or two sequential phases in which the medical undergraduate education is completed before starting the PhD training and research period (track 2). Clinical residency traditionally follows the MD-PhD period, but some Track 2 MD-PhD students complete (part of) their clinical specialisation before starting their MD-PhD. In addition, new flexible MD-PhD curricula in patient-oriented research offer to combine the PhD research

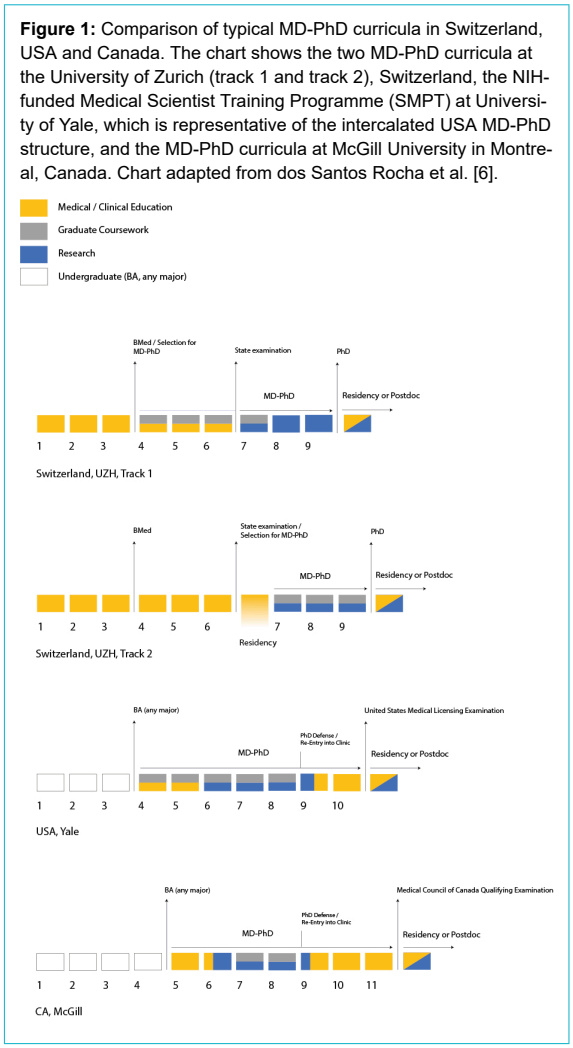


Figure 1: Comparison of typical MD-PhD curricula in Switzerland, USA and Canada. The chart shows the two MD-PhD curricula at the University of Zurich (track 1 and track 2), Switzerland, the NIH-funded Medical Scientist Training Programme (SMPT) at University of Yale, which is representative of the intercalated USA MD-PhD structure, and the MD-PhD curricula at McGill University in Montreal, Canada. Chart adapted from dos Santos Rocha et al. [6].

with clinical training. Programmes in Switzerland and in the USA both have a broad range of fields in which the PhD can be pursued. These include experimental biomedical research, translational research, clinical research, environmental health and biomedical ethics in Switzerland, while social sciences and anthropology are additional options in the US programmes. However, an overall decline in the number of physician scientists has been observed and several reports mention that they are at risk of becoming an "endangered species" [4, 5].

Brief review of literature: career outcomes of MD-PhD programmes

Comparing the Swiss MD-PhD programmes with similar programmes in European countries and North America, we found that these programmes successfully promote research-focused careers in medicine. Dos Santos Rocha et al. (2020) stress that the MD-PhD training in Europe is heterogenous, and results in a variety of career choices and academic outcomes. However, according to the authors, the opportunity to conduct research is an important factor for most of the MD-PhD students when planning their future careers [6]. A recent study, which analysed data from a national cohort of MD-PhD programme graduates of accredited medical schools in the USA from 2000 to 2005, shows that over half of the graduates have full-time faculty appointments [7]. Brass et al. (2010) [8], who traced the career path of National Institutes of Health-funded MD-PhD alumni during the past 40 years, found that 81% of them were employed in academia, research institutes, or industry. Overall, MD-PhD graduates are more likely to be involved in research during their subsequent careers than graduates of other MD degree programmes [9]. Other investigations, however, stress that research is often not the only focus of MD-PhD graduates. A survey of a group of Canadian MD-PhD graduates revealed that only 43% of the graduates dedicate the majority of their time to research in their current jobs [10]. Although most studies detected a positive effect of the MD-PhD programmes on the careers of physician scientists, challenges were also reported. Alarmi's (2016) [11] global survey of MD-PhD programmes highlights an underrepresentation of women in the programmes, challenges in funding the programmes, students' increasing debt burden, high attrition rates (10–28.5%), and longer time to graduation. Recently reported problems of European MD-PhD graduates include lack of opportunities for research, lack of funding, and unsatisfying work-life balance [6].

Similar results have been obtained for Switzerland and its National MD-PhD Grants Programme – both in terms of positive career outcomes, long-term research engagement, and challenges encountered. A detailed outcome analysis of the National MD-PhD Programme was performed by the SAMS in 2007 [2] and in 2013 [data not published]. Both analyses showed that a substantial proportion of MD-PhD grantees pursued a successful research-oriented career and that most of them were satisfied with their dual training. The survey data for 2013 shows that 64% of the graduates remained scientifically active in the long term, while the 2007 survey showed that 70% were still active. More than 90% of grantees in both studies believed that the MD-PhD training had been helpful for their careers. However, one of the main challenges mentioned in both studies was the limited number of positions at Swiss hospitals that allow combining research and clinical activity beyond the MD-PhD training.

In order to obtain a more comprehensive data set, in the Spring of 2022 we conducted a small-scale survey of all grantees supported through the Swiss National MD-PhD Grants Programme between 1992 and 2021. As outlined above, the aim was to assess the career trajectory of MD-PhD grantees, including their current position, research and clinical activity. Specifically, we wanted to know whether they had attained a faculty position, were still engaged in research, and if they were still clinically active. We also gathered information about participants' opinions on the programme and its impact on their career, and obstacles they believed should be addressed to improve the programme.

Methods

This study covers the time period between 1992 and 2021 (the years refer to the start of the MD-PhD thesis). An online survey was conducted among all recipients of a national MD-PhD grant (named MD-PhD scholarship until 2017) since the start of the programme. E-mail addresses were collected via the SAMS and SNSF databases, Google search and personal inquiries via LinkedIn. Of the total 308 grantees, 277 were successfully contacted by e-mail and invited to fill in an online questionnaire through a link to a non-public webpage on the SAMS website. Thirty-one grantees were not invited to participate because: no e-mail address was found for them (18), they had dropped out (9), or they were deceased (4).

E-mails were sent in April 2022, followed by one reminder three weeks later to encourage non-respondents to participate. We split grantees into two cohorts (2010–2021 and 1992–2009). We originally intended to restrict the survey to the younger cohort (2010–2021) for which we had already assembled and verified more data. We then however decided to include all grantees in the survey to obtain a better view of their long-term career trajectory. For the older cohort 1992–2009, for which only limited systematic information was available in our records, we collected up-to-date e-mail addresses to include these grantees in the survey. The survey was anonymous with an option to provide personal contact details. The questionnaire was made up of 16 closed and four open questions (see appendix). We collected information on the participants' demographics for statistical purposes, MD-PhD thesis duration, career trajectory, clinical specialty, current position and context of professional activity, perceived impact of the grant on the recipients' career, reasons for discontinuing research, satisfaction with various aspects of the MD-PhD grant/scholarship and suggestions to improve the experience of grantees. We used cross-tabulation in Excel to summarise the answers to quantitative questions, and regrouped answers to qualitative questions in thematic categories as the basis for our analysis.

Results

General description of respondents

141 out of the 277 contacted grant/scholarship recipients returned the survey (51% response rate). Of these, 116 (82%) did provide personal contact details and 25 (18%) submitted their responses anonymously. The response rate was higher for the younger 2010–2021 grantees' cohort (54%) than for the older 1992–2009 cohort (48%). For all results and figures, the years refer to the start of the MD-PhD project. Of the respondents 33 % were women, 63% men, and 4% chose not to answer this question. This distribution was almost identical to the gender distribution among all grantees (35% women, 65% men). At the time of the survey, 114 (81%) respondents had completed their MD-PhD thesis, while 27 (19%) were still MD-PhD students. In the graduates' group, six respondents had just completed their MD-PhD but not yet started a new position. These respondents were thus not included in the analysis below examining the career trajectory of graduates. Based on the survey data of graduates, the mean duration of a MD-PhD was 4.27 years, with an upward trend over time (1992–2009 [n = 72]: 4.15 years; 2010–2013 [n = 16]: 4.39 years; 2014–2017 [n = 20]: 4.58 years).

Current activity and career trajectory of MD-PhD grantees

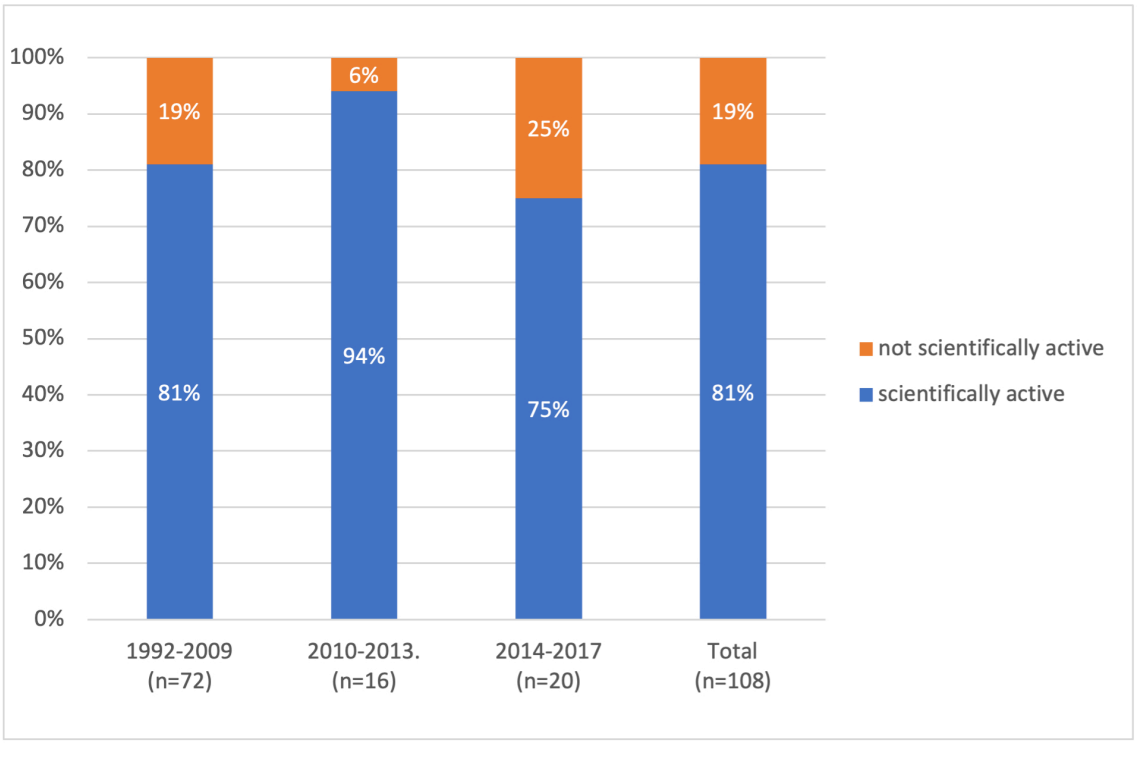
To increase the granularity of the career trajectory analysis, we decided to split the respondents in academic age subcohorts. Of the 108 graduates, 88 (81%) remained scientifically active after the end of the grant. This proportion varies in the career phases following the completion of the MD-PhD. Early after the completion, when many graduates were in their clinical specialisation, a slightly lower percentage (75%, 2014–2017, n = 15) was observed, followed by a peak of scientifically active graduates during the typical postdoctoral years (94%, 2010–2013, n = 15). This value stabilised in the period during which most grantees found a stable position, at least eight years after completing their MD-PhD (81%, 1992–2009, n = 58) (figure 2).

Most of the 88 graduates conducting scientific research at the time of the survey work in an academic setting, primarily at a university hospital (figure 3). Only a few grantees are doing research at a university without links to a clinical department or hospital. This number varies with the career stages following the completion of the MD-PhD and is the highest during the typical postdoctoral period (27%, 2010–2013, n = 4) in which a few grantees indicated doing full-time experimental research. We consider the first (1992–2009) cohort to be the most informative regarding the long-term career trajectory. Eight years or more after completion of the MD-PhD, 64% (37) of the scientifically active graduates in this cohort were working at a university hospital, 16% (9) in other clinical research institutions (cantonal hospitals, non-university research foundation, international research institute), 12% (7) at a university without hospital affiliation, and 14% (8) in a private company in the healthcare/biotechnology sector.

To further assess the career track of MD-PhD graduates, survey participants were asked about their daily activities and current position(s). Focusing on the first and most informative cohort (1992–2009), 55% of grantees reported having a paid research position. Of these, 15% do research only, while 40% combine research and clinical activity (figure 4).

Seventy-six percent of grantees remain clinically active – mostly in a university hospital context, as described in fig-

Figure 2: Percentage of scientifically active MD-PhD graduates.



ure 3. Overall, 54% of grantees occupy a leadership position: 25% are professors, 18% group leaders, and 11% occupy a leadership position in the healthcare industry (figure 5).

Up to two positions can be attributed to the same respondent if they are occupied in parallel (e.g., senior physician and group leader). The positions "group leader", "professor" and "industry leadership position" could however not be combined with each other. These three items can thus be cumulated to estimate the total percentage of graduates occupying a leadership position.

Of the graduates who had completed their MD-PhD eight years or more before the time of the survey (total: n = 70 male n = 49 [68%], female n = 21 [29%]), women are underrepresented among professors (relative proportion: 18%), senior physicians (22%) and holders of a leadership position in industry (13%). A significant number of women compared to the sample distribution reach a group leader position (31%). It is notable, however, that women are heavily over-represented in the postdoc/senior researchers' group (80%) (figure 6). These ratios must be interpreted with caution because they are calculated from small samples. They are however in line with the discrepancies in career trajectories of male and female medical

Figure 3: Proportion of scientifically active graduates in academic, clinical and industry setting

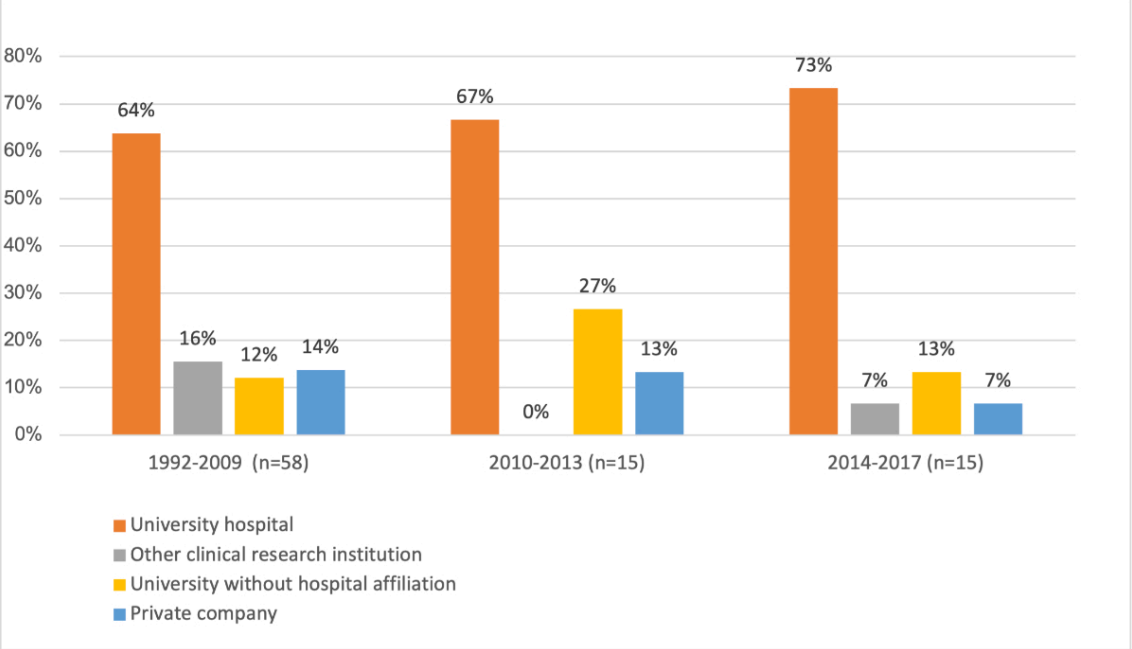
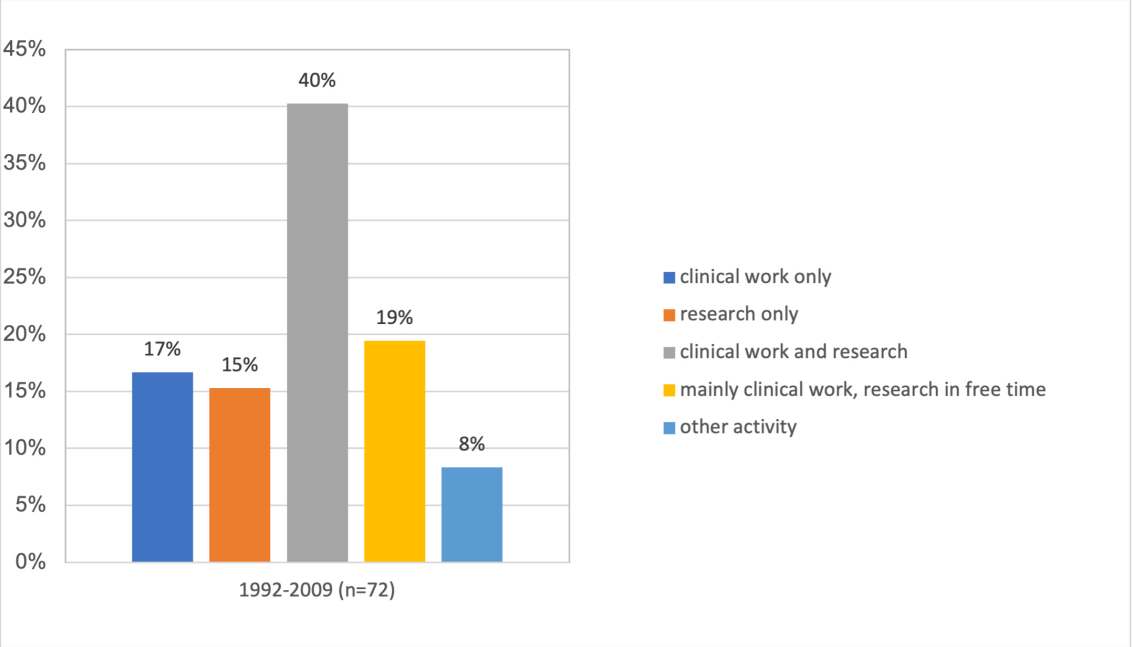


Figure 4: Current activity of MD-PhD graduates of the oldest cohort (1992-2009, i.e. 8 years or more after completion of the MD-PhD).



graduates, which are well described in several reports on the effects of the leaky pipeline [12, 13].

Qualitative aspects of the survey

More than 85% of grantees (93% of respondents with their MD-PhD still ongoing, 85% of graduates) indicated that the grant had had a positive or a very positive impact on their career trajectory. Only a few respondents considered that the grant was neither an advantage nor a hindrance in the pursuit of their career (3.7% of MD-PhD students [n = 1], 4.5% of graduates [n = 5]), or regretted having chosen the MD-PhD path (3.7% of respondents with ongoing MD-PhD [n = 1], 4.5% of graduates [n = 5]).

The main arguments presented by several respondents regarding the perceived added value of the grant on their career, or the challenges encountered, are listed in table 1.

Reasons for discontinuing research

Graduates who were not scientifically active anymore at the time of the survey (19% of respondents) gave several

Figure 5: Current position(s) occupied by graduates of the oldest cohort (1992-2009).

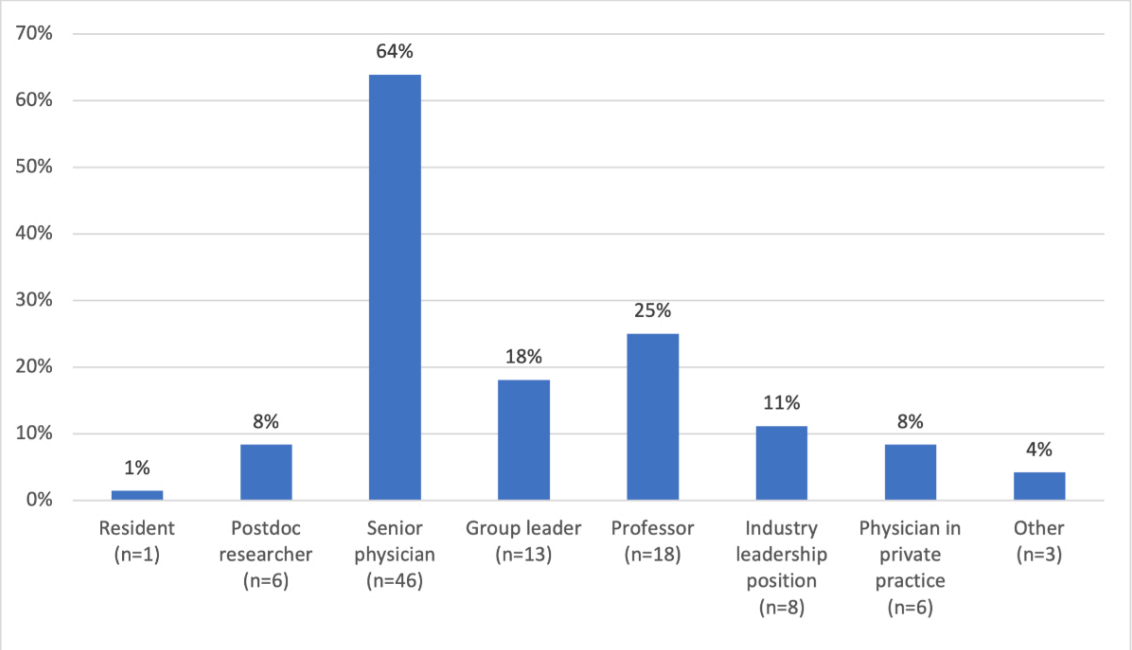
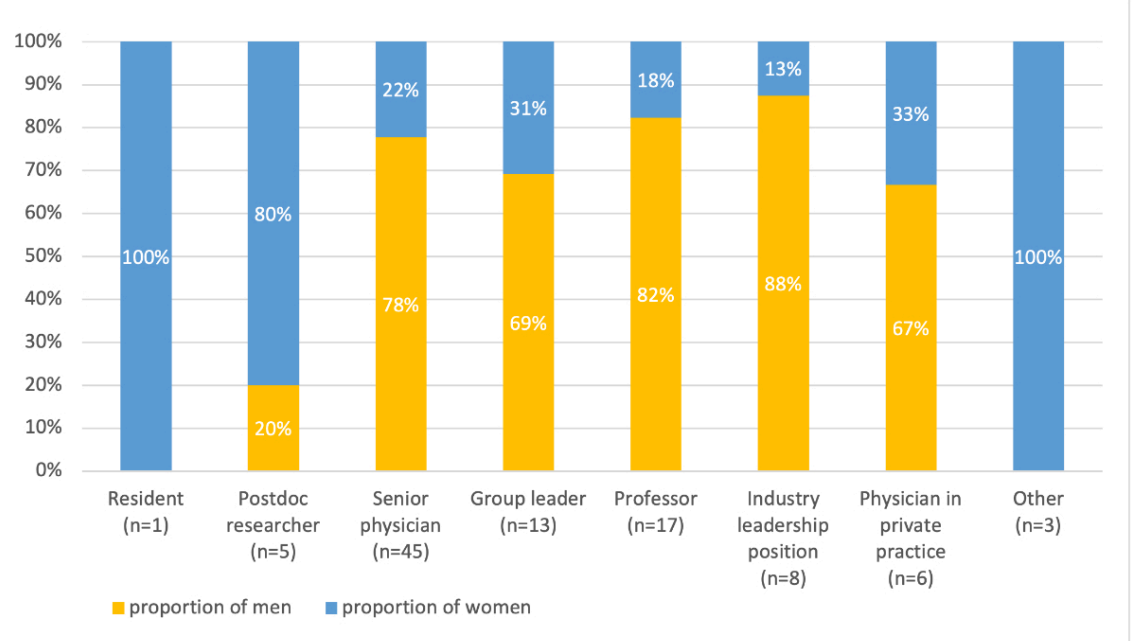


Figure 6: Ratio of women to men in the position(s) occupied by graduates of the oldest cohort (1992–2009, n = 70 here since the two respondents who did not disclose their gender were not included in the gender ratio analysis). As in figure 5, up to two positions can be attributed to the same respondent if they correspond to activities executed in parallel.



reasons why they left science: the lack of clinical research grants with protected time for research after the MD-PhD, the unattractive working conditions (high work load in both clinics and research with, overall, a lower salary), the lack of clear career perspectives in hospital structures, the difficulty of combining a clinical-research career with family responsibilities, or a shift of interests in another direction (preference for clinical work, industry, technology, politics).

Discussion

The data collected for this study show that the Swiss National MD-PhD Grants Programme is a highly successful instrument that most grantees consider to have had a positive impact on their career trajectories. The results of the study indicate that the grants act as the kick-start and basis of the academic career of promising young physician scientists, giving them the autonomy to pursue their own scientific interests and to acquire a rigorous research training. The national grants are also recognised as a quality distinction, as illustrated by the high proportion of grantees who obtained faculty and leadership positions at university hospitals, universities or in the pharmaceutical and biotechnological industry. In the first cohort, who had completed their MD-PhD eight years or more before the survey, 25% are professors, 18% are group leaders and 11% occupy a leadership position in industry. More than 80% of the grantees have remained scientifically active (some of them in their free time, along with their clinical activity); 55% have a paid position in research, with 40% combining research and clinics, and 15% focusing entirely on research.

In the long term, 76% of MD-PhD grantees remain clinically active, and 64% of the scientifically active graduates work at a university hospital, where they function as role models building bridges between basic research and clinical practice. Although the lack of well-defined career paths after the MD-PhD training, the sub-optimal recognition by hospital hierarchies, and the economic disadvantages compared to purely clinical careers are important hurdles, the National MD-PhD Grants Programme appears to provide important support to promising physician scientists.

With a response rate of 51%, we could not exclude a non-response or self-selection bias. Grant recipients who had a positive experience with the programme may have been more likely to have responded. Since the survey was anonymous, with the option to provide personal contact details (116 respondents (82%) did provide personal details, while 25 respondents (18%) filled out the survey anonymously), we could not identify all non-respondents unequivocally. We thus decided to filter out the nominative respondents from the list of all grantees, and used the remaining grantees (pool of non-respondents and anonymous respondents) as an indicative comparison group (n = 165). We then searched for the current workplace and activity of these grantees online. Based on the publicly available information, 21% of these grantees became professors, 4% group leaders and 3% occupy a leadership position in industry. Furthermore, most are working in an academic context: 51% are working at a university hospital, and 11% at a university without affiliation to a hospital. No indication could be found on the current activity of 10% of grantees. Despite the methodological limitations in our comparison, these numbers – which include MD-PhD grantees of all academic ages, not only graduates with a stable position on which we focused our career trajectory analysis in our survey – support the validity of our findings and allow us to exclude a non-respondents bias.

Lastly, the results of our survey are similar to the last outcome analysis of the programme in 2013 (SAMS, data not published) which had a significantly higher response rate of 77%. In that study, 21% of grantees, who had completed their MD-PhD six years or more before the survey, had been appointed as professors. This proportion is very close to the 25% that we found among grantees having completed their MD-PhD at least eight years before our survey.

In a broader context, it is interesting to note that several indicators of our survey (81% of graduates remaining scientifically active in the long term, 85% of graduates stating that the grant had a positive or very positive impact on their career) align with the observations made in other contexts. In a much more comprehensive outcome analysis of MD-PhD graduates in the USA [14], 77% of respondents were still active in research and over 80% were satisfied with their training and would have chosen the MD-PhD track again. The challenges faced by MD-PhD trainees in the North American context, as outlined in the relevant literature discussed earlier [1, 8, 11], are also strikingly similar to those existing in the Swiss system. Notably, the lack of opportunities to combine research and clinical activity after the MD-PhD training period, economic disadvantages compared to purely clinical tracks, and the increas-

Table 1:
Main arguments brought up by respondents regarding the added value of the grant on their career, or the challenges encountered.

	Strengths	Challenges
MD-PhD students	Autonomy (to choose own research topic, to combine 20% clinics with the MD-PhD)	Delay of clinical training with few additional career opportunities
	Recognition (national grant as distinction)	Insufficient mentoring and local support
	Freedom to focus on research for 3-4 years	Challenging to combine research and clinics in practice (clinics has often higher priority)
	Expansion of the scientific network	
Graduates	Acquisition of scientific rigor, methodology, grant and article writing skills	Lack of attractive career options in hospitals after the MD-PhD (few positions with protected time for research at postdoc level)
	Grant as kick-start and fundament of the scientific career	MD-PhD title not sufficiently recognised by clinical specialist societies and by hospital hierarchy (higher appreciation in the US)
	Opened doors for obtention of subsequent grants	Return to the clinics after 4 years of research challenging
	Solid scientific network built	Economic disadvantage compared to a purely clinical track
	Facilitated entry into clinical specialisation (for some with “fast track” option)	
	MD-PhD title valued in healthcare industry	

ing time to graduation are major issues. Reasons for the latter might be the increasing complexity in medicine due to scientific and technological developments, and a possible higher workload in MD-PhD programmes necessitating the acquisition of transversal competencies in addition to specialised scientific expertise. There is, however, a need for more research that compares the strengths and weaknesses of different MD-PhD programmes and local contexts, and how they influence career paths in medical research cross-nationally.

It is obvious that a well-recognised, competitive national MD-PhD grants programme, which acts as a benchmark for local MD-PhD programmes, is an important element that increases the visibility and attractivity of the MD-PhD track as a career option for young physicians. The impact of the national programme on the medical landscape in Switzerland extends beyond the mere number of MD-PhD students that it supports (estimated to 19% of all MD-PhD students, based on the data that we collected from relevant local doctoral programmes). The comparatively small amounts awarded to highly motivated, curious individuals in their early training years, do make a difference in supporting their decision to engage in, and pursue, a career at the interface of research and clinical care. Many grantees then reach faculty positions or leading roles in the healthcare industry, where they contribute to shape structures to support the next generations of physician scientists. While research stays abroad after graduation are highly desirable, it is increasingly difficult to find graduates who are willing to do this. This is another reason why it is important to have competitive career funding instruments in Switzerland.

Looking ahead, with the growing number of medical faculties and doctoral schools training MD-PhD students, the evaluation procedure of the National MD-PhD Grants Programme, which relies primarily on an agreement with the 'historical' MD-PhD programmes focused on biomedical experimental research in the five universities attached to a university hospital (Bern, Basel, Geneva, Lausanne and Zurich), joined by the Università della Svizerra Italiana in 2023, will need to be adapted to include new actors. While the national programme has created added value, it must take the evolution of the MD-PhD landscape and its increasing heterogeneity into account to continue to beneficially service the medical research community. In this context, it is important to seize the opportunity to imagine how the (MD–)PhD models for patient-oriented research, allowing to combine an individual research project with substantial clinical activity, could be considered for funding within the National MD-PhD Grants Programme. And, in line with one of the main demands of the White Paper Clinical Research of the SAMS [5], the reflection should be expanded to include financial models to support talented healthcare professionals interested to pursue a career at the interface of research and patient care.

Conclusion

As the results of this study show, the National MD-PhD Grants Programme is an important instrument for supporting young physicians' research careers. A majority of MD-PhD grantees successfully combine clinical work and research later in their career, contributing to the development of medical knowledge based on the latest scientific advances. Primarily in academic hospitals, but also in industry, many grantees become leading figures and decision makers who play an important role in advancing medical treatments and technology. However, as our findings highlight, there are also challenges faced in the MD-PhD curriculum, e.g. economic disadvantages compared to purely clinical careers and limited attractive career options beyond the MD-PhD period in university hospitals. In order to tackle these challenges and make the programme fit for the future, public funding – independent of discipline, and secured on the long term – is needed. Funders, research institutions and university hospitals need to consolidate their partnership and develop a shared vision for the MD-PhD Grants programme.

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Potential competing interests

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. Hanns Ulrich Zeilhofer is Board member of the Swiss Academy of Medical Sciences (SAMS) and Chair of the National MD-PhD Evaluation Committee. Myriam Tapernoux is head of Department Science at SAMS and member ex officio of the National MD-PhD Evaluation Committee. Sarah Vermij and Gaudenz Metzger work as scientific coordinators at the SAMS.

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Appendix: Survey questionnaire

Swiss National MD-PhD grantees' survey on career trajectory, April 2022

Target: all recipients of a national MD-PhD grant/scholarship

Magnolia form on SAMS website (no option for contextual/skip logic)

Form items

Introductory text

This survey is intended for recipients of a grant/scholarship of the Swiss national MD-PhD Programme. Collected data will be treated as strictly confidential by the SAMS. The results of the survey will be presented in an anonymous, aggregated form after statistical analysis.

Do not hesitate to contact us if you have any question: research[at]samw.ch

** mandatory field*

Grantee's details (for statistical purposes)

- Gender (choose an option, male, female, other)
- Nationality* (please indicate the country's full name)
- Year of birth* (yyyy)
- E-mail address (if desired, for future communications)

MD-PhD thesis details

- Date of medical degree* (mm.yyyy)
- Start of MD-PhD thesis* (mm.yyyy)
- End of MD-PhD thesis* (mm.yyyy) (indicate expected date if in the future)

Career details

- Clinical specialty* (indicate intended specialty if in the future)
- Start of clinical specialisation (mm. yyyy)
- End of clinical specialisation (indicate expected date if in the future) (mm.yyyy)
- Current position(s)* (e.g., research group leader 80%, deputy physician 20%)
- Current institution(s)/organisation*

Other questions

1) Please describe how the MD-PhD grant/scholarship has impacted your career (in terms of achievements, grants, scientific network, collaborations, career opportunities, etc.).*

2) Did you have contact with patients in the framework of your MD-PhD research project?*

- Yes
- No
- Unsure

3) Are you still scientifically active?

Select all that apply*

- Yes, at a university hospital
- Yes, at another clinical research institution (e.g. cantonal hospital)
- Yes, at a university but without hospital affiliation
- Yes, at a private company
- No, I am no longer scientifically active

4) If you answered 'no' to the previous question, how long were you scientifically active after you obtained your MD-PhD?

- Number of accumulated months: xx
- What was the main reason for your discontinuing research? (if applicable > *necessary for legibility due to layout of the form*)

5*) Which of the following options currently apply to you?

- Clinical work only
- Research only
- Clinical work and research
- Mainly clinical work (and research in your spare time)
- Other activity

6) If you answered 'other activity' to the previous question, please specify your current professional activity.

7*) Further comments

Please add any remarks or suggestions regarding your experience as recipient of a national MD-PhD grant/scholarship. For instance, were you satisfied with the support of your MD- PhD advisor? Did you have enough time for your research project next to your clinical work (if applicable)? Was the format of the grant/scholarship adequate? Would more support from the SAMS have helped you (if so, in which form)?