The Research Experience of Young Scientists in South Africa

Results of the SAYAS Survey of Young Scientists involving Postgraduate Students and Postdoctoral Scholars

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WORKING GROUP OF SAYAS

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KEY FINDINGS

1. 43% of respondents indicated that the reason for pursuing postgraduate studies was the desire to pursue an academic career. This proportion increased to 58% among PhD students and postdoctoral scholars. This may highlight a knowledge gap regarding the developmental needs of the country (e.g., industry), other career opportunities and career planning by postgraduate students.

2. Young scientists are well aware of the importance of quality — in terms of institution choice, supervisor choice, and the importance of mentorship. The majority prefers an institution which provides high quality teaching and research (although quality is not defined by the respondents), and a supervisor which is regarded as an expert in their field of study.

3. Respondents with mentors (in addition to supervisors) were more likely to report good or excellent progress with their studies than those without mentors.

4. Postgraduate scientists in South Africa are well aware of the need to publish research results. More than 50% of the respondents ranked courses in writing for publication as important for their development as young scientists, indicating a desire for institutional support in this critical area.

5. The majority (64%) of young scientists afforded their studies by making use of bursaries, either as stand-alone source or with other support. In their open-ended responses, the respondents placed significant emphasis on the need for adequate financial support at all levels. Arguably, if more bursaries are not made available, the number of postgraduate students in South Africa will not increase.

6. The SAYAS Working Group pursued various avenues to ensure that responses to the Young Scientist Survey were representative of South African institutions and population groups. The majority of responses were from white respondents (65.3%) with one fifth of responses from black scientists. This may reflect the general imbalance in the racial distribution of postgraduate students in South Africa. Representation from female science students (56%), Masters students (46%) and students enrolled for Natural Sciences (38.6%) were slightly higher than expected. Also, approximately 70% of the respondents originated from four of the largest tertiary institutions in South Africa. Some elements of response bias can therefore not be ruled out.
INTRODUCTION

The South African Young Academy of Science (SAYAS) was initiated in September 2011 when 20 founding members were inaugurated by the then Deputy Minister of the Department of Science and Technology. This diverse group of young academics was selected after a stringent process of individual selection, performed and administered by the Academy of Science of South Africa (ASSAf).

SAYAS’s mandate is to be a voice for young scientists in South Africa. In order to fulfil this mandate, the Young Academy needed a deeper understanding of the profile and general needs of young scientists in the country. Due to SAYAS’s close affiliation with ASSAf and the Global Young Academy (GYA), it is possible to build on the knowledge and experiences gained by these organisations. However, it seems that sufficient knowledge on this subject is lacking at present – not only in South Africa, but on a global scale.

A previous landmark study commissioned by ASSAf, namely The PhD Study, aimed at assessing and making recommendations about the status, needs, and challenges of PhD graduates in South Africa. One of the main outcomes from The PhD Study, published in 2010, was the recommendation to escalate the numbers of doctoral graduates in South Africa through various mechanisms such as external intervention programmes and expanding funding for doctoral studies in South Africa. This recommendation was based on the relatively low doctoral graduation rate in South Africa. For example, South Africa produced 1274 doctoral graduates in 2007 (i.e. 26 doctorates per million persons), considerably lower than the production rates of other countries such as Turkey (48 per million persons) and Australia (264 per million persons). This shortage of doctoral graduates threatens the future development of science, innovation and technology in the country. In addition, The PhD study recommended further research to develop a better understanding of the dynamics affecting postgraduate throughput and doctoral education in South Africa (such as funding and mentorship).

This report is a first step towards obtaining a broad overview of the status and experience of young scientists in South Africa. It reports on the challenges and needs of a wide range of postgraduate students, including those at the earlier stages of postgraduate studies than The PhD study (for example, Honours and Masters students). By understanding the experiences of postgraduate students that form part of the production line of doctoral studies, this survey may provide some insights into the various reasons for the relatively low production rate of doctoral students in our country. The experience of postdoctoral fellows adds an extra dimension to the survey results that have not been reported before. The results of this report may also act as baseline that policy makers and academic institutions can use for evaluating interventions to assist with the development of young scientists.

It is anticipated that the resulting information and recommendations will influence the decisions and policies related to the development of young scientists in South Africa, including those of the Department of Science and Technology, the Department of Basic Education, the Department of Higher Education and Training and institutional management from all tertiary institutions in South Africa. It is the long term aim of SAYAS to promote a more supportive and fertile research environment for young scientists, and to assist with policy decisions through the production of
evidence based reports, to ultimately increase the production of young scientists in South Africa.
METHODOLOGY

Preparatory Procedures

SAYAS aims to understand the experiences and to obtain a basic demographic profile of a broad spectrum of young scientists in South Africa. In this study a young scientist is defined as a science postgraduate currently engaged in postgraduate education or a postdoctoral fellowship.

A SAYAS Working Group was established in 2012, comprising individuals from five different tertiary institutions throughout South Africa (Refer to Appendix 1). The SAYAS Working Group prepared a research proposal, which set out the aims, methodology and content of the survey. This proposal was also formally supported by ASSAf.

The research project was submitted to and approved by the Health Research Ethics Committee of the Faculty of Medicine and Health Sciences of the University of Stellenbosch and the Nelson Mandela Metropolitan University. Permission was also obtained from all other participating institutions, which included tertiary education institutions in South Africa. (Question #8 in Appendix 2 contains a full list of participating institutions). The SAYAS Survey of Young Scientists was subsequently distributed online to Honours, Masters and Doctoral postgraduate students and postdoctoral scholars via the research administration offices of the various institutions. Young scientists were invited to complete an online version of the survey in Appendix 2, developed within Google Drive. The Survey was open to receive responses from 18 September 2012 until 17 January 2013, a total of four months.

Content of the Survey

The survey consisted of a questionnaire to be completed anonymously. It comprised four main sections:

A. General demographic profile
B. Description of respondent’s current academic situation [focused on student motivation for study and academic indicators]
C. Financial indicators
D. Future plans

The questions were formulated by the Working Group members to obtain information on the respondents’ demographic profile; academic status including qualifications, current level of study [i.e. Honours/Masters/PhD student/postdoctoral scientist], fields of expertise and research interests; needs and challenges, and opportunities available to them within their respective academic settings. The survey took approximately 10-20 minutes to complete, and consisted mostly of multiple choice items and a few open-ended questions. The final open-ended question gave respondents the opportunity to voice any concerns or ideas not addressed by the survey. The complete survey is provided in Appendix 2.
MAIN FINDINGS

During the survey period of four months, a total of 1021 young scientists completed the online survey. This section describes the main findings from the survey.

**A. General Demographic Profile of Respondents**

As expected, most respondents were South African citizens (n=867, 85.2%), with 111 (10.9%) responses from the Southern African Development Community (SADC) and other African countries. The remaining respondents (less than 4%) originated from Europe, Asia, and the Americas.

The distribution of current enrolment is shown in Figure 1. Most respondents were enrolled for a Masters (46%) or Doctoral (33%) degree, whereas Honours and Postdoctoral scholars comprised 12% and 9% of the sample, respectively (Fig. 1). More specific details regarding the age, race and gender profile of respondents, registration period and study discipline are presented in Table 1.

The age-range of the group was 20-78 years, with a mean age of 29 years. Young black scientists represented about one fifth of responses across all enrolment categories. Sixty-five percent of respondents identified themselves as white, which may reflect the general imbalance in the racial distribution of postgraduate students in South Africa. Representation from female science students (56%), Masters students (46%) and students enrolled for Natural Sciences (38.6%) were slightly higher than expected.

Although the invitation to complete the online questionnaire was sent to all tertiary institutions in South Africa by an administrator from ASSAf, approximately 70% of the responses were from four institutions (Fig. 2), namely the Universities of Stellenbosch, Pretoria, Cape Town and the North-West University. The University of Witwatersrand, Nelson Mandela Metropolitan University and the University of KwaZulu-Natal also feature, each comprising approximately 5% of the sample. The remaining 15% of responses originated from 13 different institutions, as shown in Figure 2.
### Table 1. Detailed Demographic Profile of the Different Enrolment Categories

| Results from the 2012 SAYAS Survey of Young Scientists |
|--------------------------------------------------------|
| **Number of Registered Students in SA 2011** | Total | Honours | Masters | Doctoral | Post-doc. |
|-------------------------------------------------|-------|--------|--------|---------|----------|
| Number of Survey Respondents | 1021 | 127 | 467 | 331 | 88 |
| Age (yrs) [min;max] | 29 [20; 78] | 24 [20; 51] | 29 [21; 68] | 31 [24; 61] | 34 [26; 51] |
| Gender | | | | | |
| Men, N (%) | 435 (43) | 56 (44) | 196 (42) | 139 (42) | 42 (48) |
| Women, N (%) | 572 (56) | 70 (55) | 264 (57) | 190 (57) | 46 (52) |
| Ethnicity | | | | | |
| Black, N (%) | 202 (19.8) | 30 (23.4) | 87 (18.6) | 71 (21.4) | 13 (14.8) |
| Coloured, N (%) | 55 (5.4) | 6 (4.7) | 25 (5.4) | 22 (6.6) | 2 (2.3) |
| Indian, N (%) | 60 (5.9) | 5 (3.9) | 30 (6.4) | 15 (4.5) | 10 (11.4) |
| White, N (%) | 667 (65.3) | 82 (64.5) | 313 (67.0) | 210 (63.4) | 59 (67.0) |
| Other, N (%) | 30 (2.9) | 3 (0.78) | 10 (2.1) | 13 (3.9) | 4 (4.5) |
| Broad Discipline | | | | | |
| Com, Law, Manage. | 109 | 25 | 59 | 21 | 4 |
| Eng., Built Env. | 179 | 25 | 101 | 45 | 8 |
| Health Sciences | 202 | 17 | 87 | 70 | 28 |
| Social Sci/Human. Natural Sciences | 132 | 19 | 62 | 45 | 5 |
| Period Registered | | | | | |
| < 1 year | 361 | 91 | 167 | 81 | 21 |
| 1-2 years | 348 | 21 | 192 | 107 | 28 |
| 3-4 years | 207 | 10 | 84 | 103 | 8 |
| ≥ 5 years | 56 | 1 | 17 | 35 | 3 |

*HEMIS data, 2012*
Post-doc, Postdoctoral scholar; Com, Commerce; Manage., Management; Eng., Engineering; Sci., Sciences; Human., Humanities; When the sum of numbers of enrolment categories does not equal the total group, it is due to missing data.
B. Motivation and Academic Indicators

This section describes survey results about young scientists’ motivation for study and other academic indicators, and will be addressed according to different themes below:

Motivation for Pursuing Postgraduate Studies

The main finding and broad consensus from *The PhD study* was that not enough PhDs are being produced in South Africa in relation to the developmental needs of the country. The *Young Scientist Survey* therefore attempted to understand the motivation of young scientists to continue their studies and to pursue a PhD locally.

When viewing the 2011 figures of registered undergraduate and postgraduate students in South Africa, it is noteworthy that 476,840 students were registered for 3-year or 4-year undergraduate degrees, whereas 48,873 and 12,832 students were registered for Masters and PhD studies, respectively (HEMIS, 2012). Based on crude calculations it appears that approximately 10% of undergraduate students continue to study at Master’s level. In the *Young Scientist Survey*, 70% of respondents indicated that they planned to perform postgraduate studies while being an undergraduate student.

A surprising finding from the *Young Scientist Survey* is that 43% of respondents indicated that the reason for pursuing their postgraduate studies was an interest in an academic career (Fig 3). This figure increased significantly with level of enrolment (as might be expected) from 24% at Honours level, to 34% at Masters, and to 58% for PhDs and postdoctoral fellows. While the broader established scientific community realises the importance of increasing PhDs in South Africa to contribute to the high-level skill demands in our emerging economy, large numbers of postgraduate students seem to have career aspirations in academia. Career opportunities in the tertiary education sector may either not be sufficient to accommodate these numbers of graduates at present, or young scientists may not be aware of career opportunities in industry. Moreover, no large scale expansion of teaching and research staff at higher education institutions has been identified in the National Development Plan. Similar mismatches in the career aspirations and opportunities for postgraduate students are experienced overseas, leading to potential unhappiness if this expectation is not properly managed and if alternative careers in government and industry are not promoted.

The career aspirations and expectations of postgraduate students is a subject that is flagged here as needing further investigation. Further support for “soft skills” development (beyond that which is strictly required to meet the academic requirements of their chosen degrees) should be made available to postgraduates. In addition, better communication, focused career planning and strengthened relationships between universities and industry are strongly encouraged. Postgraduate students need career development information and opportunities.
Emphasis on Quality

The general trend at tertiary institutions to focus on quality research and to publish research results was also evident from the responses. Respondents seemed knowledgeable when it came to the characteristics that would make an institution favourable for postgraduate studies (e.g. “University/institution provides the highest quality in my particular field of study”) beyond factors that would make postgraduate studies more convenient (e.g. “Closest to home (therefore cheaper)” or “Cheapest registration costs”)(Fig 4). However, it seemed that the institution where undergraduate studies were performed and institutions that offered bursaries were also favoured, for obvious practical and logistic reasons.

FIG 3. RESPONSES TO THE QUESTION: “WHAT IS THE REASON FOR DOING POSTGRADUATE STUDIES?” (%)
The focus on quality was maintained when asked which characteristic was perceived as the most important when choosing a supervisor (Fig 5). Being an expert within the study field was considered five times more important than being “intelligent”. Personality traits such as being understanding and enthusiastic were also appreciated, with 14% perceiving quick feedback to be of primary importance.

Despite the emphasis on quality in choosing an institution or supervisor, students expressed variable levels of satisfaction with their current experience, with respect to the academic quality of the research subject and environment. In Figure 6 we captured the ratio of satisfied (stating “probably the best on a national level” and “competes with the best internationally”) versus the expression that the research quality and environment have a “poor standard” or only “acceptable quality”. This ratio provides an indication of student satisfaction with their current postgraduate experience. These ratios were only captured for institutions having 17 or more responses (ranging between 17 to 269 responses per institution). The satisfaction of students enrolled at the University of Cape Town was overall the highest (N=156), with almost 80% (N=122) being satisfied versus 20% (N=34) being dissatisfied.

**Fig 5.** Most Important Characteristics of Supervisor

**Fig 6.** Satisfaction with Academic Quality and Working Environment (Best on National Level/Competes with Best Internationally versus Poor Standard/Acceptable Quality)
Supervision

The Survey also included a number of questions on the student-supervisor relationship. Most students, regardless of enrolment level (Honours to PhD students and postdoctoral fellows) were satisfied with their own study progress and their primary supervisor. For example, 70% of respondents reported “good” or “excellent” levels of satisfaction with their study progress, whereas 73% gave similar ratings to their satisfaction with their primary supervisor. Only 6.5% and 7.7% rated their progress or supervisors as “poor” and “very poor”, respectively. The majority (82%) were satisfied with their current supervisor although a worrying 17.3% of respondents indicated that they would switch to another supervisor if it were possible. Figure 7 depicts the number of hours of supervision received by respondents on a monthly basis. The majority of students (approximately 75%) at all enrolment levels received less than 5 hours of supervision per month.

![Figure 7: Hours of Supervision Per Month According to the Level of Enrolment (%)](image)

Mentorship

The majority (82.5%) of respondents indicated that they see the need for or the value of having a mentor in addition to their supervisor. When asked what type of support from their institution they would value, 36% indicated that “an active mentorship programme” would be one of the most important types of support (Fig 8). It is encouraging to note that 59% of respondents had at least one mentor in the academic environment that was not their academic supervisor.

Further analyses indicated that young scientists with at least one mentor were 46% more likely to report good or excellent academic progress (rather than very poor, poor or adequate progress) compared to those without mentors (p=0.007). This finding highlights the importance of young scientists having mentoring relationships with more established scientists.
**Expected Support from the Institution**

We wanted to establish what type of institutional support respondents perceive as important for their development as young scientists. Respondents had the opportunity to choose three options from ten suggestions (See question #21 in Appendix 2). More than 50% of the respondents ranked courses in writing for publication as important for their development as young scientists, indicating a desire for institutional support in this critical area. Postgraduate scientists in South Africa, it appears, are well aware of the need to publish research results. Other notable needs indicated were for courses on analysing/managing their data, active mentorship and improved internet access.

![Figure 8. Ranking of Research Support Expected from Institutions (%)](image)

Solid research methodology is of critical importance to the success of postgraduate research. Question #20 of the Survey explored postgraduate student experiences of courses on Research Methodology. Surprisingly, 40.5% (N=413) of young scientists reported that they either have not done such a course, will not enrol for such a course, or that the quality of the course(s) that they attended was poor (Fig 9). Respondents were least likely to endorse courses on using the internet effectively, possibly indicating a high level of computer literacy. This was also supported by the reported availability of computer and laptop facilities by respondents, with 96% reporting access to a computer at home, and 92% reporting access to computer facilities at their institution. Reported internet access at home was somewhat lower (73%) which supports the fourth ranked need for unlimited free internet access at their institution (Fig 8).
Research Exposure and Dissemination of Results

The Survey probed the young scientists’ experience of writing and presenting conference and journal papers. The importance of publishing research results and presenting results at local and international conferences is highlighted by the responses of survey respondents, with 52% reporting that they have been an author on one or more research articles before, and 86% indicating that they plan to publish their results. A total of 64% reported that they plan to submit two or more manuscripts for publication resulting from their current degree.

Some of the respondents reported that they do have opportunities to attend scientific meetings locally (34%) or internationally (46.5%). Whereas attendance is typically funded fully or in part by some institutions (62%), 20% reported that all costs would have to be covered by their personal funds, a potential barrier for many students.

C. Financial Indicators

The ability to financially support postgraduate studies was an area that attracted a great deal of comment from respondents. When asked how their studies are funded (Fig 10), 63% of respondents indicated that they funded their studies with bursaries. Less than 20% of the respondents reported funding their studies from other sources. From the results it appears that many young scientists use multiple ways to fund their studies, such as bursaries and part-time work (many students ticked more than one box).

In support of this finding, 77% of respondents indicated that they applied for bursaries and 62% had a successful outcome. Forty-four percent (44%) received help from an academic staff member or another person when applying for a bursary. One area where institutions could improve their visibility is to provide information to undergraduate students regarding possible scholarships or bursaries for continuation of postgraduate studies, since only 43% indicated that this information
was readily available. This could lead to increased interest from undergraduates in pursuing postgraduate studies.

![Bar chart showing number of respondents according to funding sources (%)](image)

**FIG 10. NUMBER OF RESPONDENTS ACCORDING TO FUNDING SOURCES (%)**

**D. Future Plans**

Earlier in this report it was indicated that a surprisingly high percentage of young scientists expect to pursue an academic career, with the highest percentage of 58% reported for those enrolled for a PhD or postdoctoral scholarship (Fig 3). When focussing only on Honours and Masters students (Fig 11), about a third of both Honours and Masters students wanted to complete their current degree only. Considerable proportions of both these groups plan to continue with a doctoral degree (29% and 43% for Honours and Masters students, respectively). More than 20% of Masters students had the desire to pursue PhD studies but were prevented from doing so by external factors, as shown in Figure 11. Obtaining further information about those external factors and providing support to assist students with overcoming those barriers may improve the number of enrolled PhD students in the future.
When questioned on whether young scientists would consider postgraduate studies abroad, 68% indicated that they would consider this, and 23% of Masters and Doctoral students indicated that they already have an opportunity to work internationally after completion of their studies. More than half of the respondents also reported that they were interested in pursuing postdoctoral studies locally or internationally (56.6%). When questioned on whether they would return to South Africa after a postdoctoral fellowship, the majority reported “definitely” or as a “high possibility” (63.6%), whereas 17% reported that it was unlikely or that they were unsure (Fig 12).
Summary of Issues Concerning Postgraduate Students and Postdoctoral Scholars

The final open-ended question of the Survey (Question #42, Appendix 2) invited suggestions, comments and challenges from respondents. The aspects mentioned by respondents are summarised in the word cloud below:

By far, the most responses discussed concerns and challenges regarding funding of postgraduate studies. Given that many respondents were bursary holders, their concerns may have been about funding the next level of study should they wish to pursue the subsequent degree. The other key focus of the open-ended responses was on the need for more opportunities following completion of their current degree. The third key focus was on support: respondents requested financial support, mentorship and career guidance.
RECOMMENDATIONS

In summary, SAYAS aimed to understand the experiences and academic needs of postgraduate students and postdoctoral scholars in South Africa, at all levels from Honours to post-PhD. The survey findings may assist in developing postgraduate students at junior levels into PhD graduates.

The results should be interpreted in the context of the limitations of this study, namely that some elements of response bias cannot be ruled out. Participation from white respondents (65.3%) from the four of the largest institutions (approximately 70%) was higher than expected, and the overall results may underrepresent challenges and needs of young scientists from smaller institutions.

Finally, it is critical to translate any increased numbers of PhD graduates into a valuable resource for national and industrial development. Achieving these aims will require additional development of young scientists, in terms of numbers, “soft skills” and academic quality.

Based on the survey results, the following key findings are summarised:

1. A mentorship programme may prove extremely valuable to postgraduate students not only for progress on their current degree but also to assist with career guidance. It is acknowledged that such a system is already in existence at some of these institutions (e.g. University of Stellenbosch and University of Cape Town); further research on the functioning and efficacy of these systems should be encouraged. Students with at least one mentor were more likely to report good progress with their studies than respondents without a mentor.

2. Postgraduate scientists in South Africa are well aware of the need to publish research results. More than 50% of the respondents ranked courses in writing for publication as important for their development as young scientists, indicating a desire for institutional support in this critical area. Although some institutions provide such courses, in many instances these are focused on academic staff members, and the focus should therefore also be shifted towards postgraduate students and postdoctoral fellows.

3. Information on scholarships and bursaries should be made readily and prominently available to all senior undergraduate and postgraduate students. Although institutions may all have financial departments focussing on bursaries and loans, the services of such departments need to be advertised more effectively to students. Assistance with completing scholarship and bursary applications should also be provided by all institutions.

4. Approximately 20% of Masters students indicated an interest in continuing to PhD level but were prevented from doing so by external factors such as lack of funding. The external barriers preventing Masters students from continuing to PhD studies should be researched in more detail and ways to overcome them should be addressed.

5. Postgraduate students should receive adequate institutional support to assist them with the development of other skills necessary for careers outside of the academic environment, and be assisted with career information and development opportunities. Further research should explore the career aspirations of postgraduate students.
ACKNOWLEDGEMENTS
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The PhD Study (2010) An Evidence-based Study on how to meet the Demands for High-level Skills in an Emerging Economy. Consensus Report. Academy of Science of South Africa (ASSAf).
APPENDIX 1: Working Group Members

Alta Schutte is Professor and South African Research Chair in Early Detection and Prevention of Cardiovascular Disease in South Africa, hosted by the Hypertension in Africa Research Team (HART) of the North-West University. Her main research interests are the development of hypertension and chronic diseases of lifestyle in black South African populations.

Caradee Wright is a Senior Researcher in the Climate Studies, Modeling and Environmental Health Research Group at the Council for Scientific and Industrial Research (CSIR) in South Africa. She specialises in public health with a particular emphasis on environmental health research. She obtained a PhD at the University of Otago in New Zealand, where she measured schoolchildren’s personal solar UV radiation exposure for skin cancer prevention.

Genevieve Langdon is an Associate Professor and Deputy Head of the Department of Mechanical Engineering at the University of Cape Town and is a member of the Blast Impact and Survivability Research Unit. She obtained her PhD in Mechanical Engineering from the University of Liverpool in 2003. She works on the response of structures and materials to dynamic loading, specializing in lightweight material response to explosions.

Christine Lochner is Co-director of the Medical Research Council (MRC) Unit on Anxiety and Stress Disorders at the Department of Psychiatry at the University of Stellenbosch. She is a qualified and practicing clinical psychologist, with clinical, genetics and brain imaging research on anxiety disorders, particularly obsessive-compulsive spectrum disorders a priority.

Bronwyn Myers is Chief Specialist Scientist in the Alcohol and Drug Abuse Research Unit of the South African Medical Research Council, where she heads up the Substance Abuse Treatment and Interventions Research sub-stream. She is also an Associate Professor in the Department of Psychiatry and Mental Health.
at the University of Cape Town.
APPENDIX 2: SAYAS Survey of Young Scientists

Survey of Young Scientists
conducted by the
South African Young Academy of Science (SAYAS)

As a bunch of young scientists, the South African Young Academy of Science (SAYAS)’s mandate is to act as a voice for young scientists in South Africa. In order to do so, SAYAS needs to find out more about the profile, general needs and challenges facing young scientists in South Africa.

Importantly, we are interested in figuring out what makes young scientists tick and how things can be improved for you. We want to help you and others to survive and succeed in this endurance race.

We would therefore like to invite you to participate by answering this short survey. We expect that this web-based mostly multiple choice item questionnaire will take less than 20 minutes to complete.

We hope to use this information to provide knowledge and recommendations on the profile and needs of young scientists in South Africa to a number of powerful local role players, including the Department of Science and Technology, the Department of Education, and/or the Department of Higher Education and Training.

Your participation is voluntary and the survey is anonymous. When you submit your answers, it will not be possible for anyone, including the research team, to establish your identity. Your responses will be combined with those of other participants and the findings will be reported as a group. None of the reported data will capture individual participant responses.

The researchers representing SAYAS will answer any questions you might have about the procedures described above, or about the results of the study. If you have any questions, you may contact the SAYAS office, (Dorothy Ngila; email: mutheu@assaf.org.za; tel. (012 349 6607)) who will forward your queries to the relevant persons.

Consent form

I hereby agree to participate in this project on the profiles and challenges of young scientists in South Africa. I understand that I am participating freely and without being coerced in any way to do so. I also understand that I can stop completing the questionnaire at any time and withdraw as a participant in the research. My results are confidential, however, direct quotations from my questionnaire may be published in an academic journal along with the final results of the study. In such a case I will be assigned a pseudonym that will protect my anonymity.
I have received the details of a person to contact should I need to voice any issues which may arise from this survey.

I understand that my answers will be anonymous and will remain entirely confidential.

If you agree with all the above, please select ‘Yes’ and proceed.

QUESTIONS:

Section A: Who are you?

1. What is your age?
   ____________ years

2. Gender:
   a. Male
   b. Female

3. Which of the following best describes your ethnic background?
   a. Black
   b. Coloured
   c. Indian
   d. White
   e. Other

4. Which of the following describes your origin or citizenship best?
   a. A South African citizen/permanent resident of South Africa
   b. Originally from a SADC (Southern African Development Community) country
   c. Other African country
   d. European
   e. Asian
   f. Australian
   g. North American
   h. South American

5. What is your broad field of study?
   a. Commerce, Law and Management
   b. Engineering and the Built Environment
   c. Health Sciences
   d. Humanities/Social Sciences
   e. Natural Sciences

6. What is your current level of enrolment?
   a. Honours
   b. Masters
   c. Doctoral
   d. Post-doctoral

7. Is your registration:
   a. Full-time?
   b. Part-time?
   c. Not applicable
8. At which institution(s) are you based?
   a. Cape Peninsula University of Technology
   b. Central University of Technology
   c. Council for Scientific and Industrial Research
   d. Durban University of Technology
   e. Human Sciences Research Council
   f. Nelson Mandela Metropolitan University
   g. North-West University
   h. Rhodes University
   i. South African Medical Research Council
   j. Tshwane University of Technology
   k. University of Cape Town
   l. University of Fort Hare
   m. University of Johannesburg
   n. University of KwaZulu-Natal
   o. University of Limpopo
   p. University of Pretoria
   q. University of South Africa
   r. University of Stellenbosch
   s. University of the Free State
   t. University of the Western Cape
   u. University of the Witwatersrand
   v. University of Venda
   w. University of Zululand
   x. Vaal University of Technology
   y. Walter Sisulu University of Technology and Science
   z. Other _____________________

Section B: Description of your current situation

9. For how long have you been registered for your current degree?
   a. Less than 1 year
   b. 1-2 years
   c. 3-4 years
   d. 5-6 years
   e. 7-8 years
   f. More than 8 years
   g. Not applicable

10. What is the reason for doing your postgraduate studies?
    a. Not ready to go and work yet
    b. Not sure on where to start finding a job
    c. Trying to ensure that I will find a job
    d. To gain a better salary/job
e. Interested in an academic career
f. I was offered funding to do so
g. I don’t know
h. Not applicable
i. Other (please specify) _______________________________

11. As an undergraduate student, did you plan to perform postgraduate studies later on?
   a. Yes
   b. No
   c. I don’t know

12. When you decided to enrol for postgraduate studies, which one of the following factors was the most important when deciding on an institution?
   a. Cheapest registration costs
   b. University/institution offered a bursary
   c. Closest to home (therefore cheaper)
   d. Active student life and/or sport teams
   e. Best university/institution in the country
   f. University/institution provides the highest quality in my particular field of study
   g. Compassionate/supportive supervision at the university/institution
   h. Convenient, since I performed my undergraduate studies at the same university/institution
   i. Other (please specify) _______________________________

13. How would you rate your overall progress with your postgraduate studies?
   a. Very poor
   b. Poor
   c. Adequate
   d. Good
   e. Excellent

14. How would you rate your satisfaction with your primary supervisor/promoter?
   a. Very poor
   b. Poor
   c. Adequate
   d. Good
   e. Excellent

15. Which one characteristic would you rate highest in a good supervisor/promoter?
   a. Intelligent
   b. Understanding
   c. Enthusiastic
   d. Quick feedback
   e. Expert in my field of study
   f. Other (please specify) _______________________________

16. If you could switch to another supervisor/promoter at this stage, would you choose a different person?
   a. Yes
   b. No
17. How many hours do you typically meet your supervisor(s) each month?
   a. Less than 2 hours
   b. 2-5 hours
   c. 6-10 hours
   d. 11 hours or more

18. Do you have one or more mentors (not your supervisor/promoter) – person(s) providing you with encouragement, advice, support in the academic environment?
   a. Yes
   b. No

19. Do you see the need for or value of having a mentor in addition to your supervisor/promoter?
   a. Yes
   b. No

20. How would you describe the formal course that you have done/are busy with in Research Methodology?
   a. Have not done such a course
   b. Have not done and will not enrol for such a course
   c. Quality is/was poor and course material insufficient/irrelevant
   d. Course was standard, but generally irrelevant
   e. Very good, and helpful in current studies
   f. Excellent, would not be able to continue with studies without this knowledge

21. Which type of support do you think should the University offer which would be most valuable for postgraduate students? (choose maximum of three options)
   a. Free courses and software for data management and analyses
   b. Free courses and software for managing references
   c. No annual registration fees
   d. Active mentorship program
   e. Courses on using the internet effectively
   f. Courses on using the library effectively
   g. Courses on writing research manuscripts for publication
   h. Courses on public speaking at research conferences
   i. Courses on writing applications for bursaries/grants
   j. Free unlimited internet access
   k. Other (please specify) ______________________________

22. As a postgraduate student, were you a (first or co-) author on one or more research articles submitted to peer-reviewed journals?
   a. Yes
   b. No
   c. Not applicable

23. Do you plan to publish the results of your studies?
   a. Yes
   b. No
c. Not applicable
24. How many articles do you expect to publish from the work resulting from your degree?
   a. None
   b. One
   c. Two
   d. Three
   e. More than three
   f. Not applicable
25. Do you have opportunities to attend scientific meetings/conferences?
   a. Yes, nationally
   b. Yes, internationally
   c. Yes, both nationally and internationally
   d. No
26. If you have the opportunity to attend a scientific meeting/conference, how would this typically be funded?
   a. University covers all costs
   b. University covers part of the costs, I have to cover the rest
   c. I have to cover all costs with personal funds
   d. Not applicable
27. What is your satisfaction with the academic quality of the research subject and environment in which you are working?
   a. Poor standard
   b. Acceptable quality
   c. Probably the best on a national level
   d. Competes with the best internationally
28. Do you have a laptop/tablet or desktop computer at home?
   a. Yes
   b. No
29. Do you have internet access at home?
   a. Yes
   b. No
30. Do you have easy access to a laptop or desktop computer at the institution where you are based?
   a. Yes
   b. No
31. If you are a student enrolled part-time, and working at an academic institution, how much time per week are you allowed to work on your research project?
   a. No time allowed
   b. Less than 2 hours
   c. 2-5 hours
   d. 6-10 hours
   e. 11 hours or more
   f. Not applicable
Section C: Description of your financial situation

32. How are your studies funded? (more than one box may be selected)
   a. Loan
   b. Bursary
   c. Parents pay for studies
   d. Working part-time while studying
   e. Working full-time while studying
   f. Study support through employment
   g. Other (please specify) _______________________________

33. Did you apply for scholarships or bursaries?
   a. Yes
   b. No

34. If so, were you successful in any of your applications?
   a. Yes
   b. No
   c. Not applicable

35. As an undergraduate student, was information on possible scholarships or bursaries for postgraduate continuation of studies readily available to you?
   a. Yes
   b. No

36. When applying for a scholarship or bursary, did you have help from an academic staff member (or someone else)?
   a. Yes
   b. No
   c. Not applicable

Section D: After completion of your studies

37. If you are presently enrolled for an Honours or Masters degree, which option would describe your situation best?
   a. I want to finish my Honours degree only
   b. I want to finish my Masters degree only
   c. I want to continue with a PhD
   d. I want to continue with a PhD but will not be able to due to lack of funding
   e. I want to continue with a PhD but will not be able to due to other reasons
   f. Not applicable
   g. Other (please specify) _______________________________

38. Would you consider enrolling for postgraduate studies internationally?
   a. Yes
   b. No
   c. Not applicable
39. If you were offered the opportunity to study internationally, would you return to South Africa afterwards?
   a. Unsure
   b. Unlikely
   c. Perhaps after a few years
   d. High possibility
   e. Definitely

40. Do you have an opportunity to work internationally after completion of your studies?
   a. Yes
   b. No

41. If you are not already a postdoctoral fellow, would you consider doing postdoctoral studies?
   a. Yes, internationally or locally
   b. Yes, only internationally
   c. Yes, only locally
   d. Unsure
   e. No
   f. Not applicable

42. If you have any comments/suggestions/challenges that you wish to share with SAYAS, please type your response here: ____________________________