Danish Diabetes Academy
Self-evaluation report
2018-2021

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Preface

Danish Diabetes Academy (DDA) was established in 2012 with a 5-year grant (2012-2017) of DKK 201,880,000 (EUR 27,148,274) from the Novo Nordisk Foundation (NNF). It subsequently received an additional grant of DKK 156,000,000 (EUR 20,978,457) for another 5-year period (2018-2022).

The initial rationale behind the creation of DDA was to promote high-quality research and research-based treatment of diabetes in Denmark, by enhancing the quality of Danish diabetes research education through training of the next generation of researchers in the field of diabetes.

In accordance with the grant agreement, NNF will conduct an external, independent and international evaluation of the performance of DDA in year 2021. The purpose of the evaluation is to assess whether DDA has been successful in relation to its overall objectives and to reflect of the progress of DDA.

This self-evaluation report represents the results of an internal self-evaluation of DDA's performance in the period from 1 January 2018 to 31 March 2021. While the self-evaluation focuses predominantly on the performance of DDA during the second grant period (2018-2022), the report will also reflect on the development and progression of DDA from the first grant period (2012-2017) and include relevant data from the first grant period to show the long-term impact of DDA.

The report has been prepared in accordance with the guidelines set out by NNF. The DDA Board of Directors (BoD), members of the DDA governing bodies (the International Advisory Board, National Advisory Forum, Committee for Talent Development and Committee for Education), current and former DDA-funded researchers and representatives from the DDA faculty, including representatives from university hospitals, universities and the life science industry in Denmark, contributed with input to the preparation of the report. In addition, DDA used external advisors, who provided input on data collection and analysis of strengths, weaknesses, opportunities and threats (SWOT). The final report was prepared by the Executive Management Team and the BoD.

Allan Flyvbjerg
Chairman of the DDA Board of Directors
CEO, Steno Diabetes Center Copenhagen

Niels Nørgaard Pedersen
CEO and grant holder for DDA
Odense University Hospital

Executive Summary

Danish Diabetes Academy (DDA) was established in 2012 with a 5-year grant (2012-2017) from the Novo Nordisk Foundation (NNF) and subsequently received an additional 5-year grant (2018-2022).

The overall vision of DDA is to enhance the quality of Danish diabetes research education to ensure that it remains at the highest international level and to attain that vision, DDA's mission is to educate and train the next generation of researchers in the field of diabetes.

The main focus areas of the DDA activities are 1) to strengthen the research training available to PhD students and postdocs within the field of diabetes; 2) to serve as a national hub within diabetes, unifying academia, hospitals and the life science industry in Denmark; and 3) to recruit outstanding national and international PhD students, postdocs and visiting professors within the field of diabetes in open and free competition.

Half-way through the grant period, DDA has succeeded in fulfilling half of the success criteria outlined in the grant application, whereas around 1/3 of the success criteria are not possible to evaluate or measure until the end of the 5-year grant period. DDA did not fulfil the success criteria focusing on recruitment of PhD students and postdoc fellows from abroad, with co-funding from life science industry or through the EU's Horizon 2020 framework programme.

From 2018 to 2021, DDA organised 65 educational activities (PhD courses, postdoc courses and symposia/seminars) and 36 networking and collaboration activities, in close collaboration with national and international research institutions from academia, hospitals and the life science industry. Further, DDA granted 42 PhD scholarships, 34 postdoc fellowships and 16 visiting professorships in an open and free competition.

The 5 major accomplishments of DDA during 2018-2021 are:

1) DDA has strengthened the educational and talent development programme by harnessing the potential of digital training and education and introducing new learning methods

2) DDA has positioned itself as a national hub within diabetes, unifying academia, hospitals and the life science industry, and has been able to attract participants across sectors, research disciplines and borders for its activities

3) DDA has recruited highly skilled national and international researchers

4) DDA has created a strong communication profile, providing a communications platform for DDA and the entire diabetes research community to communicate research and activities within the field

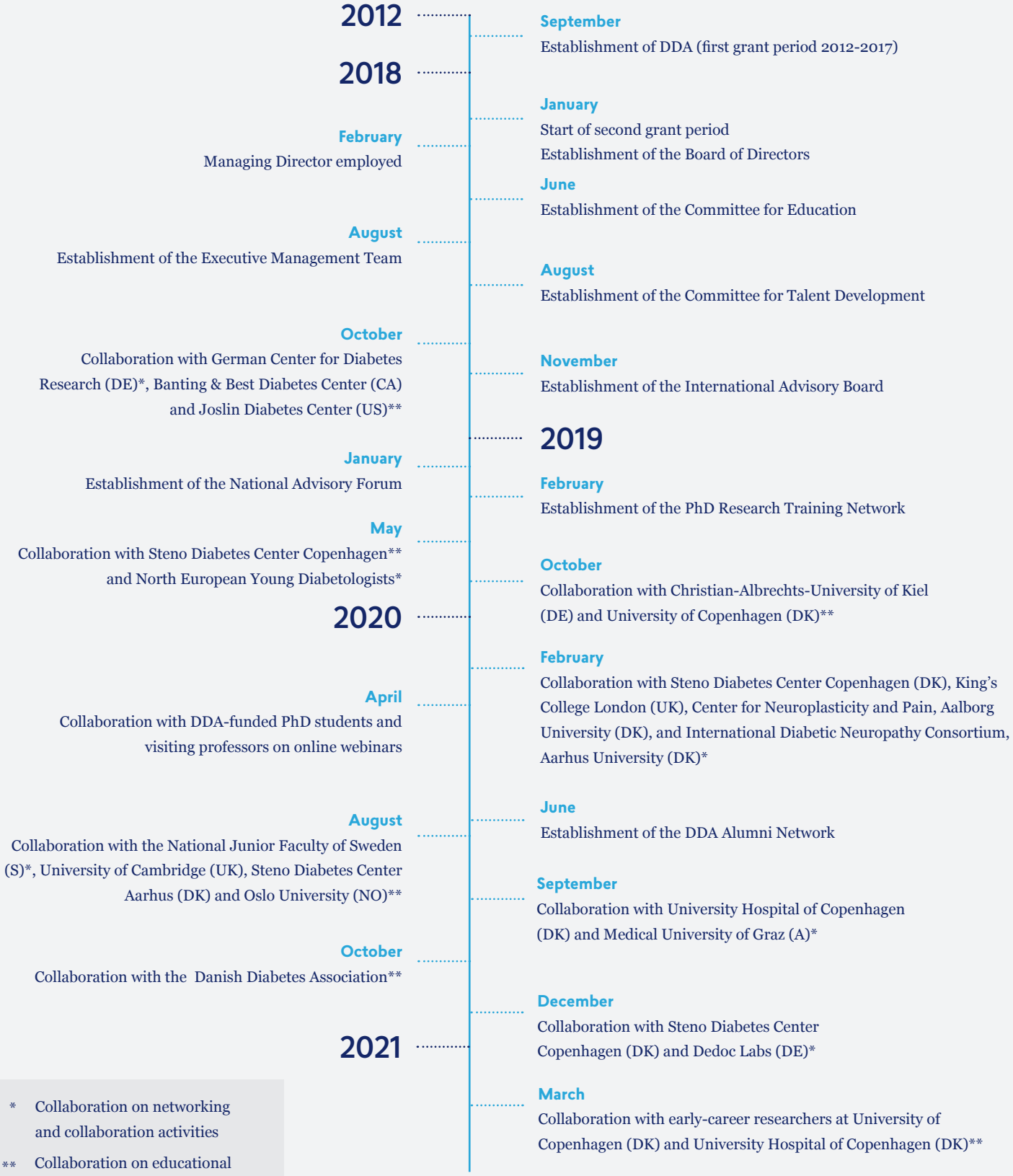
5) DDA has established itself as an effective and overall competent organisation with a well-established platform for granting PhD scholarships, postdoc fellowships and visiting professorships and balanced and dynamic bodies in relation to the level of seniority and gender

The establishment of DDA has provided a unique opportunity to further draw on synergies within the Danish and international diabetes research landscape, across sectors and disciplines, to create research outputs greater than the sum of each individual partner – for the benefit of society and citizens.

1. Introduction and overall objectives

A timeline for the establishment of DDA is provided in *Figure 1*.

Figure 1. Timeline for the establishment of DDA



* Collaboration on networking and collaboration activities

** Collaboration on educational and talent development activities

Vision, mission and objectives of DDA

The overall vision of DDA is to enhance the quality of Danish diabetes research education to ensure that it remains at the highest international level.

To attain that vision, DDA's mission is to educate and train the next generation of researchers in the field of diabetes.

The vision and the mission serve as the framework for all strategic efforts and activities of DDA, including DDA's defined objectives within three main focus areas, as outlined in the grant application:

- Strengthen the research training available to PhD students and postdocs within the field of diabetes, in collaboration with academia, hospitals and the life science industry
- Serve as a national hub within diabetes, unifying academia, hospitals and the life science industry in Denmark, to strengthen educational activities and talent development within the area
- Recruit outstanding national and international PhD students, postdocs and visiting professors within the field of diabetes in open and free competitio

2. Success criteria and achievements

DDA has within the defined objectives identified a number of success criteria, as outlined in the grant application. The success criteria and DDA's performance with regard to the success criteria for the three focus areas are presented below in *Tables 1-3,* and described and reflected upon in details in *Chapters 6-10*.

Table 1. DDA success criteria for educational and talent development activities and performance with regard to the success criteria

Success criteria	Success criteria accomplished
90% of the participants in each course/workshop or other activity attended can demonstrate that he/she is able to make critical reflection of the field and to put the acquired competence to use in a challenge within the specific area.	Not applicable
The PhD/postdoc trained within DDA can clearly describe competences gained and the value of these for future positions (for an employer).	Yes
DDA to hold six national and international PhD courses per year, including two organized in collaboration with research institutes outside Denmark.	Yes
DDA to hold four major seminars/symposia per year in collaboration with national and international research groups.	No
DDA courses to be fully booked, and its symposia and seminars to be attended by at least 60 national and international researchers. Of the attendees, 25% to be from abroad, from the life science industry or from disciplines other than medical doctor or Master of Science.	Yes

Table 1. DDA success criteria for educational and talent development activities and performance with regard to the success criteria (continued)

Success criteria	Success criteria accomplished
Of the teachers and speakers on DDA PhD courses, seminars and symposia, half to be internationally recognized experts from outside Denmark.	No
Participant satisfaction with the education scientific programs to be 4.0 on a scale from 1 (unsatisfactory) to 5 (very satisfactory)	Yes
DDA-funded researchers' satisfaction with the Executive Management Team's performance regarding the organization and information on the PhD courses to be 4.0 on a scale from 1 (unsatisfactory) to 5 (very satisfactory)	Yes

Table 2. DDA success criteria for networking and collaboration activities, and performance with regard to success criteria

Success criteria	Success criteria accomplished
That 85% of DDA-funded PhD students and postdocs stay abroad for at least three months or have spent time within life-science industry.	Not applicable
That 85% of DDA-funded PhD students and postdoc have joint publications and/or funded applications with researchers abroad or within life-science industry.	Not applicable
That 25% of DDA-funded PhD students and postdoc have publications and applications that are interdisciplinary.	Not applicable
That DDA arrange at least six workshops and other networking activities per year in collaboration with national and international research groups and industry.	Yes
That DDA organise at least two workshops and other networking activities per year across disciplines including scientists with background in engineering, IT, health-economics, anthropology and health science.	Yes
That DDA can document that an increasing number of PhD students and postdocs from abroad have spent time in Danish research institutions in collaboration with DDA as a consequence of the networking activities.	No
That the number of national and international PhD students and postdocs who apply for DDA membership increases by 10% annually.	Yes
That the number of national and international PhD students and postdocs subscribing to DDA social media activity (DDA Facebook, DDA LinkedIn and DDA twitter) increases 10% each annually.	Yes

Table 3. DDA success criteria for grant and recruitment activities, and performance with regard to success criteria

Success criteria	Success criteria accomplished
DDA-funded researchers publish in high-impact journals (bibliometric analysis) (10% in top 10 within diabetes and metabolism)	Yes
1/3 of PhD students and 1/3 of postdocs are recruited from abroad.	No
Time to completion is 3 years and 4 months for PhD students.	Not applicable
DDA-funded PhD students and postdocs are attractive and 90% obtain employment at research institutions or clinical research units within diabetes and metabolism at Danish universities and hospitals, internationally or in the life science industry.	Not applicable
That the DDA take part in at least two annual applications to the EU's Horizon 2020 framework programme focusing on Innovative Training Networks – joint PhD programs and educational networks. Recruitment of PhD students through EU's Horizon 2020 framework programme focusing on Innovative Training Networks.	No
Recruitment of PhD students and postdocs through co-funding of regional, national and international programs (COFUND) under the Marie Skłodowska-Curie Actions (Horizon 2020).	No
External funding secured by DDA-funded PhD students and postdocs.	Yes
A total of 15-20% industrial PhD and 15-20% industrial postdoc fellowships.	No

Half-way through the second grant period, DDA has succeeded in fulfilling half of the success criteria set up (indicated by 'Yes' in *Tables 1-3* above). A number (around 1/3) of the success criteria are not possible to evaluate or measure (indicated by 'Not applicable' in *Tables 1-3*) until the end of the 5-year grant period (ending in 2022), in particular due to the short enrolment or employment period of researchers receiving a grant from DDA during the second grant period (13 months on average). The success criteria that are not yet fulfilled (indicated by 'No' in *Tables 1-3*) mainly focus on recruitment of PhD students and postdoc fellows from abroad, with co-funding from life science industry or through the EU's Horizon 2020 framework programme. Reflections on the performance are presented in details in *Chapters 6-10*.

Major highlights

We define the top 5 accomplishments of DDA to be:

1) The high-quality educational and talent development programme that has strengthened research training within diabetes

DDA has been successful in strengthening research training within diabetes by introducing new learning methods; harnessing the potential of digital training and education; and reaping the benefits of the national and international network facilitated by DDA. The implementation of educational technologies and pedagogic learning methods to support higher interactivity between speakers and participants and to facilitate adaptive learning, critical thinking and knowledge increased the quality of the educational programme. Further, with the implementation of webinars and online courses, DDA gained flexibility and a cost-effective way to educate and train early-career researchers and was provided with the opportunity to attract participants from abroad.

2) The strong national network within the diabetes sector, unifying academia, hospitals and life science industry

DDA has been successful in positioning itself as a national hub within diabetes, unifying academia, hospitals and the life science industry, and has been able to attract participants and collaborators across sectors, research disciplines and borders for its activities. In particular, DDA has tapped some of the unresolved potential in building a closer collaboration with the life science industry. Through the facilitation and creation of the strong national network, DDA has contributed with a significant difference and impact within diabetes research, which actors within the diabetes system would not be able to create alone.

3) The outstanding national and international PhD students, postdocs and visiting professors

DDA has been successful in recruiting highly skilled national and international researchers through calls covering all aspects of diabetes research in open and free competition. This is reflected in the continuously high number of applications and a low funding ratio for PhD scholarships and postdoc fellowships, the high evaluation scores given by the international peer reviewers in the Committee for Talent Development, the recruitment of highly profiled visiting professors, and the performance in relation to publications.

4) The strengthened communication profile

DDA has been successful in creating a strong communication profile, providing a platform for both DDA and the entire diabetes research community to communicate and highlight research and activities within the field. DDA has successfully used its communications channels to post events and stories on a regular basis regarding DDA's educational, networking and grant activities, DDA-funded researchers' publications and research and collaborators' educational and networking activities or grant opportunities. The success is indicated by an increased visibility on DDA social media.

5) The effective and overall competent organisation

DDA has been successful in setting up a new agile governance model and organisation, which has a strong and very positive reputation and support from users and stakeholders, and which ensures that the organisation delivers on its mission and strategic objectives. The organisation has, among others, prompted a well-established platform (international peer review process) for granting PhD scholarships, postdoc fellowships and visiting professorships and balanced and dynamic bodies in relation to level of seniority and gender.

3. Experience from the first Danish Diabetes Academy

For the second grant period (2018-2022), DDA built on the experiences gained during the first 5 years (2012-2017), including the relations and goodwill built with researchers from academia and university hospitals. The self-evaluation conducted in 2015 and the experiences gained throughout the grant period have served as the foundation for the continuation of DDA in the current grant period and for the changes made.

By the end of the first grant period, it was the general comprehension that a transformative change of the organisation and governance model was needed to ensure a more agile organisation, involving representatives from the life science industry and early-career researchers and ensuring gender balance in combination with a transparent governance model.

Thus, the existing BoD was reorganised and reduced from 5 to 3 members, and the national advisory body

(Consultative Council) and the Committee for Education were re-established, ensuring balance with regard to gender and level of seniority. Further, to ensure transparency and arm's length in relation to allocation of grants, the national review committee (Research Committee) was replaced by an international committee (the Committee for Talent Development). The Executive Management Team also underwent a transformative change with the addition of competences within pedagogical learning methods and public relations and communications.

Even though, the educational and talent development programme received appraisals, a transformative change of the format and the structure of the activities was needed to ensure up-to-date relevance to early-career researchers and continue to attract these to diabetes research. Thus, pedagogical learning methods have become 'standard procedure' when organising the activities. Further, a bottom-up approach ensuring implementation of suggestions for educational and talent development activities from the members of the DDA faculty, including DDA alumni, and the DDA governing bodies, and an active involvement of the life science industry, was part of the transformative process.

In an attempt to balance disciplines and research areas, more efforts have also been done to involve researchers across disciplines and sectors, including the life science industry, and, if possible, from abroad, in the networking and collaboration activities. Further, the need to establish a professional and supportive platform where former and current DDA-funded researchers could meet and further develop to become excellent research leaders, has entailed the establishment of the DDA Alumni Network.

The procedure for allocating PhD scholarships, postdoc fellowships and visiting professorships underwent a significant change with the exclusion of national peers due to the obvious issues with conflicts of interest. Thus, in the current grant period, DDA has given high priority to establishing a trustworthy and transparent evaluation process by setting up an international review committee with recurring members (the Committee for Talent Development).

In conclusion, the experiences from the first grant period induced relevant and important changes, which ensured that DDA has now developed into a well-established and solid organisation with a clear national mandate, offering high-quality educational and networking activities and a well-established platform for granting PhD scholarships, postdoc fellowships and visiting professorships.

4. Strengths, weaknesses, opportunities and threats (SWOT)

For the self-evaluation, DDA performed an internal evaluation of the DDA strategy, organisation and activities, including a SWOT analysis of DDA, and involving representatives of all DDA bodies. The detailed internal SWOT analysis is included in *Appendix 1*.

Further, external consultants (Mobilize Strategy Consulting A/S) carried out an external SWOT analysis to uncover the strategic potential of DDA. The external SWOT analysis involved main stakeholders (users) of DDA, i.e. former and current DDA-funded researchers (PhD students, postdoc fellows and visiting professors), and secondary stakeholders (collaborators) from universities, university hospitals and the life science industry in Denmark and abroad. In addition, two benchmark cases were included. Details about the evaluation approach and the final report, containing results and conclusions of the external strategic evaluation performed by Mobilize, is included in *Appendix 2*.

The key insights and conclusions of the internal and external strategic evaluation are summarised and presented with a division into the four SWOT dimensions in *Figure 2* (page 12). The factors with the greatest impact within each dimension are presented and elaborated on page 12.

Figure 2. SWOT analysis of DDA

Strengths

- DDA has become part of the backbone of Danish diabetes research
- DDA has succeeded in creating a strong national network within the diabetes sector, unifying academia, hospitals and life science industry
- DDA has built a very positive reputation among stakeholders and users
- DDA has an effective, agile, lean and overall competent leadership and organisation

Weaknesses

- Few hard data are available to accentuate the societal impact of DDA
- DDA has primarily acted as a supply-oriented actor
- Advisory bodies have relatively many members and are permanent bodies (less agile)
- The governance of DDA includes a relatively low number of representatives from life science industry and early-career researchers
- DDA does not possess the resources to expand strategically

Opportunities

- Expand the professional scope by including other scientific areas
- Expand the activity scope by engaging more in user involvement and increasing public awareness and visibility
- Expand the educational scope by becoming a central learning hub working across national borders by utilising a digital platform and digital presence
- Expand the actor scope by creating relations to the life science industry and facilitating to innovation

Threats

- The risk of a continued COVID-19 pandemic or other similar external threats
- The risk that DDA is not relevant to early-career researchers
- The risk that DDA is not relevant to society and meet the needs and demands of end-users
- The risk that researchers will not engage in (voluntarily) and support DDA as members of DDA governing bodies or for the organisation of activities
- DDA is solely depending on funding from the Novo Nordisk Foundation

Key learnings

Overall, the internal and external SWOT analysis can be summarised in the below key learnings. These uncover the strategic transformative potential of DDA that may be pursued to strive for an even bigger impact on another level.

The SWOT analysis reveals that DDA has become part of the backbone in Danish diabetes research and has contributed with a significant difference and impact for Danish diabetes research. DDA has succeeded in creating a strong national network within the diabetes sector, unifying academia, hospitals and life science industry, and a culture around DDA and its activities – a culture that goes beyond the young researchers currently attending the programme, but also includes the wider network of international presenters and alumni. Yet, there is unleashed potential for DDA to expand the professional scope to include other research areas in the DDA portfolio and focus more on translational and multidisciplinary research, and to expand the educational scope by embracing new methods and ways to tackle diabetes or related metabolic disorders (e.g. the emergence of new technologies and digitalisation).

Further, DDA has an effective, agile and overall competent leadership and organisation and has built a very positive reputation among both stakeholders and users of the various courses and networking activities that DDA has initiated, as well as national and international recognition by senior and junior researchers at national research institutions. If DDA is to follow a transformative change path and expand strategically, it is important to proactively expand and develop the organisation accordingly.

The SWOT analysis reveals as a weakness that only few hard data are available to accentuate the societal impact of DDA. Through recruitment of highly talented early-career researchers and educational and networking activities, DDA strives to establish a foundation to create impact on society, e.g. DDA-funded early-career researchers' influences on policy, training of practitioners or researchers, high-impact publications, patents, citations in policy documents, conference talks, increased employability and collaborations across sectors and disciplines. Data in the self-evaluation report already describe the early impact of DDA on society, but further data collected in the years to come will reveal if DDA is

able to achieve these ambitions. The role and impact of DDA may also be further improved by expanding the professional scope.

The two benchmarking cases (King's Health Partners and UCL Partners) included in the external SWOT analysis reveal that DDA has primarily acted as a supply-oriented actor and thus has a (missed) opportunity to have more systematic activities that focus on the requirements and needs of the sector. Further, DDA may harness the strong national network created by increasingly acting as a proactive, strategic network "broker" between the other actors in the system (Danish Cardiovascular Academy, Danish Data Science Academy, Steno Diabetes Centres, universities, hospitals, industry, primary care facilities and users). This transformation would also secure the future relevance of DDA to early-career researchers and the research society and meet the needs and demands of end-users and thus meet the threats indicated in the SWOT analysis.

An acute threat to the DDA educational and networking programme was the outbreak of the COVID-19 pandemic, which led to cancellations and postponement of activities in the beginning of the pandemic in March 2020. Even though the DDA leadership addressed this risk quickly by transforming planned onsite activities into online courses and webinars, it also revealed the potential (and missed) opportunities that lie within digital training. Thus, DDA should seek to establish itself as a central learning hub working across national borders by utilising a digital platform and digital presence and thereby taking an approach to expanding the educational scope of the educational and networking programme to include researchers from abroad.

Another missed opportunity, and to avoid that DDA is solely depending on funding from NNF, is the lack of success in obtaining funding for PhD scholarships and postdoc fellowships from other sources e.g. the EU Horizon 2020 programmes. Further, the lack of significant (co)-funding from life science industry to support industrial PhD scholarships and postdoc fellowships (3 postdoc fellowships were funded by AstraZeneca) was also a missed opportunity to reduce the dependence of NNF. Expanding the actor scope by creating a stronger relation between DDA and the life science industry e.g. through including more members from life science industry in the DDA advisory bodies, may be a solution to establish a fundament for funding from other sources than NNF.

5. Organisation, structure and governance

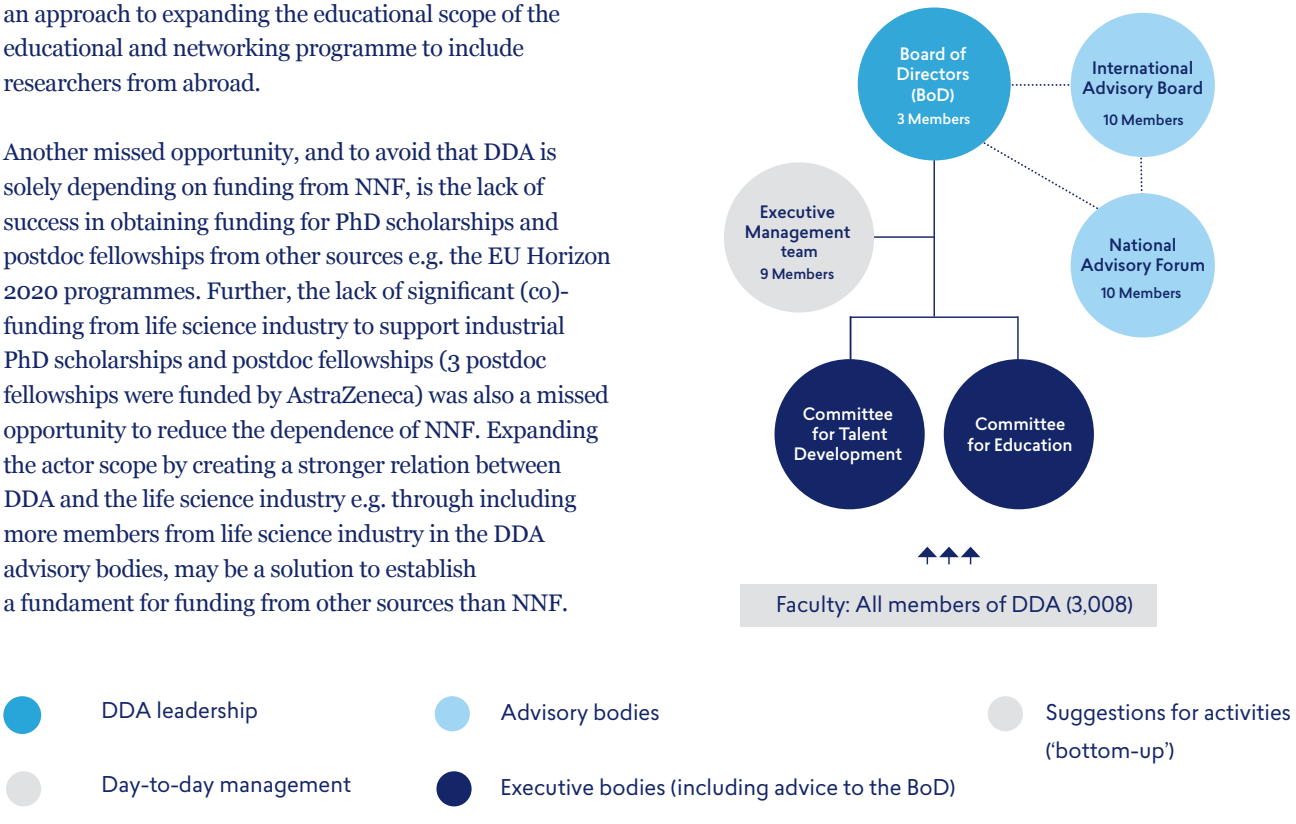
5.1 Organisation and structure

A BoD heads DDA and includes members representing the universities, university hospitals, and Steno Diabetes Centers across Denmark, as well as research disciplines across the entire field of diabetes. The three members are listed in *Appendix 3*, and curricula vitae for the members are included in *Appendix 4*.

Four bodies support the BoD: the International Advisory Board, the Committee for Education, the National Advisory Forum and the Committee for Talent Development. The members are scientific experts within basic, translational and clinical diabetes research, interdisciplinary research and education and talent development. Early-career researchers are also included as members in the Committee for Education and the National Advisory Forum. The members are listed in *Appendix 3*. The Executive Management Team assists the BoD and the four bodies.

The organogram below (*Figure 3*) shows the organisational and reporting structure of DDA's bodies and their sizes and the decision-making processes of DDA.

Figure 3. DDA organisation



The governance model ensures that the BoD functions at a high strategic level; provides the Managing Director with a work scope permitting effective execution of the policies and strategies adopted by the BoD; and allows for bottom-up feedback on past, present and future DDA activities.

Host Institution

Odense University Hospital is the grant holder and hosts DDA, which pays around 2.2% of the grant to the hospital for providing the offices and facilities needed for the Executive Management Team, for administering the grant, auditing the accounts and providing legal advice, when needed. In particular, the Executive Management Team receives continuous support from the Finances and Accounts Department with regard to administration and follow-up on the DDA accounts. Furthermore, all employees of the Executive Management Team are employed by Odense University Hospital, and the hospital thus provides assistance with regard to appointments and human resources. The collaboration with the hospital management and the service departments has been efficient, and the hospital management has delivered as agreed.

5.2 Governance

5.2.1 Academy leadership and decision-making mechanisms

The management of Odense University Hospital as host institution is legally and financially responsible for the NNF grant, but the overall scientific and financial responsibility is handled by the Chair of the BoD, Allan Flyvbjerg, who has delegated the responsibility for the daily operations to the Managing Director, Tore Christiansen. He reports directly to the Chair and is in dialogue with him as needed. The Chair and the Managing Director constitute the leadership team of the DDA.

The BoD is responsible for defining and deciding on the implementation of the strategy in the DDA's three focus areas and the overall strategy.

DDA combines a top-down decision-making process from the BoD downwards with a bottom-up strategy, where the DDA bodies advise the BoD within DDA's focus areas. DDA also includes the DDA members (early-career researchers, in particular) for bottom-up feedback on past, present and future DDA activities, and early-career researchers are involved to a great extent in the organisation of the DDA activities for education and networking. The bottom-up strategy ensures that the DDA activities are aligned with the stakeholders' needs and the belief that the DDA's vision, mission and objectives can best be achieved by employing a broad approach in which the members' and bodies' contributions are implemented in the DDA's work. An example of the bottom-up process can be read in *Appendix 5*.

Through the Managing Director, the BoD is responsible for ensuring that the advice and recommendations of the DDA bodies are implemented in DDA and remain aligned with DDA's vision, mission and objectives as originally outlined in the grant application.

Each year, the BoD has conducted a self-evaluation of the DDA bodies and the DDA Executive Management Team to identify areas of improvements. These self-evaluations have resulted in adjustments to the composition of the Committee for Education and Committee for Talent Development.

5.2.2 Governing bodies

The BoD has selected the members of the four bodies based on nominations from the entire Danish diabetes research community, i.e. relevant departments at the faculties of science and health sciences at the universities; departments of endocrinology at the university hospitals; PhD students and postdocs funded by DDA; DDA members, the Danish Endocrine Society; and relevant life-science companies. This selection procedure ensures broad support from the Danish diabetes research community.

The advisory bodies (International Advisory Board and National Advisory Forum) provide recommendations and suggestions on past, present and future DDA activities and the overall strategy to the BoD.

The executive bodies (Committee for Talent Development and Committee for Education) perform a professional peer review of the applications for the DDA grants and provide a motivated recommendation to the BoD on applications to be funded by DDA (Committee for Talent Development); coordinate and plan the annual scientific curriculum for the DDA educational and talent development activities; and organise the activities together with the Executive Management Team (Committee for Education).

Further information on the composition, roles and responsibilities of the DDA bodies are described in the Terms of References (*Appendix 6*). An overview of the number of members, election periods, meetings and overall roles of the four DDA bodies is included in *Appendix 7*.

5.2.3 Executive Management Team

The Executive Management Team provides service and administrative support and ensures a strong relationship and dialogue with the BoD and the four bodies. Further, the Executive Management Team ensures proper implementation of the activities proposed by the bodies and decided upon by the BoD, and develops and proposes, to the BoD and the bodies, activities within the DDA's three focus areas. The Executive Management Team also provides service and support to the main stakeholders (early-career researchers) and other main collaborators from Denmark and abroad, and ensures communications to these through the DDA website and social media. Finally, the Executive Management Team has been the focal point for the administration of the educational and networking activities, including invitation of speakers, publicity, registration, organisation, evaluation and follow-up, together with any media coverage, and administration of the grant programme, including administration of grant applications, matching of the applications with appropriate reviewers, conducting the review process, communications to applicants and announcements and publicity. The organisation and composition of the Executive Management Team, including members and the staff skill set over time, are presented in *Appendix 8*. The curriculum vitae for the Managing Director is included in *Appendix 4*.

5.2.3 Interplay between Executive Management Team, governing bodies and NNF

The Chair of the BoD and the Managing Director meet twice per year with NNF to inform NNF of the current work and progress of DDA and plans for the coming year. The grant holder (represented by the CEO of Odense University Hospital) attends one of the meetings. In addition, the Executive Management Team is in continuous dialogue with the NNF contact person to discuss relevant issues related to the grant, the DDA activities and the reporting of the activities (e.g. Researchfish®). The formal meetings and the continuous informal dialogue ensure that DDA operations are aligned with the grant agreement and provide the opportunity for making minor adjustments, when relevant (e.g. for the budget and accounts and new activities).

5.2.4 Reflections on governance

The internal and external SWOT analyses (*Appendices 1 and 2, Chapter 4*) reveal a number of strengths and weaknesses of the composition, roles and responsibilities of the DDA leadership and governing bodies. The main points are presented and addressed below.

The main strengths are: 1) An agile, lean and resilient leadership and organisation; 2) inclusion of early-career researchers as co-organisers of the DDA educational and talent development activities; 3) members of the bodies are representatives of the universities, university hospitals and life science industry (the number of the latter could be higher, see below), which supports DDA's objective of unifying academia, hospitals and life science industry; and 4) members of the Committee for Talent Development are solely international renowned experts, which ensures an independent and scientifically rigorous, in-depth and high-quality peer-review assessment of all applications for the DDA grants.

The main weaknesses are: 1) a relatively low number of early-career researchers included in the DDA governing bodies (including BoD); 2) a relatively low number of representatives from the life science industry in the DDA bodies (also see above): this might preclude some opportunities for establishing collaborations within that sector; 3) a relatively high number of members of the advisory bodies (the National Advisory Forum and International Advisory Board) and the fact that these bodies are permanent (for 2.5 years): this makes it difficult to engage continuously with these bodies, to receive prompt and relevant feedback, also on topics or research fields that are not represented by these bodies (e.g. online learning); and 4) no (or very little) representation of the end-users, citizens or individuals with diabetes in the DDA bodies or in the organisation of DDA activities: this means that public outreach and societal impact might not be optimal.

6. Educational and talent development activities

6.1 strategy

The bottom-up process (*see Chapter 5*) and a close and strong collaboration between DDA, national and international universities, university hospitals and the life science industry have been the backbone of the development of the educational and talent development activities (a list of key collaborators is included in *Appendix 9*). In that respect, DDA established the PhD Research Training Network including the heads of the PhD schools of the Danish universities. The aim of the network is to ensure coordination of educational activities for PhD students and ensure that these are embedded in the PhD programme of the universities and offered as part of their PhD curriculum. Finally, the network also help disseminate information about DDA activities to PhD students across institutions.

The strategy for the educational and talent development programme included incorporation of interdisciplinary research with elements of basic, translational, clinical, epidemiological and qualitative research, pedagogic learning approaches and teaching methods. Aiming at the highest possible international standards, it is a priority that speakers are nationally and internationally recognised experts, and that a number of the activities are organised in collaboration with research institutes outside of Denmark. Since the outbreak of the COVID-19 pandemic, DDA has also strengthened the online platform by offering webinars and online training (29 in one year).

To attract relevant participants, all activities were posted on the DDA website and announced on DDA social media (LinkedIn and Twitter) and in monthly newsletters. In addition, the activities were promoted through electronic university bulletins, websites of relevant societies and direct mail to relevant research groups nationally and internationally.

Early-career researchers, including researchers from abroad, have had open and unfettered access to DDA's educational and talent development programme. Where seats on a course were limited, DDA-funded researchers have had first priority. On courses where it was compulsory to submit an abstract, the respective organisation committee for the specific activity selected attendees on the basis of the abstracts submitted.

6.2 Accomplishments

Milestones of the educational and talent development activities from 2018 to 2021 are presented in *Appendix 10a*. A list of all activities, including title, date, type, format, collaborators and number of participants, is presented in *Appendix 10b* (*Tables A-D*).

From August 2018 to 31 March 2021, DDA organised 65 educational activities, which attracted over 2,400 national and international participants (*Table 4*). An average of 78 national and international researchers attended the DDA symposia.

Table 4. Number of educational and talent development activities, including types, format and participants, 2018-2021

Year	PhD & postdoc courses	Symposia	Webinars	Format (onsite or online (%))	Number of participants
2018	2	1	0	100 vs. 0	231
2019	9	4	0	100 vs. 0	607
2020	18	2	13	28 vs. 72	1,033
2021	0	0	16	0 vs. 100	592
Total	**29**	**7**	**29**	**34 vs.66**	**2,463**

The activities were organised in collaboration with national and international research institutions across sectors and disciplines, and 21 activities were organised in collaboration with researchers from research institutions outside Denmark.

The 65 activities equate to around 600 hours of high-impact education for early-career researchers. DDA awarded a total of 1,139 European Credit Transfer System (ECTS) points to PhD students from national and international research institutions.

Over 350 speakers (65% male and 35% female), drawn from across universities, university hospitals, the life science industry and consultancy companies as well as across borders gave lectures at the educational activities (*Table 5*, page 17). The speakers were nationally and internationally recognised scientists and consultants and also included the DDA visiting professors (mean H-Index of 39.3) (*Table 5*, page 17), and current and former DDA-funded PhD students and postdocs also took part in educational duties at the PhD and postdoc courses, symposia and webinars.

Table 5. Overview of invited speakers (number) and their characteristics (internationalisation, sector of employment, gender and H-index) 2018-2021

Number of speakers	Speakers from abroad (%)	Speakers with hospital affiliation (%)	Speakers with university affiliation (%)	Speakers with life science industry affiliation (%)	Others	Gender: Male (%)	Gender: Female (%)	Speakers' mean H-index
358	40.0	42.1	44.4	5.5	8.0	65.0	35.0	39.3

The participants of the educational activities were mainly early-career researchers (over 75% of all participants) (*Table 6*).

Table 6. Overview of participants' educational background 2018-2021

Postdocs (%)	PhD students (%)	Master student (%)	Professors, associate professors and assistant professors (%)	Others (medical doctors, nurses, NGO and industry representatives) (%)
24.1	51.8	3.6	7.2	13.3

In general, the activities attracted participants from across sectors, the majority from universities and hospitals, and, as aimed for, 25% of participants were either from abroad or from the life science industry (*Table 7*). The introduction of webinars and online courses in 2020 prompted an increase in participants from abroad (mean 19%) taking part in DDA's educational and talent development activities.

Table 7. Overview of the participants' institutional/sectorial and geographical (national/international) characteristics 2018-2021

University (%)	Hospitals (%)	Life science industry (%)	General practice (%)	Others (medical doctors, nurses, NGO and industry representatives) (%)	Participants from abroad (%)
52.8	32.1	6.0	0.6	8.5	19.0

The PhD courses attracted students from across all universities in Denmark *(Table 8)*

Table 8. Overview of the participants' (PhD students) institutional characteristics at the DDA PhD courses 2018-2021

University of Copenhagen (%)	University of Southern Denmark (%)	Aarhus University (%)	Aalborg University (%)	Denmark's Technical University (%)	Roskilde University (%)
59.0	15.1	17.0	3.7	0.3	4.9

Table 9 shows the average participant satisfaction with the scientific educational programmes and with the Executive Management Team's performance regarding the organisation and communication of each activity from 2018 to 2021.

In summary, 86% of the participants stated throughout the three years that they were satisfied to either a very great (5) or a large (4) extent (on a 5-point scale) (average of 4.3) with the content of the scientific programme, while 91% (average of 4.5) responded that they were satisfied to either a very great or a large extent with the performance of the Executive Management Team. An example of participant satisfaction is included in *Appendix 11*.

Table 9. Participant satisfaction with the scientific educational programmes and with the Executive Management Team's performance of the DDA educational and talent development activities 2018-2021

Satisfied to either a very great (5) or a large (4) extent (on a five-point scale) with the content of the scientific education programme (%)	Satisfied to either a very great (5) or a large (4) extent (on a five-point scale) with the performance of the Executive Management Team (%)
86.0	91.0

Finally, former and current DDA-funded PhD students and postdocs responded to a written survey about the competences gained and further developed through participation in DDA activities. The results are presented in *Appendix 10c* (*Tables A and B*). In summary, around 90% of the PhD students and postdocs responded that they had to some extent, to a large extent or a very large extent gained and developed scientific, transferrable and career-development competences, and that they had to some extent, to a large extent or a very large extent used or expected to use the competences gained or further developed through participation in DDA activities in their future careers.

6.3 Performance in relation to success criteria

The success criteria for the educational and talent development activities and overall performance in relation to these are presented in *Chapter 2* (*Table 1*) and reflected upon in details below.

Overall, DDA has delivered on the strategy and the majority of success criteria described in the grant application: organising 6 PhD courses in close collaboration with national and international research institutions from academia, hospitals and the life science industry; incorporation of elements of basic, translational, clinical and interdisciplinary research; and inclusion of new pedagogic approaches and teaching methods, including expanded use of online learning platforms.

Further, the activities had a high number of participants (mainly early-career researchers) from across institutions, sectors and countries and, importantly, achieved a high participant satisfaction with the scientific programmes and the performance of the Executive Management Team.

Last but not least, the majority of current and former DDA-funded researchers, who responded to a survey, stated that they had gained competences from the DDA educational programme and made use of the competences gained.

DDA was unsuccessful in reaching the success criterion stating that 50% of teachers and speakers on DDA's PhD courses, seminars and symposia should be internationally recognised experts from outside Denmark. This was mainly due to the global COVID-19 pandemic entailing travel restrictions. Even though, this success criterion was not met, the DDA educational and talent development activities involved nationally and internationally recognised speakers (40% were from abroad), including the DDA visiting professors, and current and former DDA-funded researchers.

DDA was also unsuccessful in achieving the success criterion to hold 4 major seminars/symposia per year in collaboration with national and international research groups. This was mainly due to the COVID-19 pandemic

entailing restrictions on assembly. However, DDA compensated for this by organising a large number of online webinars.

The success criterion stating that participants of each activity should be able to demonstrate critical reflections of the field and put the acquired competence to use in a challenge within the specific area was not evaluated. The BoD decided (upon recommendation form the Committee for Education) not to introduce written examinations at the DDA activities, due to the high work load this presents to the organisers and teachers (who are not remunerated for their work).

Overall, by delivering on the majority of the success criteria set in the grant application, DDA has succeeded in strengthening research training available to early-career researchers within the field of diabetes.

7. Networking and collaboration activities

7.1 strategy

The cornerstone of the networking and collaboration programme has been the strategic focus on involving researchers across disciplines and sectors and, if possible, from abroad as organisers and participants of the networking and collaboration activities to foster new collaboration between disciplines, between sectors and across borders. A list of key collaborators is presented in *Appendix 9*.

In that respect, DDA also used the collaboration and networking activities as a starting point to apply for grant applications to the EU Horizon 2020 programme (e.g. European Cooperation in Science and Technology (COST) Actions to facilitate further collaboration between researchers across sectors and from national and international research institutions *(see Chapter 11)*. Another cornerstone of the programme has been the bottom-up process whereby DDA invited members of the DDA faculty, including DDA alumni and DDA visiting professors, to suggest activities for the networking and collaboration programme to ensure that the activities feature relevant and topical themes and facilitate new collaborations. DDA also had open calls (at the DDA website) for networking and collaboration activities to further strengthen DDA's position as a national hub within diabetes.

The outbreak of the COVID-19 pandemic challenged the networking and collaboration programme. DDA therefore prioritised, as a new concept and strategy, establishing online networking and collaboration activities and harnessing some of the potential within this format.

All activities were posted on the DDA website and announced on DDA social media (LinkedIn and Twitter) and in monthly newsletters. In addition, the activities were promoted through electronic university bulletins, websites of relevant professional societies and direct mail to relevant research groups nationally and internationally. Early-career researchers, including researchers from abroad, have had open and unfettered access to DDA's networking and collaborations programme.

7.2 Accomplishments

Milestones of the networking and collaboration activities from 2018 to 2021 are presented in *Appendix 12a*. A list of all activities, including title, date, type, format, collaborators and number of participants, is presented in *Appendix 12b (Tables A-D)*.

From August 2018 to 31 March 2021, DDA organised 31 networking and collaboration activities, which attracted almost 1,000 national and international participants. Further, DDA contributed to 5 workshops initiated by the National Junior Faculty of Sweden (*Table 10*, page 20). In summary, 19 workshops, 11 networking activities and 6 alumni activities make up the 36 events. Since 2020, DDA has been involved in 12 online or hybrid networking and collaboration activities.

Table 10. Number of networking and collaboration activities, including format and participants, 2018-2021

Year	Networking and collaboration activities	Format (onsite vs. online (%))	Number of participants
2018	6	100 vs. 0	314
2019	13	100 vs. 0	430
2020	16	37.5 vs. 62.5	375
2021	1	0 vs. 100	16
Total	**36**	**66.6 vs 33.4**	**1,135**

The activities were organised in collaboration with researchers affiliated to institutions across sectors and disciplines, and 15 of the activities were organised in collaboration with researchers and institutions outside Denmark.

Tables 11-13 show an overview of participants' educational, institutional, geographical (national/international) and disciplinary background.

Early-career researchers accounted for around 60% of all participants (*Table 11*).

Table 11. Overview of participants' educational and geographical (national/international) background 2018-2021

Postdocs (%)	PhD students (%)	Professors, associate professors, assistant professors, etc. (%)	Participants from abroad (%)
20.3	39.1	40.6	21.3

In general, the activities attracted participants from across universities (49%), university hospitals (40%) and the life science industry (6%)(*Table 12*), and around 21% of the participants were from abroad (*Table 11*).

Table 12. Overview of participants' institutional/sectorial characteristics 2018-2021

Hospitals (%)	University (%)	Life science industry (%)	Other sectors (%)
40.5	49.3	6.1	4.1

Further, participants were drawn from research disciplines ranging from basic science (42%) and clinical science (32%) to translational science (10%), epidemiology (7%), qualitative (2.8%) and technology and engineering research (4.7%) (*Table 13*).

Table 13. Overview of organisers' and participants' disciplinary (according to research discipline) characteristics 2018-2021

Basic science	Clinical science	Translational science	Epidemiology	Qualitative	Technology/ engineering
42.8	32.1	10.4	7.2	2.8	4.7

Table 14 shows the average participant satisfaction with the networking opportunities and with the Executive Management Team's performance regarding the organisation and communication of each activity from 2018 to 2021.

In summary, almost 84% were satisfied to either a very great (5) or a large (4) extent (on a 5-point scale with 5 as highest score) with the opportunities for networking offered at the networking and collaboration activities, while 91% responded that they were satisfied to either a very great (5) or a large (4) extent with the performance of the Executive Management Team. An example of successful outcome of the networking and collaboration activities is presented in *Appendix 13*.

Table 14. Overview of participants' satisfaction with the networking opportunities and the Executive Management Team's performance of the DDA networking and collaboration activities 2018-2021

Satisfied to either a very great (5) or a large (4) extent (on a five-point scale with 5 as highest score) with the networking opportunities (%)	Satisfied to either a very great (5) or a large (4) extent (on a five-point scale with 5 as highest score) with the performance of the Executive Management Team (%)
83.9	91.0

In addition, former and current DDA-funded PhD students and postdocs responded to a written survey about their outcome of the DDA networking and collaboration activities in terms of expansion of their network, finding new collaborators and enhanced contact or awareness of researchers across sectors and borders. The results are presented in *Appendix 12c* (*Tables A-C*). In summary, 80% of respondents reported that they had expanded their network at the DDA activities; 50% responded that they had found new collaborators at the DDA activities; and, in general, the PhD students and postdocs experienced enhanced contact with researchers across sectors in Denmark (52%) and from abroad (50%).

Also, almost 92% of former and current DDA-funded visiting professors, who responded to a written survey, reported that they had found new collaborators as a result of their visiting professorship (*Appendix 12d, Table A*), and 58% reported that they had had early-career researchers from Denmark on a research stay at their home institution – or planned to have (*Appendix 12d, Table B*).

Finally, data from Researchfish® (*Appendix 14*), where DDA-funded researchers report data on their annual activities, including collaborations, showed over 150 unique collaborations established since 2018. The collaborations take place within and across sectors, with the majority within academia (universities) (47%), but a high percentage of collaborations with hospitals (27%) and the private sector (17%) is also observed.

7.3 Performance in relation to success criteria

The success criteria for the networking and collaboration activities and overall performance in relation to these are presented in *Chapter 2* (*Table 2*) and reflected upon in details below and in *Chapters 8-11*.

Overall, DDA has delivered on the strategy and half of the success criteria described in the grant application: organising at least 6 workshops or other networking activities per year in collaboration with national and international research institutions from academia, hospitals and the life science industry, and at least 2 networking and collaboration activities per year across disciplines, i.e. with incorporation of elements of basic, translational, clinical and interdisciplinary research. Further, DDA reached its success criteria regarding the increase in DDA membership and subscribers to DDA social media (*see Chapter 10*).

One success criterion has not been achieved. DDA cannot document that an increasing number of PhD students and postdocs from abroad have spent time in Danish research institutions as a consequence of the DDA networking activities, as this has not been measured. Moreover, to achieve this success criterion, several factors need to come into play in addition to facilitating to networking and collaboration through the DDA networking activities, i.e. to spend time in Danish research institutions requires more than a collaborative partner, it also requires funding for the research project and salary for carrying it out. Thus, it is difficult to prove causation.

Three success criteria have revealed to be unmeasurable and impossible to evaluate.

First, due to the relatively short time of enrolment/ employment (13 months on average) of DDA-funded PhD students and postdocs and due to travel restrictions entailed by the COVID-19 pandemic, it is not yet possible to fully evaluate the success criterion stating that 85% of DDA-funded PhD students and postdocs stay abroad for at least three months or have spent time within life-science industry. However, as internationalisation is a key strategic area and has a significant positive impact on the evaluation of the applicants for DDA PhD scholarships and postdoc fellowships during the review process (see *Chapter 8*), it must be expected that at least 85% of DDA-funded PhD students and postdocs will stay abroad for at least three months during their two- or three-year research period. This will be uncovered in the years to come.

Second and third, it is not possible to evaluate whether 85% of DDA-funded PhD students and postdocs have joint publications and/or funded applications with researchers abroad or within life-science industry, or that 25% of DDA-funded PhD students and postdocs have publications and applications that are interdisciplinary. This is due to the fact that only a small number of DDA-funded researchers have published publications. However, preliminary data on publications show evidence of collaborations with international researchers (63%) and academic-corporate (45%) and academic-university hospital (20%) collaborations. Accomplishments and further reflections on these success criteria are presented in *Chapter 9*.

Overall, DDA has succeeded in strengthening its position as a national hub unifying academia, hospitals and the life science industry within diabetes through its networking and collaboration activities.

8. Recruitment and grant activities

8.1 strategy

DDA has set up a transparent and well-governed recruitment and grant process, which is recognised and accepted by national and international research institutions.

The strategy for the recruitment and grant activities included open biannual calls from 2018 to 2020. All calls were posted through the DDA´s communication channels and national and international job portals, including the Danish universities, and contained links to the standardised evaluation criteria forms.

For the co-funding grants (all PhD scholarships (1/3 and 2/3) and 1/3-financed postdoc fellowships), the allocation was on the premise that the remaining funding (2/3 or 1/3) was assured. The premise for all grants was that the host institution (or the private company for the industrial grants) undertook to cover operating costs for the project or that the candidate secured this through other funding schemes or other external partners.

The Committee for Talent Development performed the evaluation of the grant applications, and a close and strong collaboration between DDA and members of the Committee for Talent Development is the backbone of the grant and recruitment programme. This included the efforts to match the submitted applications with appropriate reviewers from the Committee for Talent Development and secure rigorous, in-depth, high-quality scientifically independent peer-review assessment of all applications by three international individual reviewers and a quality check of the peer-review evaluations by the two chairs of the Committee for Talent Development.

The evaluation criteria focused on assessment of the project, the applicant, the research environment and internationalisation. Further, the applicants were asked to explain specifically how their projects fitted the strategic criteria set in relation to the three major strategic areas of DDA: 1) internationalisation; 2) interdisciplinarity; and 3) enhanced collaboration across sectors.

On the basis of recommended lists forwarded by the chairs, the BoD decided the grant allocations. DDA notified applicants by award or rejection letters including the peer reviewers' comments on the application. Further, DDA released a public announcement of grant allocations through DDA's communication channels, national newspapers and emails to the communications departments at Danish universities and university hospitals.

DDA's ambition is that, through a combination of participating in DDA's educational and networking activities and carrying out their research projects, DDA-funded PhD students and postdocs will obtain national and international recognition for their research (e.g. publications in high-impact journals and awards), will make an impact on society and will be attractive to future employers across sectors.

8.2 Accomplishments

Milestones of the recruitment and grant activities are presented in *Appendix 15a*.

From August 2018 to 31 March 2021, DDA held 6 open calls for funding of PhD scholarships, postdoc fellowships and visiting professorships. In total, DDA awarded 13 million EUR to 92 national and international applicants for PhD scholarships, postdoc fellowships and visiting professorships.

8.2.1 PhD scholarships

Tables A and *B* in *Appendix 15b* give an overview of the granted PhD scholarships (2018-2020), including grant year, grant type, names of awardees, academic title, project title, affiliation, gender and nationality. In total, DDA allocated 42 PhD scholarships: 37 2/3-financed PhD scholarships and 5 1/3-financed industry PhD scholarships, corresponding to 5.69 million EUR.

The overall funding ratio for allocation of PhD scholarship grants was 13% and was comparable between gender and educational background (*Table 15*, page 24). Further, 20% of awardees had an international background and the overall mean evaluation score for the awardees was 4.6 on a scale from 1 to 5 with 5 as highest score (*Table 15*, page 24).

Table 15. Overall funding ratios of DDA PhD scholarships 2018-2020, including gender, educational background, nationality and mean evaluation score of awardees

Funding ratio (%)	Funding ratio (%) Male	Funding ratio (%) Female	Funding ratio (MD) (%)	Funding ratio (MSc) (%)	International background (%)	Mean evaluation score (1-5 with 5 as highest score)
13.1	12.3	14.5	11.6	13.6	20.6	4.6

The PhD scholarships were awarded to students to be enrolled at universities across Denmark with the majority at the University of Copenhagen, Faculty of Health and Medical Sciences (59%) (*Table 16*).

Table 16. Allocation of DDA PhD scholarships 2018-2020 according to enrolment institution

University of Copenhagen (Health) (%)	University of Copenhagen (Science and Engineering) (%)	University of Southern Denmark (Health) (%)	University of Southern Denmark (Science) (%)	Aarhus University (Health) (%)	Aalborg University (Health) (%)
59.0	4.3	9.1	6.7	18.9	2.0

Around 9% of the PhD scholarships were awarded as industrial grants in collaboration with pharma and biotech companies (*Table 17*).

Table 17. Allocation of DDA PhD scholarships 2018-2020 according to sector

Academia (%)	Industry (%)
91.7	8.7

DDA submitted two applications for additional funding for PhD scholarships through the Innovative Training Network programme under the Marie Skłodowska-Curie Actions (Horizon 2020). Both were unsuccessful (*see Chapter 11*).

8.2.2 Postdoc fellowships

Tables A and *B* in *Appendix 15c* give an overview of the granted postdoc fellowships (2018-2020), including grant year, grant type, names of awardees, academic title, project title, affiliation, gender and nationality. In total, DDA allocated 34 postdoc fellowships: 18 3-year, 15 2-year and 1 1/3-financed industrial postdoc fellowship, corresponding to 6.73 million EUR. Three of the 3-year postdoc grants were funded by AstraZeneca, and 4 of the 2-year postdoc grants were allocated as 4-year part-time postdoc positions/clinical positions.

The overall funding ratio for allocation of postdoc fellowships was 18% and was comparable between gender and educational background (*Table 18,* page 25*)*. Further, around 21% of awardees had an international background and the overall mean evaluation score for the awardees was 4.5 on a scale from 1 to 5 with 5 as highest score (*Table 18,* page 25).

Table 18. Overall funding ratios of DDA postdoc fellowships 2018-2020, including gender, educational background, nationality and mean evaluation score of awardees

Funding ratio (%)	Funding ratio (%) Male	Funding ratio (%) Female	Funding ratio (MD) (%)	Funding ratio (MSc) (%)	International background (%)	Mean evaluation score (1-5 with 5 as highest score)
18.2	17.2	18.8	21.1	17.9	20.6	4.5

The fellowships were awarded to postdocs to be employed at the Steno Diabetes Centers (21.8%), university hospitals (18.5%) and universities (59.7%) across Denmark. 12% of these postdoc fellowships were awarded as industrial grants in collaboration with pharma and biotech companies (*Table 19*).

Table 19. Allocation of DDA postdoc fellowships 2018-2020 according to institution of employment

University hospitals (%)	Universities (%)	Steno Diabetes Centres (%)	Life Science Industry
18.5	59.7	21.8	11.7%

8.2.3 Visiting professorships

Table A in *Appendix 15d* gives an overview of the granted visiting professorships (2018-2020), including grant year, names of awardees, academic title, project title, affiliation, host institution, gender and nationality. In total, DDA allocated 16 visiting professorships corresponding to 672,296 EUR.

The overall funding ratio for allocation of visiting professorships was 59.3 (decreased during 2018-2020 from 100% to 47%) (*Table 20*). The overall mean evaluation score for the awardees was 4.5 on a scale from 1 to 5 with 5 as highest score (*Table 20*).

Table 20. Overall funding ratios of DDA visiting professorships 2018-2020 and overall mean evaluation score

Funding ratio (%)	Mean evaluation score (1-5 with 5 as highest score)
59.3	4.5

The majority of visiting professorship awardees were North Americans (31%) and Australians (31%) (*Table 21*) and the visiting professorships were awarded to researchers visiting Steno Diabetes Centers (50%), university hospitals (21%) and universities (29%) across Denmark (*Table 22*, page 26).

Table 21. Country of employment of DDA visiting professors 2018-2020

	USA	Canada	Australia	United Kingdom	Belgium	Austria
Visitiprofessorships (numbers)	2	3	5	4	1	1
Visitingprofessorships (%)	12.5	18.8	31.3	25.0	6.3	6.3

Table 22. Host institution in Denmark of DDA visiting professorships 2018-2020

Steno Diabetes Centres (%)	Universities (%)	University hospitals (%)
50	29.2	20.8

8.3 Performance in relation to success criteria

The success criteria for recruitment and grant activities and overall performance in relation to these are presented in *Chapter 2* (*Table 3*) and reflected upon in details below and in *Chapters 9* and *11*. Examples of the performance and outcome of the grant and recruitment activities can be read in *Appendices 16* and *17,* including case stories by two DDA-funded postdocs.

Overall, DDA has delivered on the strategy and on two of the success criteria described in the grant application: DDA-funded researchers publishing in high-impact journals and DDA-funded PhD students and postdocs securing external funding. Reflections on these success criteria are included in *Chapters 9* and *11*. On the contrary, DDA did not achieve four of the success criteria, and two success criteria were unmeasurable.

First, DDA did not meet the success criterion stating that 1/3 of PhD students and 1/3 of postdocs are recruited from abroad (20% were recruited from abroad). An obvious reason for the lack of international recruitment is that only few international candidates applied for the grants. This may be due to the lack of knowledge of DDA funding even though the DDA funding opportunities have been well advertised, both in Denmark and internationally. Another reason, at least for the PhD scholarships, may be related to the model of only providing 2/3 financing of the PhD scholarship. It is often challenging for principal investigators to find the extra year of funding to offer a three-year PhD scholarship and this may deter some principal investigators from recruiting candidates from abroad. Still, the 20% of the current awardees with an international background reflects the fact that DDA supports and retains highly qualified international researchers in Denmark and that the DDA grant and recruitment programme for PhD students and postdocs - despite the requirement for co-funding for the PhD scholarships - is also attractive to early-career researchers from abroad.

Second, DDA did not meet the success criterion of recruiting 15-20% industrial PhD scholarships and postdoc fellowships (8-12% were industrial grants). A reason for this can be related to the two-step application model that DDA used for the first application rounds. This model only allowed applications from candidates, who had already received funding from the Innovation Fund Denmark. As a consequence, DDA received relatively few applications for industrial PhD scholarships and postdoc fellowships. However, even though this process was changed in 2020 meaning that applicants applied directly to DDA, the number of qualified applicants for these grants was still relatively low, and in addition to this, three applicants, who were offered an industrial PhD or postdoc grant, declined the offer due to other opportunities. Another explanation for the lack of success of this programme could be that DDA only funds 1/3 of the grant, whereas the remaining 2/3 funding must be guaranteed by the applicant's principal investigator.

Third and fourth, DDA was unsuccessful in recruiting PhD students and postdocs through the EU's Horizon 2020 framework programme (Co-funding of regional, national and international programmes (COFUND) and the Innovative Training Networks programme). First of all, DDA did not fulfil the criteria for applying for the COFUND programme as the current DDA funding period from NNF would terminate two years before the termination of a potential grant from COFUND. This would require another institution to take over the lead and administration of the EU grant during the last two years, which none of the involved partners were interested in. Secondly, the competition for funding through the Innovative Training Network programme under the Marie Skłodowska-Curie Actions (Horizon 2020) was high, and the two applications submitted to the programme did not meet the cut-off score for funding, even though they received high scores. Also, see *Chapter 11*.

The average enrolment time at the universities for the 42 funded PhD students is 13.5 months (range 2-27), and average employment time for the 34 postdocs is 13 months (range 1-29). It is therefore difficult to measure the outcome of the recruitment and grant activities in relation

to the success criteria on the attractiveness of DDA-funded PhD students and postdocs and further employment and the time to completion of PhD students. In addition, it is difficult to obtain a full picture of the success criteria in relation to publications and further funding (reflected upon in *Chapters 9* and *11*). These data will first be available in a couple of years. Further, the COVID-19 pandemic has caused a delay in the DDA-funded PhD students and postdocs projects. The full picture of this is not clear, but DDA has retained some funds to support researchers whose projects have been delayed due to COVID-19. In particular, the visiting professorship programme has been affected by COVID-19 owing to travel restrictions that prevented the visiting professors appointed in 2018-2020 from coming to Denmark in 2020 and 2021.

Overall, DDA succeeded in recruiting outstanding national and international PhD students, postdocs and visiting professors. The quality is exemplified by the high evaluation scores given by the international peer reviewers in the Committee for Talent Development (mean score 4.5 on a scale of 1-5 with 5 as highest score) and also by the fact that around 57% of publications are in top-10% most cited journals, which exceeds the listed success criteria of 10% in the grant application significantly, and that the funded researchers reported additional funding corresponding to a total value of DKK 14.8 million (EUR 2.0 million).

9. Scientific output

9.1 Bibliometric approach

Based on publications reported by DDA-funded researchers and captured in Researchfish®, the University Library of Southern Denmark performed a bibliometric analysis.

The library used Elsevier Scopus Data, Elsevier Scival analysis tools, Digital Science, Dimensions Data, Digital Science Altmetrics Data and Researchfish® as bibliometric/almetric databases.

The performance metrics described are based on the work of DDA-funded PhD students and postdocs, only. For benchmarking, we used publication data from former DDA-funded PhD students and postdocs (in total 155 from 2012 to 2017) and awardees of the European Foundation for the Study of Diabetes (EFSD)/Lilly Young Investigators 2018-2020.

9.2 Accomplishments

A list of publications including title, authors (DDA-funded researchers marked with bold), year, journal, impact factor, publication type, citations, field-weighted impact citation impact, institutions and country is presented in *Appendix 18* (*Table A*).

Table 24. Main performance metrics of DDA-funded researchers' publications 2013-2020 and benchmarking with EFSD/Lilly Young Investigators Awardees 2018-2020

	Scholarly output (no)	Publications in top-10% Journal Percentiles by Scimago Journal Ranking (%)	Output in top-10% Citation Percentiles (%)	Field-Weighted Citation Impact	International Collaboration (%)	Academic-Corporate Collaboration (%)	Academic-University Hospital Collaboration (%)
DDA-funded researchers' publications reported in Researchfish 2018-2020	59	57.6	36.7	1.43	63.3	45.0	20.0
DDA-funded PhD students and postdocs 2013-2019	1802	52.00	26.00	1.50	46.00	29.00	30
EFSD/Lilly Young Investigators Awardees 2018-2020	182	58.90	36.30	2.74	59.30	18.10	NA

In summary, DDA-funded researchers reported 69 publications in Researchfish® attributed to their DDA grant (*Appendix 14*). Of these, 10 publications did not appropriately acknowledge the support of NNF and was excluded from the bibliometric analysis.

DDA-funded PhD students and postdocs had first authorship in 29 (49%). Eight (13.5%) of the publications involved a DDA visiting professor. Twelve of the publications were reviews, whereas the remaining 47 were original peer-reviewed articles (*Appendix 18, Table B*). The publications received around 300 citations, corresponding to an average of 5 citations and a field-weighted citation impact of 1.43 (1 is standard). (*Table 24*, page 27).

The main performance metrics (outputs in top percentage percentiles; percentage in top journal percentiles; percentage of international collaboration; and percentage academic-corporate collaboration) are presented in *Table 24 (*page 27).

In summary, around 37% of the publications were in top-10% most cited worldwide and almost 57% of the publications were in the top-10% most cited journals (as defined by the Scimago Journal Ranking). Further, around 63% were published in collaboration with researchers affiliated to international research institutions, 45% were published as academic-corporate collaboration, and 20% were published as academic-university hospital collaboration.

Examples of the scientific output of two DDA-funded researchers are presented in *Appendices 19* and *20*.

9.3 Benchmarking

The performance by current DDA-funded PhD students and postdocs is comparable to the performance of former DDA-funded PhD students and postdocs (2012-2017), who published 1,802 publications from receiving their DDA funding and 5 years ahead. Of these, 26% were in top-10% most cited worldwide, 52% were in the top-10% most-cited journals, 46% were published in collaboration with international researchers and 29% were published in an academic-corporate collaboration (*Table 24*).

Further, benchmarking with the groups of EFSD/Lilly Young Investigator awardees (2018-2020) showed a comparable percentage of publications in top-10% cited journals and comparable percentage of publications with international collaboration, but a significantly higher percentage of academic-corporate collaboration (45% versus 18.1%) (*Table 24*).

9.4 Performance in relation to success criteria

The success criteria for the scientific output and overall performance in relation to these are presented in Chapter 2 (*Tables 2* and *3*) and reflected upon in details below.

Importantly, the bibliometric analysis must be considered with care, and the results may change in the years to come for the following three reasons: the number of DDA awardees, the average enrolment or employment time for current DDA-funded PhD students and postdocs is 13 months, and the number of publications analysed is small. Further, a limitation of the bibliometric analysis is that the number of years since the articles were published is low and therefore makes it difficult to analyse the real research impact in terms of citations.

Retrospectively, the success criteria that 10% of the publications by DDA-funded researchers should be in the top-10% most cited journals was too unambitious. The benchmarking analysis revealed that over 50% of former DDA-funded researchers' publications were in the top-10% most cited journals. Thus, it must also be expected that around 50-60% of current DDA-funded researchers' publications will be in the top-10% most cited journals.

Due to the relatively short period of enrolment or employment time for current DDA-funded PhD students and postdocs, it is not yet possible to fully evaluate the success criteria stating that 85% of DDA-funded PhD students and postdoc should have joint publications and/or funded applications with researchers abroad or within life-science industry and that 25% of DDA-funded PhD students and postdoc should have publications and applications that are interdisciplinary. Data from the 59 publications included in the bibliometric analysis, however, indicate a strong collaboration across sectors, with almost 45% of the publications involving a collaboration between universities/university hospitals and the life science industry; 63% of the publications were published with researchers from international research institutions; and 20% of the publications were a collaboration between researchers from universities and hospitals.

In conclusion, preliminary data from the bibliometric analysis, including 59 publications (predominantly peer-reviewed) by current DDA-funded researchers, reveal that 37% of the publications were in top-10% most cited worldwide, almost 57% were in the top-10% most-cited journals. The performance was comparable to the performance of former DDA-funded PhD students and on some parameters within the group of EFSD/Lilly Young Investigator awardees.

10. Outreach and communications

10.1 Objectives and strategy

Throughout 2018-2021, DDA has strengthened its outreach and communication strategy and activities with the overall objective to create measurable visibility around DDA's educational, networking and grant activities among early-career and senior researchers at national and international research institutions.

In line with DDA's communications strategy (developed in 2018, revised in 2020) (https://www.danishdiabetesacademy.dk/about/code-conduct), the focus has been to work towards functioning as a national hub within diabetes research through digital outreach and communications via 6 primary channels: the DDA website, newsletter, Twitter, LinkedIn, Instagram and press by posting events and stories based on DDA activities and DDA-funded researchers' publications and research. In 2020, to strengthen the DDA Alumni Network, DDA also launched an Alumni Network LinkedIn profile and a newsletter for members of the DDA Alumni Network. Further, DDA has acted as a national hub by posting events and activities organised by national research institutions, for example calls for grants and educational or networking activities. DDA also uses the educational and networking activities to attract attention to the DDA activities.

Finally, DDA encourages DDA-funded researchers to disseminate their research through social media, at scientific conferences and to the public, among others by offering training to enhance early-career researchers' presentation skills (*see Chapter 6*) and by providing early-career researchers with a platform for disseminating their research (e.g. through the DDA website and DDA webinars) (*see Chapter 6*).

10.2 Accomplishments

Milestones of communication and outreach activities are presented in *Appendix 21*.

From January 2018 to 31 March 2021, DDA has on a weekly basis disseminated information on educational, networking and grant activities through the DDA website, Twitter (created in 2018), LinkedIn and Instagram (created in 2019). DDA closed its Facebook group in 2020, as an audit of the membership list revealed only a few members in the DDA target group, and the effort involved in keeping the site regularly updated was too great.

An overview of the number of followers on Twitter, LinkedIn and Instagram is presented in Table 25. In summary, the number of followers increased from January 2018 to March 31 2021 by almost 200% on LinkedIn (1,050 to 2,857) and by almost 400% on Twitter (218-1,054). The DDA Instagram profile is growing and reached around 300 followers per 31 March 2021.

Table 25. Number of followers of DDA social media 2018-2021

	Followers (no) as per 31 December 2018	Followers (no) as per 31 December 2019	Followers (no) as per 31 December 2020	Followers (no) as per 31 March 2021
Twitter	218	589	912	1054
LinkedIn	1050	1640	2511	2857
Instagram (created in 2020)	N/A	115	216	288

The DDA monthly newsletter is received by around 3,008 subscribers (DDA members) as per 31 March 2021, an increase of almost 150% as compared to 2018 (1,175 to 3,008). Total page views at the DDA website has been stable with around 60,000 since 2018. Further, the DDA media coverage in newspapers, electronic periodicals and Danish university and university hospital websites varied between 70-93 times throughout 2018-2020. Data on the DDA website, newsletter and media coverage are presented in *Table 26* (page 30).

Table 26. Data on the DDA website, newsletter and media coverage 2018-2021

	As per 31 December 2018 (no)	As per 31 December 2019 (no)	As per 31 December 2020 (no)	As per 31 March 2021 (no)
DDA newsletter (subscribers)	1775	2374	2815	3008
DDA website (page views)	60,384	58,315	60,486	17,090
Media coverage	60	93	76	N/A

Finally, DDA and DDA-funded researchers reported over 220 dissemination activities from 2018 to 2020 (*see Appendix 14*) with the majority of these as national and international press releases, press conferences and response to media inquiries, but also participation in national and international workshops and talks at national and international conferences were reported.

10.3 Performance in relation to success criteria

The success criteria for the outreach and communications activities and overall performance in relation to these are presented in *Chapter 2* (*Table 2*).

DDA succeeded in achieving the success criteria that were described in the grant application: increase by 10% annually of the number of national and international PhD students and postdocs who apply for DDA membership and increase by 10% annually of the number of national and international PhD students and postdocs subscribing to DDA social media activity (DDA Facebook, DDA LinkedIn and DDA twitter, respectively).

In fact, the number of followers on the DDA social media increased by almost 50% per year, and the number of people who receive the DDA newsletter (DDA members) increased by more than 150% over three years. These data indicate that DDA has increased its visibility on social media.

Recently, DDA has focused on providing early-career researchers with the opportunity to disseminate their research or recently published peer-reviewed articles through webinars on the DDA channels and through the DDA website and social media. This – along with the training offered for enhancing the early-career researchers' scientific and public presentation skills - has been a success and has led to high attention on social media (see case story in *Appendix 22*), and for some of the early-career researchers it has even led to new collaboration opportunities (see case story in *Appendix 23*).

Overall, DDA has been successful in creating a strong communication profile, providing a platform for both DDA and the entire diabetes research community to communicate and highlight research and activities within the field.

11. Financial overview

11.1 Financial overview

The results for DDA funding from NNF for the years 2018-2021 (as per 31 March 2021) compared with the budget are presented in *Appendix 24* (*Table A*). The overall funding is DKK 156,000,000 (EUR 20,978,172).

Overall, DDA has complied with the budget, as stated in the grant agreement between DDA and NNF.

11.2 External funding

11.2.1 Strategy and accomplishments

The strategy for securing external funding included a three–pronged approach: 1) employment of a project manager to explore opportunities for external funding; 2) organisation of workshops and networking meetings with national and international partners from academia, university hospitals and the life science industry to facilitate collaborations and prepare applications to the EU Horizon 2020 programme; and 3) setting up grant schemes for PhD scholarships and postdoctoral fellowships requiring co-funding from external partners.

DDA succeeded in obtaining direct external funding of DKK 4.7 million (EUR 0.6 million) from the private company AstraZeneca for three co-financed three-year postdoc fellowships. Further direct external funding was not obtained. *Tables B* and *C* in *Appendix 24* show the amount of direct external funding and the external funding in % of the grant from NNF.

By employment of the project manager, DDA was able to submit a total of four applications to the EU Horizon 2020 programmes COST Actions, Innovative Training Networks and Erasmus+ in collaboration with external partners. In that connection, DDA provided administrative and coordinative support to the external partners and organised a number of workshops and networking meetings to facilitate and set up collaborations for the preparation of the applications. One application is still under review (re-submission of an earlier application), and three applications received high scores, but were rejected.

In addition to seeking opportunities for external funding, DDA has set up grant schemes for PhD scholarships and postdoc fellowships with the prerequisite of co-funding from external partners. For example, the 37 2/3-financed PhD scholarships provided by DDA required that the PhD students were able to secure the remaining 1/3 financing from external funds, e.g. universities, university hospitals or private foundations. Further, DDA allocated 1/3-financed grants for PhD scholarships (5) and postdoc fellowships (1) requiring co-funding from the life science industry and the Innovation Fund Denmark. As DDA has only given out grants covering the salary of PhD students and postdocs, the principal supervisor of the PhD students and the principal investigator of the postdocs also agreed to cover operating expenses for the projects.

Finally, the individual DDA-funded researchers have succeeded in obtaining external funding corresponding to a value of DKK 14.8 million (EUR 2.0 million) in total for their projects.

11.2.2 Performance in relation to success criteria

The success criteria for external funding and overall performance in relation to these are presented in *Chapter 2* (*Table 3*) and reflected upon in details below.

The success criteria that DDA-funded researchers obtain further funding for their projects has been met with DDA-funded researchers reporting to have received external funding to a total value of DKK 14.8 million (EUR 2.0 million).

On the contrary, DDA was unsuccessful in relation to taking part in at least two annual applications to the EU's Horizon 2020 framework programme focusing on Innovative Training Networks and recruitment of PhD students through this programme. First of all, the workload of applying for the Innovative Training Networks is relatively high and has hindered the submission of applications twice annually due to a lack of human resources. Secondly, even though the applications submitted received high scores, the competition for these grants is very high. However, a positive by-product of the application process was a close collaboration between DDA and researchers and key opinion leaders from national and international research institutions.

Further, DDA's ambition to obtain further funding for PhD scholarships and postdoc fellowships through the COFUND programme (Co-funding of regional, national and international programmes) under the Marie Skłodowska-Curie Actions (EU Horizon 2020) could not be fulfilled as DDA did not meet the application requirements (*Chapter 8*).

In conclusion, the strategy for actively pursuing external funding beyond NNF funding has not resulted in significant co-funding, but the strategy of facilitating strategic collaborations with a view to prepare applications for external funding has proved to be of value. Yet, there is still great potential in further pursuing external funding opportunities by DDA together with external partners.

12. Impact

The healthcare system is rapidly evolving to address an aging population, the growing importance of chronic diseases, an information revolution and a new healthcare consumer. A continued need therefore exists for developing scientific and clinical know-how, training, policies and practices to optimise the prevention and treatment of diabetes and related diseases. This requires that the next generation of employees in the healthcare system and in academia are highly educated and trained. Further, the new strategy for life science in Denmark emphasises that to maintain Denmark's position in the absolute world elite of research and development within the biotech and life science industry, highly qualified, specialised and innovative employees are needed. Thus, society - across universities, hospitals and the life science industry - needs constant access to a highly qualified workforce. These are some of the gaps that DDA needs to address to have impact on the research community and on society.

DDA has contributed directly to training and educating the next generation of researchers and employees and added to the individual PhD student's and postdoc' educational portfolio through the 65 educational and talent development activities.

The DDA educational and talent development programme is an add-on to the Danish universities' educational programmes for PhD students. All DDA PhD courses are credited with ECTS points and accepted by the Danish universities as a part of the PhD students' PhD programme. To ensure relevance and that these courses are embedded in the PhD programmes of the Danish universities and offered as part of their PhD curriculum for PhD students, DDA established the PhD Research Training Network including the heads of the PhD schools of the Danish universities.

The DDA educational and talent development activities for postdocs fill in an existing gap in the research community. Around 25% of all participants of the DDA educational and talent development programme are postdocs, which reflects the obvious need for additional scientific training for this group of early-career researchers.

On an individual researcher level, former and current DDA-funded PhD students and postdocs responded to a written survey about the impact on the competences gained and further developed through participation in DDA activities. In summary, around 90% of the PhD students and postdocs responded that they had to some extent, to a large extent, or a very large extent gained and developed scientific, transferrable and career-development competences, and that they had to some extent, to a large extent, or a very large extent used or expected to use the competences gained or further developed through participation in DDA activities in their future careers.

Further, the career status of the PhD students and postdocs from the first grant period confirms that there is a demand from society for highly skilled researchers. As shown in *Table 26* below, 36.6 % are now working in a university hospital in Denmark or abroad, 31.3% are employed at a university in Denmark or abroad, and 23.7% are working within the life science industry in Denmark or abroad.

The two benchmarking cases included in the external SWOT analysis are great examples of lean networking organisations that have great impact on the collaboration between research, education and clinical practice across sectors and partners. These organisations could serve as inspiration for DDA in the future efforts to make a larger impact on the research community and on society further harnessing its role as a national hub within diabetes.

Table 26. Career status of PhD students and postdocs having received a grant from DDA 2012-2017

Employed at a Danish or international university (%)	Employed at at Danish or international hospital (%)	Employed in the life science industry (%)	Other (%)	Missing data (%)
36.6	31.3	23.7	3.8	4.6

Even though it is not comparable to the results of the two benchmarking organisations, data described in the self-evaluation report qualify the statement in the SWOT analysis that DDA has succeeded in creating a strong national network within the diabetes sector, unifying academia, hospitals the life science industry. This highlights the potential impact of DDA to maintain Denmark's position as a hotspot for pioneering diabetes research and development.

First, data from Researchfish® show over 150 unique collaborations established since 2018 either by DDA or by DDA-funded PhD students and postdocs and visiting professors. These collaborations involved researchers across sectors with the majority with academia (universities) (47%), but the data also showed a high percentage of collaborations with hospitals (27%) and the private sector (17%) (*Appendix 14*).

Second, former and current DDA-funded PhD students and postdocs responded to a survey on their outcome of the DDA networking and collaboration activities in terms of expansion of their network, finding new collaborators and enhanced contact or awareness of researchers across sectors and borders. In this survey, 80% of respondents reported that they had expanded their network at the DDA activities; 50% reported that they had found new collaborators at the DDA activities; and, in general, the PhD students and postdocs experienced enhanced contact with researchers across sectors in Denmark (52%) and from abroad (50%). Also, almost 92% of former and current DDA-funded visiting professors, who responded to a written survey, reported that they had found new collaborators as a result of their visiting professorship (*Appendix 12d, Table A*), and 58% reported that they had had early-career researchers from Denmark on a research stay at their home institution – or planned to have (*Appendix 12d, Table B*).

Third, the bibliometric analysis reveals a strong collaboration across sectors and borders with 63% of the publications published in collaboration with international researchers, 45% as academic-corporate collaborations and 20% in collaborations between university hospitals and universities.

To meet the demand for highly skilled researchers, funding opportunities are also needed. Between 2018 and 2020, DDA awarded 92 national and international world-class applicants PhD scholarships, postdoc fellowships and visiting professorships, based on peer-review by international scientific experts. The world-class and high potential of these awardees are proved by the bibliometric analysis showing that 37% of the publications by DDA-funded PhD students and postdocs were in top-10% most cited worldwide and almost 57% were in the top-10% most-cited journals. Further, data from Researchfish® show that the DDA grant awardees have had impact on society through influences on policy, training of practitioners or researchers and citations in policy documents. Moreover, DDA-funded PhD students and postdocs and visiting professors reported over 220 dissemination activities, e.g. press releases, press conferences, talks or presentations, participation in expert panels. Bibliometric data from former DDA-funded researchers revealed that 26% of the articles published were in the top-10% most cited worldwide; 13 clinical trials were linked to DDA awardees; 24 patents were co-authored with DDA awardees; 5% of the publications were cited in patents; and that DDA publications have been mentioned over 30,000 in conventional and social media, policy, documents blogs, etc. Thus, even though the career direction of current DDA-funded PhD students and postdocs is still too early to predict, the recruitment of almost 100 researchers contains a great potential for impact on the research community and society.

The model of providing early-career researchers with an agile and dynamic platform for educational training and development, networking and collaboration activities and funding opportunities has shown its strength and relevance throughout 8 years, since the inception of DDA in 2012. This has also been observed by other research communities in Denmark and abroad. Very recent initiatives within the cardiovascular research community and the data science research community have resulted in applications and subsequent funding from NNF to establish two new academies: the Danish Cardiovascular Academy and the Danish Data Science Academy, which have similar objectives as DDA, namely to train and educate the next generation of researchers to conduct high-quality translational research and translate their discoveries into new and innovative treatments and solutions for the prevention and treatment of diseases. The establishment of these two new academies provides a unique opportunity to come together and draw on synergies within the Danish and international research landscape, across sectors and disciplines, to create research outputs greater than the sum of each individual partner – for the benefit of society and citizens.

In conclusion, DDA has contributed with a significant difference and impact to Danish diabetes research, not least by supporting, developing and enabling early-career researchers at PhD and postdoc level and thereby contributing to the flourishing diabetes research environment at national level.