Impact and Outcomes of Training Awards Completed 2015-2024

Postdoctoral Fellowship (PF)
Advanced Postdoctoral Fellowship (APF)
Career Development Award (CDA)
Transition Award (TA)
Early Career Patient-Oriented Diabetes Research Award (ECPODRA)

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Executive Summary

Award Cohort for Evaluation, and Response Rate

- The goal of this evaluation was to identify outcomes and impact of a cohort of 269 training awards that were funded by Breakthrough T1D and completed between January 1, 2015 and December 31, 2024.
- The 269 training award cohort targeted included 155 Postdoctoral Fellowships (PF), 48 Advanced Postdoctoral Fellowships (APF), 36 Career Development Awards (CDA), 22 Transition Awards (TA) and 8 Early Career Patient-Oriented Diabetes Research Awards (ECPODRA).
- Some awardees received/completed more than one of the 269 training awards consecutively during the time period under evaluation; as a result, 230 unique investigators were identified as the recipients of the 269 awards.
- A survey was developed, for the purpose of gathering outcomes and impact information from awardees. Questions focused on areas including awardees' current career status; publications, patents, clinical trials and other metrics that had emerged from the training award; follow on funding secured to continue and further research following the training award; and feedback on the career impact, if any, of the training award.
- Respondents who had received multiple training awards from the cohort were asked to include in the survey collective information covering outcomes from all awards.
- The survey response rate was 135 (~60%) of the target awardees, covering 162 (~60%) of the target award cohort.
- The 162 awards covered by survey responses included 80 PF, 35 APF, 26 CDA, 17 TA and 4 ECPODRA.
- Respondent data was analyzed and mapped.

Current Career and Engagement in Type 1 Diabetes Today

All Respondents

- Respondents are located in 17 countries around the world, with 60% in the USA.
- 19% of respondents are now in a different country than immediately following the training award.
- 76% of all respondents are in academic research and/or clinical practice, compared to 89% in their first job immediately after the training award.
- 16% of all respondents are in industry, compared to 9% in their first job immediately after the training award.
- 4% of all respondents are in non-bench/science administration careers, compared to zero in their first job immediately after the training award.
- 79% of all respondents are working in Type 1 and/or Type 2 diabetes.
- PF and APF recipients – those at the earliest training award career stages - are the most likely awardee group to have left academia, left diabetes and left the bench.

Researchers

- 100% of responding researchers are focused on diabetes.
- 98% of responding researchers are working in Type 1 & Type 2 diabetes.
- 54% of responding researchers are exclusively working in Type 1 diabetes.
- Responding researchers focused on diabetes are working in up to 7 areas. The most prominent are endocrinology/ metabolic disease and disease modifying/cell therapies.

Clinicians in Practice

- 69% of responding clinicians are focused on diabetes.
- 88% of responding clinicians who are focused on diabetes are working in Type 1 & Type 2 diabetes.
- 31% of responding clinicians who are focused on diabetes are working exclusively in Type 1 diabetes.
- For responding clinicians in diabetes, the most prominent practice areas are endocrinology/metabolic disease.

Follow-On Research Grant Funding Secured Since Training Award Ended

- 78% of respondents reported that since their training award, they have received follow-on research grants totaling over $327M.

- Collectively, respondents secured as much as $60M in follow-on funding per year.
- These funds secured are to pursue diabetes studies stemming from and following on from the training award through the awardee's career, as well as to support additional related studies e.g. applying diabetes immunological know-how to other disease areas.
- Follow-on funding comes primarily from the National Institutes of Health (13 different NIH institutes) which accounted for 44% of reported dollars.
- Additional sources included over 50 public charities & foundations (24% of reported dollars) and international government (17%); the remainder came from sources including pharma/biotech, private philanthropy, institutional programs, non-NIH federal sources and state funds.
- Among non-profit funders, Breakthrough T1D is the leading supporter of these follow-on grants.
- Looking across all training award types, per respondent:
    - PFs secured the largest number of follow-on grants, and provided the greatest return on investment: they secured 18.9x the amount of their training award in follow on funding.
    - ECPODRAs secured the most dollars overall (notably from NIH), with some individual grant amounts exceeding of over $10M.

Scientific Publications From Training Awards

- 463 publications in 174 scientific journals were reported as emerging from training awards.
- Journals most frequently published in were Diabetes, Diabetologia and Journal of Immunology.
- 87% of respondents have published from their training award; most have published between 1 and 3 papers.
- CDAs are the most productive in publishing, with an average index of 7.7 per respondent.
- PFs are the least productive in publishing, with an average index of 3.4 per respondent.

Clinical Trials Emerging From Training Awards

- 17 clinical trials resulted from training awards.
- Trials covered all phases, from observational to phase IV.
- Trial areas include drug and cell-based interventions for T1D; non-drug strategies for improved closed loop control; and T1D assessment approaches.
- The majority of clinical trials (10) are funded by research/academic institutions; 4 by industry; and 3 by Breakthrough T1D (2 of these in collaboration with other agencies).

The majority of clinical trials came from PFs (7) and ECPODRAs (6).

Patents and Commercialization of Inventions from Training Awards

- 35 patents were filed, published or issued from training awards.
- 6 inventions were licensed to industry including cell-generation and encapsulation technologies.
- CDAs were most productive in this area (4 published patent applications, 11 issued patents, 3 IP licensing events) followed by PFs (7 published patent applications, 5 issued patents, 2 IP licensing events, 1 abandoned filing).

Professional Research Collaborations of Awardees

- 57% of respondents have formed scientific collaborations with other researchers during/as a result of their training award, including many international collaborations and long-lasting partnerships.
    - CDAs were most likely to form collaborations (83%).
    - APFs, TAs and ECPODRAs also forming collaborations at high rates (67% - 75%).
    - PFs were far less likely to form collaborations (40%).
- 34% of respondents have generated research resources they are glad to share with the scientific community. These include mice, data sets, technologies, etc.
- 39% of respondents have trained "next-generation" diabetes fellows. Of those next-generation fellows who could be tracked, 84% are now in academia/clinical practice, and 14% in industry.

Scientific Community Service

- 60% of respondents serve as grant for one or more funding/scientific agencies. Most prominently, service is for Breakthrough T1D (36%) NIH (27%), and international government agencies (26%) followed by American Diabetes Association a variety of other non-profits and entities.
- 22% of respondents serve the more senior role of advisor for grant funding/scientific agencies, again most prominently Breakthrough T1D (50%).
- 50% remain engaged with Breakthrough T1D in non-grant/review roles such as fundraising and advocacy.
- 83% of respondents shared a variety of other leadership roles held in the professional diabetes community, including manuscript and abstract reviewers, editorial boards, and conference planning.
- 50% of respondents have engaged with Breakthrough T1D in non-grant-related activities since the training award ended. This includes giving lay science presentations; participating in a fundraising activity; or membership on a local or national Breakthrough T1D board.

What Have Been the Areas of Highest Career Impact of the Training Awards?

- Respondents provided 1-5 (high to low) scale measures of areas of potential impact the training award had on their career. Top 5 areas of impact (% of respondents voting "1") were:
  - 58%: building confidence and independence as a researcher.
  - 52%: focusing my career on diabetes.
  - 49%: developing my grant writing and budgeting skills.
  - 47%: making a groundbreaking or significant discovery.
  - 47%: getting a new position I wanted.
- Variations were seen in responses from different training award mechanisms.
- Breakthrough T1D training awards are seen as prestigious and largely preferred to other training awards, and are seen as filling a unique niche in the diabetes field.
- Some trainees noted that Breakthrough T1D had shaped and launched their career in diabetes.

Trainees' Key Recommendations for Training Award Programs

In written feedback, respondents expressed many trainees expressed immense gratitude for this training award funding. They also provided recommendations for improvement of the training award programs, including:

- Develop further "path to independence" funding for trainees such as post-CDA.
- Build upon the fellows meeting to facilitate more trainee meetups: regional, European, online, at ADA or other annual meetings. These meetings were viewed as an important opportunity for Breakthrough T1D to help their trainees connect; build collaborations and develop collaborative projects with other trainees; connect with senior mentors; receive career guidance on how to apply for grants and jobs; receive training on improving presentations; and other resources.
- Revisit training award benefits: provision of healthcare, paid maternity leave.
- Offer flexibility of award use in special cases such as during geographic moves, leaves of absence or other unique personal situations.
- Build in external mentorship and monitor/pay more attention on how/what trainee mentors are doing.
- Keep "alumni" trainees engaged in core BreakthroughT1D activities – advocacy, events, fundraising etc.

Conclusions

- The training award mechanisms are a successful program, impactful in training diabetes researchers and clinicians and helping shape careers in diabetes and to build collaborations.
- Training awards are regarded as prestigious, though improvements are suggested.
- Training awards are effective in yielding publications and inventions and in helping awardees secure subsequent funding and build a professional career.
- There are indications of persons leaving independent diabetes research and moving to industry or non-bench careers. This is particularly of note among PFs and APFs. In some cases, inability to find a job/compete in the field are cited.
- Along with additional indicators, it is noted that PFs and APFs, the earliest stages of training, might benefit from the provision of more resources and support to develop collaborations, career skills and mentor connections, thus creating a founding for a successful career in diabetes.

Scorecard: summarizes key numbers presented in this report and allows a comparison of award mechanisms.

Area	Outcome Statistic Reported By Respondents	PF	APF	CDA	TA	ECPODRA	Total: All Mechanisms
Survey Responses	response rate from PIs	51%	70%	75%	76%	50%	59%
	targeted awards covered	52%	73%	72%	77%	50%	60%
PI Demographics today	USA based	62%	42%	62%	56%	100%	81%
	outside USA	38%	58%	38%	44%	0	19%
	in industry	22%	16%	4%	6%	_	16%
	in academic research/clinical practice	72%	63%	92%	81%	100%	76%
	in scientific administration	6%	11%	4%	_	_	4%
	in government research	_	_	_	13%	_	2%
	jobseeking	_	10%	_	_	_	2%
Engagement in diabetes today	in diabetes research/clinical practice today	68%	84%	96%	94%	100%	79%
	outside academic research/clinical practice, but still in diabetes	30%	57%	100%	25%	_	44%
	YES training award helped keep in diabetes research	100%	100%	100%	100%	100%	100%
	YES the training award helped keep me in diabetes clinical practice	67%	50%	0%	100%	100%	69%
Follow-on funding...	...as index of Breakthrough T1D award	18.9x	5.6x	10.2x	14.3x	9.7x	11.9x
Publications	publications index per award	3.4	4.2	7.7	4	5	463
Clinical trials	Number of clinical trials	7	3	1	_	6	17
Patents	patents filed or issued	13	3	15	4	_	35
Commercialization	invention licensing to industry	2	_	3	1	_	6
Training next-generation diabetes fellows...	...who stayed in diabetes	36%	11%	67%	31%	100%	39%
Grant reviewer	... for research organization (s)	46%	42%	96%	93%	100%	60%
Scientific advisor ...	... for research organization(s)	11%	10%	33%	7%	75%	16%
Breakthrough T1D engagement...	...outside of grant apps/reviews	40%	68%	83%	75%	75%	57%
Rating 12 career areas: did the training award have a high impact on these areas?	professional confidence	47%	74%	71%	56%	100%	58%
	focus career on diabetes	47%	53%	63%	50%	75%	52%
	grant skills building	46%	58%	50%	44%	75%	49%
	significant discovery	40%	42%	67%	56%	50%	47%
	new position	39%	53%	58%	50%	100%	47%
	independent lab	32%	37%	83%	50%	100%	46%
	significant grants	31%	47%	58%	56%	75%	42%
	generating key initial data	28%	47%	67%	56%	50%	41%
	promotion or tenure	29%	37%	67%	31%	75%	39%
	testing a promising idea	35%	26%	46%	38%	75%	37%
	building collaborations	28%	26%	46%	25%	75%	32%
	getting my first NIH grant	17%	16%	38%	19%	25%	21%

1. Introduction & Evaluation Approach

Section Summary:
- Breakthrough T1D previously evaluated outcomes and impact of training awards completed 1974-2014

- These yielded positive indicators of training awards impact on encouraging longer-term pursuit of a career in T1D

- This 2025 evaluation looks at 269 training awards completed in 2015-2024

- A 60% response rate was reached from surveying the cohort of investigators who received these awards

- This report presents a summary of findings from the 2025 impact evaluation

Overview and Context: Breakthrough T1D is the world's largest funder of Type 1 diabetes (T1D) research, with 50 years of research supported to date covering 2 core objectives:

- Finding cures for T1D, and in the meantime, providing means for insulin independence by replacing insulin-producing cells in those with T1D; and
- Improving life for those with T1D, keeping them as healthy as possible until cures are found, by advancing new T1D resources, technologies, and therapies.

Training award research funding mechanisms are a cornerstone of the Breakthrough T1D grants portfolio. These aim to support and encourage early career scientists and clinician researchers to focus on T1D and remain in the field. Breakthrough T1D provides a framework of training awards that support investigators from early postdoctoral stage to the point of transition to an independent lab and career.

The training award mechanism path is illustrated in ***Fig.1*** and the individual mechanisms are described in ***Appendix I.*** Note that these are individual grant programs awarded through a competitive peer-reviewed process; there is no guarantee of funding in the next stage, once and award has been completed. However, a small number of investigators have over the years succeeded in securing consecutive training award types.

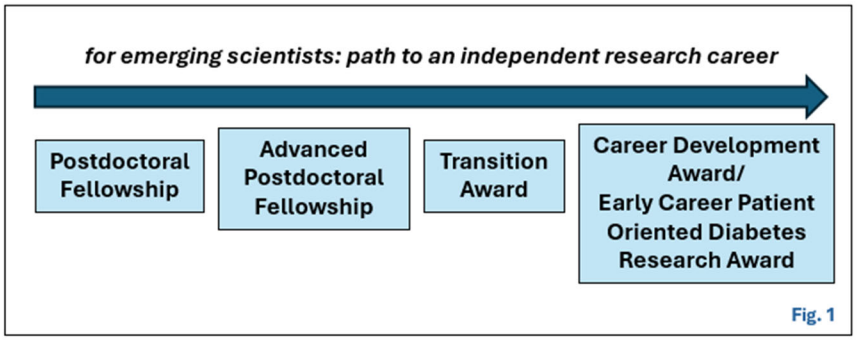
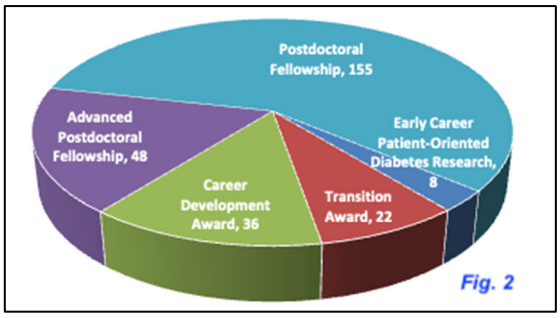


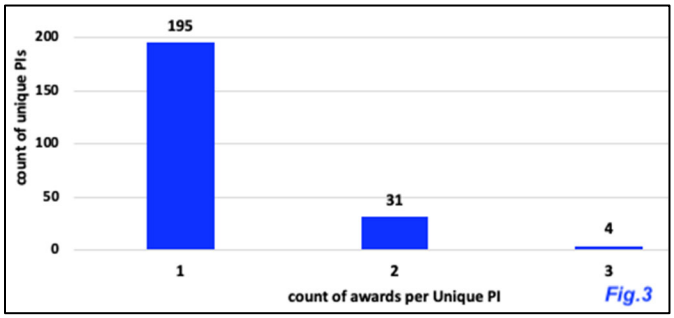
Fig. 1

In 2004, Breakthrough T1D conducted its first evaluation of completed training awards they had funded to that time: this encompassed 1,260 awards completed 1974-2000. A second evaluation in 2015 focused on 454 training awards completed 2004-2014. For both evaluations, training awardees completed a survey of questions addressing whether these training awards had been impactful on the career paths of emerging diabetes researchers. The results of both evaluations yielded outcomes including publications from training awards; follow-on research funding secured from other sources; professional roles held; and many other positive indicators that these training awards are helping keep researchers in T1D and therefore building a future professional diabetes field.

This 2025 impact evaluation targeted 269 training awards completed January 1, 2015 - December 31, 2024.

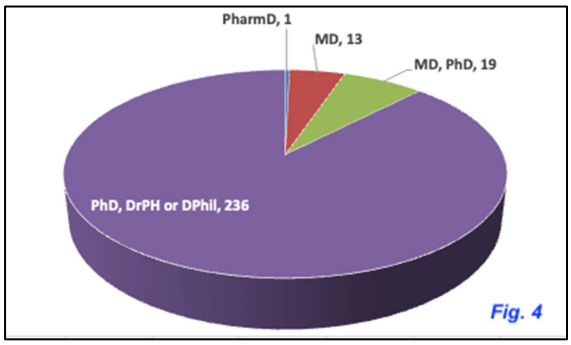
This evaluation cohort includes all 5 of the training award types offered by Breakthrough T1D. The number of each award type in the 2025 target cohort is shown in ***Fig.2.*** 35 awardees received either 2 or 3 of the training awards in this cohort ***(Fig.3).*** As a result, 230 unique PIs were identified and contacted for this evaluation. For the purposes of this evaluation, this group of 35 are identified (and, where received, responses are logged) based on their most recent award received, since this represents the most advanced stage of their career reached with Breakthrough T1D funding.

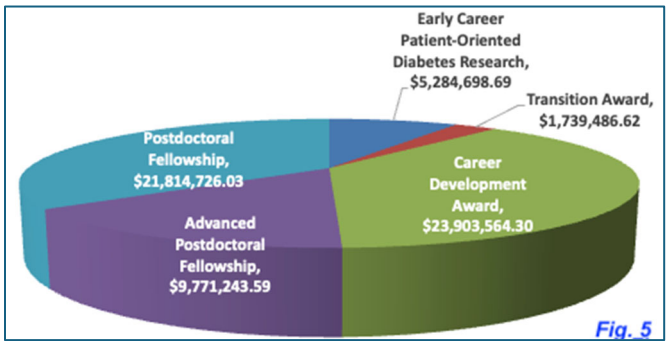




Educational Path of the 2025 Evaluation Cohort: At the time of the training award, the awardees spanned training paths of PhD/equivalent; MD; MD/PhD; and PharmD ***(Fig. 4).***

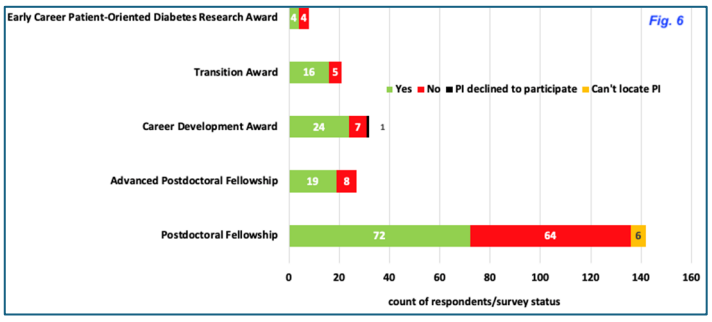
Funding Commitment to 2025 Evaluation Cohort: Breakthrough T1D committed an investment of $62,513,719 to the 269 training awards ***(Fig.5.)***

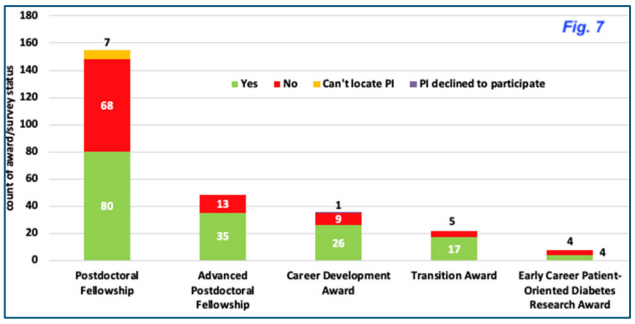




Award Recipient Survey: As for the prior two Breakthrough T1D training award evaluations, the core tool for data collection was a survey of training awardees. Survey questions are in ***Appendix II.***
Data for this evaluation was collected via Google Forms circulated in an email request. Email addresses on record at Breakthrough T1D for 224 of the 230 unique PIs were verified/updated via online search, outreach to former mentor, contacting current place of business, etc. For the remaining 6, a functional email could not be found, so they were not successfully contacted for survey participation.

Survey Response Rate: 135 (59%) of the 230 unique PIs in the 2025 target evaluation cohort completed the survey. Responses covered all 5 training award mechanisms ***(Fig.6)***. Because some respondents had received more than one award in the evaluation cohort, the surveys received covered 162 (60%) of the 2025 awards cohort across all mechanisms ***(Fig.7).*** A list of all awards for which responses were received in in ***Appendix VIII.***





Data Mapping: Survey data was entered into Excel Workbooks for analysis. Where items were missing or unclear, the respondent was contacted to clarify, or their *curriculum vitae* (requested with the survey) was used. Publicly available online resources were used to complete missing data on grant funding, publications, patents, etc. (resources used are listed in ***Appendix III*).**

About This Report Structure: Survey data is analyzed and summarized in sections. These are focused on different aspects of respondents' professional career pathway and activities in the period since their training award ended. The survey was designed to gather as much quantitative format data as possible, to facilitate meaningful analysis. Question-specific opportunities were provided for written feedback, which was parsed and mapped for analysis.
Data is analyzed as a cohort of all respondents; in addition, trends within award mechanisms are explored, to see what can be learned about the impact of the training awards on different career stages. Some anecdotal statements submitted are presented, but not attributed to individuals.

2: Where Are the Training Awardees Today?

Section Summary:
- 135 respondents are now in 17 countries around the world, 60% in the USA

Comparing job sectors "now" (today) and "then" (first job after training award ended):
- 76% of respondents are in academia now; compared to 89% then
- 16% of respondents are in industry now; compared to 9% then
- 4% of respondents are in non-bench/scientific administration roles now; compared to ZERO then

- PF (and to a lesser extent APFs) were more likely than recipients of other training award types to have pursued careers outside academia; more likely to leave diabetes research; and more likely to leave the bench altogether

- There may be an opportunity for Breakthrough T1D to provide additional career support for PF/APF training awardees at the end of their awards to keep them in the diabetes field

- For 100% of responding diabetes *researchers*, and 69% in diabetes clinical *practice*, the training award helped keep them in diabetes

- Breakthrough T1D funding was cited as more attractive than many alternative sources of funding for reasons including its support of innovative work, and for publishing, networking and training opportunities in diabetes

- 43% of respondents have attended a Fellows Meeting, but this event has an opportunity for further development and growth into a strong tool in building a future diabetes community

Geographic Location: Our 135 respondents are working in 17 countries around the world ***(Fig.8).***
Purple dots show country distribution; size of dot represents concentration of awardees in that country. Main concentration:

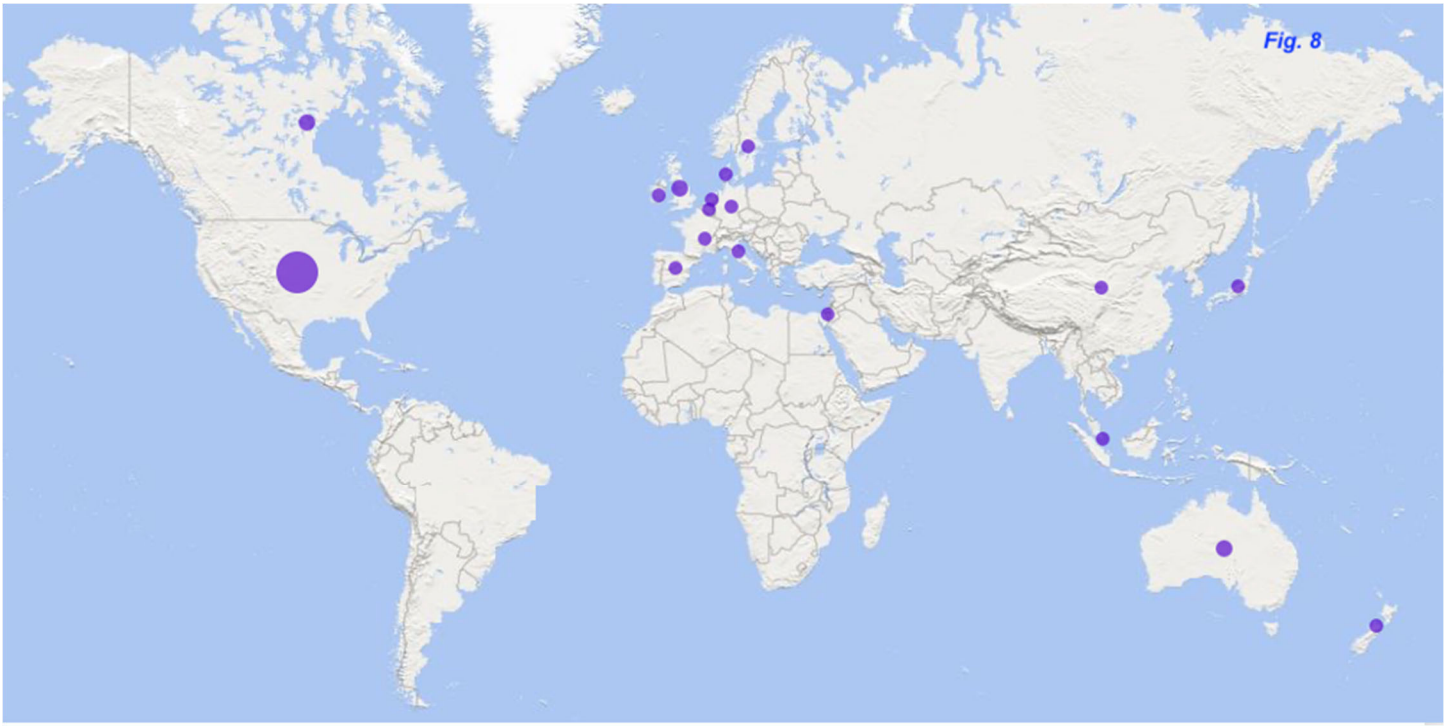
- **81 (60%) are in the USA**
- 11 (8%) are in Canada
- 10 (7%) are in Australia

26 (19%) of respondents reported separately that they are now in a different country than they were immediately following their training award.

Job Roles "Then and Now": Respondents shared their job role today, and their job role right after the training award completed. Where a person reported that they held multiple roles, the most senior was mapped.

A summary of high-level changes are shown in ***Fig.9***. For first job after training award ended, and for job today, the majority of respondents (103, 76%) are in academic roles.

There has been around a 20% decline in the number of researchers in academia since the time of the training award, though the number of *clinician* researchers in academia has remained the same since the time of the training award.



Comparing first job after training award ended, to job today, **there has been almost a doubling in the number of researchers in industry (12 (9%) to 22 (16%).** Also, a new category of roles has appeared, not present among roles taken after the training award completed: 5 (4%) of respondents are now in **scientific administration/non-bench roles.** Though both of these job sectors involve relatively small numbers, these upward swings may be worth noting.

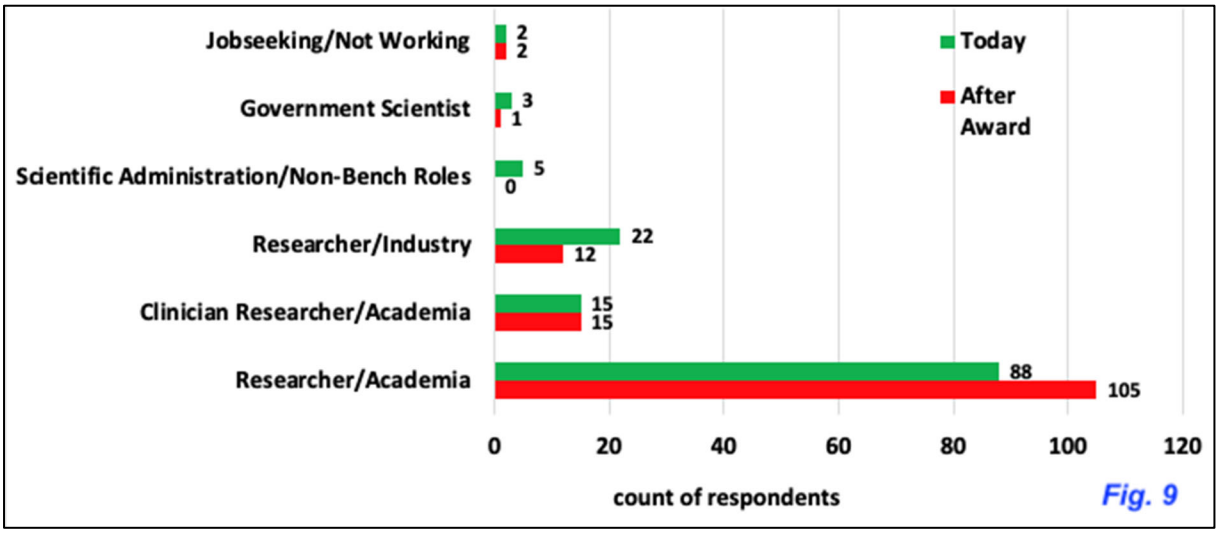


Fig.10 looks at the migration of job roles in more granularity. **In academia, researchers have moved up, taking on more senior positions** –from postdoc/scientist up to professor track and director/officer/lead roles. **60 (44%) of respondents reported separately that they are now in a tenure-track role**, another indicator of career progression.

The rise in those in industry are mainly Scientist roles, with a small number in industry leadership roles. 3 respondents joined The Jackson Laboratory, the animal breeding and research facility; here this is grouped with industry, not academia, though it is service industry for both.

The 5 respondents entering scientific administration are in diverse roles: patent examiner, academic research

administration and scientific communications roles. These are vital support areas for academic and industry research and represent a career area for scientists that has opened up more widely in the last 20 years or so as an alternative to staying at the bench.

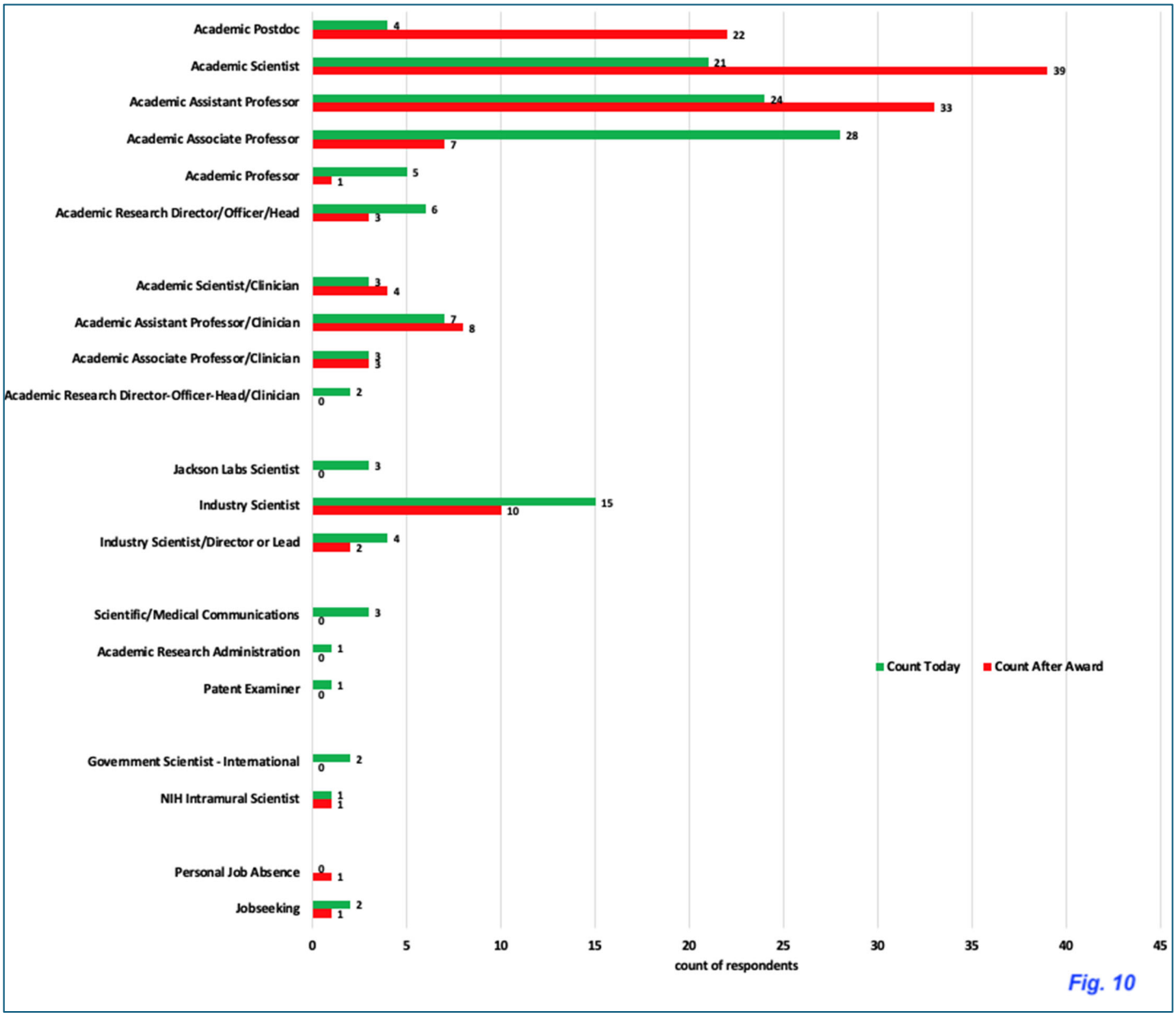


Fig. 10

Which Roles Have Specific Award Mechanism Training Awardees Taken?
Fig.11 looks at the distribution of respondent roles today, sorted by training award mechanism.

Across mechanisms, the majority of respondents are in academia, including all ECPODRA, and all but 1 CDA. Two TA respondents left academia for industry (1) and government research (1).

However, there is significant career fluidity for PF and APF respondents.

- 26% of PF and 37% of APF respondents are not in academia
- 22% of PF respondents are in industry
- All of those who have left the bench are PF or APF respondents

Since the training award, respondents have taken on more senior roles in academia.
A number are now in industry; and there is the emergence of a new role sector non-bench employment in scientific administration.

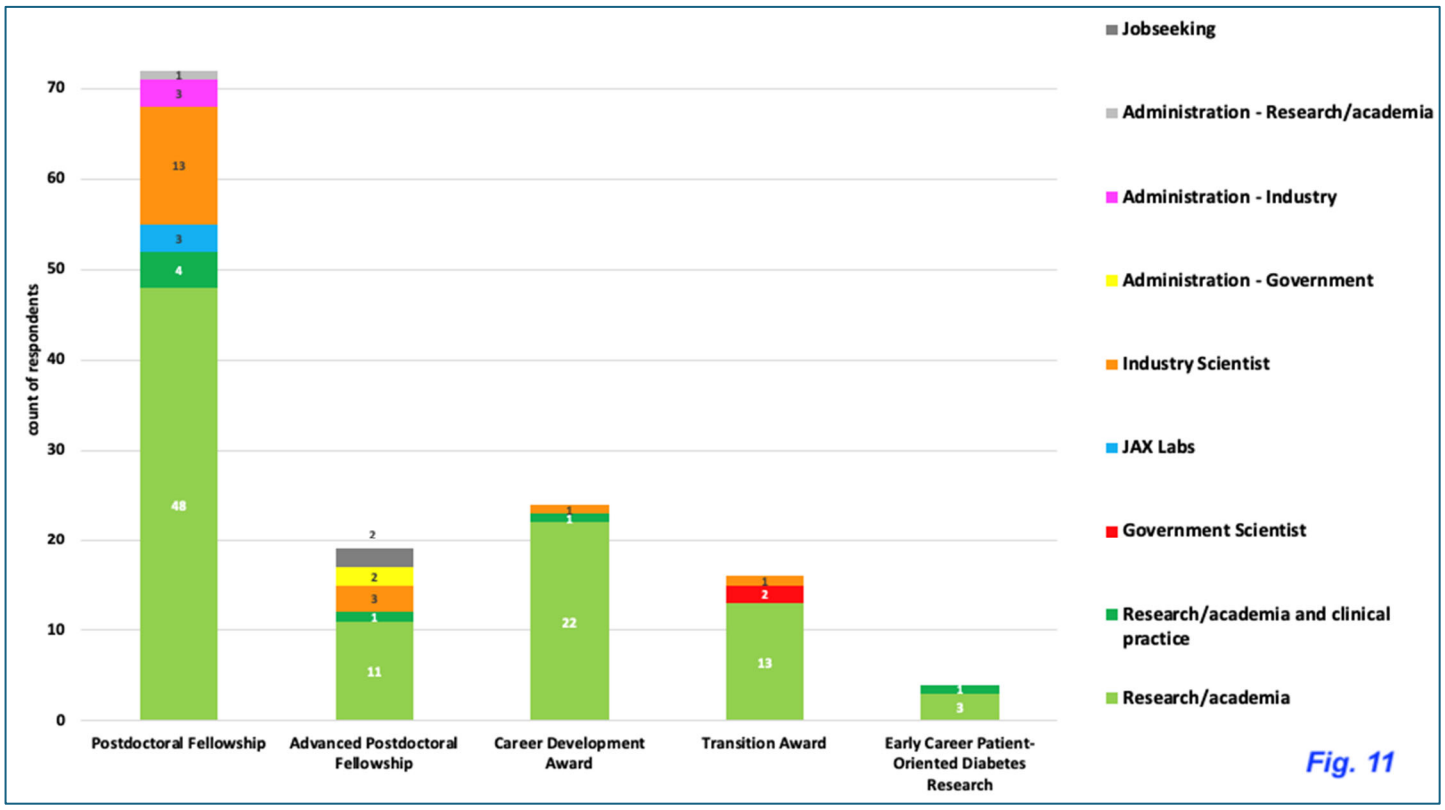


Fig. 11

Are Training Awardees Still in the Diabetes Field? 106 (79%) of the 135 respondents are still working in Type 1 and/or Type 2 diabetes: 67% are in diabetes research, and 12% in diabetes research and clinical practice ***(Fig. 12).***

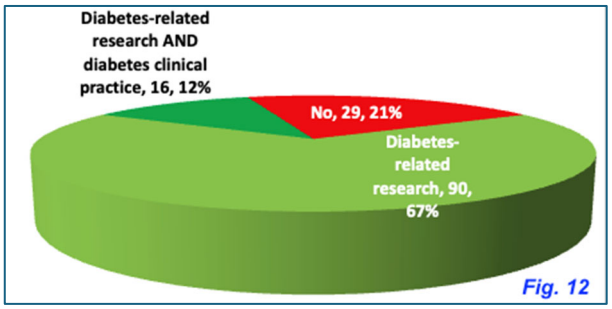


Fig. 12

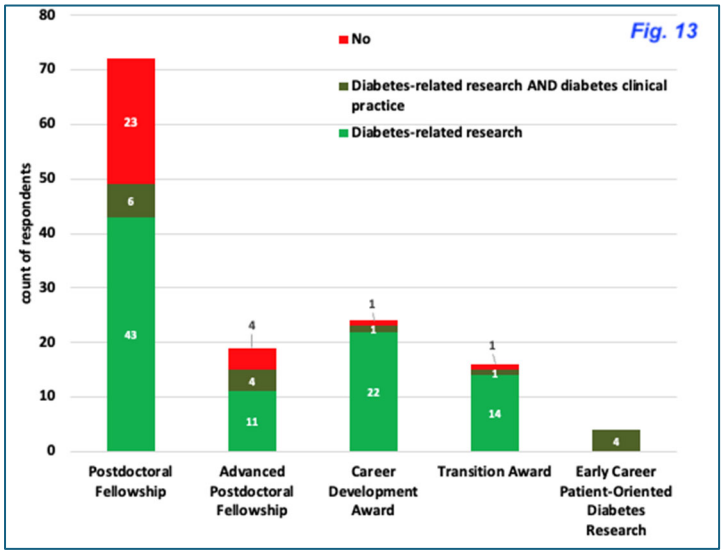


Fig. 13

Which Training Awardees Are Still in the Diabetes Field?

Fig.13 shows who is still in diabetes today, sorted by training award mechanism.

- 49 (68%) of PF respondents
- 15 (84%) of APF respondents
- 23 (96%) of CDA respondents
- 15 (94%) of TA respondents
- 4 (100%) of ECPODRA respondents

This percentage rises with more advanced training award mechanisms, from 68% of PF respondents, to 100% of ECPODRA respondents.

If Respondents Are Not in Academia, Are They Still in the Diabetes Field? Of the 32 respondents not in academia, only 14 (44%) are still in the diabetes field.
Of those departing the diabetes field, the majority, 14 (44%) are PF respondents.
- 14 (70%) of PF respondents and
- 3 (43%) of APF respondents not in academia
…..are no longer in diabetes.

17 (94%) departing diabetes - all but one respondent - are PF or APF training awardees ***(Fig. 14).***

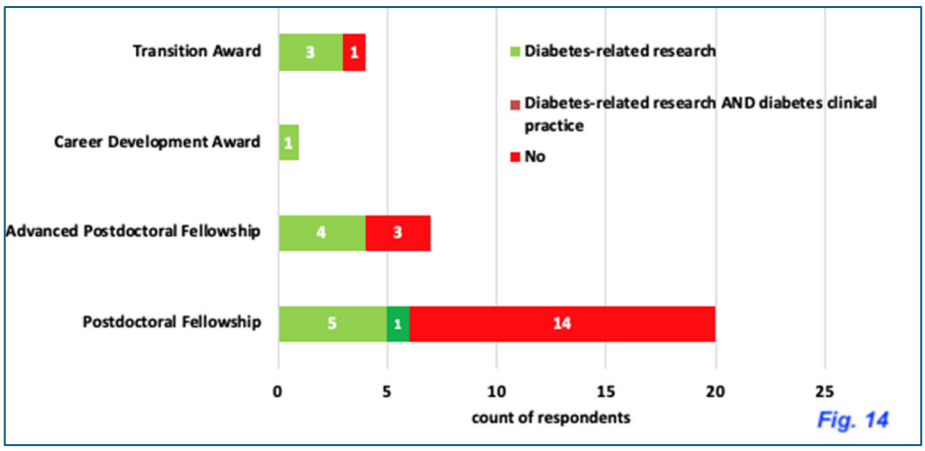


Fig. 14

If training awardees are not in academia, the majority of PFs, and some APFs, may be more likely to leave diabetes.

Why Have Respondents Left the Diabetes Field? All of those who left the diabetes field were asked for reasons. Some did -and some shared multiple reasons – for this. This feedback was parsed, mapped and sorted by award mechanism ***(Fig.15).***

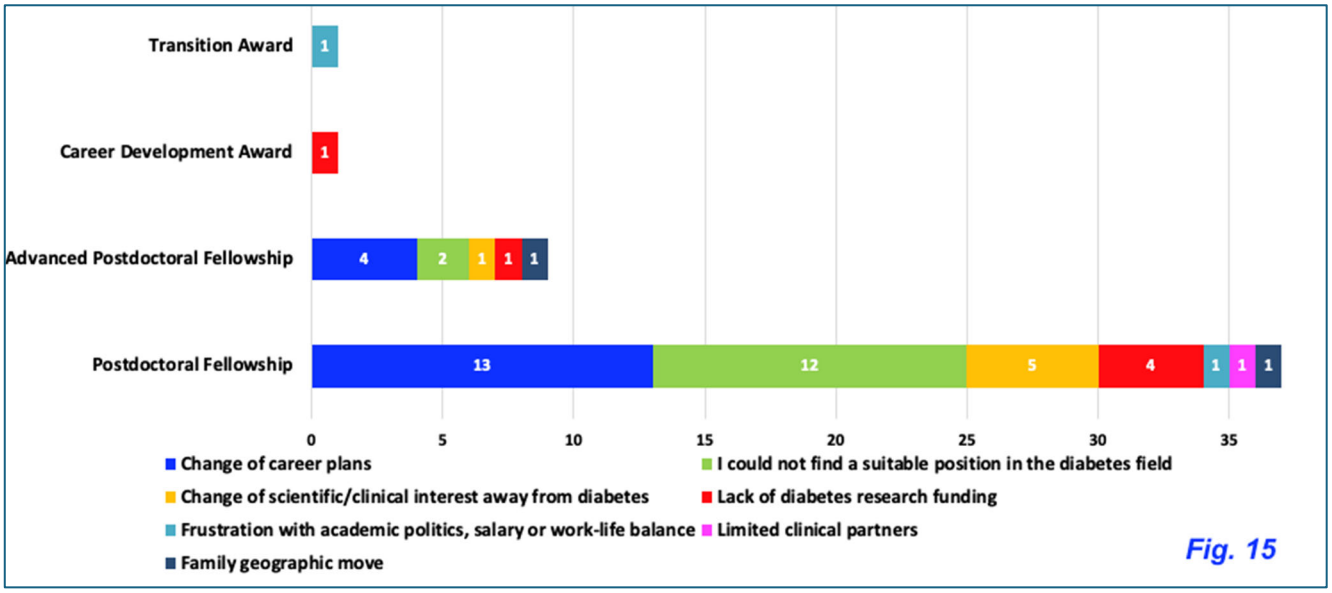


Fig. 15

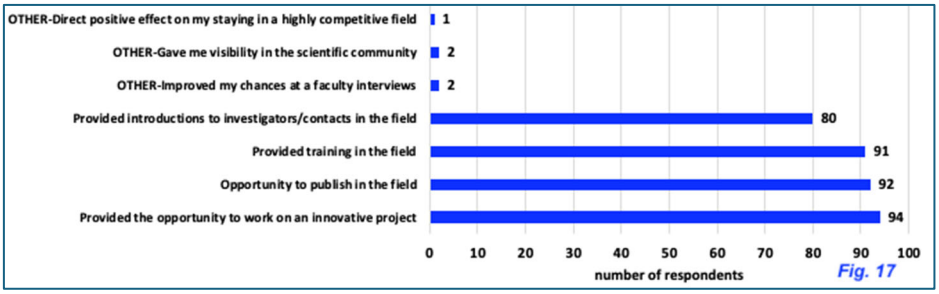
PF and APF awardees cited a number of reasons for leaving the diabetes field, notably:

- Change of career plans (or scientific interests) and inability to find a diabetes position were prominent
- Lack of diabetes funding was given as a reason:
  - by PF and APF respondents
  - By the 1 CDA respondent who has left the field
- Family geographic move was given as a reason by 1 PF and 1 APF respondent.
- Frustration with academia was cited by 1 PF and by the sole TA respondent who has left the field.

PF respondents, followed by APF respondents, gave the broadest range of reasons for leaving the diabetes field.

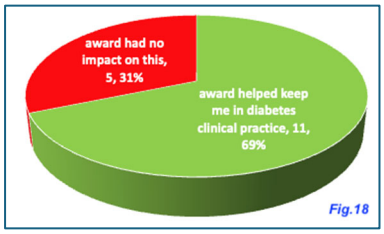
Are Training Awards a Tool to Keep Researchers in Diabetes?

All 106 respondents in diabetes research reported that the training award had influenced and supported their decision to stay in diabetes ***(Fig.16).*** From a checklist, respondents selected reasons for this ***(Fig.17).*** These included opportunities to present, publish and network in the field; to work on an innovative project. Additional items added by individual respondents included giving them an "edge' at interviews and visibility in a competitive field.



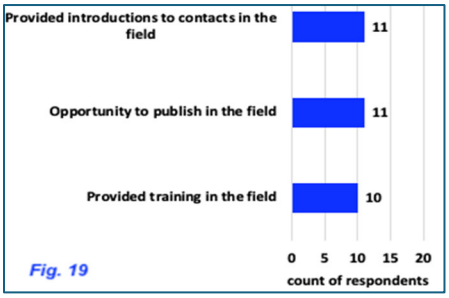
Did the Training Award Keep Clinicians in Diabetes Practice?

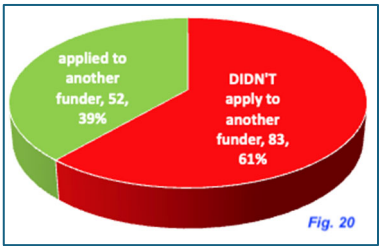
Of the 16 respondents in diabetes clinical practice, 11 (69%) indicated that yes, the training award had helped to keep them in clinical practice ***(Fig.18)***. However, 5 respondents (31% of this group) stated that the award had no impact on their career decisions. Where the award had impact, reasons presented for this are by supporting training, publications and introductions in the field ***(Fig.19)***.

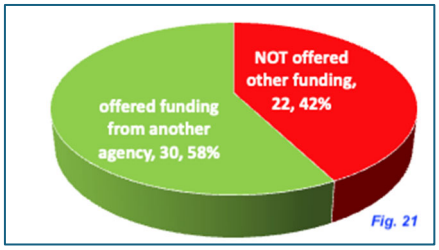


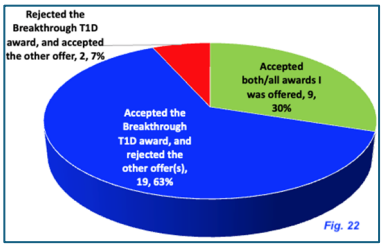
What Is "Special" About Breakthrough T1D Training Awards?

The survey asked if, at the time of applying for the Breakthrough T1D training ward, they also applied for other training awards.
52 respondents (39%) did ***(Fig.20)***; of those, 27 (58%) received a funding approval from another agency ***(Fig.21)***.
Of those respondents offered simultaneous Breakthrough T1D training award and funding from another agency, 19 (63%) accepted the Breakthrough T1D award and declined the other, while 9 (30%) were able to accept both. Only 2 (7%) declined the Breakthrough T1D award in favor of the alternative ***(Fig.22).***

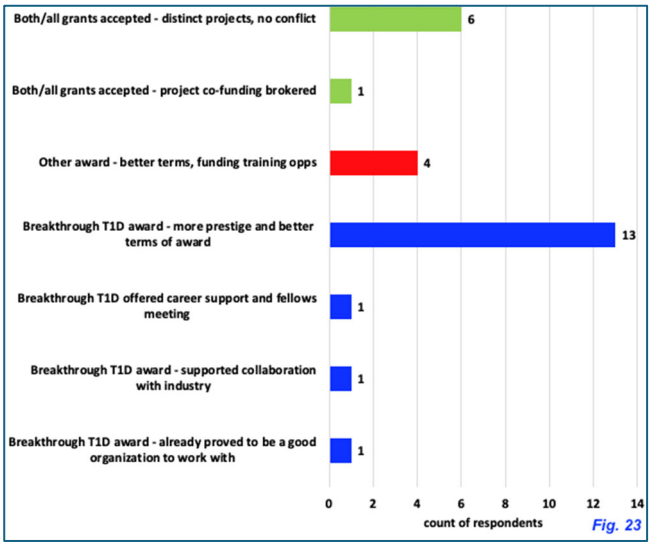






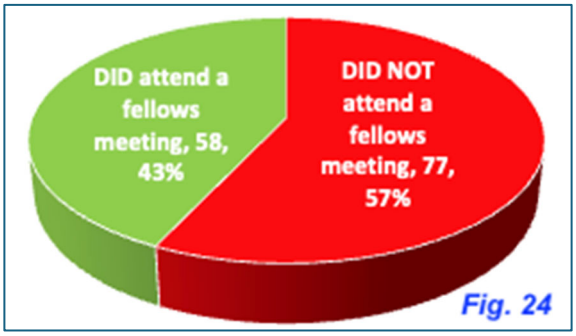


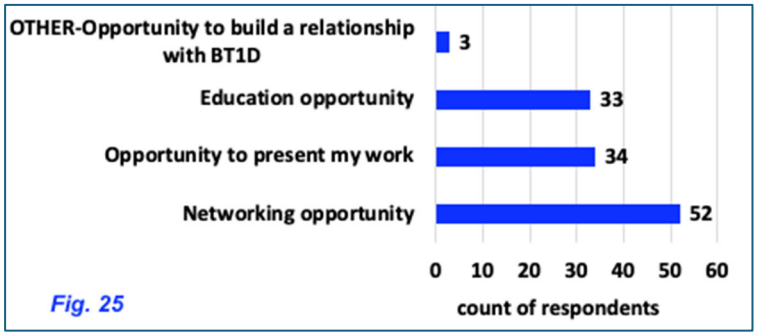
Respondents were asked to share their decision-making reasons for accepting one award over the other. In some cases multiple reasons were given by a respondent, while in other cases no reason was given; feedback was parsed and mapped ***(Fig. 23)***. Breakthrough T1D awards were selected for reasons of prestige and favorable terms of award; additionally for career development support and the opportunity of the fellows meeting, for being supportive of industry collaborations, and for having already proved to be a good organization to work with.



The Role of the Fellows Meeting - Assessment and Opportunities: Breakthrough T1D has convened a small number of Fellows Meetings These are a venue for training awardees to gather and share their research. As these meetings were not annual, not all training awardees would have been invited to one if it wasn't planned in the cycle of their award; but those who had attended were asked for feedback, and suggestions on how to improve the meetings.

58 respondents (43%) had attended a Fellows Meeting ***(Fig. 24).*** They identified from a checklist the leading benefits of the Fellows Meeting. Top of list were networking, education opportunities and a chance to present their work. 3 respondents specifically identified the meeting's opportunity to build a relationship with Breakthrough Type 1D ***(Fig.25)***.





Of those respondents who hadn't attended a Fellows Meeting, a small number shared they had been invited but unable to travel at the time. Of those who had not heard of the fellows Meeting, there was great enthusiasm for this idea. shared that they had been unable to attend due to other commitments limiting travel, though others had no knowledge of the Fellows Meeting; this was most likely because there was no Fellows Meeting during the cycle of their award.

Respondents offered ideas for strengthening the fellows meeting and extended this to ways to improve connections between Breakthrough T1D training awardees. This feedback was parsed and mapped. Most prominent were suggestions to meet more frequently, in person or remotely; to provide space at the meetings to develop ideas with other fellows; to offer networking opportunities with senior scientists, and educational sessions on potential career trajectories. Also suggested were meetups at diabetes conferences; creating an online space for connections between meetings; and bringing in a speaker with diabetes who has benefited from research. These are shown in ***Fig. 26.***

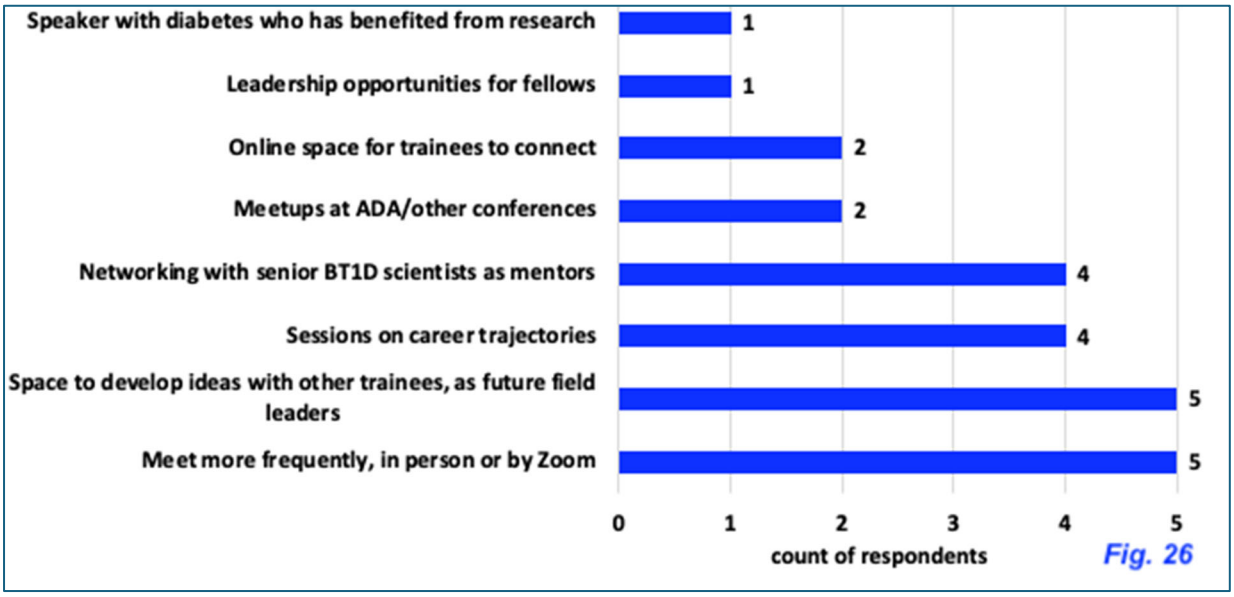


Fig. 26

3: Diabetes Focus of Training Awardees Today

Section Summary:

- Of respondents in diabetes research today, 98% include T1D in their interests

- 54% of respondents in diabetes research are exclusively focused on T1D

- Diabetes researchers are individually working in as many as 7 sub-areas T1D, most predominantly immunology, endocrinology/metabolic disease and disease modifying/cell therapies

- Across training award mechanisms, there is a similar spread of T1D research interest topics with some emphasis variations; of note, ECPODRA respondents, the focus is on clinically applicable topics

- Of respondents in diabetes clinical practice today, 88% include T1D in their focus areas

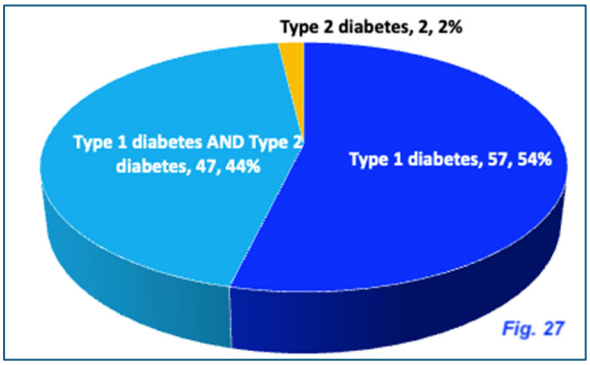
- 31% of respondents in diabetes clinical practice are exclusively focused on T1D

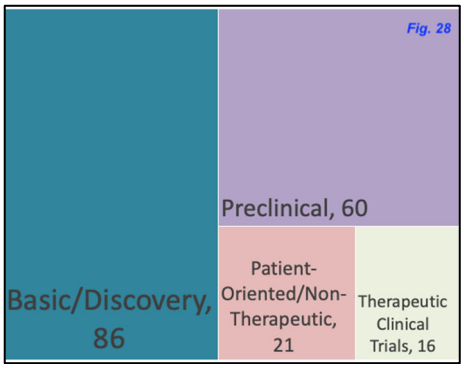
- The predominant areas of diabetes clinical practice are endocrinology/metabolic disease

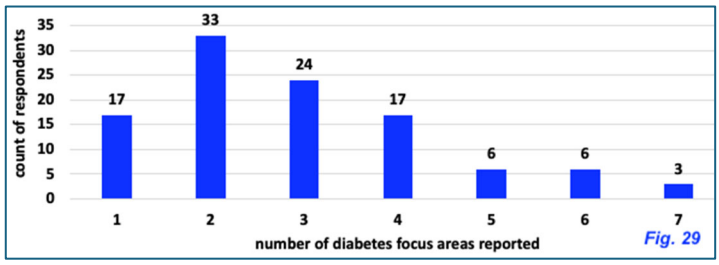
106 of survey respondents are working in diabetes today. What are their areas of interest and subspecialties?
This question is addressed below, first for researcher respondents, and then for clinical practice respondents. Note that some respondents fit both of these categories, and therefore are included in both sections.

Training Awardees in Research – Diabetes Interests Today:
106 respondents are currently engaged in diabetes research. Of this group, 57 (54%) are exclusively focused on Type 1 diabetes, and overall, 104 (98%) are working partly or exclusively on Type 1 diabetes ***(Fig. 27).***

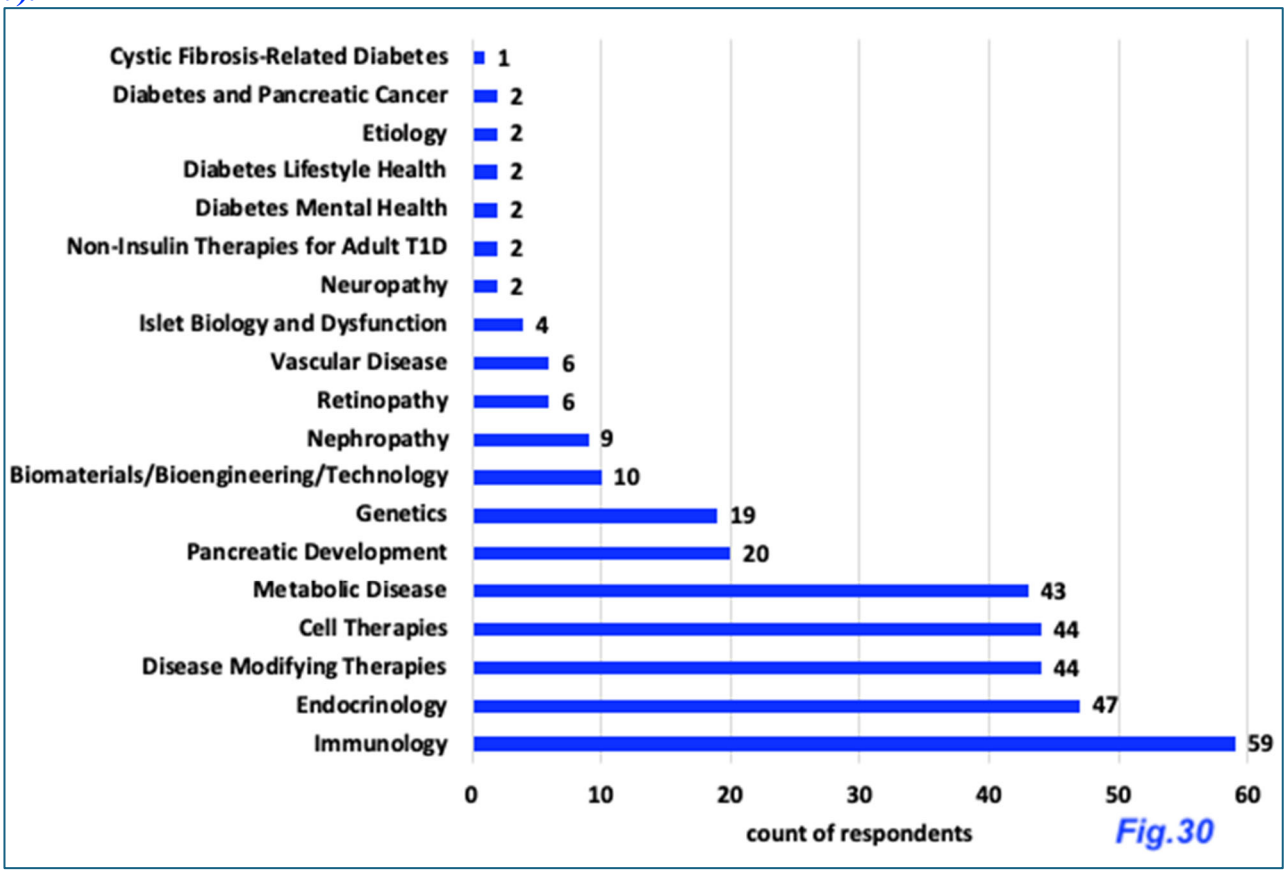
Training Awardees in Research – Diabetes Bench-to-Bedside Interests Today: Researchers identified all "bench to bedside" areas that applied to their research ***(Fig. 28)***. There is a heavy emphasis on discovery and preclinical research, but some respondents are focused on patient-directed research and therapeutic trials.







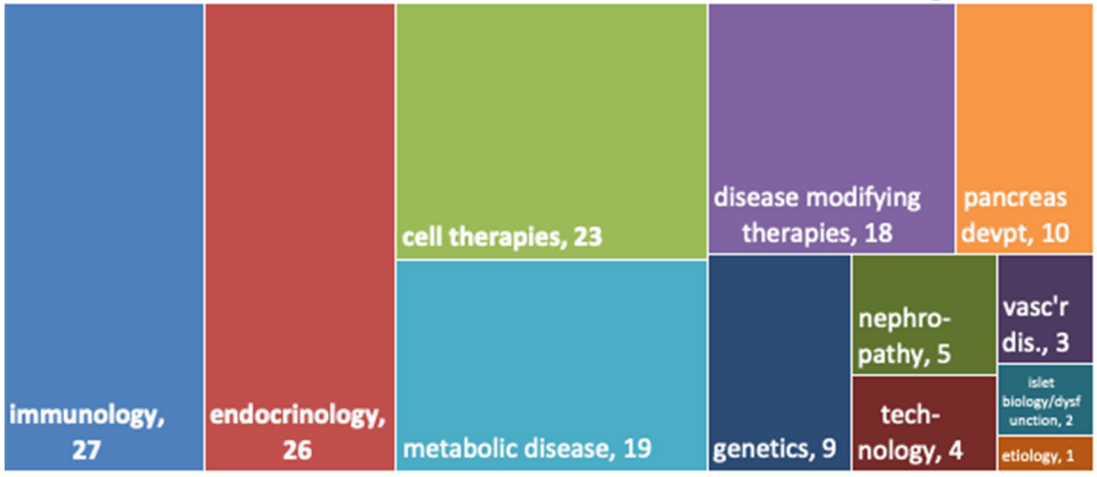
Training Awardees in Research – Diabetes Topics of Focus Today: Respondents checked off a list to indicate their areas of interest in diabetes research, selecting as many as applicable. If their areas were not listed, they wrote them in; these responses were parsed and mapped. 106 respondents reporting having up to 7 areas of diabetes research interest ***(Fig. 29).***



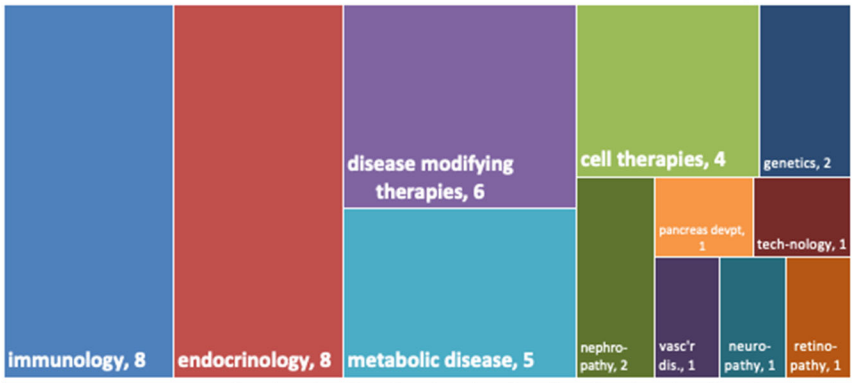
Topics cover a broad array of diabetes areas ***(Fig. 30).*** Predominant research foci are immunology, endocrinology/ metabolic disease, modifying and cell therapies. With the exception of ECPODRAs, which are patient-focused, there is no reason to expect variation between the diabetes focus areas of respondents from different training award mechanisms.

However, for a close look at focus within training award mechanisms, tree maps for each below show the spread of topic areas reported from respondent data ***(Fig. 31a-e).*** As anticipated, distributions for the most prominent topics are very similar across mechanisms, with ECPODRA respondents focusing on core clinically related areas.

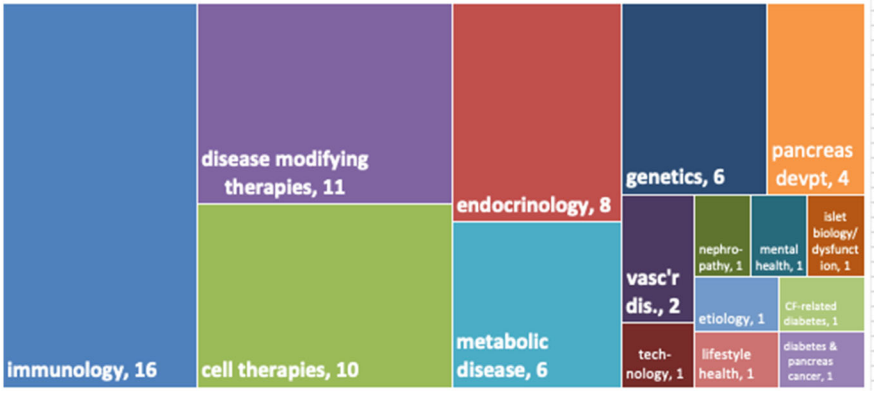
PF Awardees ***Fig. 31a***



APF Awardees ***Fig. 31b***



CDA Awardees



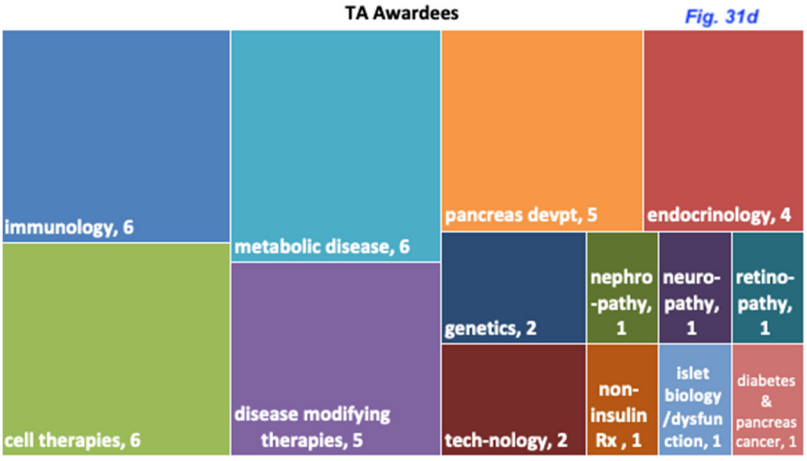


Fig. 31d

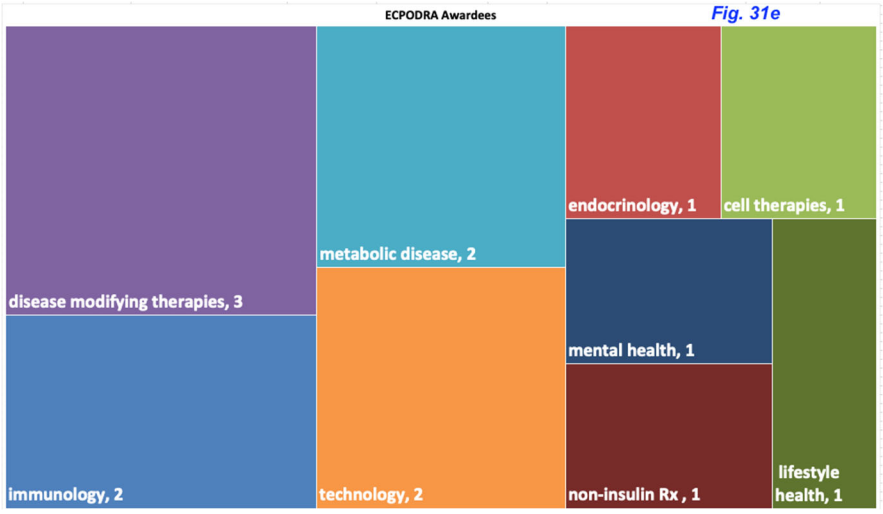


Fig. 31e

Training Awardees in Clinical Practice - Diabetes Interests Today:
16 respondents are currently engaged in diabetes clinical practice. Of this group, 5 (31% of this group) are exclusively practicing in Type 1 diabetes, and overall, 14 (87% of this group) include Type 1 diabetes in their practice areas ***(Fig. 32).***

Training Awardees in Clinical Practice - Diabetes Topics of Focus Today: Respondents checked off a list to indicate their areas of interest in diabetes clinical practice, selecting all applicable. If their areas were not listed, they wrote them in; these were parsed and mapped ***(Fig. 33)***. Predominant are endocrinology/metabolic disease, followed by other clinical areas.

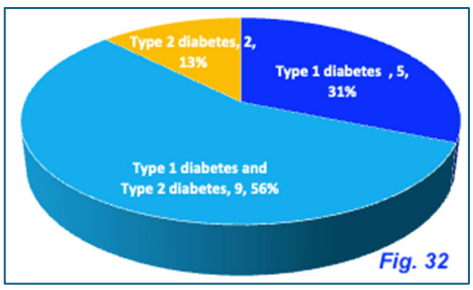


Fig. 32

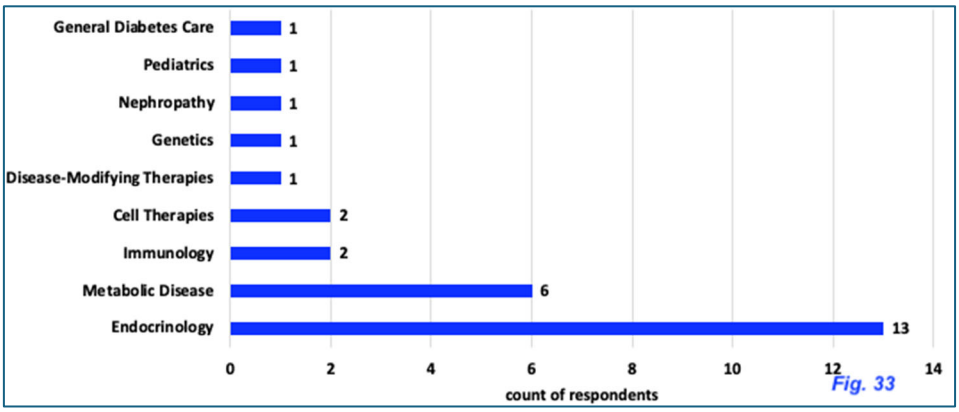


Fig. 33

4. Are Training Awardees Successful in Securing Ongoing Research Funding?

Section Summary:

- 78% of respondents have received follow-on funding since the training award ended, to utilize for follow-on diabetes and related research

- 51% of respondents provided details of this funding, reporting a collective $327,880,689.49 secured to pursue diabetes research stemming from their training award, or studies bringing diabetes findings to other diseases

- PFs were the most successful in the *number* of follow-on grants secured per training award; however, the actual *amount* of follow-on funding secured was lowest for PFs and greater for the progressively more advanced award mechanisms

- In terms of "return on investment" (ROI), ECPODRAs yielded the greatest dollar return per training award funded (over $10M), but PFs multiplied ROI the original training award by a factor of 18.9x

- For all award mechanisms, follow-on funding came from multiple sources, including a range of federal, foundation, industry, institutional and other philanthropic sources

- 13 institutes of NIH represented the primary follow-on funder across award mechanisms

- NIH accounted for a greater proportion of follow-on funding for the more advanced award mechanisms

- Over 50 public/charity foundations or partnerships were the second-largest follow-on funding source

- Of public charity/foundations, Breakthrough T1D was the single largest follow-on funder

Breakthrough T1D training awards aim to help early career researchers found a successful future in Type 1 diabetes research. An important factor in ongoing independent research career success is training awardees securing further research funding. 105 (78%) respondents reported that they have received some follow-on funding since the training award completed ***(Fig.34)***. Respondents shared information on the types of funding agencies they had applied to; and where applications were successful. Respondents have applied to a range of funding sources ***(Fig. 35).***

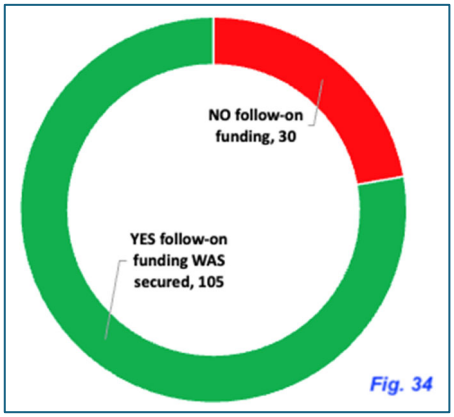


Fig. 34

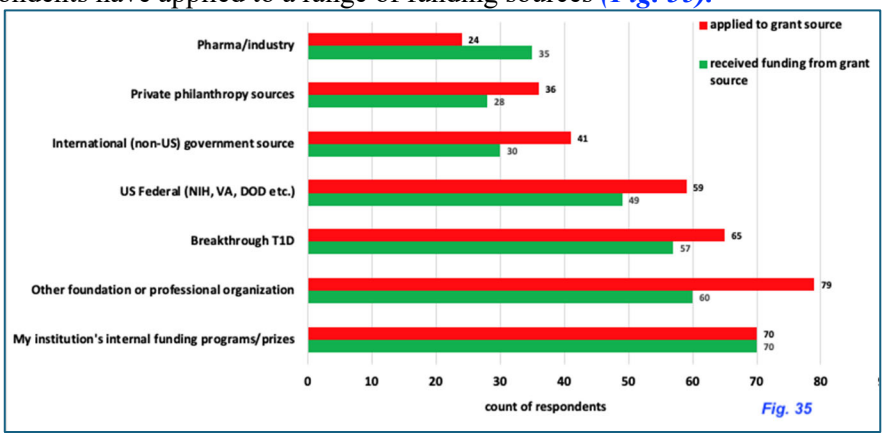
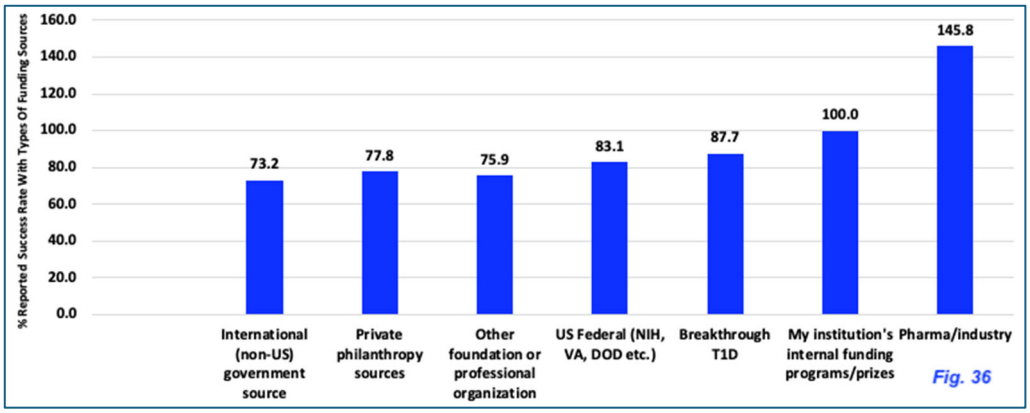


Fig. 35

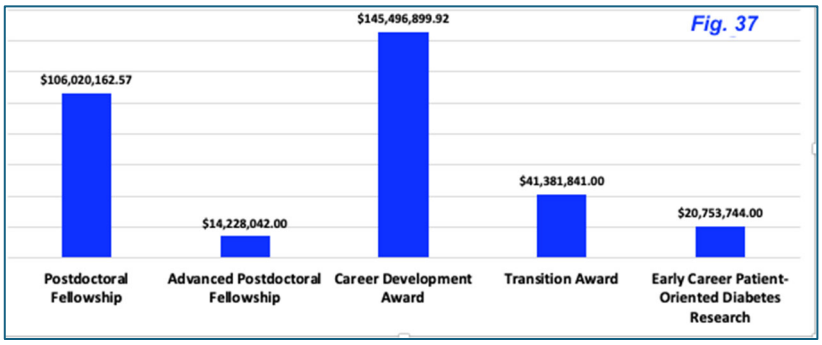
Fig. 36 converts ***Fig. 35*** into a "success rate" with different funding sources.

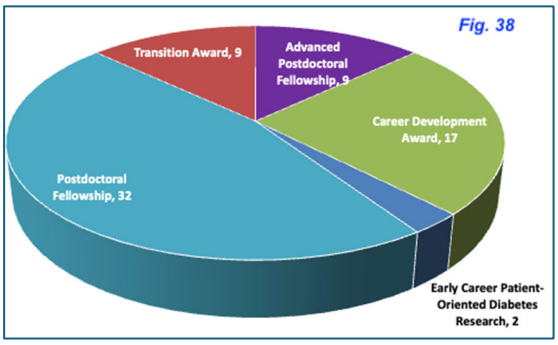


Overall success rates are 75% and above in securing funds from different agencies. This may seem optimistically high but note that this rate does not account for each individual grant application submitted and received. Rather, this could represent many rejected or resubmitted applications. But it does provide a general idea of activity and success with these funding sources. Anticipated rationale for the pharma/industry statistic of over 100% makes sense since researchers can be approached by industry research funding opportunities under contract rather than through active application.

How Much Follow-On Research Funding Have Training Awardees Secured? Of the 105 respondents reporting that some funding had been secured, 69 (51%) provided details about this funding. A total of **$327,880,689.49** in follow-on funding was reported; this is shown by award mechanism ***(Fig. 37).***

Who Is Reporting Follow-On Funding? The number of respondents reporting follow-on funding per training award mechanism is shown in ***Fig. 38.***





"Return On Investment" for Breakthrough T1D? The total amount of follow-on funding reported by 69 respondents was compared to the amount the amount that Breakthrough T1D had originally "invested' in the 69 awards issued to these respondents.
As shown earlier in ***Fig. 3*****,** a small number of training award recipients received either 2 or 3 Breakthrough T1D training awards between 2015 and 2024: i.e. from the group of awards we are evaluating here. In these cases, Breakthrough T1Ds "investment" in that respondent included all of the training award dollars issued to them.

Together, these 69 respondents represented a Breakthrough TD "training awardee investment" of **$27,447,401.67.** This number was broken down by award mechanism and, using the dollar numbers in ***Fig. 37,*** used to create a "return on investment" - the average amount of follow-on funding secured, per respondent, for each award mechanism. This is shown in ***Fig. 39.***

All mechanisms reported indices of return of at least 5x the training award amount of follow-on funding. PF respondents report the greatest index, a 19x return. A contributor to this high PF result could be that these are the least expensive awards for Breakthrough T1D; and, since the evaluation dates back to awards closed in 2014, at least some of these PFs have established a 10-year career since then.

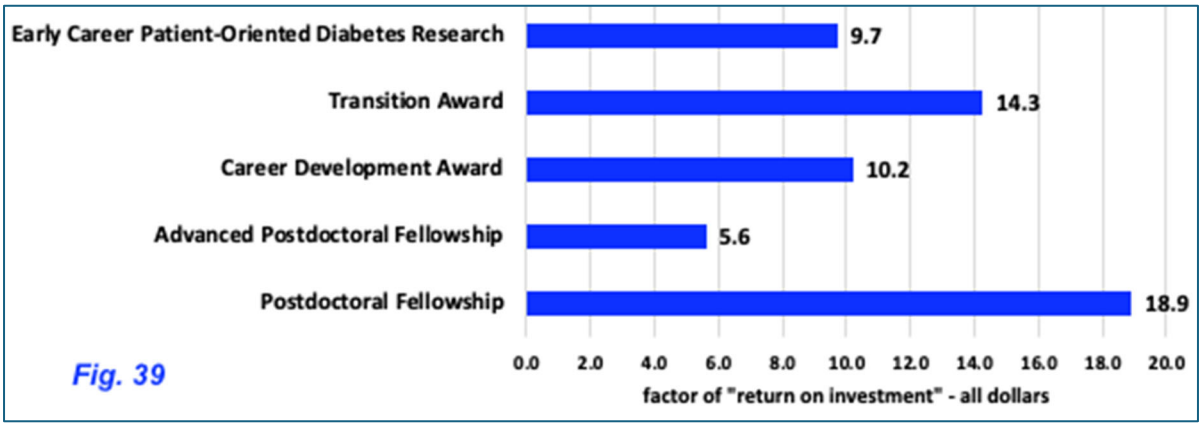


Fig. 39

To explore this further, the observation in ***Fig. 39*** was converted to a "dollar comparison" of Breakthrough T1D's investment in these 69 awards, and the dollar amount of the return on investment ***(Fig. 40).***
Looking at dollar invested by Breakthrough T1D vs. new dollar secured, ECPODRAs and CDAs have the greatest return.

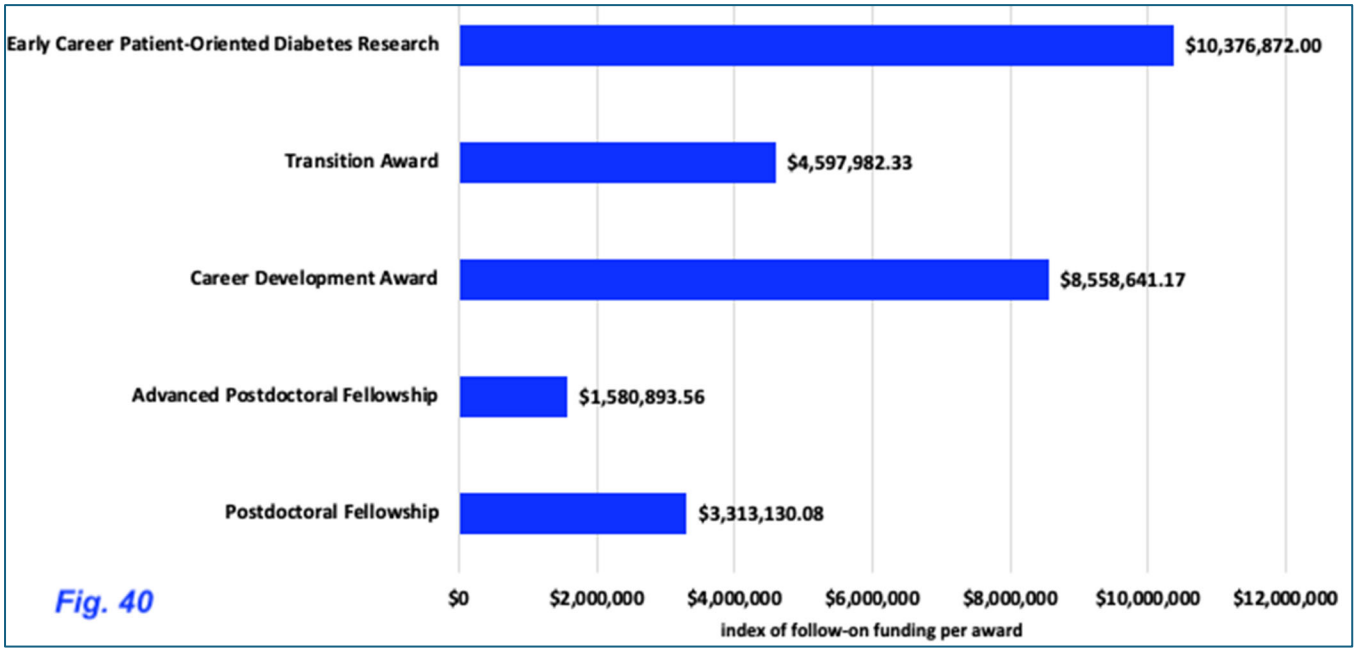
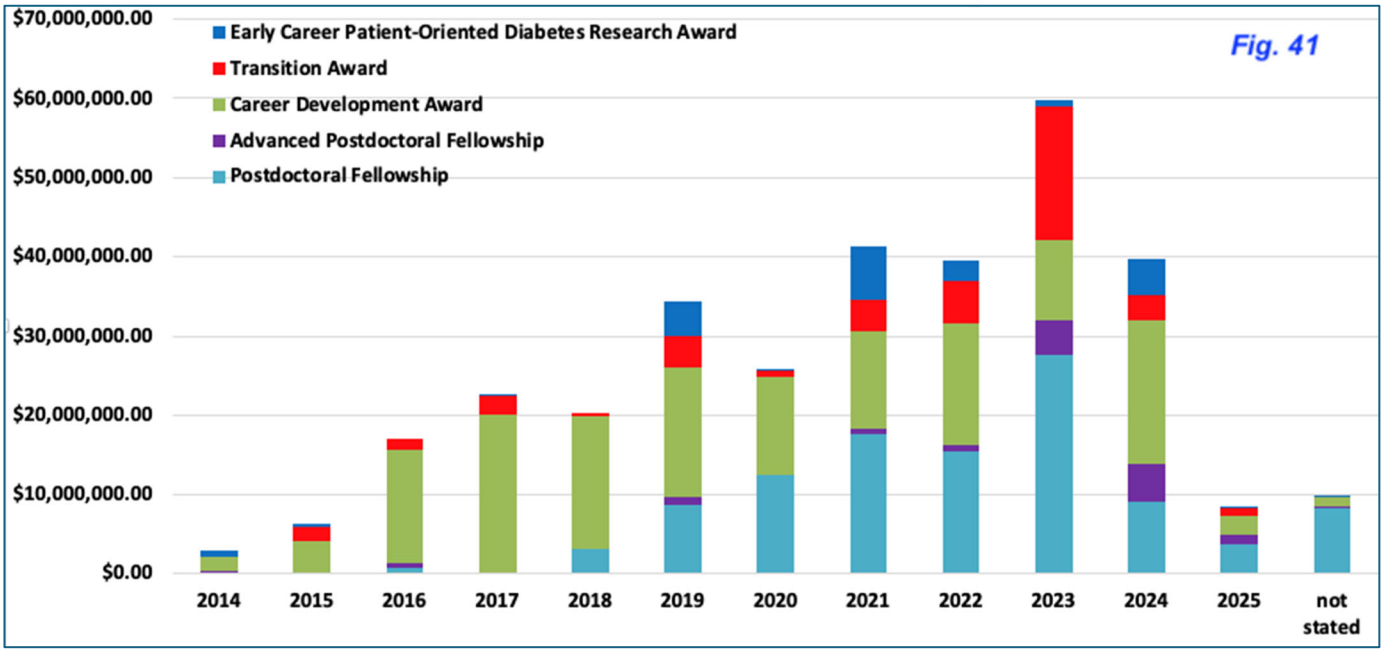


Fig. 40

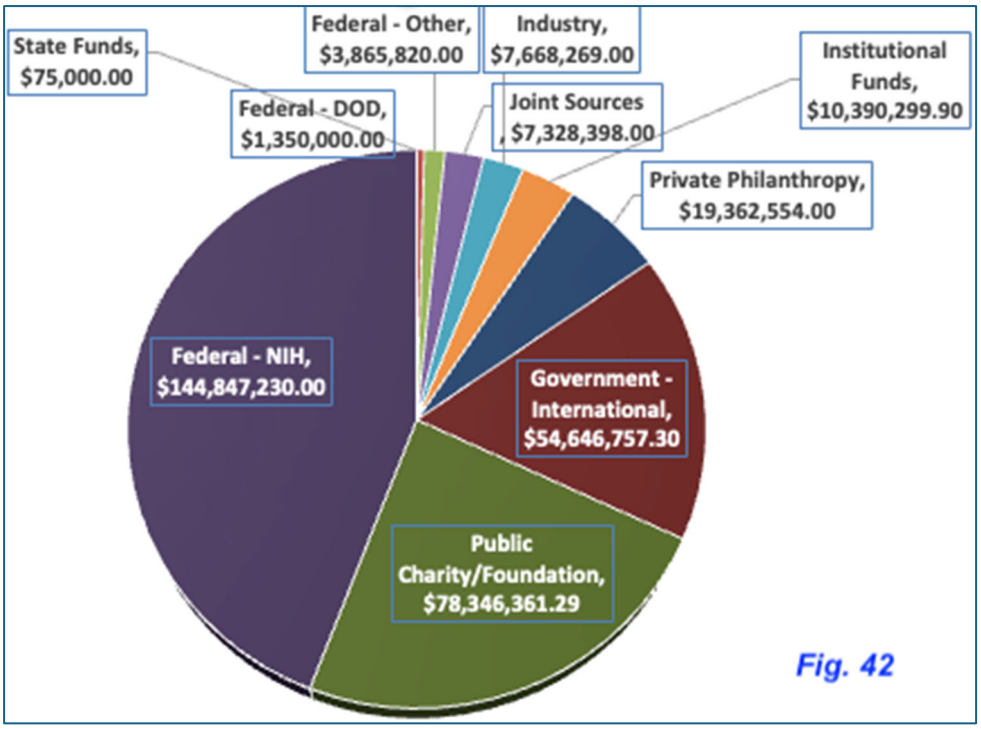
To get a sense of how this follow-on funding was secured, over the decade these awards have closed, ***Fig. 41*** shows the year that reported funding commenced, sorted by mechanism.



What Is the Source of Follow-On Funding?

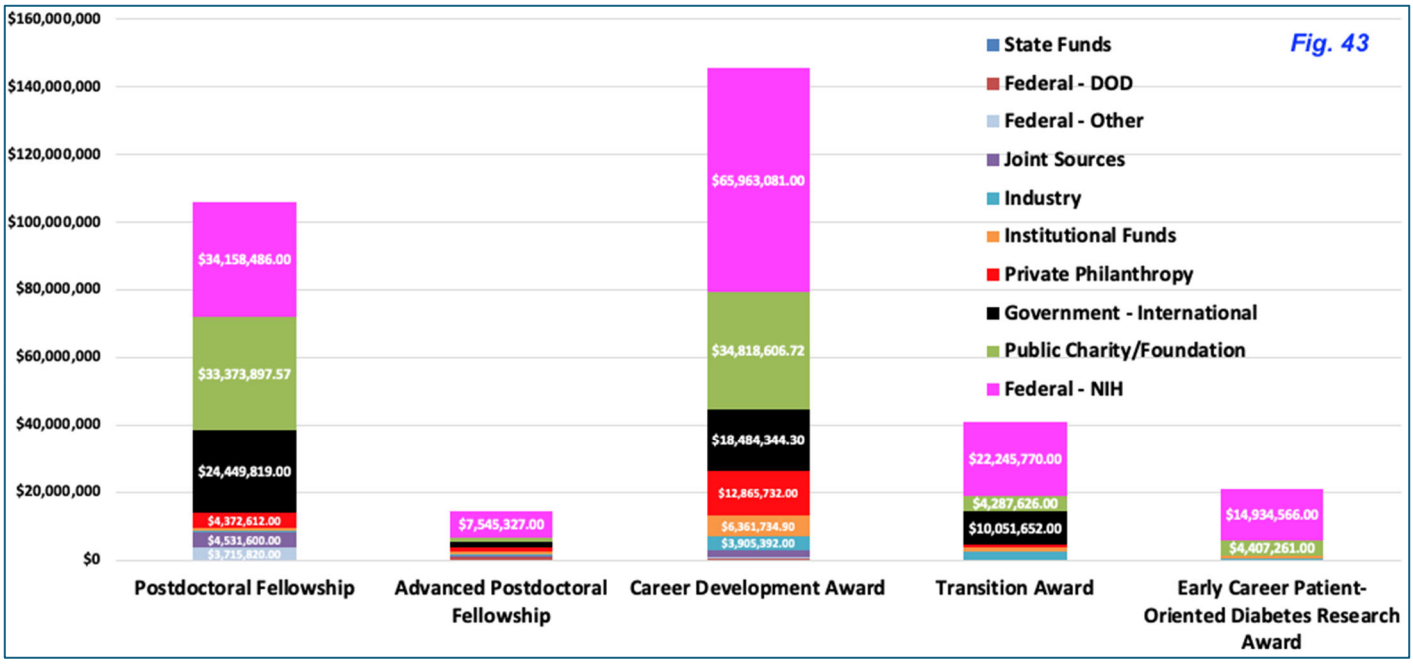
The $327,880,689.49 in reported follow-on funding comes from multiple sources *(Fig. 42)*.

~44% comes from the National Institutes of Health (NIH); ~24% from public charities/ foundations;
~17% from international government sources;
- the remaining 15% from industry, institutional funds, state funds, DOD and private philanthropy.

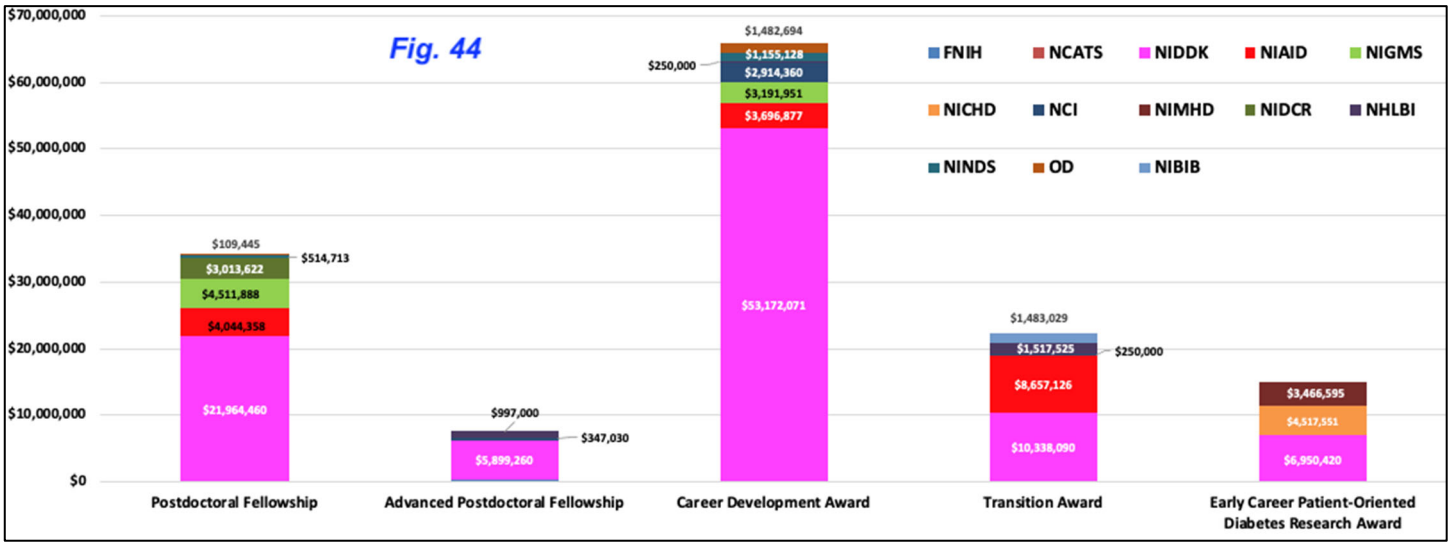


Our 69 respondents have collectively secured as much as $60,000,000 follow-on funding in one year. All award mechanisms have been successful in securing funding over the past decade from a range of sources.

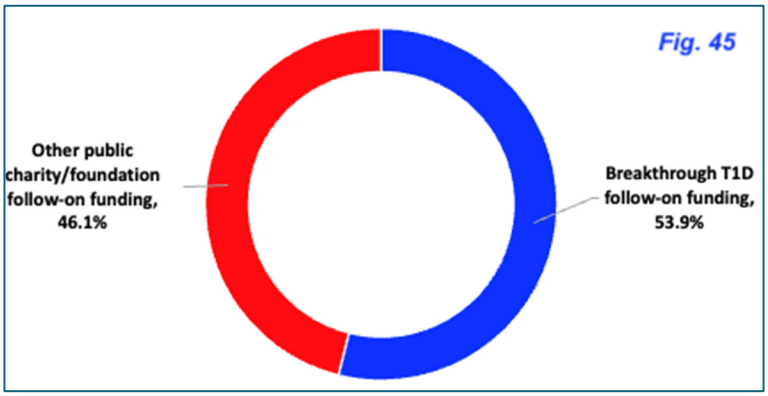
Fig. 43 looks at the distribution of funding secured from these different sources, by training award mechanism. All 5 award mechanisms have secured follow-on funding from a range of sources.

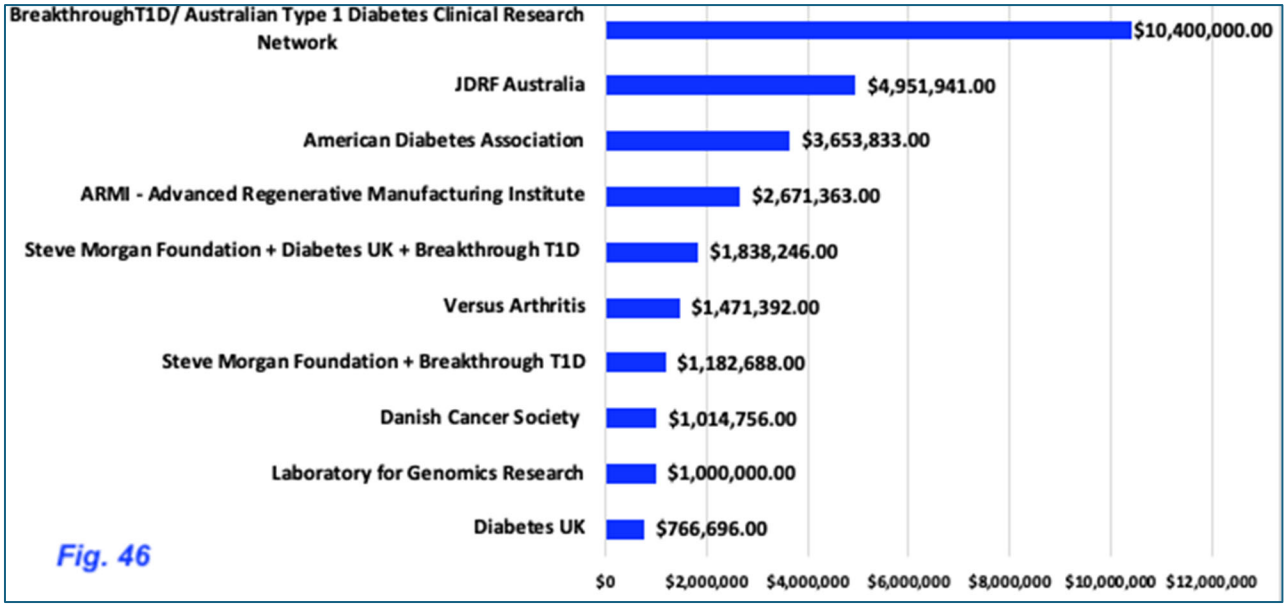


Focus on NIH Funding: NIH is the most prominent source of follow-on funding for all mechanisms, contributing a greater percentage of follow-on funding for progressively more advanced mechanisms (PF: 32%, APF: 30%, CDA: 45%, TA: 54%) and the most for ECPODRA (71%). NIH funding came from 13 NIH institutes, most prominently NIDDK, the principal supporter of diabetes research ***(Fig. 44).***



Focus on Public Charity/Foundation Funding: This was the second-most prominent source of follow-on funding for PDs, CDAs and ECPODRAs. Of public charities/foundations, the top funding entity was Breakthrough T1D ($42,272,740.65) ***(Fig. 45).*** (This did not include additional joint funded initiatives of Breakthrough T1D with other entities, which are included in the chart below). (These were Breakthrough T1D awards given after the training award ended, from programs outside this training award cohort.) Excluding Breakthrough T1D's individual investments, top public charity/foundation funders are shown in ***Fig. 46.*** In total, public charity/foundation funding came from 52 different entities or joint entities.





More details on follow-on funding sources and amounts are provided in ***Appendix IV***.

5. Research Publications from Training Awards

Section Summary:

- 87% of respondents have published papers as a result of the training award

- 463 total publications were reported, published in 174 different journals topped in popularity by Diabetes, Diabetologia and Journal of Immunology

- 41% of respondents published between 1 and 3 papers each; individually, as many as 34 were published

- All award mechanisms were active in publishing papers over the 10-year period under evaluation

- CDAs are the most productive in publications, with an average "index" per award of 7.7 papers, followed by ECPODRAs at 5.0

A key marker of research success research project is the professional publication. 117 respondents (87%) reported that they had published from their training award ***(Fig. 47)***. 104 respondents (77%) provided details on these. 41% of respondents reported 1, 2 or 3 publications, but more were reported, up to 34 ***(Fig. 48).***

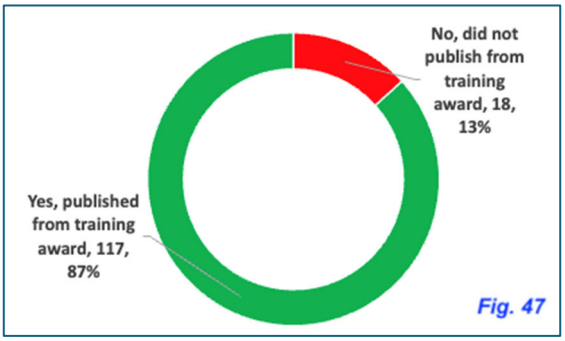


Fig. 47

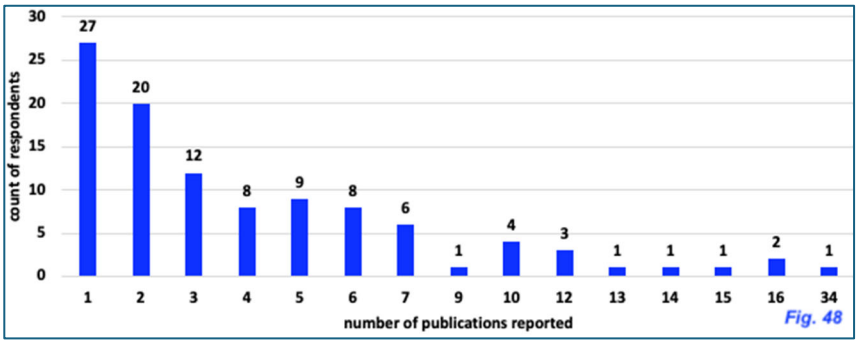


Fig. 48

Publication Numbers, By Respondent and By Year: 463 publications reported over years are shown in ***Fig. 49*** sorted by award mechanism. Some publications were reported from 2009-2013; these would have come out during the active years of the very earliest awards in the evaluation cohort.
All mechanisms were productive in reported publications from 2015 onward.

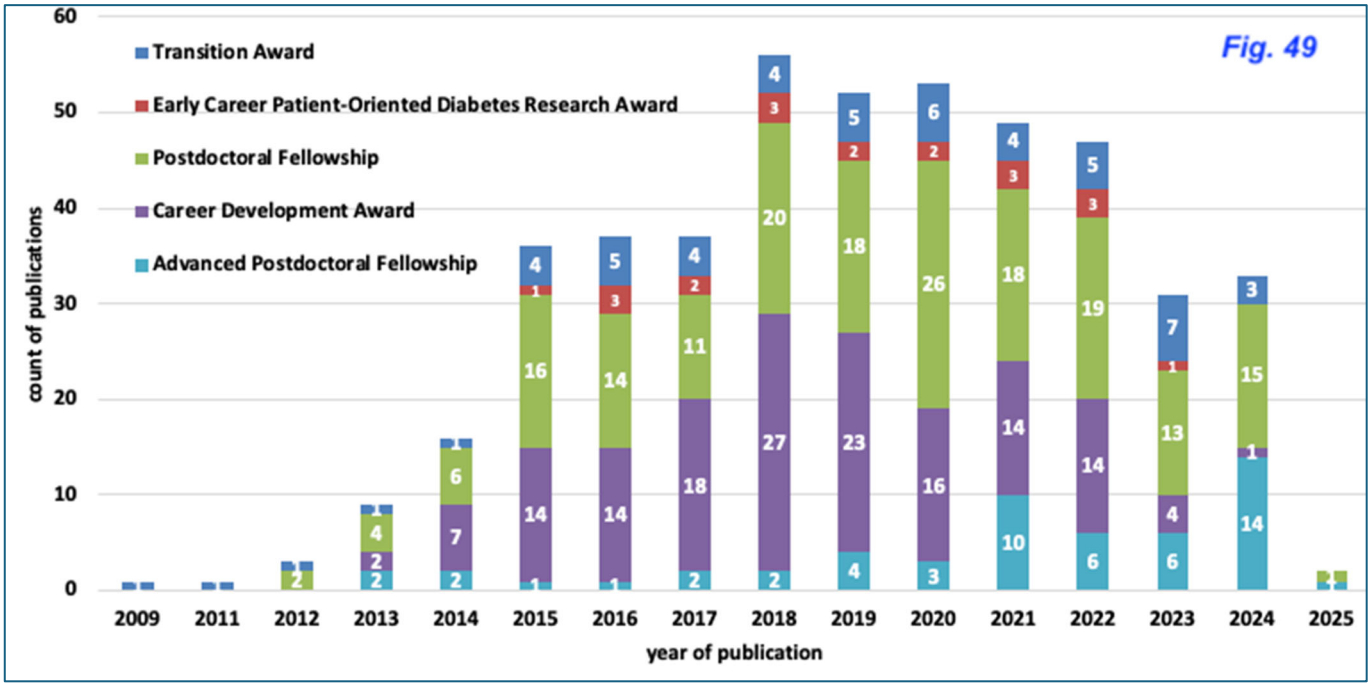


Fig. 49

Publication Index, By Award Mechanism: A "publication index" is generated for each mechanism in ***Fig. 50*** - the average number of publications, per award, for each award mechanism. All reporting CDAs are the most productive publishing mechanism at an index of 7.7, followed by ECPODRAs at 5.0. Respondents have published in 176 different journals.

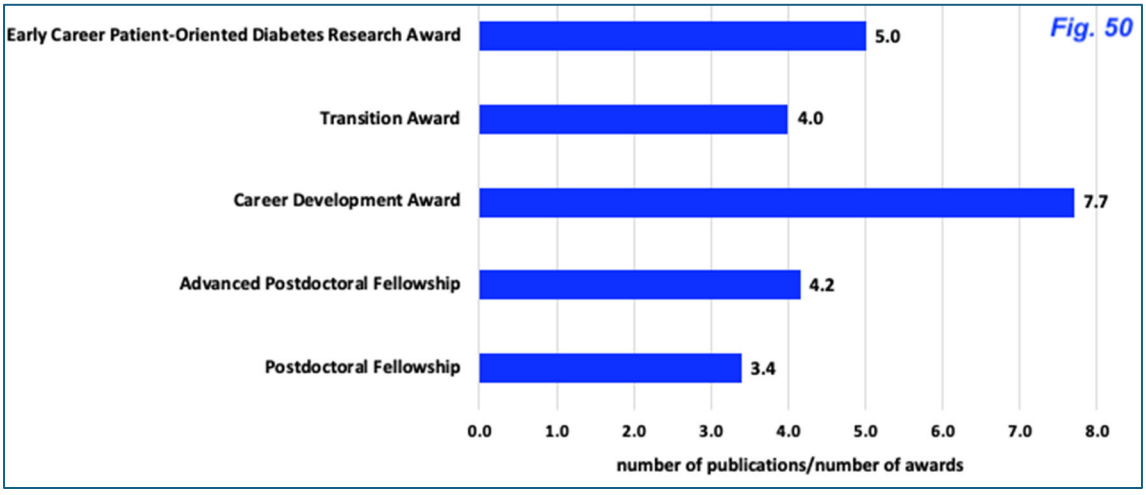


Fig. 50

The most-published-in journals are listed in ***Fig. 51.***

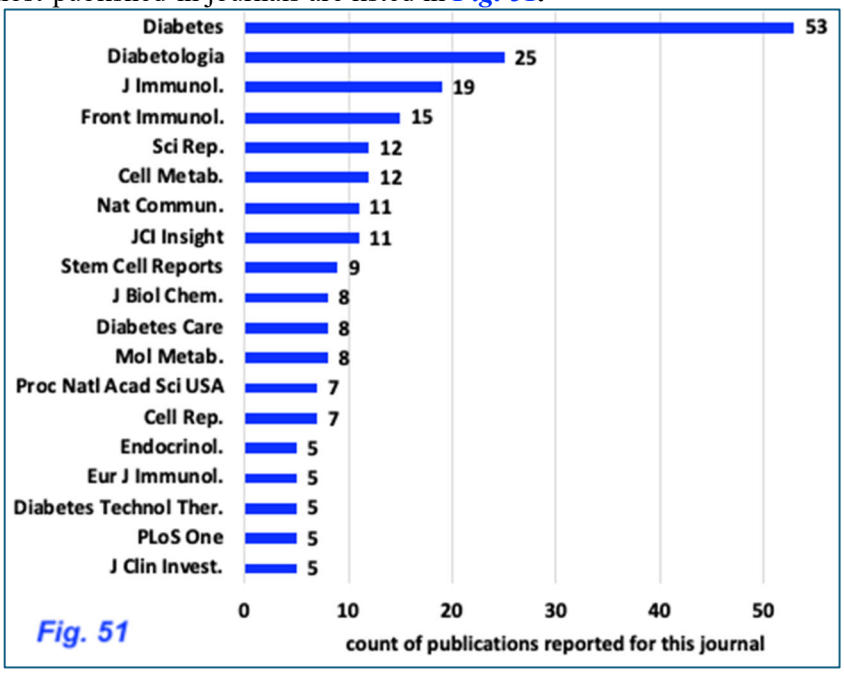


Fig. 51

In total, respondents reported 463 publications stemming from their training award in 176 different journals.

All journals and tally count where training award-funded research was published are listed in ***Appendix V.***

6. Clinical Trials, Patents and Commercialization from Training Awards

Section Summary:

- 17 clinical trials were reported as resulting from training awards

- PFs (7) and ECPODRAs (6) yielded the most clinical trials, followed by APFs (3) and CDAs (1)

- Clinical trials cover all phases from observational to Phase IV

- The majority of clinical trials (10) are funded by research/academic institutions; 4 by industry; and 3 by Breakthrough T1D (2 of these in collaboration with other agencies)

- Trial areas include drug and cell-based interventions for T1D; non-drug strategies for improved closed loop control; and T1D assessment approaches

- 41 patent-related activities were reported emerging from training awards: these included patents, published patent applications and licensing of intellectual property to industry/pharma

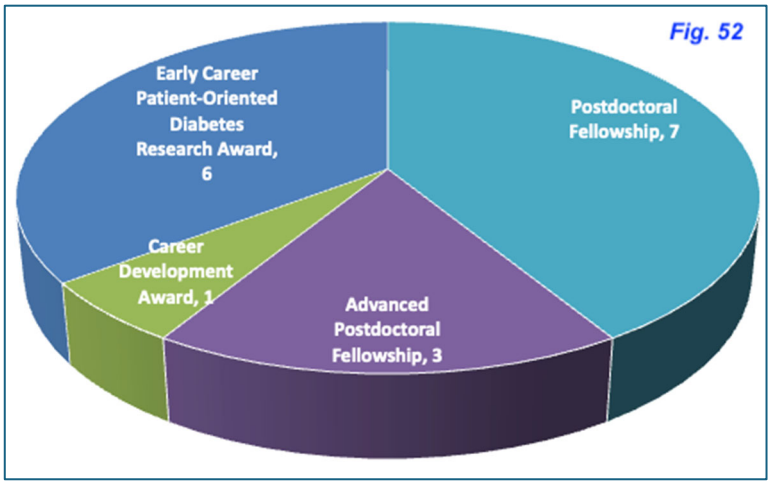
- The majority of patent activity came from CDAs (18), followed by PFs (15); ECPODRAs yielded no patents

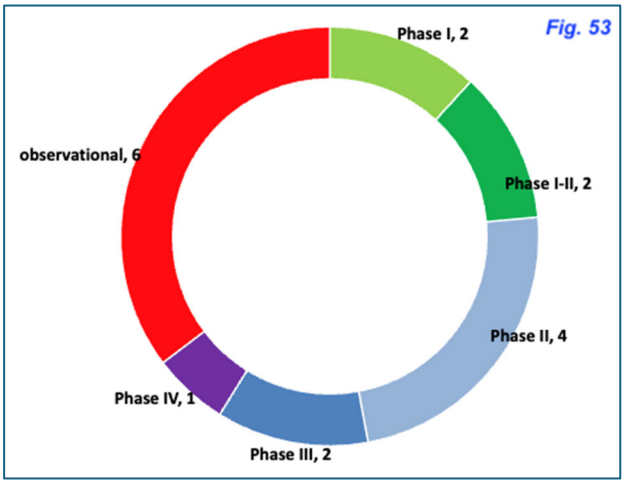
- 6 training awardee-generated inventions were licensed to pharma/biotech were reported including generation of beta-cells from progenitors; and encapsulation/matrix technologies used with cell/islet transplantation

Clinical Trials Emerging from Training Awards: Successful research studies can advance to the point of spurring a clinical trial. 17 clinical trials were reported as having come out of the training award cohort.

- These came from all award mechanisms except TAs
- PFs yielded the most trials (7) …
- followed by ECPODRAs (6) ***(Fig. 52).***

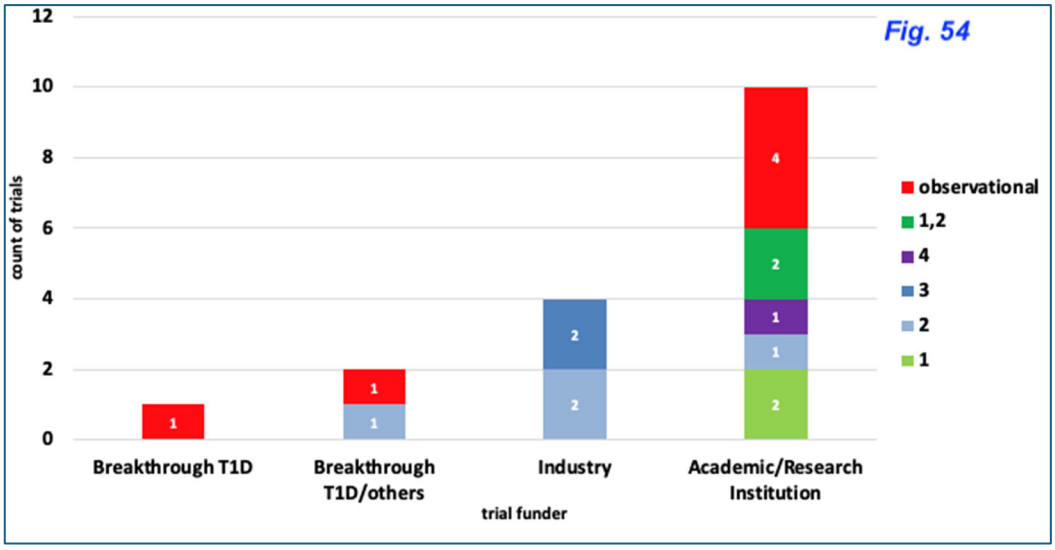
6 of the clinical trials reported were observational; the remaining 11 spanned across all trial stages Phases I-IV ***(Fig. 53)***.





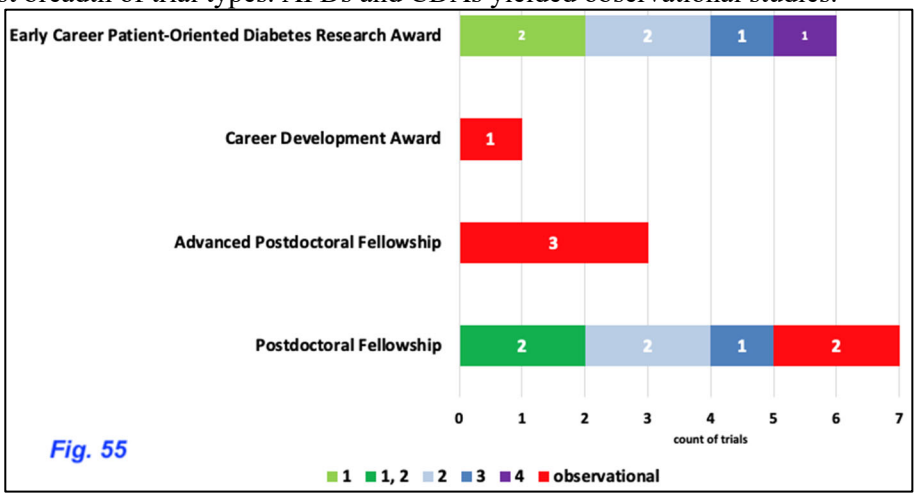
Who Funded These Clinical Trials? This is shown in ***(Fig. 54).***

- The majority of this small group of trials (10), are funded by academic/research institutions.
  - These covered a breadth of trial stages
    - Industry funded 4 of the trials: These were in Phase II or III trials.
    - 3 trials were funded fully/in part by Breakthrough T1D: 2 observational, 1 in Phase II.



After academic/research institutions and industry, Breakthrough T1D was the biggest funder of clinical trials emerging from training awards.

Fig. 55 shows the phases of trial that emerged from across award mechanisms.
PFs and ECPODRAs cover the greatest breadth of trial types. APDs and CDAs yielded observational studies.



What is the Focus of These Clinical Trials? The 17 clinical trials were sorted to high-level categories to get a sense of their topics of focus.

strategies for T1D assessment (Vitamin D measurement and ultrasound imaging)

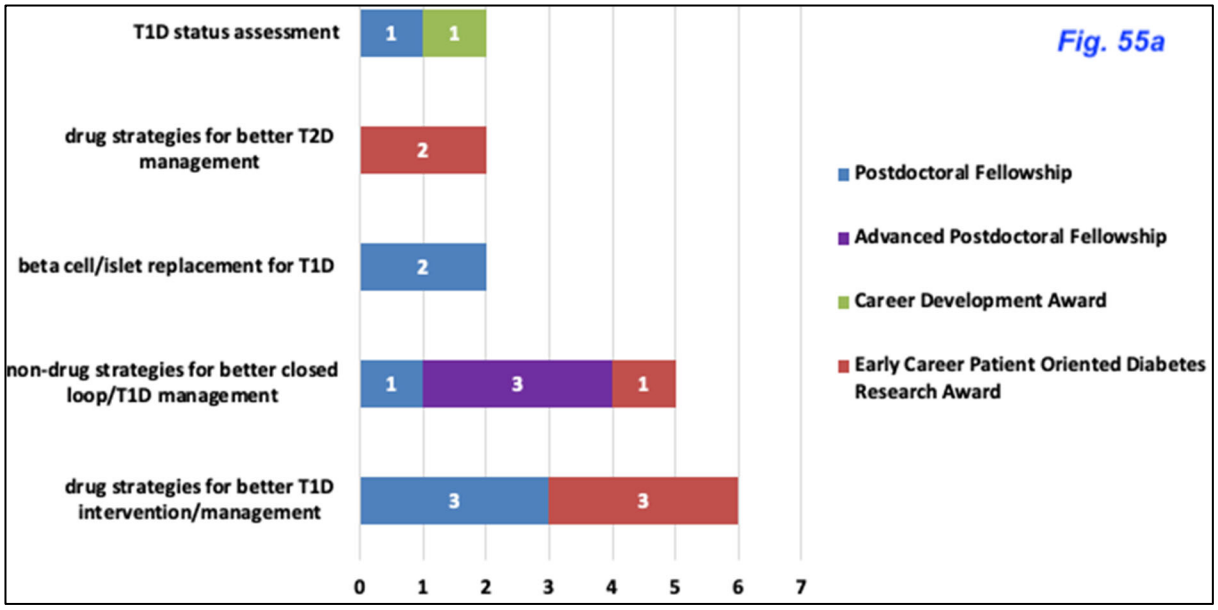
beta cell/islet replacement

Clinical trials come from across 4 training award mechanisms, and cover diabetes therapeutics, intervention, closed loop management, and beta cell transplantation.

drug strategies for improved diabetes management (T1D and T2D) and intervention (T1D)

non-drug strategies for improving closed-loop and T1D management

This data is shown in ***Fig. 55a,*** sorted by award mechanism and broad categories of trial focus.



Clinical trials emerging from training awards are listed in ***Appendix VI.***

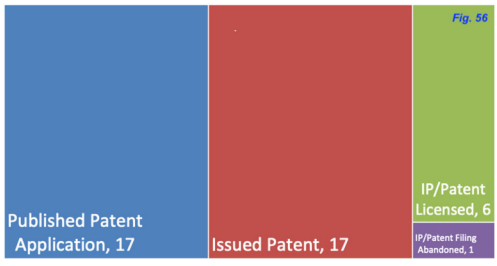
Intellectual Property (IP) and Patent Activity: Intellectual property (IP) can emerge from research in many forms, including new therapeutic candidates, novel drug targets or clinically-applicable technology. Once reviewed by an institution's technology transfer office, patents may be filed; they will subsequently be published; and eventually, issued. Along this journey, even before a patent is issued, this IP can be licensed to industry for commercial development.

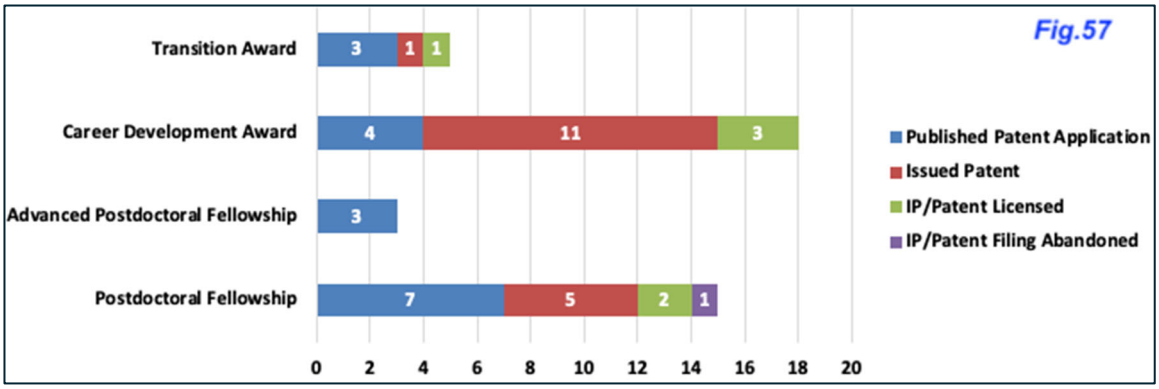
41 patent-related activities were reported from the training awards:

- 17 issued patents; 17 published patent applications; 1 abandoned patent filing 6 IP/patent licensing

A list of these patent-related activities are in ***Appendix VII.***

Note that this list does not include the full patent family that may stem from an individual invention. However it identifies the invention's core discovery. This is visualized in ***Fig. 56***. Patent activity comes from across award mechanisms with the exception of ECPODRAs. The majority of patent activity came from CDAs (18), followed by PFs (15) ***(Fig. 57).***





IP Licensing for Commercialization: 6 events of IP licensing to pharma/biotech were reported.

- 3 of these came from CDAs, 2 from PFs, 1 from TA

7. Community Engagement and Service: Collaboration, Resources, Service, Honors and More

Section Summary:

- 57% of respondents formed collaborations during the award; recipients of more advanced mechanisms were more likely to do this, PFs least likely, which might represent a facilitation opportunity for Breakthrough T1D

- 34% of respondents have resources that they are willing to share, ranging from data sets to mouse models

- 39% of respondents have trained "next generation" fellows. For 91 of these fellows, career paths were known, with 84% in academic research/clinical practice and 14% in industry

- 60% of respondents are grant reviewers for funding agencies, most prominently Breakthrough T1D, then NIH

- 16% of respondents are scientific advisors for foundations, industry and federal agencies

- 83% of respondents hold additional leadership roles in the diabetes scientific community

- 31% of respondents have received a professional honor they attribute to their training award

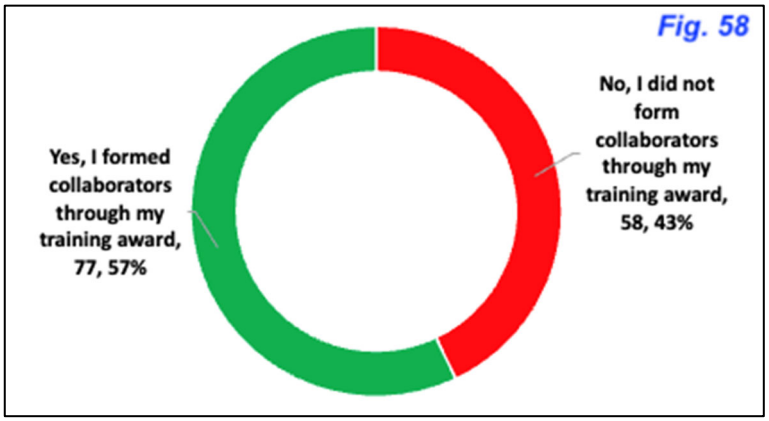
- 50% of respondents have continued to engage with Breakthrough T1D in community roles beyond seeking funds or reviewing grants. This is most prominent through presenting at local chapter events; participating directly in fundraising challenges; and supporting advocacy efforts

Training award recipients were asked to share their engagement and service activities across the diabetes community since their training award. Community engagement and service can take many forms, and some of these are explored below.

Did the Training Awardees Form Research Collaborations Through the Award?

77 (57%) of respondents reported that they had formed at least one, and often multiple, collaborators through the training award ***(Fig. 58, 59).***

- 40% of PFs
- 68% of APFs
- 83% of CDAs
- 75% of TAs
- 75% of ECPODRAs …formed collaborations from their training awards.



PF respondents were notably the least likely of all mechanisms to form collaborations from their training award.

This might highlight an opportunity for Breakthrough T1D to help facilitate collaborations for PFs during the award period.

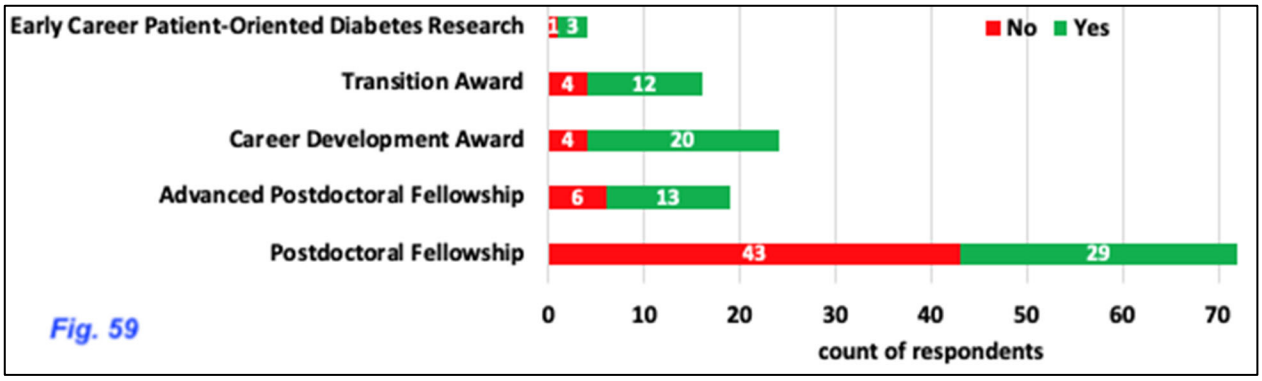


Fig. 59

Respondents shared extensive information about the many collaborations they had formed with academic and industry colleagues around the world. Some of the feedback expressed is presented below.

"I am not only maintaining older [collaborators] but building new ones right now for the new follow-on award we're applying for."
- **PF awardee**

"[I have made] International collaborations … research institutions and biotech companies to advance therapy development… partnerships across Europe, Asia, and the U.S."
- **TA awardee**

"[the award] inspired a turn in direction for my research … some of the people I have met through Breakthrough T1D …have been helpful discussion, advice and protocol sharing."
- **PF awardee**

"The award allowed me latitude to collaborate more widely. Many of those I maintain today were a result of this funding. Thank you."
- **CDA awardee**

"Literally countless [collaborators]. Industry, other academics, patient organizations. The networking this grant provided was remarkable."
- **ECPODRA awardee**

"Thanks to the APF, I was able to connect and collaborate with many scientists across the globe."
- **APF awardee**

Do Training Awardees Have Research Resources to Share With Colleagues? Training awardees were asked if, through their Breakthrough T1D- funded research, they had generated any resources that they might be willing to share. This topic was explored because, if there is sufficient interest, Breakthrough T1D could explore establishing an online sharing platform for this. 46 (34%) of respondents have resources to share ***(Fig. 60)***. These respondents identified 57 different resources; these were grouped into 4 broad categories and are summarized in ***Fig. 61*** and sorted by award mechanism. Information on a variety of resources was submitted across all award mechanisms except ECPODRA. Some respondents have already deposited these data in public databases; mouse models with JAX Labs. Some investigators are already sharing their resources widely.

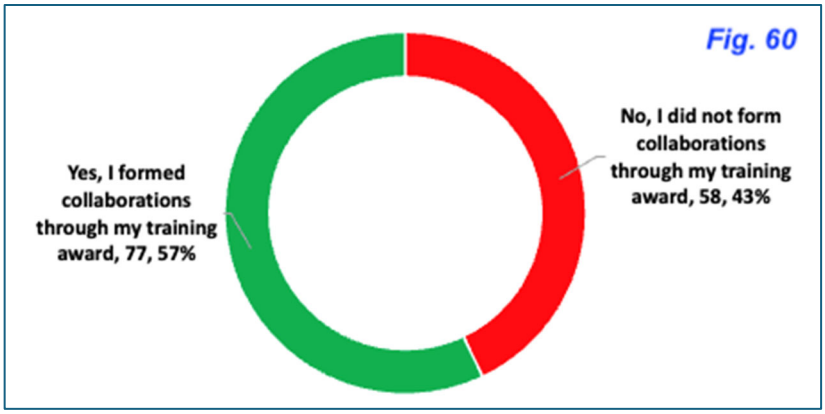
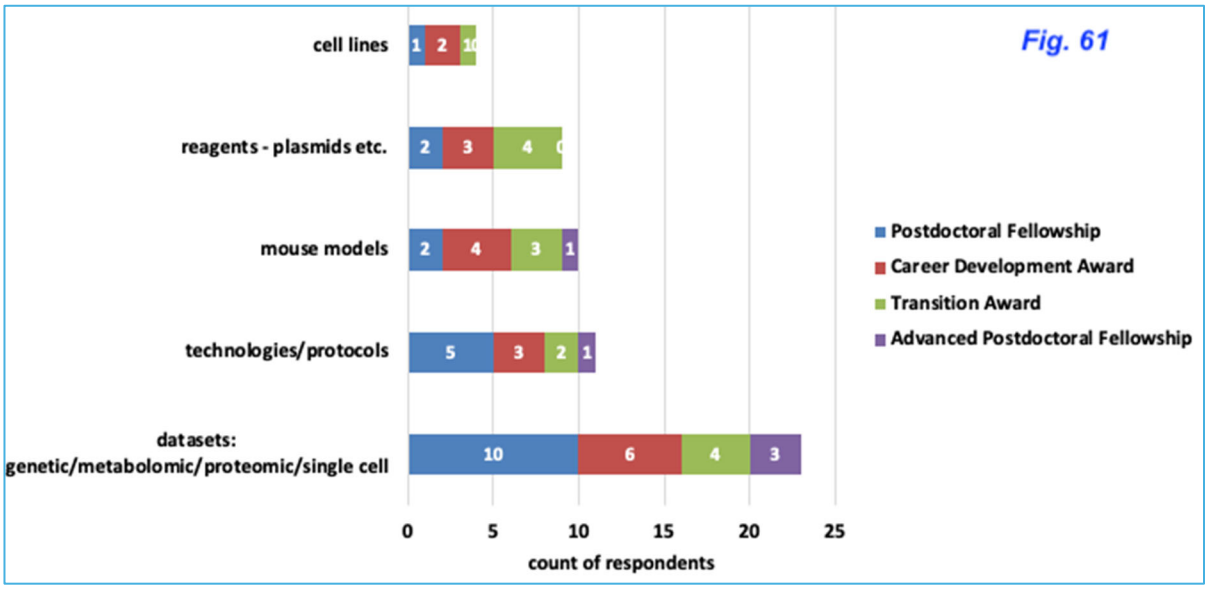


Fig. 60

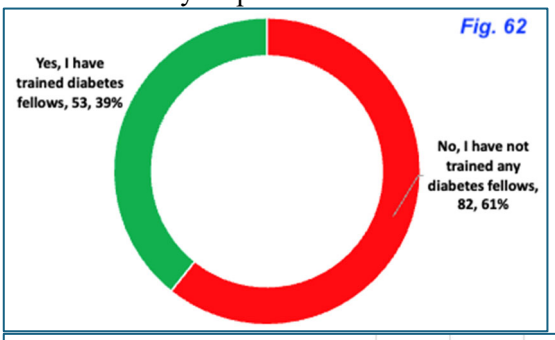
Training awardees have generated an array of research resources and are willing to share these. Some unique opportunities are presented, such as a chance to test cell therapies in custom devices and 3D printing setups.



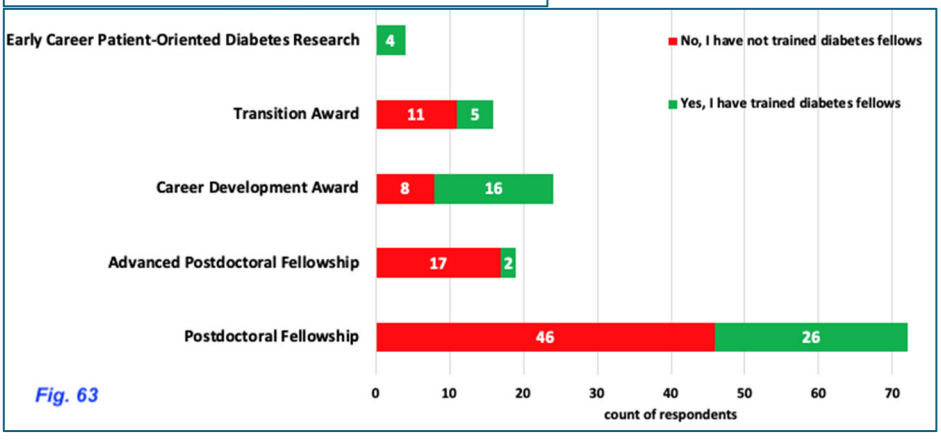
Are Training Awardees Themselves Training the Next Generation of Diabetes Fellows? This question was included in the survey, since many former training awardees now have independent laboratories, which might include their own "next generation" trainees.

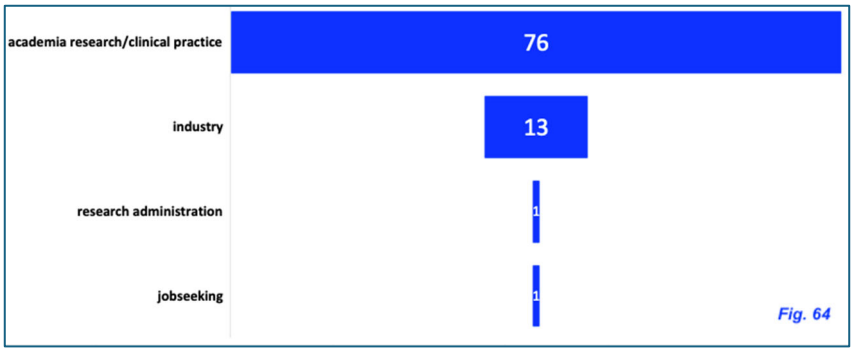
- 53 (39%) of respondents have trained fellows ***(Fig. 62)***
- These came from across all award mechanisms ***(Fig. 63)***
- 43 (32%) of respondents shared information on the current roles of a total of 91 of their own former trainees
- Today:
  - 76 (84%) of these "next-generation" trainees are in academia research/clinical practice
  - 13 (14%) in industry; and
  - 1 (1%) are in each of research administration, and jobseeking categories ***(Fig. 64)***.

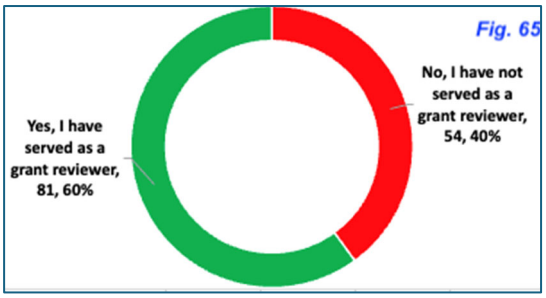
The split between industry and academia research/clinical practice roles is very similar to that reported earlier in Section II for our survey respondents.



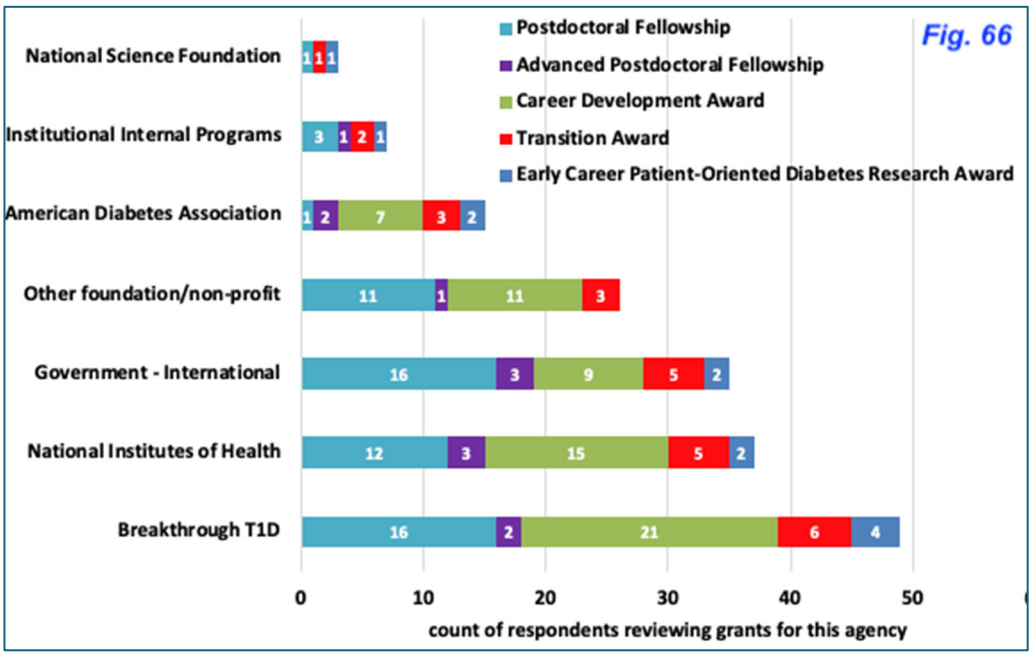
"I am now fortunate to have mentees below me (one of whom received a CDA). So not only did this award help me, but it helped establish an enduring source for new trainees interested in diabetes research."
- **CDA awardee**







Have Training Awardees Served as Grant Reviewers for Research Funding Entities? For researchers, the invitation to review or research funding agency grants can be an indicator of having established expertise in a field of science. 81 (60%) of respondents have served as a grant reviewer since their training award closed ***(Fig. 65)***.
From the responses, 8 prominent agencies or categories of agency were mapped and organized by training award mechanism. Breakthrough T1D is the most prominent entity where 49 (36%) of respondents are serving as grant reviewers. This is followed by NIH (37, 27% of respondents are reviewers) then international government agencies (35, 26% of respondents are reviewers). Respondents from all award mechanisms are serving as reviewers across most agencies ***(Fig. 66)***.



Have Training Awardees Served as Advisors for Research Entities? Research entities often engage top-level expertise from the research community to help plan and guide their programs at high level. A small number are serving as grant advisors -only 22 (16%) of respondents have fulfilled the role of advisor ***(Fig. 67).*** CDAs represent the greatest number of advisors, but respondents from across mechanisms are fulfilling these roles, advising a range of entities including government and non-profit funding agencies. Breakthrough T1D, American Diabetes Association and other foundations/non-profits are the most prominent clients ***(Fig. 68).***

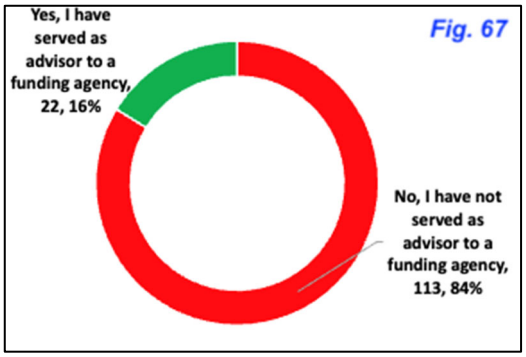


Fig. 67

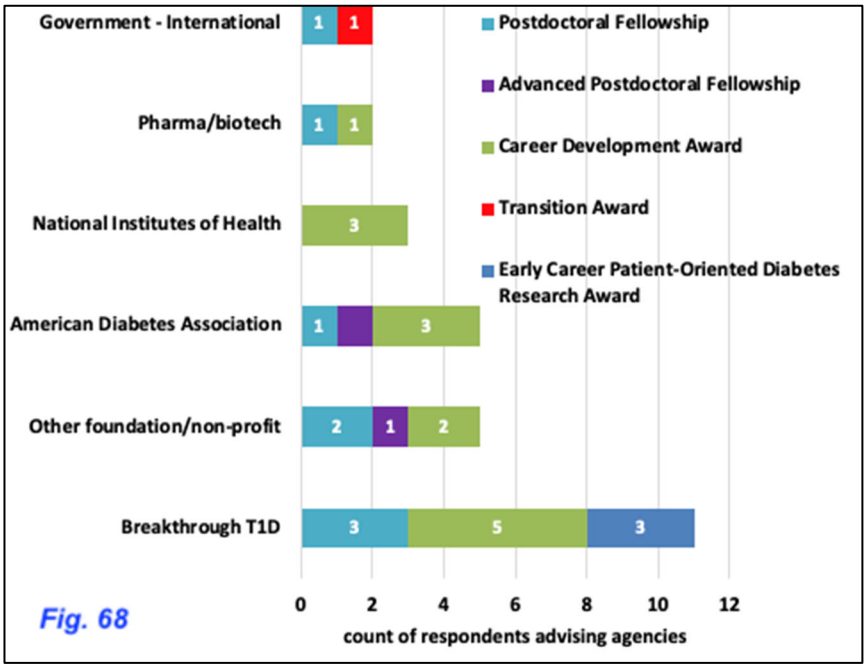


Fig. 68

What Other Leadership Roles Do Training Awardees Hold?

112 (83%) of respondents reported a total of 306 additional leadership roles *(Fig. 69).*

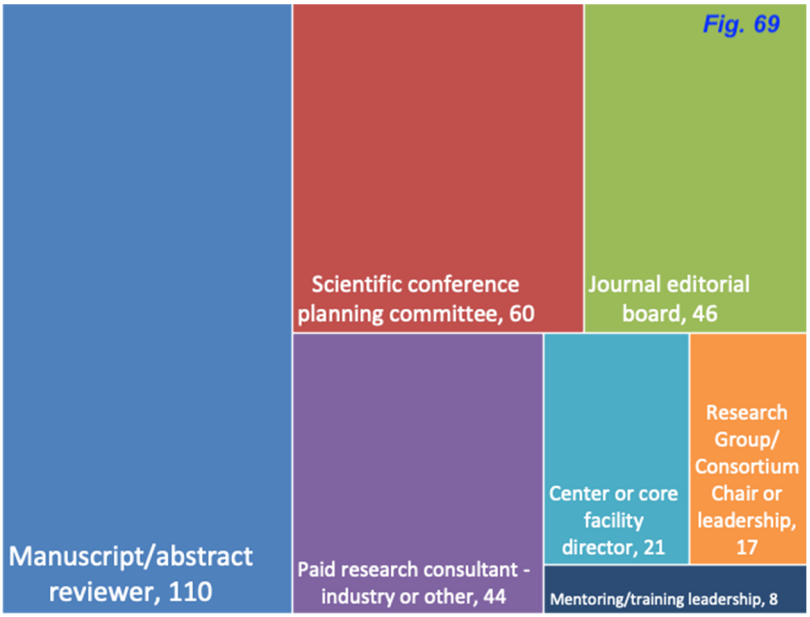


Fig. 69

Respondents hold many roles in the professional diabetes community, including grant, manuscript and abstract reviewers; advisors and consultants to non-profit agencies and industry; editorial boards; conference planning; and research program leadership.

Have Training Awardees Received Any Honors As a Result Of The Award? The survey asked respondents to share anything that they perceived or identified as an honor that had been received as a result of the training award.
42 (31%) of respondents reported at least 1 honor *(Fig. 70).* Written responses were parsed and sorted and formed 4 broad categories, shown in *Fig. 71* organized by award mechanism. The most prominent honor was a recognition or excellence award; addititonal honors cited included invited meeting speaker, travel award and securing a desirable appointment.

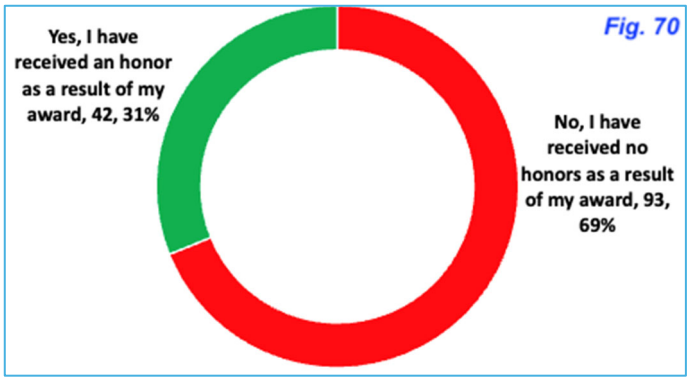


Fig. 70

> **"… being awarded a faculty position with institutional support was all made possible because of this grant. It truly launched my career and enabled me to start my own lab. … this investment in myself by BT1D has made a huge difference in my career and hopefully many more to follow after me!"**
>
> - **CDA awardee**

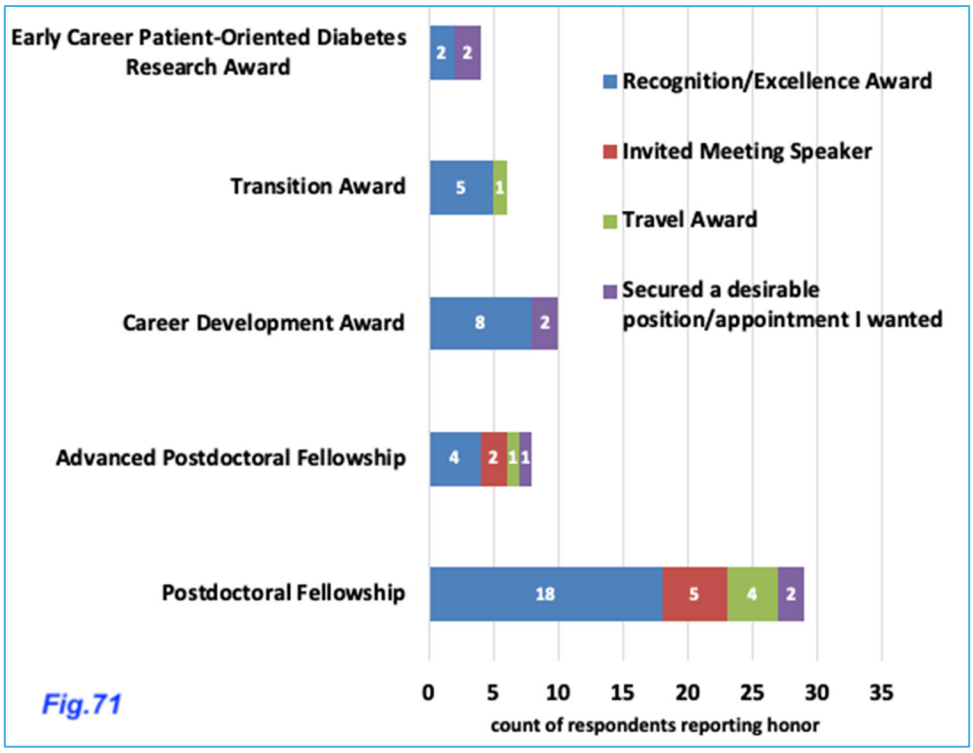


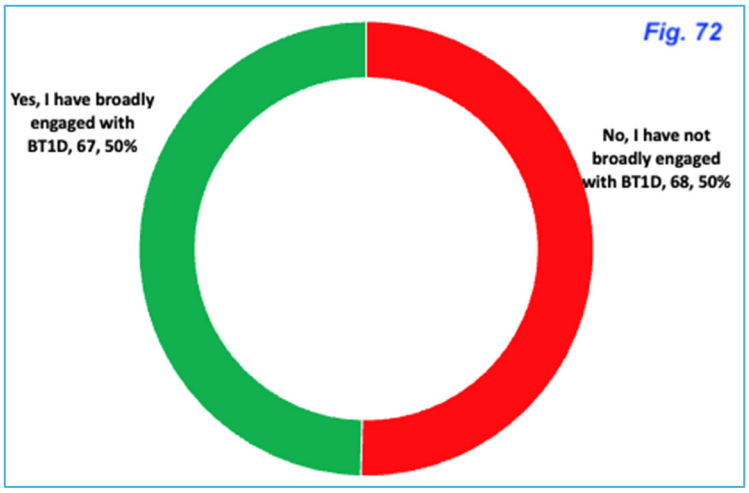
Fig.71

Have Training Awardees Engaged With Breakthrough T1D in Broader Community Roles? Outside of research grant or reviewer roles, 67 (50%) of respondents have engaged with Breakthrough T1D in a number of ways since the training award closed ***(Fig. 72)***. Paths of engagement are shown in ***Fig. 73.***
Respondents have continued to interface with Breakthrough T1D in numerous ways, most prominently having presented research updates at local events; participated in fundraising challenge activities, and supported advocacy efforts.

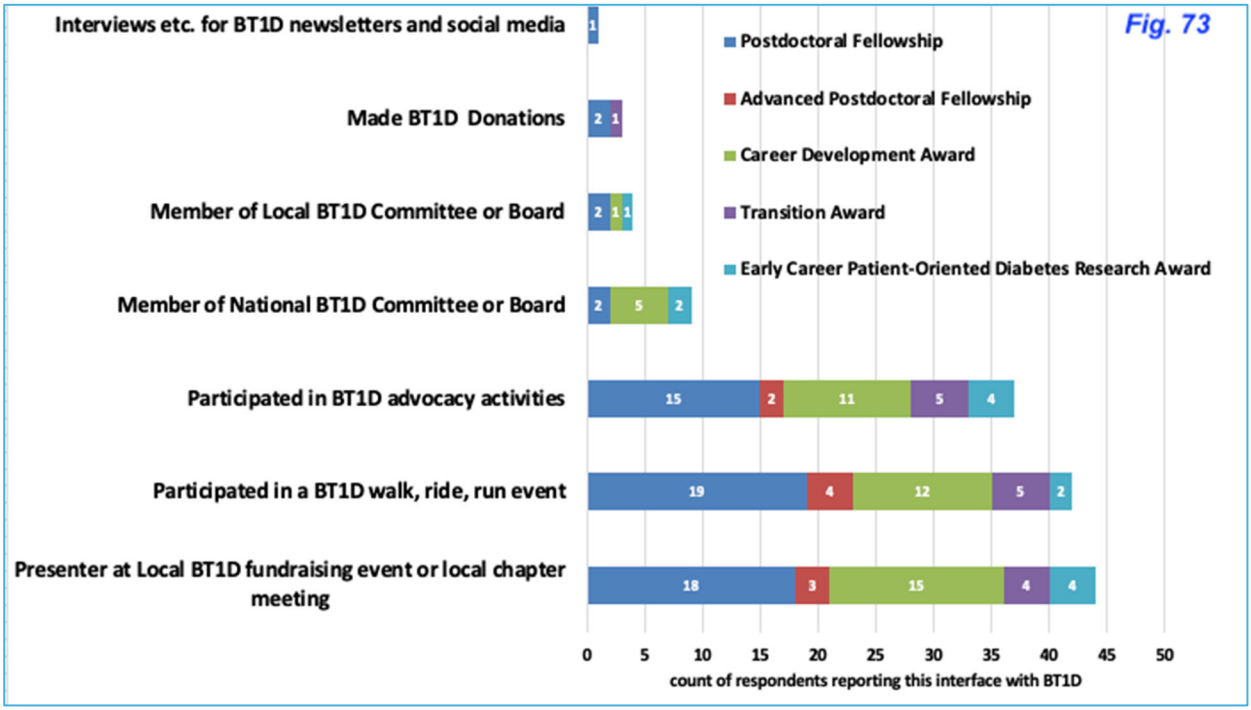
> **"Keynote Speaker at the (chapter) Summit Meeting"**
>
> - **TA awardee**

> **"I have been featured on social media and newsletters providing responses to questions"**

> **"[I do a Breakthrough T1D] walk every year and [make] annual donations"**
>
> - **TA awardee**



Across award mechanisms, repondents have maintained engagement with Breakthrough T1D and supported the organization beyond seeking grants or reviewing programs.



8. Assessing the Global Impact of the Training Award: Ratings for 12 Areas

Section Summary:

- Respondents ranked 12 career aspects/events in terms of how impactful the training award had been on them

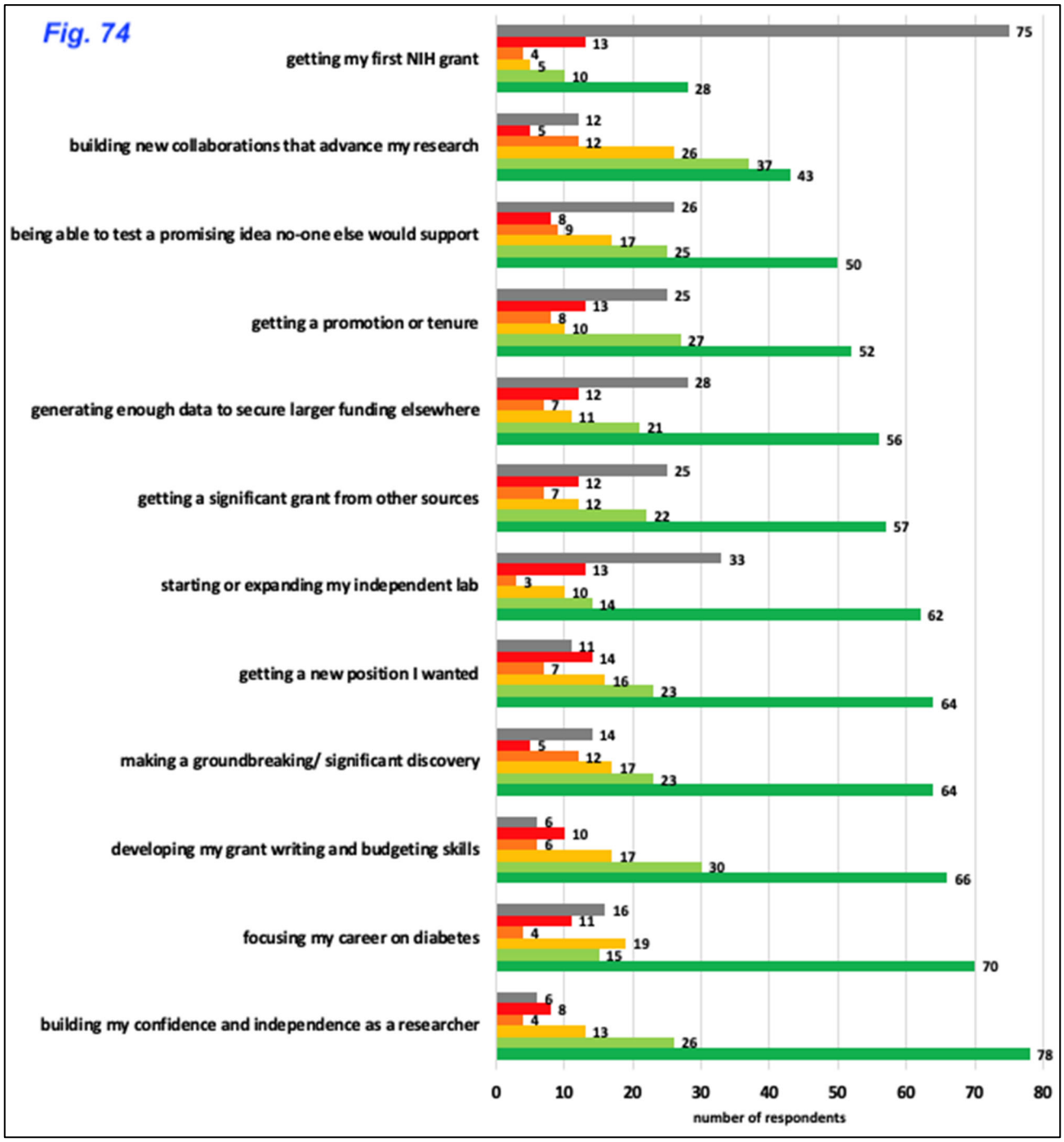
- Certain factors were rated high impact across all award mechanisms, relating to the core aspects of early career development: building confidence, focusing on diabetes, and developing grant writing skills

- However, variations in ratings were also seen for career-stage specific items

- These findings might provide guidance on specific career aspects that may be supported by each training award mechanism

Scale of Assessment: In the two prior evaluations of Breakthrough T1D training awardees, respondents provided a large body of qualitative text sharing anecdotal ways in which the award had impacted their careers. However, this type of data is hard to sort and use to generate meaningful output. Drawing from many of the topics that were shared in these anecdotes, the 2025 survey included 12 "rating scale" questions.
Respondents were asked to rate on a scale of 1-5 how impactful their training award had been on this specific aspect of their career.
1 = had high impact
5 = had no impact
The option of "n/a" (not applicable) was also offered for use when this aspect did not apply to the individuals' career.

12 Question Responses: All 135 respondents completed this section of the survey. The collected responses for all respondents, by total number of responses received for each rating, is shown in ***Fig. 74.***



Top 5 Areas of Overall Impact: Collating the responses for all awards can provides indicators of overall impact for the training awards programs.
The top 5 areas where the training award had overall "highest impact" were:

1. **Building my confidence and independence as a researcher (58% of respondents)**
2. **Focusing my career on diabetes (52% of respondents)**
3. **Developing my grant writing and budgeting skills (49% of respondents)**
4. **Making a groundbreaking/significant discovery (47% of respondents)**
5. **Getting a new position I wanted (47% of respondents)**

These 5 areas are fundamental to the inception of a new and successful research career.

One thing that sticks out on this chart above is that 75 (56%) of all respondents said that "getting my first NIH grant" was not applicable to them. Presumably this covers those no longer in academic research; and those that have not yet successfully secured an NIH grant.

Question Responses by Award Mechanism: To look deeper at this data, the responses were converted to represent the percentage of respondents for each award mechanism that gave a specific answer. This enables the direct comparison between award mechanisms. For easy visualization, this percentage responses data was converted to treemaps, shown in ***Fig. 75.*** The top 5 areas identified above are seen to be prominent in all 5 of the treemaps. In comparing the treemaps, there are differences. For example:

- CDAs and ECPODRAs prioritize "getting a promotion or tenure"
- CDAs and TAs prioritize "generating enough data to secure larger funding elsewhere"
- PFs prioritize "being able to test a promising idea no-one else would support".

These treemaps confirm that the training award mechanisms can be of unique value for different purposes at certain career stages. The PF map below shows the 12 color categories most clearly.

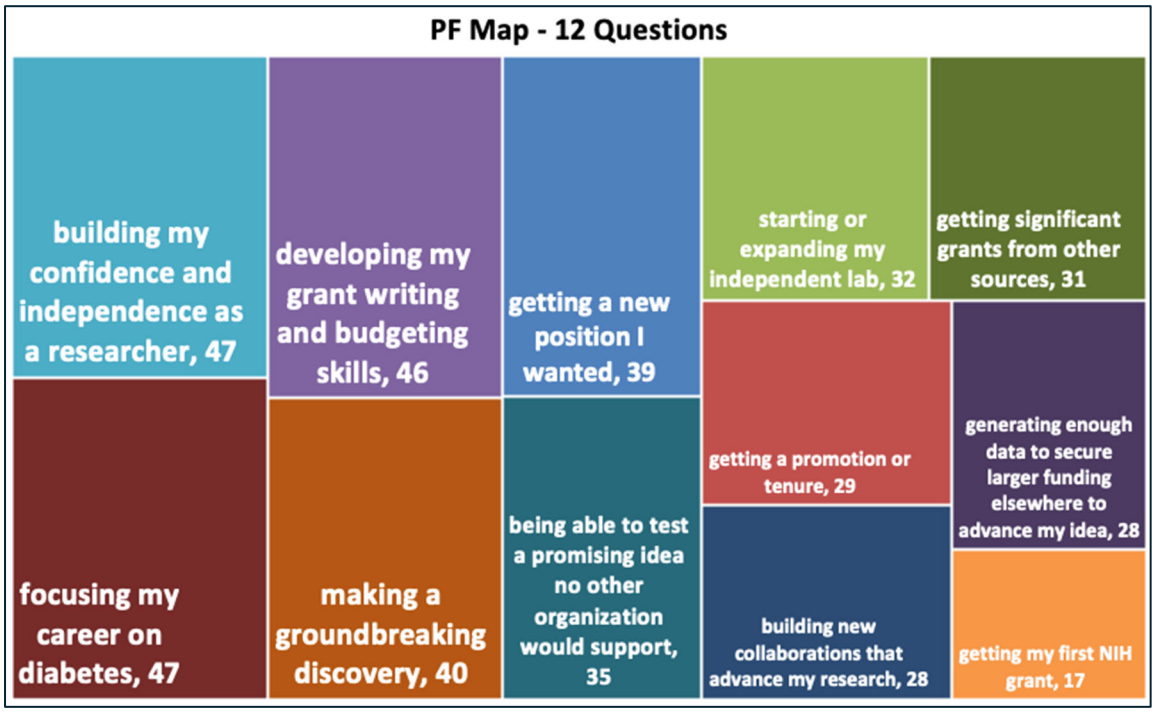
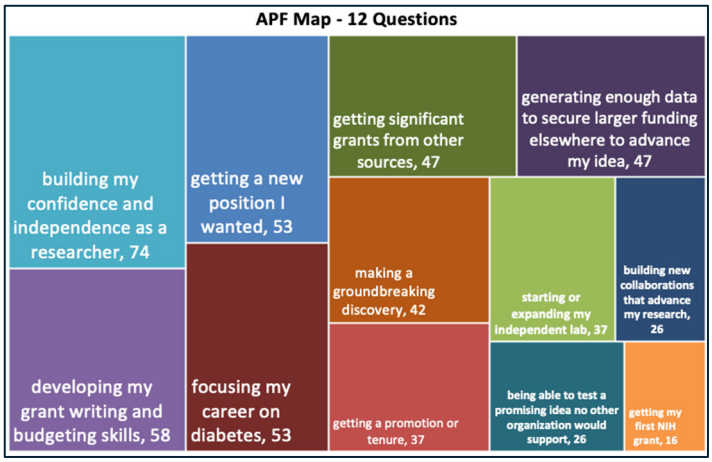
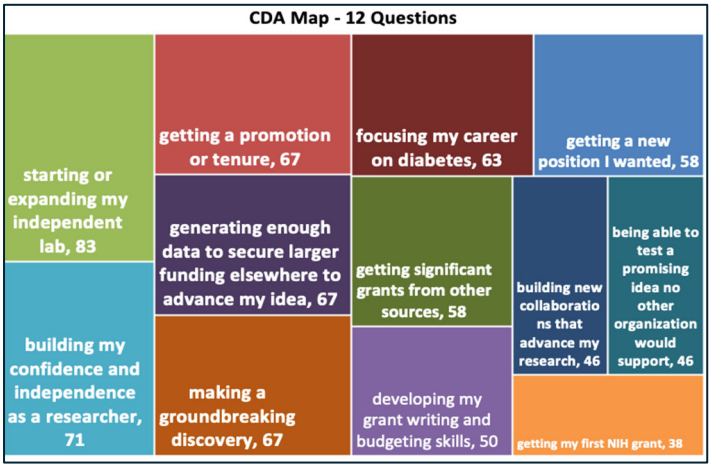


Fig. 75





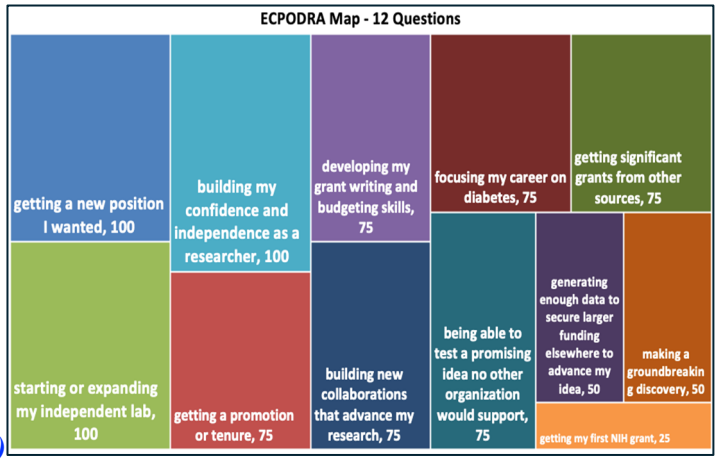


Fig 75 (continued)

9. Written Feedback, Suggestions & Recommendations

Section Summary:

- 43 respondents provided 54 items of written feedback as to how the training award programs might be improved

- the most prominent recommendations:

- **have more fellows meetups in person or online, including European/regional, at the ADA conferences, and virtual platforms for connection. These will help build a future diabetes network**
- **facilitate networking with senior mentors external to awardee institution, and better monitor the role of trainee internal mentors**
- **provide career training guidance in areas including grant writing and leadership, as well as on potential career paths to take**
- **support for health benefits and maternity leave**
- **flexibility in the way funds may be used in cases of unique circumstances**
- **fund a "pathway to independence" award to take post -CDA recipients forward into their own career**
- **keep trainee alumni engaged in Breakthrough T1D non-science roles: advocacy, fundraising, etc.**

- there may be a particular advantage to provide PF and APF trainees with the connection opportunities, additional mentorship & career training mentioned above. The survey found that trainees at the PF and APF stages are more likely to leave academic research, to leave diabetes and to leave the bench altogether

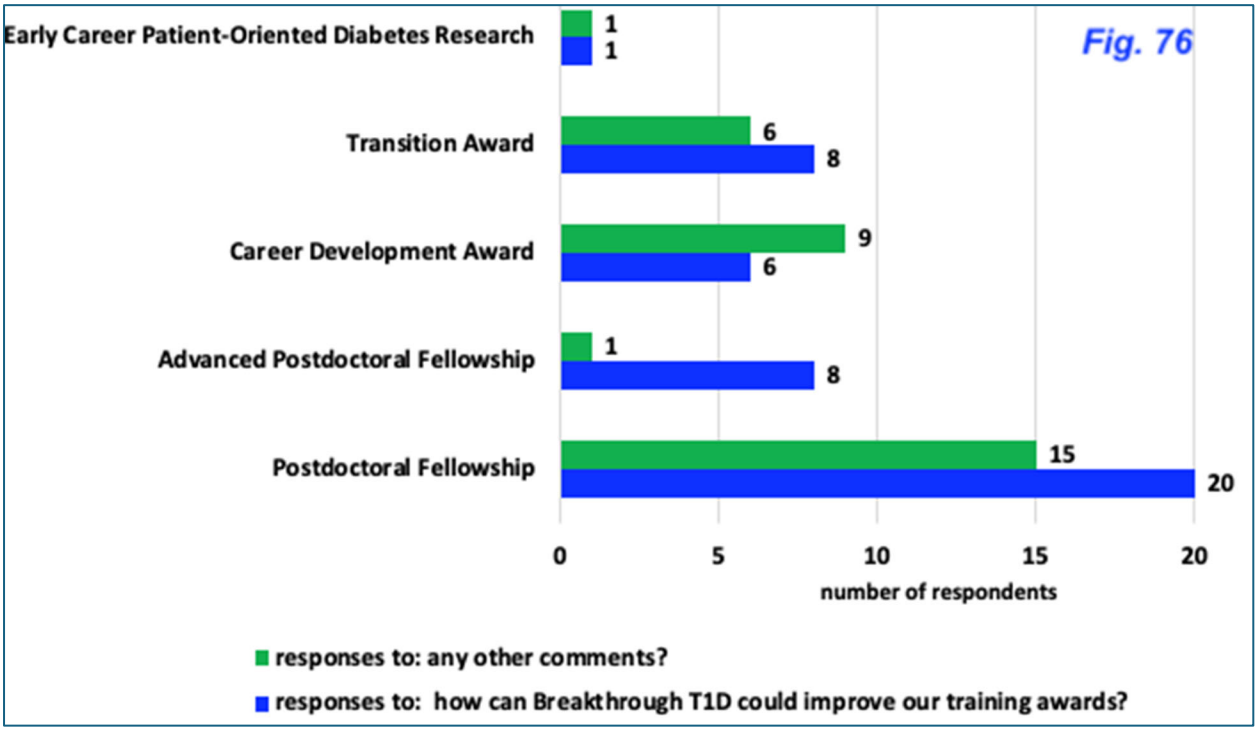
- a resounding message was a remarkable level of gratitude from respondents about how impactful these awards have been in shaping their professional careers as T1D professionals

- a small survey of Breakthrough T1D peer organizations found that while a number do fund training programs, none have evaluated them beyond the scope of this 2025 impact evaluation. Indeed, some peer organizations hope to learn from Breakthrough T1Ds work here, and it can potentially be widely shared with these colleagues.

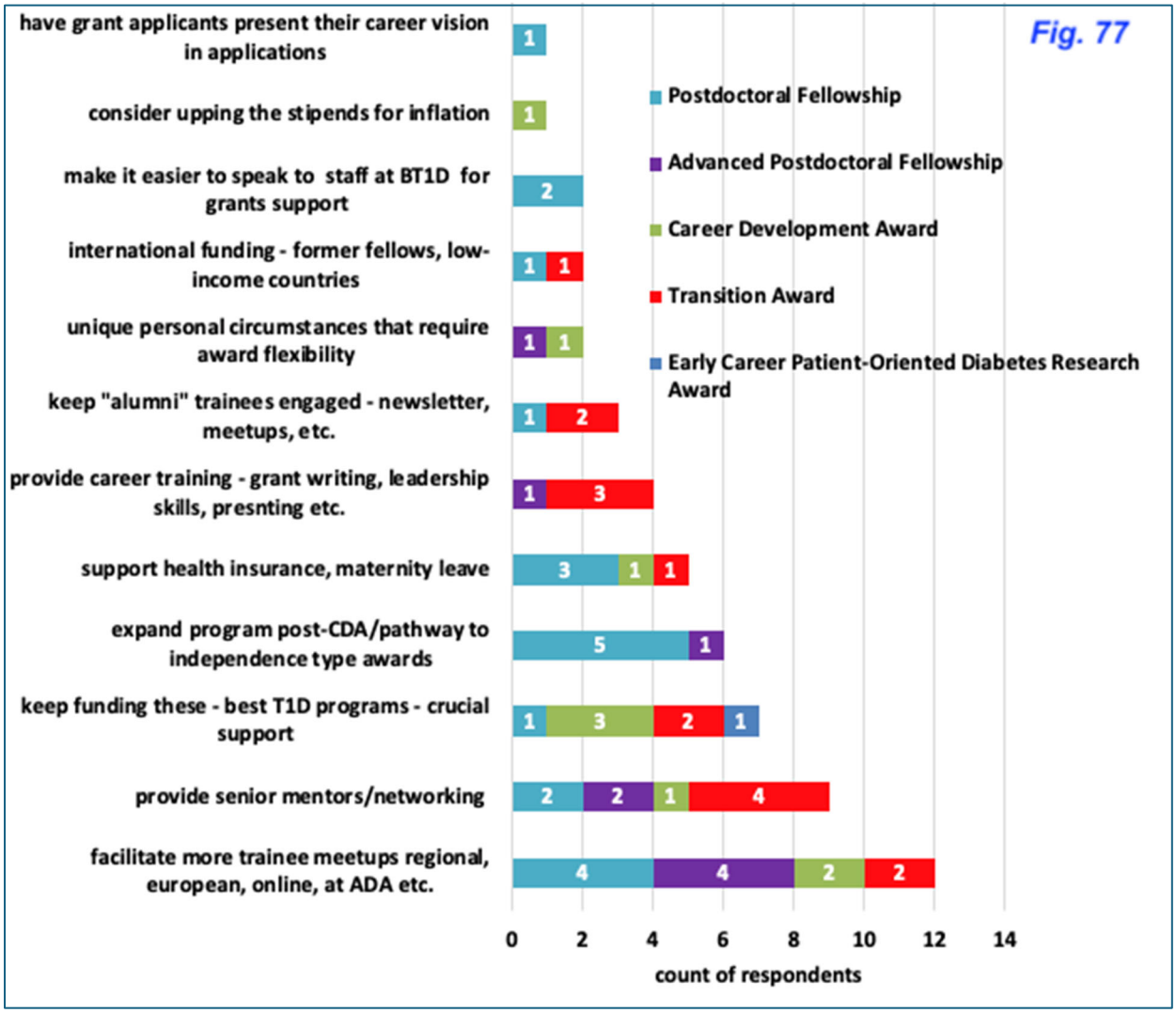
At the end of the survey, were asked share general written comments on two areas:

1. How can Breakthrough T1D improve its training awards?
2. Do you have any other comments to share about the value of the training awards?

The number of respondents from each award mechanism who provided feedback is shown in ***Fig. 76.***



Question 1: How Can Breakthrough T1D Improve Its Training Awards? 43 (32%) of respondents provided comments in response to this question. This feedback was reviewed, parsed into 54 recommendations, organized into 12 categories and is presented in ***Fig. 77.***



- 12 respondents requested more ways for trainees to connect and meet, nationally, locally or online.
- 9 respondents requested assistance with meeting/connecting with senior mentors
- 4 respondents requested training in career development issues, leadership skills, etc.
  These 3 areas echo recommendations made earlier for fellows meetings.

Additional recommendations included:

- add a post-CDA "path to independence" award (6 respondents) to support the establishment of an independent lab. Suggestions included something like NIH R03, K99 awards and post-CDA senior research fellowships. Also suggested were for PFs, an alternative to traditional APFs; and support for translational of preclinical findings from training award.
- add health insurance or paid maternity leave (5 respondents)
- keep "alumni" fellows engaged in Breakthrough T1D by reaching out with information about fundraising events etc. (3 respondents)

7 respondents communicated the message that Breakthrough T1D training awards are the best in their class, fill a unique niche, and are crucial support for T1D research

Some individual feedback is provided below.

"Keep offering these awards, especially in today's climate they are crucial"

"Please keep allocating funds to these grants. They are so important.
… the grants could be formalized a bit more to assign outside mentors or have dedicated meetings at say the ADA conference every year for current awardees"

"Keep us engaged even once our BT1D grants have expired! I would have loved to be still invited to walks, talks to patient groups, consortia... but that all stopped when my grant ended"

"For European candidates a local community (like the future leaders program in Australia) will be needed. In Europe, the T1D community is very closed/narrowed and still managed by same senior PIs for the last 15 years"

"My department used the "extra" [funds] of my fellowship for my health insurance. I wasn't able to use that money to buy a laptop or travel to conferences. Breakthrough T1D … really wants to support awardees' careers. Covering health insurance costs might be another way [to do this]"

"It would be invaluable if Breakthrough T1D could support trainees by fostering the development of leadership and entrepreneurial skills, enabling them to make a significant societal impact, particularly in improving the lives of individuals living with T1D"

Question 2: Do You Have Any Other Comments to Share About the Value of the Training Awards? 32 (24%) of respondents provided comments in response to this question. This feedback was reviewed, parsed into 45 recommendations, organized into categories and is presented in ***Fig. 78.***

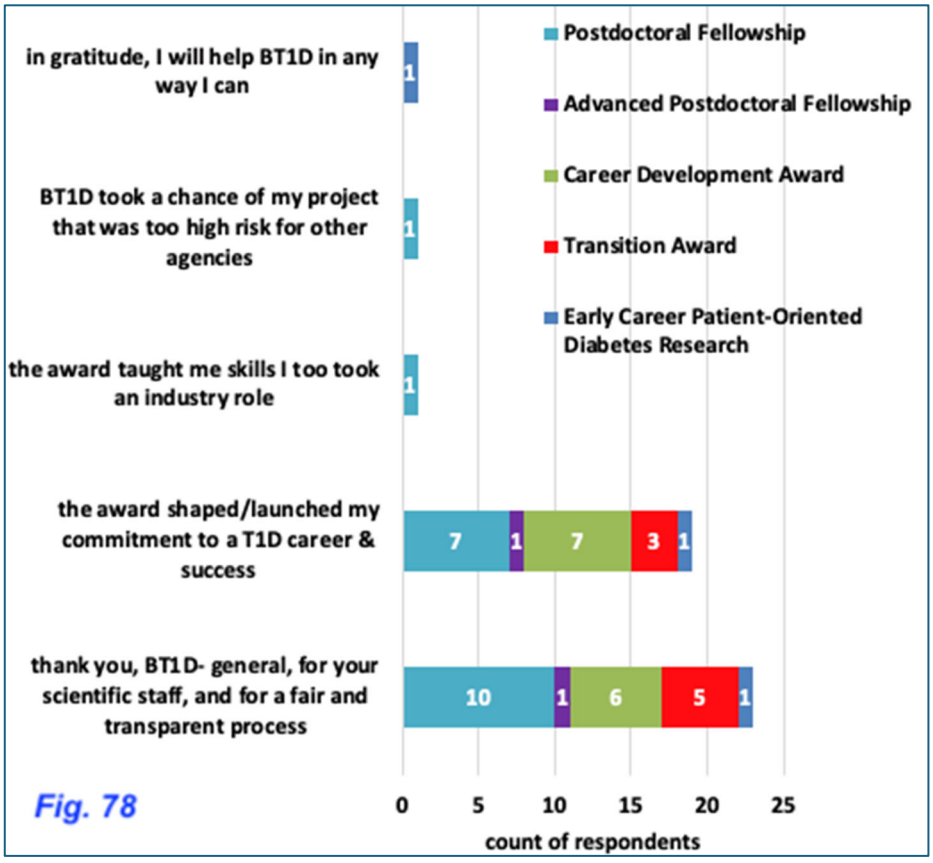


Fig. 78

- 23 respondents expressed thanks and gratitude to Breakthrough T1D for supporting their research; lauded the scientific staff of the organization; and the fair processes used in decision-making
- 19 respondents specified that this award had shaped their T1D career and contributed to their success
- 1 respondent said that Breakthrough T1d had funded a project too risky for other agencies; and another noted that though they had moved to industry, they had taken with them lessons learned under the award.

Some individual feedback is provided below.

"… a fantastic application process with valuable feedback and transparency"

"I wouldn't be where I am without this award. Please, please continue to grow these grant programs"

"Unequivocally, the award launched my career as a diabetes researcher"

"It was truly an honor to be part of the program"

"… [the award] enabled me to launch my independent career, secure an independent tenure track position (and train my first 10 graduate students"

"It is impossible to convey in words how fundamental the support provided by Breakthrough T1D has been to enabling me to continue as a committed and passionate researcher in the field of T1D. Thank you to all the donors and for making this possible"

Improving the Evaluation Process: What Can We Learn from Our Peer Organizations? During this impact evaluation, Breakthrough T1D reached out to fellow medical research non-profits through the Health Research Alliance, a professional membership group for health research agencies. The purpose of this survey was to find out:

- if other agencies also fund training awards;
- if they do, what is the scope of these programs? and
- have they evaluated these training programs? If so, what have they gleaned?

Data was collected from 16 HRA member organizations via survey; the survey questions and list of participating agencies are included in ***Appendix VII.*** Summary from survey responses of 16 agencies is below; this suggested that Breakthrough T1D is quite advanced in its approach and may be able to share its experiences with other agencies.

3 agencies fund trainees internationally around the world; 3 more fund only US-based international trainees

13 agencies support training awards; 3 do not support trainees

Training awards support from undergraduate to independent career and post-resident clinician stages

Training award features including flexible funding structures, parental leave, paid conference attendance and protected study time

8 agencies have evaluated their training programs; 5 have not

Of those agencies that have evaluated training programs, nothing novel was shared that may be used to improve future Breakthrough T1D evaluations

6 agencies noted that their evaluation methods for training programs are not optimal and that they would actually like to learn from the Breakthrough T1D impact evaluation process

Appendices

Appendix I: Brief description of training award mechanisms

More information can be found in the Breakthrough T1D Grants Handbook:
https://www.breakthrought1d.org/wp-content/uploads/2024/07/granthandbook.pdf

Postdoctoral Fellowships (PFs) are designed to attract qualified, promising scientists entering their professional career in the T1D research field. The applicant is required to work with a sponsor who can provide a training environment conducive to beginning a career in type 1 diabetes-relevant research. At the time of activating the award, the applicant must have a doctoral degree (PhD, MD, DMD, DVM), or the equivalent from an accredited institution and must not be simultaneously serving an internship or residency. This fellowship is intended for those at a relatively early stage of their career. Ordinarily, the most recent doctoral degree (PhD, MD, DMD, DVM, or equivalent) will have been received no more than 5 years before the application is submitted. Awards are for three years, assuming satisfactory progress. The fellowship term is 12 months for each fellowship year. Fellows must devote at least 75% of their effort to the project outlined in the fellowship proposal. Recipients of the Breakthrough T1D postdoctoral fellowship award cannot hold another postdoctoral fellowship at the same time.

Advanced Postdoctoral Fellowships (APFs) are designed to attract qualified and promising health scientists, to provide an opportunity to receive full time research training, and to assist thesepromising individuals in transitioning from a fellowship to an independent (faculty-level) position. Breakthrough T1D envisions the 3-year award term as a period in which fellows will receive critical research training that will position them to work at the leading edge of their chosen field. An additional, optional 1-year transition award will further assist fellows to proceed to independent faculty or research appointments and will serve as a bridge between the fellowship and independent competitive research funding. During the fellowship phase, the applicant is required to work with a sponsor who can provide a training environment conducive to beginning a career in diabetes-relevant research. At the time of activating the award, the applicant must have a doctoral
degree (PhD, MD, DMD, DVM, or equivalent) from an accredited institution and must not be simultaneously serving an internship or residency. This fellowship is intended for applicants who have completed some postdoctoral training, show
extraordinary promise and are preparing for a transition to an independent research position. Generally, the most recent doctoral degree (PhD, MD, DMD, DVM, or equivalent) will have been received no more than 6 years before the application is submitted. Awards will be made for a duration of up to 3 years, assuming satisfactory progress. The fellowship term is 12 months for each fellowship year. Fellows must devote at least 75% of their effort to the
project outlined in the fellowship proposal.

Career Development Awards are designed to attract qualified and promising scientists early in their faculty careers and to give them the opportunity to establish themselves in areas that reflect the Breakthrough T1D research emphasis areas. In the five-year term of the award, awardees will focus their research efforts on a subject directly related to Breakthrough T1D mission goals and Breakthrough T1D Research Strategy, and position themselves to work at the leading edge of type 1 diabetes research. These awards are designed to assist exceptionally promising investigators. Although Breakthrough T1D is especially interested in fostering careers in clinical investigation, Career Development Awards may emphasize either basic or clinical topics. Required: MD, DMD, DVM, PsyD, PhD, or equivalent and faculty position or equivalent. to attract qualified and promising scientists. The Career Development Award is intended for individuals at an early stage of their independent academic career. Researchers who have received their first faculty-level appointment less than 3 years before the submission date are eligible to apply for this award. The applicant must hold an academic faculty-level position (including assistant professor or equivalent) at the time of submission of the proposal, at a university, health science center, or comparable institution with strong, well-established research and training programs for the chosen area of interest.

Transition Awards are an optional transition year on the APF in which the awardee may request funding support in their first year as a faculty member of an academic institution. To apply for the transition year, awardees must
provide a letter of institutional commitment and faculty appointment along with a satisfactory progress report and abbreviated research plan for the transitional year. The Transition Award can be requested at any time during the 3-year fellowship period after a faculty appointment has been obtained.

Kellogg Family Early-Career Patient-Oriented Diabetes Research Awards are designed to provide crucial support to investigators who plan to pursue a career in diabetes-related clinical investigation. Awards are made in the later stages of training and include the ability for recipients to transition to independent faculty or research appointments. This is intended for clinical researchers at a relatively early stage of their independent career. Clinical researchers who have received their first faculty-level appointment less than 5 years before the submission date are eligible to apply for this award. Applicants must have an MD or MD-PhD or PsyD, hold an appointment or joint appointment in a subspecialty of clinical medicine in a clinical department, and conduct human clinical research. In exceptional circumstances, non-MD candidates will be considered if their work is likely to contribute significantly to a clinical outcome.

Appendix II: 2025 survey questions for training awardees.

Breakthrough T1D (formerly JDRF): 2025 Evaluation of Training Awards

SECTION 1: INTRODUCTION

You are invited to participate in a Breakthrough T1D survey of past training award recipients. This focuses on training awards that closed out between 2015 and 2024, and you are in this recipient group. The survey data will be used to evaluate the training awards overall impact, and to identify ways to improve these programs.

Breakthrough T1D training awards included are: Career Development Awards, Early Career Patient Oriented Diabetes Research Awards, Postdoctoral Fellowships, Advanced Postdoctoral Fellowships, Faculty Transition Awards (follow on from Advanced Post Doctoral Fellowships).

Your training award is referred to in the survey as "your Breakthrough T1D award". If you completed more than one Breakthrough T1D training award between 2015 and 2024, you can provide outcome data for them collectively in one survey response.

*If you can't remember the details of your award(s), contact Kim Hunter-Schaedle (see below).

The survey is in Google Forms. Allow enough time or keep the tab open until it is complete and submitted. If you have a Google account, you can sign in at the bottom of this page to save your partial responses and return to the survey later.

The survey asks about your current career, outcomes from your training award; and for your thoughts on how the Breakthrough T1D training award may have impacted or influenced your career. Questions are multiple choice, checkbox or scale-rating based, but there are also opportunities for your written feedback. The survey should not take more than 30-45 minutes, depending on how much you have to share. All responses will be collated for analysis, and will not be directly identifiable as yours in our outcome reports.

If you have any questions during the completion of this survey, please contact:

Dr. Kim Hunter-Schaedle, Survey Consultant for Breakthrough T1D at: khunter-schaedle@breakthrought1d.org

You are also welcome to contact Tamara Croland, Director of Program Administration at Breakthrough T1D at TCroland@BreakthroughT1D.org

You'll be prompted to do so at the end of the survey, but when you are done, please also forward a copy of your current curriculum vitae to Kim at the above email address.

Thank you!

SECTION 2: YOUR CURRENT PROFESSIONAL ROLE

- Name/Email Address
- Current Position/Job Title/Institution/Company/Organization/Organization Type
- Are you presently in a tenure track position? yes/no
- Are you still working in the same country where you held your Breakthrough T1D award? Yes/No
- Are you currently engaged in diabetes research and/or diabetes clinical practice? (selections: either, both, none)
- If you left diabetes why? Select all that apply.
- Lack of diabetes research funding
    - I could not find a suitable position in the scientific diabetes field
    - I could not find a suitable position in the clinical diabetes field
    - Change of my scientific interest away from diabetes
    - Change of my clinical interest away from diabetes
    - Change of my career plans
    - Other reason (describe)

SECTION 3: YOUR CURRENT ENGAGEMENT IN DIABETES-RELATED RESEARCH

If you are NOT currently engaged in diabetes-related research, please scroll down to Section 4 – "your current engagement in diabetes-related clinical practice".

- **What is the type focus of your diabetes-related research?** Type 1 diabetes/Type 2 diabetes/both
- **Identify your current fields of diabetes-related research. Check all that apply.** Endocrinology, Immunology, Genetics, Pancreatic development, Nephropathy, Neuropathy, Retinopathy, Vascular disease, Metabolic disease, Disease modifying therapies research, Cell therapies research, Other diabetes field (describe)
- **What is the bench-to-bedside focus of your diabetes-related research? Check all that apply.** Basic/discovery research, Preclinical research, Patient oriented/non-therapeutic clinical research, Therapeutic clinical trials, Other focus (describe)
- **Did your Breakthrough T1D Award help you stay in/focus on diabetes-related research? Check all that apply.**
    - Yes - it provided training in the field
    - Yes - it provided the opportunity to publish in the field
    - Yes - it provided introductions to investigators/contacts in the field
    - Yes - it provided the opportunity to work on an innovative project
    - No - it had no impact on my decision
    - It had another type of impact (describe

SECTION 4: YOUR CURRENT ENGAGEMENT IN DIABETES-RELATED CLINICAL PRACTICE

If you are NOT engaged in diabetes-related clinical practice, please scroll down to the bottom and skip to the next section.

- **What is the type focus of your diabetes-related clinical practice?** Type 1 diabetes/Type 2 diabetes/both
- **Identify your current field of diabetes-related clinical practice. Check all that apply.**
  Endocrinology, Immunology, Genetics, Nephropathy, Neuropathy, Retinopathy, Vascular disease, Metabolic disease, Disease modifying therapies, Cell therapies, Other diabetes field (describe)
- **Did your Breakthrough T1D award help you stay in/focus on diabetes-related clinical practice? Check all that apply.**
  - Yes – it provided training in the field
  - Yes – it provided the opportunity to publish in the field
  - Yes – it provided introductions to contacts in the field
  - No – it had no impact on my decision
  - Other type of impact (describe)

SECTION 5: DURING YOUR BREAKTHROUGH T1D AWARD

- **When you applied for your Breakthrough T1D award, did you apply to another funding agency at that time, to support the research?** Yes/no
- **If yes, did you receive a Notice of Award (funding offer) from another agency at that time?** Yes/no
- **If yes, which award did you accept?**
  - I accepted the Breakthrough T1D award, and rejected the other offer(s)
  - I accepted both/all awards I was offered
  - I rejected the Breakthrough T1D award, and accepted the other offer(s)
  - I don't remember
- **If you received a notice of award from another agency, what determined your decision on which award(s) to accept or not accept?** Describe
- **During your Breakthrough T1D award, did you attend a Breakthrough T1D Fellows Meeting?** Yes/no
- **If you attended the Breakthrough T1D Fellows Meeting, what did you find the most beneficial aspects? Check all that apply.** Educational opportunity; networking opportunity; opportunity to present my work; None; Other (describe)
- **Even if you did not attend, please share with us any ways in which Breakthrough T1D might further improve upon or enhance the Breakthrough T1D Fellows Meeting.** Describe

SECTION 6: OUTCOMES FROM YOUR BREAKTHROUGH T1D AWARD

- **Immediately after your Breakthrough T1D award completed, did you take a role at the same institution (as where you had held the award) or at a new institution?** same institution/new institution
- **List your position title and institution immediately after your Breakthrough T1D award completed.** Describe
- **Have you applied for research funding since completing your Breakthrough T1D award?** Yes/no
- **If yes, from which of the following sources, if any, have you APPLIED FOR research funding since completing your Breakthrough T1D award? Only include applications on which you were Principal Investigator or Co-PI. Check all that apply.**
  - Breakthrough T1D
  - US Federal (NIH, VA, DOD, etc.)
  - International (non-US) government source
  - Foundation or professional organization other than Breakthrough T1D
  - Private philanthropy sources
  - Pharmaceutical/Industry
  - My institution's internal funding programs/grants/prizes
  - Other funding source (describe)
- **If yes, from which of the above sources have you RECEIVED research funding since completing your Breakthrough T1D award? Only include awards on which you were Principal Investigator or Co-PI. Check all that apply. Describe awards** (source, total amount including indirect costs, start/end year, grant title, grant number, etc.)
- **Did you publish any papers from your Breakthrough T1D award?** Yes/no. If yes, provide PMID or citations.
- **As a result of your Breakthrough T1D award, have any patents been filed or issued, or intellectual property reported to your institution?** Yes/no. If yes, provide details – patents issued/applications titles, numbers, e-links, etc.
- **Has your Breakthrough T1D award led to real-world impact in the diabetes scientific/clinical community for any of the following? Check all that apply and provide details.** Groundbreaking advances in research; Patient interventions/clinical trials; Medical technology; Patient resources; Policy; Other
- **Did your Breakthrough T1D award generate any resources you'd be willing and able to share with other investigators?** Yes/no. if yes, describe.
- **Did you receive any honors or accolades as a result of your Breakthrough T1D award? These may be prizes, or anything else that you consider an honor or accolade.** Yes/no. If yes, describe.
- **Did you build any new collaborations through your Breakthrough T1D award?** Yes/no. If yes, describe.
- **In your career since your Breakthrough T1D award, have you trained any new diabetes fellows who are still working in diabetes-related research or diabetes-related clinical care?** Yes/no. If yes, provide name and current institute.

SECTION 7: YOUR PROFESSIONAL SERVICE AND COMMUNITY ENGAGEMENT SINCE YOUR BREAKTHROUGH T1D AWARD

- **Do you currently or have you in the past participated as a research grant reviewer for the following agencies? Check all that apply.** Breakthrough T1D; ADA; NIH; Other agency (describe)
- **Do you currently or have you in the past participated as a scientific advisor for the following agencies? Check all that apply.** Breakthrough T1D; ADA; NIH; Other agency (describe)
- **Do you now or have you in the past served in any of the following leadership roles within the field of diabetes research? Select all that apply.**
    - Manuscript/abstract reviewer
    - Scientific conference planning committee
    - Journal editorial board
    - Center or core facility director
    - Paid research consultant – industry
    - Paid research consultant – other
    - Other leadership roles (describe)
- **Since receiving your Breakthrough T1D award, in which of the following ways have you engaged with Breakthrough T1D? Select all that apply.**
    - Member of national Breakthrough T1D Committee or Board
    - Member of local Breakthrough T1D Committee or Board
    - Presenter at local Breakthrough T1D fundraising event or local chapter meeting
    - Participated in Breakthrough T1D advocacy activities
    - Participated in a Breakthrough T1D walk or ride event
    - Other engagement with Breakthrough T1D (describe)

SECTION 8: GENERAL CAREER IMPACT OF YOUR BREAKTHROUGH T1D AWARD

This section asks if your Breakthrough T1D award has impacted specific events of your career. For each question, please select a score from 1 to 5 where 1 = had high impact, 5 = had no impact. Check n/a if this question is not applicable to your career.

1. Breakthrough T1D award impact on: "Getting a new position I wanted"
2. Breakthrough T1D award impact on: "Getting a promotion or tenure"
3. Breakthrough T1D award impact on: "Starting or expanding my independent lab"
4. 64. Breakthrough T1D award impact on: "Developing my grant writing and budgeting skills"
5. Breakthrough T1D award impact on: "Building my confidence and independence as a researcher"
6. Breakthrough T1D award impact on: "Getting my first NIH grant"
7. Breakthrough T1D award impact on: "Building new collaborations that advance my research"
8. Breakthrough T1D award impact on: "Focusing my career on diabetes"
9. Breakthrough T1D award impact on: "Generating enough data to secure larger funding elsewhere to advance my idea"
10. Breakthrough T1D award impact on: "Being able to test a promising idea no other organization would support"
11. Breakthrough T1D award impact on: "Making a groundbreaking/significant discovery
12. Breakthrough T1D award impact on: "Getting significant grants from other sources"

SECTION 9: FINAL COMMENTS

- **Are there any ways in which Breakthrough T1D could improve upon our training awards? This may include award structures or opportunities you have seen other funding agencies offer.**
- **Please provide any other comments you have.**

Appendix III: Publicly available online resources used to complete missing data.

These are some of the most frequently used resources for this project.

NIH RePORTER
https://reporter.nih.gov
Used when respondents provided only partial information on follow-on grant funding secured from NIH to confirm full amounts (including indirects), grant duration dates, grant titles, funding NIH institute etc.

Congressionally Directed Medical Research Programs Funded Research Database*
https://cdmrp.health.mil/search.aspx
*Used briefly for same purposes as NIH website above. However, this resource was not accessible for the majority of this project as the database was taken offline by the government in early 2025 and not yet restored as of May 2025. Despite follow-up with respondents, they were not always responsive. In the majority of cases for CDMRP funding, therefore, information shared for these awards is therefore as provided by respondents, and may not reflect indirect costs.

Breakthrough T1D Funded Research Database
https://www.breakthrought1d.org/explore-research/funded-research/
Used to confirm details of Breakthrough T1D funding obtained by respondents that were outside of the evaluation cohort of awards.

Google Patents
https://patents.google.com
Used to locate and confirm information (patent numbers, dates, status) on patent filings reported by respondents.

PubMed
https://pubmed.ncbi.nlm.nih.gov
Used to confirm details on publications (year, journal, title, PMID etc.)

Clinicaltrials.gov
https://clinicaltrials.gov
Used to confirm information on clinical trials reported by respondents (phase, current status, therapeutic, sponsor). These were largely reported via the survey section “real world impact”.

Foundations & Non-Profit Funding Agencies
The websites of many small foundations (see Appendix IV) were searched if needed to confirm details provided by respondents.

Appendix IV: Summary list of sources and amounts providing follow-on funding.

Summary of all follow-on funding reported by source type.

SOURCE OF FUNDING	PF	APF	CDA	TA	ECPODRA	TOTALS REPORTED
State Funds				$75,000.00		$75,000.00
Federal - DOD		$750,000.00	$600,000.00			$1,350,000.00
Federal - Other	$3,715,820.00		$150,000.00			$3,865,820.00
Joint Sources	$4,531,600.00	$448,789.00	$2,348,009.00			$7,328,398.00
Industry	$313,702.00	$375,816.00	$3,905,392.00	$2,545,399.00	$527,960.00	$7,668,269.00
Institutional Funds	$1,104,226.00	$780,000.00	$6,361,734.90	$1,260,382.00	$883,957.00	$10,390,299.90
Private Philanthropy	$4,372,612.00	$1,505,198.00	$12,865,732.00	$619,012.00		$19,362,554.00
Government - International	$24,449,819.00	$1,660,942.00	$18,484,344.30	$10,051,652.00		$54,646,757.30
Public Charity/Foundation	$33,373,897.57	$1,161,970.00	$34,818,606.72	$4,287,626.00	$4,407,261.00	$78,346,361.29
Federal - NIH	$34,158,486.00	$7,545,327.00	$65,963,081.00	$22,245,770.00	$14,934,566.00	$144,847,230.00
TOTALS REPORTED	**$106,020,162.57**	**$14,228,042.00**	**$145,496,899.92**	**$41,381,841.00**	**$20,753,744.00**	**$327,880,689.49**

Detailed summary of follow-on funding from NIH institutions.

NIH INSTITUTE SOURCES	PF	APF	CDA	TA	ECPODRA	TOTALS REPORTED
NIDDK	$21,964,460	$5,899,260	$53,172,071	$10,338,090	$6,950,420	**$98,324,301**
NIAID	$4,044,358		$3,696,877	$8,657,126		**$16,398,361**
NIGMS	$4,511,888		$3,191,951			**$7,703,839**
NICHD					$4,517,551	**$4,517,551**
NCI		$347,030	$2,914,360	$250,000		**$3,511,390**
NIMHD					$3,466,595	**$3,466,595**
NIDCR	$3,013,622					**$3,013,622**
NHLBI		$997,000	$250,000	$1,517,525		**$2,764,525**
NINDS	$514,713		$1,155,128			**$1,669,841**
OD	$109,445		$1,482,694			**$1,592,139**
NIBIB				$1,483,029		**$1,483,029**
FNIH		$302,037				**$302,037**
NCATS		$100,000				**$100,000**
TOTALS REPORTED	**$34,158,486**	**$7,645,327**	**$65,863,081**	**$22,245,770**	**$14,934,566**	**$144,847,230**

Detailed summary of follow-on funding from public charity/foundation entities.

PUBLIC CHARITY/FOUNDATION SOURCES	PF	APF	CDA	TA	ECPODRA	TOTALS REPORTED
Alzheimers Research UK	$42,890					**$42,890**
American Cancer Society				$30,000		**$30,000**
American Diabetes Association	$1,625,000		$1,488,366	$540,467		**$3,653,833**
American Heart Association	$531,000					**$531,000**
Animal Free Research			$216,727			**$216,727**
ANZSPED	$25,000					**$25,000**
ARMI - Advanced Regenerative Manufacturing Institute	$1,443,163		$1,228,200			**$2,671,363**

Australasian Paediatric Endocrine Group			$60,000			**$60,000**
Autoimmune Foundation				$37,430		**$37,430**
Beatson Foundation			$400,000			**$400,000**
Breakthrough T1D	$12,202,269	$871,400	$23,124,809	$2,417,000	$4,407,261	**$43,022,739**
Breakthrough T1D UK	$25,947					**$25,947**
Breakthrough T1D/ IIDP/IAI	$15,000					**$15,000**
BreakthroughT1D/ Australian Type 1 Diabetes Clinical Research Network	$10,400,000					**$10,400,000**
Canadian Diabetes Association			$57,600	$208,350		**$265,950**
Cancer Research Institute	$175,500					**$175,500**
Channel 7 Telethon Trust	$220,407					**$220,407**
Children's Hospital Foundation			$350,000			**$350,000**
Danish Cancer Society				$1,014,756		**$1,014,756**
Diabetes Australia	$37,335		$387,114			**$424,449**
Diabetes Australia			$70,000			**$70,000**
Diabetes Canada			$72,000			**$72,000**
Diabetes Research Connection	$200,000					**$200,000**
Diabetes UK		$290,570	$476,126			**$766,696**
Dutch Diabetes Research Foundation	$283,918					**$283,918**
European Foundation for the Study of Diabetes	$103,473		$139,549			**$243,022**
Fondazione Italiana Diabete			$105,314			**$105,314**
Foundation for Diabetes Research			$100,000			**$100,000**
ISPAD	$26,329					**$26,329**
Japan Diabetes Foundation and Costoco Wholesale Japan Ltd	$5,885					**$5,885**
JDRF Australia	$2,300,000		$2,651,941			**$4,951,941**
JDRF Australia/Macquarie Group Foundation			$5,000			**$5,000**
Laboratory for Genomics Research			$1,000,000			**$1,000,000**
Lustgarten Foundation				$200,000		**$200,000**
Mallinckrodt Foundation			$400,000			**$400,000**
Mathematics of Information Technology and Complex Systems				$26,623		**$26,623**
Mid-America Transplant Services/ Foundation for Barnes-Jewish Hospital			$40,000			**$40,000**
National Pancreas Foundation	$50,000					**$50,000**
National Pancreatic Cancer Fndn				$110,000		**$110,000**
PhRMA Foundation	$100,000					**$100,000**
Stan Perron Charitable Foundation	$341,654					**$341,654**
Steve Morgan Foundation + Breakthrough T1D	$1,182,688					**$1,182,688**
Steve Morgan Foundation + Diabetes UK + Breakthrough T1D			$1,838,246			**$1,838,246**
Tekke Huizinga Fonds	$10,324					**$10,324**
Telethon			$73,720			**$73,720**
The Rebecca L. Cooper Medical Research Foundation			$21,500			**$21,500**
Treadwell Foundation			$500,000			**$500,000**
Versus Arthritis	$1,471,392					**$1,471,392**
Villum Synergy	$554,724					**$554,724**
Wellcome Trust			$12,394			**$12,394**
TOTALS REPORTED	**$33,373,898**	**$1,161,970**	**$34,818,607**	**$4,584,626**	**$4,407,261**	**$78,346,361**

Detailed summary of follow-on funding from international government entities.

INTERNATIONAL GOVERNMENT SOURCES	PF	APF	CDA	TA	TOTALS REPORTED
BBSRC	$596,990				**$596,990**
Canada Research Chairs				$694,501	**$694,501**
Canadian Donation and Transplantation Research Program				$58,339	**$58,339**
Canadian Foundation for Innovation				$17,000	**$17,000**
Canadian Institutes of Health Research	$4,196,598	$918,000		$3,837,806	**$8,952,404**
Canadian Stem Cell Network				$347,251	**$347,251**
Centre québécois sur les matériaux fonctionnels Projets collaboratifs interuniversitaires				$27,780	**$27,780**
CIHR			$597,600		**$597,600**
Cooperative Research Centre for Cell Therapy Manufacturing			$456,980		**$456,980**
European Research Council	$1,620,135				**$1,620,135**
European Union	$7,898,550	$210,628	$72,270		**$8,181,448**
EUROSTARS, Horizon Europe				$137,594	**$137,594**
Fonds de recherche du Québec				$286,134	**$286,134**
FWO postdoc fellowship	$12,974				**$12,974**
Health Research Board Ireland	$864,000				**$864,000**
Horizon Europe	$5,832,486				**$5,832,486**
Irish Research Council	$162,014				**$162,014**
Japan Agency for Med. Research/New York Academy of Sciences				$40,000	**$40,000**
Japan Society for the Promotion of Science	$21,578				**$21,578**
Jiangsu Provincial Department of Science and Technology				$409,200	**$409,200**
LEAD EU COFUND				$302,706	**$302,706**
Medical Research Council	$1,976,368		$493,556		**$2,469,924**
Medical Research Future Fund			$2,676,000		**$2,676,000**
Ministère de l'Économie, de l'Innovation et de l'Énergie				$80,699	**$80,699**
Ministère de l'Économie, Science et Innovation (MESI)				$294,392	**$294,392**
MSFHR				$450,000	**$450,000**
National Health and Medical Research Council	$1,146,036	$532,314	$6,999,244		**$8,677,594**
National Research Council Canada (NRC) (Ottawa, ON)				$83,340	**$83,340**
Natural Sciences and Engineering Research Council of Canada				$2,383,195	**$2,383,195**
New Frontiers in Research Fund				$173,625	**$173,625**
NIHR BRC UCLH	$122,090				**$122,090**
Research England			$7,188,694		**$7,188,694**
Réseau de thérapie cellulaire, tissulaire et génique du Québec				$69,450	**$69,450**
Social Sciences and Humanities Research Council of Canada				$173,625	**$173,625**
Taizhou City				$136,400	**$136,400**
ThéCell				$48,615	**$48,615**
TOTALS REPORTED	**$24,449,819**	**$1,660,942**	**$18,484,344**	**$10,051,652**	**$54,646,757**

Detailed summary of follow-on funding from private philanthropy.

PRIVATE PHILANTHROPY SOURCES	PF	APF	CDA	TA	TOTALS REPORTED
Dr Hadwen Trust			$96,676		**$96,676**
Drucker Family Innovation Grant		$75,000			**$75,000**
Environmental Determinants of Islet Autoimmunity	$1,767,181				**$1,767,181**
Helmsley Charitable Trust	$2,530,431	$1,430,198	$12,339,056	$619,012	**$16,918,697**
Not Named			$430,000		**$430,000**

Ralph W. and Grace M. Showalter Award	$75,000				**$75,000**
TOTALS REPORTED	**$4,372,612**	**$1,505,198**	**$12,865,732**	**$619,012**	**$19,362,554**

Detailed summary of follow-on funding from institutional funds.

INSTITUTIONAL SOURCES	PF	APF	CDA	TA	ECPODRA	TOTALS REPORTED
Banting and Best Diabetes Centre		$90,000				**$90,000**
BCCHRI			$36,000			**$36,000**
BCCHRI –CD Theme			$54,000			**$54,000**
Boston Children's Hospital		$125,000				**$125,000**
Capital Equipment Fund UCL	$340,417					**$340,417**
CFI/BCKDF			$5,854,953			**$5,854,953**
Columbia University				$350,000		**$350,000**
Einstein-Sinai	$70,000					**$70,000**
GW4 Alliance			$10,896			**$10,896**
Indiana University	$75,000					**$75,000**
Jaeb Health Center					$9,457	**$9,457**
McGill University				$6,598		**$6,598**
Orphan Disease Center				$340,784		**$340,784**
Pancreas Centre BC				$60,000		**$60,000**
Royal Free Charity	$12,168					**$12,168**
St George & Sutherland Shire Med. Res. Fund	$31,112					**$31,112**
UBC FoM			$72,000			**$72,000**
University of Bristol		$90,000				**$90,000**
University of California, San Diego					$825,000	**$825,000**
University of California, San Francisco	$100,000		$150,000			**$250,000**
University of Colorado			$50,000			**$50,000**
University of Florida				$15,000		**$15,000**
University of Guelph				$40,000		**$40,000**
University of Minnesota	$21,636					**$21,636**
University of New South Wales	$89,604					**$89,604**
University of Oxford/ UCB			$83,886			**$83,886**
University of South Florida					$49,500	**$49,500**
UVA Launchpad for Diabetes		$175,000				**$175,000**
Vanderbilt University	$339,047					**$339,047**
Virginia Commonwealth University				$348,000		**$348,000**
Washington University St. Louis			$50,000	$100,000		**$150,000**
Western Michigan University	$25,242					**$25,242**
Yale University		$300,000				**$300,000**
TOTALS REPORTED	**$1,104,226**	**$780,000**	**$6,361,735**	**$1,260,382**	**$883,957**	**$10,390,300**

Detailed summary of follow-on funding from industry.

INDUSTRY SOURCE	APF	CDA	ECPODRA	PF	TA	TOTALS REPORTED
Abbott Diabetes			$39,036			**$39,036**
AxCell Labs/ SherMatrix/NRC					$130,219	**$130,219**
BlueRock Therapeutics		$537,000				**$537,000**
Boehringer-Ingelheim				$185,185		**$185,185**
Calcilytix Therapeutics					$195,000	**$195,000**
Dexcom Delta			$8,338			**$8,338**
Eli Lilly		$34,235		$100,000		**$134,235**
Immunocore					$304,000	**$304,000**
Insulet Corporation			$58,936	$28,517		**$87,453**

Kanyr Pharma, Inc.					$29,852	**$29,852**
Krueger v. WYETH Settlement	$322,728					**$322,728**
Médicament Québec					$764,105	**$764,105**
Medtronic Diabetes			$44,755			**$44,755**
Morphocell, Inc.					$48,615	**$48,615**
Novo Nordisk					$385,263	**$385,263**
Ono Pharmaceutical Co. Ltd.		$270,731				**$270,731**
Provention Bio			$80,518			**$80,518**
Saint-Gobain					$568,937	**$568,937**
Saint-Gobain Recherche					$119,408	**$119,408**
Semma Therapeutics		$991,912				**$991,912**
Sernova Corp		$2,071,514				**$2,071,514**
Travere Therapeutics	$53,088					**$53,088**
ViaCyte			$283,977			**$283,977**
Xeris Pharmaceuticals/The Emmes Corp.			$12,400			**$12,400**
TOTALS REPORTED	**$375,816**	**$3,905,392**	**$527,960**	**$313,702**	**$2,545,399**	**$7,668,269**

Detailed summary of follow-on funding from joint sources.

JOINT SOURCES	PF	APF	CDA	TOTALS REPORTED
Breakthrough T1D-CIHR			$108,000	**$108,000**
Breakthrough T1D/ Helmsley Charitable Trust			$1,276,000	**$1,276,000**
Breakthrough T1D/ UTSouthwestern/ VUMC	$599,636			**$599,636**
CIHR/Breakthrough T1D		$448,789		**$448,789**
EFSD/Boehringer Ingelheim	$108,120			**$108,120**
JDRF Australia/Helmsley Charitable Trust			$708,255	**$708,255**
Maastricht University/FHML	$324,360			**$324,360**
Mining forMiracles/BCCHF	$3,434,266			**$3,434,266**
NIGMS/OneVaxLLC			$255,754	**$255,754**
United States-Israel Binational Science Fndn.	$65,218			**$65,218**
TOTALS REPORTED	**$4,531,600**	**$448,789**	**$2,348,009**	**$7,328,398**

Detailed summary of follow-on funding from Federal-DOD and Federal-Other sources.

FEDERAL SOURCE	PF	APF	CDA	TOTALS REPORTED
CDMRP			$300,000	$300,000
Department of Veteran Affairs			$150,000	$150,000
National Science Foundation	$3,715,820			$3,715,820
PRMP			$300,000	$300,000
TDRDP		$750,000		$750,000
TOTALS REPORTED	**$3,715,820**	**$750,000**	**$750,000**	**$5,215,820**

Detailed summary of follow-on funding from State sources.

STATE SOURCES	Transition	TOTALS REPORTED
Virginia Innovation Partnership Corporation/ Commonwealth Commercialization Fund	$75,000	$75,000
TOTALS REPORTED	**$75,000**	**$75,000**

Appendix V: List of journals and tally count where training award-funded research was published.

JOURNAL TITLE	PF	APF	CDA	TA	ECPODRA	TOTAL	JOURNAL TITLE	PF	APF	CDA	TA	ECPODRA	TOTALS REPORTED
3D Print Addit Manuf.				1		1	In J Mol Sci.				1		1
ACS Biomater Sci Eng.	1			1		2	Inmmune Ageing		1				1
ACS Chem.			1			1	Int J Mol Sci.	1					1
ACS Nano.	1					1	Invest Ophthalmol Vis Sci.	2	1				3
Acta Biomater.			1			1	iScience			1			1
Adv Biol.	1					1	J Allergy Clin Immunol.				1		1
Adv Drug Deliv Rev.				1		1	J Autoimmun.	2		1	1		4
Am J Physiol Endocrinol Metab.			2			2	J Biol Chem.	4		3	1		8
Am J Physiol Regul Integr Comp Physiol.	1					1	J Cell Physiol.	1					1
Am J Physiol Renal Physiol.		1				1	J Clin Endoc Metab.			1		1	2
Am J Transplant	2	1	1			4	J Clin Invest.	5		1			5
Antibodies (Basel)	1					1	J Clin Med.			1			1
Antioxidants (Basel)			1			1	J Clin Virol.			1			1
Arthritis Res Ther.	1					1	J Diabetes	1					1
Auton Neurosci.	2					2	J Diabetes Sci Technol.					1	1
Autophagy			1			1	J Endocr Soc.	1					1
Best Pract Res Clin Endocrinol Metab.	1					1	J Endocrinol.	1		1			2
BioEssays			1			1	J Exp Med.			1			1
Bioinformatics	1					1	J Histochem Cytochem.	1					1
Biomaterials	2					2	J Immunol.	14		3	2		19
Biomedical Microdevices	1					1	J Lipid Res.	1	2				3
Biomedicines	1					1	J Mol Endocrinol.			3			3
Biomol.	1					1	J Physiol.			3	1		4
Bioprotocol			1			1	JCI Insight	5	2	4			11
bioRxiv			1	1		2	JoVE			1			1
Biotechniques	1					1	Lancet Diabetes & Endocrinol.	1					1
BMC Genomics			1			1	Macromol Mater Eng.			1			1
Cell		1		1		2	Macromol.	1					1
Cell Death Dis.	2					2	Matrix Biol.	1					1
Cell Gene Ther Insights			1			1	Matrix Biol.	1					1
Cell Metab.	5	1	4	2		12	Med Eng Phys.			1			1
Cell Rep Med.		1	1			2	Metabolism	1					1
Cell Rep.	6		1			7	Metabolites	1					1
Cell Stem Cell		1		1		2	Microbiome	2		1			3
Cell Syst.		1				1	Microorganisms	1					1
Cell Transp.	1					1	Mol Therapy			1			1
Cells	1					1	Mol Cell		1				1
Clin Epigenetics	1					1	Mol Cell Endocrinol.	1	1				2
Clin Exp Immunol.		3				3	Mol Immunol.				1		1
Clin Exp Med.	1					1	Mol Metab.	3		2	3		8
Clin Immunol.			2	2		4	Nat Biomed Eng.	2					2
Clin Transl Immunol.			1			1	Nat Biotechnol.	1		1	1		3
Control Eng Pract.		1				1	Nat Cell Biol.	1		1			2
Curr Diab Rep.	1	1	1			3	Nat Commun.	5	2	4			11
Curr Opin Biomed Eng.			1			1	Nat Genet.			1			1
Curr Opin Endocrinol Diabetes Obes.			1	1		2	Nat Immunol.			2			2
Curr Opin Immunol.	1			2		3	Nat Mater.	1					1
Curr Opin Immunol.	1					1	Nat Med.			1			1
Curr Opin Pharmacol.	1					1	Nat Metab.	1					1
Dev Cell			1			1	Nat Protoc.			1	2		3
Development	1			1		2	Nat Rev Endocrinol.	1					1
Diabetes	22	6	18	6	1	53	Nat. Biotechnol.	1					1
Diabetes Care	1	2	2		3	8	Nat. Commun.	2	1				3
Diabetes Med.		2	1			3	Nature		1	1	1		3
Diabetes Obes Metab.	1	2			1	4	Nephrol Dial Transplant		1				1
Diabetes Obes Metab.					1	1	Nitric Oxide				1		1
Diabetes Technol Ther.					5	5	Nutrients		1				1
Diabetologia	6	4	14	1		25	Oncotarget			1			1
EbioMed.			1			1	Pediatr. Diabetes					4	4
EBioMedicine	1					1	Peptides			1			1

eLife	1		1	1		3	Physiology			1			1
EMBO J .	1					1	PLOS Biol.	1					1
Endocr Rev.		1				1	PLoS Med.	1					1
Endocrine		1				1	PLoS One		1	4			5
Endocrinol.	2	1	2			5	PLoS Pathog.	1					1
Eur J Hum Genet.				1		1	Polymers (Basel)	1					1
Eur J Immunol.	3		1	1		5	Proc Natl Acad Sci USA	3		3		1	7
Exp Cell Res.			1			1	Redox Rep.		1				1
Exp Eye Res.		1				1	Rev Med Virol.	1					1
Expert Opin Drug Deliv.					1	1	Sci Adv.	3		1			4
Expert Rev Clin Pharmacol.					1	1	Sci Data	1					1
Front Bioeng Biotechnol.				2		2	Sci Rep.	3	2	6	1		12
Front Diab Healthcare	1					1	Sci Transl Med.	1		3			4
Front Endocrinol.			2	1		3	Science			1			1
Front Genet.			1	1		2	Small	1					1
Front Immunol.	7	1	6	1		15	Stem Cell Reports	5	1	3			9
Front Physiol.			2	1		3	Stem Cell Res Ther.		1				1
Function			1			1	Stem Cell Res.	1					1
Gastroenterology				1		1	Stem Cells	1					1
Genes Dev.	1			1		2	Stem Cells Int.	1					1
Genes Immun.				1		1	Stem Cells Transl Med.			1			1
Genes Immun.	1		1			2	Transplantation			1			1
Gut				1		1	Trends Genet.				1		1
Hum Mol Genet.			1			1	Ultrasound in Medicine and Biol.			1			1
IEEE J Biomed Health Inform.		1				1	Vis Exp.			1			1
Immunoendocrinology (Houst)	1					1	Xenotransplantation	1					1
Immunol Cell Biol.			3			3	**Grand Total**	**183**	**54**	**154**	**52**	**20**	**463**
Immunother Adv.	1					1							

Appendix VI: List of clinical trials emerging from training awards.

Mechanism Trial Came From	Clinical Trial ID/Link	Trial Title	Trial Type	Phase	Test Agent	Trial Status	Funder	Publication/results if available
PF	NCT04786262	A Safety, Tolerability, and Efficacy Study of VX-880 in Participants With Type 1 Diabetes	Interventional	3	VX-880 stem cell derived therapy	Recruiting	Vertex Pharmaceuticals	
PF	ACTRN12620000239965	Baricitinib and β-Cell Function in Patients with New-Onset Type 1	Interventional	2	Baricitinib	Completed	Breakthrough T1D and others	PMID: 38055252
PF	None - did not require registration - see publication at right	Vitamin D levels and risk of type 1 diabetes: A Mendelian randomization study	Observational	observational	n/a	Completed	Breakthrough T1D and others	PMID: 33630834
PF	ACTRN12625000026426	TRends in continuous glucose monitoring measures of glycaemic variability in Australian Children with Early stage T1D (TRACE-T1D study)	Observational	observational	n/a	Active	Breakthrough T1D	
PF	NCT01781975	Imatinib Treatment in Recent Onset Type 1 Diabetes Mellitus	Interventional	2	Imatinib Mesylate	Completed	University of California, San Francisco	
PF	NCT03977662	Pancreatic Islets and Parathyroid Gland Co-transplantation for Treatment of Type 1 Diabetes (PARADIGM)	Interventional	1,2	co-transplantation of allogeneic PTG with adult pancreatic islets	Active, Not Recruiting	Peter Stock, UCSF	
APF	NCT04439903	Web-Based Simulation Tool For Self-Management Support In Type 1 Diabetes Mellitus (WST)	Observational	observational	n/a	Completed	University of Virginia	PMID: 36149995
APF	NCT04784637	Adaptive Biobehavioral Control (ABC) of Automated Insulin Delivery	Observational	observational	n/a	Completed	University of Virginia	PMID: 38662425
APF	NCT05610111	Adaptive Biobehavioral Control (ABC) in a Closed-Loop System (ABC-WIT)	Observational	observational	n/a	Completed	University of Virginia	
PF	NCT02117765	Pilot Clinical Trial of Ustekinumab in Patients With New-onset T1D (UST1D)	Interventional	1,2	Ustekinumab	Unknown	University of British Columbia	
CDA	NCT05482321	Pancreas Ultrasound Imaging in type1 Diabetes	Observational	observational	_	Active	University of Colorado, Denver	
ECPODRA	NCT03117998	Multiple Dose Study to Evaluate the Efficacy, Safety and Pharmacodynamics of REMD-477 in Subjects With Type 1 Diabetes Mellitus	Interventional	2	REMD-477	Completed	REMD Biotherapeutics, Inc.	PMID: 36192552
ECPODRA	NCT01843127	A Study to Evaluate the Effect of Ranolazine on Postprandial Glucagon in Subjects With Type 2 Diabetes	Interventional	3	Ranolazine	Completed	Gilead Sciences	PMID: 26749407
ECPODRA	NCT02851849	A Study of LGD-6972 in Patients With Type 2 Diabetes Mellitus	Interventional	2	RVT-1502	Completed	Ligand Pharmaceuticals	PMID: 31694861
ECPODRA	NCT03919617	Metabolic Pathways of GRA in Patients With Type 1 Diabetes	Interventional	4	REMD-477	Completed	University of California, San Diego	PMID: 29283470
ECPODRA	NCT02135068	Preventing Hypoglycemia During Exercise With Proactive Snacking on Closed Loop	Interventional	1	Diet	Completed	Yale University	_
ECPODRA	NCT01856790	Effect of Liraglutide on Automated Closed-loop Glucose Control in Type 1 Diabetes	Interventional	1	Liraglutide	Completed	Jennifer Sherr, Yale University	see ct.gov

Appendix VI: List of patent-related activities emerging from training awards.

Mechanism Patent/IP Came From	Title & Link - Google Patents	Assignee	Filing/ Patent Number(s)	Published Patent Application	Issued Patent	IP/Patent Licensed	IP/Patent Filing Abandoned
CDA	Assay for T-cell Responses	St Vincents Institute of Medical Research	AU2024903912A0	Yes	_	_	_
PF	Biocompatible microfabricated macrodevices for transplanting cells	MASSACHUSETTS INSTITUTE OF TECHNOLOGY, THE CHILDREN'S MEDICAL CENTER CORPORATION	16/007,922	_	_	_	Yes
TA	CELL MACROENCAPSULATION DEVICES, METHOD OF FABRICATION AND USE THEREOF	The Royal Institution For The Advancement Of Learning/McGill University	WO/2024/059942	Yes	_	Yes	_
PF	Chimeric molecules comprising an anti-coagulant agent and an anti-gpiib/iiia antigen binding molecule and uses thereof	Baker Heart & Diabetes Institute, Beth Israel Deaconess Medical Center	WO2020237307A1	Yes	_	Yes	_
APF	Compositions and Methods for Regulating Enteroendocrine cell Differentiation and Uses Thereof	The Children's Medical Center Corporation	PCT/US2021/037592 WO/2021/257678	Yes	_	_	_
CDA	Conformal Coating at Neutral pH	University of Miami	17/921,888	Yes	_	Yes	_
PF	Controlled induction of human pancreatic progenitors produces functional beta-like cells	The Regents Of The University Of California	WO2016172564A1	_	Yes	_	_
PF	Cyclodextrin supramolecular scaffolds and uses thereof	Massachusetts Institute of Technology	WO/2020/219880, PCT/US2020/029817	Yes	_	_	_
TA	Guest/host inclusion complexes containing s-nitrosoglutathione and methods of use thereof	Virginia Commnwealth University	PCT/US2023/023177/ WO2023239551A1	Yes	_	_	_
CDA	Htr1f antagonists for improvement of beta cell survival and function	Regents of the University of California	WO2022155152A1	Yes	_	_	_
PF	Hydrolytically degradable hydrogels and uses thereof	Georgia Tech	Published Applications WO2022251468A3; US20240216271A1	Yes	_	_	_
PF	Hypoimmunogenic beta cells and methods of producing the same	President And Fellows Of Harvard College	PCT/US2023/013246	Yes	_	_	_
CDA	Insulin derivatives for diabetes treatment	Boston Childrens Hospital, Massachusetts Institute of Technology	US Patent Number: US9867869B2	_	Yes	_	_
PF	Materials and methods for the delivery of therapeutic nucleic acids to tissues	University of Miami	WO2019217571A1	Yes	_	_	_
APF	Method and System for Generating a User Tunable Representation of Glucose Homeostasis in Type 1 Diabetes Based on Automated Receipt of Therapy Profile Data	University of Virginia	US Patent App. 18/041,659	Yes	_	_	_
CDA	Method for Differentiating Human Embryonic Stem Cells into β-cells for the Treatment of Type 1 Diabetes	Massachusetts Institute of Technology	US9447378B2	_	Yes	_	_
CDA	Methods and Compositions for Enhanced Differentiation from Embryonic Stem Cells	Massachusetts Institute of Technology	US9029147B2	_	Yes	_	_
CDA	Methods and compositions for increased safety of stem cell-derived populations	Massachusetts Institute of Technology	US9388381B2	_	Yes	_	_
CDA	Methods and compositions for increased safety of stem cell-derived populations	Massachusetts Institute of Technology	US10179901B2	_	Yes	_	_
PF	Methods and compositions for producing pancreatic beta cells	J David Gladstone Institutes, University of California San Diego	US11332716B2	_	Yes	_	_
CDA	Methods for generating stem cell-derived beta cells and uses thereof	Harvard University	US10190096B2	_	Yes	Yes	_

CDA	Methods for generating stem cell-derived beta cells and uses thereof	Harvard University	US10927350B2	–	Yes	–	–
CDA	3D-printed scaffold device for cell transplantation	Washington University	US10597639B2	–	Yes	–	–
PF	Modified alginates for anti-fibrotic materials and applications	Massachusetts Institute of Technology	WO2016019391A8	Yes	–	Yes	–
PF	Monoclonal antibodies directed to peptide in the context of mhc and methods of making and using monoclonal antibodies	University of Minnesota System	US20230331850A1	Yes	–	–	–
PF	Murine-mhc-deficient hla-transgenic nod-mouse models for t1d therapy development	Jackson Laboratory	US20190110450A1	–	Yes	–	–
PF	Preservation of pancreatic islet grafts in the extrahepatic space	US Department of Veterans Affairs, University of California San Diego	US20200360446A1	–	Yes	–	–
PF	Production of fully functional mature beta cells from human pancreatic progenitors	Regents of the University of California	US11299711B2	–	Yes	–	–
PF	Production of fully functional mature beta cells from human pancreatic progenitors	University of California, University of California Berkeley, University of California San Diego UCSD	EP3440192B1	–	Yes	–	–
CDA	Protection of beta cells from immune attack	Joslin Diabetes Center	US-11708561-B2	–	Yes	–	–
CDA	SC-β cells and compositions and methods for generating the same	Harvard University	US10030229B2	–	Yes	Yes	–
CDA	SC-β cells and compositions and methods for generating the same	Harvard University	US11078463B2	–	Yes	–	–
TA	Serpins: methods of therapeutic beta-cell regeneration and function	Sanofi, Joslin Diabetes Center	WO2014128257A1	Yes	–	–	–
TA	Signaling and antigen-presenting bifunctional receptors (sabr)	CalTech	US20190201443A1	–	Yes	–	–
CDA	Type 1 diabetes treatment	St Vincents Institute of Medical Research	PCT/AU2018/051282	Yes	–	–	–
APF	Use of macrophages for improved pancreatic cells	University Health Network	PCT/CA2024/050493	Yes	–	–	–

Appendix VII: Survey of peer organizations: list of agencies and survey questions.

This survey below was issued to the Health Research Alliance ListServ group (see **https://www.healthra.org**). Respondents are listed following the survey.

Survey of Trends in Medical Research Training Award Programs From Non-Profits & GrantFunding Entities

INTRODUCTION

In 2025, Breakthrough T1D (formerly JDRF) is evaluating our training award programs that support researchers at points along the path from their entry into research, to their independent lab*. The goal is to understand the impact and outcomes of these funding programs, as well as to identify ways we might improve these programs.
We'd like to learn about current trends in training award programs at other biomedical research organizations, so we are requesting that HRA organizations complete a survey about the types of training award programs you support. The survey should not take more than 20 minutes. Even if your organization doesn't support training programs, we would ask you to complete the initial sections of the survey to let us know why.
The Survey is in Google Forms. Keep the tab open until it is complete and submitted. Your participation will be acknowledged in our internal report. We will also be glad to share the collated responses gathered via this survey back with you, through the Health Research Alliance. If you have any questions please contact:
Dr. Kim Hunter-Schaedle, Survey Consultant for Breakthrough T1D at: khunter-schaedle@breakthrought1d.org
Thank you!

*Breakthrough T1D training & early career award programs include:
- Career Development Awards
- Early Career Patient Oriented Diabetes Research Awards
- Postdoctoral Fellowships
- Advanced Postdoctoral Fellowships
- Faculty Transition Awards (follow on from Advanced Post Doctoral Fellowships)
Learn more about these programs at: https://www.breakthrought1d.org/explore-research/funding-opportunities/

Your Contact Details

- **Organization name**
- **Name of person completing survey**
- **Contact email in case we have follow up questions**
- **Which of the following best describes nature of your organization? Mark only one.**
  Public Charity/Foundation; Private or Family Foundation; Voluntary Health Agency; Research Institute; Other (describe)
- **Does your organization support training awards programs as defined in the opening of this survey?** Yes/no
[if "no", this takes respondent to final question, any comments]

Who do your training awards support?

- **Does your organization offer training awards for individuals on the following career paths? Check all that apply.** PhD; MD; MD, PhD; DVM; DVM, PhD; Other (describe)

- **What career levels do your training awards to individuals support?** Check all that apply.
  Undergraduate
  Predoctoral (currently in a program in pursuit of MD, PhD or other advanced degree)
  Postdoctoral (doctoral degree received no more than 5 years prior to funding)
  Advanced postdoctoral (5+ years postdoctoral, with a goal to transition to independent career/faculty role/having own lab)
  Transitional (fjrst year(s) of independent career/faculty role/having own lab)
  Early independent career (has established own lab)
  Medical resident
  Post-residency clinician
  Other (describe)

- **What target audience may apply for your training awards? Mark only one.**
Global; Specific countries; United States only; Local community or program; Other (describe)

- **If you do fund internationally, please describe any adaptations to the training awards for foreign trainees and/or any roadblocks in this funding.**

- If there any other restrictions on who may apply for your training awards, describe these below.

- Describe any unique benefits or aspects of your training awards that make them especially attractive to applicants.

- Have you had feedback from your awardees about any additional benefits or aspects they'd like to see included in training awards, or any obstacles they face?

- As well as individual grants, does your organization provide Institutional Grants to support training programs? Yes/no**.** If yes, describe or provide a weblink for institutional program(s).

Program Evaluation; Current Funding Climate

- Have you conducted any long-term evaluation of your training programs? For instance, do you track trainees' publications and impact scores, track career outcomes after the fellowship and if so for how many years, track whether people are staying in the field their fellowship was in, did people stay in academia or move to private practice or industry, other outcomes? Yes/no

- If YES to the above question, what were the key takeaways? If NO to the above question, can you describe any anecdotal/observed results of your training program?

- Do you follow NIH stipend rates for your training awards? Mark only one

Yes
No, our awards are generally less than NIH awards
No, our awards are generally more than NIH awards
I don't know

- **Are you making any changes to your training program(s) based on the current political climate and executive orders?** Yes/no.

- If yes, and if you are able to, can you share what these changes are or might be?

FINAL COMMENTS

Below you are invited to share any further pertinent information not addressed or covered above. If your organization does NOT support training awards, can you comment on why, or if there is a specific reason for this?

Survey Responding Organizations

Breakthrough T1D is grateful to the following organizations for responding to the survey.

Alzheimer's Drug Discovery Foundation
American Cancer Society
Autism Science Foundation
Children's Tumor Foundation
Conquer Cancer - The ASCO Foundation
Doris Duke Foundation
Foundation for Physical Therapy Research
Health Resources In Action
Kenneth Rainin Foundation
Lewy Body Dementia Association
Lipedema Foundation
National Alopecia Areata Foundation
Rheumatology Research Foundation
Susan G. Komen
TSC Alliance
The Vallee Foundation Inc

Appendix VIII: List of awards for which responses were received.

Grant Key	PI Last Name	Mechanism	Award Amount	Project Title	End Year
3-PDF-2014-187-A-N	Hosseini-Tabatabaei	PF	$142,427.46	Prevention of islet autoimmunity by manipulating beta cell lactate production	2014
3-2012-178	Komori-Occhicone	PF	$159,720.00	Immunoepigenomic Regulation of Type 1 Diabetes	2015
3-2012-266	Russ	PF	$149,448.00	Identifying mesenchymal factors capabel of generating beta cells in vitro.	2015
3-2012-200	Helman	PF	$132,195.00	Understanding and controlling pancreatic beta cell senescence	2015
3-2011-214	Nyeng	PF	$154,120.80	Regulation of beta-cell delamination	2015
3-2011-401	Bruin	PF	$146,688.00	Generation of Mature Beta Cells from Human Embryonic Stem Cells	2015
3-2012-241	Lim	PF	$167,352.00	Role of the 14-3-3 proteins in type 1 diabetes	2015
3-2012-263	Arda	PF	$142,996.93	Genome-scale gene expression analysis of human beta-cell development	2015
10-2012-204	Fousteri	APF	$237,873.62	Combined immunotherapy for islet transplantation and the role of viruses	2015
10-2012-155	Kopp	APF	$190,258.19	Nkx6.1 mediated regulation of beta-cell growth	2015
2-2010-383	Kissler	CDA	$750,000.00	Functional study of human type 1 diabetes genes in the NOD mouse model	2015
2-2010-322	Tikellis	CDA	$740,229.00	ACE2 in the vascular complications of type 1 diabetes	2015
2-2010-581	Liston	CDA	$749,715.00	The contribution of non-hematopoietic defects to autoimmune diabetes	2015
1-FAC-2014-243-A-N	Bettini	TA	$105,833.53	Transition Award - TCR Associated Mechanisms of Insulin Specific Foxp3+ Regulatory T Cell Function	2015
1-FAC-2014-292-A-N	Hoesli	TA	$110,000.00	A 3D printed artificial pancreas to study encapsulated pancreatic progenitor cell fate	2015
3-2013-121	Bonami	PF	$168,563.99	Autoantigen-Specific Depletion of Anti-Insulin B Lymphocytes	2016
3-2013-92	Cantero	PF	$161,769.65	Novel strategy for induction of tolerance in mouse models of T1D	2016
3-2013-184	Coudriet	PF	$156,096.39	Promoting beta cell replication in the face of autoimmunity	2016
3-2013-217	Ward	PF	$144,876.00	Mitochondrial dysfunction in diabetic kidney disease	2016
3-2013-56	Chou	PF	$69,684.30	Development of novel glucose-responsive insulin formulations	2016
3-2012-303	Erener	PF	$161,418.59	Targeting miRNA pathways to improve differentiation of hESCs to beta cells	2016
3-2013-69	Shi	PF	$144,468.52	New Targets for Prevention/Treatment of Diabetic Nephropathy	2016
10-2013-188	Wiradharma	APF	$253,527.20	Real time In Vivo Live Imaging of Insulin Secretion	2016
10-2013-73	Bettini	APF	$90,000.00	TCR associated mechanisms of insulin specific Foxp3+ T regulatory function.	2016
10-2013-62	Gurzov	APF	$270,000.00	The role of PTPN2 & PTPN22 in pancreatic ß-cell function and survival.	2016
2-2011-416	Brehm	CDA	$749,999.03	Immune therapy for beta-cell replacement in mice with human immune systems	2016
2-2011-91	Lynn	CDA	$750,000.00	The role of Sox4 in beta cell genesis and proliferation	2016
1-FAC-2015-10-A-N	Dhawan	TA	$110,000.00	Epigenetics approaches to improve beta cell function and regeneration	2016
1-FAC-2015-4-A-N	Kopp	TA	$110,000.00	Regulation of endogenous endocrine progenitors	2016
3-PDF-2014-202-A-N	Braitsch (now Maynard)	PF	$154,644.00	Beta cell specification: Hippo-Warts pathway (YAP/TAZ) regulation of pancreas epithelial 3D architecture and progenitor cell fate	2017
3-PDF-2014-189-A-N	Dean	PF	$166,032.00	Circulating Factors that Promote Alpha Cell Proliferation	2017
3-PDF-2014-188-A-N	Hanjaya-Putra	PF	$153,795.75	The Role of Vascular Networks in the Genesis of Progenitor-derived Pancreatic-like Tissue	2017
3-PDF-2014-115-A-N	Jokiaho	PF	$150,829.57	Functional Organization of Hypoglycemia-sensitive Networks in the Brain	2017
3-PDF-2014-105-A-N	Moore-Dotson	PF	$166,032.00	Identification of novel mechanisms of diabetic retinal disease	2017
3-PDF-2014-224-A-N	Nagy	PF	$166,032.00	Hyaluronan and the Tissue-Immune Interface in Autoimmune Insulitis	2017
3-PDF-2014-219-A-N	Presa	PF	$160,207.48	Nfkbid contributions to the thymic deletion of diabetogenic CD8 T-cells	2017
3-PDF-2014-215-A-N	Spanier	PF	$158,304.00	A Novel Method of Detecting Diabetes Specific CD4+ T Cells	2017
3-PDF-2014-193-A-N	Wortham	PF	$154,764.00	Enhancing beta cell survival and function through LSD1 inhibition	2017
3-PDF-2014-217-A-N	Pesenacker	PF	$148,074.24	Mechanisms driving the failure of regulatory T cells to control type 1 diabetes	2017
3-PDF-2014-109-A-N	Barutta	PF	$166,032.00	The Role of Tunnelling Nanotubes in Diabetic Nephropathy	2017
3-PDF-2014-191-A-N	Denroche	PF	$141,050.62	The role of islet amyloid polypeptide in islet transplant failure	2017
3-APF-2014-197-A-N	Arnes	APF	$270,000.00	Examining the role of novel lncRNAs upon beta cell biology	2017
3-APF-2014-183-A-N	Baeyens	APF	$269,989.17	Mechanisms controlling pancreas development and regeneration	2017
3-APF-2014-182-A-N	El Ouaamari	APF	$256,292.00	The role of SerpinB1 in the proliferation of pancreatic beta-cells	2017
3-APF-2014-208-A-N	Phelps	APF	$237,125.89	Immune modulation of GAD65: enginering autoimmunity and tolerance in type 1 diabetes	2017
2-2012-280	Brusko	CDA	$749,216.01	Investigating human autoreactive T cells in humanized mice	2017
2-2012-197	Friedman	CDA	$750,000.00	T cell stimulation and effector function regulation in the islets	2017
2-2012-205	Long	CDA	$742,981.59	Cellular and molecular basis for impaired IL-2 response in T1D	2017
1-FAC-2016-144-A-N	Fousteri	TA	$109,689.07	Tr1 cell therapy for pancreatic islet transplantation: mechanisms of action and stability	2017
1-FAC-2016-273-A-N	Gurzov	TA	$110,000.00	The role of Protein Tyrosine Phosphatases in pancreatic beta cell function and survival.	2017
3-PDF-2015-90-A-N	Bose	PF	$162,764.00	Engineering next generation superbiocompatible capsules for islet cell therapy	2018
3-PDF-2015-91-A-N	Doloff	PF	$177,546.56	Identification of improved drugs and encapsulation strategies for the prevention of immune-mediated fibrosis and host rejection of alginate-encapsulated islets in the treatment of type 1 diabetes	2018
3-PDF-2015-81-A-N	Fu	PF	$162,764.00	Enhancing beta cell survival through glucose metabolism: A role for the BAD-GK axis	2018
2-PDF-2017-419-A-B	Chow	PF	$82,803.00	The therapeutic potential of Compound 21 (Angiotensin II type 2 receptor agonist) in diabetic nephropathy	2018
3-PDF-2015-100-A-B	Chow	PF	$79,961.00	The therapeutic potential of Compound 21 (Angiotensin II type 2 receptor agonist) in diabetic nephropathy	2018
4-CDA-2015-45-A-N	Huising	CDA	$580,841.66	Urocortin 3 marks mature beta cells and prevents diabetes	2018
2-2013-54	Huising	CDA	$169,158.34	Urocortin 3 marks mature beta cells and prevents diabetes	2018
1-FAC-2017-433-A-N	El Ouaamari	TA	$110,000.00	Unraveling the neuro-anatomy of the endocrine pancreas in health and diabetes	2018
1-FAC-2017-367-A-N	Phelps	TA	$109,999.91	Pathophysiology of GAD65 and GABA Signaling in Autoimmune Diabetes	2018
1-FAC-2018-541-A-N	Arnes	TA	$109,851.12	Examining the role of novel lncRNAs upon beta cell biology	2018
3-PDF-2016-195-A-N	Nair	PF	$170,476.00	Targeting cellular de-differentiation and metabolic reprogramming of β-cells to repair β-cell dysfunction in diabetes	2019
3-PDF-2016-174-A-N	Quijano	PF	$170,990.90	The role of Notch in adult pancreatic colony-forming progenitor cells	2019
3-PDF-2016-199-A-N	Syed	PF	$169,515.99	Biomarkers of beta cell stress and death	2019
3-PDF-2016-197-A-N	Pearson	PF	$175,604.08	Investigating the interaction of the innate immune system and the microbiota in modifying diabetes susceptibility	2019
3-PDF-2016-173-A-N	Van Simaeys	PF	$175,003.13	SaRNA-aptamer chimera for the treatment of primary non-function in islet transplantations	2019
3-APF-2019-749-A-N	Farnsworth	APF	$94,558.69	The Role of Protein Kinase C delta and Extracellular Matrix Interactions in Mediating Beta Cell Decline in Type 1 Diabetes	2019
3-APF-2016-177-A-N	Ge	APF	$266,357.97	Roles of UBASH3A and its interaction with LYP in human T cells and type 1 diabetes	2019
3-APF-2016-178-A-N	Joglekar	APF	$276,208.00	Plasma RNA Evaluation and Diagnosis In Children progressing To Type 1 Diabetes (PREDICT T1D)	2019
3-APF-2016-205-A-N	Shi	APF	$275,570.45	Novel therapeutic treatment of Diabetic Nephropathy	2019
5-CDA-2014-198-A-N	Benninger	CDA	$749,999.30	Interactions between islet function and beta cell autoimmunity during the pathogenesis of type1 diabetes	2019
5-CDA-2014-184-A-N	Engin	CDA	$750,000.00	Beta cell endoplasmic reticulum stress and its crosstalk with immune system in type 1 diabetes pathogenesis	2019
2-CDA-2018-663-A-N	Holland	CDA	$282,654.31	Sphingosine kinases in beta cell survival and proliferation	2019
5-CDA-2014-199-A-N	Ku	CDA	$750,000.00	Identification of targets to induce human beta cell proliferation and survival in type 1 diabetes	2019

5-CDA-2014-221-A-N	Richardson	CDA	$723,352.14	Pancreatic enteroviral persistence - a molecular trigger for islet autoimmunity and type 1 diabetes in humans?	2019
5-CDA-2014-214-A-N	Devecchi	CDA	$719,654.91	Nanomedicines to expand type 1 diabetes-specific T-regulatory-1 type cells: mechanistic and translational studies	2019
2-2013-34	Hamilton-Williams	CDA	$753,944.74	A genetic link between gut microbial flora and T1D susceptibility	2019
5-CDA-2014-210-A-N	Mannering	CDA	$749,410.65	Molecular and functional analysis of human islet-infiltrating T cells	2019
5-CDA-2014-185-A-N	Holland	CDA	$467,345.69	Sphingosine kinases in beta cell survival and proliferation	2019
1-FAC-2018-538-A-N	Baeyens	TA	$110,000.00	Geminin in human pancreas development	2019
3-PDF-2017-385-A-N	Bone	PF	$177,876.00	ER Calcium Dyshomeostasis in the Pathogenesis of Type 1 Diabetes	2020
3-PDF-2017-406-A-N	Chen	PF	$188,149.38	Development of Glucose-Responsive Insulin Derivatives	2020
3-PDF-2017-372-A-N	Racine	PF	$193,502.88	Advancing HLA-"Humanized" Models for T1D Therapy Development	2020
3-PDF-2017-395-A-N	Kuppan	PF	$174,305.73	Novel functionalized retrievable scaffolds for islet transplantation.	2020
3-PDF-2020-939-A-N	Haynes	PF	$112,910.40	Informing type 1 diabetes prevention strategies by investigating early dysglycaemia in children at risk	2020
3-PDF-2017-373-A-N	Chen	PF	$182,172.00	Alternatively processed forms of islet amyloid polypeptide as predictive biomarkers for type 1 diabetes	2020
3-PDF-2017-400-A-N	Prentice	PF	$177,876.00	Targeting Lipid Chaperone Adipocyte Protein 2 (aP2) For The Prevention Of Type 1 Diabetes	2020
3-APF-2016-204-A-N	Tan	APF	$19,988.00	Targeting the C5a-C5aR1 signaling axis in diabetic nephropathy	2020
3-APF-2017-394-A-N	Wang	APF	$229,005.15	Nitric Oxide Releasing Cannula Integrated with Glucose Electrode for Long Term Single-Port Glycemic Control	2020
1-FAC-2020-891-A-N	Farnsworth	TA	$110,000.00	The Role of Protein Kinase C delta and Extracellular Matrix Interactions in Mediating Beta Cell Decline in Type 1 Diabetes	2020
1-FAC-2019-858-A-N	Shi	TA	$109,918.19	Role of mTORC2/HuR/Nox4 signaling pathway in Diabetic Kidney Disease	2020
1-FAC-2019-802-A-N	Ge	TA	$107,125.45	Modeling genetic and molecular interaction between human type 1 diabetes risk genes and their products	2020
3-PDF-2018-584-A-N	Bevacqua	PF	$208,184.00	Innovating genetic studies to promote human islet regeneration	2021
3-PDF-2018-576-A-N	Bhattacharya	PF	$202,038.19	Novel glucose-responsive tripeptides for smart insulin	2021
3-PDF-2018-590-A-N	Sintov	PF	$200,942.78	Genetic screening for immune-tolerance inducers in stem cell-derived β-cells for cell replacement therapy of type-1 diabetes	2021
3-PDF-2018-575-A-N	van der Heide	PF	$202,171.46	Mapping the histopathological landscape of the pre-/diabetic human pancreas	2021
3-PDF-2018-594-A-N	Smink	PF	$202,172.00	Towards efficacious oxygen exchanging vasculature in a retrievable PDCCL scaffolds for islet transplantation.	2021
2-APF-2019-737-A-N	Colmegna	APF	$188,400.82	Web-based simulation tool for self-management support in type 1 diabetes	2021
3-APF-2017-390-A-N	Funa	APF	$375,488.00	Identification of signaling pathways controlling expansion of human pancreatic progenitor cells	2021
3-APF-2018-591-A-N	Long	APF	$279,070.91	Adult onset Type 1 Diabetes: Slow Progressors or Late Starters?	2021
3-APF-2018-585-A-N	Migliorini	APF	$300,188.00	Macrophages-endocrine cross talk during human pancreas development	2021
3-APF-2017-418-A-N	Tan	APF	$279,692.97	Targeting the C5a-C5aR1 signaling axis in diabetic nephropathy	2021
5-CDA-2016-171-S-B	Tomei	CDA	$749,611.21	Resolution of the impediments of immunoisolation technologies	2021
5-CDA-2015-85-A-N	Monti	CDA	$750,000.00	Autoreactive memory stem T cells generation and expansion post islet transplantation	2021
1-FAC-2019-874-A-N	Wang	TA	$110,000.00	Continuous Infusion of Nitric Oxide Donors for Prolonged Subcutaneous Insulin Delivery and Glucose Monitoring	2021
1-FAC-2021-1063-A-N	Joglekar	TA	$34,106.10	PREDICT-T1D: Plasma RNA Evaluation and Diagnosis In Children progressing To Type 1 Diabetes	2021
1-FAC-2019-859-A-N	Joglekar	TA	$75,893.90	PREDICT-T1D: Plasma RNA Evaluation and Diagnosis In Children progressing To Type 1 Diabetes	2021
5-ECR-2016-181-A-B	Pettus	ECPODRA	$749,997.62	Evaluation and restoration of glucagon dysregulation in individuals with type 1 diabetes	2021
3-PDF-2019-743-A-N	Coronel	PF	$176,013.20	Engineering Bio-functionalized Synthetic Platforms for the Induction of Immune Tolerance	2022
3-PDF-2019-742-A-N	Maldonado	PF	$173,277.77	Investigating the role of the mechanical microenvironment on beta cell maturation	2022
3-PDF-2019-739-A-N	Huang	PF	$43,827.66	alpha cell glucagon secretion: regulated exocytosis, dysregulation and rescue of T1D	2022
3-APF-2018-586-A-N	Denroche	APF	$256,482.00	Targeting islet amyloid for diabetes prevention and improved beta cell replacement therapy	2022
3-APF-2019-748-A-N	Ardestani	APF	$285,000.00	Targeting Hippo kinase LATS2 for beta cell protection in T1D	2022
5-CDA-2017-391-A-N	Millman	CDA	$746,814.72	Improved Generation of Stem Cell-Derived Beta Cells	2022
5-CDA-2016-189-A-N	Soleimanpour	CDA	$750,000.00	Targeting mitophagy to prevent beta cell failure in T1D	2022
5-CDA-2017-404-A-N	Sutherland	CDA	$750,000.00	Type 17 immunity in type 1 diabetes	2022
5-ECR-2014-112-A-N	Sherr	ECPODRA	$636,728.25	Clinical Strategies to Improve Closed Loop System Performance	2022
3-PDF-2020-935-A-N	Basile	PF	$188,184.00	Investigating the crosstalk between pancreatic elastase blockade and human beta-cell proliferation	2023
3-PDF-2020-934-A-N	Bhowmick	PF	$176,806.09	DOC2b mediated protection of the functional beta cell mass	2023
3-PDF-2020-937-A-N	Damond	PF	$171,072.50	Systematic Analysis of Islet Cell Heterogeneity by Imaging Mass Cytometry	2023
3-PDF-2020-936-A-N	Filipowska	PF	$176,934.60	LGR4, a novel receptor for RANKL: role in Type 1 diabetes	2023
3-PDF-2020-941-A-N	Potter	PF	$177,876.00	Modulation of brain fatty acid oxidation to improve hypoglycemia counterregulation	2023
3-PDF-2020-940-A-N	Kim	PF	$207,180.00	Characterizing the viruses that trigger and accelerate islet autoimmunity and type 1 diabetes	2023
3-APF-2020-929-A-N	Zeve	APF	$285,000.00	Reprogramming human gastrointestinal stem cells into insulin-producing cells	2023
3-APF-2019-744-A-N	Petrelli	APF	$139,000.00	Insulin-resistance and autoimmunity: the tale of an endotype in T1D	2023
3-APF-2023-1318-A-N	Prentice	APF	$95,000.00	Elucidating the Role of the Fabkin Hormone Complex on Metabolic Disease	2023
3-APF-2020-930-A-N	Hogrebe	APF	$283,532.00	Microenvironmental cues to enhance the differentiation and maturation of stem cell-derived beta cells	2023
5-CDA-2018-572-A-N	Chou	CDA	$352,067.90	Development of ultrafast-acting insulin for applications in artificial pancreas	2023
3-PDF-2020-938-A-N	Fløyel	PF	$199,032.00	Involvement of Cathepsin S in type 1 diabetes development and progression	2024
2-APF-2022-1182-A-N	Petrelli	APF	$144,687.10	Insulin-resistance and autoimmunity: the tale of an endotype in T1D	2024
1-FAC-2023-1316-A-N	Hogrebe	TA	$105,672.20	Cytoskeletal regulation of cell fate during differentiation to stem cell-derived islets	2024
5-ECR-2019-736-A-N	Forlenza	ECPODRA	$750,000.00	Promotion of Successful Artificial Pancreas Utilization via Predictive Modeling and Targeted Behavioral Interventions in Children, Adolescents, and Young Adults with Type 1 Diabetes	2024
3-APF-2022-1139-A-N	Thelin	APF	$190,000.00	Gaining insight into type 1 diabetes pathogenesis through STAT gain of function	2025
3-CDA-2021-1056-A-N	Chou	CDA	$390,925.29	Development of ultra-fast acting insulin for applications in the artificial pancreas system	
3-PDF-2017-374-A-N	Babon	PF	$123,456.00	Autoreactive CD8 T cell infiltrates from the islets of human subjects with T1D	Terminated
2-PDF-2014-114-A-N	DeSalvo	PF	$62,639.82	Randomized cross-over intervention study on the effects of recombinant human hyaluronidase on a treat-to-range closed-loop system and insulin infusion set life	Terminated
3-PDF-2022-1132-A-N	El	PF	$65,683.00	Targeting alpha-cell GPCRs to stimulate glucagon and counter hypoglycemia	Terminated
3-PDF-2018-579-A-N	Jacobsen	PF	$62,869.32	Characterization of T cell Autoreactivity in Type 1 Diabetes	Terminated
3-PDF-2017-399-A-N	Liu	PF	$58,344.00	Systematic identification and validation of causal variants and genes targets associated with type 1 diabetes	Terminated
3-PDF-2018-580-A-N	Minardi	PF	$62,640.00	Multifunctional bio-inspired nanovesicles for tolerance delivery in T1D	Terminated
3-PDF-2018-588-A-N	Russell	PF	$164,259.09	Investigating the role of MAFA and MAFB in human β cell specification and maturation using hESCs as a model.	Terminated
3-PDF-2015-82-A-N	Shveygert	PF	$50,932.00	Post-transcriptional regulation of beta-cell proliferation	Terminated
3-PDF-2017-401-A-N	Yuen	PF	$69,693.86	The impact of thymic insulin presentation on the repertoire of islet-specific T-cells	Terminated
3-PDF-2018-583-A-N	Zadeh	PF	$192,317.82	Targeted delivery of adiponectin receptor agonists for promoting beta cell regeneration and survival	Terminated

3-PDF-2019-751-A-N	Zhang	PF	$57,984.00	Regulation of Type 1 Diabetes through the IL-23:IL-23R axis	Terminated
3-2011-308	Stables	PF	$153,036.00	Studying the link between type-1 diabetes and cardiac arrhythmias	Terminated
3-PDF-2018-593-A-N	Buitinga	PF	$62,640.00	Posttranslational modification of beta-cell proteins: towards a better understanding and detection of type 1 diabetes.	Terminated
3-PDF-2020-933-A-N	Urizar	PF	$60,816.00	Developing human islet genetics and epigenetics to promote human islet regeneration	Terminated
3-2013-236	Teo	PF	$78,034.85	Significance of MODY genes in the differentiation of hiPSCs into beta cells	Terminated
3-PDF-2017-383-A-N	Kowalski	PF	$131,580.71	Engineering mRNA nanocarriers to rescue pancreatic beta cells in Type 1 Diabetes	Terminated
3-PDF-2014-222-A-N	Mullaney	PF	$138,245.27	A link between the gut microbiome and type 1 diabetes	Terminated
3-PDF-2017-379-A-N	Akazawa	PF	$117,060.00	Defining a new role for granzyme A in maintaining immune tolerance	Terminated
3-PDF-2015-80-A-N	Morita	PF	$113,288.00	Effect of Imatinib and KIRA6 on the Terminal UPR in NOD mice	Terminated
3-PDF-2016-184-A-N	Jha	PF	$50,056.00	The relative role of NADPH oxidase-Nox5 versus Nox4 in type1 diabetic nephropathy: in vitro and in vivo studies	Terminated
3-PDF-2017-370-A-N	Manousaki	PF	$132,943.00	A Mendelian Randomization Study to Investigate the Causal Role of Vitamin D on the Risk of Type 1 Diabetes	Terminated
3-APF-2016-172-A-N	Arda	APF	$115,775.72	Identification of genomic enhancers regulating human beta cell development and function	Terminated
3-APF-2019-753-A-N	Perdigoto	APF	$186,278.87	Protective and immunogenic responses of pancreatic beta cells to inflammation and checkpoint inhibition	Terminated
3-APF-2014-111-A-N	Salem	APF	$86,778.00	Pathway based GWAS Loci Prioritization, Rare Variant Discovery, and Analysis of multivariate and longitudinal DN phenotypes	Terminated
3-APF-2018-573-A-N	Lavagnino	APF	$92,524.00	Quantitative Multiscale Imaging to Investigate the Regulation of Glucagon Secretion in Pancreatic Islet	Terminated
3-APF-2017-397-A-N	Erener	APF	$250,923.60	Role of micro-RNAs in the pathogenesis of type 1 diabetes and their value as predictive biomarkers	Terminated
3-APF-2022-1141-A-N	Chen	APF	$71,352.11	Causes and consequences of inefficient islet prohormone processing in T1D	Terminated
5-ECR-2016-186-A-N	Gaglia	ECPODRA	$630,480.03	Monitoring Autoimmunity in Type 1 Diabetes	Terminated
3-APF-2023-1317-A-N	Longo	APF	$135,307.11	Genome-scale CRISPR screens identify ER export cargo proteins as mediators for β-cell stress response and antigen presentation	Terminating