July 28, 2021
[HRA Info Listserv] FEEDBACKWANTED– program evaluation indicators
Question posed by: Sindy Escobar Alvarez, Doris Duke Charitable Foundation

We recently completed an evaluation of a program supporting innovations in a specific disease area, sickle cell disease. However, we are having trouble finding comparisons against which to benchmark our portfolio's outcomes such as follow on funding, number of publications, and return on our dollars. Have you done an evaluation of a grant program including follow-on funding and bibliometric indicators? And if it has been published?

Organization	**Response**	**Contact**
Susan G. Komen®	Komen has done such an evaluation, with those metrics, but it's not published. However, I'm happy to share my approach with you and the sources I used to benchmark, though it was specific to early career researchers.	Kari Wojtanik, Ph.D. Sr. Director, Health Information & Evaluation
The ALS Association	We did an evaluation of our Ice Bucket spending for the 5th year anniversary. There are some measures in there that RTI did retrospectively: http://www.alsa.org/assets/pdfs/RTI-Report-FINAL.pdf.	Neil Thakur, Ph.D. | Chief Mission Officer
Optimized Scientific Solutions, LLC	For bibliometric analysis, I like to use iCite (https://icite.od.nih.gov/). It takes the list of PMIDs and automatically benchmarks them against similar articles. It provides useful metrics like RCR - relative citation ratio, that tells you how often an article is cited compared to other articles in the same field. It's also time-adjusted. So you can make statements like, investigators funded by DDCF were 2.3 times more likely to be cited than other investigators in the same field. It also gives metrics/predictions on how clinically meaningful/translatable it is. For follow-on funding, most of the analysis I do is to report back to donors. And often high net-worth donors who fully funded a project. So I like to benchmark the follow-on funding against average stock market returns (https://financial-calculators.com/historical-investment-calculator). e.g. With your donation to this project, they were able to leverage that in to X million dollar grant, a 4.5 times return. If you have invested that money, you would have seen a return of 3.2x in the market.	Maneesh Kumar
James S. McDonnell Foundation	Katy Borner's group at Indiana does beautiful work (see https://info.sice.indiana.edu/~katy/) and is thinking very hard on how to measure what we really want to know and not just what can be easily measured.	Susan M. Fitzpatrick, Ph.D. President
Autism Science Foundation	ASF also presented program evaluation metrics at a prior HRA meeting. We have more data and have now evaluated our undergrad mechanism as well funds leveraged. In both those that received and those that applied for funding. We also collect bibliometric analyses and created a metric of collaboration - which I would love input on because it has some problems.	Alycia Halladay CSO
Melanoma Research Alliance	We did an evaluation in 2018 that I spoke about at the Spring 2020 Members Meeting. I also presented our evaluation as a poster at a conference in 2019 and so have attached that as well as a summary slide of metrics from the HRA presentation.	Kristen Mueller

Organization	Response	Contact
	I'm in the process of doing another program-wide eval that includes a larger number of awards. I am just finishing up the analysis of those data and will be sharing with our Board later this year. Attachments follow this table.	
HRiA (Health Resources in Action/The Medical Foundation)	We have done several evaluations of this nature for foundation partners and we'd be happy to share the methods, results, and lessons learned from a recent example if that would be helpful. On both the topic of evaluation and the wider topic of reimaging research, there are some interesting ideas about how to fund research better coming out of the UK recently: https://royalsociety.org/topics-policy/projects/research-culture/tools-for-support/ **Résumé for Researchers** Résumé for Researchers suggested template PDF, 114.5KB **Sustained excellence in research requires a range of contributions** By creating a working environment that is both challenging and supportive, researchers help improve the flow of ideas, encourage talent to join their organisations and nurture future generations of researchers. To make the decisions concerning the people that create such an environment, decision-makers need to be able to assess the previous contributions made by individuals. https://www.gov.uk/government/publications/research-and-development-rd-people-and-culture-strategy Policy paper: **Research and development (R&D) people and culture strategy** This strategy sets out government's ambition to build the research and innovation workforce the UK needs, working in a positive and inclusive culture.	Lara Bethke, PhD Chief Scientific Officer

IMPACT 2018: Outcomes Summary

Award Mechanisms	Number of Awards	Amount Funded	Amount of Follow-on Funding	ROI (Additional Funding/Award Funding)	Number of Patent Applications	Number of Patents Awarded	Number of Publications	Number of Presentations	Number of Collaborations
Pilot	13	$1.1M	$5.2M	4.7	4	2	26	23	26
Established Investigator	31	$7.5M	$51.4M	6.8	10	4	136	332	77
Team Science	32	$27.4M	$70.8M	2.6	26	16	212	306	123
Young Investigator	28	$4.8M	$26M	5.4	10	6	127	152	77
Total	**107**	**$42.7M**	**$153.6M**	**3.6**	**50**	**28**	**543**	**827**	**307**

Strategic investments by the Melanoma Research Alliance in research and career development accelerate progress in melanoma prevention, diagnostics and treatment

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ABSTRACT

Non-governmental organizations, such as foundations, charities, philanthropists and corporations, represent a growing source of research funding[1]. The Melanoma Research Alliance (MRA) was founded in 2007 by Debra and Leon Black under the auspices of the Milken Institute with the mission to end suffering and death due to melanoma by collaborating with all stakeholders to accelerate powerful research, advance cures for all patients, and prevent more melanomas. Since its founding, MRA has invested a total $101 million in 266 research awards to 126 academic institutions in 15 countries. Award mechanisms include Team Science Awards, Established Investigator Awards, Young Investigator Awards for newly independent faculty, and Pilot Awards.

A key challenge among research funders is measuring the effectiveness of their grants in achieving the organizational mission. In 2018, MRA assessed the impact of its multi-million dollar investment in research by conducting an in-depth analysis of the 107 research projects completed between 2010 - 2018. The evaluation included the following: 1) Analysis of progress towards scientific aims; 2) A post-award survey sent to all administrative principal investigators (response rate 74% of 107 awards); and, 3) Research on quantitative outcomes such as follow-on funding, publications and patents using award progress reports, PubMed, Uber Research Dimensions, Google Patents, www.uspto.gov, and www.clinicaltrials.gov.

The evaluation demonstrated that the research areas funded by MRA reflect the swift progress of melanoma research as a whole over the past 11 years. MRA awards informed current thinking in the field and impacted clinical practice. Survey responses indicated MRA funding positively impacts the career and research trajectories of funded researchers, for example by fostering collaboration, obtaining additional funding and securing promotions or new positions. Both team and individual awards yielded high returns; however, their specific impacts differed. For example, Team Science Awards contributed to more patents (16 of 28 total) and publications (212 of 543 total) than individual awards, which garnered significant follow-on funding. While Team Science Awards resulted in a 2.6x multiplier effect in follow-on funding, Established Investigator, Young Investigator, and Pilot Awards yielded a 6.8x, 5.4x and 4.7x multiplier effect, respectively. While most projects conclude in the expected timeframe, clinical research projects typically experience greater delays and involved greater risk than their non-clinical counterparts.

Collectively, this analysis suggests that foundation funding of a diverse portfolio of research grants can catalyze preclinical, translational and clinical research as well as aid in the career development of academic researchers.

1 Private Funding of Basic Science Survey conducted by the Science Philanthropy Alliance https://www.sciencephilanthropyalliance.org/u-s-research-institutions-received-over-2-3-billion-in-private-funding-for-basic-science-in-2017-alliance-news/

OBJECTIVE

To assess the impact of MRA's multi-million dollar investment in research by evaluating all 107 awards completed between 2010 and 2016.

METHODS

- Assessed progress towards Scientific Aims for 107 competitively-selected and funded research projects completed between 2010 and 2016
- Conducted a post-award survey of 95 funded Principal Investigators on 107 projects to capture:
  - Quantitative success measures such as follow-on funding, patents and publications; and
  - Feedback from funded investigators
- Researched quantitative outcomes using award Progress Reports, PubMed, Uber Research Dimensions, Google Patents, www.uspto.gov, and www.clinicaltrials.gov

RESULTS

Table 1. Follow-on funding by award type

Funding Type	Amount Funded	Amount of Follow-on Funding	ROI (Additional Funding/Award Funding)
Pilot	$1,100,000	$5,195,500	4.7
Established Investigator	$7,525,000	$51,401,700	6.8
Team Science	$27,448,516	$70,755,112	2.6
Young Investigator	$4,774,180	$25,993,541	5.4
Total	**$42,752,696**	**$153,645,853**	**3.6**

Table 2. Researcher Progress Toward Stated Aims

Funding Type	% Completed	% Progress	% (Completed + Progress)	% Not Conducted
Pilot	64.29%	25.00%	89.29%	10.71%
Established Investigator	60.44%	26.37%	86.81%	13.19%
Team Science	60.64%	27.66%	88.30%	11.70%
Young Investigator	63.29%	29.11%	92.41%	7.59%
Average	**62.16%**	**27.04%**	**89.20%**	**10.80%**

Table 3. Quantitative outcome measures

Award Type	Number of Awards	Number of Publications	Number of Presentations	Number of Collabora-tions	Number of Patents Awarded
Pilot	13	26	23	26	2
Established Investigator	31	136	332	77	4
Academic-Industry Partnership	2	7	8	4	0
Team Science	32	212	306	123	16
Team Science Industry Partnership	1	35	6	0	0
Young Investigator	28	127	152	77	6
Grand Total	**107**	**543**	**827**	**307**	**28**

Table 4. Impact on research and career trajectory

Areas of Highest Impact
Expanding an existing collaboration
Establishing a new collaboration
Receiving additional funding
Using a new method or technique
Expanding the lab

Areas of least impact
Applying for or receiving a patent
Transitioning from clinical to basic research
Starting a biotech company

CONCLUSIONS

- The evolution of research topics funded by MRA – immune and targeted therapies – reflect the progress of melanoma research over the past 11 years
- MRA funded research informs current thinking in the field and impacts clinical practice
- MRA funding positively impacts the careers of funded researchers and leveraged substantial dollars
- The majority of MRA's funded awards are successful, but modifications to original aims occur, as well as technical hurdles