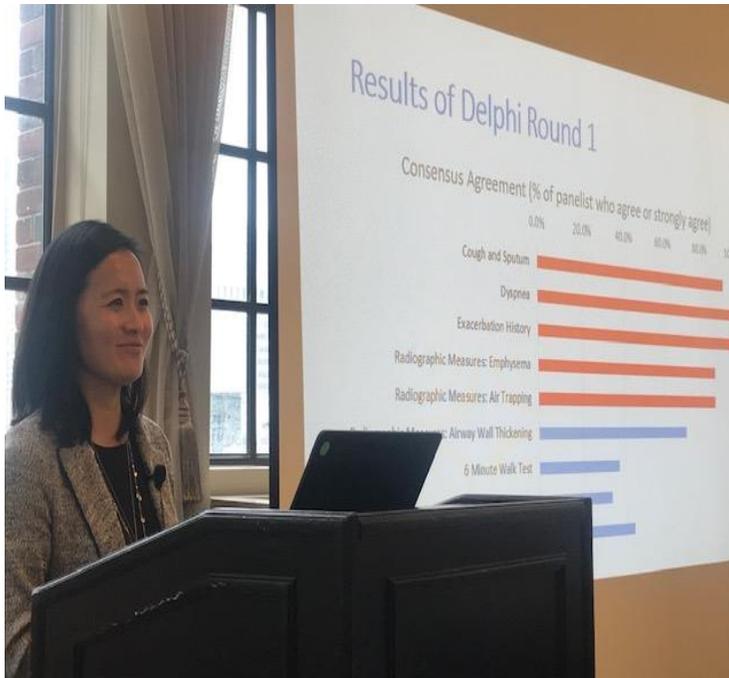


RESPIRATORY DISEASE Young Investigators' Forum



Impact of Educational Program on the Career Development of Physician Scientists; Outcomes from 14 Years of the Annual Respiratory Disease Young Investigators' Forum – An Article for Publication

Outcomes Summary

This program was supported by an educational grant from AstraZeneca Pharmaceuticals

Background and Rationale

The Problem

Physician-scientist workforce is declining -> From 23,268 (4.7%) in 1984 to 13,447 (1.6%) in 2011

Predicted shortages will negatively impact US biomedical research productivity

Call to Action

In 2014, the National Institutes of Health Physician Scientists Workforce Working Group called for measures to:

- Encourage more trainees to become physician-scientists
- Prevent loss of candidates to alternate careers

Next Steps

In 2019, a study was conducted to evaluate the impact of the RDYIF on the career development and productivity of fellows and early-career physician faculty who participated in the RDYIF between 2005 and 2018.

RESPIRATORY DISEASE Young Investigators' Forum



The Respiratory Disease Young Investigators' Forum is an annual three day symposium created to prepare young candidates for successful careers as physician-scientists. With support from AstraZeneca, National Jewish Health has been proud to serve as the accredited provider of this event since 2014 though it originated in 2004. The Forum is designed to enable pulmonary, allergy and immunology fellows and junior faculty to present their research and interact with expert faculty in order to:

- ✓ improve research methodologies and presentation skills
- ✓ enhance communication in the field of respiratory disease and allergy
- ✓ develop relationships with faculty mentors
- ✓ assist in translating laboratory research into useful bedside application
- ✓ stimulate an academic career in respiratory disease and allergy research

June 16, 2020

Original research article
published in *ATS
Scholar*, peer-reviewed
journal of the American
Thoracic Society

1,099
article
downloads!

Methods

- Retrospective, observational study
- 66 item questionnaire emailed to 308 past participants from 2005 through 2018
- Responses analyzed using descriptive and qualitative approaches

Key Questions

The study assessed the impact of RDYIF participation on 8 factors associated with career development:

1. Enhancing ability to communicate scientific information
2. Networking with peers
3. Interest in career as a physician-scientist
4. Career selection and advancement
5. Establishing relationships with mentors
6. Transition to independence
7. Successfully obtaining grant funding
8. Identifying funding sources

RESPIRATORY DISEASE Young Investigators' Forum



Impact of a Respiratory Disease Young Investigator's Forum (RDYIF) on the Career Development of Physician-Scientists

The Problem

- Number of Physician-scientists is declining
- Predicted shortages in physician-scientist workforce
- Negative impact on biomedical research productivity in the U.S.
- Physician-scientists: 23,268 (4.7%) in 1984 to 13,447 (1.6%) in 2011

Educational Intervention

A CME certified 3-day live forum consisting of junior faculty/fellow research presentations, competitive scoring by expert faculty panel, career focused presentations and structured feedback for the young investigators.

- RDYIF started 2004, running for 14 years
- Approximately 420 Young Investigators have participated
- Supported by AstraZeneca through independent medical education grants since inception

Format of the RDYIF

- 3-day Live Forum
- CME Certified
- 30 Young Investigators
- 9 Expert Faculty
- 3 Expert Faculty Behavioral Presentation Advisors
- Respiratory/Airway Disease Focus
- Research and Presentation Rehearsal with Advisor Feedback
- Basic Science/Clinical Research Presentations
- Competitive Process with Scored Presentations
- Awards: Top 3 in Each Category & Peer Award

14th Annual Respiratory Disease Young Investigators' Forum (2018)

Confidence level increased 146% from pre to post activity regarding conducting effective respiratory research to pursue a career in academic medicine.

Confidence level increased 204% from pre to post activity regarding presenting scientific research to expert faculty.

100% would recommend the program to colleagues; forum met or exceeded expectations; activity positively influenced their interest in pursuing a career as a physician scientist.

RESPIRATORY DISEASE Young Investigators' Forum

Reynold A. Panettieri, Jr., MD¹; Jay K. Kolb, MD²; Stephen C. Lazarus, MD³; Esther Langmack, MD⁴; Andrea Harshman, MHA⁵; Stephanie Corser, ND, RN⁶; Irina Petrasche, MD⁷

A study was conducted to evaluate the impact of the RDYIF on the career development and productivity of fellows and early-career physician faculty who participated in the RDYIF between 2005 and 2018.

Participation in the RDYIF may have had its greatest impact by stimulating or confirming participants' selection of a physician-scientist career, by providing opportunities to interact with role models and mentors, and practice networking and scientific communication skills.



¹ Rutgers University, New Brunswick, NJ; ² Tulane University School of Medicine, New Orleans, LA; ³ University of California San Francisco School of Medicine, San Francisco, CA; ⁴ Langmack Medical Communications LLC, Denver, CO; ⁵ National Jewish Health, Denver, CO.

**RDYIF Poster Presentation at the
AstraZeneca MEGO Showcase October 8, 2019**

BEST PRACTICES

National Jewish Health
Breathing Science is Life.

Methods

- Retrospective, observational study
- Questionnaire emailed to 308 past participants from 2005 through 2018
- Analyzed using descriptive and qualitative approaches
- IRB deemed the study to be exempt from review

Program Impact

- "Encouraged me at a critical moment to continue to pursue the path of a physician scientist"
- "Solidified my interest in clinical research and becoming a physician-scientist."

78% of respondents report the Forum had a strong to very strong impact on their interest in a career as a physician-scientist

87% of respondents report the Forum had a strong to very strong impact on their ability to communicate scientific information

Thank you to AstraZeneca for supporting young investigators and independent medical education.

"The research career and grant process can be complicated, but can be successfully navigated. This was a great opportunity to learn more about the system and interacting with others interested in the field." – 2017 young investigator

Methods

ORIGINAL RESEARCH

Impact of a Respiratory Disease Young Investigators' Forum on the Career Development of Physician-Scientists

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ABSTRACT

Background: To reverse the dramatic decline in the U.S. physician-scientist workforce, interventions are necessary to retain physicians in research careers.

Objective: To evaluate the impact of an annual 3-day symposium, the Respiratory Disease Young Investigators' Forum (RDYIF), designed to guide fellows and junior faculty into successful physician-scientist careers.

Methods: In this retrospective, observational study, a questionnaire was e-mailed to 308 physicians who participated in the RDYIF between 2005 and 2018. The questionnaire was administered by National Jewish Health study personnel in the spring of 2019. Responses were primarily analyzed using descriptive and qualitative approaches.

Results: The response rate was 39.3% (n = 121), with 107 of responders (88.4%) completing the full survey. The majority of survey completers currently worked as physician-scientists (76.6%; n = 82), held faculty positions (88.8%; n = 95) in an academic center (90.6%; n = 97), and were currently involved in research (93.4%; n = 100). The majority had been an author on ≥10 peer-reviewed publications (61.3%, n = 65) and had been awarded research grants (71.7%; n = 76). Thirty completers (28.3%) had served as a principal investigator on one or more clinical trials. Completers indicated that participation in the RDYIF had a "strong impact" or "very strong impact" on their career development as physician-scientists.

Conclusion: Participation in the RDYIF strengthened participants' interest in physician-scientist careers and appeared to track with successful career development. Young Investigator Forums such as the RDYIF may be an effective intervention to support the declining supply of physician-scientists in North America.

Keywords

physician-scientists; career development; mentoring; basic science research; clinical research

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As of October 21, 2020:

Total citations: 1
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EDITORIALS

Check for updates

It Takes a Village: The Value of National Courses Focused on Training Physician-Scientists

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In this issue of *ATS Scholar*, Corder and colleagues describe the "Impact of a Respiratory Disease Young Investigators' Forum on the Career Development of Physician-Scientists" (1). Although a number of educational papers have been published throughout the years, these almost exclusively focus on training for clinical/procedural skills and are often conducted as part of either residency conferences or as part of national conferences or bootcamps (2-4). In contrast, the Respiratory Disease Young Investigators' Forum (RDYIF), which has been run since 2004 and continuously since 2011, is one of the few national forums focused on the education of physician-scientists at the fellow/junior faculty level. Adding to its unique nature is the collaboration between industry and academia to fund and host this forum. The focus on physician-scientists is critically important because numerous studies document the declining number of young investigators, which in turn can lead to a critical shortage of scientific investigators as established investigators retire (5). Although a number of factors contribute to this decline, what is clear is that with fewer and fewer individuals pursuing a career as a physician-scientist, the likelihood of there being a critical mass of peers at any single institution is

becoming increasingly less likely. Therefore, the goal of the RDYIF was to create this critical mass by inviting fellows and physician-scientists from academic pulmonary critical care programs around the United States and to use this forum to provide career guidance and education on skills necessary for a career as a successful physician-scientist.

Although a minimum threshold for determining the effectiveness of an educational program is the assessment of learner satisfaction and the perceived value of the program at the conclusion of an activity, a more powerful evaluation is to reassess these perceptions at a future time point to determine the persistence of any benefit. However, the ultimate goal of any educational program is to impact learner behavior/outcomes, which is what the authors try to assess in this study. In 2019, they administered a structured, validated survey to all prior participants with the goal of assessing their current role in research/academia and the perceived value of the RDYIF. Overall, they had 107 complete responses (a 40% response rate). They demonstrated that 78% of subjects are working as physician-scientists, with 97% working in academic health centers and 93% involved in research. More than half the subjects were authors of at least 10 peer-reviewed publications, and 65% had gone on

*J.A.G. is Associate Editor of *ATS Scholar*. His participation complies with American Thoracic Society requirements for recusal from review and decisions for authored works.

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September, 2020

Jeffrey A. Gold wrote an editorial about the article in *ATS Scholar*

As of October 21, 2020:

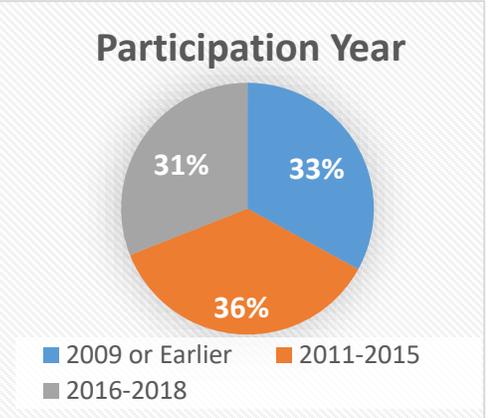
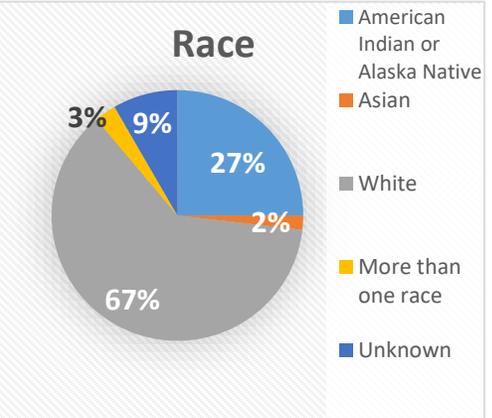
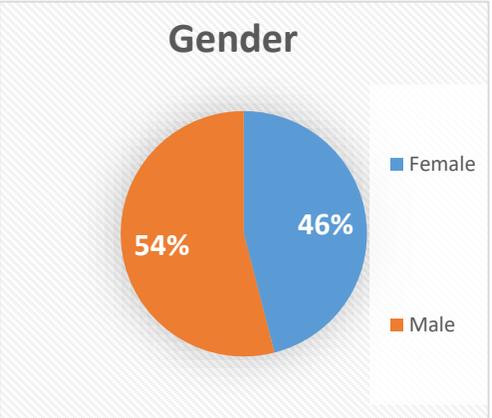
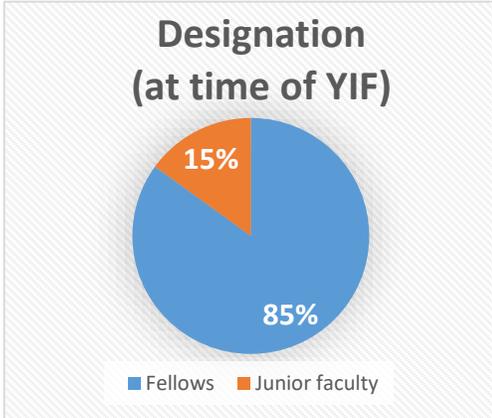
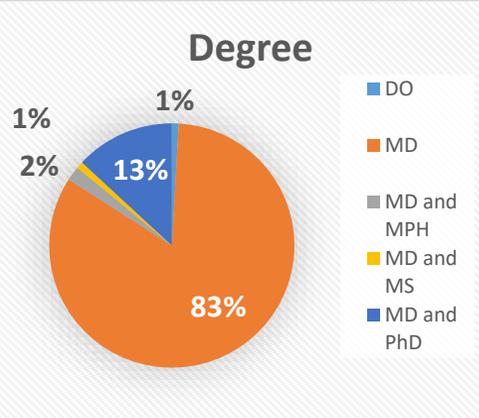
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Respondent Characteristics

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Surveys sent: 308
Responses received: 121
Surveys completed: 107



77%
currently working as physician-scientists

71%
had received grant funding for their research

93%
remain involved in research in some capacity

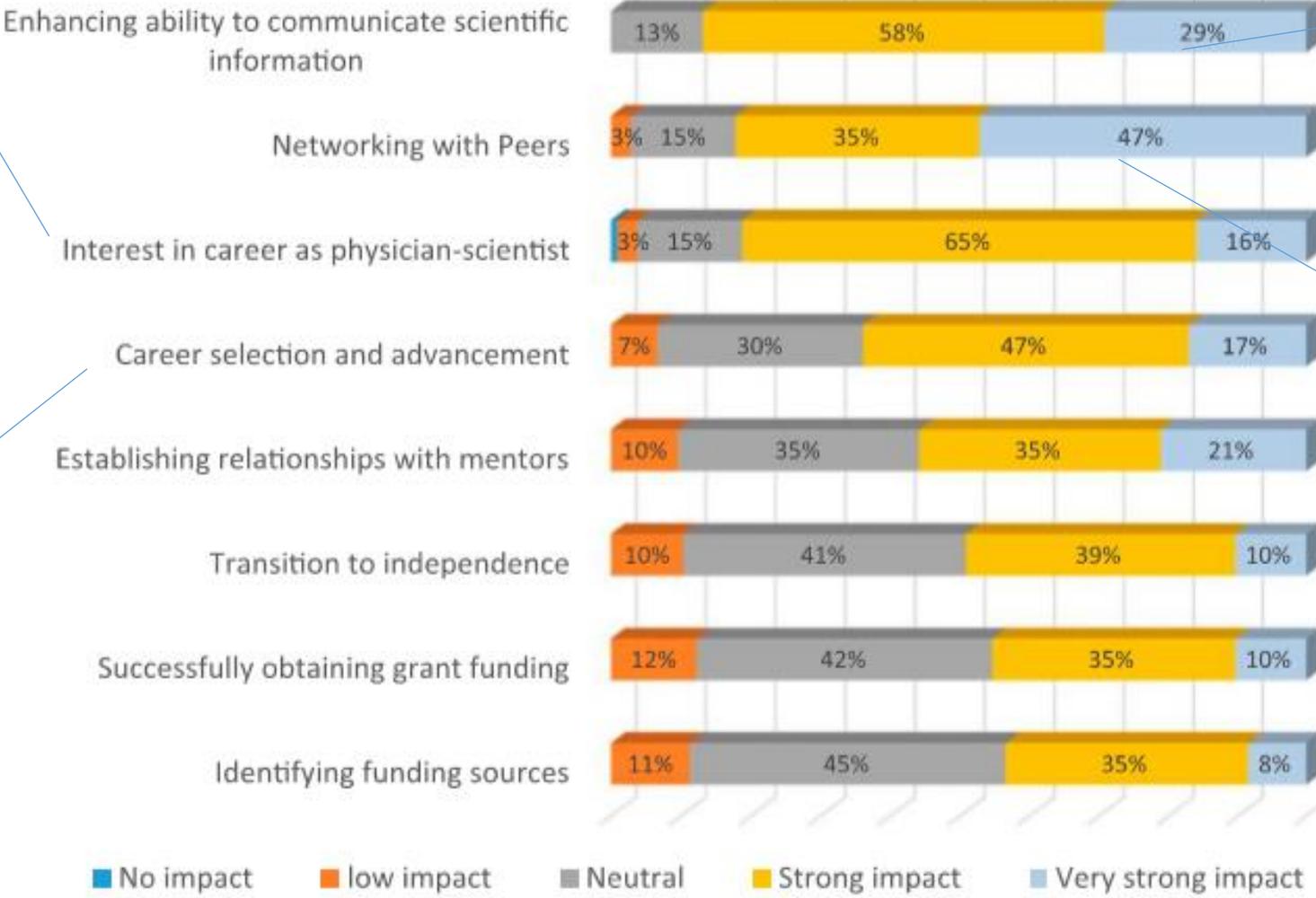
13
median # of peer-reviewed publications authored

Research Findings: Program Impact

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As it relates to your career, please rate the degree to which you feel the RDYIF had an impact on the following factors:



81%
reported the RDYIF had a strong to very strong impact on their **interest in a career as a physician-scientist**

64%
reported the RDYIF had a strong to very strong impact on their **career selection and advancement**

87%
reported the RDYIF had a strong to very strong impact on their **ability to communicate scientific information**

82%
reported the RDYIF had a strong to very strong impact on **peer networking**

N = 107

Research Findings: Program Impact

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Most important part of your experience in RDYIF*

- Receiving advice and feedback
- Networking with peers
- Improving presentation skills
- Interacting with RDYIF faculty and mentors

N=83

100%
Would recommend
RDYIF to current fellows
as a professional
development
opportunity (*n* = 105)

Impact participation in the RDYIF had on your career path*

- RDYIF helped to validate decision to pursue a physician-scientist career
- Positive impact on:
 - ✓ Networking skills
 - ✓ Scientific communication skills
 - ✓ Confidence

N=80

53%
Stayed connected
with peers they
met at RDYIF
(*n* = 53)

Comments/Suggestions for improvement*

- Strong desire for RDYIF to be continued
- Recommendations for improvement:
 - ✓ Expand the program
 - ✓ Strengthen the mentoring component

N=49

*Open ended questions aimed to elicit participants' feedback on overall impact of RDYIF on their careers

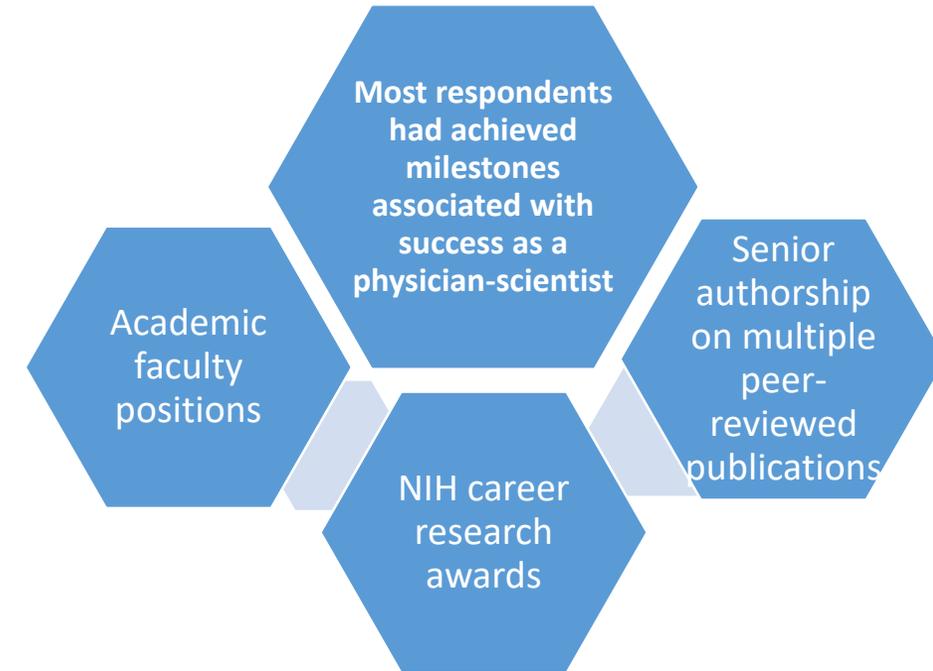
Conclusions

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Based on this analysis, the authors concluded that the RDYIF:

- ✓ Was very successful in **strengthening interest in a physician-scientist career** among participants
- ✓ Had a strong positive impact on participants' **scientific communication skills**, ability to build **relationships with peers and mentors**, and **career selection and advancement**



Factors associated with retention in the physician-scientist pipeline include:

- Development of professional skills, such as collaboration, networking, and interactions with role models and mentors
- Development of a professional identity as a physician-scientist
- Confidence and clarity in choosing a research career

RDYIF had a **positive impact on career development and productivity** of fellows and early-career faculty in respiratory diseases

Pictured: Young Investigator Presentation by Arun Jose, MD, RDYIF 2019

Conclusions



While not all respondents reported a career of physician-scientist (77% are physician scientists), nearly all respondents (93%) reported they were in roles involving research



Respondents were more likely to be involved in **clinical research** than basic or translational research

The majority of respondents reported their primary research area was **asthma** or **COPD**



Among those respondents not in physician-scientist roles, common reasons for selecting another career path include perceived lack of:

Research funding

Adequate mentoring

Institutional support for research

Lessons Learned and Future Directions

RESPIRATORY DISEASE Young Investigators' Forum



- ✓ The findings of this study support continuation and expansion of the Respiratory Disease Young Investigators' Forum
- ✓ Respondents did not report positive impact on:
 - Obtaining grant funding
 - Identifying funding sources
 - Transitioning to independence
- ✓ This finding suggests a need for greater focus on these areas in future offerings of the RDYIF
- ✓ Additionally, the RDYIF can serve as a model for the development of similar educational programs designed to address the needs of aspiring physician-scientists in other specialty areas

“As a fellow, the RDYIF provided the first forum to present my research to an audience of my peers. The networking with co-fellows at other institutions was unbelievable. I made friendships and collaborations that persist today.”

—Past young investigator



Pictured: Neil Aggarwal, MD, (NHLBI) expert faculty presentation

Study Limitations

- This observational study lacked a control group
- The survey was based on self-reported information
- Respondents did not include past participants whose email addresses could not be verified online
- Response rate was low (39.3%), which could skew results
 - Those who chose to respond may have been more likely to have a positive view of RDYIF

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*Thank you for your support of this
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