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Mentoring of Early Stage Investigators when Funding is Tight: The COPTR Experience

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Scientific progress requires a sustained multi-generational momentum whereby new discovery builds on previous successes and failures. To achieve this legacy, the scientific community must look past the short-term gains that can be achieved through most 3–5 year grant mechanisms and consider how to develop systematic approaches to efficiently integrate and train early stage investigators. With only 10%–18% K-awardees successfully transitioning to become independently funded scientists, finding ways for effective early training is imperative.¹

In 2010 the National Institutes of Health funded the Childhood Obesity Prevention and Treatment Research (COPTR) consortium, which is a 7-year cooperative agreement that brings together five institutions to conduct obesity prevention or treatment trials.² An innovative aspect of this cooperative agreement included funding for ESIs for the entire length of the seven-year grant award. These included emerging scientists from a range of disciplines at varying career stages (from post-doc to junior faculty) who would be deliberately and systematically involved in the conduct of this research. The early stage investigator group met for monthly phone calls and at annual face-to-face meetings, the content of which included scientific works in progress, professional development skills, and peer mentoring. The group was led by two co-chairs (first and second authors) and a faculty (PI) mentor (third author).

As the COPTR trials draw to a close, almost 7 years later, we report on the success of the ESI program and demonstrate how it contributed to: 1) launching the careers of a new cohort of investigators as evidenced by promotions, publications, presentations, and grant funding; 2) training these new investigators in best-practices for high-quality research in behavioral interventions; and 3) amplifying the capacity of the COPTR team to both conduct and disseminate its research (Figure 1).

Over the course of the 7-year trial, 19 individuals (approximately 3–4 per study site) were designated as COPTR ESIs. The range of time spent as an early stage investigator was between 1 year and 7 years, though the majority spent >3 years in the program (average 3.3 years, SD 1.9). One of the hallmark accomplishments of this ESI program was the effective

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launching of multiple scientific careers. Over the course of the 7 years, ESIs achieved 6 promotions, received 3 NIH training awards (e.g., K12, K23), and 9 NIH grants (e.g., R03, R21, R56), 2 of which were R01 awards. Furthermore, 18 of the 19 investigators are still involved in scientific discovery with 4 working in industry and 14 working in academia.

The ESI program also allowed for the effective amplification of COPTR's ability to conduct and disseminate research. Each of the early stage investigators played an important co-investigator role for the four studies. In some cases early stage investigators served as study coordinators while others led recruitment efforts, delivered the intervention, oversaw data collection efforts, or facilitated the data management at the coordinating center. Over the course of the 7-year study, early stage investigators were authors on 22 COPTR-related manuscripts (5 additional manuscripts currently under review). For 10 of those manuscripts, multiple early stage investigators were co-authors and for 12 of those manuscripts, an early stage investigator was the first author.

In addition, the COPTR principal investigators and NIH-program officers provided a systematic investment in training of ESIs through the near total-access to all aspects of the trial, including invitations to attend steering committee and data safety and monitoring board meetings. Consequently, the metrics of success extend beyond the typical metrics of academic productivity. Throughout the course of the study, additional skills learned by many of the early stage investigators as a direct result of their COPTR involvement included: leadership (chairing or co-chairing a committee/working group) N= 3; mentoring of undergraduate/graduate students N=7; community engagement methodology N=8; data quality/analysis N=10; study recruitment, N=10; training of data collectors, N=8; project management, N=6; and study design, N=9. Finally, through broad exposure to multiple senior faculty across the country, early stage investigators were able to learn best practices in research as they developed effective mentoring relationships with multiple successful investigators.

The sustainability of the ESI program throughout the 7-year COPTR experience depended on institutional support for each ESI. To garner this support, each ESI relied on either COPTR-funded percent effort, or synergistic incorporation of the COPTR ESI program into an ongoing training plan (e.g., career development award, PhD thesis, or post-doctoral fellowship). In addition, ESIs carefully reported scientific productivity, which allowed for clear demonstration to home institutions of the value of participating in the ESI program.

The COPTR early stage investigator program has been an unqualified success. While it initially represented a novel way for the NIH to invest in scientific discovery, we would now recommend that this be integrated into large grants that bring multiple sites together to conduct research. Not only did this launch early investigator careers to independence, but it has already created a natural amplification effect of the COPTR ESIs serving as mentors for even earlier investigators (medical students, residents, graduate students) to catalyze their careers. Moreover, considering a broader perspective, it is hard to quantify the ripple effects of the early stage investigator program on the future of obesity research. Transferring knowledge and research skills from one generation to another through effective mentoring is

a scientific imperative. With the COPTR experience in mind, the question shouldn't be how can you afford to invest in early investigators, but rather, how can you afford not to?

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