METAS+

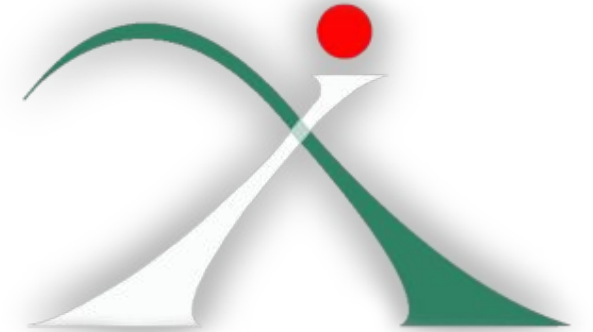## *Maintaining, Engaging, and Tracking Alumni in Science and Health Research*

UNIVERSITY OF PUERTO RICO AT CAYEY

Institute of Interdisciplinary Research

ANALITICA Fundación Inc.

Ísar P. Godreau, Ph.D

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Raymond Tremblay, Ph.D

PARTICIPATION GUIDELINES

- We would love to SEE you. Please turn your camera on, if possible.

- Feel free to ask questions or comments during the presentation.

- Mute yourself when not speaking.

- Feel free to also use the chat-box for questions or comments.

- Introduce yourself briefly.

KEY STAKEHOLDERS & ADVISORY COMMITTEE

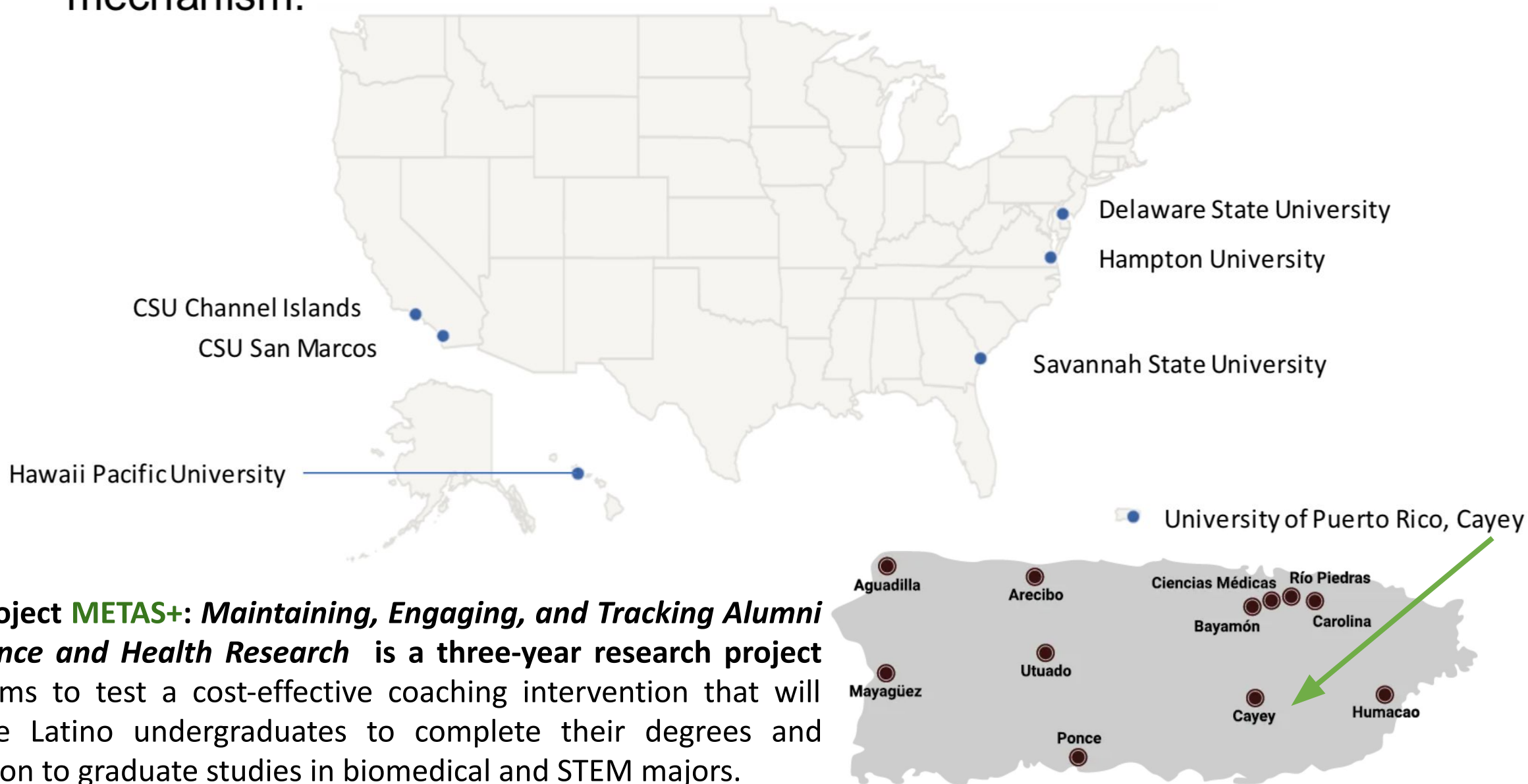| NAME	AFFILIATION
Dr. Glorivee Rosario	Chancellor, UPR-Cayey
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Dr. Julián Hernández	Consultant on Evaluation Instruments and Program Implementation Analítica
Prof. Gladys Ramos	Director, Office of Sponsored Programs and Research (OSP&R)
Prof. Vionex Marti	Research Initiatives and Compliance Coordinator (RICC)
Dr. Xiomara Santiago-Rodríguez	Director, Institutional Research and Planning Office (OPAII)
Prof. Fernando Vázquez-Calle	Researcher, Institutional Research and Planning Office (OPAII)
METAS+ ADVISORY COMMITTEE	
Dr. Lourdes Echegoyen	Director, Campus Office of Undergraduate Research Initiatives (COURI), University of Texas at El Paso (UTEP), PI BUILDing SCHOLARS center at UTEP
Dr. Emma Fernández	Director, RCMI Program, UPR-Medical Sciences Campus
Dr. Carlos Crespo	PI of BUILD EXITO , Portland State University (PSU) School of Public Health
Dr. Ubaldo Córdova	UPR Vice-President
Dr. Maria-Eglée Pérez	Chair, Mathematics Department, UPR-Rio Piedras

AGENDA

1. Introduction

2. Proposed Intervention & Testing Hypothesis

3. Project Time-line

4. Questions for the Advisory Board

5. Challenges and Strengths

OVERALL NIH PROGRAM OBJECTIVE

- Diversity Program Consortium Dissemination and Translation Awards (DPC DaTA) (U01)

- Objective: Implement a scientific approach to enhancing the diversity of the biomedical research workforce, using a rigorous assessment and evaluation of the proposed training and mentoring interventions implemented.

- The DPC DaTA program is funded via Cooperative Agreement: a support mechanism used when there will be substantial Federal scientific or programmatic involvement.

- PI=Principal Investigator(s) PO=Program Officer PS=Project Scientist

- **Seven** awards funded through a **U01 cooperative agreement** grant mechanism.

Delaware State University

Hampton University

CSU Channel Islands

CSU San Marcos

Savannah State University

Hawaii Pacific University

University of Puerto Rico, Cayey

Aguadilla

Arecibo

Ciencias Médicas

Río Piedras

Bayamón

Carolina

Utuado

Mayagüez

Cayey

Humacao

Ponce

The project **METAS+**: *Maintaining, Engaging, and Tracking Alumni in Science and Health Research* is a three-year research project that aims to test a cost-effective coaching intervention that will prepare Latino undergraduates to complete their degrees and transition to graduate studies in biomedical and STEM majors.

Figure 1. Location of the eleven campuses of the University of Puerto Rico.

METAS+ ADMINISTRATIVE UNIT
Institute of Interdisciplinary Research at UPR-Cayey (IIR)

INSTITUTIONAL & IIR STUDENT GRADUATION RATES
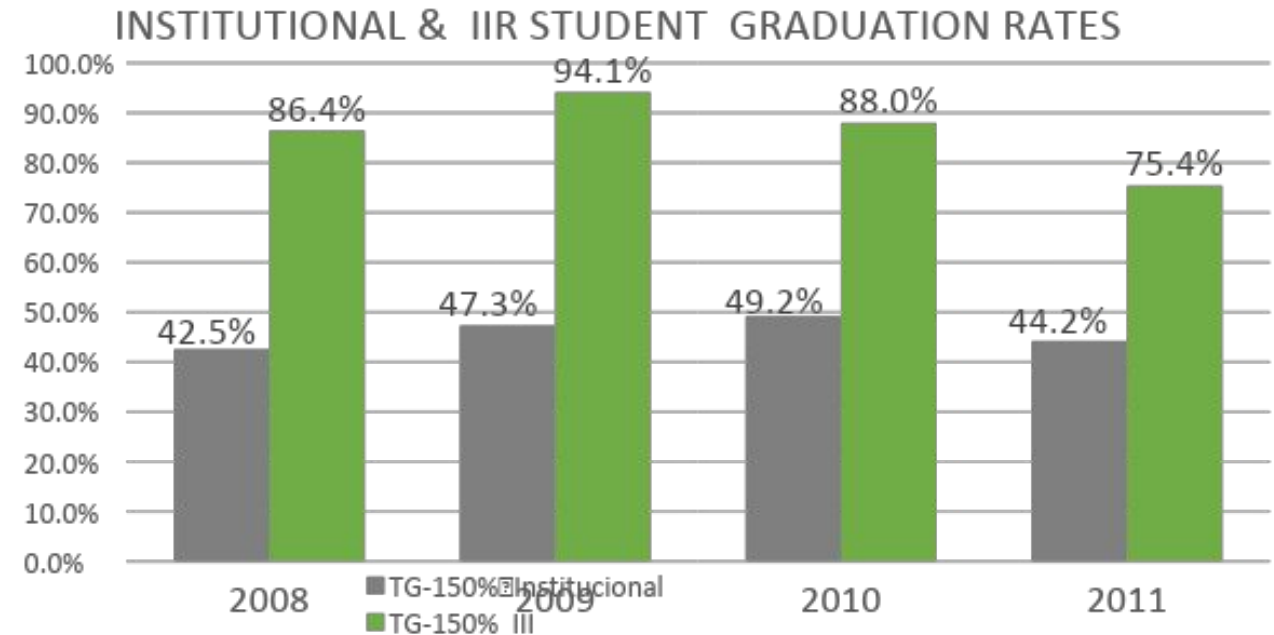
Approx. 86% of undergraduate students who are engaged in research at the IIR finish their degrees successfully (6yrs)

NIH Research Programs: RIMI (2004-2009), BRIC (2010-2016), BRAD (2015-2020), IPERT (2016-2021)
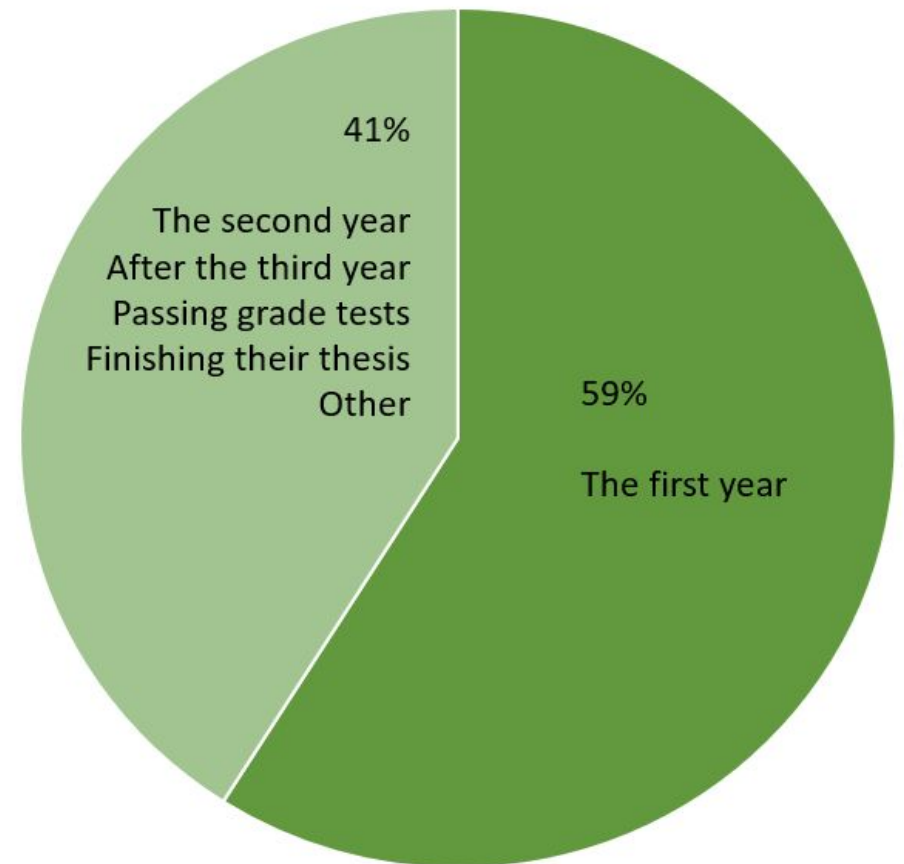
THE PROBLEM

- Median time to attrition to the Ph.D. has been identified at 23 months, with particular challenges in the first year.

- The rate of attrition to complete a doctoral degree is at least 50% for underrepresented minority students.
  - Isolation
  - deficient mentoring
  - cultural invalidation
  - lack of life strategies for overall wellness

- Undergraduate Research experiences are known to improve students' self-efficacy and scientific identity, with particular significant results for underrepresented students, but additional efforts are needed.
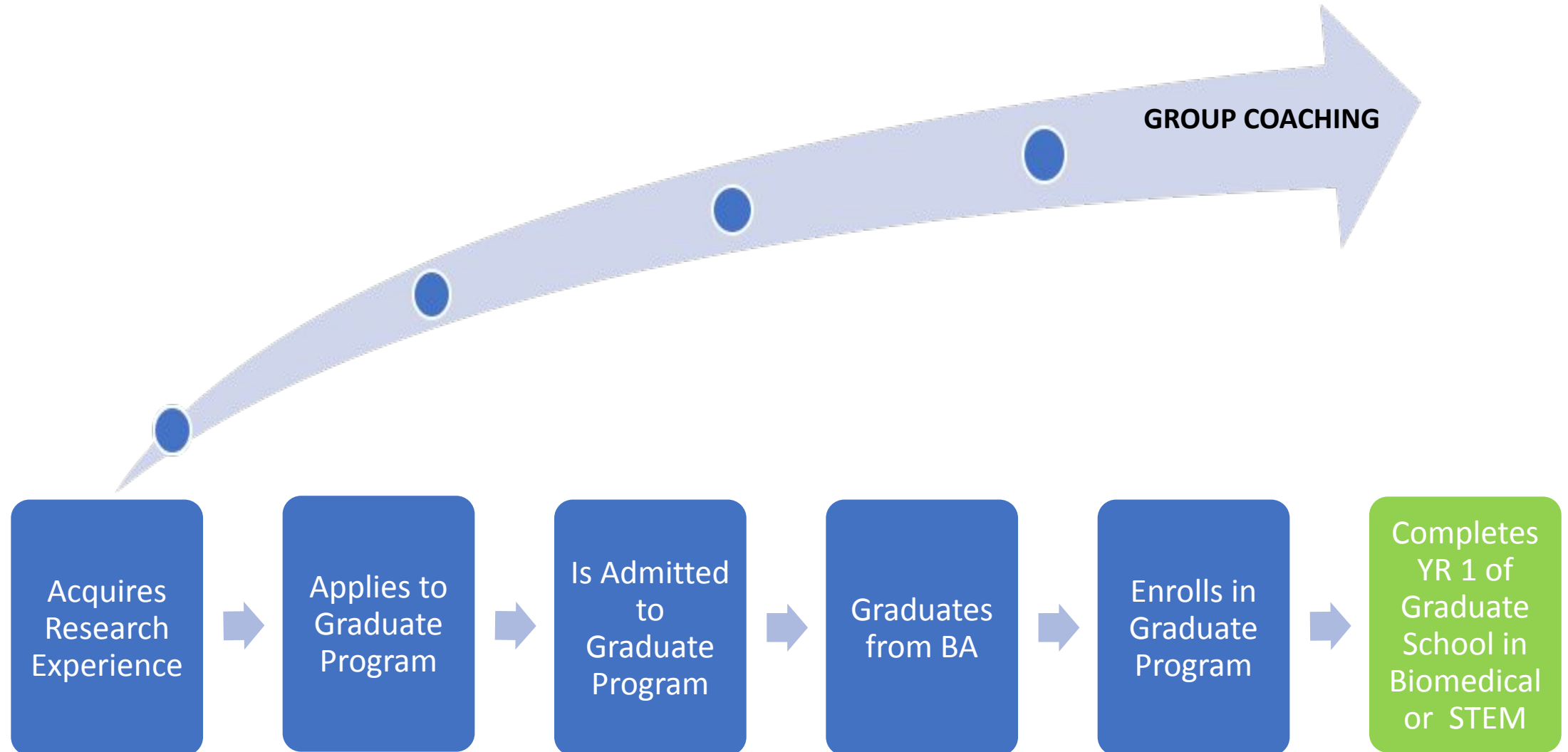
THE PROBLEM

- 59 % of Alumni from UPR-C (a 100 % HSI) with previous undergraduate research experience and more than two years of graduate school identified the first year as one of the most challenging periods.

- Challenges:
  - organization and time management skills
  - stress management
  - self-care and wellness
  - oral communication skills
  - team-work

- Life Coaching can provide most of these skills, but one-to-one approaches can be limited in scope and mentors are rarely certified in life skills coaching.

What do you consider to be the most difficult stages of graduate school (check all that apply)?

41%
The second year
After the third year
Passing grade tests
Finishing their thesis
Other

59%
The first year

THE QUESTION:
CAN GROUP COACHING BRIDGE CHALLENGES?

GROUP COACHING

| Acquires Research Experience | → | Applies to Graduate Program | → | Is Admitted to Graduate Program | → | Graduates from BA | → | Enrolls in Graduate Program | → | Completes YR 1 of Graduate School in Biomedical or STEM |

COACHING FOR A SUCCESSFUL TRANSITION

Certified Coaches are UPR institutional counselors

- Provide crucial life skills (goals, stress, family pressures/ expectations, finances, etc).

- Build support networks among participants.

- Group on-line sessions lead by professionally **certified Coaches**

- 10 students / group

- CienciaPR graduate students provide peer-mentoring

STUDENT PARTICIPANTS

- Students with…
  - prior undergraduate research
  - plans to continue in graduate school
  - in STEM or health related fields

- UPR students begin as seniors and continue Coaching as alumni through their 1st year of graduate school

- 8 coaching sessions total:
  - 4 coaching sessions as seniors
  - 4 sessions as 1st YR graduate students

HYPOTHESIS & TESTING METHODOLOGY

HYPOTHESIS

Coaching participants will successfully enroll and persevere through their first year of graduate school

They will also show higher levels of:
1) self-efficacy
2) professional networks and
3) sense of belonging to the scientific community than the control group

TESTING METHODOLOGY

- Experimental model
  - ~40 students in control group
  - ~40 students in experimental group
- Stratified random sampling
  - Not just simple random sampling for separating control and experimental group.
- Generalized Linear Model, GLM, to identify best predictors for persistence
- Key Indicators
  - Entering a graduate program
  - Completing 1st YR of Grad. School
  - Pre-post surveys
  - Satisfaction of Coaching process

Main Independent Variable ↓	Dependent Variables	
	Graduate School Enrollment	Completion of first year of graduate school
Intervention vs. No Intervention	X	X
Covariates ↓		
2 semesters of UGR vs. > 2 semester of UGR	X	X
Socioeconomic status	X	X
First Generation Student	X	X
GPA at the bachelor's level	X	X
Gender	X	X
Major at the graduate level		X
Has financial support		X
Quality of our intervention (coaching)	X	X
Quality of mentored UGR experience	X	X

EVALUATION INSTRUMENTS & TIMELINE

	YR 1 2020-2021	YR 2 2021-2022		YR 3 2022-2023
Pre-Efficacy Survey Control and Experimental group	1st Cohort (April 2021)	2nd Cohort (April 2022)		
Satisfaction of Coaching Evaluation after the 4th and 8th Coaching session, respectively.	1st Cohort (May 2021)	1st Cohort (Feb. 2022)	2nd Cohort (May 2022)	2nd Cohort (Feb. 2023)
Post-Efficacy Survey Control and Experimental group		1st Cohort (Feb. 2022)		2nd Cohort (Feb. 2023)
Focus Groups Control and Experimental group			1st Cohort (June 2022)	2nd Cohort (June 2023)

PRE - POST EFFICACY SURVEY

ACADEMIC EXPERIENCES SURVEY: GOALS PROJECT +

Please select the level at which you agree with the following statements. You can select:

1 if you completely DISAGREE;
10 if you completely AGREE; or
some other intermediate number based on the level of your agreement or disagreement.

Section I
- I have been able to identify research opportunities within my areas of interest.

| Completely disagree | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Completely agree |

- I can explain the research that I have conducted with other researchers.

| Completely disagree | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Completely agree |

- I think that research presents an important opportunity to develop my commitment to academic goals.

| Completely disagree | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Completely agree |

- I feel prepared to make decisions about my academic future.

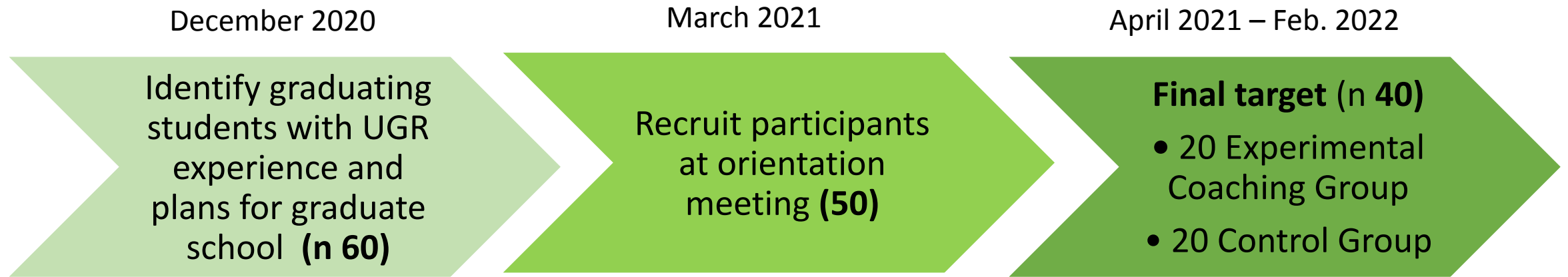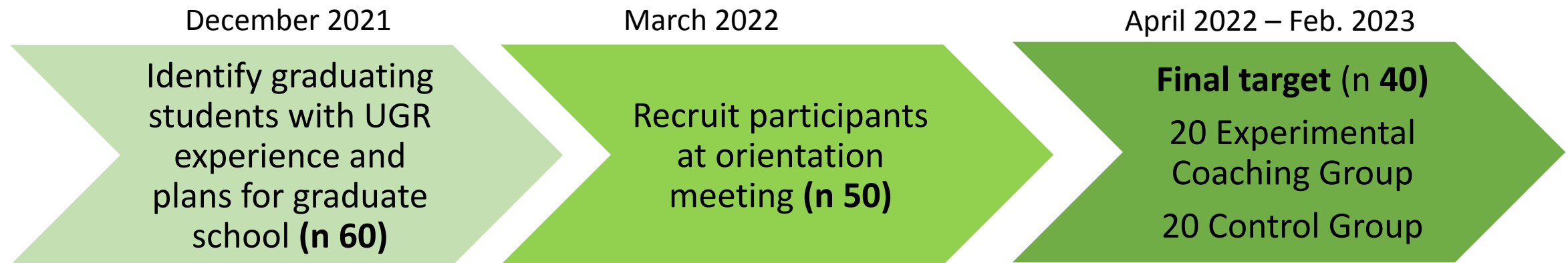| Completely disagree | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Completely agree |

45 Questions

6 sections & Indices

1. Research self-efficacy coaching
2. Sense of belonging to scientific community
3. Scientific identity and professional and peer networks
4. Emotional preparedness (no hallmarks)
5. Research self-efficacy
6. Self-efficacy performance accomplishments
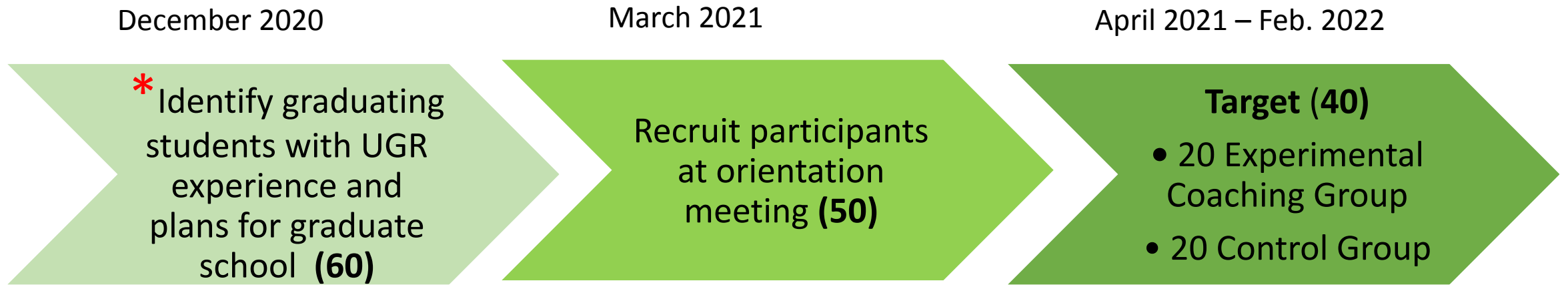
RECRUITMENT TIMELINE

FIRST COHORT

December 2020

Identify graduating students with UGR experience and plans for graduate school **(n 60)**

March 2021

Recruit participants at orientation meeting **(50)**

April 2021 – Feb. 2022

Final target (n **40**)
- 20 Experimental Coaching Group
- 20 Control Group

SECOND COHORT

December 2021

Identify graduating students with UGR experience and plans for graduate school **(n 60)**

March 2022

Recruit participants at orientation meeting **(n 50)**

April 2022 – Feb. 2023

Final target (n **40**)
20 Experimental Coaching Group
20 Control Group

IRB APPLICATION WAS SUBMITTED ON NOVEMBER 17, 2020

RECRUITMENT RESULTS THUS FAR

FIRST COHORT

December 2020

March 2021

April 2021 – Feb. 2022

* Identify graduating students with UGR experience and plans for graduate school **(60)**

Recruit participants at orientation meeting **(50)**

Target (40)
- 20 Experimental Coaching Group
- 20 Control Group

- GRADUATING CLASS n=288

✔ 104 students responded to institutional survey thus far (38% response rate)

✔ 54 with previous research experience

✔ 35 qualify for METAS+

✔ We need 25 more to reach our target of 60 potential candidates for YR 1

QUESTIONS FOR THE ADVISORY COMMITTEE

- How can we best mitigate contamination between control and experimental group?
  - How much information about the research (and the experimental group) should we give students in the control group?

- What is the difference between an evaluator and a researcher in this type of project?

- What has been your experience with the National Clearing House?

- Does the Pre-Post Efficacy Survey seem adequate?

- Should we track the progress of student mentors as well? (15 grad students/yr. from YaleCiencia Academy)?

PROJECT CHALLENGES

PROJECT CHALLENGES

- Notification of Grant Award received in September (instead of July)
- Possible contamination between control & experimental groups
- Delays with institutional data sets (incomplete data)
- UPR-C has not used The National Clearinghouse Services
- Loss of personnel at the IIR (communication specialist and bio-statistician)
- COVID-19 can impact student's plan for graduate school (postponement) and for reaching goal of 60 students who qualify
- UPR Central Admin. changed institutional E-Platform to Microsoft amidst Pandemic

BROADER CHALLENGES

- Drastic budget cuts to the UPR system, tuition increase and other austerity measures imposed by the Fiscal Control Board

- Slow Hurricane Recovery, Earthquakes and COVID-19

- Lack of tenure-track positions & over-burdened faculty

- Limited matching funds for future grants

- Not being able to provide stable positions to maintain IIR research support personnel beyond the METAS+ project.

PROJECT STRENGTHS

- IIR full- time personnel funded with institutional matching funds for the duration of the grant.
- Implementation support from the UPR-Cayey Academic Deanship
- Interdisciplinary research team, well-prepared and acquainted with each other
- Graduating class (n=288) with robust undergraduate experience
- Availability of various institutional databases documenting undergraduate research
- Successful previous experience with coaching and its on-line modality
- Successful previous experience with CienciaPR
- Support from the DPC DaTA program and Dr. Luis Cubano

¡MUCHAS GRACIAS!

METAS+

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