

Frontiers in Cancer Research

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OVERALL DESCRIPTION

Frontiers in Cancer Research aims to increase public understanding of molecular and cellular biology and how these disciplines are used to develop cancer therapies and cures. More specifically, it focuses on immunotherapy, which is fundamentally shifting cancer treatment. The program will also explore the ethical implications of cancer research-related topics and introduce students to career possibilities in research. Our approach leverages the scientific resources of a comprehensive cancer research center, Fred Hutchinson Cancer Research Center. It also draws on the resources of the Science Education Partnership (Fred Hutch's teacher professional development program), our experience in bioethics education, and curricular resources developed with prior NIH funding.

PROJECT GOALS

Frontiers Curriculum Development:

A team of teachers supported by staff, scientists, and bioethicists will develop two NGSS-aligned cancer-focused curriculum. Each unit will incorporate hands-on kit resources and instructional materials while highlighting breakthrough research at Fred Hutch (Y1). Each unit will be piloted and edited (Y2).

SEP-Frontiers:

Twenty teachers annually participate in a newly designed 3-week professional development workshop using the Frontiers curricular resources including a mentored research experience and multiple school-year follow-up sessions. This professional development will equip teachers to teach fundamental biological principles through the lens of cancer research. Additionally, one-day teacher workshops will provide opportunities to widely disseminate resources and build community among our teachers.

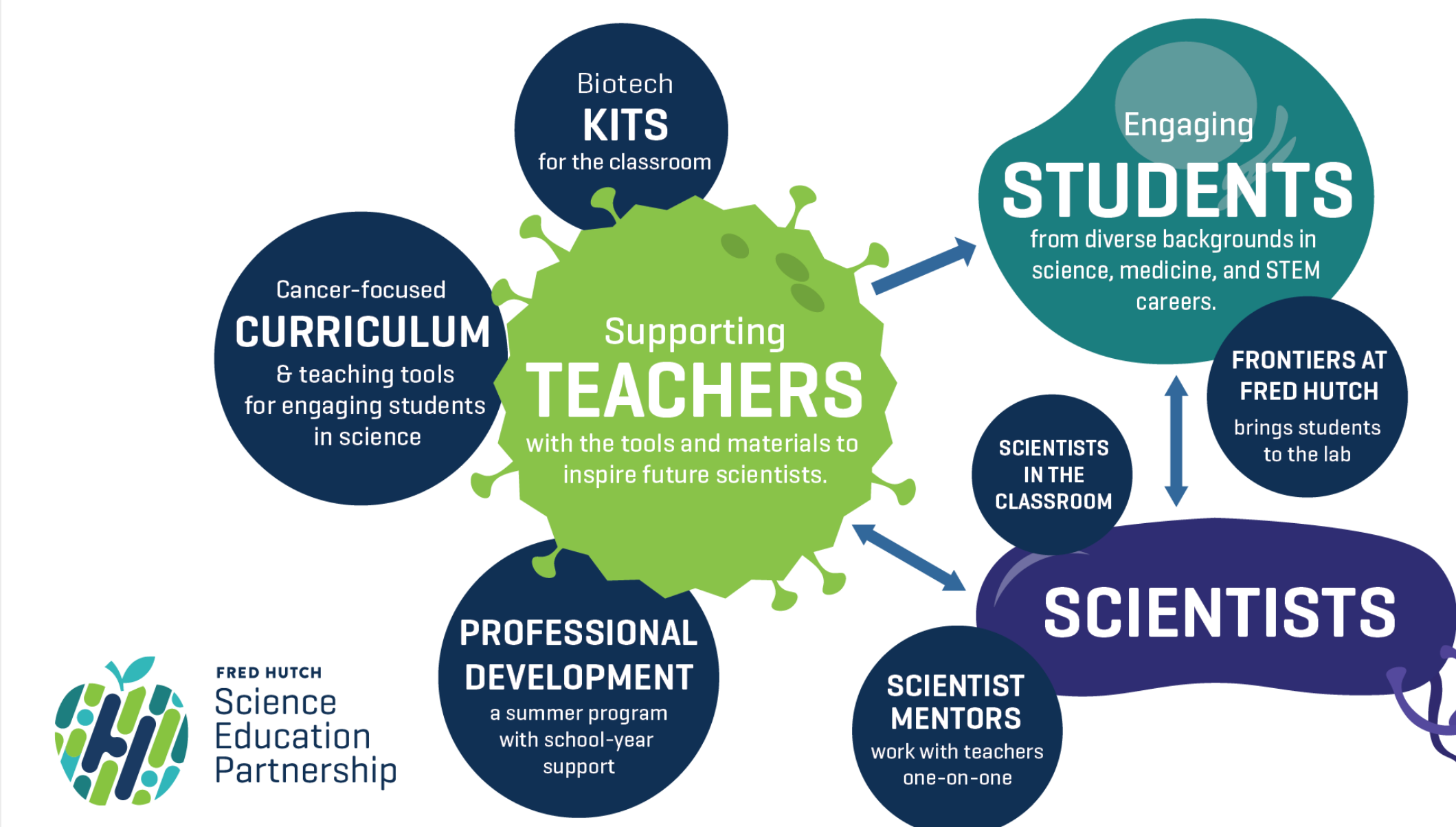
Frontiers at Fred Hutch:

Through an introductory school-year outreach program, our program works to inspire high school students from underrepresented communities to pursue biomedical and clinical research careers.

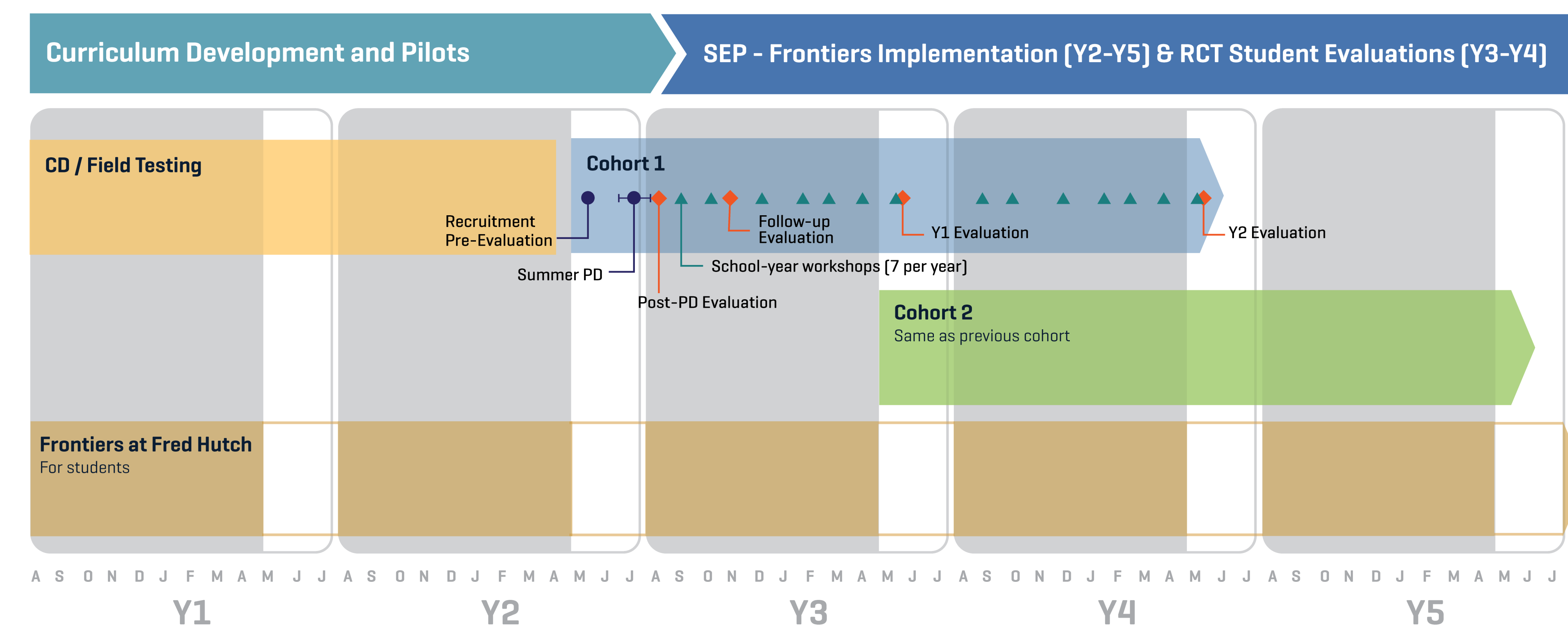
TEACHERS IN FRED HUTCH RESEARCH LABS



PROGRAM OVERVIEW



FRONTIERS TIMELINE



EXAMPLE CURRICULUM OVERVIEW

Overarching Questions	What is cancer? How can we stop it?	
Level	Introductory Biology	Advanced Biology / Biotechnology
Additional Questions	How can proteins from nature help us fight cancer?	How can a patient's own immune system fight cancer?
Current Cancer Research Topic (Engage/Anchor Phenomena)	Project Violet Anti-cancer molecules	Immunotherapy Modified T-cell therapies

EVALUATION

Program Evaluation:

The evaluation focuses analyzing the effectiveness of:

- The curriculum resources demonstrated by the students through greater understanding of core biological concepts and greater awareness and interest in biomedical careers.
- The professional development for the teachers. Does it improve teachers' knowledge skills and instructional practices? To what extent are teachers using the materials from the PD in their classrooms over time?
- The outreach visits to Fred Hutch measured by increased awareness of and interest in biomedical careers.

Research:

Evaluation of the teacher PD and curriculum resources will be done through a longitudinal study of teacher cohorts (n=20) starting in Y2 for Cohort 1 and Y3 for Cohort 2. Each cohort will be evaluated during the academic school year before PD, during the year proceeding PD, and the following year.

External Evaluator:

Rockman et al, an independent educational evaluation, research, and consulting form.

SUMMER PROFESSIONAL DEVELOPMENT

