Cancer Research Opportunities for Youth 2017
Application

Application Deadline: Friday, March 31st, 2017

The CROY Summer application can be completed on paper or online. Please note the following:

- CROY is a 2 year program, mainly occurring during the summer months.
- Each year, students will participate in an 8 week program that at a minimum requires an uninterrupted 6 week commitment over the summer. You should carefully consult your summer schedule before you apply.
- You must be at least 16 years old by the beginning of the program on June 26th.
- If your initial application is selected, you will be invited to an interview with a program coordinator and your paired researcher.
- At the end of the application, there are three parent signature pages that must be printed, completed, and mailed to our offices by the application deadline. Applications submitted without a hard copy of these pages will not be complete.

Application Due Date: March 31st, 2017
Questions: Please contact Steven Parra at steven.parra@yale.edu or 203-764-7281
Thank you and good luck!
**APPLICANT INFORMATION**

*Remember you must be at least 16 years old by the time the program starts*

First Name  ___________________________________________

Last Name  ___________________________________________

Middle Initial  ______

Street Address  _________________________________________

Apt/Unit #  ______

City  ___________________________________________

State  ___________________________________________

ZIP  ___________________________________________

Student Cell Phone (xxx-xxx-xxxx) ________________________________

Student Home Phone (xxx-xxx-xxxx) ________________________________

Student Email  ___________________________________________

Gender

☑ Male

☑ Female

Date of Birth (mm/dd/yyyy) ________________________________
Student School
☐ Amistad Academy High School
☐ Amity Regional High School
☐ Common Ground
☐ Cooperative Arts HS
☐ Engineering-Science University Magnet (ESUMS)
☐ High School in Community
☐ Hill Regional Career HS
☐ Creed/Hyde Sports Medicine Magnet High School
☐ James Hillhouse HS
☐ Metropolitan Business HS
☐ New Haven Academy
☐ Sound School
☐ West Haven High School
☐ Wilbur Cross HS
☐ Other ______________________

**Current** Grade
☐ 9th
☐ 10th
☐ 11th

Do you qualify for free or reduced lunch at school?
☐ Yes
☐ No
☐ I don’t know.

Ethnicity:
☐ Hispanic/Latino
☐ Non-Hispanic/Latino

Race (Please check ALL that apply)
☐ Native American/Alaska Native
☐ Black/African American
☐ Caucasian/White
☐ East Asian/Asian America
☐ Middle Eastern/Arab American
☐ Native Hawaiian/Other Pacific Islander
☐ South Asian/Indian American
☐ Other. Please specify: ______________________
Which language(s) did you learn first (please select one)?

- English Only
- English & Another Language
- Another Language

Please specify other non-English language: ___________________________________________

**MOTHER/GUARDIAN INFORMATION**

Mother/Guardian Full Name _____________________________________________

Does the Mother/Guardian Live with the student?

- Yes
- No

Mother/Guardian Cell Phone (xxx-xxx-xxxx) _______________________________________

Mother/Guardian Home Phone (xxx-xxx-xxxx) _______________________________________

Mother/Guardian Work Phone (xxx-xxx-xxxx) _______________________________________

Mother/Guardian Email _________________________________________________________

Mother/Guardian Occupation ___________________________________________________

Mother/Guardian’s Highest Level of Education _______________________________________

- Less than high school
- Graduated high school
- Some college
- Associate’s Degree (2-year degree)
- Graduated college (4-year degree)
- Master’s Degree
- Doctorate (Ph.D., MD)
- Other. Please specify: __________________________
FATHER/GUARDIAN INFORMATION

Father/Guardian Full Name __________________________________________

Does the Father/Guardian live with the student?
☑ Yes  ☐ No

Father/Guardian Cell Phone (xxx-xxx-xxxx) __________________________________________

Father/Guardian Home Phone (xxx-xxx-xxxx) __________________________________________

Father/Guardian Work phone (xxx-xxx-xxxx) __________________________________________

Father/Guardian Email __________________________________________

Father/Guardian Occupation __________________________________________

Father/Guardian’s Highest Level of Education
☑ Less than high school
☑ Graduated high school
☑ Some college
☑ Associate’s Degree (2-year degree)
☑ Graduated college (4-year degree)
☑ Master’s Degree
☑ Doctorate (Ph.D., MD)
☐ Other. Please specify: ____________________
RESEARCH PREFERENCES

Carefully read the following descriptions of potential research projects. Please rank your choices in order from #1 (highest preference) to #10 (lowest preference). **These selections do not impact application decisions.** If you are accepted into the program, we will do our best to assign students to a preferred research project.

_____ **Role of Retromer-mediated Retrograde Transport in HPV Entry | Genetics**
Human papillomaviruses (HPV) are an important cause of disease including some forms of cancer. We are studying how these viruses enter cells as the first step in infection and the development of cancer. We are identifying cell proteins that help deliver the virus into cells. Students should expect to learn how to grow human cells in the laboratory, transfer genes into cells, and how to clone genes. Student’s main responsibilities will be to grow cells and bacteria, purify DNA, and carrying out basic recombinant DNA experiments.

_____ **Program on the Molecular Basis of Cancer Viral Transformation Role of Gamma-Secretase in HPV Transformation | Genetics**
Human papillomaviruses (HPV) are an important cause of disease including some forms of cancer. We are studying how these viruses enter cells as the first step in infection and the development of cancer. We are identifying cell proteins that help deliver the virus into cells. Students should expect to learn how to grow human cells in the laboratory, transfer genes into cells, and how to clone genes. Student’s main responsibilities will be to grow cells and bacteria, purify DNA, and carrying out basic recombinant DNA experiments.

_____ **Analysis of Cell Transformation by Bovine Papillomavirus | Genetics**
Most cell biochemical functions are carried out by proteins. We have invented a new class of artificial proteins that are simpler than any proteins that arose during evolution. We are conducting experiments to increase the activity of these proteins to make them more useful. Students should expect to learn how to grow human cells in the laboratory, transfer genes into cells, and how to clone genes. Student’s main responsibilities will be to grow cells and bacteria, purify DNA, and carrying out basic recombinant DNA experiments.

_____ **A Mail- and Video-based Weight Loss Trial in Breast Cancer Survivors | Public Health**
Women who have experienced menopause are more likely to develop breast cancer if they are obese. This project tries to address cancer by addressing obesity and tests whether a mail- and video-based weight loss trial will help cancer survivors lose weight. Students can expect to help with data collection, perform literature searches, and learn basic statistical analysis.

_____ **A Research and Training Program for Junior Clinicians in Treating Metastatic Melanoma | Medical Oncology**
Yale Cure applicants will learn to analyze tumors from melanoma patients treated with immune therapies to identify molecules in tumors or immune cells that might be associated with sensitivity or resistance to treatment. Students can expect to learn how to conduct immunofluorescence staining, perform Western blotting, and to learn
basic statistical analysis for data generate. Student’s main responsibilities will be to perform bench experiments in a supervised setting and presenting results at lab meetings.

________ Gene-Targeted Apoptosis as a Treatment for HER2-Postitive Breast Cancer | Therapeutic Radiology

Approximately 30% of diagnosed breast cancers are HER2-positive, causing their cancer to grow more aggressively. Our project aims to design new anti-cancer drugs that can help HER2-positive patients that suffer from drug resistance. We will design synthetic DNA molecules, called oligonucleotides to only bind to the DNA of the HER2 gene. When these oligonucleotides bind to DNA they will alter the normal DNA structure causing the cell to recognize it as damaged. In the cancer cells, multiple oligonucleotides will bind to the extra copies of the HER2 gene and the excess damage will cause the cell to activate its own death. The differences between the numbers of HER2 genes in normal cells versus cancer cells, will allow us to only kill the breast cancer cells and not the normal cells. Students can expect to learn basic biochemistry and laboratory techniques while performing supervised bench experiments.

________ DNA Polymerase Fidelity Mechanisms: Theory and Experiment | Therapeutic Radiology/Radiation Oncology

The goal of this project is to understand how the enzymes that produce DNA, called DNA polymerases, synthesize DNA. We are interested in understanding each step of the chemical reaction. Students can expect to learn basic biochemistry and molecular biology techniques by assisting postdoctoral associates with preparing for and running experiments.

________ DNA Polymerase Beta and Mutagenesis | Therapeutic Radiology/Radiation Oncology

The goal of this project is to determine how a DNA synthesizing enzyme called a DNA polymerase, knows to incorporate A opposite T and G opposite C during DNA synthesis. Students can expect to gain an understanding of the basics about DNA polymerases and to learn basic molecular biology and biochemistry techniques. This is accomplished by assisting postdoctoral associates in preparing for and running experiments.

________ Validating the Patient-Reported Experiences of Discrimination in Care Tool | General Internal Medicine

This project is a mixed-methods study designed to examine the influence of discrimination in healthcare settings. This means that both qualitative data and quantitative data are used in the study. Students can expect to learn the research principles behind different study designs; how to design and disseminate a study; and to describe the role of patient perspectives in addressing health disparities. Students’ main responsibilities will be to conduct literature searches, manage data, and interpret basic statistical findings.

________ Eastern Caribbean Health Outcomes Research Network (ECHORN) | General Internal Medicine

This project is a cohort study meant to explore the prevalence and risk factors of non-communicable chronic diseases in the Eastern Caribbean islands of Puerto Rico, U.S. Virgin Islands, Barbados, and Trinidad and Tobago. Students can expect to learn the research principles behind different study designs; how to design and disseminate a study; and to describe the role of patient perspectives in addressing health disparities. Students’ main responsibilities will be to conduct literature searches, manage data, and interpret basic statistical findings.
SHORT ESSAYS
Please attach your responses to the following two prompts on a separate sheet of paper. While you are free to write these by hand, we prefer that you present us with typed answers to these questions. **If you do not include your essay answers, this application will be considered incomplete.**

- Tell us about a time you needed to work in a group, either in school, in a job, or as part of a team. What was the experience like for you? (250 words or less)
- Why you have chosen to apply to CROY? Maybe you want to work in particular lab or find a specific type of science interesting. Maybe there’s another reason. Let us know! (250 words or less)

SIGNATURE
By signing my name below, I assure that I have completed the CROY application honestly and to the best of my ability. If accepted, I agree to fully participate in the program by committing to summer research and attending all scheduled activities with **no unexcused absences**.

Applicant Name (printed): ___________________________________________

Applicant Signature: ________________________________________________
**IMPORTANT:** Your application is not considered complete until we receive the Parent/Guardian Signature Pages AND the Teacher Recommendation form. Read these instructions carefully before submitting your application.

**MAIL-IN PARENT/GUARDIAN SIGNATURE PAGES**

Please print, fill out, and mail these forms to:

Steven Parra  
55 Church Street Suite 801  
New Haven, CT 06511  
(Note: You may also scan and email the forms to Steven Parra at steven.parra@yale.edu)

These pages must be postmarked by March 31\textsuperscript{st}, 2017. If you misplace any, you can download these forms and print them out from our website (http://campuspress.yale.edu/croy/).
**Cancer Research Opportunities for Youth Medical Form**

It is mandatory that this medical form be completed thoroughly so that appropriate emergency treatment can be provided, if needed.

<table>
<thead>
<tr>
<th>Student's Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Insurance Carrier</td>
</tr>
<tr>
<td>Health Policy Number</td>
</tr>
<tr>
<td>Hospital of Choice</td>
</tr>
<tr>
<td>My child's medications</td>
</tr>
<tr>
<td>My child's allergies or other health problems</td>
</tr>
</tbody>
</table>

**Emergency Contact Information**

Please provide contact information for another family member or friend who is NOT the child’s parent or guardian

<table>
<thead>
<tr>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
</tr>
<tr>
<td>Cell Phone</td>
</tr>
<tr>
<td>Home Phone</td>
</tr>
<tr>
<td>Work Phone</td>
</tr>
</tbody>
</table>

**Signature**

I authorize Yale University to provide appropriate emergency care to my child, should it be necessary to do so.

| Parent/Guardian Signature | Date |

Mail completed forms to: Steven Parra, 55 Church Street, Suite 801, New Haven, CT 06511

All application materials must be postmarked by Friday, March 31st, 2017
Cancer Research Opportunities for Youth Liability Form

My child, ____________________________________ is not yet 18-years-old and will participate in the Yale University ("Yale") Cancer Research Opportunities for Youth Summer Program, from June 26th to August 31st, 2017, (the "Program"). This program brings students to campus to perform research throughout the Yale Cancer Center. This document ("Agreement") covers all aspects of my child's participation in the Program. In this Agreement, "Yale" means Yale, its trustees, officers, employees, trainees, students, volunteers, and agents.

- **Program Risks.** I understand that participation in the Program involves risks that Yale cannot eliminate, including, among others, risk of property damage, illness, bodily injury, permanent disability, and death. Students will attend STEM workshops and be involved in a variety of enrichment activities.

- **Assumption of Risk.** I voluntarily take responsibility for all risks of participating in the Program.

- **Release.** In exchange for Yale allowing my child to participate in the Program, I release Yale from all legal and financial responsibility for any harm that I, my child, or our property might suffer as a result of my child’s participation, even if the harm is caused by Yale’s negligence.

- **Indemnification.** I agree to indemnify and hold Yale harmless from (that is to say, I agree to pay or reimburse Yale for) any costs, penalties, legal fees, or judgments ("Costs") that Yale has to pay related to my child’s participation in the Program, even if the Costs resulted from Yale’s negligence.

- **Governing Law and Jurisdiction.** The laws of Connecticut shall govern and the courts of Connecticut shall interpret this Agreement.

- **Binding Agreement.** This Agreement shall legally bind me, and my child, family members, spouse, estate, heirs, administrators, or personal representatives.

- **Severability.** If a court decides that any part of this Agreement cannot be enforced, I agree to change that part to make it enforceable. If the unenforceable part cannot legally be changed, it will be severed, but the rest of the Agreement will remain in effect.

- **Signature.** I agree that I have read and understood this Agreement, I am competent to sign it, and I do so voluntarily and without relying on anything Yale wrote or told me except what is written above. I understand that I am free not to sign this Agreement and to find a different program for my child.

<table>
<thead>
<tr>
<th>Printed name of Parent/Legal Guardian</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature of Parent/Legal Guardian</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>Child's Name (Printed)</td>
<td></td>
</tr>
<tr>
<td>Child's Birthdate</td>
<td></td>
</tr>
</tbody>
</table>

Mail completed forms to: Steven Parra, 55 Church Street, Suite 801, New Haven, CT 06511
All application materials must be postmarked by Friday, March 31st, 2017
# Cancer Research Opportunities for Youth Consent Form

Please select Yes or No to tell us if you give permission for Yale University and the Cancer Research Opportunities for Youth program to include your child in the following components for our program. While participation in Cancer Research Opportunities for Youth is not dependent on answering yes to any of the following questions, these permissions are vitally important to the evaluation and long-term success of our programming.

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIH Release:</td>
<td>I give permission for the NIH, which funds Cancer Research Opportunities for Youth, to add my child’s information to a database in order to track academic success over the course of the program.</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Survey Release:</td>
<td>I give permission to allow my child to fill out surveys and participate in interviews to share his or her perceptions of the benefits and quality of Yale University and Cancer Research Opportunities for Youth.</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>School Records Release:</td>
<td>I give permission to Yale University and Cancer Research Opportunities for Youth to obtain my child’s school records (including but not limited to courses taken, grades, and test scores). This information will be used in conjunction with other survey data and will be maintained in electronic files with strict confidentiality.</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Media Release:</td>
<td>During the course of Cancer Research Opportunities for Youth, we may use photographs, videos, films, or other media to record or otherwise capture your child’s image or voice or material resulting from his or her activities. As described below, this form allows Yale University and its contractors, ages, and licensees to use those images and recordings.</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>I grant to Yale the permanent right to use the images and recordings in all types of media in connection with the Cancer Research Opportunities for Youth program and for other purposes that support Yale’s not-for-profit mission. Neither I nor anyone else acting on behalf of my child will have any right to approve or be paid for Yale’s use of the images and recordings. Neither I nor anyone else acting on behalf of my child will have any right to make a legal claim as a result of Yale’s use of the images and recordings.</td>
<td></td>
</tr>
</tbody>
</table>

**Printed name of Parent/Legal Guardian**

**Signature of Parent/Legal Guardian**

**Date**

**Child’s Name (printed)**

**Child’s Birthdate**

Mail completed forms to: Steven Parra, 55 Church Street, Suite 801, New Haven, CT 06511

All application materials must be postmarked by Friday, March 31st, 2017.
TEACHER RECOMMENDATION FORM
This application requires a teacher recommendation from your math or science teacher. **You must print out and give this form to your math or science teacher to fill out.** Instructions for your teacher are written on the form: your teacher can mail or email completed forms to our office, or complete the recommendation form online. You should provide the attached form to your teacher, or find it on our [website](http://campuspress.yale.edu/croy/).
Cancer Research Opportunities for Youth
Summer Program
Science/Math Teacher Recommendation

To the Applicant: Complete this information before presenting to your teacher.

Applicant’s Full Name: _______________________________
Applicant’s Email Address: ___________________________

Teachers, you can also complete this form online:
http://onhsa.yale.edu/croyteacher

Please circle the number which best represents your assessment of the applicant in comparison to his or her peers.

<table>
<thead>
<tr>
<th></th>
<th>Poor Lowest 25%</th>
<th>Fair 26%-75%</th>
<th>Excellent 76%-90%</th>
<th>Outstanding Highest 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intellectual ability</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Integrity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Work habits</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>General motivation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Leadership</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Imagination/Creativity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Initiative</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Ability to work with others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Maturity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Ability to communicate (written)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Ability to communicate (spoken)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Please comment briefly on your assessment of the applicant’s candidacy for this program, particularly about how the applicant would perform in a laboratory setting:

____________________________________________________________________________________________
____________________________________________________________________________________________
____________________________________________________________________________________________

Teacher Name: ____________________________________________________________
Teacher School Email Address: ______________________________________________
Teacher Signature: __________________________________ Date: ______________________

Teacher, please submit the form by Friday, March 31st, 2017:
Online (preferred): http://onhsa.yale.edu/croyteacher
Mail paper application to: Steven Parra, 55 Church Street, Suite 801, New Haven, CT 06511
Questions? Call Steven Parra at 203-764-7281
Thank you for applying!
We appreciate your interest in Cancer Research Opportunities for Youth, and we look forward to reviewing your application. Below is a checklist to help you make sure your application is complete.

☐ Applicant Information Section is complete

☐ Mother/Guardian 1 and Father/Guardian 2 Section are complete

☐ All research preferences are ranked

☐ Both short essays are complete and have been attached separately

☐ All three (3) Parent/Guardian Consent forms have been completed

☐ My teacher has received the Teacher Recommendation Form

As a reminder, completed forms and applications should be mailed to:
   Steven Parra
   55 Church Street Suite 801
   New Haven, CT 06511
   (Note: You may also scan and email the forms to Steven Parra at steven.parra@yale.edu)

These pages must be postmarked by March 31st, 2017. If you misplace any, you can download these forms and print them out from our website: http://campuspress.yale.edu/croy/.