CARMEL SCIENCE RESEARCH

Recruiting Young Scientists!!

Carmel Science Research is a three year program affords students the opportunity to participate in the community of scientific research as part of their high school experience

Benefits of Joining

- **Earn up to 12 college credits**
- **Build a resume**
- **Master skills in public speaking, writing, communication and time management**
- **Become a part of the supportive Science Research "Family"**
- **Follow your passions!**

Is your student a freshman and interest in a class…

- **where grades are based on effort and are no test?**
- **where they choose what they study?**
- **that is challenging and demands their best?**
- **that requires the use of computer skills?**
- **is worth honors (10th) and AP weight (11th & 12th)**
- **that may help them win state and national science competitions and scholarships?**
- **that will help them get accepted to competitive colleges?**
- **unlike any class they have taken?**

Does your student…

- **have an exceptional worth ethic?**
- **does their best when personally challenged?**
- **show curiosity and enthusiasm?**
- **aspire to do great things?**
- **have a passionate interest to study something school does not offer?**

Visit us online at http://bit.ly/2ekbyc4

What is Carmel Science Research

- **A three-year program that is able to balance instruction in the high school with a mentorship experience over the course of the student's high school career starting in the 10th grade through senior year**
- **Affiliated with the State University of New York at Albany**
- **Graduates have reported that their experiences have given them an edge in college in terms of acceptance rates as well as preparedness**
- **For further information, visit our website at http://bit.ly/2ekByc4**

By participating, your student will accomplish the following:

- **Choose and explore a topic of interest**
- **Develop skills in using the internet, and learn to conduct searches of a wide range of databases**
- **Find and study professional research publications related to their topic of interest and formally presented these articles to audiences**
- **Prepare a statement of original intended research**
- **Ask a scientists or researcher to serve as a mentor and assist student is carrying out a research project**
- **Design and conduct a research investigation under the supervision of a scientist mentor and the research course teacher**
- **Present their findings to their class, school district and at regional and statewide competitions**

Competitions & Mentorships we participate in (and win!)

- **Regeneron Science Talent Search**
- **Junior Science and Humanities Symposium**
- **Westchester Science and Engineering Fair**
- **Tri-County Science Fair**
- **Somers Science Fair**
- **Mianus River Gorge Wildlife Technician Program**
- **1000 Girls, 1000 Futures**
- **STEM U**

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How CSR reinforces the 6C's

- **Critical Thinking**
  - Analyze & synthesize information
  - Evaluate authentic research
- **Creativity**
  - Identify & pursue passions
  - Think innovatively
- **Communication**
  - Articulate & present research project
  - Compose a research report
  - Speak with experts in field of study
- **Collaboration**
  - Develop partnerships with experts & institutions
  - Work productively with others
- **Compassion**
  - Demonstrate empathy & kindness
  - Positively impact others
- **Citizenship**
  - Engage in the science research community
  - Demonstrate scientific responsibility & pride

Research Topics

- **Animal & Plant Science**
- **Behavioral & Social Science**
- **Biochemistry**
- **Computer Science**
- **Engineering**
- **Environmental Science**
- **Medicine & Health Science**
- **Microbiology**
- **Physics & Astronomy**
- **Cellular & Molecular Biology**

Alumni have attended:

- **Columbia**
- **Cornell**
- **Villanova**
- **Rochester Institute of Technology**
- **Dartmouth**
- **Boston College**
- **Boston University**

Expert Voices

- **Constructivism is guided by recommendations that encourage learning in context and that learns pursue their own learning goals (Driscoll, 2005)**
- **It rest on the assumption that knowledge is constructed by learners as they attempt to make sense of their experiences (Driscoll, 2005)**
- **Students learn within context**
- **Learners identify and pursue their own learning goals (Driscoll, 2005)**
- **Importance is placed on retaining focus on higher-order goals and necessary scaffolding (Driscoll, 2005)**
- **Problem solving, reasoning, critical thinking and active and reflective use of knowledge are goals of constructivist instruction (Driscoll, 2005)**

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Anatomy of Research Project

- **Introduction & Review of Literature**
  - General background information that leads to area of research
  - Explanation of prior research that leads to a gap of knowledge
- **Research Question(s)**
  - Specific question(s) that will be addressed
  - Goals or purpose of research
- **Materials & Methodology**
  - Identification of required materials
  - A clear plan and identification of scientific variables
  - Explanations of procedural steps that will be utilized to address research question
  - Collection of data
- **Results & Analysis**
  - Statistical analysis of collected data
  - Display of results in tables and figures
- **Discussion & Application**
  - Explanation of the relationship between research question and results
- **Conclusion & Future Research**
  - Statement(s) made on the data/schematics presented
  - Identify a direction for further research

Sophomore Year

- **Read journal publications**
- **Choose an area of research**
- **Identify a research question**
- **Formalize a research plan**
- **Apply for approval**
- **Create a poster presentation of intended research plan**
- **Compete at Somers Science Fair**

Junior Year

- **Implement research plan**
- **Gather & Analyze data**
- **Write research paper**
- **Submit research paper to Eastern Junior Science and Humanities Symposium**
- **Create a poster and PowerPoint presentation of research**
- **Compete at Westchester Science and Engineering Fair**

Senior Year

- **Continue implementation of research plan**
- **Gather & Analyze data**
- **Write research paper**
- **Submit research paper to Regeneron Science Talent Search and Eastern Junior Science and Humanities Symposium**
- **Compete at Westchester Science and Engineering Fair**

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How to Apply

- **Tell your guidance counselor you are interested in science research**
- **Complete the Carmel Science Research Application**
  - **Applications can be obtained from a science teacher, guidance counselor or at http://bit.ly/2ekByc4**
  - **Applications must be submitted by Thursday, April 23**
- **Submit the completed application to Mrs. Griffin**
- **If accepted, you will receive a letter in the mail**

Parts of Application

- **Two Essays**
- **Teacher Recommendation**
- **Two popular science article summaries**
- **Four possible research questions**
- **Signed parent/guardian letter**

See application for full details

Course Pre-requisites

- **Must be a freshman to apply**
- **Successful application process**
- **Teacher recommendation**
- **Minimum of 85% class averages in all Regents math and science courses**

***Course Sequence*:**

10th = Introduction to Science Research

11th = Science Research

12th = Advanced Science Research

Further Involvement Opportunities

- **Consider volunteering as a judge at the Somers Science Fair to help bright, young inspiring scientists as they start their journey into the world of scientific research**
- **Are you an expert in a STEM field? Consider mentoring a student in Carmel Science Research**
- **Visit our website for more information and research participant opportunities**

Carmel Science Research Symposium

- **Join us for the annual Carmel Science Research Symposium on:**
  - **Thursday, May 14, 2020**
  - **6:30 – 8:30 pm**
  - **CHS Library**

Contact Us

- **We are located in room 201, feel free to stop by!**
- **Mrs. Nicole Griffin**
  - **Science Research Coordinator**
  - **Carmel High School**
  - **ngriffin@carmelschools.org**

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2018-19 Accomplishments

- **Grace Vaidian (jr)** has been accepted into the 1000 Girls, 1000 Futures program, which is presented by the Global STEM Alliance of the New York Academy of Sciences. As part of the program, our students receive one-on-one mentoring from professional women in STEM fields, network with female STEM enthusiasts and professional and complete coursework that emphasizes college readiness, leadership, communication and critical thinking skills.
- **Annalena Fusco (sr)** place 3rd in the category of Behavioral and Social Science at the Westchester Science and Engineering Fair. She presented her research entitled: *Stem cell misconceptions within High School Biology Education.*
- **Isabel Leslie (sr)** for winning the Community Impact Award at the Westchester Science and Engineering Fair. It was awarded to the projects that strive to advance public good. She presented her research entitled: *The Relationship between Positive Teacher Student relationships and the Implementation of the PBIS Programs.*
- **Shreya Chopra (sr)** for winning the Ricoh Sustainable Development Award at the Westchester Science and Engineering Fair. It is awarded to outstanding effects in addressing issues of environmental responsibility and sustainable development. She presented her research entitled: *The Effect of Genetically Modified Crops on Soil Nutrient Content.*
- **Meghan Dillon (jr)** for winning the National Oceanographic and Atmospheric Association (NOAA) Taking the Pulse of the Planet Award at the Westchester Science and Engineering Fair. It is awarded to projects whose research emphasizes NOAA's mission of science, service and stewardships. She presented her research entitled: *The Correlation between Levels of Air Pollution and Death from Alzheimer 's disease across the US: Does Foggy Air lead to a Foggy Mind?*
- **Shreya Chopra (sr)** for winning the Association for Women Geoscientists Award at the Westchester Science and Engineering Fair. It is awarded to female studnets whose projects exemplify high standards of innovativeness and scientific excellence in the geosciences. She presented her research entitled: *The Effect of Genetically Modified Crops on Soil Nutrient Content.*

2018-19 Accomplishments

- **Emily Alps (jr), Monica Zheng (so), Shreya Chopra (sr), Julia Pasquale (jr)** and **Meghan Dillon (jr)** have been chosen as a speaker to present their original research at the Eastern Junior Science and Humanities Symposium before fellow students, teachers, mentors and judges. Their work is the culmination of a three year Science Research in the High School program that unites students, teachers and mentors in dynamic research. This program has cultivated future scientists from schools in every region in New York State.
  - ***Student Project Titles:***
  - *Emily Alps – Mysterious Stone Structures of Putnam County: Historical Plausibility*
  - *Monica Zheng – Perceived Self-Efficacy and Perfectionism Type in Public Suburban High School*
  - *Shreya Chopra – The Effect of Genetically Modified Crops on Soil Nutrient Content*
  - *Julia Pasquale – The Correlation between Radon Levels and Cancer Incidences in New York State*
  - *Meghan Dillon – The Correlation between Levels of Air Pollution and Death from Alzheimer's Disease Across the United States. Does Foggy Air Lead to a Foggy Mind?*
- **Cara Galli (so)** was awarded the 3-year Wildlife Technician Program at the Mianus River Gorge. The Wildlife Technician Program is a competitive internship program offering high school students the opportunity to undertake a three-year research program in the natural sciences. The students conduct hands-on field experiments, learn first-hand about the complexities of natural systems and receive expert guidance from the Mianus River Gorge staff, graduate students, and professional partners to produce high-level research studies with significant applications to natural resources management.
- **Ariana Boswell (so), Rebecca Monge (so), Emily Alps (jr), Sebastian Monge (so), Julia Pasquale (jr), Michelle Shaffer (so), Olivia Scaperotti (so), Monica Zheng (jr), William Meyers (so), Kylie Rosenquest (so), Sierra Zory (so)** and **Sandy Zheng (so)** were accepted into the New York Academy of Sciences' Global STEM Alliance STEM U mentoring program. The New York Academy of Sciences is one of the country's oldest and most widely respected scientific organizations. As part of the program, our students receive one-on-one mentoring from professionals in STEM fields, network with STEM enthusiasts and professionals and complete coursework that emphasizes college readiness, leadership, communication and critical thinking.