

***REGENERON***

**SCIENCE**  
**TALENT SEARCH**

A program of  
SOCIETY FOR SCIENCE  
& THE PUBLIC



Since 1942

# REGENERON SCIENCE TALENT SEARCH

## 2020 RULES AND ENTRY INSTRUCTIONS

**APPLICATIONS DUE ON WEDNESDAY, NOVEMBER 13 AT 8:00 PM EASTERN TIME!**

# CHECKLIST FOR REGENERON STS ENTRANTS

Students who are interested in applying for the Regeneron Science Talent Search 2020 should review these Rules and Entry Instructions document carefully. The checklist below is provided to help you navigate the Rules Book so that you do not miss information pertinent to your project.

1. ☐ Review the Regeneron STS Eligibility Requirements on page 6.
2. ☐ Read the Entry Rules and Ethics Information on page 10.
3. ☐ Make sure your research project adheres to Regeneron STS rules. All entrants are urged to explore the rules wizard, available online at URL.
  - a. ☐ If you worked with vertebrate animals, review page 16.
  - b. ☐ If you worked with humans, review page 12.
  - c. ☐ If your engineering project or invention was tested on humans, review page 12.
4. ☐ Mark the application deadline on your calendar (Wednesday, November 13, 2019 at 8:00 pm Eastern Time).
5. ☐ Open your online application at <https://sciencetalentsearch.fluidreview.com>.
6. ☐ Request your recommendations right away! You can find info on page 19.
7. ☐ Work on your research report. You can find guidelines on page 17.
8. ☐ Submit by the deadline on Wednesday, November 13, 2019 at 8:00 pm Eastern Time!

Questions about your eligibility, your project or the application?

Email [sts@societyforscience.org](mailto:sts@societyforscience.org).

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# REGENERON SCIENCE TALENT SEARCH



The Regeneron Science Talent Search (Regeneron STS) is the oldest and most prestigious science and mathematics competition for high school seniors, providing an important forum for original research that is recognized and reviewed by a national jury of professional scientists. Since 1942, alumni have made extraordinary contributions to science and have earned many of the world's most distinguished science and math honors, including thirteen Nobel Prizes, eleven National Medals of Science and two Fields Medals. Annually, approximately 2,000 high school seniors from around the country accept the challenge of conducting independent science, math or engineering research and completing an entry for the Regeneron Science Talent Search. The Regeneron Science Talent Search recognizes 300 students as scholars and awards their schools each year and invites 40 student finalists to Washington, D.C. to participate in final judging, display their work to the public, and meet with notable scientists and government leaders. Each year, Regeneron STS scholars and finalists compete for \$3.1 million in awards. Regeneron STS is owned and produced by the Society for Science & the Public.

**To view a full list of prestigious Science Talent Search Alumni, visit [page 30](#).**

# IMPORTANT DATES

**Application Opens:** **JUNE 1, 2019**

The online application is available online: <https://sciencetalentsearch.fluidreview.com>

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**Technical Support Deadline:** **NOVEMBER 12, 2019 AT 8:00 PM EASTERN TIME**

Students submitting a technical support request by this date and time are guaranteed that the problem reported will be resolved before the Application Deadline. The Society cannot guarantee that requests for technical assistance will be resolved if submitted after this date and time.

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**Application Deadline:** **NOVEMBER 13, 2019 AT 8:00 PM EASTERN TIME**

All parts of the application must be received by the Society by this date and time, including recommendations. Recommendations must be submitted by the recommendation provider by this date and time. No portions of the application will be accepted after the deadline for any reason.

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**Top 300 Scholars Announced:** **EARLY JANUARY 2020**

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**Top 40 Finalists Announced:** **MID-JANUARY 2020**

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**Regeneron Science Talent Search Finals Week:** **MARCH 6 – 11, 2020**

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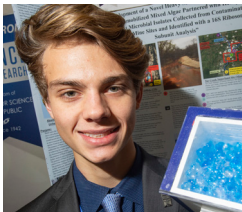
**Top 10 Winners Announced:** **MARCH 10, 2020**

Entrants are encouraged to visit the Regeneron STS website,  
**[student.societyforscience.org/regeneron-sts](https://student.societyforscience.org/regeneron-sts)**  
frequently for announcements during the summer and fall.

# AM I ELIGIBLE?

Interested students must meet all of the eligibility requirements listed below in order to apply to Regeneron STS.

1. Applicants must:
  - a. be over 13 years of age and have legal parental or guardian consent to submit the application and participate, OR
  - b. be 18 years of age or older, OR
  - c. be an emancipated minor.
2. On the application deadline, applicants must be:
  - a. A student (of any citizenship) who is enrolled in and attending the 12th grade/their last year of secondary school (public, private, parochial, or home school) in the United States, Puerto Rico, Guam, the U.S. Virgin Islands, American Samoa, Wake and Midway Islands, or the Marianas, OR
  - b. A United States citizen enrolled in their final year of secondary school on the application deadline date attending a:
    - i. Department of Defense Dependents School or an accredited overseas American or International School, OR
    - ii. foreign school as an exchange student, OR
    - iii. foreign school because his/her parent(s) are temporarily working and living abroad.
  - c. Proof of citizenship and school accreditation is required for 1b (above).
3. Applicants must be completing high school courses required for college applications, must not have graduated from high school before the Regeneron STS application deadline, and must not have entered any previous STS.
4. Applicants must complete individual research projects to enter Regeneron STS; research conducted as part of a pre-collegiate student team project is not eligible for Regeneron STS. This includes any research or portion of research regardless of whether it has or will be submitted to any competition. To remain eligible and collect Regeneron STS awards, the following statements must remain true about the submitted research project until June 1, 2020:
  - a. Students may not “split” a team project and enter it in Regeneron STS as individuals. Students also may not within the time between submission to Regeneron STS in November 2019 and May 2020 combine individual research submitted to Regeneron STS and present it as a team in competition, publications or any forum.
  - b. Research conducted alongside adult researchers in a research institution is permitted, but clarity and adequate knowledge of an individual's role and independence vs. work being done by the collective laboratory throughout the application is vital. Consideration should be given to the extent to which the research qualifies as independent research, given the student and adult responsibilities.
5. Sons and daughters of Society for Science & the Public employees, Trustees, Regeneron Science Talent Search evaluators or judges are not eligible to enter the Regeneron Science Talent Search.



“It is the ultimate dream for any science research kid to be recognized by this competition, due to the long history of STS and what it stands for in the scientific community. Not only is our research interesting, but it can change the world. STS gives us the network to propel our research and our careers to the next level to really make an impact in society.”

**BRADEN MILFORD, REGENERON STS FINALIST 2019**



# APPLICATION REQUIREMENTS

Entries in the Regeneron Science Talent Search are submitted online. The online application is free of charge. All components are collected in the online application, including school transcripts and test scores. Core components of the application include:

- Essays, short answer responses, activity and basic information.
- Scientific Research Report (maximum 20 page research paper about entrant's original research project), and any corresponding paperwork (see Appendices 2 & 7-9)
- Recommendations and Transcripts submitted by adults
- Test Scores (optional)

**An entry to the Regeneron Science Talent Search will be considered for review and awards if the following items A-C are completed in the online application system by an eligible applicant:**

- A. The following application tasks:
1. Demographic and High School Information
  2. Rules Wizard and Paperwork Upload
    - a. Students will answer questions to determine if IRB/IACUC approvals, blank surveys, informed consent, wildlife permits, etc. are needed. See Appendices 7-9 for more information.
    - b. Carefully answer all questions and upload all required documentation. Failure to do so could result in disqualification.
  3. Science Research Description
  4. Research Report (up to 20 pages; see Appendix 2 for requirements)
  5. Previous Research
  6. Essay Questions
  7. Activities, Interests and Awards
  8. Test Scores (Optional)
  9. Beyond Judging
  10. Longitudinal Research Study
- B. "Submitted" status—applications that are not fully submitted will not be accepted. Entrants must hit a submit button and will know their applications have been accepted when they receive a confirmation email.
- C. Recommendation Requests—applicants must request the following types of recommendations from adults via the online application system, but applications for which the Society does not receive these items will still be judged. See Appendix 3 for more information and requirements.
1. Educator Recommendation (up to 2)
  2. Project Recommendation (up to 2)
  3. High School Report

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**ALL COMPONENTS OF THE REGENERON SCIENCE TALENT SEARCH APPLICATION ARE DUE ON **WEDNESDAY, NOVEMBER 13, 2019 AT 8:00 PM EASTERN TIME**, INCLUDING RECOMMENDATIONS FROM ADULTS. NO EXCEPTIONS WILL BE MADE.**

# WHAT COULD I WIN? SELECTION PROCESS, AWARDS, FINALS WEEK EXPERIENCE

## SELECTION PROCESS

After reviewing entries for completeness, accuracy, eligibility and rules adherence, student age, citizenship and residence, all portions of every eligible submission are evaluated by three or more doctoral scientists, mathematicians, and/or engineers in the appropriate scientific discipline. The originality of each entry is checked using plagiarism monitoring software. A rules committee reviews each project for compliance with the vertebrate animal and human participant rules. Entries are evaluated in four areas:

- Research Report and Scientific Merit
- Student Contribution to the Research
- Academic Aptitude and Achievement
- Overall Potential as a Future Leader of the Scientific Community

Three hundred scholars are selected. These top entries are further reviewed by an additional judging panel of doctoral scientists, mathematicians and engineers, who select 40 finalists.

## ENTRANT RECOGNITION

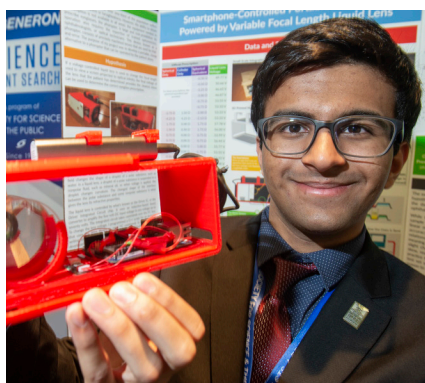
All eligible and valid entrants will receive a t-shirt, laptop stickers, a free one-year student membership to Society for Science & the Public which includes a free one-year subscription to *Science News*.

## SCHOLAR AWARDS

Each of the 300 students named a scholar in the Regeneron Science Talent Search will receive a \$2,000 award for their outstanding science research. These awards will be mailed to Regeneron STS scholars in late Spring, upon completion and return of a W9 Request for Taxpayer Identification Number to the Society.

## SCHOOL AWARDS

The Regeneron Science Talent Search School Award recognizes excellence in teaching and school support of individual student research. The schools of each Scholar will each receive an award of \$2,000 (per scholar). The award is intended to contribute to excellence in science, math and/or engineering education at the recipient school. In the case of home schooling, the award will be given to a public school district in the home state of the student, or to a 501(c)3 non-profit science organization of the student's choosing and at the approval of the Regeneron STS Director. The award will be mailed to the school in the Spring after submission of the School Award Program application and a W9 Request for Taxpayer Identification Number to the Society.





## FINALIST AWARDS

A panel of judges representing expertise across the disciplines of entry convenes and selects forty finalists from among the scholars. These students are awarded an all-expenses-paid trip to Washington, DC, where they will participate in individual interviews and display their work for the judges. Finalists receive a minimum award of \$25,000 upon completion of Finals Week.

Award amounts are as follows:

|  |  |   |
|--|--|---|
| <b>FIRST PLACE AWARD</b><br>\$250,000  | <b>FIFTH PLACE AWARD</b><br>\$90,000   | <b>NINTH PLACE AWARD</b><br>\$50,000          |
| <b>SECOND PLACE AWARD</b><br>\$175,000 | <b>SIXTH PLACE AWARD</b><br>\$80,000   | <b>TENTH PLACE AWARD</b><br>\$40,000          |
| <b>THIRD PLACE AWARD</b><br>\$150,000  | <b>SEVENTH PLACE AWARD</b><br>\$70,000 | <b>REMAINING THIRTY FINALISTS</b><br>\$25,000 |
| <b>FOURTH PLACE AWARD</b><br>\$100,000 | <b>EIGHTH PLACE AWARD</b><br>\$60,000  |   |

## REGENERON SCIENCE TALENT SEARCH FINALS WEEK & TOP 10 AWARDS

The 40 Regeneron Science Talent Search finalists will participate in an in-person competition March 5–11, 2020. The program will include final in-depth judging, visits to historic sites and cultural institutions, and meetings with national leaders and prominent scientists and engineers. Finalists will exhibit their research to the public and will have the opportunity to exchange ideas and insights with each other, as well as with illustrious members of the scientific research community. Full participation in the Regeneron Science Talent Finals Week is a requirement of maintaining finalist status and receiving finalist award monies. The Regeneron Science Talent Institute culminates in a black-tie gala honoring the forty finalists, to be held March 10, 2020. The evening will conclude with the announcement of the top ten award winners.

## CONDITIONS OF AWARDS

All awards will be paid in the year they are awarded, if the student has provided the necessary documentation to process payment. Awards not disbursed within two years of the award date will be subject to forfeiture. For individual awards greater than or equal to \$20,000, annual payments will be made either to the student winner to use for educational purposes, or directly their college or university of choice. The awardee must be an undergraduate or graduate student in good standing to receive payment. Payments must begin no later than six years after the award is made and must conclude within eight years of matriculation from high school. Initial payments will commence once the student has provided the necessary documentation to provide payment. Awards not disbursed within the dates noted above will be subject to forfeiture. The Society may approve, at its discretion, the extension of the payment schedules noted above if the student provides a request in writing detailing his or her individual circumstances. The Society reserves the right to deny any such request. Internal Revenue Service (IRS) regulations require that the Society file IRS Form 1099 for Miscellaneous Income for recipients of award monies which total \$600 or more during a calendar year; similarly, colleges and universities who receive direct payment from the Society on a student winner's behalf will file IRS Form 1098. Award recipients will receive their copy of Form 1099 from the Society, or Form 1098 from their college or university, in January of the year following the year award payments are made.

# ENTRY RULES AND ETHICS STATEMENT

## ENTRY RULES

1. Each student must attest to the following statement before submitting an application:
  - a. I certify that I am at least 18 years of age, or that I am an emancipated minor, or that I possess legal parental or guardian consent to submit the Application and participate in the Regeneron STS, and that I am fully able and competent to submit the Application and to abide by and comply with the Regeneron STS Rules & Entry Instructions.
  - b. In any case, I certify that I am over the age of 13. I certify that all the information provided is correct and complete without omission to the best of my knowledge and I certify that the Research Report I am submitting is my own individual work, not that of a student team, nor does it represent the work of others.
  - c. I understand that I am responsible for all aspects of my work's authenticity: the research, the Application, and all other documentation in the application process, as well as the display board and oral presentation if I am selected as a finalist. I attest that all these submissions are exclusively my work in substance and in presentation.
  - d. I further understand that scientific fraud, misconduct, misrepresentation of work or attribution thereof, or violation of the rules and/or eligibility requirements may result in disqualification and forfeiture of any monetary awards and that the Society reserves the right in such cases to bar future participation in Society programs.
  - e. I agree to accept the decision of the judges as final and understand that my digital application and Research Report, and scores, will not be returned to me but shall become the sole property of Regeneron STS/the Society.
  - f. I also agree to permit Regeneron STS/the Society to use all information contained in my application in any way it deems appropriate for publicity purposes.
  - g. I certify that I have read and fully understood all rules and eligibility requirements found in the Regeneron STS Rules & Entry Instructions and that I have complied with all rules and meet the eligibility for submitting this Regeneron STS entry.
2. The Society uses plagiarism detecting software to authenticate the Regeneron Science Talent Search entries including essays, research reports and recommendation letters. Every report is individually reviewed by the software and any questionable cases receive a second review by a Regeneron STS Rules Advisor to determine whether the entry is in violation of Regeneron STS rules and guidelines. Submissions found to be in violation of the originality rules will not be awarded entrant status, nor will they receive the benefits associated with being an entrant. Students who submit applications to Regeneron STS agree to the plagiarism screening.
3. The practice of mentor/adult compensation based on a student's results (placement) in the Regeneron STS is prohibited. Any such compensation will render the student entry ineligible for consideration and will be grounds for the revocation of any award already made.
4. Research conducted as part of a pre-collegiate student team project is not eligible for Regeneron STS. This includes any research or portion of research regardless of whether it has or will be submitted to any competition. Even if the student was a primary member of a team or conducted one portion of the research, it must still be considered a part of that team project, and is not eligible for Regeneron STS. Students may not "split" a team project and enter it in Regeneron STS as individuals. Students who enter Regeneron STS with individual research may not combine this research into a team project for other competitions, publications or other forums. Research conducted alongside adult researchers in a research institution is allowed, but adequate acknowledgement of ownership throughout the application is vital. Consideration should be given to the extent to which the research qualifies as independent research, given the student and adult responsibilities.

5. Student must submit all required components of the Regeneron STS online application in order to be considered for awards. Application requirements are listed on page 7.
6. Only one entry per student is allowed.
7. Student must obtain permission from their project mentor to enter research into Regeneron STS, and will be asked to attest to this in the application.

## ACADEMIC INTEGRITY

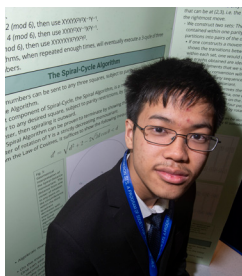
The Regeneron Science Talent Search, like colleges and universities across the nation, expects that students hold themselves to rigorous ethical standards, both academic and personal. Responsibility for integrity in scholarship is inherently the scholar's, including the Regeneron STS student applicant. Students must be responsible for all aspects of their work's authenticity: the research, the application, and all other documentation. The required signature box in the Submission stage asks the entrant to attest to every statement, and by their signature, claim each one to be true or understood. It also attests that material submitted is exclusively the work of the applicant in substance and in presentation. Note that it additionally attests that no mentor of Regeneron STS applicants may be compensated based on an applicant's performance in the Regeneron STS. The responsibility and privilege to present independent work in conformity with Regeneron STS rules rests with the student, with the guidance of faculty and adult advisors. If a determination is made at any point that an entrant has violated rules as outlined in this document or at the discretion of the Society, and/or misrepresented work or attribution thereof, the Society reserves the right to disqualify the entry, withhold and/or withdraw monetary awards and/or exclude the entrant from participating in Society programs.

## INTELLECTUAL PROPERTY

Independent research for the Regeneron STS may produce findings that are the Intellectual Property (IP) of the entrant. Participation in the Regeneron STS requires disclosure of methods and results; they will be made available to our evaluators and judges, who sign non-disclosure agreements. Results and methods may be made available to the public in the promotion of the project at the scholar or finalist level. If entrants are concerned about the protection of IP, they are urged to consider these issues with their supervising scientist and qualified adult advisors to make an informed decision before entering the Regeneron STS. The exhibition, posting, and judging process will not be modified in deference to journal embargoes or other considerations.

## GRIEVANCES

If an adult or student entrant wishes to share a grievance or a suspected violation of STS entry rules, eligibility or research related rules, they they should email their concern to [sts@societyforscience.org](mailto:sts@societyforscience.org).



"Being part of this select group of the biggest math and science aficionados in the country was a once-in-a-lifetime experience. Just being 'one of them' instills so much confidence in my future and my potential as a mathematician, and being recognized heavily for my research has been fascinating and reassuring. Overall, the experience has been an unforgettable odyssey."

THOMAS LAM, REGENERON STS FINALIST 2019

# RULES FOR RESEARCH INVOLVING HUMAN PARTICIPANTS AND HUMAN TISSUE

*If your project involves humans, including the testing of an engineering project or invention on humans, review the rules below. In most cases, you will be asked to upload approval documentation in the online application.*

Projects involving HUMAN PARTICIPANTS, including surveys (written, in-person, or online), product testing, or human tissue samples, must adhere to the following rules even for anonymous studies:

**Based upon the Code of Federal Regulations (45 CFR 46), the definition of a human participant is a living individual about whom an investigator conducting research obtains (1) data or samples through intervention or interaction with individual(s), or (2) identifiable private information.**

- a. Student researchers must write a research plan that should include a description of research participants, recruitment procedures, research methodology, assessment of risks and benefits of the research, procedures for minimizing physical, psychological and privacy risks to participants and procedures for obtaining informed consent.
- b. The research plan must be reviewed and approved by a properly constituted Institutional Review Board (IRB) before the student may begin recruiting and/or interacting with human participants (see IRB guidelines below). After initial IRB approval, a student with any proposed changes to the research plan must repeat the approval process before experimentation/data collection resumes.
  1. If research is conducted in a high school, it is the responsibility of the student researcher to receive properly documented IRB approval before beginning the study.
  2. If research is conducted at a federally regulated research institution (e.g., university, medical center, NIH, correctional institution, etc.), the research plan must be reviewed and approved by that institution's IRB and proper documentation must be provided.
- c. The research study must be in compliance with all privacy and HIPAA laws when they apply to the project. Students are prohibited from administering medications and performing invasive medical procedures on human participants. The IRB must confirm that the student is not violating the Medical Practice Act of the particular state or territory in which he/she is conducting the research.
- d. Research participants must voluntarily give informed consent/assent, and in cases where the research participant is a minor, parental permission may be required. The IRB determines whether written documentation of consent/assent/permission is necessary.
- e. Student researchers may NOT publish or display information in a report that identifies the human participants directly or through identifiers linked to the participants (including photographs), without written consent (Public Health Service Act, 42, USC 241 (d)).
- f. All standardized tests that are not in the public domain must be administered, scored and interpreted by a qualified professional as required by the instrument publisher. Any and all use and distribution of the test must be in accordance with the publisher's requirements including procurement of legal copies of the instrument. Standardized tests in the public domain do not require documentation in the Regeneron STS application.
- g. Some studies involving human data or human tissue samples are not considered human participant projects and are exempt from IRB review and approval. These include:

1. Studies in which the data or tissue samples are preexisting and publicly available.
  2. Behavioral observations of unrestricted public settings in which
    - a. the researcher has no interaction with the individuals being observed and
    - b. the researcher does not manipulate the environment and
    - c. the researcher does not record any personally identifiable data.
  3. Research in which the student receives preexisting or retrospective data or tissue samples in a de-identified/anonymous format. The student mentor must certify in the online recommendation form that the data or tissue samples were not collected for the purpose of the student's project and have been appropriately de-identified before being given to the student and are in compliance with all HIPAA laws.
- h. If a student-designed invention, program, concept, etc. is product tested by human participants, other than the student researcher, the project must be reviewed and approved by an IRB as described above before the product testing takes place.
  - i. Projects utilizing human/vertebrate animal established cell lines or tissue cultures must include documentation regarding the source of the cells/tissues. If obtained from a commercially available collection (e.g., ATCC) the catalog number is required. If obtained from a private/non-commercial source (public or private laboratory, museum, etc.), documentation from the supplier must be uploaded in the application.

## **INSTITUTIONAL REVIEW BOARD**

An Institutional Review Board (IRB) is an independent committee that, according to federal regulations (45-CFR46), evaluates the potential physical and/or psychological risk of research involving human participants. All proposed human research must be reviewed and approved by an IRB before experimentation begins. This includes any surveys or questionnaires to be used.

IRBs exist at federally registered institutions (e.g., universities, medical centers, NIH, correctional facilities). The IRB must initially review and approve all proposed research conducted at, or sponsored by, that institution.

For projects completed at the high school or home environment, school-level IRBs must consist of a minimum of three members. A school-level IRB must include:

- (1) a science teacher not involved with project(s) being reviewed,
- (2) a school administrator (preferably a principal or vice principal) and
- (3) one of the following who is knowledgeable and capable of evaluating the physical and/or psychological risk involved in a given study: a physician, psychiatrist, physician's assistant, registered nurse, psychologist, or licensed social worker who is not involved with the project being reviewed.

No member of any IRB may be personally related to the student researcher. Teachers and advisors who oversee a specific project must not serve on the IRB reviewing that project. An improperly constituted IRB invalidates the approval of a project. IRBs must secure additional alternate members to ensure the eligibility of the projects being reviewed.

## **RISK ASSESSMENT**

Once a study population is chosen, the student researcher must assess any potential physical and/or psychological risks. In evaluating risk, students and IRBs must follow the federal definition of minimal risk: no more than minimal risk exists when the probability and magnitude of harm or discomfort anticipated in the research are not greater (in and of themselves) than those ordinarily encountered in DAILY LIFE or during performance of routine physical or psychological examinations or tests.



The following risk groups require additional safeguards because they may be vulnerable to coercion or undue influence:

1. Any member of a group that is naturally at-risk (e.g., pregnant women, individuals with diseases such as cancer, asthma, diabetes, cardiac disorders, psychiatric disorders, dyslexia, AIDS, etc.).
2. Special vulnerable groups that are covered by federal regulations (e.g. children/minors, prisoners, pregnant women, mentally disabled persons, or economically or educationally disadvantaged persons).

The following are examples of activities that contain more than minimal risk:

1. PHYSICAL
  - a. Exercise other than ordinarily encountered in daily life by that participant.
  - b. Ingestion of any substance or exposure to any potentially hazardous materials.
2. PSYCHOLOGICAL
  - a. Any activity (e.g. survey, questionnaire, viewing of stimuli) or experimental condition that could potentially result in emotional stress. For example, answering questions related to personal experiences such as sexual, physical or child abuse, divorce and/or psychological well-being (e.g. depression, anxiety, suicide) is considered more than minimal risk. Additionally, research activities that involve exposing participants to stimuli or experimental conditions that could potentially result in emotional stress must also be considered more than minimal risk. Examples include violent or distressing video images, distressing written materials or activities that could potentially result in feelings of depression, anxiety, or low self-esteem in participants.
  - b. Any activity that could potentially result in negative consequences for the participant due to invasion of privacy or breach of confidentiality. When research activities involve collection of personal information (e.g. history of abuse, drug use, opinions, fingerprints) or health-related data (genetic material, blood, tissue) the researcher must consider risks related to invasion of privacy and possible breach of confidentiality. Ways to reduce these risks include collecting data anonymously or developing data collection procedures that make it impossible to link any identifying information (e.g. participant's name) with his/her responses or data.

## INFORMED CONSENT

Human participant research/data collection may begin only after the participants have been provided complete information about the risks and benefits associated with participation in the research. This allows the participant to make an independent, educated decision about whether to participate. Informed consent is an ongoing process, not a single event that ends with a signature on a page. It must not involve coercion or deception. Adults give their CONSENT. Research participants under 18 years of age and/or individuals not able to give consent (e.g. developmentally disabled individuals) give their ASSENT, and the parents/guardians give their PERMISSION.

Documentation of informed consent /assent/permission is required when:

1. When the IRB determines that a research study involves physical or psychological activities with more than minimal risk;
2. When the IRB determines that the project could potentially result in emotional stress to a research participant;
3. When the IRB determines that the research participants belong to a risk group.

## ADDITIONAL RESOURCES

Additional resources are available regarding human participants research guidelines. On this website, the Office for Human Research Protections details national guidelines from which Regeneron STS rules are derived and provides the recommended online training prior to planning any human participant study, for students, new high school IRBs, and new IRB members: <http://ohsr.od.nih.gov>. Bioethics resources are at: <http://bioethics.od.nih.gov>.

# RULES FOR RESEARCH INVOLVING VERTEBRATE ANIMALS AND VERTEBRATE ANIMAL TISSUE

*If your project involves vertebrate animals, review the rules below. In most cases, you will be asked to upload approval documentation in the online application.*

Projects involving experimentation with live, non-human vertebrate animals are permitted under restricted/limited conditions.

Live, non-human vertebrate animals are defined as any live mammalian embryo or fetus, bird or reptile eggs within three days (72 hours) of hatching, and all other vertebrates at hatching or birth. Exception: Because of their delayed cognitive neural development, zebrafish embryos are not considered vertebrate animals until 7 days (168 hours) post-fertilization.

All studies involving vertebrate animals must be conducted at a Regulated Research Institution and be reviewed and approved before experimentation begins by an Institutional Animal Care and Use Committee, known as an IACUC.

All projects involving live, non-human vertebrate animals must adhere to the following rules. Projects involving experimental procedures conducted on live animals must be conducted in a Regulated Research Institution with documentation of IACUC approval and must be restricted to the following:

- a. the student's only physical contact with the animal(s) is restricted to supervised handling and husbandry procedures that meet IACUC standards at Regulated Research Institutions, which conform to federal regulations protecting animal well-being and researcher safety; AND
  1. the student works with non-living material (e.g. tissue, blood) that has been supplied to them by the supervising scientist; AND
  2. the animal(s) is/are not sacrificed solely for the student's project; AND
  3. the project the student designs and implements begins with non-living material. (No procedures, invasive or otherwise, were conducted on live vertebrate animals for the student-designed project); AND
  4. the student was not involved in the collection of data, directly or indirectly (through media or video) where the research involved invasive or intrusive experimentation that causes more than momentary pain or distress to the vertebrate animal(s).
- b. Projects involving animals in their natural environment may be conducted in the field or other site with documentation of IACUC approval, proper permissions or licenses and must be restricted to the following:
  1. the study is observational or behavioral AND
  2. the study is non-invasive and non-intrusive AND
    - iii. the study does not affect an animal's health or well-being by causing stress, discomfort or pain AND
  3. the student has no direct contact with the animal
- c. Projects that only involve the observation of animals in their natural environments, where no experimental or behavioral procedures are conducted AND in which the study does not affect the animal's health or wellbeing by causing stress or discomfort do not require prior review and approval.
- d. Projects utilizing human/vertebrate animal established cell lines or tissue cultures must include documentation regarding the source of the cells/tissues. If obtained from a commercially available collection (e.g., ATCC) the catalog number is required. If obtained from a private/non-commercial source (public or private laboratory, museum, etc.), documentation from the supplier must be uploaded in the application.

In cases (a), (b) and (d) described above, documentation of IACUC approval, proper permissions, and licenses must be provided with the application.

# APPENDIX 1: CATEGORIES

Entrants must select one category from the list below; this will determine the expertise of the initial review only.

Scholars and finalists are selected without regard to the category, and winners may not be selected proportionally across categories. Consultation with teachers or mentors is encouraged to determine the best category for each entry.

**ANIMAL SCIENCES (AS):** Study of animals – ornithology, ichthyology, herpetology, entomology, animal ecology, paleontology, cellular physiology, circadian rhythms, animal husbandry, cytology, histology, animal physiology, invertebrate neurophysiology, studies of invertebrates, etc.

**BEHAVIORAL AND SOCIAL SCIENCES (BE):** Human and animal behavior, social and community relationships – psychology, sociology, anthropology, archaeology, ethology, ethnology, linguistics, learning, perception, urban problems, public opinion surveys, educational testing, etc.

**BIOCHEMISTRY (BI):** Chemistry of life processes – mechanisms of molecular biology and genetics, enzymes, photosynthesis, blood chemistry, protein chemistry, food chemistry, hormones, etc. Studies involve understanding life and cellular processes specifically at the molecular level.

**BIOENGINEERING (BN):** Engineering principles applied to biology or medicine, such as bodily aids or replacements, medical/diagnostic devices, and drugs or other therapies using engineering to address a biological problem.

**CELLULAR AND MOLECULAR BIOLOGY (CM):** Wide ranging field that studies cellular structure, function, biomolecule trafficking, signal transduction, genetic information flow, and cellular replication.

**CHEMISTRY (CH):** Study of nature and composition of matter and laws governing it – physical chemistry, organic chemistry (other than biochemistry), inorganic chemistry, plastics, fuels, pesticides, metallurgy, soil chemistry, etc.

**COMPUTATIONAL BIOLOGY AND BIOINFORMATICS (CB):** Studies that primarily focus on the discipline and techniques of computer science and mathematics as they relate to biological systems. This includes the development and application of data-analytical and theoretical methods, mathematical modeling and computational simulation techniques to the study of biological, behavioral, and social systems.

**COMPUTER SCIENCE (CS):** Study and development of computer hardware, software engineering, internet networking and communications, graphics (including human interface), simulations/virtual reality or computational science (including data structures, encryption, coding and information theory), etc.

**EARTH AND PLANETARY SCIENCE (EP):** Geology, mineralogy, physiography, cryosphere, ocean sciences, geomagnetism, hydrology, meteorology, climatology, speleology, seismology, tectonics, volcanology, and planetary science, etc.

**ENGINEERING (EN):** Technology; projects that directly apply scientific principles to manufacturing and practical uses – civil, mechanical, aeronautical, chemical, and electrical engineering; electronic, sound, automotive, marine, heating and refrigeration, transportation, environmental engineering, etc.

**ENVIRONMENTAL SCIENCE (EV):** Study of ecology, sustainability, climate, and human impacts, including pollution from air, water or land sources and their control or remediation, etc.

**GENOMICS (GE):** DNA microarray and deep sequencing studies; phylogenetic analysis of DNA or other biomolecules; analysis of human or other genomes, molecular evolution, etc.

**MATERIALS SCIENCE (MS):** The structure, engineering properties, processing, and innovative uses of metals/alloys, polymers, ceramics, glasses, electronic materials, biomedical materials, composites, and other innovative materials at scales ranging from the atomic to the macroscopic, etc.

**MATHEMATICS (MA):** Development of formal logical systems or various numerical and algebraic computations, and the application of these principles – calculus, geometry, abstract algebra, number theory, statistics, complex analysis, probability, etc.

**MEDICINE AND HEALTH (ME):** Study of diseases and health of humans and animals – pharmacology, physiology, pathology, ophthalmology, oncology, cardiology, nephrology, endocrinology, pediatrics, dermatology, allergies, speech and hearing, nutrition, dentistry, etc.

**PHYSICS (PH):** Theories, principles, and laws governing energy and the effect of energy on matter – solid state, optics, acoustics, particle, nuclear, atomic, plasma, superconductivity, fluid and gas dynamics, thermodynamics, magnetism, quantum mechanics, biophysics, etc.

**PLANT SCIENCES (PS):** Study of plant life – agriculture, agronomy, horticulture, forestry, plant taxonomy, plant physiology, plant pathology, plant genetics, hydroponics, algae, etc.

**SPACE SCIENCE (SS):** Study of celestial bodies, their positions, motions, nature and evolution – astronomy, astrometry, celestial mechanics, etc.

# APPENDIX 2: RESEARCH REPORT

The Research Report is evidence of research ability, scientific originality, and creative thinking. It is an opportunity to demonstrate competence in planning and completing a project in science, mathematics, or engineering. Students must have completed an independent scientific investigation and have results to report. Investigations not yet completed, literature reviews, and essays are not eligible for this competition. There is no time limit on the period over which research is performed. Some entrants spend years developing the work that is eventually submitted; others will have spent a few intensive weeks. Each entrant may submit only one entry and Research Report on one topic.

## FORMATTING REQUIREMENTS:

- 20 pages maximum (Title Page, Abstract and Bibliography do not count against 20 page limit)
- Font must be the same size as Times New Roman 11pt. font, but entrants may choose their own clearly legible font
- 1.5 line spacing, and 1" margins on all sides
- Students should select a report format/style that is appropriate for their discipline.
- The file size upload limit for the research report, including all illustrations, photos, tables, diagrams, charts, drawings, and/or maps embedded in the report, is 3MB.
- Only PDFs will be accepted in the online system.

### The research report must include the following:

- Title Page (1st page, not in 20-page limit) containing no phone numbers or email addresses
- Abstract (2nd page, not in 20-page limit)
- Short introduction describing the background and purpose of the work
- Experimental section including methods and results
- Concluding discussion of results and implications
- Bibliographic references for all sources consulted with internal citations (not in 20-page limit)
- Note: Any pages provided that exceed 20 will not be read or considered.

### Please do not include the following in the research report:

- Library research or a history of literature beyond the short introduction
- Detailed explanations of experiments and procedures of other researchers that preceded the project
- Lengthy autobiographical information or personal history
- Photographs of yourself
- Photographs of people that are not part of a data set

**ENTRANTS ARE ENCOURAGED TO SEEK EVERY POSSIBLE RESOURCE:** Books, journals, experts in the field, adult advisors. Refer to research journals in your subject area for examples of report formats to guide your own format. Regeneron STS recognizes the independent research of student investigators. Work submitted by the student scientist should be of her or his own design and execution, and presented in her or his own words. Frequently Regeneron STS applicants do research within the context of the laboratory and/or in collaboration with others outside of a laboratory in which they work or that is related to that of those with whom they are working. This is expected, since science is a cumulative process, each finding built on previous ones. However, full disclosure of any research or person that has influenced the applicant's work is required. Furthermore, the research report must accurately reflect the work of only the student researcher. While students may seek review of their content and presentation of the research report, both the content and writing should be the work of the applicant. Adults reviewing research reports should suggest areas for improvement, but not provide the student with replacement text or rewrite any portion of the entry. Note that no mentor of a Regeneron STS applicant may be compensated based on an applicant's performance in the Regeneron STS. It is acceptable for students to pay or be paid for research experiences.



# APPENDIX 3: TYPES OF RECOMMENDATIONS

Applicants must request the following recommendations, all to be submitted by the designated adults by the application deadline (**November 13, 2019 at 8:00 pm ET**):

- Educator Recommendation (up to 2)
  - Educator Recommendation should be completed online by the person with the most knowledge of the student in an academic setting and of his or her scientific potential. Students may choose a non-science teacher, and if they choose to submit two of this type of recommendation, may select a coach or other type of advisor as the second Educator Recommender.
- Project Recommendation (up to 2)
  - Project Recommendation should be completed online by the person closest to the student's research. The head of a lab should only complete this if he or she worked with the student closely.
  - Project Recommenders might be asked to provide information and documentation about projects involving humans and vertebrate animals.
- High School Report
  - High School Report should be completed online by a counselor or administrator. Official high school transcripts must be uploaded in this section. Counselors must upload transcripts on the high school report as PDFs. Mailed, hard copies are not accepted.

Students are encouraged to request recommendations early in the application process through the online system. Recommenders receive an email invitation and are prompted to create a password to complete and submit forms online. Students are responsible for the timely receipt of transcripts and recommendations.

To preview the Recommendation Forms, visit Appendices 4-6.

All recommendations are due on the student application deadline – **Wednesday, November 13, 2019 at 8:00 pm ET**. No exceptions can be made.



“Students should apply to Regeneron STS not only to gain recognition for their research and hard work but also to connect with the STEM community at large and gain a better understanding of themselves and their goals for the future. I believe the STS application, while intensive, provides a great opportunity for introspection and personal growth on the part of the applicant.”

KAILI LIU, REGENERON STS FINALIST 2019

# APPENDIX 4: EDUCATOR RECOMMENDATION

## INSTRUCTIONAL DOCUMENT REGENERON SCIENCE TALENT SEARCH 2020

### INFORMATION FOR STUDENTS

#### **Who should complete the Educator Recommendation?**

- A high school teacher who has worked with you in a classroom setting. Preference should be given to science, engineering and/or math educators.

#### **When is the Educator Recommendation due?**

- The deadline for your Recommender to submit this form is Wednesday, November 13, 2019 at 8:00 pm Eastern Time. This deadline is now the same date and time as the student application deadline. We will be unable to accept materials, including recommendations, after this deadline.

#### **How do I request my Educator Recommendation?**

- Talk to or email your recommenders to ask them if they would be willing to complete a recommendation on your behalf. Let them know that they should anticipate an automated email from our online system – the sender name will be “Regeneron Science Talent Search.” Then request your Educator Recommendation through the online application system.
- We recommend that you request your recommendations the day you open your application to allow your recommenders plenty of time.
- It is your responsibility to remind your recommenders to submit their recommendations before the deadline. We cannot accept any portions of the application, including recommendations, after the application deadline.

#### **How many Educator Recommendations should I request?**

- Each applicant must request one Educator Recommendation, but may request up to two. Should you choose to request a second Educator Recommendation, you will find this option at the bottom of your Task List.
- Consider requesting multiple Educator Recommendations only if you believe each educator has something unique to say about your abilities. We encourage you to ask another supportive adult, like a coach or boss, to provide a recommendation as well.
- If you are a homeschool student and your parent is your only educator and completes an Educator Recommendation, we recommend that you request a second Educator Recommendation from a non-relative who knows you in an academic setting, even if not in the traditional classroom sense.

#### **Other things to know about the Educator Recommendation:**

- The Society no longer accepts PDF letters of recommendations. Recommenders are now required to answer a few short responses within the online form.

## EDUCATOR RECOMMENDATION PREVIEW

Entrants must request that their Recommender complete this form in the online recommendation system. The questions below are asked in the online form.

1. Do you have a familial relationship with the student? Such a relationship is not disallowed under Regeneron STS rules, however it is important that it be disclosed.
  - a. If so, please describe the relationship.
2. Have any of your former students entered and/or won awards in the Science Talent Search?
3. How long have you known this student and in what capacity? How does this student compare to students you currently teach and also to those you have known during your teaching career? (150 words max)
4. Please address, with specific examples if possible, the student's character and integrity, and describe any challenges he/she has overcome (200 words max)
5. Please describe your personal observation (if any) of the extracurricular involvement and/or leadership this student has demonstrated among his/her peers. Do not include activities you have not witnessed. Entrants are able to provide a full extracurricular list in their portion of the application. (200 words max)
6. Please summarize your observations and experience with this student and the qualities (s)he possesses that you believe would contribute to his/her future promise as a scientist, mathematician or engineer. Relevant topics include (but are not limited to) scientific attitude, curiosity, initiative, problem-solving, originality of thought, collegiality, and work ethic.
7. What level of mentorship have you provided the student with the STS application process and/or research project? Please explain your level of knowledge (if any) regarding the submitted research project and/or any other research projects conducted by this student during his/her high school career. Can you attest that the application and research project submitted in this application properly reflect his/her own work? (150 words max)
8. How would you rate this student against other high school students you have worked with in the past? Choose range from Top 1%, Top 5%, Top 10%, Top 25%, Top 50%, Other
9. How would you rate this student against other STS entrants you have worked with in the past? Choose range from Top 1%, Top 5%, Top 10%, Top 25%, Top 50%, Other

## ETHICS AGREEMENT

I certify that I have presented the full truth regarding the student researcher's experience in my classroom and have not presented false information. I understand that mentors of Regeneron STS entrants may not benefit financially based on the overall placement of entrants in the competition.

## TROUBLESHOOTING ISSUES

Should your Recommender experience any issues with our online process, please encourage them to email [sts@societyforscience.org](mailto:sts@societyforscience.org). Once you request a recommendation from them through the online system, the Recommender should receive an email with instructions. Occasionally these messages are caught in junk mail or strict school email filters, or a recommender could receive requests from multiple students under different email addresses, causing confusion. We are happy to investigate any issues.

# APPENDIX 5: PROJECT RECOMMENDATION

## INSTRUCTIONAL DOCUMENT REGENERON SCIENCE TALENT SEARCH 2020

### INFORMATION FOR STUDENTS

#### **Who should complete the Project Recommendation?**

- The person who is most familiar with the research and the work you did on a daily basis. In many cases that is a graduate student in a lab rather than the head of the lab.

#### **When is the Project Recommendation due?**

- The deadline for your Recommender to submit this form is Wednesday, November 13, 2019 at 8:00 pm Eastern Time. This deadline is now the same date and time as the student application deadline. We will be unable to accept materials, including recommendations, after this deadline.

#### **How do I request my Project Recommendation?**

- Talk to or email your recommenders to ask them if they would be willing to complete a recommendation on your behalf. Let them know that they should anticipate an automated email from our online system—the sender name will be “Regeneron Science Talent Search.” Then request your Project Recommendation through the online application system.
- We recommend that you request your recommendations the day you open your application to allow your recommenders plenty of time.
- It is your responsibility to remind your recommenders to submit their recommendations before the deadline. We cannot accept any portions of the application, including recommendations, after the application deadline.

#### **How many Project Recommendations should I request?**

- Each applicant must request one Project Recommendation, but may request up to two. Should you choose to request a second Project Recommendation, you will find this option at the bottom of your Task List.
- If you worked closely with more than one mentor, you may request one additional Project Recommendation.

#### **Other things to know about the Project Recommendation:**

- The Society no longer accepts PDF letters of recommendations. Recommenders are now required to answer within the online form.
- If your parent is the person closest to your research and completes your Project Recommendation, we recommend requesting an additional Project Recommendation from someone who has experience with you in a lab or research setting, making it clear that they did not mentor this particular research.
- If there is no adult who provided guidance to you, please have a parent or teacher complete this recommendation, stating that is the case.

### PROJECT RECOMMENDATION PREVIEW

Entrants must request that their Recommender complete this form in the online recommendation system. The questions below are asked in the online form.

## RULES QUESTIONS

In order to ensure this student entry adheres to Regeneron STS rules, we ask for your support in providing documentation for research projects involving humans and/or vertebrate animals, and in describing the student's level of independence.

1. Did the student conduct a non-invasive, non-obtrusive observational or behavioral study on live non-human vertebrate animals?
  - a. Please describe the student's training to work with animals, the supervision under which the work took place, and the student's overall interaction with the animals. (200 words max)
2. Did the student conduct a study of non-human vertebrate animal tissue which was obtained from a pre-existing study and supplied by a supervising scientist?
  - a. Please describe the pre-existing study, provide the title of the IACUC-approved study, the IACUC approval number and date of approval (where required and/or applicable). (200 words max)
  - b. I certify that the student was provided tissue from a pre-existing study and that the animals were not sacrificed, nor were invasive procedures used, solely for the purpose of the student's project.
3. Did the student's research involve either a behavioral or tissue study of human participants?
  - a. Please provide the IRB approval number, title of study and date of approval. Please describe the student's interaction with the human subjects and/or the student's specific role in the larger study. (200 words max)
4. Did you provide the student with pre-existing human data or human tissue?
  - a. I certify that the student was provided with human data/human tissue that was anonymous or appropriately de-identified before it was given to the student AND was in compliance with all privacy and HIPAA laws.
  - b. Explain where and how the human data or human tissue was obtained.

## PROJECT QUESTIONS

In order to ensure this student entry adheres to Regeneron STS rules, we ask for your support in providing documentation for research projects involving humans and/or vertebrate animals, and in describing the student's level of independence.

1. Do you, or does anyone in your lab, have a familial relationship to the student?
  - a. Such a relationship is not disallowed under Regeneron STS rules, however it is important that it be disclosed. If so, please describe the relationship.
2. Briefly explain how the student became known to you. (75 words max)
  - a. (e.g. personal relationship, summer program, high school partnership, direct communication from student, required or elective high school course)
3. Please describe the nature of your involvement with the student's research. (150 words max)
  - a. What role did you serve for the student? What type of guidance did you provide?
4. How did the student get the idea for the project? (200 words max)
  - a. Was the project assigned; picked from a list of possible research topics; result from discussion with a scientist; arise from work in which the student was engaged; suggested by student?
5. What was the duration and intensity of the student's research experience at your institution?
  - a. Number of weeks, months or years; full-time vs. part-time; resident vs. non-resident, etc.
  - b. Approximate Start & End Dates



6. Provide a brief description of your laboratory/research environment and what the student's role was within this group. (150 words max)
  - a. size, # of scientists/student and their research levels (post-doc, doctoral, undergrad, high school)
7. If there were other high school students in your research group please name them and explain in detail the difference between this student's work and the work of other high school students in your group.
  - a. Name any students who performed research that was similar to this student and explain how this student's work was different and independent from others.
8. For what aspects of the research can you give credit to the student as being his or her own unique contribution?
  - a. Research Question:
  - b. Procedural Design:
  - c. Data Collection:
  - d. Data Analysis:
  - e. Drawing Conclusions:
9. What did the student do that showed creativity and ingenuity?
  - a. Based on your knowledge of the student, please provide examples of how this student demonstrates potential as a scientist. Was he/she creative in his/her science, or creative for a high school student? What is your impression of their knowledge of experimental design, construction or use of equipment, evaluation of data, etc.?
10. Would you hire this student again in the future to work in your lab? Why or why not? In 5 to 10 years, do you believe this student could have a career as a working scientist, engineer or mathematician? (200 words max)
11. How would you rate this student against other high school students you have worked with in the past? Rank Top 1%, Top 5%, Top 10%, Top 25%, Top 50%, Other
12. Please provide any additional information that will help to articulate the work of this student.
13. Does the student have permission to share this research project with the Regeneron Science Talent Search?
  - a. If selected as a finalist (top 40) or scholar (top 300), our science writers will compose short summaries of the research project to share with the public. The student might be interviewed in the media. Through these processes, results might be shared. The Society for Science & the Public does not share student applications, which includes the research report.

#### **ETHICS AGREEMENT**

I certify that I have presented the full truth regarding the student researcher's experience in my laboratory and have not presented false information. I understand that mentors of Regeneron STS entrants may not benefit financially based on the overall placement of entrants in the competition.

#### **TROUBLESHOOTING ISSUES**

Should your Recommender experience any issues with our online process, please encourage them to email [sts@societyforscience.org](mailto:sts@societyforscience.org). Once you request a recommendation from them through the online system, the Recommender should receive an email with instructions. Occasionally these messages are caught in junk mail or strict school email filters, or a recommender could receive requests from multiple students under different email addresses, causing confusion. We are happy to investigate any issues.

# APPENDIX 6: HIGH SCHOOL REPORT

## INSTRUCTIONAL DOCUMENT REGENERON SCIENCE TALENT SEARCH 2020

### INFORMATION FOR STUDENTS

#### **Who should complete the High School Report?**

- Your school counselor or other school official who is able and allowed to provide the information requested.

#### **When is the High School Report due?**

- The deadline for your counselor to submit the High School Report is Wednesday, November 13, 2019 at 8:00 pm Eastern Time. The recommendation deadline is now the same date and time as the student application deadline. We will be unable to accept materials, including recommendations, after this deadline.

#### **How do I request my High School Report?**

- Talk to or email your recommenders to ask them if they would be willing to complete a recommendation on your behalf. Let them know that they should anticipate an automated email from our online system – the sender name will be “Regeneron Science Talent Search.” Then request your High School Report recommendation through the online application system.
- We recommend that you request your recommendations the day you open your application to allow your recommenders plenty of time.
- It is your responsibility to remind your recommenders to submit their recommendations before the deadline. We cannot accept any portions of the application, including recommendations, after the application deadline.

#### **How many High School Reports should I request?**

- Each applicant must request one High School Report; only one High School Report may be submitted for each entrant.

#### **Other things to know about the High School Report?**

- The Society no longer accepts hard copy transcripts; your counselor will need to upload your transcript through the online system.
- Should you have other types of transcripts from a community college or summer course, you will need to request these transcripts and ask your High School Report recommender to upload them on your behalf, or request another High School Report at the bottom of your Task List.
- First quarter grades are not necessary. Please request transcripts early in the process through the High School Report recommendation from your guidance counselor.
- Letters of recommendation from the counselor are not required, unless the student requests an educator recommendation from the counselor.

## HIGH SCHOOL REPORT PREVIEW

Entrants must request that their school counselor or an administrator complete this form in the online recommendation system. The questions below are asked of your counselor in the online form.

### RULES QUESTIONS

In order to ensure this student entry adheres to Regeneron STS rules, we ask for your support in providing documentation for research projects involving humans and/or vertebrate animals, and in describing the student's level of independence.

1. What is the graduation rate of your school from entering students to graduation?
2. Approximately what percentage of your graduates attend four-year colleges?
3. Type of school (select all that apply):  
Choices include: Public, Private, Homeschool, Magnet School, Magnet Program within School, International Baccalaureate, AP Courses Offered, AP Courses Offered in Math/Science, Charter School, Dual Enrollment, Title I
4. Will this student graduate from high school in December 2019 or Spring 2020?
  - a. Yes
  - b. No (If no, please explain here)
5. School Transcript Upload (PDF file only)
  - a. Please upload an electronic version of the student's transcript. The Society no longer accepts hard copies in the mail. If this new rule causes concern or you experience problems with our system, please email [sts@societyforscience.org](mailto:sts@societyforscience.org).
  - b. Receipt of a school transcript prior to the November 13, 2019 deadline is ultimately the responsibility of the student. Please do not delay in submitting this report if you are uncertain about a school transcript.
  - c. There is no letter of recommendation associated with this report. Please do not upload one here. If you would like to submit a letter of recommendation for this student, please ask them to request an Educator Recommendation from you.

Note about Standardized Test Scores: Student applicants to the Regeneron Science Talent Search are now required to upload their own test scores within the application. In prior years, this information was submitted with the High School Report.

### TROUBLESHOOTING ISSUES

Should your Recommender experience any issues with our online process, please encourage them to email [sts@societyforscience.org](mailto:sts@societyforscience.org). Once you request a recommendation from them through the online system, the Recommender should receive an email with instructions.

Occasionally these messages are caught in junk mail or strict school email filters, or a recommender could receive requests from multiple students under different email addresses, causing confusion. We are happy to investigate any issues.

# APPENDIX 7: DOCUMENTATION AND PAPERWORK

If your project involved humans or vertebrate animals, please carefully review the rules found in this document. Within the online application, you will also answer a series of questions in Task 3, which may require you to upload approval paperwork or other types of documentation such as IRB and IACUC.

As you fill out these forms, be sure to carefully answer all questions and to download all required documentation. Failure to do so could result in your disqualification. Please ensure that your paperwork is properly signed, especially IRB approval forms.

For projects involving humans and surveys, please note the system will require a blank copy of the administered survey and a blank informed consent /assent/permission form.

For tissue studies, even if exempt, you may be asked to share documentation or certification about the origin of the tissue.

Project Recommenders will also be asked to verify similar information.

# APPENDIX 8: REGENERON STS INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL FORM

Required for all research involving human participants. (Institutional Form or Intel ISEF form may be substituted.)

Student's Name: \_\_\_\_\_ Title of Project: \_\_\_\_\_

Adult Sponsor: \_\_\_\_\_ Contact Phone/Email: \_\_\_\_\_

To be completed by Student Researcher in collaboration with the Adult Sponsor/Designated Supervisor/Qualified Scientist:

1. ☐ I have submitted my Research Plan which addresses research methodology, participant recruitment, confidentiality and privacy issues, informed consent procedures and a risk and benefit analysis for the human participants.
2. ☐ I have attached any surveys or questionnaires I will be using in my project.
3. ☐ I have attached an informed consent that I would use if required by the IRB.
4. ☐ Yes ☐ No Are you working with a Qualified Scientist?

Name: \_\_\_\_\_ Degree: \_\_\_\_\_

Email Address/Phone Number: \_\_\_\_\_

Experience/Training as it relates to this project: \_\_\_\_\_

## ITEMS IN THIS BOX MUST BE COMPLETED TO BE VALID

To be completed by Institutional Review Board (IRB) after review of the research plan. The submitted Research Plan must address all areas indicated on the Human Participants section of the Research Plan Instructions.

### Check one of the following:

- ☐ Research project requires revisions and is NOT approved at this time. IRB will attach document indicating concerns and/or requested revisions.
- ☐ Research project is Approved with the following conditions below: (All 5 must be answered)
1. Risk Level (check one) : ☐ Minimal Risk ☐ More than Minimal Risk
  2. Qualified Scientist (QS) Required: ☐ Yes ☐ No
  3. Written Minor Assent required for minor participants:  
☐ Yes ☐ No ☐ Not applicable (No minors in this study)
  4. Written Parental Permission required for minor subjects:  
☐ Yes ☐ No ☐ Not applicable (No minors in this study)
  5. Written Informed Consent required for subjects 18 years or older:  
☐ Yes ☐ No ☐ Not applicable (No subjects 18 yrs or older in this study)

IRB SIGNATURES (All 3 signatures required) None of these individuals may be the adult sponsor, designated supervisor, qualified scientist or related to (e.g., mother, father of) the student (conflict of interest).

I attest that I have reviewed the student's project and agree with the above IRB determinations.

Medical or Mental Health Professional (a psychologist, psychiatrist, medical doctor, licensed social worker, licensed clinical professional counselor, physician's assistant, or registered nurse)

Printed Name \_\_\_\_\_ Degree/Professional License \_\_\_\_\_

Signature \_\_\_\_\_ Date of Approval \_\_\_\_\_

### School Administrator

Printed Name \_\_\_\_\_ Degree \_\_\_\_\_

Signature \_\_\_\_\_ Date of Approval \_\_\_\_\_

### Educator (not involved with the project)

Printed Name \_\_\_\_\_ Degree \_\_\_\_\_

Signature \_\_\_\_\_ Date of Approval \_\_\_\_\_



# APPENDIX 9: SAMPLE INFORMED CONSENT FORM

## INSTRUCTIONS TO THE STUDENT RESEARCHER:

An informed consent/assent/permission form should be developed in consultation with the Adult Sponsor, Designated Supervisor or Qualified Scientist.

This form is used to provide information to the research participant (or parent/guardian) and to document written informed consent, minor assent, and/or parental permission.

When written documentation is required, the researcher keeps the original, signed form.

Students may use this sample form or may copy ALL elements of it into a new document.

If the form is serving to document parental permission, a copy of any survey or questionnaire must be attached.

## STUDENT RESEARCHER:

### TITLE OF PROJECT:

I am asking for your voluntary participation in my science fair project. Please read the following information about the project. If you would like to participate, please sign in the appropriate box below.

### PURPOSE OF THE PROJECT:

### IF YOU PARTICIPATE, YOU WILL BE ASKED TO:

### TIME REQUIRED FOR PARTICIPATION:

### RISKS:

### BENEFITS:

### HOW CONFIDENTIALITY WILL BE MAINTAINED:

If you have any questions about this study, feel free to contact:

Adult Sponsor: \_\_\_\_\_ Phone/email: \_\_\_\_\_

## VOLUNTARY PARTICIPATION:

Participation in this study is completely voluntary. If you decide not to participate there will not be any negative consequences. Please be aware that if you decide to participate, you may stop participating at any time and you may decide not to answer any specific question.

By signing this form I am attesting that I have read and understand the information above and I freely give my consent/assent to participate or permission for my child to participate.

### ADULT INFORMED CONSENT OR MINOR ASSENT

Date Reviewed & Signed: \_\_\_\_\_

Printed Name of Research Subject: \_\_\_\_\_

Signature: \_\_\_\_\_

Parental/Guardian Permission (if applicable)

Date Reviewed & Signed: \_\_\_\_\_

Parent/Guardian Printed Name: \_\_\_\_\_

Signature: \_\_\_\_\_

# APPENDIX 10: ALUMNI HONORS

## NOBEL PRIZE

| STS YEAR | NAME             | HONOR, YEAR                  |
|----------|------------------|------------------------------|
| 1944     | Ben R. Mottelson | Physics, 1975                |
| 1946     | Gerald Edelman   | Physiology or Medicine, 1972 |
| 1947     | Leon Cooper      | Physics, 1972                |
| 1947     | Martin Karplus   | Chemistry, 2013              |
| 1949     | Walter Gilbert   | Chemistry, 1980              |
| 1950     | Sheldon Glashow  | Physics, 1979                |
| 1952     | John Hall        | Physics, 2005                |
| 1955     | Roald Hoffman    | Chemistry, 1981              |
| 1958     | Kip Thorne       | Physics, 2017                |
| 1964     | Paul Modrich     | Chemistry, 2015              |
| 1967     | Frank Wilczek    | Physics, 2004                |
| 1968     | Roger Tsien      | Chemistry, 2008              |
| 1968     | Alvin Roth       | Economics, 2012              |

## FIELDS MEDAL

|      |                  |                   |
|------|------------------|-------------------|
| 1950 | Paul J. Cohen    | Mathematics, 1966 |
| 1953 | David B. Mumford | Mathematics, 197  |

## NATIONAL MEDAL OF SCIENCE

|      |                 |      |
|------|-----------------|------|
| 1948 | Ronald Breslow  | 1991 |
| 1950 | Paul Cohen      | 1967 |
| 1950 | Daniel Kleppner | 2006 |
| 1953 | Leo Kadanoff    | 1999 |
| 1953 | David Mumford   | 2009 |
| 1954 | Lubert Stryer   | 2006 |
| 1955 | Roald Hoffmann  | 1983 |
| 1956 | Leroy Hood      | 2011 |
| 1956 | Donald Knuth    | 1979 |
| 1957 | Richard Zare    | 1983 |
| 1961 | Robert Axelrod  | 2012 |

## NATIONAL MEDAL OF TECHNOLOGY

|      |                       |      |
|------|-----------------------|------|
| 1954 | Marcian E. "Ted" Hoff | 2010 |
| 1965 | Raymond C. Kurzweil   | 1999 |

## MACARTHUR FELLOWSHIP

|      |                     |      |
|------|---------------------|------|
| 1948 | Richard S. Berry    | 1983 |
| 1967 | Frank Wilczek       | 1982 |
| 1962 | Michael Silverstein | 1982 |
| 1960 | Arthur Winfree      | 1984 |
| 1953 | Alar Toomre         | 1984 |
| 1958 | Jane Richardson     | 1985 |
| 1958 | John Schwarz        | 1987 |
| 1972 | Robert Coleman      | 1987 |
| 1961 | Robert Axelrod      | 1987 |
| 1974 | Eric Lander         | 1987 |
| 1953 | David Mumford       | 1987 |
| 1964 | Amory Lovins        | 1993 |
| 1982 | Peter Miller        | 1998 |
| 1984 | Daniel Schrag       | 2000 |
| 1978 | David Spergel       | 2001 |
| 1989 | Jon Kleinberg       | 2005 |
| 1999 | Maneesh Agrawala    | 2009 |
| 1996 | Jacob Lurie         | 2014 |

## ALBERT LASKER BASIC MEDICAL RESEARCH AWARD

|      |                |      |
|------|----------------|------|
| 1949 | Walter Gilbert | 1979 |
| 1956 | Leroy Hood     | 1987 |
| 1976 | Ron Vale       | 2012 |

## NATIONAL ACADEMY OF ENGINEERING

|      |                   |   |
|------|-------------------|---|
| 1943 | Eberhardt Rechtin | Aerospace Corporation                   |
| 1949 | Alan J. Goldman   | Johns Hopkins University                |
| 1952 | John A. Armstrong | IBM Corporation                         |
| 1956 | Leroy Hood        | Institute for Systems Biology           |
| 1961 | Michael E. Lesk   | Rutgers, State University of New Jersey |
| 1964 | Robert Sproull    | Sun Microsystems                        |
| 1965 | Raymond Kurzweil  | Kurzweil Technologies                   |
| 1974 | Ilan Kroo         | Stanford University                     |
| 1974 | Tom Leighton      | Massachusetts Institute of Technology   |
| 1978 | Mark Drela        | Massachusetts Institute of Technology   |
| 1989 | Andrew Jackson    | University of Pennsylvania              |

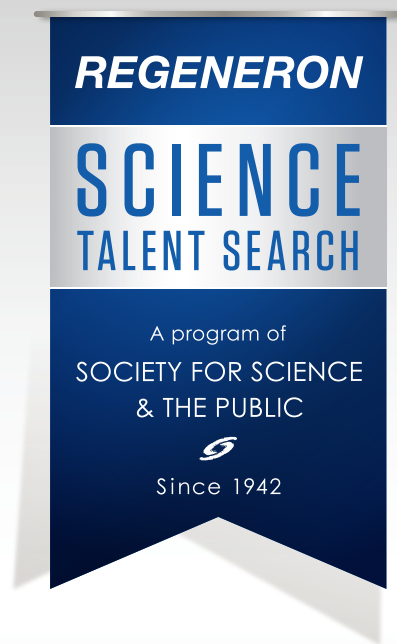
## NATIONAL ACADEMY OF SCIENCES

|      |                     |      |
|------|---------------------|------|
| 1943 | Murray Rosenblatt   | 1984 |
| 1944 | Roald Hoffmann      | 1972 |
| 1944 | Robert H. Kraichnan | 2000 |
| 1945 | George Clark        | 1980 |
| 1945 | Andrew Sessler      | 1990 |
| 1945 | Andrew Streitwieser | 1969 |
| 1945 | Michael Tinkham     | 1970 |
| 1947 | Leon N. Cooper      | 1975 |
| 1947 | Gary Felsenfeld     | 1976 |
| 1947 | Martin Karplus      | 1967 |
| 1948 | Ronald Breslow      | 1966 |
| 1948 | Stephen Berry       | 1980 |
| 1948 | Paul Martin         | 1979 |
| 1949 | Walter Gilbert      | 1976 |
| 1950 | Paul J. Cohen       | 1967 |
| 1950 | Sheldon Glashow     | 1977 |
| 1950 | Saul Sternberg      | 1982 |
| 1952 | Paul Richards       | 1985 |
| 1953 | David Mumford       | 1975 |
| 1954 | Donald Crothers     | 1987 |
| 1954 | Eric Davidson       | 1985 |
| 1956 | Mary-Dell Chilton   | 1985 |
| 1956 | Leroy Hood          | 1982 |
| 1956 | Robert Solovay      | 1986 |
| 1957 | Stephen L. Adler    | 1975 |
| 1958 | Bertrand Halperin   | 1982 |
| 1958 | Jane Richardson     | 1991 |
| 1960 | Melvin Hochster     | 1992 |
| 1960 | John Mather         | 1988 |
| 1961 | Robert Axelrod      | 1986 |
| 1961 | Wayne Hubbell       | 2005 |
| 1963 | James Vaupel        | 2004 |
| 1964 | Edward I. Solomon   | 2005 |
| 1967 | Frank Wilczek       | 1990 |
| 1969 | Robert Cava         | 2001 |
| 1970 | Douglas Rees        | 2000 |
| 1967 | Clark Lagarias      | 2001 |
| 1976 | Ronald Vale         | 2001 |
| 1976 | George Yancopoulos  | 2004 |
| 1974 | Eric Lander         | 1997 |
| 1974 | Tom Leighton        | 2008 |
| 1980 | Lisa Randall        | 2008 |

## SEARCHING FOR ALUMNI

Do you know a former Science Talent Search (STS) finalist or scholar from either the Regeneron, Intel or Westinghouse years? If so, please contact Society for Science & the Public at [alumni@societyforscience.org](mailto:alumni@societyforscience.org). The Society is developing an alumni program to create a national network of past participants of STS.





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