

The Virginia Junior Academy of Science

Official Handbook of Rules & Guidelines



2017 - 2018

Non-Profit 501(c)(3) - Donations Accepted

OUR SCHOOL NUMBER IS _____

(The VAS Office Staff will provide this information after receipt of 2017-2018 VJAS Membership Application and Membership Fee payment.)

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SUPPORTERS

The Virginia Junior Academy of Science notes with appreciation the contribution and support of the hundreds of individuals and the many organizations to the success of the Junior Academy.

VJAS programs need support from industries, organizations, and individuals in Virginia. Gifts to the Junior Academy qualify as charitable contributions, which entitle a donor to federal income, estate, and gift tax exemptions under the IRS code. All fund raising efforts must be cleared through the chair of the Fund Raising Committee of the Virginia Academy of Science.

VJAS SCHOLARSHIPS AND AWARDS

The Virginia Environmental Endowment
Bethel High School Science Club
Dominion Energy
The Virginia Academy of Science
American Cancer Society
Virginia Sea Grant College Program
Richmond Area Speleological Society
Virginia Chapter, National Foundation for Infectious Diseases
American Junior Academy of Science
American Association for the Advancement of Science
National Association of Academies of Science
Virginia Tech Chapter, Gamma Sigma Delta (Agriculture)
Jeffers Fund
Genetics Award
Dr. and Mrs. Preston Leake
Catesby Jones Fund
Carpenter & Berry Funds
Botany Award
Old Dominion University
Randolph College
Randolph-Macon College
Virginia Commonwealth University
Virginia Wesleyan College
Hampton University
Dr. Russell J. Rowlett
American Society of Naval Engineers - Tidewater Section
Arlington County Public Schools
Friends of the Museum of Natural History
Virginia Space Grant Consortium
Ertle Thompson Memorial Endowment Award
Dr. R. Dean Decker Honorarium Award
Phil Robinson VJAS Research Grants Fund
Virginia Environmental Business Council

DATES TO REMEMBER

| | |
|---|--|
| Deadline for applications for Phil Robinson Research Grants | <u>Must be received</u> by the VJAS Director by November 1. |
| Deadline for affiliation with VJAS: School and Individual Memberships and Membership Fees | <u>Must be received</u> in the VAS Office by January 16. |
| Deadline for submitting papers and Student Entry Fees | All papers, entry fees and entry forms <u>must be received in the VAS Office by Wednesday, February 21, 2018.</u> |
| Notification of meeting participants | Check web site (www.vjas.org) beginning March 26 |
| Notification of meeting registration, food, and lodging costs plus due date to host institution | Check web site (www.vjas.org) beginning March 26 |
| Deadline for sponsors to <i>confirm</i> participation of all of their accepted students and to notify the VJAS Office of any student(s) that cannot participate | By email to the VAS office by April 11. |
| Deadline for nominations for E.C.L. Miller (VAS) Science Teacher Award | <u>Must be received</u> by the VJAS Director by April 30. |
| Deadline for nominations for Honorary Membership in VAS. | <u>Must be received</u> by the VJAS Director by April 30. |
| Deadline for applications for Junior Academy Officers | <u>Must be received</u> by the VJAS Director by April 30. |
| Deadline for receipt of Special Interest Award Applications and most* Scholarship Applications | <u>Must be received</u> by the VJAS Director by April 30. |
| *Deadline for receipt of the VEE (F. & S. Lewis and H. MacKenzie) Scholarship Applications | <u>Must be received</u> by the VJAS Director by April 30. |
| Deadline for submission of abstracts by all Research Symposium participants | All abstracts <u>must be submitted</u> by May 15 (according to instructions posted on website). |
| VJAS Research Symposium & Annual Meeting | May 22-24, 2018 at Longwood University |

VJAS HANDBOOK REVISIONS

| | |
|---|--|
| Original Handbook, 1963 | Marc Salzberg Norfolk Academy |
| Second Edition, 1965 | Clyde Kelley Pres. VJAS 1965-66 Churchland High School |
| Third Edition, 1968 | Jack Woodside Pres. VJAS 1968-69 W.T. Woodson High School |
| Fourth Edition, 1970 | Debbie Meloy Pres. VJAS 1970-71 W.T. Woodson High School |
| Fifth Edition, 1972 | Frank Key Pres. VJAS 1972-73 Liberty High School |
| Sixth Edition, 1975 | Bruce Marton Pres. VJAS 1975-76 Wakefield High School |
| Seventh Edition, 1976 | Beau Farmer Vice-Pres. VJAS 1977-78 Pulaski County High School |
| Eighth Edition, 1982 | Christopher-Lee Shawn Bloodworth Vice-Pres. VJAS 1981-82 Manor High School |
| Ninth Edition, 1987 | VJAS Committee |
| Tenth Edition, 1992 | VJAS Committee |
| Eleventh Edition, 1995 | VJAS Committee |
| Twelfth Edition, 1996 | VJAS Committee |
| Thirteenth Edition, 2000 | VJAS Committee |
| Fourteenth Edition, 2001 - Reviewed Annually | VJAS Committee |

I. INTRODUCTION TO THE VJAS

A. AFFILIATION AND OBJECTIVES

The Virginia Junior Academy of Science (VJAS) is directly sponsored by the Virginia Academy of Science (VAS). The objectives of the VJAS are to (1) discover and encourage scientific aptitude among secondary school students [grades 7 through 12] in Virginia, (2) foster fellowship between its members and members of the VAS, (3) encourage students to continue their education in science, engineering and related fields, and (4) develop a background among its members which will lead to membership in the Virginia Academy of Science and other professional science organizations.

B. HISTORY OF THE VJAS

In 1938 the VAS served as host to the annual meeting of the American Association for the Advancement of Science in Richmond, Virginia. One important event discussed at this meeting was the rapid development of science clubs in high schools throughout the country, especially the organized associations of science clubs in New York City.

The VAS became interested in these association's accomplishments, and Dr. Ruskin S. Freer, the incoming president of the VAS, appointed a committee under Dr. L. C. Bird to initiate such work in Virginia. At a meeting in Dean Hortley F. Rudd's office on June 5, 1940, two committees were formed to direct the activities of VJAS - the Virginia Junior Academy of Science Committee and the Virginia Academy of Science Sponsoring Committee.

Invitations to join the VJAS were mailed to all science clubs that had indicated interest, and charters for the VJAS were printed. On May 3, 1941, the first meeting of the VJAS was called to order in Richmond by Mr. Hubert J. Davis, chairman of the VJAS Committee. More than two hundred high school students, delegates from member clubs, visiting officers of the VAS, and guests were present.

Since this first meeting, the VJAS has initiated and promoted a variety of important programs, including an annual meeting, the presentation of awards, sponsoring radio science quiz shows, publication of scientific documents, and preparation of a VJAS film (now replaced by a video) to encourage science students in Virginia. The VJAS has grown rapidly from a nucleus of 17 clubs to over 100 affiliated schools. Many of the Senior Academy members instrumental in the formation of the VJAS have maintained their interest in its progress and have continued to guide its affairs. Financial support has been provided by organizations and individuals throughout the Commonwealth.

Appreciation is expressed to the following people who have chaired the VJAS Committee and served as Director, and have labored faithfully through the years to assure VJAS's growth to its present status:

| | |
|---|-----------|
| Mr. H. J. Davis * | 1941-47 |
| Mr. F. G. Lankford * | 1947-49 |
| Dr. Boyd Harshbarger * | 1949 |
| Mr. B. W. Cooper * & Mr. Floyd S. Andrews * | 1950 |
| Mr. Grover Everett * | 1951 |
| Mrs. Thelma C. Heatwole * | 1952-60 |
| Dr. W. W. Scott | 1960-64 |
| Dr. E. L. Wisman | 1964-72 |
| Dr. Lee Anthony | 1972-75 |
| Dr. John L. Hess | 1975-78 |
| Dr. A. B. Neimeyer, Jr. | 1978-80 |
| Dr. R. Dean Decker | 1980-92 |
| Mr. Donald R. Cottingham * | 1992-97 |
| Dr. Eugene Maurakis, Associate Director | 1994-95 |
| Dr. R. Dean Decker & Mr. Donald R. Cottingham * | 1997-98 |
| Dr. R. Dean Decker & Mr. Donald R. Cottingham * Ms. Susan Booth, Associate Director | 1998-99 |
| Dr. R. Dean Decker & Ms. Susan Booth | 1999-2000 |
| Ms. Susan Booth (Director & VJAS Committee Chair) | 2000-2011 |
| Ms. Susan Booth (Director) Ms. Bobbie Whittier (VJAS Committee Chair) | 2011-2013 |
| Ms. Susan Booth (Director & VJAS Committee Chair) | 2013-2014 |
| Ms. Susan Booth, Director & VJAS Committee Chair Dr. David S. Torain II, Associate Director Mr. Se W. Jeong, VJAS Committee Chair | 2014-2015 |
| Mr. Se W. Jeong, VJAS Committee Chair Ms. Susan Booth, Director | 2016- |

* Deceased

The VJAS continues to expand to meet the needs of the student participants. Student officers are available at the Annual Meetings to record your concerns (constructive criticism and ideas) about the VJAS.

II. MEMBERSHIP

A. BENEFITS

The VJAS, through its active statewide programs, serves as an effective stimulus for scientific research by sponsoring programs for the advancement of science in grades 7 through 12 and by encouraging students to enter scientific research investigations in competition for awards at the annual VJAS Research Symposium. Students, grades 7 through 12, are eligible to submit their research papers to the Research Symposium. If accepted students are expected to attend the Symposium, participate in the Annual Meeting, present their papers and compete for numerous honors and awards.

The VJAS provides a means for students to meet others of similar ages, intents, and ambitions from the Commonwealth. The Research Symposium of VJAS provides an opportunity for students to attend lectures by professional scientists, scientific paper sessions of the VAS, and research presentations by their peers.

B. SPONSORS

Recognition is given to all of the teachers, students, parents, sponsors, administrators, committee members, mentors and countless other volunteers who unselfishly spend thousands of hours assisting the participants in conducting research, writing and processing their papers. The Virginia Junior Academy of Science notes with appreciation the contribution and support of the many sponsors who work with students throughout the Commonwealth. They are the key to the success of the Junior Academy and we rely on them in three ways.

1. The **Head Sponsor** serves as the point of contact for a school with the VJAS. The responsibilities are as follows.
 - **Submits** the **School Membership Application and Membership Fee**, described below.
 - **Submits** the **research papers and Student Entry Fees** for the school and completes the **School Entry Form**.
 - **Registers** students, whose papers have been accepted, for the Research Symposium
 - **Co-signs** (along with Student Sponsor) **applications** for Special Interest Awards and/or Scholarships.
2. The **Student Sponsor** is the specific school teacher serving as the advisor for an individual student's research project. The student sponsor has direct knowledge of what the student is working on and provides guidance for the project. The Student Sponsor:

- **Signs the Student Entry Form** for each student submitting a paper.
- **Signs** all appropriate “**Certifications**” on the “Certification Statement Form”.
- **Co-signs** (along with Head Sponsor) **applications** for Special Interest Awards and/or Scholarships.

Note: In a mentored project, the **Student Sponsor** is the person in the student’s school who has the above responsibilities.

3. The **Officer Sponsor** is the teacher that advises and encourages the current Student Officer(s) of the VJAS from his/her school. The responsibilities are:

- To serve a one year membership on the VJAS Committee.
- To provide transportation for the officer(s) to and from VJAS Committee meetings and, if necessary, the Research Symposium
- To participate in the work of the Committee by attending VJAS Committee meetings and supporting the activities of the officers.

C. HOW TO PARTICIPATE: MEMBERSHIP AND ENTRY FEES

1. **Types of Membership.** Two types of membership in the VJAS are available:

a. **School Membership: \$50.**

This is open to any secondary school, middle school or high school (grades 7 through 12) in Virginia. This type of membership is encouraged.

- The **Head Sponsor** of the school is responsible for completing and submitting the school Membership Application and \$50 membership fee for the school, **which is due January 16.** See *Membership Note 3* below.

b. **Individual Membership: \$10.**

This membership category is primarily intended for home-schooled students (grades 7 through 12) in Virginia. In addition, a student (in grade 7-12) who attends a public or private school that will not be joining VJAS as a School Member for the current year may be allowed to become a VJAS Individual Member. It is recommended that the parent/guardian contact the VAS Office Staff at vasoffice@vacadsci.org and request more information about the requirements for this membership category.

- The **parent/guardian of the student** must be listed as the **legally responsible party** on the Membership Application. The parent fills the role of the Head Sponsor for a School Member (as previously described) and is responsible for completing and submitting the individual Membership Application and \$10 membership fee, **which is due January 16.** See *Membership Note 3* below.
- The parent/guardian should also list a **Student Sponsor** (as previously described) on the Membership Application who is the project advisor and signs the required VJAS forms. If this person is not a science teacher he/she should have an appropriate scientific background to properly advise the individual. With an appropriate background the parent of a home-schooled student could serve as the student sponsor.

2. **Invoices and Late Fees.**

- a. **Invoices** are available upon request from the VAS Office. To avoid a penalty, requests must be made in time to insure meeting the January 16 deadline for submission of fees.
- b. There will be a **late fee of 20% for all membership fees received after January 16:**
 - School Membership late fee = \$10.
 - Individual Membership late fee = \$2.

3. **Membership Notes.**

- a. **The Membership Applications** (located in Appendix B) may be copied from the handbook (form can be filled out on the screen and then printed) or downloaded from the VJAS website.

It is important that all School and Individual Membership Applications and Membership Fees be received at the VAS Office by the January 16 deadline or shortly thereafter. This will ensure that all School Head Sponsors and all parents/guardians of Individual Members will receive key reminders and other information about the upcoming VJAS Paper Submission process and deadline.

- b. If a student who attends a public or private school is applying for the Phil Robinson Research Grant (due October 1), then a teacher at the student's school must submit the School Membership Application and Membership Fee for the school no later than October 1. If a home-schooled student is applying for the Phil Robinson Research Grant, then the student's parent/guardian must submit the Individual Membership Application and Membership Fee for the student no later than November 1.
 - c. Fees are subject to change by the VJAS Committee on an annual basis. Upon receipt of Membership Applications and payment of the appropriate Membership Fees, a certification of membership will be issued from the VAS office.
4. **Student Entry Fees.** An Entry Fee is required for each student submitting a paper and is due with the paper. All Entry Fees must be received by the paper submission deadline (i.e., the last Wednesday in February unless otherwise announced); the paper submission deadline for the current year is **Wednesday, February 21, 2018**. Invoices are available upon request from the VAS Office; requests must be made in time to meet the deadline.
- a. **Members** (students from Member Schools and Individual Members). **\$15 per student.**
 - Each Member School should submit a single check (single payment) for all of the entry fees received from the students from its school.
 - The parent/guardian of an Individual Member should submit a check for his/her child's Student Entry Fee.

- b. **Non-Members at time of VJAS Paper Submission on February 21, 2018.**
- **For schools that are not members:** School should submit \$60 School Membership Fee (includes \$10 late fee) plus \$15 Student Entry Fee for each student paper submitted. Must also submit a School Membership Application along with the School Entry Form.
 - **For individuals who are not members:** Parent/guardian should submit a total of \$27 (\$10 Individual Membership Fee per student plus \$2 late fee plus \$15 Student Entry Fee). Must also submit an Individual Membership Application along with the Individual Entry Form.
5. **Entry Forms.** Either the School Entry Form or the Individual Entry Form must be submitted with the Student Entry Fees and papers. These forms (spreadsheets) are used to generate the Program for the Research Symposium, so it is important that all of the information is accurate.

6. Summary

| | Membership & Fee: <i>January 16</i> | Paper Submission & Fee: <i>February 21</i> |
|-----------------------|---|---|
| | <i>Invoices for fees are available upon request from the VJAS Office.</i> | |
| School Membership | Head Sponsor submits <u>School Membership Application*</u> and \$50 Fee by January 15 to VJAS Office. (<i>Late fee = \$10.</i>) | Head Sponsor submits the following: <ol style="list-style-type: none"> 1. All papers for the school, 2. <u>School Entry Form,**</u> 3. \$15 Entry Fee per student, submitted as a single payment from school. |
| Individual Membership | Parent submits <u>Individual Membership Application*</u> and \$10 Fee by January 16 to VJAS Office. (<i>Late fee = \$2.</i>) | Parent submits the following: <ol style="list-style-type: none"> 1. Paper, 2. <u>Individual Entry Form,**</u> 3. \$15 Entry Fee. |
| Non-Member School | | School submits the following: <ol style="list-style-type: none"> 1. <u>School Membership Application.*</u> 2. \$60 School Membership Fee 3. Student Papers 4. <u>School Entry Form**</u> and, 5. \$15 Student Entry Fee for each student paper |
| Non-Member Individual | | Parent submits the following: <ol style="list-style-type: none"> 1. <u>Individual Membership Application.*</u> 2. \$12 Individual Membership Fee 3. Paper, 4. <u>Individual Entry Form**</u> and, 5. \$15 Student Entry Fee |

*Appendix B: School and Individual Membership Applications (download from website)

**Appendix C: School and Individual Entry Forms available from VAS Office at vasoffice@vacadsci.org)

III. CATEGORIES

The VJAS provides competition in scientific research for students in grades 7 through 12. In 2012, this competition was divided into separate categories for middle school students and high school students.

- It is very important to make sure that students are not only entered in the proper age-appropriate category, but also in the proper subject-appropriate category. Papers placed in an inappropriate category will be disqualified.
- Category codes are used to identify the categories and are placed on the top left corner of the Student Entry Form (page ONE) and the Readers and Judges Evaluation Forms (pages FOUR and FIVE).

A. MIDDLE SCHOOL CATEGORIES

- **For Grades 7 and 8** (Grades 9-12 are not eligible to enter these categories.)
 - **Category codes are two letters.** (All MS papers must have a two-letter category code.)
1. **ANIMAL & HUMAN SCIENCES (AH)** – The study of all animals and animal life (including humans), and the study of diagnosing, treating and preventing disease. This includes the studies of cells, cell processes and genetics as they pertain to animals (including humans). This also includes the study of the behavior of animals. It does not include the study of human behavior (see #5).
 2. **CHEMICAL SCIENCE (CS)** – The study of matter, its properties and the changes it undergoes.
 3. **ECOLOGY & EARTH SCIENCES (EE)** – The study of the interactions among living and/or non-living components of the environment or the study of the Earth including geology, oceanography, meteorology, and human impacts. This category does not include astronomy (see #7).
 4. **ENGINEERING & TECHNOLOGY (ET)** – The application of scientific, mathematical, and/or engineering principles to achieve a practical result that is of value to human beings and society such as the design, construction, and/or operation of physical, biological, environmental, or computer-based systems.
 5. **HUMAN BEHAVIOR (HB)** – The study of all aspects of learning and behavior of humans.
 6. **MATHEMATICS: PATTERNS & RELATIONSHIPS (MP)** – The use of graphical displays, descriptive statistics, and/or algebra to review, analyze, and draw conclusions from large volumes of data, which is available in databases or collected by the researcher; project can address various fields such as business, humanities, government, manufacturing, sports, psychology, and the sciences.

7. **PHYSICAL SCIENCE & ASTRONOMY (PA)** – The study of non-living matter and energy and their interaction, either on Earth or throughout the universe. This includes astronomy which is the study of the science of the solar system, stars, galaxies, other heavenly bodies, and space exploration (manned and unmanned). This category does not include chemical science (see #2).
8. **PLANT SCIENCES & MICROBIOLOGY (PM)** – The study of plants and plant life and the study of microorganisms. This includes the studies of cells, cellular processes and genetics as they pertain to plants or microorganisms.

B. HIGH SCHOOL CATEGORIES

- **For Grades 9, 10, 11 and 12** (Grades 7-8 are not eligible to enter these categories.)
 - **Category codes are three letters.** (All HS papers must have a three-letter category code.)
9. **BOTANY (BOT)** – The study of plants, plant cells, and plant genetics. This does not include the study of microorganisms, cellular processes, or biochemistry (see #15).
 10. **CHEMISTRY (CHM)** – The study of the composition, structure, properties, and reactions of matter, especially of atomic and molecular systems. This does not include biochemistry (see #15).
 11. **ENGINEERING (EGR)** – The application of scientific, mathematical, and engineering principles to the design, construction, and/or operation of efficient and economical physical, biological, environmental, or computer-based systems.
 12. **ENVIRONMENTAL & EARTH SCIENCE (ENV)** – The study of the biosphere, geosphere, hydrosphere, and atmosphere; this includes interactions within and/or among these components as well as the impact of humans. Archaeology and paleontology projects are included in this category. Astronomy projects are not included (see #16).
 13. **MATHEMATICS: THEORETICAL & MODELING (MTM)** - The study of problems in theoretical (abstract) mathematics or in applied mathematics (use of mathematical models to solve real-world problems).
 14. **MEDICINE & HEALTH (MDH)** – The study of the various sciences related to structure, function, and diseases of humans and laboratory animals.
 15. **MICROBIOLOGY & CELL BIOLOGY (MCB)** – The study of microorganisms and their genetics (bacteria, protozoans, algae, and fungi), cellular processes, and biochemistry.

- 16. PHYSICS & ASTRONOMY (PHY)** – The study of inanimate matter and energy relationships exclusive of chemical change. This category includes astronomy which is the study of the science of the solar system, stars, galaxies, and space exploration (manned and unmanned). This category does not include chemistry (see #10).
- 17. PSYCHOLOGY (PSY)** – The study of all aspects of human thought processes and behavior.
- 18. STATISTICAL ANALYSIS & INFERENCES (SAI)** – The use of descriptive and inferential statistics to draw conclusions from large volumes of data, which is collected by the researcher or available in large databases; project can use data from fields such as social studies, arts, health, sports, psychology, manufacturing and the various sciences.
- 19. ZOOLOGY (ZOO)** – The study of vertebrate or non-vertebrate animals, animal behavior, and animal genetics. This does not include the study of microorganisms, cellular processes or biochemistry (see #15). This category does not include human behavior (see #17).

IV. CONDUCTING THE RESEARCH

A. Ethics and Individuality of Work.

1. **Ethics.** Through the annual Research Symposium, the VJAS promotes scientific research at the highest ethical level. The work presented by students must be their own and must not include such things as plagiarism, fabrication of data, and presenting someone else's work as his/her own. Credit must always be given to information belonging to another researcher.
2. **Multiple Authored Projects.** The VJAS requires each participant to work independently unless engaged in a joint project with no more than three additional participants. If a multiple-authored paper is accepted for presentation, all authors must attend the Symposium and participate in the oral presentation.
3. **Sponsors and Mentors.** Teachers, sponsors, parents, faculty at colleges and universities, and industrial researchers, among others, may serve as advisors, consultants, or supervisors provided the student conducts and understands the research. The "Student Sponsor" at the student's school is the official advisor.
4. Any student who worked in a research facility or received significant help from a professional other than his/her teacher (Student Sponsor), must include a **Mentor and/or Research Facility Form**; see section V. F, with the research paper. This includes working in a laboratory of, or receiving significant help from, a parent or family friend.

B. Planning and Designing the Research

1. Early **planning** is important. A research plan/proposal of the anticipated project should be submitted to student sponsor (advisor) for review. Such review of the **problem to be studied** ultimately saves time, effort, and money and results in a better investigation.
2. When the problem to be studied has been identified, **researching** background information and the works of others facilitates focusing a general topic to a definite **hypothesis**.
3. Careful **research design** utilizing experimental controls, identification of variables, analysis of data, and creativity are considered fundamental to a successful research project.
4. A simple experiment using readily available materials in an ingenious fashion may indicate higher capabilities than a complex subject which is neither well designed nor understood.
 - a. On the other hand, certain research must be in compliance with designated regulations and a signed Certification Statement must be included when vertebrate animals, human subjects, recombinant DNA, cells and tissues, and pathogenic agents, toxic or controlled substances, etc. are involved in the research. (See

“Regulations and Certifications” in Section V, and the “Certification Statement” in Appendix C.)

C. Safety and Record Keeping

1. Appropriate **safety** guidelines must always be part of your research plan, followed carefully, and documented in your records and research paper.
2. Discuss your research plan with your **Student Sponsor** (advisor), and mentor, if applicable. After approval of the research plan and experimental design, the researcher may then proceed with experimentation.
3. A **written record** is an important part of every research investigation, including the safety precautions followed. Each aspect of the experimental design should be recorded, including all collected data, observations, and experimental notes.

D. Financial Support

Some financial support for research is available through the VJAS office. Funds are provided from the proceeds of the Phil Robinson Virginia Naturally 5K Run held in previous years. These monies will NOT cover travel expenses OR materials schools normally have. Upon completion of the research these materials become the property of the school. Grants usually do not exceed \$100.00. Each student applying for support must complete the Research Grant Application in Appendix D and submit it and any supporting information to the VJAS Director by **November 1**. Multiple grant applications from a given school should pool requests for supplies common to the research of these grant applications. For additional information, please refer to Appendix D – Guidelines for the Phil Robinson Research Grant Application.

Notification of awards and checks are sent directly to the sponsor within three weeks. When a student requests funds, it is a commitment to submit a paper, and attend and present at the Symposium if selected. If these conditions are not met, this is a violation of the fund and monies must be returned to the Phil Robinson Research Fund.

V. REGULATIONS AND CERTIFICATIONS FOR CERTAIN TYPES OF RESEARCH

Certain types of research require that special and designated regulations be followed. In these cases a “Certification Statement” must be signed by the student and the sponsor verifying that the regulations have been followed.

- When a student does research in any of these areas, **the regulations below must be followed**, and both the **student and sponsor must sign the certification statement verifying compliance**.
- The “**Certification Statement Form**” in **Appendix C** is the place where **both students and school sponsors sign**, in the appropriate sections. The signed form is then attached to paper.

A. VERTEBRATE ANIMAL EXPERIMENT REGULATIONS and STATEMENT OF CERTIFICATION

The basic aim of experiments involving vertebrate animals is to achieve an understanding of life’s processes. Experiments involving vertebrate animals must have clearly defined objectives requiring the use of animals to demonstrate a biological principle or answer scientific propositions. Protista and other invertebrates are preferable for most experiments involving animals. The wide variety of these animals and the feasibility of using large numbers make them especially suitable.

Federal, State, and VJAS regulations concerning animal research apply to **ALL** vertebrates under **ANY** conditions.

1. Animal experiments **must** be conducted with respect for life and an appreciation for humane considerations. To provide for the humane treatment of vertebrate animals, a qualified adult supervisor who has had training in the proper care of vertebrates **must** assume the primary responsibility for the conditions of any experiment that involves living vertebrates. If the school faculty includes no one with training in the proper care of vertebrates, the services of such a person **must** be obtained. **ALL** animals, whether laboratory, domestic, or wild must be maintained in a suitable environmental condition for that species.
2. No experiments may be undertaken that involves anesthetics, drugs, thermal procedures, organisms pathogenic to vertebrates, ionizing radiation, carcinogens, or surgical procedures other than venipuncture or hypodermic injection, **unless** the procedures are performed under the immediate supervision of a Qualified Scientist experienced in the field under investigation or a Designated Adult Supervisor in an institutional laboratory. In addition to the qualified scientist, a designated adult supervisor will be required when the research is not conducted in the qualified scientist’s laboratory. Note: This is different than the sponsor.

3. The comfort of the animal used in any experiment shall be a prime concern. No experiment using live vertebrate animals shall be attempted unless the animals have been obtained from a reliable source and the following conditions can be assured:
 - Continuous care, including weekends and vacation periods;
 - Appropriate, comfortable quarters;
 - Adequate food and water;
 - Humane treatment and gentle handling.
4. Research in nutritional deficiency, ingestion or inoculation of hazardous or reputedly toxic materials or drugs may proceed only to the point where symptoms of the deficiency or toxicity appear. Appropriate measures shall then be taken to correct the deficiency, toxicity, or drug effect, if such action is feasible, or the animal(s) shall be killed by a humane method by the animal care supervisor. Students are not to euthanize animals.
5. LD₃₀ and beyond experiments are unacceptable and will not be permitted. The LD₃₀ (lethal dose or death rate) will be calculated for the total experiment and for each subgroup in the experiment such as the control and various experimental groups. LD₃₀ in the total or any subgroup will not be permitted.
6. Research that is designed to kill vertebrates for any reason will not be permitted. Proper euthanasia for pathological analysis is the only exception to this rule and this is conducted by an animal care supervisor only. An animal care supervisor only must conduct this research.
7. To assure proper technique, surgical procedures on vertebrates shall only be done within academic, hospital, and clinical or institutional research facilities under direct adult supervision. This rule is intended specifically to prohibit such procedures at home.
8. The student shall not be allowed to perform sacrifice unless under the supervision and in the presence of the animal care supervisor, qualified scientist, and/or the designated adult supervisor. The only exception to this rule is an emergency, which would require a humane termination of life.
9. Each student who submits a research paper to the Junior Academy, and uses live vertebrates in that research is required to furnish the following certification with all copies of the paper, using the "Certification Statement" found in Appendix C:

"I certify that the use of live vertebrates in the experimentation and observations covered by this paper was in accordance with the rules for the use of live vertebrates contained in the latest edition of the VJAS handbook."

If this applies, both student and student sponsor must sign the appropriate certification.

USE THE "CERTIFICATION STATEMENT FORM" FOUND IN APPENDIX C

B. HUMAN SUBJECT RESEARCH REGULATIONS and STATEMENT OF CERTIFICATION

The decision to undertake research using human subjects should rest upon valid contribution to psychological science and to human welfare. The investigator must carry out the investigations with respect for the research subjects' dignity and welfare. Consent of subjects' participation **MUST** be obtained. If the subject is under 18, parental permission must be obtained. The following principles describe the investigator's ethical responsibilities:

1. If the study deviates from any ethical principle, the investigator must seek ethical advice or redesign the research to protect the rights of the participants.
2. The investigator is always responsible for the establishment and maintenance of acceptable ethical practice and for the ethical treatment of research participants by collaborators (all of whom, however, incur parallel obligations).
3. Prior to the commencement of the research and using language that is reasonably understandable to the participants, the investigator must inform all participants of the nature of the research and that they are free to participate or to decline or to withdraw from the research at any time. **Such informed consent must be appropriately documented on a written Consent Form (designed by the researcher) and must include:**
 - a. All negative or positive aspects of participation.
 - b. Answering of all questions posed by the participants.
 - c. If concealment or deception is an integral feature of the design and conduct of the research, this must be explained to the participants as early as is feasible. (The use of concealment or deception is only justified if no equally effective alternative procedures are available.)

The investigator must honor all promises and commitments included in the agreement.

Note: A sample of the Consent Form provided to participants and/or their parents must be included in the Appendix of the submitted VJAS Research Paper.

4. The investigator must protect participants from any present or future physical and mental discomfort, harm, and danger.
5. After the data are collected, the investigator must provide the participants with an explanation of the study and remove any misconceptions that may have arisen. Where scientific or humane values justify delaying or withholding information, the investigator acquires a special responsibility to assure that there are no damaging consequences for the participants.

6. Information obtained about the research participants during the course of an investigation is confidential. If others may obtain access to such information, this possibility, and plans for protecting confidentiality, must be explained to the participants.

NOTE: These guidelines were adapted from *Ethical Principles of Psychologists and Code of Conduct, 1995*.

When doing research involving only observations of behavior of human subjects in their unmodified environment and no information is obtained that identifies individuals, consent is not required.

7. Each student who submits a research paper to the Junior Academy, and who used human subjects in that research is required to furnish the following certification with all copies of the paper, using the “Certification Statement” found in Appendix C:

“I certify that the use of human subjects in the experimentation and observations covered by this paper was in accordance with the State of Virginia *Regulations of the Board of Education Regarding Research Involving Students* and the rules for the use of humans contained in latest edition of the VJAS Handbook.”

If this applies, both student and student sponsor must sign the appropriate certification.

USE THE “CERTIFICATION STATEMENT FORM” FOUND IN APPENDIX C

C. RECOMBINANT DNA RESEARCH REGULATIONS and STATEMENT OF CERTIFICATION

Recognizing both the risks and benefits inherent in recombinant DNA research, VJAS has adopted a set of rules to govern student research employing these techniques. All research must be carried out in accordance with the revised *NIH Guidelines for Research Involving Recombinant DNA Molecules (2011)*. To obtain a copy of this document, visit http://oba.od.nih.gov/oba/rac/guidelines/nih_guidelines.htm.

1. All research involving recombinant DNA technology must be carried out in accordance with the revised *NIH Guidelines for Research involving Recombinant DNA Molecules*.
2. Only research which is normally conducted in a microbiological laboratory without containment will be permitted and only when under the supervision of an appropriately Qualified Scientist. Research requiring containment is prohibited.

3. Each student who submits a research paper to the Junior Academy involving recombinant DNA is required to furnish the following certification with all copies of the paper, using the “Certification Statement” found in Appendix C:

“I certify that the use of recombinant DNA in the experimentation and observations covered by this paper was in accordance with the revised *NIH Guidelines for Research Involving Recombinant DNA Molecules* and the rules contained in the latest edition of the VJAS Handbook.”

If this applies, both student and student sponsor must sign the appropriate certification.

USE THE “CERTIFICATION STATEMENT FORM” FOUND IN APPENDIX C

D. CELL AND TISSUE RESEARCH REGULATIONS and STATEMENT OF CERTIFICATION

1. Tissue samples such as blood, blood products, teeth, cell cultures, or body fluids of human or vertebrate animals must be obtained from an institution or biomedical scientist. Plant tissue is excluded.
2. Human blood and blood products must be documented as free of AIDS and hepatitis prior to the student receiving the tissue.
3. Each student who submits a research paper to the Junior Academy which involves the use of cell or tissue research must furnish the following certification with all copies of the paper, using the “Certification Statement” found in Appendix C:

“I certify that the use of cell or tissue samples in the experimentation and observations covered by this paper was in accordance with the rules contained in the latest edition of the VJAS Handbook.”

If this applies, both student and student sponsor must sign the appropriate certification.

USE THE “CERTIFICATION STATEMENT FORM” FOUND IN APPENDIX C

E. PATHOGENIC AGENTS, TOXIC OR CONTROLLED SUBSTANCE RESEARCH REGULATIONS and STATEMENT OF CERTIFICATION

1. No research may be undertaken with pathogenic agents, toxic or controlled substances unless these procedures are performed under the direct supervision of a Qualified Scientist or Designated Adult Supervisor in an institutional laboratory. Agents obtained from nonregistered sources, such as public surfaces, food, soil, etc., are to be considered potentially pathogenic and fall under these guidelines. In addition to the qualified

scientist, a designated adult supervisor will be required when the research is not conducted in the qualified scientist's laboratory.

Please note, we automatically disqualify any projects pertaining to mold or mildew, even if an experiment is discarded at the first sight of mold growth.

2. Each student who submits a research paper to the Junior Academy and used pathogenic agents, toxic or controlled substances in that research is required to furnish the following certification with all copies of the paper, using the "Certification Statement" found in Appendix C:

"I certify that the use of pathogenic agents, toxic or controlled substances in the experimentation and observation covered by this paper was in accordance with the rules for pathogenic agents, toxic or controlled substances contained in latest edition of the VJAS Handbook."

If this applies, both student and student sponsor must sign the appropriate certification.

USE THE "CERTIFICATION STATEMENT FORM" FOUND IN APPENDIX C

F. MENTORED RESEARCH and/or RESEARCH CONDUCTED in a RESEARCH INSTITUTION, MENTOR and/or RESEARCH FACILITY FORM, and STATEMENT OF CERTIFICATION

1. The writer must give credit for special assistance received from scientists or other sources on the VJAS Mentor and/or Research Facility Form found in Appendix C. Please note that this may be a parent or close friend with expertise. This can include bench work.
2. Each student who submits a research paper to the Junior Academy and worked with a mentor and/or worked in a Research Facility is required to include the Mentor and/or Research Facility Form (completed and signed by mentor or research facility director) with all copies of the paper.

If this applies, the mentor or research facility director must complete and sign this form and provide it to the student for inclusion in the student's paper.

USE THE "MENTOR AND/OR RESEARCH FACILITY FORM" FOUND IN APPENDIX C

The "Mentor and/or Research Facility Form" follows the Judge's Evaluation Form.

3. Each student who submits a research paper to the Junior Academy and used a mentor and/or worked in a Research Facility is required to furnish the following certification with all copies of the paper, using the "Certification Statement" found in Appendix C:

“This is to certify that the student worked in a research facility and/or received significant help from a professional scientist/mentor other than the teacher serving as the Student Sponsor.”

If this applies, both student and student sponsor must sign the appropriate certification.

USE THE “CERTIFICATION STATEMENT FORM” FOUND IN APPENDIX C

VI. PREPARATION AND PRESENTATION OF PAPERS

A. WRITING THE PAPER

NOTE: Papers not following these guidelines will be disqualified.

1. LENGTH.

- a) Twelve page text limit. The text (Abstract, Introduction, Methods and Materials, Results, Discussion, Conclusion, and Literature Cited) is restricted to twelve (12) pages, double-spaced on one side of 8 1/2" by 11" (21.3 cm by 27.5 cm) paper. The results section includes summary data (charts/graphs and illustrations) and the analysis of the data. Sections of the paper should immediately follow one another rather than starting on a separate page. The one (single) side-printing requirement is because of the overwhelming preference of the screeners and judges reading the papers.
- b) Twenty page total limit. When additional raw data, charts/graphs, or illustrations are desired, they may be placed in appendices. The paper plus the appendices may not exceed twenty (20) pages.
- c) The twenty page total limit does not include the VJAS entry forms and any required Certification and Mentor and/or Research Facility Forms (Pages ONE, TWO, THREE, FOUR, FIVE, and/or SIX).

Note: Do NOT include a title page. The Student Entry Form will be used in its place.

2. FORMAT.

- a) Font. Use a word processor, 12 pt. font size (no smaller) in one of the following print fonts - Arial, Helvetica, Times New Roman, Courier, or Geneva. Others will not be accepted. Do not change font size or style in the body of the paper. Graphs and charts may be in different but legible format.
- b) Margins shall be not less than 1" (2.5 cm) on top, bottom, and left and right margins of all pages INCLUDING appendices. All copies must be dark enough to photocopy.
- c) Number the pages with the **Abstract as page 1**. The page numbers should be placed in the footer, and can be within the 1" margin.
- d) Headings (Abstract, Introduction, Methods and Materials, etc.) should be bolded and/or underlined.

3. LITERATURE CITATIONS. (Also see B. 6.)

- a) In-Text Citations. All references must be properly cited in the paper. Give author's last name and year in parentheses (Wagner, 1988) for in-text citations (use *et al.* if more than two authors) but do not use *et al.* in the Literature Cited part of paper (all authors names must be included). Footnotes are NOT used in scientific papers for citation.
- b) When information belongs to others, proper credit must be given to the author. Failure to do so is plagiarism. Students should be informed that if they copy from an author word for word without attempting to re-phrase sentences in their own words, they

must put the copied material in quotation marks or otherwise set it off from the rest of the text, such as by indenting and single spacing it. Even if the author is cited, any material taken word for word must be credited to the author by putting it in quotes. Plagiarism will result in disqualification.

4. **MECHANICS OF THE PAPER.** The paper should be concise and proper grammar, sentence structure, and punctuation should be used throughout the paper. **In most scientific disciplines papers have traditionally been written in third person but, more recently, first person has also been used. Results of the study should be written in past tense while accepted facts may be written in present tense. In contrast, papers in the areas of mathematics, statistics, and computer science are written in first person present tense.** Graphs and figures not done by computer should be appropriately labeled in black ink, suitable for publication. After the paper has been edited and rewritten by the student, it should be submitted to a science teacher for review and suggestions. In addition, the papers should be reviewed by an English teacher and/or consulting scientist.
5. **QUANTITY.** **Five (5)** clear copies of the paper [the original and four (4) copies] must be submitted to the VJAS for review. **Each copy of the paper must be printed single-sided. Papers that do not adhere to this requirement will be disqualified. Each copy must include form pages ONE (2018 Student Entry Form), FOUR (2018 Reader's Evaluation), and FIVE (2018 Judge's Evaluation) plus any other required forms such as the Certification Statement Form, Continuation Project Form, and/or VJAS Mentor and/or Research Facility Form. If other applicable forms are submitted, all forms must be in sequential order according to the form page numbers.** Identify the original copy by writing "ORIGINAL" in the middle of the top of the Student Entry Form in RED. Copies of the papers will NOT be returned so it is important that students retain a copy for their personal use. Students applying for special awards must submit a copy of the paper with each special award application.

Note. Do not submit papers that include the school's web address in the margins.

B. THE PAPER COMPONENTS (The following are the required headings, and should be **bolded and/or underlined, both of which are shown below. Number the pages beginning with the abstract as page 1.)**

1. **ABSTRACT.** The abstract consists of concise statements of the research objective, approach, key results, and conclusions. It must not exceed one (1) standard page, double-spaced. **Do not use citations in the abstract or refer to any other part of the paper. The twelve (12) allowable text pages begin with this page.**
2. **INTRODUCTION.** The introduction includes a brief review of current and related literature with an explanation of the writer's interest in the subject. Additionally, it should contain the problem, concise objectives, identification of variables, and the hypothesis.

3. **METHODS AND MATERIALS.** This section explains the equipment and supplies used, methods employed and safety guidelines followed in the research. The materials used should be incorporated in the description of the procedures rather than in list format. All procedures should be sufficiently detailed and clearly stated to allow duplication of the experiment. Standard techniques, appropriately referenced, may be included without providing details. Specialized techniques should be presented concisely. A description of equipment unique to the experiment or which was built specifically for use in this research should be included. The number of organisms (sample size), experimental replications, and/or type of statistical analysis should be included. Description of experimental design should be in text form. Chart form of experimental design is placed in the appendix. Pictures/photographs and/or diagrams relating to your procedure are encouraged and should be included here (or in the appendix).
4. **RESULTS.** This section contains only information obtained as a result of the investigation or experimentation. It consists of both data presentation and data analysis.
 - a. **Data Presentation.** Only summary data should be presented. (Raw data, if vital to the paper, should be placed in an appendix.) Summary data should consist of both:
 - i. Numerical data (charts or tables) and/or pictorial data (graphs, pictures, and/or photographs) which are appropriately titled and have the variables clearly labeled;
 - ii. Verbal synopsis (paragraphs) of findings with clear references to applicable charts, tables and/or graphs.
 - b. **Data Analysis.** The data presented should be evaluated for general trends and the degree of variability. Appropriate use of methods of analysis of these data should be presented and explained, such as measures of central tendency, measures of dispersion/variation and/or other statistical analysis.
5. **DISCUSSION AND CONCLUSIONS.** This section contains an interpretation of the results. Comparisons to other research should be made with appropriate literature citations. An evaluation of the success of the experiment, possible procedural improvements, and suggestions for future scientific studies may also be included. Logic and the application of laws, principles, and theories are used to draw conclusions. The conclusions should be clearly and concisely stated and the hypothesis either accepted or rejected.

6. **LITERATURE CITED.** This is **NOT** a bibliography. This section is a list of all books, publications, and communications from which significant materials were **cited** in the paper. **IF this is not done, then the paper will be disqualified.**

a. Reference Requirements.

- i. **Middle school** papers must include a **minimum of three peer-reviewed or scholarly** references.
- ii. **High school** papers must include a **minimum of five peer-reviewed or scholarly** references.
- iii. Each reference must be cited at least once in the paper.

b. Types of References.

- i. Peer-reviewed or Scholarly. These are references written for an audience of scholars and researchers in a particular field and are published in “scholarly” publications. Other terms commonly used to describe this type of journal are peer reviewed, academic, or refereed. Peer review is a process used to ensure the quality of articles. When an article is submitted to a peer-reviewed journal, the editor(s) send it out to experts/scholars in the field (i.e. the author’s peers) to review and critically evaluate the article on quality, importance, and appropriateness to the journal. Most peer-reviewed articles present primary, or new, research. The VJAS also encourages the use of secondary research, which it considers as “scholarly.” While it does not present new research it does provide a compilation or evaluation of previously presented material which can be very helpful to student researchers, particularly those doing research for the first time.

Examples include:

- Scientific articles summarizing research or data, such as in *Scientific American*, *Discover*, *Annual Review of Genetics*, or *Biological Reviews*,
- Encyclopedia entries and entries in most other Reference books,
- Textbooks.

Website sources can be peer-reviewed and scholarly.

- ii. Non-peer-reviewed (non-scholarly). Many website “sources” such as, magazine articles, are only judged/reviewed by the editor/writer of the source/magazine, who may not have any knowledge of the article's subject matter. Writers for popular publications are usually paid for their articles. The articles are also usually geared to a more general audience.

iii. Notes.

- If you are not sure whether an article is peer-reviewed or scholarly or not, please check with someone who might know or who could check on this, such as a librarian.
- Wikipedia references are unacceptable.

- For more information, see: http://www.linfo.org/peer_review.html, <http://www.library.tcu.edu/howto/primary.asp#scholarly>, <https://www.saintmarys.edu/library/how-do-i-decide-if-source-scholarly>.

c. Format and Style.

- i. The citations are to be listed (divided) into two sections: Peer-reviewed and non-peer-reviewed. See example below.
- ii. Middle school papers (grades 7-8) will be accepted in both MLA and APA citation formats. However, we will only accept APA citation format for high school papers (grades 9-12). Also see www.citationmachine.net.
- iii. The list is alphabetical by the last name of the first author of a citation.
- iv. Use single spacing within each listing and double space between the listings. See example below

d. Literature Cited is the last component of the paper (occurring on page 12 or before).

Examples of Literature Cited: (Note: separate sections and single/double spacing.)

Peer-reviewed and Scholarly references

McCaffrey, Cheryl A. and Raymond D. Dueser. 1990. Plant associations of the Virginia barrier islands. Va.J.Sci.41:282-299.

Spry, A. 1969. Metamorphic Textures. Pergamon Press, New York. 350pp.

Storrs, Carina. 2009. One for the Ages: Bristlecone Pines Break 4,650-Year Growth Record. <<http://www.scientificamerican.com/article.cfm?id=great-basin-bristlecone-pine-growth-rate-tree-line>> (24 November 2009).

Non-peer-reviewed references

Bristlecone Pine. 1986. < <http://www.woodmagazine.com/materials-guide/lumber/wood-species-1/bristlecone-pine/>> (February 1986).

7. **APPENDIX.** The appendix is for **supplementary** information and should include an example of any participant Consent Forms required for Human Subject Participation. Raw data too lengthy to be included in the results section of the text may be placed here only if absolutely necessary for understanding the paper. Remember that summary data should be in the “Results” section. All materials in this section must meet the same requirements as the text of the paper. **Experimental design chart format, if used, is to be placed here.**

C. ASSEMBLY OF THE PAPER COMPONENTS

The assembly of the paper must follow the sequence of the previous seven (7) items. **Attached to the front of EACH copy of the paper must be ALL required VJAS forms (Pages ONE, FOUR and FIVE) and any required certification forms.** These forms, in order, are the Student Entry Form, PAGE ONE (a complete student entry form must be submitted by each author of a multiple authored paper); the Certification Statement Form when applicable, PAGE TWO; the Continuation Project Form, PAGE THREE, the Reader's Evaluation Form, PAGE FOUR; the Judge's Evaluation Form, PAGE FIVE; and finally the VJAS Mentor and/or Research Facility Form when applicable, PAGE SIX. These forms are followed by the abstract (page one of the actual paper), and then the rest of the properly assembled paper. **(In the case of a multiple author paper use only one set of Reader's and Judge's Forms on each paper.) Each copy of the paper complete with all required forms must be firmly stapled and then all 5 copies must be rubber banded together** (preferably using a 7" x 1/8" rubber band).

NOTES: Do not include a Title Page. *The Student Entry Form serves as the Title Page and is the top page of the assembled paper. Also, it is not necessary to include the Certification Form, Continuation Project Form or Mentor Form if it is not required for your research. Do not include Acknowledgements.*

D. PAPER SUBMISSION

Preparation of Papers for Mailing or Delivery

1. Make four copies of the "original" paper and of **all** required forms (resulting in five copies of the paper and each form). Each copy of the paper along with a set of forms placed on top of the paper must be securely **stapled** at the top left corner.

Reminder: Each copy of the paper including all required forms must be printed **single-sided**. Papers that do not adhere to this requirement will be disqualified.

2. On the top of **each** paper and on the top of **each form**, place the following:
 - a. The abbreviation/code for the category written in the blank in the left upper corner. **ALL** copies must have this. Note: Middle school categories have a two-letter code and high school categories have a three-letter code.
 - b. The school number in large numbers in the space at the top, right side followed by
 - the letter "A" if the paper is submitted by a senior,
 - the letter "B" if the paper is submitted by an eighth grader.
3. The following information must be written on page 1 of the **original paper**: The word "ORIGINAL" written in the top, center in red. *Note: Be sure to make your copies BEFORE you mark "ORIGINAL" on the original copy.*

4. The **original and four (4) copies** must be put together **with the forms, in proper order, stapled securely to the paper** placing the original on top and a **rubber band** (preferably using a 7” x 1/8” rubber band) around the **five (5) copies**.
5. The papers then should be sorted by category before sending to VJAS.
6. **Do not** bind individual copies or the sets into folders, binders, or other containers from which they must be removed to process.
7. **Entry Forms** (These spreadsheets will be provided via email to all VJAS School Head Sponsors and to the parent/guardians of all VJAS Individual Members .)
 - a. **Member Schools - School Entry Form.** (See Appendix C). The **Head Sponsor** must fill this form out and list all of the entries for the school. Enclose one paper/hard copy with the papers. Email the file to the VAS Office at vasoffice@vacadsci.org. Complete directions are in Appendix C.
 - b. **Individual Members – Individual Entry Form.** (See Appendix C). The **Parent (or Guardian)** must fill this form out and provide the information required. Enclose one paper/hard copy with the paper. Email the file to the VAS Office at vasoffice@vacadsci.org. Complete directions are in Appendix C.
8. **Entry Fees.** The appropriate entry fee must be enclosed with the papers and entry form. Member schools should submit a single check (single payment) for all entry fees received from the students from its school. Invoices are available on request from the VAS Office.

Mailing and Delivering the Papers. (Do not request a signature.)

9. The VJAS Entry Form and Fees and **five (5) copies** of the research papers with all required forms attached to each copy must be received in the VAS Office, by **Wednesday, February 21, 2018**.
10. The School’s VJAS Head Sponsor should send **ALL papers** from a VJAS Member School in bulk. **ALL** papers from VJAS Individual Members should be sent by the student’s parent/guardian.
11. Papers should be hand delivered to the **Front Desk** at the **Science Museum of Virginia**, or sent by priority mail or express delivery.
12. Papers should **NEVER** be sent by media mail.

E. PAPER PROCESSING

- **Upon Arrival in Richmond.**

When the papers are received in Richmond, a group including the Director, staff, and Committee members separates the papers into the categories entered in the left hand corner of the paper and screens the papers in accordance with the **DISQUALIFICATION LIST located in the appendix**. After being screened, the original copy and one other copy of all papers are retained in the VAS Office. Only the “original” copy is screened. If a paper is disqualified, one copy is marked “DQ” (disqualified) and the reason properly indicated. This disqualified paper is returned at the Research Symposium in the Paper Return Room.

- **Processing and Screening**

Qualified (i.e., non-disqualified) papers are sent, by category, to the VJAS committee member or designee serving as a Reader Chair for that category for further processing. The **Reader Chair** transfers paper numbers to the Reader’s Evaluation Form, removes the Student Entry Forms and the Certification Forms and distributes the papers to the **Readers** with instructions. When papers have been returned to the Reader Chair, the Readers scores are averaged and ranked. The list of presenters is determined based upon the readers’ ranked scores and available spots to be filled in each category. Reader’s Evaluation Forms are removed from all papers and returned at the Research Symposium in the paper return room. The paper number is transferred to the Judge’s Evaluation Form of those papers selected for presentation at the Research Symposium and subsequently sent to the judges. (*Note that the Reader’s Forms are NOT sent to the judges.*)

- **Distribution.** In categories with more than one section, papers will be distributed into sections by alphabetical order of the presenter’s last name.

- **Judging.** The judges read the papers prior to the Symposium and evaluate the written paper marking the appropriate portion of the Judge’s Evaluation Form before the Research Symposium. The scoring of the oral presentation portion occurs at the Research Symposium. After all papers are presented, the judges complete their evaluations, rank their scores and select the winners. At the close of the presentation day the papers are returned to the Paper Return Room. (*Note. The judges do not see the Reader’s Evaluation Forms.*)

- **Returning Papers through the Paper Return Room.** The accepted papers, the previously removed Reader’s Evaluation Forms, and the disqualified papers are retrieved by the sponsors from the Paper Return Room after the awards presentation. If there are sponsors who cannot pick up their papers, arrangements must be made to have them picked up. The person picking up the papers will be asked to sign a form verifying the paper pick-up. All papers are to be picked up since there will not be the availability to mail them.

F. NOTIFICATION AND SYMPOSIUM PREPARATION

1. **Notification.** Sponsors of students who submit papers for presentation at the VJAS Research Symposium and students who have submitted independently may begin looking on our web site (www.vjas.org) for the **list of papers accepted for presentation** (usually early in April).
 - At this point and until the end of Symposium, we are not able to answer any questions about specific papers and why they were not accepted. We take great care in processing the papers submitted to the VJAS for our Research Symposium in May. During the receipt, screening and reading of papers and the preparation of the accepted lists, we check and double-check our work at each step with multiple people. Unfortunately, as in any such competition, we cannot accept all of the entries.
 - At the Symposium, we will be returning all of the Reader' Evaluation Forms, all presented papers with the Judge's Evaluation Forms and other relevant material.
2. **Symposium Information.** At this time information regarding the forthcoming Research Symposium will be made available through our web site (www.vjas.org):
 - a. Registration information.
 - b. Food and lodging information.
 - c. General Research Symposium information.
3. **Special Interest Awards.** Application is made by submitting a Special Interest Award form available from the VJAS Handbook, Appendix D - Special Forms.
4. **Scholarship Applications.** Application is made by submitting a Special Interest Award form available from the VJAS Handbook, Appendix D - Special Forms.
5. **Confirmation of Participation.** Sponsors should *confirm* the participation of all of their accepted students by email with the VAS office and notify the Office of any student(s) that cannot participate by **April 18, 2018**. (*Example: "all of our students will participate, except..."*) The names of the students who cannot participate will not be included in the final version of the program.

G. PRESENTATION OF THE PAPER

Overview. In the presentation of the paper, the presenter informs colleagues, judges, and other members of the scientific community of the research done. **The objectives should be stated, methodology outlined, results and data analysis presented, and conclusions detailed. Also, it is important to properly acknowledge help received.** The oral presentation should reflect only the student's original work. If additional work has been completed since the written paper was submitted, the judges should be alerted to such work during the course of the oral presentation. Also indicate whether this research is part of work done over more than one year and how it is different.

Presentation Guidelines. Presenters will be allowed a period of ten (10) minutes for their presentation. This is followed by a three (3) minute period of questioning by the judges and audience. Two (2) minutes are allowed between presentations for the next speaker to prepare.

Videotaping during presentations is not allowed by the participants (or parents, teacher sponsors, etc). Only an official VJAS media member may film during presentations for marketing and promotional purposes (the personnel can be identified by an official VJAS media tag/name badge).

By registering to attend the Virginia Junior Academy of Science (VJAS) symposium, you grant permission to VJAS to take and use your photo in VJAS marketing and promotional pieces for an indefinite period of time. Marketing and promotional pieces include, but are not limited to, printed brochures, reports, postcards, flyers, and materials, as well as online uses such as postings on the VJAS website, online newsletters, and e-mail blasts. VJAS shall own all rights, including copyrights in and to the photos. You also grant permission to VJAS to use, encode, digitize, transmit, and display the video/audio of your session, presentation, or workshop given at the VJAS conference, singularly or in conjunction with other recordings, as well as to use your name, photograph, biographic information, and ancillary material in connection with such video/audio for commercial, promotional, advertising, and other business purposes. VJAS directors, officers, and meeting volunteers are released from any liability arising out of the use of your name, video, photographs, and/or organization name and location.

Presentation Format.

- **Technology.** The presentation should be supported by appropriate visual aids, such as a PowerPoint or some LCD/Computer generated presentation material, on a CD or flash drive. While the host school provides the technology to display these, it is important to check the website for specific notes on what formats are required. In the unusual case of equipment failure, there should be a back-up plan, such as a hard copy of the presentation or laptop computer. If there are additions to the paper since its submission, these should be included in the presentation. **Ancillary materials are not permitted and students will be disqualified.**
- **Content.** The presentation should cover all of the sections of the paper: Introduction, Methods and Materials, Results: Data Presentation and Data Analysis, Discussion and Conclusion. These should be used in structuring the PowerPoint Presentation.

Preparation. Adequate preparation for the oral presentation of the student research paper is highly recommended. This preparation should include teachers, other students, and related professionals acting as a critiquing audience for oral practices of the presentation. The student presenter should be critiqued regarding general delivery, speaking voice, clarity, mannerisms, and the use of visual aids as well as on scientific accuracy. An outline of the presentation on note cards may be desirable to help avoid information omission and to stay within the time limitations. You ARE NOT to read your paper. You are to speak so all in the room may hear and understand your words. You should use a pointer when pointing to images on the screen, chalkboard, or overhead projector. Do not use laser.

Dress. Students presenting papers should be properly dressed (business casual) for the oral presentation.

The entire oral presentation must be done in person by all of the authors. **All multiple authors must attend the meeting and present.** If there are extenuating circumstances, such as injury or death in the family, affecting the attendance of one member of a team project, the proposal for having the remaining team present should be submitted before the meeting begins. Please send request no later than one week to VJAS Director prior to the beginning of the meeting.

H. ABSTRACT SUBMISSION AND PUBLICATION

- **The VJAS publishes *Proceedings* for each Research Symposium.** These are posted online on the VJAS website for download. The abstracts of all presentations will be published as well as a list of the award winners and the entire papers of VJAS Honors Awards winners.
- **Abstract Submission.** Each person (or group of multiple authors) that presents a paper at the Virginia Junior Academy of Science Research Symposium is required to submit an abstract of his/her paper for publication in the *VJAS Proceedings*. Abstract submissions will now be done electronically. Discs will no longer be accepted at the symposium – **specific instructions along for Abstract Submission Form will be made available on the VJAS website after April 1.**

VII. AWARDS

A. SECTION AWARDS

Description: Certificates and T-shirts are given for the best student research papers presented in competition at the annual VJAS meeting. The winners will be awarded T-shirts based on the place won, as follows:

| | |
|-------------------|-----------------|
| First Place | Blue T-shirts |
| Second Place | Red T-shirts |
| Third Place | Yellow T-shirts |
| Honorable Mention | Green T-shirts |

First, Second, Third, and up to three (3) Honorable Mention Places may be given in each of the following categories.

Categories:

Middle School (Grades 7 and 8)

Animal & Human Sciences
Chemical Science
Ecology & Earth Sciences
Engineering & Technology
Human Behavior
Mathematics: Patterns &
Relationships
Physical Science & Astronomy
Plant Science & Microbiology

High School (Grades 9 – 12)

Botany
Chemistry
Engineering
Environmental & Earth Science
Mathematics: Theoretical &
Modeling
Medicine & Health
Microbiology & Cell Biology
Physics & Astronomy
Psychology
Statistical Analysis & Inferences
Zoology

When there are multiple sections in a category, awards will be given in each category section.

Procedures: Papers chosen for presentation will be judged in the sections of each category by the section judges. These judges will evaluate both the research paper and the oral presentation of the research at the research symposium for final selection of First, Second, Third, and Honorable Mention winners. **The decision of these judges is final. Please note that students/teachers/sponsors/parents or anyone else may not contact the judges prior, during, and after the Research Symposium or disqualification will occur.**

Criteria: The criteria for these awards appear as the points considered by the judges on the Judge's Evaluation Form.

B. BEST OF CATEGORY AWARDS

These awards are given to the best project in certain categories. If there are multiple sections, the VJAS Chair and/or the VJAS Director has the right to decide whether a) the two (or more) section judges meet together and decide one final project for the Best of Category Award OR b) receive all first place papers from sections and let the Special Awards to grant the Special Awards Committee/Judges decide the winning project for the Best of Category Award.

VAS BOTANY AWARD

Description: A certificate and a cash award are given by the Botany Section of the VAS for outstanding research presented in a Botany section of the VJAS.

Procedure: The section judges of Botany will select the best Botany paper to receive this award.

RODNEY C. BERRY CHEMISTRY AWARD

Description: A certificate and a cash award are given for outstanding research in the field of chemistry.

Procedure: The section judges of Chemistry will select the best Chemistry paper to receive this award.

WILLIAM W. BERRY ENGINEERING AWARD

Description: A certificate and a savings bond are given to the best paper in the field of Engineering. Dominion Virginia Power established the award in honor of retired Virginia Power Chairman, W. W. Berry.

Procedure: The section judges of Engineering will select the best Engineering paper to receive this award.

ANN M. HANCOCK CELLULAR BIOLOGY AWARD

Description: A certificate and a cash award are given to the best paper in cellular biology. This award is given in memory of Ann Hancock who retired from the Hanover County Public Schools.

Procedure: The section judges of Microbiology and Cell Biology will select the best Cellular Biology paper to receive this award.

MATHEMATICS AWARD

Description: A certificate and a cash award are given for outstanding research in mathematics.

Procedure: The section judges of Mathematics: Theoretical & Modeling will select the best Mathematics paper to receive this award.

STATISTICS AWARD

Description: A certificate and a cash award are given for outstanding research in statistics.

Procedure: The section judges of Statistical Analysis & Inferences will select the best Statistics paper to receive this award.

VABE ZOOLOGY AWARD

Description: A certificate and cash award is presented for outstanding research in Zoology. The Virginia Association of Biological Educators support this award.

Procedure: The section judges of Zoology will select the best Zoology paper to receive this award.

C. SPECIAL INTEREST AWARDS

Special Interest Awards must be applied for in advance of the VJAS Research Symposium. Only papers accepted for presentation are eligible, so students must wait until notified of acceptance before applying. **Application is made by submitting a Special Interest Award form available from the VJAS Handbook, Appendix D - Special Forms.** Follow the instructions on the form and those below carefully.

Note: If no qualified papers meeting the standards of the award(s) are received, it (they) will not be given.

Directions for submitting Special Interest Award applications:

- The Award Form, your research paper and all required certifications must be sent to the VJAS Director to the address indicated on the form.
- Send by **Priority mail**.
- They must be **received by April 30**.
- A separate form is required for each Special Interest Award application.
- Please indicate on the lower left hand side of the outside of the envelope, the name of the award for which the application is being made.

A student must present his/her paper at the meeting to be eligible for these Special Interest Awards. There is no appeals process for these decisions.

ROSCOE HUGHES GENETICS AWARD

Description: A certificate and a cash award are given to an outstanding paper in the field of Genetics. It is given in memory of Dr. Roscoe D. Hughes who formed the “Department of

Biology and Genetics” in 1938 in the Medical College of Virginia’s School of Pharmacy, later to become part of VCU. In the 1960’s the Virginia Academy of Sciences, led by Dr. Hughes, vigorously lobbied the Governor and General Assembly to finally establish the Science Museum of Virginia.

Procedure: Selection of the winning papers is made by the Roscoe Hughes Genetics Award judges based on the written paper.

CANCER RESEARCH AWARDS

Description: Certificates and cash awards are given by the American Cancer Society for outstanding research relevant to cancer studies based on the written paper

Procedure: Selection of the winning papers is made by the Cancer Research Award judges based on the written paper

DR. AND MRS. PRESTON H. LEAKE AWARD IN APPLIED CHEMISTRY

Description: A certificate and a cash award are given to the paper that shows in some way how chemicals, chemical principles, or chemistry have been used, or might be used to enhance or even save lives - ways chemistry may be used to provide better things for better living.

Procedure: Selection of the winning paper is made by the Dr. and Mrs. Preston H. Leake Award in Applied Chemistry judges based on the written paper.

SMITH SHADOMY INFECTIOUS DISEASES AWARD

Description: A certificate and a cash award are given to commemorate Dr. Smith Shadomy by the Virginia Chapter of the National Foundation for Infectious Diseases to the paper that evidences outstanding research in the field of infectious diseases.

Procedure: Selection of the winning paper is made by the Infectious Disease Award judges based on the written paper.

SPELEOLOGICAL SOCIETY AWARD

Description: A certificate and a cash award are given by the Richmond Area Speleological Society for outstanding research addressing karst or topics related to speleology (bats, caves, carbonate geology, paleoenvironments, limestone fossils, sinkholes, etc.).

Procedure: Selection of the winning paper is made by the Speleology Society Award judges based on the written paper.

VIRGINIA MUSEUM OF NATURAL HISTORY (VMNH) AWARD

Description: Presented by VMNH in recognition of significant contribution in the study and interpretation of Virginia's natural heritage.

Procedures: Selection of the winning paper is made by a representative of the Friends of the VMNH based on the written paper.

VIRGINIA SEA GRANT COLLEGE PROGRAM AWARD

Description: A certificate and a cash award are given by the Virginia Sea Grant College Program for outstanding marine or coastal research.

Procedure: Selection of the winning paper is made by the Virginia Sea Grant College Program Award judges based on the written paper.

GAMMA SIGMA DELTA AWARD

Virginia Tech Chapter of the Honor Society of Agriculture

Description: A certificate and cash award is given to a student in recognition of excellence in research dealing with the application of new technologies and/or concepts in agriculture, forestry, or veterinary medicine.

Procedure: Selection of the winning paper is made by the Gamma Sigma Delta Award judges based on the written paper.

D. VJAS HONOR AWARDS

These are the highest awards that the Virginia Junior Academy of Science presents. A special committee of judges convene to read the papers to discuss and score.

1. Awards for the Best Paper Presentations.

CATESBY JONES AWARD, Grade 12

Description: The best research paper by an individual senior (12th grade) is given a certificate and cash award of \$1,000.

Procedure: First Place Senior papers of all sections will be considered for this award. A special panel of judges evaluates the papers.

Criteria:

1. Significant scientific contribution, basic or applied.
2. Originality of thought.
3. Independent student effort.

DOROTHY KNOWLTON AWARD

Description: A certificate and a cash award are given to the Middle School student presenting the best paper in the life and earth sciences. This is given in honor of Dorothy Knowlton, the former Science Coordinator of Arlington County, who was instrumental in advancing experimental design within the science curriculum.

Procedures: A special panel of judges selects the winner from among the first place papers in the Animal and Human Sciences, Ecology and Earth Science, Human Behavior, and Plant Science and Microbiology middle school sections.

JOYCE K. PETERSON AWARD

Description: A certificate and a cash award are given to the Middle School student presenting the best paper in the physical sciences.

Procedure: A special panel of judges selects the winner from among the first place papers in the Chemical Science, Engineering & Technology and Physical Science & Astronomy middle school sections.

VAS BEST RESEARCH PAPERS, Grades 9-11

Description: The top four research papers by individual students in grades 9-11 are given a certificate and an invitation to attend the annual meeting of the American Junior Academy of Science (AJAS) and to present at a poster session. Two winners and two alternates are selected. Normally, the VJAS/VAS pays most of the winning students' expenses. Depending on the cost of the trip and the VJAS/VAS's financial status, the VJAS/VAS will attempt to cover the alternates' expenses as well. If costs or other circumstances are prohibitive, winners will receive cash awards. Students chosen to represent the Commonwealth of Virginia are required to attend all activities and house with the students.

Seventh graders and 12th grade seniors are not eligible for this award. A student can win this award only two (2) times.

Procedure: A special panel of judges selects the winners and alternates from among the first place winners in all sections.

ERTLE THOMPSON MEMORIAL ENDOWMENT AWARD

Description: The Ertle Thompson Memorial Endowment Award is established to honor Dr. Ertle Thompson. These awards will be presented annually to the winners of the VAS Best Research Awards and to support attendance at the annual meeting of the American

Association for the Advancement of Science and the American Junior Academy of Science.

Procedure: Students who receive the VAS Best Research Awards will also receive this award.

2. Award for Student's School Sponsor

DR. R. DEAN DECKER HONORARIUM AWARD

Description: The Dr. R. Dean Decker Honorarium award of \$500 each will go to the teacher/sponsor of the two top student winners of the VAS Best Research Award. The monies can be used at the discretion of the recipients as long as it is related to the attendance at the AJAS meeting. Guidelines and procedures for the recipients will follow later.

Procedure: The teacher/sponsor of students who receive the VAS Best Research Awards will receive this award.

3. Award for Outstanding Service by Students

VIRGINIA ACADEMY OF SCIENCE HONORARY MEMBERSHIP

Description: A certificate and one year's membership, without cost, in the Virginia Academy of Science including a subscription to the *Virginia Journal of Science* will be awarded.

Procedure: A club sponsor, any VJAS Committee member, or a member of the VAS may make Nominations. Nominations and supporting materials are to be sent to the VJAS Director prior to the Research Symposium. The award is based upon one or more of the following criteria. The VJAS Committee selects the winner(s).

Criteria:

1. Serving as an officer of the VJAS.
2. Working in a commendable manner for a local or state VJAS activity.
3. Dedication to being a good VJAS member as exhibited by assistance in such activities at the Research Symposium as registration, balloting, and program planning.

4. Awards for Outstanding Service by Adults

E.C.L. MILLER (VAS) SCIENCE TEACHER OF THE YEAR AWARD

Description: The ECL Miller Teacher of the Year receives a trip to the next Virginia Association of Science Teachers (VAST) Conference/Professional Development Institute with paid expenses for registration and hotel. It is awarded to a teacher or sponsor of grades 7-12.

Procedure: Students, science clubs, colleagues, parents, and administrators may make Nominations. The nominator is responsible for submitting all the required documents, which must be sent by priority mail to the VJAS Director so that it is received by the **April 30** deadline. A stamped envelope, addressed to the nominator, will be used to notify the nominator that the VJAS Director has received the materials. All submitted documents will be confidential and will become the property of the VJAS. Nominations may be made for only the year in which the award is given. Nominations may be resubmitted in succeeding years by sending a letter of request for resubmission after the symposium to the VJAS Director. No teacher may win the award more than once in a three-year period. All nominees are asked to attend the VJAS Committee Meeting before the General Session; see Program for exact time and location (also found on web site www.vjas.org). A subcommittee of the VJAS Committee will evaluate the nominees and determine the winner.

Documents to be submitted for the E.C.L Miller (VAS) Teacher of the Year award:

1. Cover letter from a nominator including reasons for the nomination.
2. Letters of support:
 - a. Two (2) from students.
 - b. Two (2) from colleagues.
 - c. One (1) from a school administrator. This letter **MUST** include authorization for the winner to attend the VAST PDI (conference).
3. The candidate's resume.
4. Stamped envelope addressed to the nominator.

Send the above documents to:

Susan Booth, Director, 2212 Executive Dr., Hampton, VA 23666

VJAS DISTINGUISHED SERVICE AWARD

Description: A special certificate is presented to a person for exceptionally outstanding service to the VJAS and public recognition is given at the Research Symposium. This is the most prestigious award that the VJAS gives.

Procedure: Selection of the person or persons to receive this award is the responsibility of the VJAS Committee and recommendations may be made at any of the regular committee

meetings. One or more may be chosen in any year but it is expected that the giving of this award will not be an annual event.

Criteria: No set criteria are described. The award is given only when time of service devoted to the VJAS and its aims is deemed exceptionally outstanding and distinguished.

VAS AWARD FOR DEDICATED SERVICE TO VJAS

Description: Highest service award of the Junior Academy. This award recognizes past VJAS officer or VJAS member who has continued to provide support as volunteer to the Junior Academy even after completion of high school.

Procedure: Selection of the person or persons to receive this award is the responsibility of the VJAS Committee and recommendations may be made at any of the regular committee meetings. One or more may be chosen in any year but it is expected that the giving of this award will not be an annual event.

Criteria: No set criteria are described. The award is given only when recognition is deserved through outstanding and distinguished support.

VIII. SCHOLARSHIPS

Scholarships must be applied for in advance of the VJAS Research Symposium. Only students whose papers are accepted for presentation are eligible for scholarships.

Only students who present their paper at the meeting may be awarded a scholarship.

Application is made by submitting the application form from the VJAS Handbook, Appendix D – SPECIAL FORMS:

- Scholarship Application: Bethel High School and Virginia Colleges & Universities or
- Application for Scholarships provided by the Virginia Environmental Endowment (VEE)

Follow the instructions on the form exactly. Application forms and accompanying information must be sent by **Priority Mail** to the VJAS Director at the address indicated on the application form by **April 30**. Please indicate on the lower left hand side of the outside of the envelope the name of the scholarship for which application is being made. **DO NOT** send Scholarship Applications until after paper acceptances have been received, but feel free to prepare them early due to time constraints.

A. **SPECIAL SCHOLARSHIPS.** Special panels of judges at the VJAS Research Symposium determine these scholarships. There is no appeals process for these decisions.

SCHOLARSHIPS PROVIDED BY THE VIRGINIA ENVIRONMENTAL ENDOWMENT

The Frances and Sydney Lewis Environmental Science Scholarship

This \$5,000 four-year college scholarship may be awarded to the student whose project presented at the VJAS Research Symposium evidences the most significant contribution in the field of Environmental Science. The purpose of the award is to stimulate interest in environmental sciences and to enable promising young students to pursue undergraduate studies in a related field. The Virginia Environmental Endowment (VEE) and the VJAS offer this scholarship in tribute to the outstanding and generous services of VEE Directors Emeriti, Frances A. Lewis and Sydney Lewis.

The Henry W. MacKenzie, Jr. Environmental Scholarship

This \$5,000 four-year college scholarship may be awarded to the student whose project presented at the VJAS Research Symposium evidences the most significant contribution in the field of Environmental Science dealing with the James River Basin and Chesapeake Bay. The purpose of the award is to stimulate interest in environmental sciences and to enable promising young students to pursue undergraduate studies in a related field. The Virginia Environmental Endowment (VEE) and the VJAS offer this scholarship in tribute to the outstanding and generous services of Judge Henry W. MacKenzie, Jr. one of the founding directors of VEE who has a great interest in the James River and the Chesapeake Bay.

Procedure: The application process is accomplished by submitting an Application for Scholarships provided by the Virginia Environmental Endowment (VEE) form along with the required information listed below.

- In order of preference, the colleges and universities to which you will apply.
- In what field of study do you plan to concentrate?
- Describe your career plans.
- List your awards and honors.
- Describe your school activities and explain your role.
- Describe your community activities and explain your role.
- An unofficial copy of your transcript.
- Two (2) letters of support, from current and past science teachers.
- Five (5) additional copies of your research paper.

A special panel of judges will consider the application to include the presentation, forms and research papers of the selected winner(s) at the VJAS annual competition. The scholarship recipients will be announced at the awards presentation. VJAS will notify VEE in June of the recipients. VEE will then notify the recipients of the process for funding. Scholarship funds will be paid by the Virginia Environmental Endowment (VEE) to the recipients' selected college or university in installments over the four-year academic period. The funds may be used for tuition, fees, books, and room and board. VEE and the college or university will establish payment schedules, and the student will be responsible for submitting progress reports and grades to VEE in order to maintain support.

Criteria: The recipient must be a Virginia resident enrolled in an accredited public or private high school (grades 9-12) in Virginia at the time of the VJAS Research Symposium. The recipient must present an outstanding paper on a topic related to environmental science at the VJAS annual competition. **(Only papers dealing with the James River and Chesapeake Bay are eligible for the MacKenzie Scholarship.)** The recipient must demonstrate leadership abilities, academic achievement, and well-rounded participation in school and community affairs. The recipient must demonstrate an active interest in environmental sciences and intend to enroll as a full-time student in an accredited college or university in the United States.

Notes: Only single authors may apply. A single application packet may be used to apply for both the Lewis and MacKenzie scholarships. **A previous winner of a VEE scholarship is no longer eligible for another VEE scholarship.** VEE scholarships will not be awarded to a student who will be attending a private institution whose primary purpose is to provide religious or theological training.

BETHEL HIGH SCHOOL SCHOLARSHIP

Description: This scholarship of \$1000 is awarded to a student (9-12 grades and not a team project) who has produced an outstanding written paper and is a first place winner. The money is paid to the student's college or university in two equal payments during the first year. The student must give VAS proof of enrollment for the first semester and evidence of satisfactory progress from the first semester for the second semester installment. This scholarship comes from the interest earned from a \$10,000 endowment contributed to the VJAS by the students of Bethel High School, Hampton, Virginia.

Procedure: A special panel of judges will select the winner from among the first place papers of all high school students who applied for the award.

B. SCHOLARSHIPS FROM COLLEGES AND UNIVERSITIES OF VIRGINIA

The college or university determines the recipients of these college scholarships. VJAS is only the connector between students and the institutions once students are involved with the VJAS. The VJAS will send to the university those student names and contact information who are first place winners to be considered by the university. The university will contact the student directly if the student meets the qualifications. Students should not contact any institution directly.

OLD DOMINION UNIVERSITY SCHOLARSHIP

Description: This scholarship of \$2,000 will be awarded to a **senior** each year who has written an outstanding research paper and who plans to attend Old Dominion University. It is not transferable to any other college or university. The money will be made available at the beginning of the year. If no recipient is selected in the following year or years, the current awardee may apply for renewal each year if a 3.0 average has been maintained and a full course load is carried.

Procedure: The VJAS part of the application process is accomplished by submitting the Special Interest Awards and Scholarship Application Form. A special panel of judges will select a winning paper. The student's name, address, telephone number, school, and paper topic will be submitted to Old Dominion University where the final selection for granting the scholarship will be made.

RANDOLPH COLLEGE SCHOLARSHIP

Description: This scholarship of \$2,000/year for four years will be awarded each year to a rising sophomore or junior who has written an outstanding research paper and who plans to attend Randolph College. It is not transferable to any other college or university. The money will be made available at the beginning of the first year and at the beginning of each subsequent year that the recipient maintains a 3.0 average for the preceding year.

Procedure: The VJAS part of the application process is accomplished by submitting the Special Interest Awards and Scholarship Application Form. A special panel of judges will select a winning paper and two alternates. The student's name, address, telephone number, school, and paper topic will be submitted to Randolph-Macon Woman's College where the final selection for granting the scholarship will be made.

RANDOLPH-MACON COLLEGE SCHOLARSHIP

Description: This scholarship of \$2,000 per year for four years will be awarded each year to a **junior or senior** who has written an outstanding research paper and who plans to attend Randolph-Macon College. It is not transferable to any other college or university. The money will be made available at the beginning of the first year and at the beginning of each subsequent year that the recipient maintains a 3.0 average for the preceding year.

Procedure: The VJAS part of the application process is accomplished by submitting the Special Interest Awards and Scholarship Application Form. A special panel of judges will select a winning paper and two alternates from any category. The student's name, address, telephone number, school, and paper topic will be submitted to Randolph-Macon College where the final selection will be made subject to the acceptance of the awardee by the college.

VIRGINIA COMMONWEALTH UNIVERSITY SCHOLARSHIP

Description: This scholarship of \$2,000 will be awarded to a **senior** each year who has written an outstanding research paper and who plans to attend Virginia Commonwealth University. It is not transferable to any other college or university. The money will be made available at the beginning of the first college year.

Procedure: The VJAS part of the application process is accomplished by submitting the Special Interest Awards and Scholarship Application Form. A special panel of judges will select a winning paper. The student's name, address, telephone number, school, and paper topic will be submitted to Virginia Commonwealth University where final selection for granting the scholarship will be made.

HAMPTON UNIVERSITY SCHOLARSHIP

Description: This scholarship of \$2,000 per year for four years will be awarded each year to a **senior** who has written an outstanding research paper and who plans to attend (and meets acceptance criteria of) Hampton University. It is not transferable to any other college or university. The money will be credited to the student's account at the beginning of the first year and at the beginning of each subsequent year that the recipient maintains a 3.0 average for the preceding year.

Procedure: The VJAS part of the application process is accomplished by submitting the Special Interest Awards and Scholarship Application Form. A special panel of judges will select a winning paper and two alternates. The student's name, address, telephone number, school, and paper topic will be submitted to Hampton University through Dr. Chutima Boonthum, Department of Computer Science where the final decision will be made. The Office of the Vice President of Administrative Affairs will notify the recipient.

IX. OPERATION OF THE VJAS

A. VJAS COMMITTEE

The operation of the VJAS is the responsibility the VJAS Director and a volunteer Committee appointed by the VAS who works within the framework of its policies. The Junior Academy officers represent students on the committee. Committee members are assigned to perform the numerous tasks of the VJAS. These assignments may occur in areas of the Fundraising, Handbook Revisions, Reader Chairs, Section Chairs, *VJAS Voice* (*VJAS Newsletter*), Graduate Records, *The Proceedings*, Publicity, Local Arrangements, Special Meeting Functions, AJAS Arrangements, and subcommittee appointments.

The Committee meets during the Research Symposium and the fourth Saturdays of January and June (unless otherwise notified) to conduct the business of the VJAS.

B. RESEARCH SYMPOSIUM AND ANNUAL MEETING

The goal of the VJAS is to promote progress in the field of scientific research among secondary school students. The Research Symposium and Annual Meeting of the VJAS, held in conjunction with that of the VAS, emphasize this goal. It is here that several facets of the VJAS program culminate. Among them are the presentation of outstanding individual research projects, the announcement of state winners in VJAS competitions, guest speakers, and the annual business session at which VJAS student officers for the coming year are elected.

The focus of the Research Symposium is the presentation of accepted research papers submitted by VJAS members. During this time the Annual Meeting is held to elect student officers.

Anyone interested in the activities of the VJAS may attend the Research Symposium and the Annual Meeting. There is a non-reimbursable registration fee for the meeting that is announced on the VJAS website prior to the Research Symposium. Everyone attending is expected to register. Preregistration is strongly encouraged.

The VJAS Committee will handle publicity of general interest, but each school is encouraged to arrange for its own local publicity concerning the Research Symposium. During the Research Symposium sponsors are responsible for the conduct and behavior of the students under their supervision. The VJAS incurs NO liabilities for any person attending this Research Symposium.

C. JUNIOR ACADEMY OFFICERS

Student Officers. The elected offices of the VJAS filled by high school students are President, Vice-President, Secretary, Editor-in-Chief and Communication Liaisons. These officers, selected from and by the statewide membership of the VJAS, work with the VJAS Committee.

Officer Sponsors. Each **candidate for office** is required to have a **sponsor**. This position as a “state officer” is a great opportunity for the student officers, and it is the responsibility of the “officer sponsor” to advise and encourage them. **Officer sponsors, therefore, are invited to serve a one-year membership on the VJAS Committee, which meets on the fourth Saturdays in June and January (unless otherwise notified). It is also the sponsor’s responsibility to provide transportation for the officers to and from the meetings and to participate in the work of the Committee by attending Committee meetings and supporting the activities of the officers. If this does not occur then the student officer will have to resign their position.**

1. Duties of Officers

The **President** is charged with presiding at the Annual Meeting and helping on various subcommittees. The President submits an article(s) for the VAS newsletter, *The Virginia Scientists*, assisted by the sponsor of the school in which the President has membership.

The **Vice-President** works with the President and on subcommittees. The Vice-President should be prepared to fulfill the duties of the President should the President be unable to perform the duties of the office.

The **Secretary** records minutes of the VJAS Committee meetings and the Annual Meeting and submits them in writing to the VJAS Director and the VJAS Committee.

The **Editor-in-Chief** is responsible for the compilation of the *VJAS Voice*. This includes contacting the appropriate persons, assembling articles and pictures, and editing the VJAS voice. The Editor-in-Chief may choose to contact other committee members or sponsors for opinions, interviews, or help.

The **Student Communication Liaisons** shall act as representatives of the school divisions included in their region. Their primary role is to relay meeting proceedings and distribute the Voice to VJAS sponsors and attendees in their region. However, the job of educating the populace falls upon the Communication Liaisons as well. They are expected to advertise the VJAS in their designated region. They must, using whatever medium they choose- be it flyers, public appearance, etc. - inform schools of the VJAS policies, positions, and opportunities.

The **Regional Directors** represent the 8 Superintendent’s regions. These students act to represent their student stakeholders and assist in recruiting new members and participants.

2. Qualifications for Office

A candidate for President, Vice-President, Secretary or Editor-in-Chief must meet the following qualifications at the time of election:

- a. Be a member in good standing of the VJAS by having attended Committee meetings.
- b. Have submitted a research paper for competition at the Research Symposium either for the current year or a past year.
- c. Be able to attend VJAS Committee meetings (summer and winter), and Research Symposium.

3. Applications for Office and Campaigning

Each year a school may nominate one student for any of these offices and at no time will there be more than one officer from the same school, unless there are no other nominations. Nominations are made without regard to sex, race, color, or creed.

All candidates for office in the VJAS must complete the “Application for Junior Officers.” It must be typed or printed in black ink and returned to the VJAS Director by April 30. The VJAS Secretary will make ballots.

The application must have the signatures of the candidate, officer sponsor and principal; unsigned applications are not acceptable. The student must have officer sponsor approval and support and principal support.

All candidates and their officer sponsors must attend the VJAS Committee Meeting before the General Session. Candidates will deliver their speeches and have the opportunity to meet with the presiding VJAS officers to learn more about each position. Failure to be present at the Committee Meeting will result in the removal of the candidate from the ballot. **Candidates should be dressed in business casual attire at ALL times.**

Candidates will attend the General Sessions with their school. At the appropriate time, candidates for each office will be called on stage. There will be **NO** floor nominations or nominating speeches at the General Session. The presiding officers will introduce each candidate. Each candidate will then have two (2) minutes to address the General Session.

There is **NO** formal campaigning, including posters, demonstrations, etc., during the Research Symposium or at the Annual Meeting.

4. Elections

Each dues-paying school in attendance will have one vote for each office. Ballots will be distributed to sponsors before the Jeffers Lecture and collected following the conclusion

of that General Session. Any ballots received after this time will not be tallied. Results of the election will be announced at the close of the Research Symposium.

D. VJAS PUBLICATIONS

The *VJAS Proceedings* is an annual publication of the VJAS edited by members of the VJAS Committee. The *VJAS Proceedings* are published to present a permanent record of the activities at the Research Symposium and Annual Meeting of the VJAS. As of 2012, the *VJAS Proceedings* will be distributed online. The *Proceedings* consist of:

- Meeting Information
- VJAS Committee Members and Officers
- The list of all award winners
- The abstracts of all presenters
- The complete papers of the winners of the “Best Paper Presentations”

The *VJAS Handbook* is a booklet with a dual purpose. Primarily, it is a promotional publication of the VJAS designed to present the aims and activities of this organization to secondary schools interested in affiliating with the VJAS. Secondly, the *Handbook* serves to describe the operations of the VJAS, the procedure for electing VJAS officers, guidelines for conducting research investigations and writing the report thereof, and procedures to participate in the awards competition. The *VJAS Handbook*, with the *Appendix* posted separately, can be found on the Academy web site at www.vjas.org.

E. GENERAL POLICY AND RULES

Your stay at the Research Symposium is too short for any part of your time to be wasted. Your schedule is concentrated and arranged in a period of three tightly structured days. The staff depends on your complete cooperation to make this intensive and complicated operation run smoothly.

The VJAS is successful because of the spirit of enthusiasm and commitment that prevails. You are there because you want to be there and the sponsors are there because they like being involved in a dynamic and exciting program of scientific study. Courtesy and punctuality are essential, as is ready and cheerful compliance with regulations, which are necessary to guarantee an optimum learning environment for each of the students in the Research Symposium.

No discipline problems are expected but it is important that our rules be clearly understood. The VJAS has no desire to make moral judgments or to dictate proper conduct for an individual’s normal daily life. During the time students participate in the program, however, the VJAS expects an acceptance on the part of the students, their parents, and their schools of the rules and policies of the VJAS.

1. All students must be chaperoned by their registered sponsors at all times.
2. All sponsors are responsible for their participants.
3. Each participant should carry their own personal medical information on them at all times.
4. All sponsors and participants should have a phone tree to contact each other in case of an emergency
5. Drugs and Alcohol: The use or possession of intoxicants of any kind is strictly forbidden at all times regardless of the student's age.
6. Curfews: Curfews are imposed and must be followed.
7. Attendance: You have a full time commitment to the VJAS programs and are required to attend all scheduled activities. No loitering or distractions are allowed. Permission from your sponsors is required for your absence from a scheduled activity.
8. Conform to the principles, practices, and procedures outlined in host school rules and regulations.
9. Show self-respect and respect for others. Stealing or possession of stolen property, physical attack, and trespassing, or insulting or abusive language is not tolerated by the VJAS and result in expulsion from the Research Symposium.
10. Refrain from intentional damage or defacing of host institution property. Schools are responsible for any damage to University property or items misplaced, such as keys and linens.
11. Cultivate a harmonious relationship between the VJAS and the host institution. Use your influence to prevent acts of vandalism that lead to the destruction of host institution property.
12. Display good sportsmanship when participating in or attending any VJAS activities.
13. Follow any rules and guidelines imposed by the student's sponsors and/or school.

Behavior considered inconsistent with these rules or any actions inconsistent with standards of the VJAS result in the student being excluded from participation in VJAS activities. No part of any fee will be reimbursed if a student is sent home for disciplinary reasons.

NOTE: VJAS assumes no liability for students and sponsors and held harmless.

