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The most prestigious undergraduate scholarship in the natural sciences, mathematics, and engineering in America.

Hits and Misses in Goldwater Applications 2026 Scholarship Competition

Kerry Karukstis

Goldwater Foundation Consultant and Reviewer

Ray and Mary Ingwersen Professor of Chemistry Emeritus Harvey Mudd College

Babs Wise

Goldwater Foundation Consultant

Retired, Director of Nationally Competitive Scholarships, Duke University

Important Roles for the CR

Choose	Advise	Recruit	Help	Look
Choose students you/your committee believe fit the criteria of the Goldwater Scholarship	Advise the student on application content	If you are not a scientist, recruit a science person to review the research essay and the career path proposed	Help the student learn to manage the recommendation process	Look for the hits and misses in the application—help the student achieve more hits than misses through • Editing • Getting help from recommenders • Addressing in your CR statement

Advice to the student approaching the application

Think of the application as a story…

Who are you?

Why is a research career a slam dunk?

How will you get there?

Recommenders should add credence to your story.

Include your research mentor (who can also help you polish your research essay)

A teacher in a science oriented/preferably research class (not your French instructor)

Someone from a summer research experience, another teacher, a former research mentor....

Don't make your reviewer work too hard

Remember that your college is different from others your reviewer needs context

Tell them what they want to know: Why? How? Record?

The sections of the application that we will discuss include:

- The Opening Statement on Career Aspirations

- The Detailed Career Narrative

- The Research Project Summary (not the Research Essay)

- The Recognitions / Activities / Accomplishments Section

- The Academic Record (Current and Future Courses) and Transcript Sections

Opening Statements on Career Aspirations

In one or two sentences, describe your career goals and professional aspirations.

- **Advanced Degree Goal**
- **Intended Research Area**
- **Possible Career location**

- State succinctly but as clearly/precisely as possible

- Remember that the career statement is the first section read by reviewers – an opportunity to excite the reader!

MISS

Very generic opening career statements.

Ph.D. in Astrobiology. Conduct research in Astrobiology. Teach at a university level.

To use a Chemistry Ph.D. for high-level research in chemistry or other materials sciences.

Ph.D. in Environmental Science. Study the effects of climate change on the environment.

Student Narrative Statements

*In one or two sentences, describe your career goals and professional aspirations.**

Ph.D. in Immunology and M.D. with a specialty in Oncology. Research the immune evasion of cancer to develop and implement innovative treatments for various diseases and teach at the university level.

*In one or two sentences, describe your career goals and professional aspirations.**

PhD in Marine Ecology. Conduct research in a marine conservation ecology context and work at the Smithsonian Environmental Research Center (SERC).

*In one or two sentences, describe your career goals and professional aspirations.**

Ph.D. in Planetary Geoscience or Geophysics to conduct research and teach at University level. I am interested in using geophysical techniques to study behavior and composition of other planets.

*In one or two sentences, describe your career goals and professional aspirations.**

Ph.D. in Chemistry. Conduct research on developing new reaction methodologies using bifunctional photocatalysts and teach at the university level.

Detailed Narrative Statement on Career Goals

What are your career goals and professional aspirations? Indicate which area(s) of mathematics, science or engineering you are considering pursuing in your research career and specify how your current academic program and your overall educational plans will assist you in achieving your career goals and professional aspirations.

To address the latter point:
- Describe the connection between your major (and any minors) and your intended research field
- Indicate the COURSES both in and outside of your major that you will take to prepare for advanced study in your chosen discipline

HIT

Career Goal: Ph.D. in **Computer Science**. Conduct **research in Artificial intelligence/machine learning**, and teach at the university level

In the Detailed Career Narrative, the applicant mentions the following:

- Undergraduate studies in **Computer Science** provided a well-rounded knowledge of the discipline
- Also pursuing **minors in Philosophy and Psychology**

Indicates how these minors contribute to research preparation

- Study of philosophy has developed critical thinking skills, ability to ask relevant questions and structure logical arguments, allowed student to delve into the philosophical aspects of AI, explore ideas about the nature of intelligence and the feasibility of creating intelligent machines.
- Psychology has provided insights into how the human brain functions in real-world scenarios and enabled student to develop innovative approaches for training AI systems.

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HIT

Career Goal: Ph.D. in Applied Mathematics. Conduct research on the math describing the emergence of macroscopic structures from interactions of constituent elements in complex and chaotic systems.

In the Detailed Career Narrative, the applicant mentions the following:

- Majoring in **Mathematics and Physics**
- **Courses** taken in **analysis, non-linear dynamics, and modern algebra** that offer insight into the formalism which is fundamental to contemporary work in the modeling of complex systems.
- **Courses** taken in physics such as **quantum mechanics, electromagnetism, and thermal physics** are helping to develop a physical intuition which links abstract mathematics to real-world phenomena and generates insight into how solutions to problems may be discovered.

HIT **Career Goal**: Ph.D. in Medicinal Chemistry . Conduct research in the pharmaceutical industry studying the biochemical interactions of molecules that help with the symptoms and treatment of Alzheimer's disease.

In the Detailed Career Narrative, the applicant mentions the following:

- Seeking better treatment for Alzheimer's disease from the experience of his grandmother where current medication on the market lessened symptoms to a small degree
- Chemistry major with research experience in the synthesis and characterization of organic molecules to focus on the methodologies involved in the construction of novel molecules
- Pharmacy minor with a focus on cellular biology to understand the interaction of drugs with the human body
- Identified graduate schools with programs in medical research and preparation for industry
- Desires to work at one of three pharmaceutical companies with considerable Alzheimer's research

Research Project Summary

Proj #	Project Name	Start Date	End Date	Publica-tions	Presen-tations
1					
2					
3					
4					
5					

- Don't feel compelled to fill the table with 5 projects.

- Don't divide a single project into multiple short-term entries just to fill the list.

- Be sure to include a **letter of reference from at least one of the research mentors in the project list,** particularly from the mentor of the project described in the research essay.

- If research participation has been limited (especially for transfer students, veterans, etc.), a brief explanation in the application would be useful to the reviewer.

- Double-check dates and participation hours. Reviewers often notice odd data and might not spend the time to clarify the issues.

HITS

Research Projects and Skills / Research Essay

RESEARCH PROJECT SUMMARY:

Example #1

Proj #	Project Name	Start Date	End Date	Publica-tions	Presen-tations
1	Constraining Bulk Density ██████████ ████████	08/2022	Present **01/2024**	2	2

RESEARCH PROJECT SUMMARY: **Listed in Chronological Order**

Example #2

Proj #	Project Name	Start Date	End Date	Publica-tions	Presen-tations
1	Disease Ecology Course-Based Research Experience (CRE)	01/2022	05/2022	0	0
2	████████████ REU Internship Program	06/2023	08/2023	0	2
3	ArcGIS Pro Course Project	08/2023	12/2023	0	0
4	Plant Ecology Course Research Project	09/2023	11/2023	0	0
5	Plant Ecology Independent Course Research Project	11/2023	12/2023	0	0

MISS

Don't double-count research activities by dividing the research project into smaller parts or stages

- Only 2 overall projects denoted by * and *
- 3 presentations, not 5
- No submitted or published manuscripts

RESEARCH PROJECT SUMMARY:

Proj #	Project Name	Start Date	End Date	Publica-tions	Presen-tations
1	The Importance of Identifying Invalid Data in Psychological Assessment Research	01/2023	05/2023	0	1
2	The Impact of Invalid Responding on Item Endorsement Rates in a Forensic Inpatie	04/2023	Present **01/2024**	0	1
3	Examining the Overreporting Scales of the MMPI-2-RF at Detecting Feigning in a S	05/2023	Present	0	1
4	Manuscript – The Impact of Invalid Responding on Item Endorsement Rates in a Fore	08/2023	Present	0	1
5	Manuscript – Examining the Overreporting Scales of the MMPI-2-RF at Detecting Fei	11/2023	Present	0	1

Presentations #2 and #4 are the same.

Presentations #3 and #5 are the same.

No manuscript resulted from these activities!

Detailed Description of Research Project Involvement

For Each Project: Dates, Time Involvement, Research Mentor and Institution, Access to Project, Research Description, Skills Developed, Presentations, Publications

RESEARCH PROJECT 1:

Starting Month/Year	Ending Month/Year	Ongoing? Yes/No

Average Hours/Week Academic Year	Average Hours/Week Summer

- Double-check dates and participation hours. Reviewers often notice odd/erroneous data and might not spend the time to clarify the issues.

MISS

Reviewer Observation: Projects #2 and #3 appear to be concurrent summer projects with an unusually high workload.

RESEARCH PROJECT 2: *Character Tables*

Starting Month/Year	Ending Month/Year	Ongoing? Yes/No
06/2023		Yes

Average Hours/Week Academic Year	Average Hours/Week Summer
2	45

RESEARCH PROJECT 3: *Spectral Graph Theory*

Starting Month/Year	Ending Month/Year	Ongoing? Yes/No
06/2023		Yes

Average Hours/Week Academic Year	Average Hours/Week Summer
0.5	40

Further Examination by the Reviewer Uncovered the Student's Error:
- Date of presentation for Project #2 is listed as January 2023
- Project #2 likely started on 6/2022

Missed Opportunity: Student failed to demonstrate that he participated in summer research for two different summers – a consistent and higher level of experience than just a single summer.

MISS While reading a particular application, a reviewer noted the following:

Observation #1 from the student's transcript:
- The applicant typically enrolled in 16-20 credit hours per quarter.
- In the winter 2023 quarter the student enrolled in only 9 credit hours.
- No explanation was provided.

Observation #2 from the list of research projects:
- The student listed two projects for the winter 2023 quarter. One involved 20 hrs/wk, the other 10 hrs/wk. The total time spent on research was unusually high.

Missed Opportunity:
- The student should have mentioned that his summer 2023 courses (and his advanced placement) afforded him the opportunity to take the lighter winter 2023 course load to **engage in two research projects exceptionally aligned with his/her career goals**.

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MISS

Application Submitted by a Junior Transfer Student

RESEARCH PROJECT 1:

Starting Month/Year	Ending Month/Year	Ongoing? Yes/No
10/2023	12/2023	No

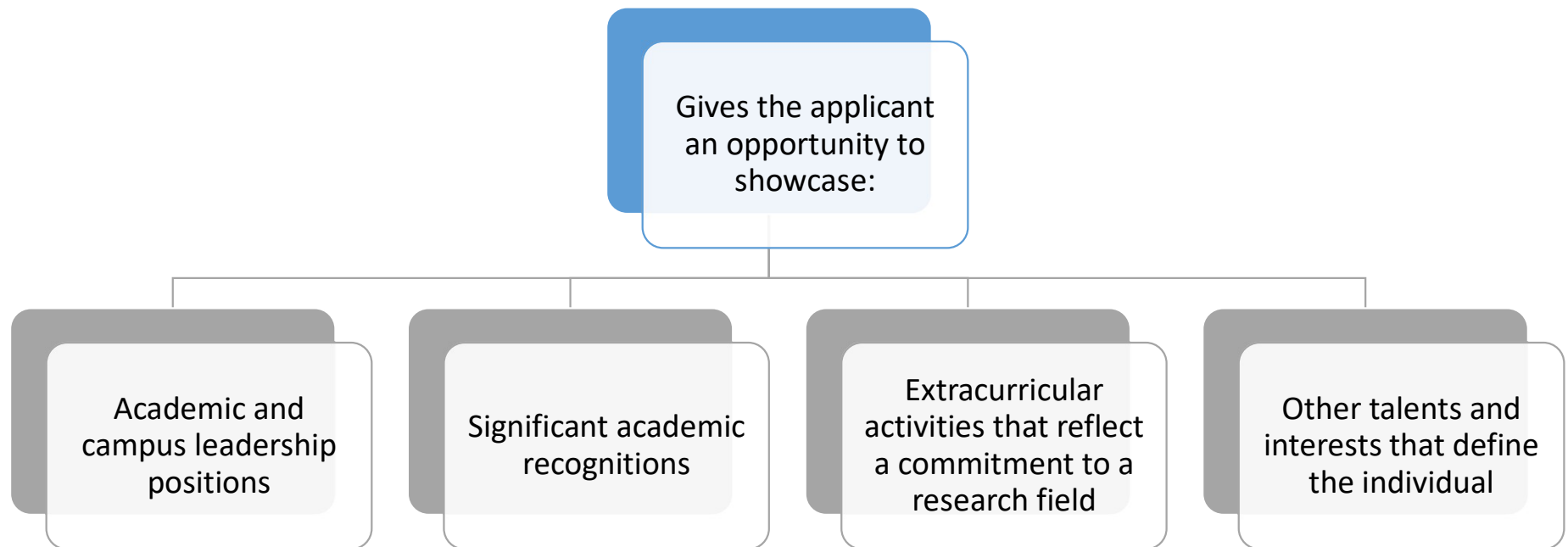| Average Hours/Week Academic Year	Average Hours/Week Summer
9	n/a

Situation: One course research project of 3 months involving 9 hours per week. No publications or presentations. No other projects reported.

Reviewer Observation #1: Faculty member who taught the course with the research project requirement did not submit a recommendation letter.
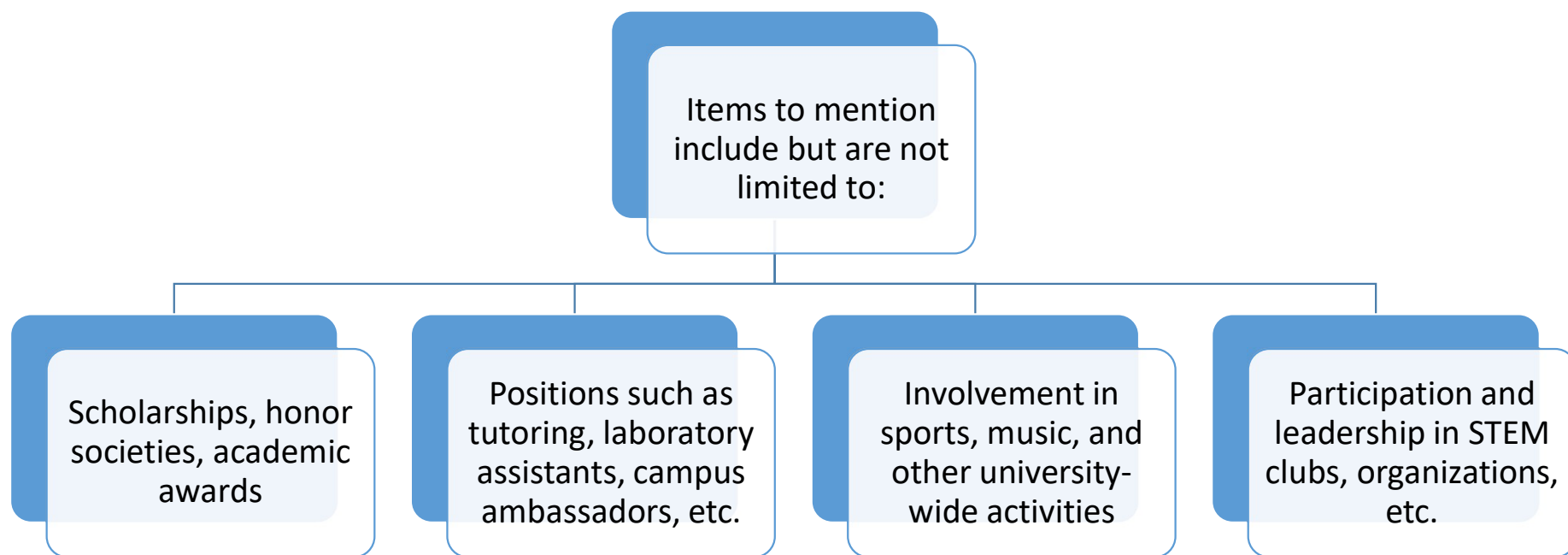
Reviewer Observation #2: Applicant is a transfer student, a reasonable situation to limit research participation.

Missed Opportunity: Applicant should have discussed the mitigating circumstances that limited research participation. The applicant should also provide information to convince the reviewer of the applicant's commitment to research. **Don't make the reviewer "read between the lines".**

Recognitions / Activities / Accomplishments Section

Gives the applicant an opportunity to showcase:

- Academic and campus leadership positions
- Significant academic recognitions
- Extracurricular activities that reflect a commitment to a research field
- Other talents and interests that define the individual

Recognitions / Activities / Accomplishments Section

Items to mention include but are not limited to:

- Scholarships, honor societies, academic awards
- Positions such as tutoring, laboratory assistants, campus ambassadors, etc.
- Involvement in sports, music, and other university-wide activities
- Participation and leadership in STEM clubs, organizations, etc.

HITS

Most applicants will have a similar academic recognition.

Details provided on this competitiveness of this leadership seminar.

Unique academic leadership position.

Recognitions/Activities/Accomplishments

AWARDS, HONORS AND SCHOLARSHIPS *(May list up to 5):*

Recognition	Honor's List for each semester		
Description	A student earns Honors List recognition for achieving a 3.7 or better grade point average. *I received this each semester that I have been in college.		
Year	2021	Type	College/University
Recognition	Member of ▮▮▮▮ Leadership Seminar		
Description	I was chosen from over 130 F&M sophomore applicants for a year-long seminar and learned strengths-based leadership, effective communication, navigating conflict, and goal-setting		
Year	2022	Type	College/University

ACTIVITIES AND ACCOMPLISHMENTS *(e.g. Clubs, Student Government, Music or Art Activities, Community Activities, Sports Activities, etc. May list up to 5):*

Activity/Accomplishment	Founder and president
Organization	Learn to Be at ▮▮▮▮
Scope of Activity	National
Role/Involvement	I founded the Learn to Be ▮▮▮▮ Chapter with the mission to provide free online tutoring sessions to students in under-resourced communities. We accumulated over 500 service hours and 130 members since founded in 2022.
Leadership Position	Founder (President)
Length of Involvement	More than one academic year

Some Memorable Activities and Accomplishments

University bee keeper

__th Fastest Rubik Cube Solver in a nationwide competition

Hiked the full length (2192+ miles) of the Appalachian Trail in 5.5 months

University Bake-Off Champion

University Talent Show Champion – Accordion Playing

Campus volunteer for the campus feral cat community

Eagle Scout

Numerous NCAA Division I, II, III Athletes

Champion Bowler

MISS | **Use of acronyms without explanation, particularly in the Awards, Honors, and Scholarships section of the application**

Student Entry	Definition Not Provided	How the Application is Strengthened by this Activity
CCEL Scholar	**Center for Community-Engaged Learning**	Reinforced the student's research interest
SLAC Community Service Award	**Student Leadership Award**	Demonstration of campus leadership
President of LEAF	**L_____ Environmental Awareness Foundation**	Reinforced the student's research interest

Academic Record (Current and Future Courses) and Transcript Sections

These sections should demonstrate that the applicant exhibits the **depth-range-breadth of knowledge expected of a researcher.** The earlier narrative statement should also convey this information.

The student's **academic performance** should suggest that the student has the **ability necessary to pursue a research career**.

HIT

Life Science major specializing in Genomics

- Broad range of biology courses
- Transcript & expanded course list indicate math, chemistry, physics, and computer science courses

COURSES:

For students with more FUTURE 'In major' and 'Outside major' courses than there are available slots (6/category), the students were asked to list the six most advanced courses they would be taking in each category, listing the courses that they believe are the most important to their research career goals.

In Major Current Course 1	Genetics (Undergraduate)
In Major Current Course 2	Undergraduate Research (Undergraduate)
In Major Current Course 3	Genome Dynamics (Undergraduate)
In Major Current Course 4	Physiological Psychology (elective) (Undergraduate)
In Major Current Course 5	Introductory Physics II (elective) (Undergraduate)
In Major Current Course 6	
In Major Future Course 1	Human Physiology (Undergraduate)
In Major Future Course 2	Human Anatomy (Undergraduate)
In Major Future Course 3	Quantitative Biology Laboratory (Undergraduate)
In Major Future Course 4	Functional Genomics (Undergraduate)
In Major Future Course 5	Microbiology (Undergraduate)
In Major Future Course 6	Design and Analysis of Biological Experiments (Undergraduate)
Outside of Major Course 1	Basic Statistics for Engineering and Science using R Programming (Undergraduate)
Outside of Major Course 2	Elementary Computer Programming (Undergraduate)
Outside of Major Course 3	
Outside of Major Course 4	
Outside of Major Course 5	
Outside of Major Course 6	

MISS

Student's Major: Psychology   Minor: Statistics
Area of Specialization: Quantitative

No explanation as to why Constitution History and American Ethnic Literature and Culture are part of the Psychology major

COURSES:

For students with more FUTURE 'In major' and 'Outside major' courses than there are available slots (6/category), the students were asked to list the six most advanced courses they would be taking in each category, listing the courses that they believe are the most important to their research career goals.

In Major	Current Course 1	Independent Research (Undergraduate)	**Indicate**
In Major	Current Course 2	Undergraduate Research III (Undergraduate)	**department**
In Major	Current Course 3	Data Simulation and Analysis (Undergraduate)	
In Major	Current Course 4	~~Constitution History (Undergraduate)~~	
In Major	Current Course 5	~~American Ethnic Literature and Culture (Undergraduate)~~	
In Major	Current Course 6		

One statistics course indicated on transcript; none in future course list

Optional Student Statement

This should not be considered optional---

- One more chance to bring yourself off the paper
- Both negative and positive statements are important.

Optional Student Statement: describe any socioeconomic impacts encountered that influenced an applicant's education – *either positively or negatively*

Limited resources that have adversely impacted the student's education

Mention any challenges overcome or any personal sacrifices made that impacted your education and/or ability to focus on research

- periodic spans of time being homeless, perhaps disrupting one's education
- leaving a foreign country to come to the US; adjusting to a new culture and language
- working several jobs to pay for college thereby limiting time for research
- overcoming a personal illness or caring for an ill family member
- etc.

Assets that have positively affected a student's education

Recognize the opportunities that you might have had to advance your coursework and/or interest in research because of:

- your high school/college choice
- your family's finances, STEM careers, and/or support for your interests
- early research opportunities
- opportunity to take AP courses or college-level courses before attending college/university, enabling you to take more advanced courses or pursue more than one major
- ability to pursue research in the summers without having to find a part-time or full-time job, helping you to more clearly identify your research interest
- opportunities your college/university has provided enabling you to flourish in your education and/or advance your research interests

Before the CR Submits
[Note this requires a campus deadline well before the national one].

Once again look for "Misses" or Holes

- Low grades in major courses

- Not showcasing importance of their research in the field

- Not indicating their contribution to their research ("I" statements)

- Coursework doesn't support ambitions or

- They don't say HOW coursework supports their ambitions

- Statements that ask the reviewer to guess at what they are trying to say

Before the CR Submits
[Note this requires a campus deadline well before the national one].

How can the CR reasonably address misses?

- Have the student submit multiple drafts before early January

- Have the student re-write their optional essay or other sections

- Ask a recommender to speak specifically to the issue

- Include mention in the CR's statement

Please contact us if we can help!

KERRY KARUKSTIS:

KARUKSTIS@G.HMC.EDU

BABS WISE:

BABSWISE@GMAIL.COM