

Application Summary

Competition Details

Competition Title:	2020 Faculty Award for Academic Outreach
Category:	Institutional Awards - CTL
Award Cycle:	2020
Submission Deadline:	03/02/2020 at 11:59 PM

Application Information

Submitted By:	Sandra Maffey
Application ID:	4352
Application Title:	Cassie Mitchell Nomination, Faculty Outreach
Date Submitted:	03/02/2020 at 9:26 AM

Personal Details

Applicant First Name:	Susan
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Primary School or Department

Biomedical Engineering - COE

Primary Appointment Title:	Wallace H. Coulter Chair, BME
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Application Details

Proposal Title

Cassie Mitchell Nomination, Faculty Outreach

Cassie S. Mitchell, Ph.D.
Faculty Award for Academic Outreach

February 28, 2020

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February 27, 2020

Awards Selection Committee
Center for Teaching and Learning
The Georgia Institute of Technology

Re: Nomination of Cassie Mitchell for the *Faculty Award for Academic Outreach*

Dear Awards Selection Committee:

On behalf of the BME Awards Committee I wish to nominate and strongly recommend, **Dr. Cassie Mitchell**, for the *Faculty Award for Academic Outreach*. Dr. Mitchell, a tenure-track assistant professor in Biomedical Engineering who has made educational and community outreach a significant thrust as part of her service efforts. Dr. Mitchell goes above and beyond to use her research and educational expertise to enrich the community, from elementary to high school students, patient advocacy and support groups for which her labs specializes in research, and professional mentoring for the disabled. Dr. Mitchell has literally hundreds of hours of community service, a meaningful feat for any professor but especially for a junior assistant professor. Dr. Mitchell is the premier example of a professor passionately engaged in educational outreach that makes the world a better place.

K-12 Outreach: Dr. Mitchell's research lab has an officially advertised high school research internship program that hosts 5-7 high school students per semester, including 41 in the past 3-years. As part of her internship program, Dr. Mitchell also serves at the Fulton County Public Schools Talented and Gifted program site advisor for GT to assist in setting up student internships. In 2019, 8 of the 14 hosted high school interns presented posters at local scientific conferences including BMES and the GT Healthcare Symposium. Dr. Mitchell also personally presented at 7 different elementary and public schools in 2019 doing motivational speaking, education outreach to encourage STEM, and assisting in the integration of students with physical disabilities.

Community Education Outreach: In 2018-present, Dr. Mitchell partnered with the local Alzheimer's Association where she has presented research at lay community member meetings, ALZ board meetings, helped to fundraise, and led a large team at the ALZ Walk to End Alzheimer's. In fact, Dr. Mitchell's lab was one of the highest fundraising groups for the ALZ Walk. Additionally, Dr. Mitchell presented at 8 different ALS Association community and patient support groups across four states where she used her expertise and lab's research as a platform to educate, inspire, and bring together the ALS community (approximately 230 patients). Dr. Mitchell, who spoke multiple times at an ALS support group in Oklahoma City, encouraged all 22 patients [18 who since died] to donate post-mortem brain & spinal cord tissue for ALS research. Families have written multiple notes about donation planning gave their loved ones' peace.

Diversity Outreach: Mitchell is passionate about service, especially patient advocacy and diversity inclusion. For 2018-2019, Dr. Mitchell was co-advisor for the newly established NIH ESTEEMED program to mentor diverse and under-represented seniors in high school and freshman undergraduates into rigorous research and academic opportunities that ultimately prepare them for future graduate programs. Seeing a need for a more specialized disability organization after being named a 2019 Georgia Tech Diversity Fellow, co-founded GT ABLE Alliance in May 2019. ABLE Alliance is the first on-campus organization open to Georgia Tech students, faculty and staff of all abilities, that provides social support, disability advocacy, and professional mentoring. Dr. Mitchell mentors approximately 50% of students with a documented physical disability on campus, most of whom find her via word of mouth. As founder and director of ABLE Alliance, Mitchell is multiplying her impact. ABLE serves students, faculty, and staff. ABLE partners with "allies" (other individuals or organizations) to identify class note takers, guides, etc.

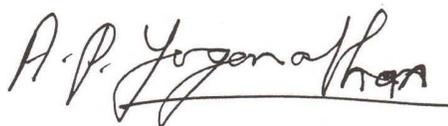
Mitchell personally organized the February 2020 Google Networking Event for Accessibility and Diversity Inclusion where 232 GT students were able to interact with Google recruiters and hear about special programs for disability and diversity. Mitchell is also leading a new professional mentoring program with Georgia Power, which focuses on pairing disabled alumni with current Georgia Tech students.

Patient Outreach: Dr. Mitchell is seen as a major disability advocate in the greater Atlanta area. Dr. Mitchell has informally mentored over 200+ disabled individuals in collaboration with organizations like The Shepherd Center, Children’s Hospital of Atlanta, BlazeSports, Winship Cancer Institute, and The Bobby Dodd Institute. Dr. Mitchell helps these students find careers and training that enable them to successfully work with a disability. Finally, Dr. Mitchell serves as a volunteer counselor at 5 local Atlanta hospitals where she utilizes her research knowledge and personal experience with neuropathology and cancer to help newly diagnosed patients and their families cope with injury/disease and return to a “new normal”. Mitchell’s counseling across 6 hospitals in the Atlanta area has helped >370 individual patients. At Shepherd Center Spinal Cord & Rehabilitation Hospital in Atlanta, Dr. Mitchell is fondly nicknamed “Counselor of Last Resort”, because even when other paid or professional counselors fail, Dr. Mitchell seems to always find a positive way to break through to the patient and evoke progress. The Bobby Dodd Institute, which helps disabled persons find jobs in the Atlanta area, highlighted Mitchell’s work with the 2016 Circle of Excellence Award. In the Bobby Dodd Institute video, the story of Kerwin, an African American who was disabled from the same neurologic disease as Dr. Mitchell. Kerwin had tried to commit suicide after paralysis, and Dr. Mitchell helped mentor him back to not only living but thriving—he subsequently got a college education, a full time job, and is now independent.

Summary: In addition to her full-time career at Georgia Tech, Dr. Mitchell has proudly competed for Team USA in two Paralympic Games, 2012 and 2016, winning two medals in track & field. While Dr. Mitchell is wheelchair-bound from quadriplegia since age 18 and often wears a mask due to ongoing chemotherapy for a current leukemia diagnosis, she never stops researching, teaching, and, most of all serving. Very few assistant professors are told to “cut back on service”, but Mitchell hears this frequently from senior faculty. Mitchell loves nothing more than to serve. In summary, we could not think of a more fitting or deserving candidate for the *Faculty Award for Academic Outreach* than Dr. Cassie Mitchell.

If you require any further information, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink that reads "A. P. Yoganathan". The signature is written in a cursive style with a horizontal line underneath the name.

Ajit P. Yoganathan, Ph.D.
Chair, BME Awards Committee
Member National Academy of Engineering
Wallace H. Coulter Distinguished Chair in Biomedical Engineering
& Regents’ Professor

SUMMARY OF EDUCATIONAL OUTREACH

Cassie S. Mitchell, Ph.D.

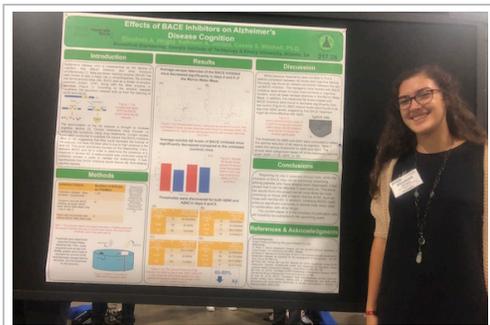
On my desk is displayed a sign that says: “Never, never, never give up.” As both a C5-6 wheelchair-bound quadriplegic [from Neuromyelitis Optica] and as a current cancer patient [leukemia] still taking chemotherapy, I have an intimate understanding of the impact of pathologies and a passion to leverage my personal and scientific research experiences to positively impact lives. Many professors in academia worry most about their h-index publication impact factor. Honestly, I am more worried about my service impact factor, “lives positively impacted through education, research, mentoring, outreach, and taking the time to actively care”. A high service impact factor alone will not get me tenure, a million-dollar research grant, or a Nobel prize, but it gives me something far more important—hope, faith, and peace of mind that I am doing what I was called to do, *to serve*.



Sign on Cassie's desk.

I don't know where I would be without education and research, so it is only fitting that I use what has given so much to me to give back to others. When I was paralyzed at age 18 and adapted to life in a wheelchair as student at Oklahoma State University, it was actually other students on the wheelchair basketball team that taught me everything I needed to know about navigating life in a wheelchair and my work as an undergraduate research helped me break the wheelchair stereotype. I saw the importance of real-world mentoring and wanted to help others similarly find their way, which is why I work with 5 local hospitals as a volunteer patient counselor. In 2016, I was diagnosed with cancer. To this day, you will see me rolling around campus with a mask during flu season as I battle low cell counts from chemotherapy. Cancer

again renewed my drive to positively impact the world using both research and service. **My primary educational outreach is summarized by 3 passions—high school research internships; patient and family mentoring and advocacy for those with life-changing diagnoses; and professional/career mentoring for the disabled.** For a short 4-minute about my story my outreach activities click: [Cassie's Story](#).



HS intern Lizzie Wright presents at the Biomedical Engineering Society Conference's scientific forum.

Laboratory for Pathology Dynamics High School Internship Program

My lab is very well known for its large undergraduate research program—30+ per semester and over 450 in 5-years. But we also have one of the largest high school research programs called the, “Laboratory for Pathology Dynamics High School Internship Program”.

Most labs or companies are willing to host one intern. However, the number of positions available is way smaller than demand. For those lucky to acquire a position, they often end up doing 100% “scut work” and do not feel truly integrated. In contrast, The Laboratory for Pathology Dynamic's internship program provides ample opportunity with real-world projects and responsibility. Our unique and nationally awarded research assembly line treats interns as professionals. They have contracts, deliverables, intellectual property agreements and even vacation days.

Within this real-world professional atmosphere, they have thrived with equally amazing real-world results.

Our internship program hosts 5-7 high school students each semester; many like it so well that they stay for multiple semesters. Over half come from coordinated public school internship programs (Fulton, Dekalb, Paulding County Public Schools, etc.) and the other half apply individually on their own online through our registered youth program. We have hosted 42 interns in the last 3-years alone. About half of these high school interns have presented a poster at a national conference or research seminar and 7 have been a co-authors on journal manuscripts. Brandon Lucas's parents drove him 2-hours one-way to work in my lab 6 hours/week for nearly 2-years. When Brandon entered my lab, he had no computer coding skill whatsoever; when he exited my lab, he had fully coded his own research project, was first author on a journal manuscript, and was accepted into the Honors Program in Computer Science at University of Alabama. Another example is Velda Wang, a current HS intern for 2019-2020 who is doing a machine learning project on Alzheimer's disease in my lab. Velda is *leading* the project as an intern and even won 1st in the 2020 regional science fair with her internship project!

Research Site Coordinator for Fulton County Talented & Gifted internship program

For several years, I have been the Georgia Tech site director for the Fulton County high school internship program. This program places talented & gifted students (TAG) into one-semester internships with course credit. Many students will come to my lab, but I also coordinate with Fulton County school representative Ms. Carolyn McCarthy

(see *Letter of Support*) in finding internships for other TAG and non-TAG students desiring an opportunity. Nidhi Mehra and Mira Mutnick, who started as TAG interns in high school, stayed on in my lab after matriculating at Georgia Tech. They have co-written an NIH grant and published more than most Ph.D. students and are not yet even half-way through their undergraduate degrees in biomedical engineering!

REU programs for diversity & inclusion

I have been a leader and research advisor for several research experience for undergraduate (REU) programs that focus on diversity and inclusion. I have hosted multiple interns for the Georgia Tech, Emory, and Georgia State SURE programs. The SURE programs emphasize summer research internships for persons that are from under-represented or under-privileged backgrounds. Each intern from my lab has gone on to present at a major national conference and has had opportunities to co-author journal articles.

Community Educational Outreach & Service: ALS, ALZ associations, etc.

For my lab, I coordinate at least 2 outreach activities per semester that are related to the patient populations for



Dr. Mitchell's lab leads Walk to End ALZ.

which our lab does research, which is mainly neuropathology (ALS, Alzheimer's, aging, spinal cord & brain injury) or cancer. Examples, include leading ALS or Alzheimer's walk fundraisers, visits by my lab researchers or students to senior homes, emceeding the Winship Fight Against Cancer 5K Run, and my personal leading of patient support groups. The picture shown is from the recent Walk to End Alzheimer's at Kennesaw State University. We were one of the top fundraising groups.

I also give volunteer research presentations to the local ALZ association, including talks to the executive boards to help educate about the current state of the field, including research in

our lab as well as in the general Alzheimer's research community. We were awarded the 2018-19 Alzheimer's Association Award in recognition of accomplishments & service.

I am also very active in patient educational support groups for the ALS association. For these, I use my academic research knowledge to give talks to patient to explain the disease and talk about small changes they can make to their life to extend their survival and increase their quality of life. I have given interactive talks at multiple ALS support groups in several states—Texas, Oklahoma, Georgia, and others. I explain to patients the biology of ALS, describe current treatments, discuss how patients can extend their life with vitamin supplements, exercise and other palliative interventions, and answer questions on upcoming trials or new drugs, etc. Dr. Karl Reid asked me to give a talk for the Integris Baptist Hospital ALS Support Group in Stillwater, OK. I supported this group for over 2-years, and during this time 18 of the 22 patients volunteered to their post-mortem brain and spinal cord tissue for ALS research. Many patients keep in contact with me until their death and their families correspond even after. I recently received a letter from an ALS tissue bank that said, “A patient that donated their tissue for ALS research left a condition in their file that said that their autopsy results must be sent to you/your lab because they want you to have their data so you can help find a cure. The patient stipulated that it was you who lead them to donate, and the patient wrote that completion of donation paperwork prior to their death allowed the patient to live the remainder of their life in peace knowing they could fight ALS post-mortem through their tissue donation.” Powerful notes like these, of which I have received many, serve as a daily reminder to keep fighting the good fight with rigorous ALS research.

Volunteer patient educational outreach, mentoring & family counseling at 5 area hospitals

I am a volunteer counselor at five local Atlanta clinics and rehabilitation hospitals: Shepherd Spinal Cord & Brain Injury Rehabilitation Hospital, Emory Hospital, Children's Hospital of Atlanta, Winship Cancer Institute, and Piedmont Hospital where I have personally mentored 205 patients using my patient and scientific knowledge. I am unofficially known as “The Counselor of Last Resort”, as I am the person called in after others have failed to “get through” to the patient. My approach works because of the scientific knowledge to really explain neurologic disease or cancer and the personal knowledge to empathize with what the patient is experiencing. This combination leads to a counseling approach that is part science teacher and part mentor. When patients better understand the science behind their disease, they psychologically accept it better and can make better decisions on treatment.

A patient named Kerwin is my biggest success story. At 11pm at night, I was called to meet Kerwin in the psych ward of Emory. Kerwin had been recently paralyzed by NMO. He was so angry and distraught about his situation that he was put in arm restraints to keep him from harming himself or others. I rolled in his room not

knowing what to expect. We talked very frankly, and I let him ask any and all questions. Kerwin later told me I was his light to lead him from the dark. Kerwin did not return to his “street life”. Kerwin enrolled in college and is now working full-time as a computer coder, and “paying it forward” by mentoring others. Kerwin is just one of many neurological or cancer patients where personalized mentoring and being given easy-to-understand scientific education about their disease, helped to change their life.

Off-campus educational outreach for disabled professionals in Atlanta and nationally



Bobby Dodd Institute celebrates Dr. Mitchell's disabled professional mentoring.

Despite the obstacles of my health and disability, I know the sheer joys of working—the psychological, intellectual, and outreach benefits it provides. I spend significant time helping disabled patients reach professional career goals —through one-on-one mentoring, educational advising, professional networking, and motivational speaking. In particular, I help the Bobby Dodd Institute, which advocates for disabled professionals by hosting structuring internships for the mentally or physically disabled in order for them to learn a trade and get a stable job in Atlanta companies. The picture at left shows me (Dr. Mitchell) with other mentees I have helped and other leaders of Bobby Dodd and Georgia Tech when I

received the 2016 Circle of Excellence Award for my work in disability professional mentoring in the greater Atlanta area. I also help other national companies and government agencies by hosting disability inclusion workshops and leading training on how to integrate the disabled into the workplace.

ABLE Alliance @ Georgia Tech

According to the National Science Foundation, persons with disabilities are vastly under-represented in the science and research fields. I have been mentoring nearly half the students with a documented physical disability through word-of-mouth at Georgia Tech for several years. But as populations grow, I just could not keep up with demand on my own. I wanted to start an organization that could proliferate the level of professional mentoring and social inclusion that students, faculty and staff really needed on campus. The office of disability services and human resources is only responsible for meeting legal obligations for classroom or workplace accommodations, but there is much more to disability inclusion and professional outreach than just legal accommodations [although even this area needs vital improvement as well]. Thus, as a 2019 Diversity Fellow chaired by Beril Totkay (see Letter of Support), I co-founded ABLE Alliance @ Georgia Tech. It is the first on-campus organization for persons with disabilities to get valuable support beyond what the Office of Disability Services can provide—like programs for socialization (movie nights, campus lunches, recreational events, peer-to-peer mentoring), profession development (partnering with companies like Google, Georgia Power to provide career mentoring and resources). We now have 60+ members and have had 5 large marquee events in the last year, with each having more than 40 attendees. ABLE Alliance might be one of my lost long-lasting impacts at Georgia Tech. ABLE Alliance has also helped our legal services on campus, including ODS for classroom accommodations, improve performance throughout interactive meetings and our outreach to insure able-bodied volunteers for classroom services like note takers, is actually available. ABLE has also worked without groups like Tools for Life, Center for Assistive Technology & Education, the Excel program, and more to serve as hub to all of the disability-related spokes on campus. The ABLE model has been so successful that I have been contacted by other universities who want to set up a similar student organization on their campus.

In February 2020, as part of my directorship of ABLE Alliance, I personally organized and hosted the Google Networking event where the Google Accessibility team came from Silicon Valley in California for a 3-hours of seminars of careers for persons with disabilities, diversity & inclusion programs and recruitment at Google, and a technical seminar on improving software design and ecosystems for persons with differing ability. There were an extraordinary 233 participants at Georgia Tech, including students, staff and those from the greater Atlanta area who came to GT just for this event. I made trips to Sam’s Club to purchase food using my own personal money, did all of the advertising, poster printing, emceeing, and provided post-event resources to all attendees. It was 100+ hours’ worth of planning and work by me, but it was so worth it as many individuals said these seminars changed their outlook, gave the, hope, and gave them tangible resources for their career.

In addition to directing ABLE Alliance, I am also leading the charge for a Georgia Tech website that has an easy to understand and compiled list of resources for disability access, social inclusion, and professional mentoring. Currently we are using the ABLE alliance website for our prototype, but the goal is to eventually have a standalone page or a page that connects from ABLE Alliance.

Other large-scale programs in the works include professional mentoring programs that use GT alumni and disabled employees in the Atlanta area to mentor HS and college students with disabilities. We have a trial program set up with Georgia Power and hope to emulate and expand it to include Coca-Cola, Bobby Dodd, Google Atlanta, and several others. With the recent large growth in physical, mental, and cognitively challenged student populations, more mentors are needed to help insure successful integration into the national workforce.



ABLE Alliance officers with Google Accessibility Team



Dr. Mitchell emcees the Google Networking event



ABLE Alliance professional development lunch-and-learn event.



ABLE alliance social for disability inclusion.



Dr. Mitchell volunteering at Kennesaw Elementary.

Go TEAM USA Motivational Speaking

Representing my country as a Paralympic athlete in the 2012 and 2016 Olympic Games is one of my biggest honors. I am often called to do voluntary motivational speaking at elementary, middle and high schools. I not only talk about never giving up and overcoming disability, but also work in mini-lessons on biomedical engineering by discussing my custom racing wheelchair design. Elementary school students learn about disability and inclusion in a fun way, and this helps with long-term integration of special needs students into the regular classroom without teasing or other similar social barriers.

I visit about 4-5 K-12 schools each year, in Georgia and in other states, for volunteer diversity and inclusion events. While there is a focus on disability and general diversity and inclusion, there is a much greater focus on finding one's self esteem, learning to overcome challenges of varieties, and keeping a positive "never give up" attitude. I also talk about engineering and try to use engineering examples in everyday life to motivate the next generation of STEM professionals.

Beyond K-12 schools, I am also asked to do motivational speaking to companies, namely engineering companies, that are looking for new ways to encourage teamwork, inclusion, creativity, and positive thinking.

February 21, 2020

Re: Faculty for Academic Outreach Award for Cassie Mitchell

I am delighted to give my ***strongest recommendation*** for Dr. Cassie Mitchell for the Academic Outreach award. I am co-director of the Georgia Tech Diversity Fellows program, a program sponsored by Institute Diversity that procures projects to promote diversity and inclusion at Georgia Tech and the greater Atlanta community. Dr. Cassie Mitchell was a 2019 Fellow and led the first-ever team to address disability inclusion. Dr. Mitchell led a team of undergraduate and graduate students to co-found and direct a new organization called ABLE Alliance @ Georgia Tech in May 2019. In less than 1-year, under Dr. Mitchell's leadership and organization, ABLE swelled to over 68 individual members and >100 allies. Dr. Mitchell included various facets of the Georgia Tech and greater Atlanta community to make ABLE alliance a success, including the Excel Program, Tools for Life, Center for Assistive Technology and Education, the off-campus Bobby Dodd Institute, and local industrial stakeholders, Shepherd Center, Georgia Power and Google Atlanta.

Under Dr. Mitchell's directorship, ABLE Alliance has had 3 main thrusts to serve persons of all abilities, including those with physical, cognitive, neurodiverse, and learning challenges. 1) ***Social inclusion***—given disabled persons often feel isolated, ABLE alliance has cultivated a social network of peers and mentors to insure recreational and supportive activities, such as music therapy, therapeutic art, sport events, and group lunches. Dr. Mitchell organized and even personally paid for several of the lunches until ABLE Alliance could acquire organizational funding. 2) ***Resource access***—Dr. Mitchell started a new webpage to document resources at Georgia Tech, including those for students, faculty and staff, which ABLE alliance hosts on their website. Additionally, Dr. Mitchell had multiple meetings with the Office of Disability Services over Summer 2019 to orchestrate advertising of notetakers, proctors, and assistants needed for timely classroom accommodations. Prior to this initiative, many students went without the resources they needed due to a massive assistant shortage. After Dr. Mitchell led the assistant enlistment campaign for ODS, there is now a surplus of ODS paid and unpaid volunteers, and all students are now receiving timely disability accommodations. 3) ***Professional development & mentoring***—Dr. Mitchell currently mentors ABLE members. She has also orchestrated professional partnerships with Google and Georgia Power. In particular, Dr. Mitchell organized the Google Networking event at Georgia Tech in February 2020; over 230 attendees enjoyed three unique seminars focused on specific Google programs for accessibility and job accommodations; technical development of accessible software and ecosystems; and special Google programs for diverse employment.

Dr. Mitchell's co-founding and directing of ABLE alliance was one of the most successful and sustainable diversity projects since the inception of the Diversity Fellows Program. I witnessed Dr. Mitchell going above and beyond to ensure the success of ABLE Alliance @ Georgia Tech. Moreover, the relationships with Bobby Dodd Institute, Shepherd Center, Google, Georgia Power, and Coca-Cola means the reach of ABLE Alliance stretches far and wide beyond Georgia Tech and into the greater community. The outstanding success of ABLE Alliance is directly due to the commitment of Dr. Mitchell in the last year. As co-director of the Diversity Fellows program, I strongly support Dr. Mitchell for the Georgia Tech Faculty Academic Outreach Award.

Sincerely,



Beril Toktay, Ph.D.

Professor and Brady Family Chair, Scheller College of Business, Georgia Tech
Director, 2019 Georgia Tech Diversity Fellows Program

January 5, 2019

Subject: Recommendation letter for Dr. Cassie Mitchell

To Whom It May Concern:

Recently I learned that Georgia Tech honors faculty who emphasize education and opportunities for K-12 and the broader community. Dr. Cassie Mitchell truly defines what this award is all about.

I would like to recommend Dr. Cassie Mitchell for this year's Outreach Award in recognition of her determined efforts in working tirelessly with our high school senior interns. Every one of our interns placed with Dr. Mitchell has appreciated her efforts to include them in a hands-on lab environment. Our interns do not simply come to the lab to observe. Dr. Mitchell spends time getting to know their strengths and weaknesses so she can best assign our interns to research groups. As a result, our interns become an integral part of the research process in the lab. An internship with Dr. Mitchell is now one of the most requested in our program. Every high school intern has appreciated being included and being held to a high standard.

Programs like ours thrive because of the mentoring Dr. Mitchell provides. She has inspired many future researchers in the Biomedical Field.

Sincerely,



Carolyn McCarthy-Jackson
Fulton County Schools
Gifted Internship Advisor

February 16, 2020

To: Awards Selection Committee

Re: Recommendation for Dr. Cassie Mitchell *Academic Outreach Award*

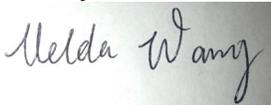
My name is Velda Wang and I am a current junior at Parkview High School. I am honored to share my experiences as an intern in the Laboratory for Pathology Dynamics under the guidance of Dr. Mitchell and recommend her for the Academic Outreach Award.

I have always been interested in science and have wanted to explore it further by conducting hands-on research with real-world applications because oftentimes, a traditional high school classroom does not give students the chance to explore and delve deeper into certain topics. Therefore, I contacted many professors last summer asking if I could possibly assist them in their research last summer and only Dr. Mitchell replied and agreed to take me on as an intern. I am so lucky to be part of the Pathology Dynamics Lab because I am especially interested in Alzheimer's disease since it has no known cures so the thought of someone I love developing these diseases and not having a definite treatment motivates me to find breakthroughs, and I have been able to do research regarding Alzheimer's disease, which is detailed below. I have learned how exactly research is conducted at an institution, technical laboratory skills such as reading and understanding scientific literature and using various databases, and an introduction to machine learning, which would have been difficult to learn elsewhere. Beyond learning technical skills, my intern experience has given me the ability to develop relationships with mentors and peers and immerse myself in a learning community and to understand how scientists think, both of which allow me to present new ways of approaching problems.

I am thankful Dr. Mitchell allowed me to lead a research project, which I used for my science fair project. When I approached Dr. Mitchell, she immediately discussed ideas, and we decided on doing a project that utilizes machine learning to identify a combination of drugs that are associated with a diagnosis of Alzheimer's disease. Many of the topics were unfamiliar to me at first, but Dr. Mitchell was immensely helpful throughout the whole process of doing this project because anytime I had a question on background research, methods, or data analysis she provided materials to clarify concepts as well as made time to answer any specific questions I had. Additionally, Dr. Mitchell was understanding of the fact that I did not know much code and allowed me to work with a Master's student in the lab to help me write the Apriori algorithm code needed. ***As a result, I received 1st place at school for this science fair project and I am hopeful for my performance at the Regional and State Science Fair!*** All of this would not have been possible without the guidance of Dr. Mitchell and the Pathology Dynamics Lab.

Lastly, the experiences and knowledge that I have acquired from being part of the Pathology Dynamics Lab has definitely shaped my career plans because now that I know what biomedical engineering research is like, I hope to major in BME and potentially go into the medical field or academia. Moreover, the resources at Georgia Tech such as the professors and the laboratory research facilities has also made me want to attend Georgia Tech because every week when I go onto campus I am struck at how surreal it is that I am doing research at such a renowned institution. All in all, my experience as a high school intern under Dr. Mitchell has been wonderful and I am excited to see what else I can contribute.

Sincerely,



Velda Wang

Laboratory for Pathology Dynamics High School Research Program
HS Research Intern, 2019-2020 Academic Year