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Application Summary

Competition Details

Competition Title: 2019 Undergraduate Educator Award

Category: Institutional Awards - CTL

Award Cycle: 2019

Submission Deadline: 02/01/2019 at 6:00 PM

Application Information

Submitted By: Sandra Maffey

Application ID: 3014

Application Title: James Rains

Date Submitted: 01/31/2019 at 11:19 AM

Personal Details

Applicant First Name: James

Applicant Last Name: Rains

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Primary School or Department

The Wallace H. Coulter Department of Biomedical Engineering

Primary Appointment Title: Professor of the Practice

Application Details

Proposal Title

James Rains

January 30, 2019

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

RE: *2019 Undergraduate Educator Award Nomination*

Dear Members of the Awards Selection Committee:

It is with great pleasure that I nominate **Professor James Rains** in our department for the *2019 Undergraduate Educator Award*. Professor Rains was recruited to Georgia Tech in 08/2012 and holds the position of Professor of the Practice.

Professor Rains teaches BME Capstone and Intro to Biomedical Engineering Design – critical classes as we develop the next generation of innovative and influential biomedical engineers. Under Professor Rains' leadership, the program offers students more real world healthcare problems from clinicians and medical companies than any other BME department around the world. Throughout the calendar year, he constantly strives to find the best and most diverse projects for his students. He has now expanded the program to include a larger geographic region. In 2018, he established a new collaboration with the Mayo Clinic. A demonstration of success of the program is that BME teams have won all major awards at the 2018 Spring and Fall Capstone Expos. This year teams also won national awards (NIBIB), and presented at multiple national competitions and conferences. Furthermore, he was selected by his peers to serve at the Chair of the Multi-Disciplinary Capstone Committee. His dedication is a factor why BME is ranked #3 nationally.

He is a dedicated, innovative, and a well-respected professor. His passion is reflected in the nomination letter provided by recent student Cassidy Wang and his CIOS scores. His students are his priority, and as such, Professor Rains makes himself available to meet with students, even in the evenings and on weekends if necessary. His impact extends beyond the classroom. He leverages his industry experience by providing long-term advice and career guidance, even after students graduate. Another avenue by which he supports the students is in attending Georgia Tech sport events and drama performances.

He continually strives for educational innovations. He routinely meets with medical companies to discover what trends are emerging in the field and what needs to be incorporated into his coursework to better prepare our undergraduate students for the workplace. One big change he has brought is the emphasis on performing Voice of the Customer exercises before teams actually start designing solutions, as well as incorporating activities for students to provide peer to peer feedback. Another example is that James brings local and national industry experts into the classroom to meet with the teams so as to provide constructive feedback, as well as to answer questions.

In addition to working with 600 Capstone students every year, Professor Rains mentors and coaches Create-X Launch startups, assists companies identify candidates for their openings, and supports the LGTBQIA community by attending the Safe Space Training, and offering an open-door policy.

Finally, he embodies the key values of Georgia Tech and is a global citizen. He expands Georgia Tech's global footprint and influence by representing our institute as he meets with medical companies around the world to discuss Capstone and other opportunities to partner with Georgia Tech, working with industry to

recruit our students, speaking at global conferences, and interacting with alums. Professor Rains has been featured in multiple Georgia Tech Institute Communication stories for his leadership regarding Capstone and his successful medical device startup (preventing patient burns in the operating room) that he spun out of Georgia Tech. In addition, he serves on a non-profit foundation board as the Vice Chair of the Chiari and Syringomyelia Foundation.

In summary, Professor Rains is an integral component to our undergraduate community and a role model for our own faculty. As such, Professor Rains is highly deserving of the *2019 Undergraduate Educator Award*. You will find attached letters of recommendation. If you require further information regarding Professor Rains' candidacy for this award, please do not hesitate to contact me.

Sincerely,



Susan S. Margulies, Ph.D.
Georgia Research Alliance Eminent Scholar in Injury Biomechanics
Wallace H. Coulter Chair

SSM/sim

Reflective Statement on Teaching

Every time I walk into a Clough or Whitaker lecture hall for one of my classes, I am reminded what a fortunate opportunity I have to be a part of the community here at Georgia Tech. I became a faculty member six years ago in order to directly guide and propel the next generation of biomedical engineer.

Core Courses and Diverse Student Populations

I teach Capstone and Intro to Biomedical Engineering Design (both are mandatory class for all BME students), as well as Fundamentals of Medical Device Design. Through these classes, I have on average 570 students per year. These courses are rooted in real world framework so that what they learn is directly translatable to the career roles that they will assume. My goal is to provide them with a well-rounded foundation as they identify clinical needs, ask the right questions, and develop approaches to solve these critical needs. With this first-hand training, we prepare a diverse student body to embark on the next step of their diverse of career paths – from jobs in medical device companies to their first year in medical school.

We have developed a strong reputation of building successful and collaborative teams which highlights our thoughtful methodology and program structure. For examples, BME teams have been recognized as the top Capstone winner seven out of the last ten Expos (among all departments participating across the campus). In the past six years, a team from BME has either won or come in second place in five times. Furthermore, our teams are moving their technologies into the real world, and more than 50% of our Capstone teams file for provisional patent applications. Several project teams have continued on as a startup, and have even launched into the market.

I work towards creating relevant educational opportunities. BME Capstone has more healthcare collaborators than any other BME program in country. For example, last year alone we recruited 90 projects, with 15 of those being from industry such as Boston Scientific, Johnson & Johnson, and Becton, Dickinson and Company. With this diverse exposure, students are prepared to leverage cross-functional teams to address interdisciplinary problems.

Our impact on the department can be observed by looking at the ABET assessments that are performed through the curriculum, for accreditation purposes. Of all of the outcomes that are assessed in the various courses, 52% of them are performed in the Design classes that I lead. We have the fortune of being able to work with students on key learning aspects that are viewed as being critical to developing an engineer.

Impact Beyond the Classroom

Our working with the students does not stop once they finish the course. It is important to support our students outside of the classroom so that we can help support them achieve their personal and professional goals. I collaborate closely with recruiters for hiring companies to identify candidates that best suit their needs. The purpose is to help the student and company find the right fit, so that both can be successful. I also work with teams that pursue their projects further, with hopes for commercialization. One way that I do this, is by mentoring/coaching Create-X Launch startups.

I work towards a diverse and supportive community and utilize the Safe Space Training I received through the Georgia Tech LGTBQIA Resource Center. In addition, I support students that are pursuing non-engineering passions, by attending their events such as DramaTech performances and athletic events.

Education Innovations

My classes are always evolving. I listen to the needs of our students, meet with recent graduates, and routinely meet with industry to discover what trends are emerging and then adjust my courses. I bring real case studies to class by leveraging my 16 years of medical device industry experience and 25 patents. I also have built strong network of industry contacts bring in industry experts to meet with students and provide additional insights. In

addition, I continue to learn and bring those learnings to class through my company, Jackson Medical, that I launched in July of 2017. Our device, GloShield, is used in hospitals across the country and is the recent recipient of the Georgia Bio 2019 Innovation Award for forging new ground by thinking outside traditional paradigms to create some unique technology.

For a global perspective, I went on an Israel medical mission trip last year alongside Emory physicians. It was an amazing experience, where I met with medical companies and healthcare systems to discuss innovation and collaboration opportunities, and brought that multi-cultural perspective back into the classroom. I also have the pleasure to serve as an EGHI Fellow (Emory Global Health Institute), where we work to identify collaborative opportunities for Georgia Tech, Emory, and other partners to make an impact on Global Health.

Accessibility to all students

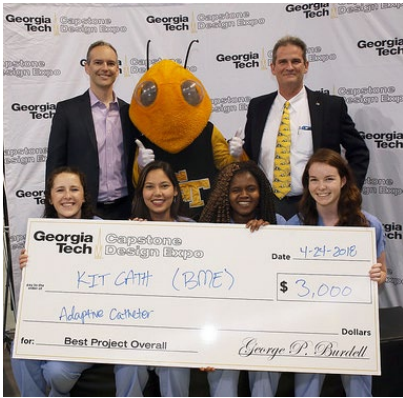
As an educator, I want to make sure all of my students excel. I keep an open door policy and I routinely check on the Capstone teams to see how I can support the dynamic teams. I am proud to show on my office door that it is a Safe Space, so that students know they can feel security coming to speak with me about issues that may not just be class related. I also keep in contact with former students, and I still provide career guidance to them years after they have graduated. This is important, because this helps build our GT network, and when they become future leaders, they will return to hire our students or to give back to GT in many different ways.

Good Georgia Tech Citizenship

As a member of the Georgia Tech community, I strive to help us grow the institution in the keys areas that we all support. I work with our students to help showcase the great achievements that they have obtained, so as to help build our reputation amongst other institutions. For excellence in scholarship, we structure our courses and program to ensure that our students a learning the key skills and characteristics needs to be successful. I work with students to support their entrepreneurial interests by working closely with them in pursuing startups. Along with my work as an EGHI Fellow, we have also recently launched a Develop World Capstone program where we have teams work in Ethiopia and at Georgia Tech to address unmet healthcare needs. It is an exciting new program, that we are focused on growing and expanding, to help raise our awareness and contributions to global health needs.

Furthermore, I represent Georgia Tech in different venues, which helps grow Georgia Tech's thought leadership. I am currently the Vice-Chair of the Chiari and Syringomyelia Foundation. As a leader in biomedical design, in the past year have been invited speaker and moderator at global innovation, entrepreneurship, and education conferences. I am also identified as the subject matter expert on Intellectual Property, and give talks each year for their Coulter Foundation series.

Examples of Student Successes



Spring 2018 Capstone Winners



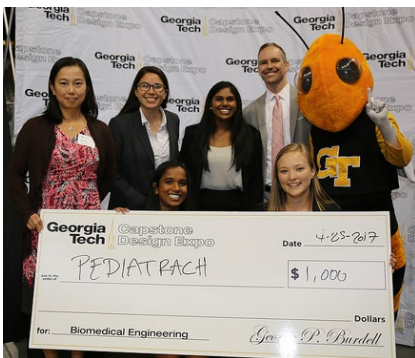
Mayo Team



Ethos Team



NICUTies Team



Pediatrach Team



CathART Team



NeuraLine Team at Mayo Clinic

Impact on Student Learning

The following are list of a few successes of BME teams from our Design courses that demonstrate the impact on students learning:

- 1) Fall 2018 Capstone Expo Overall Winner: Supluerative
- 2) Fall 2018 Capstone Expo BME Winner: aMAYOnnaising
- 3) Fall 2018 Capstone Expo Multi-D Winner: PPEeps
- 4) Spring 2018 Capstone Expo Overall Winner: Kit Cath
- 5) Spring 2018 Capstone Expo BME Winner: NICUties
- 6) Third Place Winner of the NIBIB (National Institute of Biomeidcal Imgaging and Bioengineering) Design Competition: Neuraline
- 7) Finalist for the Collegiate Invetors Competition: Neuraline
- 8) ScalPal Finalists in the 2018 Inventure Competition
- 9) ScalPal in talks to a med device company to potentially license their novel IP
- 10) 20 provisional patent applications filed by BME Capstone teams in the year 2018
- 11) Spring 2018 team that worked with the Mayo Clinic participated in the Create-X Launch incubator this summer, and have continued their work as a start-up, Ethos Medical. Their focuses on assisting with needle placement.
- 12) Fall 2018 team that worked with the Mayo Clinic participated in the Create-X Launch incubator this summer, and have continued their work as a start-up, Ethos Medical. Their focuses on assisting with needle placement.
- 13) US Patent No. 10,099,579 was granted to a former Multi-D Capstone team. This invention addressing assisting persons with disabilities to enable them access to play golf.

Collection of Student Feedback from 2018 CIOS

Below are comments and scores from students in the CIOS survey from last year:

Teaching Excellence:

- He's a really enthusiastic teacher who is clearly passionate about senior design and the whole learning process.
- Passionate about informing students about the information as well as our potential future careers.
- Very good at lecturing and was always super engaging in lecture.
- Encouraged student discussion of lecture material.
- He was my favorite lecturer. His lectures were fun and interactive and we still learned a lot!

Real-world Application:

- Real world applications and tie-ins with the work done in/for class it was fun.
- Very enthusiastic, lots of industry experience.
- Lectures included many simulating examples and discussions.
- Knew a lot about industry and the keys to capstone success.
- Greatest strengths were giving feedback to students on their projects.

Instructor**Enthusiasm**

Fall 2018 BMED 4602 (96 students)	4.6
Spring 2018 BMED 4602 (135 students)	4.5
Fall 2018 BMED 2310 (125 students)	4.5
Spring 2018 BMED 2310 (140 students)	4.4

ABET Evaluations Assessed in Prof. Rains' Courses
(ABET, Accreditation Board for Engineering and Technology)

An example of the impact that my contributions have on the department, 52% of the ABET assessed student outcomes are performed in the classes that I lead. These are seen in the table below. We are incorporating many of the critical education elements that our students need before they graduate from our program.

New SOs:	Performance Criteria	Assessment Method	VENUE
2	A. Identifies appropriate design criteria, constraints, and engineering standards	Design Input Report	BMED 4602
	B. Generates and analyzes alternative solutions.	Prior Art Report	
	C. Determines specifications in the final design solution.	Final Report	
3	A. Generates and delivers oral presentations to a technical audience	Final Capstone Presentation	BMED 4602
	C. Communicates to a non-engineering audience	Project Charter / Parameters	BMED 4602
4	A. Evaluates the global, economic, environmental, and societal impacts associated with a biomedical engineering design solution	Project Charter / project description / needs	BMED 4602
	B. Demonstrates understanding of NSPE Code of Ethics	Exam question	BMED 2310
5	B. Establishes appropriate project goals and timelines	Project Charter / Semester Project Plans	BMED 4602
	C. Meets objectives within scope of timeline	Prototype Evaluation / Addresses use needs	BMED 4602
7	A. Identifies opportunities for intellectual growth	Project Charter Report	BMED 4602
	C. Engages in self-directed learning and applies new knowledge	P1 Written report	BMED 2310

January 9, 2019

To The Selection Committee – Undergraduate Educator Award,

It is my total pleasure and honor to support **Prof. James K. Rains** for the 2019 Undergraduate Educator Award! As you will quickly see below, he exceeds or excels in every category of importance in this award.

James has led the BME Capstone (senior design) program in BME for the last 6 years, of which I have the pleasure of working with him for the last two. He also chairs the GT Multi-Disciplinary Capstone program. As an industry-to-academia professional, he brings the real world into class in a variety of ways. For starters, his Capstone teams work on actual clinical problems he has recruited from physicians and the medical device industry. In the Capstone world, this is unusual and he's continued to develop innovative recruitment methods to aggressively build an ever- evolving roster of new projects. Recently, a new milestone was achieved wherein more sponsored projects were available than teams to undertake them. That's remarkable, especially since most schools/departments have students define their own project (no two teams do the same project in BME). All of this is due to his efforts of identifying and building new relationships with industry and hospital systems, as well as nurturing existing ones. Recently the hospital relationship mix was expanded to include the Mayo Clinic, Morehouse School of Medicine and Piedmont Healthcare in addition to our long-time partner, Emory School of Medicine. Currently, his BME Capstone program has more clinical and industry partners than any other program in the US.

Capstone in BME is required, and he has run the class and lab section reaching close to 300 students per academic year. Lectures in Fall and Spring are attended by about 125 and 175 students, respectively, making this one of the largest classes taught in BME. The lab sessions for Capstone number from 4 to 7 depending on the semester, which is a significant teaching load. He also has responsibility for the sophomore design class, practically doubling the student in classes under his watch during any particular semester. The students he has worked with are majority female and come from every region of the US and the world. In addition to the diverse backgrounds of his students, he works with a wide range of future career paths for students in Capstone. Our graduates typically move into the medical device industry, head to grad school or medical school (a few law school-bound students also!). Thus, the backgrounds and trajectories of the students he's led in senior design originate from multiple directions and backgrounds and move on to highly divergent fields of professional endeavors.

The impact his senior design classes cannot be underestimated. While the direct measure of his impact is certainly felt in the classroom, much of his advice, guidance and experience is retained and used by BME grads as they move into the next phases of their lives. He comes to the classroom with 17 years of medical device industry experience and puts that into practice as a model for how Capstone is run, thus mirroring the work environment in many crucial fashions. Deliverables focus on what is expected in graduates working in the medical device or healthcare fields. His students walk out of Capstone with a maturity and perspective that, to hiring managers, grad and professional school admission committees, appears more like a year's worth of real experience in building technology for healthcare and handling tough technical and sometimes human issues. All of these factors are sought after in our GT grads. To further quantify the impact he has on students, consider these BME Capstone team accomplishments:

- BME teams won best overall Capstone team at the Spring AND Fall 2018 Capstone Expo for Georgia Tech

- BME-led teams won for best Interdisciplinary Team at Expo in Spring 2017 & Fall 2018
- 3rd Place winner of the national DEBUT competition
- Finalists and presenters at the Collegiate Inventors Competition, held at the US Patent and Trademark Office
- Finalists and presenters at the national Capstone Design Conference

James has boundless energy and enthusiasm for teaching and improving how it is done in BME. No sooner than I joined him in Capstone, he was pushing for creation of a new course on the Fundamentals of Medical Device Development, a gap he perceived in the education our students.

Six months later he was co-teaching this course at summer abroad. That course is now a regular part of the BME course offerings.

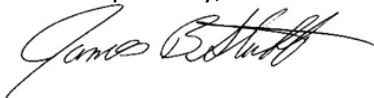
Other examples abound of his entrepreneurial approach to the students and support of their startup ideas, regardless of their school within GT. A few of these are outlined below:

- He created and leads the new collaboration between GT and the Mayo Clinic, to have a team work with their clinicians to solve unmet clinical needs. Now in its third straight semester, teams that he has overseen were very successful, both now pursuing their projects as startups.
- He is actively involved in the Create-X program;
- He's a Coaches for the Healthcare cohort in the summer LAUNCH accelerator
- He leads a section of the Start-up Lab course

It should be noted that in addition to the time and effort he puts in for the students, he maintains his professional credentials and exercises his entrepreneurial side vigorously. He co-founded a medical device startup called Jackson Medical and that firm has now has a device in early sales for surgeons to use in the operating room. He is a definite leader in his fields of endeavor, racking up several noteworthy achievements, including; 2019 recipient of the GA Bio Innovation Award, finalist for the Petit Institute Entrepreneurship Award, serving as an invited member (and a Session Chair) of the planning committee for the 2018 BME-IDEA conference as well as serving as the Invited Session Chair and Speaker for the International Conference for Innovations.

There are many more things I can say about Prof. Rains and how he deserves the recognition conveyed by the Undergraduate Educator Award. He definitely deserves to be counted among the luminaries previously honored with this award. But I'll close with a couple of simple observations. By way of a small, but important example, James never repeats the same lecture in sequential semesters. He's always updating the information, graphics and facts to incorporate changes and new technologies (or regulations). It's just that important to keep it new, up-to-date and fresh. I firmly believe that the BME Capstone program and Ga Tech, too, is a far more effective educational institution with his continued efforts here. I can't think of a more deserving educator at GT, and the competition for that is incredibly high.

Yours respectfully,



James B. Stubbs, Ph.D
Professor of the Practice
404-385-5507 Office

To Whom It May Concern,

I am a fifth-year Biomedical Engineering student and a student of Professor James Rains. Professor Rains has made a significant impact on my education at Georgia Tech and my future through his mentorship. As such, it is my pleasure to provide him a letter of support and recommendation for the *Undergraduate Educator Award*.

Last semester, I had the honor of working with Mayo Clinic for my Capstone project, a project that was facilitated by Professor Rains. This partnership with one of the leading research centers in the world is just one example of the dozens of real-world projects Professor Rains has brought to the BME department for Georgia Tech Capstone students. Professor Rains not only ensures that Georgia Tech's existing relationships with hospitals, research institutes, and biomedical companies are flourishing, but he also continually cultivates new partnerships. As a result of his work, the BME Capstone program has more clinical and industry partners than any other program in the United States.

My Capstone team was the second cohort of Georgia Tech students who had the privilege to work with Mayo Clinic. It is through Professor Rains' consistent support and assistance that my team went on to win *Best BME Project* at Capstone Expo and is prospecting participation in Mayo Clinic's new Life Sciences Incubator in the near future. Last semester's Mayo Clinic team, also mentored by Professor Rains, has achieved similar success and is also exploring participation in Mayo Clinic's incubator. This showcases the quality with which Professor Rains educates and coaches his BME teams. His management of the Mayo Clinic collaboration in addition to his enthusiasm, encouragement, and support has made our success possible. I can say without a doubt that Professor Rains' work in the BME Capstone program has changed my life on a personal level.

In addition to connecting industry and the classroom, Professor Rains understands what it takes to motivate and engage students. It is evident he leads by example in his classes. For example, Professor Rains launched his own medical device company this year and each of his lectures, assessments, and class activities incorporate his real-world experiences. The high level of engagement, knowledge, and experience that he brings to his teaching provides his students an effective way to learn rigorous material. Presently, three of my colleagues and I are currently running a startup company and Professor Rains' expertise combined with his willingness to help students makes him the first person we go to for advice. He is a true mentor and exemplifies a true educator.

Professor Rains is one of the most relatable professors I have had the privilege to study under. He diligently listens to his students and takes interest in his students' lives. Seeing Professor Rains in the hallway between classes, he not only asks how your team's Capstone project is progressing, but he also asks how each teammate's day is going or how your job search is coming along. It is obvious he wants his students to succeed in Capstone, but it is just as obvious that he wants each of his students to succeed in their personal endeavors.

I have learned so much from Professor Rains about both the business and engineering side of biomedical design. I am truly grateful that he is willing to share his expertise with his students. He believes in his students and is willing to help each and every one learn what he or she is capable of. I have become a more successful student and I have confidence that in the future I will be a more successful engineer due to all that Professor Rains has taught me. It is for these reasons that I believe no one is as deserving of the *Undergraduate Educator Award* as Professor Rains.

Sincerely,



Rachel Mann

Georgia Institute of Technology

Undergraduate Biomedical Engineering Student - Class of 2019

January 9, 2019

Dear Award Selection Committee,

It is my pleasure to recommend Prof. James Rains for the Undergraduate Educator Award. I have known Prof. Rains for two years, first as a co-inhabitant of the BME Machine Shop, then as his student in Capstone Design, and finally as his mentee in the Create-X Startup Launch program. His warmth and his dedication to facilitating the growth of students deserve to be recognized as a model for all educators.

As a Capstone instructor, Prof. Rains draws upon his vast product development experience in the medical industry to not only teach essential concepts but also give context to their importance. He frequently integrates his own experiences (both successes and failures) into lessons, which helps students understand the reality of how a product evolves from an idea to a device in clinical use. What I appreciate most is that Prof. Rains started his own medical device company, so he did not just *learn about* what he teaches – he *lived* it. His passion for the subject is contagious, and I found it impossible to walk away from a lecture or meeting without feeling energized for the path ahead.

Prof. Rains has a knack for connecting with students both inside and outside of the classroom. During lab sections in Capstone, he routinely checks with groups to monitor progress, answer questions, and offer advice. His approachability was a welcome part of my Capstone experience, and it reassured me that he was available as a resource. When confronted with course- or even career-related issues, I never hesitated to schedule a meeting with him to hear his advice. Even before I was his student, Prof. Rains showed warmth and kindness whenever we worked in the BME Machine Shop at the same time. He always asked what I was working on, showed enthusiastic support for my endeavors, and shared his own stories. It is truly meaningful to know, as a student, that a professor cares about your success and well-being.

One of Prof. Rains's greatest contributions to the Georgia Tech community is the exceptional learning environment he cultivates for the students. From the student's perspective, we want to know that we *matter*. We care that what we do has real meaning to real people. The BME Capstone program is phenomenal in this regard because most students have the opportunity to work on sponsored projects with real-world applications. As the head of the program, Prof. Rains does an incredible job of building and maintaining hospital and industry relationships. Case in point: My team had the opportunity to collaborate with three world-class physicians at the Mayo Clinic – a dream come true for any biomedical engineer and the product of Prof. Rains's tireless efforts. The results speak volumes about the importance of student engagement and high-quality coaching: In recent events, BME teams won Best Overall Project at the Spring and Fall 2018 Capstone Expos, one team won Third Place at the national DEBUT competition for biomedical design, one team was a Finalist in the Collegiate Inventors Competition held at the USPTO, and one was a Finalist at the National Capstone Design Conference.

The Capstone course gives students a glimpse of the impact they can make in the world, and some teams choose to chase that vision by taking their projects beyond the classroom. As one of these visionaries/fools, I also had the privilege of working closely with Prof. Rains in the Startup Launch accelerator. Prof. Rains mentors teams in the Healthcare cohort, helping them develop

their products and craft their business plans. He dedicates at least 10 hours each week over the summer to helping teams, which was extremely valuable to our growth as fledgling entrepreneurs. To this day, he continues to be one of our most enthusiastic supporters and advisors.

An educator's central role is to enable students to succeed, and Prof. Rains has embraced this role wholeheartedly. I strongly believe he should be recognized for his commitment to providing the best possible environment for students to learn and develop as engineers, scientists, and citizens of the world.

Sincerely,

A handwritten signature in black ink, appearing to read 'Cassidy Wang', written in a cursive style.

Cassidy Wang
B.S. Biomedical Engineering
Georgia Institute of Technology '18
cassidyjwang@gmail.com
614-795-1281

It is my honor to nominate James Rains with great enthusiasm for the 2019 Undergraduate Educator Award. Over the past 6 years, I've gotten to know Professor Rains both personally and professionally through his leadership and mentorship in both Junior and Senior Design. Since then, I had the privilege to serve as a Teaching Assistant for Junior Design under his guidance and have sought his professional advice on many occasions throughout my career.

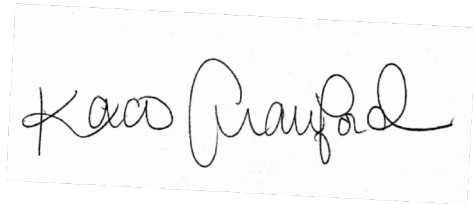
In the classroom, Professor Rains demonstrates teaching excellence in core classes of Junior and Senior Design. His real-world experiential knowledge is not only incredibly evident, but entirely contagious. He is willing and eager to share not only his knowledge and technical skills, but his professional advice and his own experience, including the launch of his own medical device company this year. The enthusiasm with which he teaches engineering design makes the class an entirely different experience than a typical classroom lecture; I couldn't help but be excited to go to class each day, and there were never enough pieces of wisdom one could possibly capture from his lectures and studio sessions. He truly demonstrates Georgia Tech's vision of progress and service, made evident by his unmatched and truly impressive industry connections for the Senior Design program. The program has more clinical and industry partners than any other in the US and perhaps globally, giving students in his courses the feeling of a professional "internship" that goes far beyond the expectations of an academic course. James led the new collaboration between Georgia Tech and the Mayo Clinic, having his teams working with their clinicians to solve unmet clinical needs. Both teams that he has overseen with this have been very successful, and are pursuing their projects as a startup. Under his guidance, BME capstone teams have continued to perform well at internal and external competitions, which showcase how well the teams are educated and coached. His teams have won the best overall Capstone team at the Spring and Fall 2018 Capstone Expos, placed third in the national DEBUT competition, and have been finalists and presenters at the Collegiate Inventors Competition at the US Patent and Trademark Office.

In addition to leading the BME Capstone Program and Chairing Georgia Tech's Multidisciplinary Capstone Program, Professor Rains is incredibly involved in other campus initiatives, including the Create-X program, where he coaches the healthcare startups in the LAUNCH accelerator each summer, and additionally leads a section of Georgia Tech's Start-Up Lab course for aspiring entrepreneurs. Throughout his involvement in campus activities, James is seen as a leader in the Design and Entrepreneurial education field. He was a recipient of the 2019 Georgia Bio Innovation Award and Finalist for the Petit Institute Entrepreneurship Award. He also serves as an invited participant on several academic interest boards, including an invited member of the planning committee and session moderator for the 2018 BME-IDEA conference, as well as an invited session chair and speaker for the International Conference for Innovations.

Outside of the classroom, Professor Rains has always been enthusiastic about offering mentorship and guidance to students. I've experienced this firsthand both as a student and as an alumni. I always felt like he cared about my learning, my career, and my life, and I always knew that I'd have a supporter and friend in him. On numerous occasions as an alumni, Professor Rains has taken the time to speak with me and gather feedback on the BME curriculum and how to make coursework more relevant for students who have a career in industry in mind. He's also always shown a great interest in helping me exceed my professional goals, and great support in my professional endeavors.

In conclusion, I could not think of a more fitting candidate for this award. Professor Rains embodies what it means to be both a leader and a listener; a true public servant of the institute. His knowledge and passion make him an incredible educator, and his accessibility and investment make him an outstanding mentor. It is with great enthusiasm I support his nomination for the 2019 Undergraduate Educator Award.

Sincerely,

A handwritten signature in black ink, reading "Kaci Crawford", enclosed in a dashed rectangular border. The signature is written in a cursive style.

Kaci Crawford
B.S. Biomedical Engineering, 2016