STANFORD ENGINEERING

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December 19, 2008

Mr. James MacDonald
1385 Cedar Street
San Carlos, CA 94070

Dear Jim,

I am pleased to introduce this year's graduate students receiving support from one of the MacDonald Fellowships. Ellis Garai and Joshua Giegel, top graduate students in Mechanical Engineering, are recipients of The John R. MacDonald Memorial Fellowship. Pratap Rao, also in Mechanical Engineering, is this year's recipient of The Daniel W. MacDonald Memorial Fellowship. Finally, Pierre-David Letourneau, a student in Computational and Mathematical Engineering, is this year's recipient of The Robert F. MacDonald Fellowship Fund.

I hope that you will enjoy reading the enclosed letters from the students, which describe their backgrounds and what they hope to achieve at Stanford. You will have the opportunity to meet them in person at our annual Fellowship Reception this spring; we can also arrange for a less formal meeting if you would like.

Also in the spring, you will receive a report on the financial activity of The John R. MacDonald Memorial Fellowship Fund, The Daniel W. MacDonald Memorial Fellowship Fund, and The Robert F. MacDonald Fellowship Fund along with a copy of the University's Annual Report. I hope you will let me or any of our External Relations staff know if you have questions about either of them.

As always, it is my pleasure to award these fellowships to talented and deserving Stanford Engineering students. The academic vitality of the school depends upon our ability to attract the very best students to Stanford, and your generosity enables us to continue to do this. Please accept my deep gratitude for your support.

Best wishes for the new year.

Sincerely,

James D. Plummer

Enclosures

Dear Mr. MacDonald,

I would like to express my greatest gratitude for The John R. MacDonald Memorial Fellowship that has allowed me to begin my graduate study in the mechanical engineering program at Stanford University this year. Stanford University was the first university to start a Biodesign Program, with many prestigious faculties, which collaborates with the mechanical engineering department. This collaboration has made my experience worthwhile.

After attending a math and science magnet high school, I went on to UCLA where I studied mechanical engineering (Design & Manufacturing Option) and received my BS in 2006. Then, I worked as a Research and Development Engineer for Advanced Bionics which was recently acquired by Boston Scientific. This experience resulted in a passion for medical device development. It allowed me to combine my engineering expertise while helping people at the same time.

I was, thus, determined to return for a graduate education and work on my MS in biomechanical engineering. I ultimately would like to be an entrepreneur and be able to take on the great challenge of creating a start-up company in the medical device field.

I am, without a doubt, enjoying my time here at Stanford. There are so many resources available at my fingertips. It is certainly my privilege to be studying in such a great environment with talented engineering and medical professors and students.

I would like to thank you from the bottom of my heart for your support. Every day I feel incredibly fortunate to continue my education at Stanford. I am glad that I can finally say thank you to the people who have made my dream a reality. I believe unique experiences in the past and my ambitions for the future will further enrich the diverse study environment here at Stanford. Please feel free to contact me at anytime to discuss things in more detail.

Kind regards,

Ellis Garai

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Recipient:	Ellis Garai
Hometown:	Sherman Oaks, CA
Department:	Mechanical Engineering
Undergraduate:	University of California, Los Angeles

The John R. MacDonald Memorial Fellowship

Ellis grew up in the outskirts of Los Angeles, where he attended a math and science magnet high school. He was president of several clubs, including the National Honor Society and peer-to-peer tutoring. Subsequently, he attended UCLA, where he earned his BS in mechanical engineering. He continued his extra-curricular activities by reaching out to high schools through the UCLA Alumni Scholars Club and by serving as tutoring chair for the UCLA Engineering Honor Society.

The completion of Ellis' undergraduate career led him to Advanced Bionics (recently acquired by Boston Scientific), where he worked as a research and development engineer. This experience resulted in a passion for medical device development, allowing Ellis to combine his engineering expertise with his desire to help others. He was then determined to pursue a graduate education and work on his MS in biomechanical engineering.

Biomedical engineering, coupled with a mechanical approach, enables one to create products that will help doctors improve their patients' lives. This ability to help people through engineering instills a passion in Ellis that drives him every day. His immediate goals include completing his graduate education; however, his long term goal is to be part of the driving force of new product research and development in industry, in order to more directly help patients.

Joshua Giegel
November 21, 2008

Dear Mr. MacDonald,

My name is Josh Giegel and I am a second year fellowship student in the Mechanical Engineering Department and I am the recipient of John R. MacDonald Memorial Fellowship, without which I would not be able to attend Stanford. Thank you very much for your support of the engineering program and in particular myself.

I have heard nothing but good things about John MacDonald, and I am truly honored that I am the recipient of a fellowship in his name. He seemed like a very ambitious person whose passion for his career was very deep, a trait which I see in myself. His unfortunate accident was a tragic loss for the scientific community, but hopefully his memory has lived on through this fellowship and encouraging students be more than themselves and do something for the greater good. I will continue to strive to try to meet the high standards that John MacDonald set for himself and hopefully I can come close to attaining them.

Sadly, my remaining time here at Stanford will be short, as I am graduating in December of this year. I specialized in fluid mechanics, heat transfer, and energy systems for my Master's degree. The majority of my classes were in these fields as was the research I conducted. This research was on boundary layer transition in high speed (hypersonic) flow. This is beneficial in studying things like the Space Shuttle reentering the earth's atmosphere and how to improve airplane designs. Starting next year I will be working at SpaceX, a startup company in El Segundo, California. They design and fabricate rockets to put satellites, probes and many other things into space. It is a new company that is doing very well and has a high potential for growth. I will be working in the propulsion group on advanced designs for the next generation rocket engine they will be using! My time here at Stanford was very enjoyable both in and out of the classroom.

Outside the classroom I have been fortunate enough to be able to see and visit many of the attractions that the Bay area has to offer. From San Francisco to Yosemite, Lake Tahoe, Death Valley it has been an amazing experience! The friends I've made will last a lifetime, as will the memories. Additionally, I have been able to play on the Stanford Ice Hockey team and as someone who grew up playing hockey on the east coast it was great to know that I could continue playing out here at high level.

I really wanted to thank you for your support and for continuing to support Stanford graduate students. It really makes a difference and I know that this experience has significantly changed my life and given me knowledge that I would not have gotten otherwise. I am truly grateful and hope to live up to the high standards that John MacDonald set. Thank you.

Much Obliged,

John D Giegel

Joshua D. Giegel

STANFORD
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Recipient:	Joshua Giegel
Hometown:	Pittsburgh, PA
Department:	Mechanical Engineering
Undergraduate:	Pennsylvania State University

The John R. MacDonald Memorial Fellowship

Joshua received his undergraduate degree in mechanical engineering from Penn State University, where he focused on thermal systems. While there, he was able to develop a computational code to model radiative heat transfer in re-entry vehicles. This initial work has helped Joshua during his master's research at Stanford because he is, again, working on high speed (hypersonic) vehicles. This time, however, he is investigating the fluid mechanics side, specifically how boundary layers transition in the presence of a protuberance. He finds the study to be very enjoyable.

Outside of class, Joshua has been able to travel extensively around the Bay Area, visiting areas such as San Francisco, Lake Tahoe, and Yosemite. He enjoys the plethora of activities and beautiful weather in the area.

Joshua plays on Stanford's ice hockey team, which allows him to stay in shape playing a sport he has loved since he was a child. He has truly enjoyed his time at Stanford and feels he has created memories and friends that will last a lifetime.

Dear Mr. MacDonald,

I am a second year Master's student in the Thermosciences Division of the Mechanical Engineering Department at Stanford, and have been supported by the Daniel W. MacDonald Memorial Fellowship since I started at Stanford five quarters ago. I am writing to express my gratitude and appreciation for this generous gift that has given me, in an absolutely critical way, the chance to follow my dream.

I came to admire and respect science at an early age. I was delighted by every scientific achievement that I read or heard about and it seemed to me that science was life's ultimate pursuit. This feeling grew stronger as time went on and I began to read science fiction, popular non-fiction and autobiographies by famous physicists and mathematicians, and began to focus more heavily on math and science in school. The order and beauty of the universe, and its laws and inner workings were the subjects of my constant fascination, and I wanted nothing more than to study and investigate fundamental science.

By the time I began my undergraduate studies at the Worcester Polytechnic Institute, however, this clarity had wavered. In particular, I saw that the engineering disciplines offered many of the challenges found in the pure sciences and gave the practitioner the tools to put science to use. I soon found myself enjoying and focusing on mechanical design. For my "Major Qualifying Project" I worked at Gillette's South Boston Manufacturing Center, redesigning cam-driven assembly machines for reduced vibration and greater operating speeds. I also interned at a startup company, designing disposable assay tubes to be used in a novel, handheld blood-testing device.

My time at WPI was truly memorable, but before I was done I knew that I was missing out on what really made me tick – the truths hidden in the nooks and crannies of the physical world. I applied to graduate schools, yearning for the opportunity to do fundamental research. But, having spent the previous three years studying cams and linkages, I worried that my lack of suitable preparation would make me a weak candidate. Admission to Stanford and the award of this fellowship were a dream come true. I began looking for a research advisor and project as soon as I got to Stanford, and found that my interests closely matched those of Dr. Xiaolin Zheng, a newly appointed Associate Professor at Stanford. The support of this fellowship allowed me to work with Dr. Zheng and show her that I could learn quickly, think creatively and make real progress in research.

My research focuses on the spontaneous, rapid growth of one-dimensional metal oxide nanostructures using a flame synthesis method. I am investigating the process by which these nanostructures nucleate and grow. This is the subject of avid research in materials science today, and is still poorly understood. The project brings together many different

subjects, such as crystallography, thermodynamics, multiphase and crystal kinetics, and quantum effects. The applications for the semiconducting metal nanostructures that interest me most are in the field of clean energy, for use in photovoltaics, solid oxide fuel cells, and for the chemical looping combustion of coal. After a year of research, I am ready to publish my first paper, and plan on taking my qualifying exams for Ph.D. candidacy in the spring. Dr. Zheng, now confident in my abilities, is happy to support my future doctoral work. At last, I am answering my calling.

I am enormously moved by the nobility of Mr. and Mrs. Robert MacDonald and hope, someday, to emulate them by giving as freely as they did. They will always have my utmost thanks and admiration.

Sincerely,

Pratap Rao

Pratap Rao

pmrao@stanford.edu

(781)724-3098

STANFORD
ENGINEERING

Recipient: Pratap Mahesh Rao

Hometown: Bangalore, India

Department: Mechanical Engineering

Undergraduate: Worcester Polytechnic Institute

The Daniel W. MacDonald Memorial Fellowship

Pratap Mahesh Rao received his bachelor of science in mechanical engineering from the Worcester Polytechnic Institute in Worcester, Massachusetts, under the tutelage of Professor Robert L. Norton. For his "Major Qualifying Project" he worked at Gillette's South Boston Manufacturing Center, redesigning cam-driven assembly machines for reduced vibration and greater operating speeds. For the duration of his studies at WPI, Pratap was the recipient of WPI's Trustees' Scholarship, a merit-based full-tuition scholarship. He graduated with high distinction and was awarded The Salisbury Prize, a faculty-nominated honor for the most meritorious seniors of the graduating class.

Pratap is currently pursuing a graduate degree in mechanical engineering at Stanford University, working with Assistant Professor Xiaolin Zheng on the synthesis and characterization of one-dimensional metal oxide nanostructures, and investigating their nucleation and growth mechanisms. In his free time, Pratap sings and tours with Raagapella, Stanford's South-Asian a cappella group.

Dear Mr. MacDonald,

My name is Pierre-David Letourneau. I am a 1st-year Ph.D. student at the Institute for Computational and Mathematical Engineering at Stanford University and I was lucky enough to benefit from your generosity through the Robert F. MacDonald Fellowship. I am writing to express my appreciation for your kindness.

I am originally from Canada and, as my name might indicate, I am from the francophone region of Quebec. My story is somewhat different. I was diagnosed with cancer at the age of nine. This situation put a lot of strain on my academics, as I had to miss a lot of classes at an early age. This might have put an end to it all, but struggle and hard work allowed me to graduate from high school on time and with the highest distinctions. I then moved from my hometown to Quebec City in order to complete my pre-University studies. After two years there, I made another daunting move by deciding to attend McGill University, an English-speaking institution. My studies had so far been conducted solely in the French language, and I was raised in an area where French was predominant. Even though this decision involved making lots of sacrifices, in the end it turned out to be beneficial. I graduated with the highest distinctions from the Honours Mechanical Engineering program with a minor in Mathematics last June. At this point, I had already been offered admission to some of the world's top schools in applied mathematics. Unfortunately, my financial situation did not allow me to attend most of them, and it is thanks to your generosity that I am now here at Stanford. You can thus understand when I say that there are no words to express my gratefulness.

Coming to Stanford offered me the opportunity to work with some of the top scholars in Mathematics, Statistics, Computer Science and Engineering. As such, it did not take me long to get involved. I am already participating in a research rotation with Professor George Papanicolaou and Assistant Professor Laurent Demanet in the field of compressed sensing. I hope this is just the beginning, as I am planning to work with as many faculty members and get exposed to as many research topics as possible before deciding the area in which I want to specialise in. My ultimate goal would be to enter the world of academia. This is why I decided to enter the Ph.D. program immediately after the completion of my undergraduate degree.

Among the awards I have received are the NSERC Alexander Graham Bell Canada Graduate Scholarship, the FQRNT – "Bourse de maitrise en recherche", the ASME Foundation Hanley Scholarship, the McConnell Award, the NSERC Undergraduate Summer Research Award, the Hong Kong Polytechnic University Sponsorship for Inbound Exchange Student Award, the J.W. McConnell Scholarship and the Governor General of Canada Academic Award. In addition, my team and I competed and finished first in the 2006 ASME International Student Design Contest. Besides my passion for Applied Mathematics, I also have an interest for Philosophy, a subject in which I will be pursuing a Masters degree concurrently. Finally, besides all this, I have a passion for travelling. I have already visited many countries including China, Japan, Laos and Turkey, and I hope to see much more of the world.

Thank you so very much,

Pierre-David Letourneau

Pierre-David Letourneau
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Recipient:	Pierre-David Letourneau
Hometown:	Saint-Marc-des-Carrieres, Canada
Department:	Computational and Mathematical Engineering
Undergraduate:	McGill University

The Robert F. MacDonald Fellowship

Pierre-David Letourneau is a PhD student at the Institute for Computational and Mathematical Engineering at Stanford University. He was awarded his undergraduate degree with distinction in honors mechanical engineering with a minor in mathematics from McGill University in Montreal, Canada. His undergraduate thesis was in the field of fluid-structure interactions. Its purpose was to model and solve equations regarding the highly nonlinear three-dimensional motion of long cantilever pipes carrying fluid and fitted with a large end-mass. His work was performed under the supervision of Professor Michael P. Paidoussis and Dr. Christian Semler, both highly regarded specialists in the field.

Among the awards he has received are the NSERC Alexander Graham Bell Canada Graduate Scholarship, the ASME Foundation Hanley Scholarship, the McConnell Award, the NSERC Undergraduate Summer Research Award, the J.W. McConnell Scholarship, and the Governor General of Canada's Academic Award. In addition, his team competed and finished first in the 2006 ASME International Student Design Contest. His academic working experience includes a research assistantship at McGill University as well as a current teaching assistantship at Stanford. He is currently participating in a research rotation with Professor George Papanicolaou and Assistant Professor Laurent Demanet in the field of compressed sensing.

Pierre-David finds the ICME program unique as it stands at the focal point of engineering, computer science and applied mathematics. In this way, it allows students to take a multidisciplinary approach to their studies. Besides his passion for applied mathematics, Pierre-David also has an interest in philosophy, a subject in which he will be pursuing his master's degree. In his spare time, he loves to travel around the world. Among the countries he has visited are China, Japan, Laos, Canada, and Turkey.