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**DEAN'S ADVISORY COMMITTEE
STUDENT VENTURE GRANT APPLICATION**

Please read all instructions and regulations on the reverse side of this sheet prior to the completion of this form. **The original plus 7 copies of your proposal are due in the Dean's Office on the 2nd Friday of the Block by 1:00 p.m.**

DATE SUBMITTED October 13th, 2006

NAME _____ CLASS _____ WORKER BOX _____ EXT. _____

ID # 046686 HOMETOWN (Not Address) _____

NAME _____ CLASS _____ WORKER BOX _____ EXT. _____

ID # _____ HOMETOWN (Not Address) _____

PROJECT TITLE Geophysical Survey and Glacial History of the Amundsen Sea, Antarctica

BRIEF DESCRIPTION OF INTENDED USE OF FUNDS
My intended use of funds is on accomodation for six nights in New Zealand and Chile, food for those days, and protective equipment from the harsh climate.

PROPOSED DATE/BLOCK OF USE Blocks Five and Six, 2007

NAME OF FACULTY SPONSOR Christine Siddoway

HAVE YOU BEEN THE RECIPIENT OF A PREVIOUS VENTURE GRANT Yes No

IF SO, WHAT AMOUNT? _____ WHEN? _____ REPORT SUBMITTED? _____

TOTAL AMOUNT OF VENTURE FUNDS NOW REQUESTED \$1000

ARE YOU SEEKING OTHER FUNDING FOR THIS PROPOSAL? Yes No

IF YES, WHAT IS THE SOURCE? _____

If this proposal is approved, I understand that it is my responsibility to notify the Dean's Office immediately if I do not pursue my project as proposed to the Dean's Advisory Committee. I further understand that all funds are to be used according to the proposal as submitted and approved by the Dean's Advisory Committee. Any changes to an approved project must be submitted to the Chair of the Committee for approval. **Please note: the IRS requires that we report Venture Funds as taxable income.**

SIGNATURE _____ DATE 10-13-06

*****DO NOT WRITE BELOW THIS LINE*****

DATE _____ ACTION TAKEN _____ DATE _____

BLOCKS TO BE USED _____ REPORT SUBMITTED _____

COMMENTS AND SUGGESTIONS:

Geophysical Survey and Glacial History of the Amundsen Sea, Antarctica with the Columbia University

West Antarctica is a focal point for research on current climate change because its ice sheet resting upon bedrock shows signs of potential instability. I will be joining an expedition with Columbia University that will revolve around gaining a better understanding of the ocean's influences on the ice shelves in the Amundsen Sea, Western Antarctica. My proposal requests funding in the amount of \$1000 for travel expenses and equipment costs associated with this opportunity.

One past study tied to my trip concentrates on the Pine Island Glacier Basin—an area in the Amundsen Sea that perfectly exemplifies the potential instability of West Antarctica's ice sheet. By studying the subglacial topography, David Vaughan of Columbia University found that one trunk of the Pine Island Glacier Basin (PIGB) shows signs of extreme vulnerability. The glacier lies partially on the basin of bedrock, but has dipped far below sea level numerous times over the past two decades. One must understand that when a glacier is below sea level or no longer protected by bedrock beneath, it is highly unstable and likely to melt quickly. Between 1992-1998 the PIGB receded at a rate of one kilometer per year. If this particular glacier trunk were to break off and fully melt, it would have the capability of raising the sea level globally by ~24cm. Just one piece of a glacier! Another vital researcher from Columbia University, Stanley Jacobs, gives more of a background to Vaughan's studies. Jacobs found that climate change (rise in temperature) increases the circulation of the ocean and thus increases the rate of glacial bottom melting. As ocean temperature rises, so does the stress and flow velocity of the glacier, decreasing the glacier's resistance to melt.

A current priority of researchers is to extrapolate the long-term climate history of West Antarctica. The Amundsen Sea recently lost its total ice content, allowing researchers

to map the marine shelf and study the glacial features in the bedrock and glacial sedimentary deposits. Patterns in the sediment indicate glacier ice flow directions and reveal whether there were high or low levels of ice at the time of sedimentation. The Columbia University project led by Frank Nitsche uses swath bathymetric mapping—a time intensive procedure that requires around the clock equipment monitoring. Joining this project with Columbia University will help me cultivate skills that are impossible to learn in any college setting. For example, I will gain a better understanding of GIS and other data collection technology used for surveying marine geology. Not only will I be adding to my geological skills, but I will also experience more independence and a world that I am unaccustomed to.

Now, the questions to ask are, “what does all of this mean, and how does it apply to a student at Colorado College?” These studies of West Antarctica are important because they provide the means to model the rates at which the ice sheet currently deteriorates. These models then apply to our understanding of what our future may hold. For example, in the aforementioned study conducted by Stanley Jacobs, the ocean’s temperature straight off of the Antarctic continent has risen approximately $.2^{\circ}\text{C}$ over the past twenty years. This temperature increase leads to about a 2m/year increase in glacier melting. These data from West Antarctic prove the presence of global temperature increase. Since climate change has the capability of impacting our lives so much (remember the 24 cm rise in sea level from one glacier trunk) we need to understand the processes and speeds at which global warming occurs in order to protect ourselves and our home.

My Antarctic journey will allow not only myself, but also the entire Colorado College community to gain a better understanding of the repercussions of global warming. While I am on my excursion from Colorado Springs to New Zealand then Antarctica to Chile and

back again, I will be completing an independent study for the geology department. An independent study for my major involves a paper, poster, and presentation on “Geology Day” to all professors and declared geology majors. My presentation to the geology department will simply give the students a better idea of what is going on in Antarctica and cement the main idea of previous studies—global warming is real and happening right now. In addition to giving my presentation at Geology Day, I will present my research findings to Christine Siddoway’s GY 100: Antarctic Science class. I hope that my presentation to this class will make enough of an impact as to cause my fellow students to think about global warming and its repercussions.

The Columbia University has provided me with an amazing learning experience. The National Science Foundation (NSF) funded the University’s research, and Stan Jacobs is kindly allowing me to join the research crew. The Columbia University will be providing all of my funds for air travel, large equipment, heavy clothing, and accommodation while aboard the Nathaniel B Palmer research ship. While I am incredibly thankful for their vast contributions, I will not be able to join their crew with their finances alone. From the Colorado College Venture Grant program I seek funds to cover accommodation and food during my travels. In addition to accommodation, I will also need protective equipment from the harsh conditions in the extreme south. I am thankful to have an amazing opportunity like this, and I hope you consider my trip a good investment for my future as well as the college’s.

Budget¹

Six nights stay in New Zealand and Chile (between \$45 and \$70/night)	\$465
Food during six nights/days in Chile and New Zealand (at approximately \$15/day)	\$120
Prescription glacier sunglasses	\$175
Physical/dental exams (A series of exams needed to visit Antarctica)	\$150
Ground transportation to and from airports	\$36
Calling card	\$10
One set of long underwear	\$50
Total:	\$1006

¹ This budget represents the maximum cost of my expenses on my trip.