



ASSOCIATION OF CHRISTIAN SCHOOLS INTERNATIONAL
INTERNATIONAL HEADQUARTERS

"That in all things He might have preeminence" Colossians 1:18



April 1, 2004

Kevin Simmons
Orange Park Christian Academy
1324 Kingsley Avenue
Orange Park, FL 32073

Dear Distinguished Recipient:

Congratulations! Your school's exemplary program, *TEKNA-THEOS Inc.*, has been recognized in the Exemplary School Programs issue of our *Christian School Education* magazine. Enclosed you will find five complimentary copies of the magazine to use and distribute as you determine. You will also find enclosed a voucher for one ACSI convention registration fee for the 2004/2005 school year. A framed certificate will be presented to your school at the ACSI convention you attend next year.

We are extremely pleased with how this edition of *Christian School Education* has come together, and hope that you and the other schools who have programs featured will find it very honoring to what is being accomplished through these programs.

You can be pleased to know that the thought and energy that has gone into developing your program can be multiplied many times over as others will now have the opportunity to develop a similar program at their schools by seeing what you have done.

Congratulations on receiving this recognition, and thank you for taking the time to participate in the exemplary school program selection process. We are finding this to be a very effective way to expose Christian schools to programs that are impacting students and others in unique and profound ways.

God bless you as you continue in your ministry to transform lives.

Sincerely,

Robert M. Miller, Ed.D.
Director of Administrative Leadership Development

TEKNA-THEOS Inc.

Orange Park Christian Academy

ACSI Region: Florida

PROGRAM OBJECTIVE

to better educate high school students through space-related biomedical and engineering research



SCHOOL PROFILE

GRADE LEVELS

K-12

ENROLLMENT

285

YEAR FOUNDED

1981

CHIEF ADMINISTRATOR

Jerry D. Stigliano

SCHOOL CONTACT INFORMATION

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SUMMARY OF PROGRAM

To help our high school students get excited about possible careers in the sciences, medicine, or engineering, we at Orange Park Christian Academy created TEKNA-THEOS Inc. A non-profit research and education corporation, TEKNA-THEOS Inc. was formed by a teacher and is staffed by students who design, build, and test a bioreactor for studying bone-forming cells, or osteoblasts, in microgravity.

In spring 2003, TEKNA-THEOS Inc. became the first high school organization to receive a Florida Space Research and Education Grant (totaling \$18,640) from the Florida Space Grant Consortium (FSGC). The FSGC is part of the Florida Space Research Institute (FSRI), whose purpose is to support Florida-based space research and education.

In fall 2002, students in TEKNA-THEOS Inc. discussed their bioreactor ideas with FSRI officials at NASA's Kennedy Space Center. Then students met in summer 2003 with our primary subcontractor, a University of California Irvine laboratory located at NASA's Marshall Space Flight Center. By December 2003, we plan to have a working prototype bioreactor for bench testing.

The mission statement of TEKNA-THEOS Inc. is "to better educate high school students through space-related biochemical and engineering research." This area of study was chosen because the primary physiological deterrents to prolonged manned spaceflight are bone degeneration and muscle atrophy. We also believe that a better understanding of osteoblasts will help doctors treat people with osteoporosis.

TEKNA THEOS Inc. is organized into three divisions, each managed by an upperclassman. The cell biology division obtains an understanding of cell processes and bone maintenance, de-

velops a working knowledge of osteoblast function and regulation, and designs the experiment and creates all protocols. Students in the engineering division learn about hydraulics, pump design, power supplies, heating and cooling elements, sensors, and data collection; and they assemble and test the bioreactor that will carry out the recommended experiment in microgravity. The marketing division establishes corporate and community relationships, generates technical and financial support, establishes a relationship with NASA, oversees the incorporation process, archives all work for publication, and coordinates all company efforts.

The students have used facilities at various medical school libraries, finished the incorporation process, completed a preliminary requirements document, and submitted a concept drawing for our primary subcontractor. In addition, students have learned how to write resumes and business correspondence, carry out medical database searches, conduct themselves in business meetings, and use computer software in practical applications. TEKNA-THEOS Inc. and its students have been written about in the local newspapers eight times in the last 16 months. After graduation, TEKNA-THEOS Inc. alumni can continue to participate in research activities.

The voluntary participation has grown from 6 students to 18. Students submit individual and team efforts to various national science competitions. This year, all junior high students will complete an instruction module reviewing manned spaceflight and future research opportunities aboard the International Space Station, and all 7th through 12th graders are participating in NASA Student Involvement Programs.