

Contact: Andrea Anania

**EQUIPMENT PURCHASES**  
**UNIVERSITY OF IOWA AND IOWA STATE UNIVERSITY**

**Action Requested:**

- ▶ Approve the University of Iowa's request to purchase:
  - ◆ Two Siemens Artis Q. Zen Biplane Systems at a cost of \$4,296,771 (includes the syngo neuro parenchymal blood volume functionality for \$1,999,990 and the syngo angio package for \$2,296,781); and
  - ◆ A Zeiss Xradia 520 Versa Micro Computed Tomography Medical Imaging System at a cost of \$1,108,442; and
- ▶ Ratify the Executive Director's June 29, 2015, approval for Iowa State University to purchase an Aberration-Corrected Scanning Transmission Electron Microscope (AC-STEM) at a cost of \$3,661,400.

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**Executive Summary:** The Board is asked to approve two equipment purchases for the University of Iowa each costing more than \$1,000,000; (1) the two Siemens systems for the departments of Pediatric Cardiology and Neurology for the new University of Iowa Children's Hospital; and (2) the Zeiss system for CT research conducted across the entire campus.

The Board is also asked to ratify the Executive Director's emergency approval for Iowa State University to purchase an AC-STEM for the new state-of-the art Laboratory Sensitive Instrument Facility. This purchase was time sensitive. A delay of another six weeks waiting for Board approval would potentially impact federal funding and future Department of Energy support.

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**Background:** Chapter 7.06B(12) of the Regents Policy Manual requires that:

- ▶ Equipment costing more than \$1,000,000 must be submitted to the Board for approval;
  - ▶ The Executive Director may approve emergency purchases which exceed \$1,000,000 to be followed by Board ratification. Emergency purchases are defined as purchases that are critical to sustaining patient care or human life, maintaining critical research equipment, or similar instances. Emergency purchases may also be defined as those purchases that are time sensitive;
  - ▶ Before submission to the Executive Director for approval, emergency purchase requests must be approved by the vice president for business and finance, superintendent, or equivalent title, or their designees, with subsequent ratification by the Board of Regents at the next scheduled meeting; and
  - ▶ Requests submitted to the Board Office for approval must include the following information:
    - ◆ Description of the equipment;
    - ◆ Justification of the need for the equipment;
    - ◆ Any known alternatives to the equipment proposed; and
    - ◆ Estimated cost and source of funding.
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**Analysis:**

**UNIVERSITY OF IOWA**

**SIEMENS MEDICAL SOLUTIONS USA INCORPORATED ARTIS Q. ZEN BIPLANE SYSTEMS (two requested)**

**Description of the Equipment**

Two Siemens Artis Q. Zen Biplane systems are requested by the University of Iowa Hospitals and Clinics (UIHC) capital management team on behalf of the departments of Pediatric Cardiology and Neurology for the new University of Iowa Children's Hospital.

One x-ray system includes the syngo neuro parenchymal blood volume functionality that allows for displaying blood volume distribution in the brain and will replace the existing Pediatric Catheterization Lab equipment previously purchased in 2008, which is reaching the end of its useful life. The second system will be an additional x-ray system which includes the syngo angio package that allows for real-time display of native and subtracted angiography images.

Both systems will be located on the fifth floor of the John Pappajohn Pavilion.

**Justification of the Need for the Equipment**

The University reports that:

- ▶ The systems incorporate new digital detector technology coupled with an x-ray tube that provides high quality imaging at a significantly lower radiation dose than the existing x-ray systems are capable of producing. The high-quality, ultra-low dose imaging is coupled with advanced applications that support precise guidance during interventions thereby improving efficiency and patient outcomes;
- ▶ The systems support patient care for pediatric cardiac interventions, neurology, and electrophysiology procedures and will serve as a backup lab for emergent stroke cases;
- ▶ The purchase of the two systems will allow physicians and patients to receive the benefits available through technical and clinical diagnostic improvements; and
- ▶ Continuing to use the existing equipment will result in increased repair costs.

**Any Known Alternatives to the Equipment Proposed**

A Request for Proposal (RFP) was issued. Of the six proposals received, Siemens Medical Solutions USA Inc. submitted the proposal which was determined by the Evaluation Committee to be the most responsive and the best value.

The award from this RFP provides an additional savings of \$387,133 from the Strategic Alliance Purchasing Agreement between Siemens Medical Solutions USA Inc. and the University of Iowa. UIHC has standardized on Siemens equipment due to the advantages gained in equipment pricing, maintenance and training.

**Estimated Cost and Source of Funding**

The cost for the Siemens Artis Q. Zen Biplane systems is \$4,296,771. The Artis Q. Zen Biplane system that includes the syngo PBV is \$1,999,990 and the cost for the syngo angio package is \$2,296,781. The source of funding is UIHC John Pappajohn Pavilion Pediatric Cardiac Catheterization Lab Relocation and Catheterization Replacement funds.

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**ZEISS XRADIA 520 VERSA MICRO COMPUTED TOMOGRAPHY (CT) MEDICAL IMAGING SYSTEM**

Description of the Equipment

The Zeiss Xradia 520 Versa Micro-CT system is requested by the University of Iowa Carver College of Medicine Radiology department for CT research conducted across the entire campus.

X-ray CT is a technology that uses computer-processed x-rays to produce tomographic images (virtual slices) of specific areas of the scanned specimen, allowing the user to see what is inside it without cutting it open. Digital geometry processing is used to generate a three-dimensional image of the inside of an object from a large series of two-dimensional radiographic images taken around a single axis of rotation.

The Zeiss Xradia 520 Versa Micro-CT will be installed in the Small Animal Imaging Center which is a core facility of the Iowa Institute for Biomedical Imaging located in the Pappajohn Biomedical Discovery Building.

Justification of the Need for the Equipment

The University reports that:

- ▶ The system is being acquired to support the research efforts of nine actively funded National Institutes of Health investigators with current research projects located in the colleges of Medicine and Engineering as well as other users on an as needed basis located in the colleges of Medicine, Engineering, Dentistry, Public Health, and Liberal Arts and Sciences;
- ▶ The system will provide significant improvements in speed, resolution, and ability to image larger animal specimen sizes than equipment currently available on campus or other systems available in the marketplace; and
- ▶ The system can accommodate samples up to 30cm in diameter. Other comparable systems require a small specimen size (~1-2mm) to achieve data at the same level. The Zeiss Xradia system has the ability to progressively image samples at increasing resolutions. Other micro-CT systems would allow for a ~100mm sample to be imaged at a low resolution, but require physical dissection to reduce specimen size, thus degrading the specimen or rendering them useless for additional scanning. The Zeiss system has specialized specimen chambers for local experiments which is also unique in the small animal research market.

Any Known Alternatives to the Equipment Proposed

The Zeiss Xradia 520 Versa Micro-CT System is the only system used in animal research that provides the capability of progressive imagery with a smaller specimen size, eliminating the need for physical dissection, as well as the ability to perform local experiments.

Estimated Cost and Source of Funding

The cost for the Zeiss Xradia 520 Versa Micro-CT System is \$1,108,442 and the source of funding is National Institutes of Health High End Instrumentation grant funds.

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## IOWA STATE UNIVERSITY

### **ABERRATION-CORRECTED SCANNING TRANSMISSION ELECTRON MICROSCOPE (AC-STEM)**

#### Description of the Equipment

A scanning transmission electron microscope (STEM) is used for high power magnification of thin material samples, while also performing chemical analysis through X-ray and energy loss processes. Aberration correction (AC) allows for higher resolution (magnification) than a traditional STEM provides. The proposed AC-STEM system consists of a vacuum sample chamber, microscope body and electronics, control station, detectors, power supplies and software.

#### Justification of the Need for the Equipment

The University reports that:

- ▶ As part of a collaboration between ISU and the US Department of Energy (DOE) Ames Laboratory, the AC-STEM will be housed in the new state-of-the art Laboratory Sensitive Instrument Facility (LSIF) at the Applied Science Center on land leased to DOE which the Board previously approved. The collaboration will allow: (1) ISU and DOE Ames Laboratory researchers to access a series of high end research instruments in a facility that has been optimized to allow maximum performance from these systems; and (2) ISU to attract sponsors for complex chemical/material analysis related projects;
- ▶ The LSIF is a facility designed, constructed and funded by DOE to be sensitive to vibrations. It will be jointly utilized by ISU and the Ames Laboratory to do research that currently cannot be conducted at any other location;
- ▶ The AC-STEM is one of several highly sensitive instruments being installed; the others being funded by the Department of Energy. Currently, there are no AC-STEMs on the ISU campus; and
- ▶ Getting the LSIF fully equipped and operational with all of the instrumentation is critical. This is time sensitive and important to ISU's ongoing relationship with the DOE Ames Laboratory. A delay of another six weeks waiting for Board approval would potentially impact federal funding and future DOE support. LSIF is a unique facility and the AC-STEM is critical for research to be effectively conducted in the facility.

#### Any Known Alternatives to the Equipment Proposed

The University reports there are only three companies worldwide that manufacture and sell AC-STEM systems of the type required. The needs of the Engineering Research Institute were competitively bid using the Regents sealed bid process. FEI of Hillsboro Oregon was determined to be the low compliant bid.

#### Estimated Cost and Source of Funding

The cost for the AC-STEM is \$3,661,400 and the source of funds include university general funds, Engineering College funds, and the Ames Laboratory.