



The Academy NEWSLETTER

THE AMERICAN ACADEMY
OF
CARDIOVASCULAR PERFUSION
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FALL 2009

The Academy Creates Student Liaison Committee

A student liaison committee was developed at the previous Academy meeting in Dallas, TX in hopes to encourage the students to become more involved with the organization. The goal of this committee is

to develop a close relationship with the current students within perfusion programs in hopes to have these students develop an ongoing relationship with the Academy. The chairperson of the student liaison committee is Richard Melchior and is working with Bill Riley, Richard Ginther and Karen Jones toward fostering a strong relationship with perfusion programs and enrolled students.

One major goal for the committee was to create a forum for students to express themselves candidly, openly and often! After much deliberation, a Facebook page was created solely for the use of currently enrolled perfusion students. This invitation-only page will allow for chat room discussions, posting of photo and video content, guest moderators and much more.

A letter was sent to perfusion program directors across the country to make them aware of the work being done and requesting that they notify their students of this resource. The student liaison committee is confident that the AACP Facebook page will generate interest in Academy membership, encourage students to attend the annual meeting and potentially bridge gaps between diverse curricula from programs across the country.

There are many other ways this committee would like to involve students by way of the Facebook page and further Academy meetings. We encourage feedback on this idea of developing a relationship with the current students in perfusion programs. If any member of the Academy has any ideas or suggestions for this committee we welcome any ways to help make this committee more effective. This committee may actually be contacting many members of the Academy to become involved within this new adventure, so please keep a lookout for any such requests!!!

Sincerely,
Richard Melchior, CCP

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Inside This Issue

Student Liaison Committee

31st Annual Seminar

Our Host Hotel

On Bypass

Pre-Registration Form

Student Section

Important Dates

Our Sponsoring Partners

Sponsoring Members

Key Attractions

31st Annual Seminar of The American Academy of Cardiovascular Perfusion

Loews Vanderbilt Hotel

Nashville, Tennessee

January 28-31, 2010

Thursday, January 28, 2010

9:00 AM – 1:00 PM

Council Meeting

10:00 AM – 3:00 PM

REGISTRATION

2:30 PM – 4:30 PM

Fireside Chats

Evidence-Based Medicine

Pediatric ECMO

Pediatrics Grown Up/Adult Congenital Heart Surgery

Perfusion Safety

Teamwork and Communication

5:00 PM – 7:00 PM

REGISTRATION

5:00 PM

Opening Business Meeting

Fellow, Member, Senior and Honorary Members

5:30 PM – 8:00 PM

Sponsor's Hands-On Workshop & Reception

Friday, January 29, 2010

7:00 AM

REGISTRATION

8:00 AM – 9:30 AM

Scientific Session

9:30 AM – 10:00 AM

Break

10:00 AM – 11:30 PM

Scientific Session

11:30 PM – 1:00 PM

Lunch

1:00 PM – 3:30 PM

Special Scientific Session (Panel)

Developing a Safety Culture: It's More Than Rules, Policies and Procedures

Moderator: Robert C. Groom, CCP

3:30 PM – 5:30 PM

Fireside Chats

Aortic Surgery

Blood Management

Minimally Invasive Cardiac Surgery

Open Student Forum

Pediatric CPB

6:30 PM

Induction Dinner

Fellow, Senior, Honorary Members & Guests

Saturday, January 30, 2010

7:00 AM

REGISTRATION

8:00 AM – 9:30 AM

Scientific Session

9:30 AM – 10:00 AM

Break

10:00 AM – 11:30 PM

Memorial Session

11:30 PM – 1:00 PM

Lunch

1:00 PM – 3:30 PM

Special Scientific Session (Panel)

Impact of Healthcare Reform on Cardiac Surgery: Seeing 20/20 in 2010

Moderator: Daniel FitzGerald

3:30 PM – 5:30 PM

Fireside Chats

Adult ECMO/Walking ECMO

Chemotherapeutic Uses of the HLM

Perfusion Safety

Teamwork and Communication

Update on VADs

Sunday, January 31, 2010

8:00 AM – 10:00 AM

Scientific Session

10:00 AM – 12:00 PM

Fireside Chats

Aortic Surgery

Blood Management

Evidence Based Medicine

Pediatric CPB

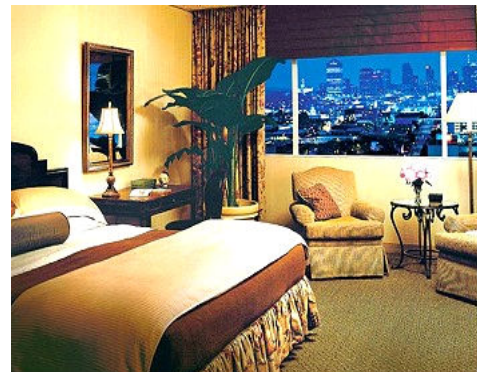
12:30PM

Closing Business Meeting

Fellow, Senior and Honorary Members Only

***Our 2009 Host Hotel
Loews Vanderbilt Hotel***

**\$179 per night
Single or Double Occupany
Reservations: 800-336-3335**



ON BYPASS

Rethinking Atherosclerosis

Arterial occlusive disease continues to be associated with the vices of western civilization. Smoking, fat-rich diets, sedentary lifestyles, and the stresses of modern living have all been implicated as causes of atherosclerosis. And yet, researchers have known for some time that arterial disease existed during the time of ancient Egypt. Paleopathology, the study of disease in ancient human and animal remains, has given new insight into the antiquity and evolution of acquired, congenital, traumatic, nutritional, and infectious disease processes. This article examines the prevalence of atherosclerosis in mummified remains, and suggests that arterial lesions of 3000 years ago were no different than those of today.

Egyptian Mummies

Sir Marc Armand Ruffer is the undisputed Father of Modern Paleopathology. In 1921, Ruffer developed a technique of rehydrating desiccated tissue for microscopic examination that is still used today by researchers. Starting in 1909, Ruffer examined mummies dating from the time of the Persian Conquest (500 B.C.). In addition, Greek and Coptic mummies belonging to various Dynasties were also dissected. In all, Ruffer's investigation of mummified remains ranged over a period of 2000 years – namely, from 1580 B.C. to 525 A.D. In over 100 mummies, Ruffer determined that the existence of calcified atheromatous patches in the thoracic and abdominal aorta was very common. In one mummy, the left subclavian artery was almost completely blocked just above its origin by a raised, ragged, calcified, atheromatous lesion “as large as a 3-penny bit”. Lesions were also present in many of the common carotid arteries, but the most marked changes were found in the pelvic arteries and those of the lower limbs. Upon examination of the legs of an old woman from the Twentieth Dy-

nasty, Ruffer concluded that “her distal vessels had been converted by calcification into rigid, bony tubes down to their minute ramifications”.

Alaskan Mummies

Naturally frozen bodies of ancient human beings have also been found in Alaska. The oldest, dating back to approximately 400 A.D., was that of a 53 year-old Eskimo woman found on St. Lawrence Island in the Bering Sea in 1972. At autopsy, yellow streaking in the aorta and coronary arteries (both visibly and microscopically) suggested the presence of moderate atherosclerosis. In 1980, an entire Alaskan family was discovered in a house in Barrow, the northernmost community in Alaska. Radiocarbon dating suggested the family lived around the time of 1520 A.D. The presumed mother of the family, estimated at 45 years of age, exhibited extensive atherosclerosis in all three coronary arteries. In addition, her mitral valve showed signs of healed bacterial endocarditis. Following autopsy, each body was reburied in accordance with the wishes of the town elders, with a small memorial erected.

Concluding Thoughts

The cause of atherosclerosis, both now and in ancient times, remains obscure. Egyptian diets were comprised mainly of vegetables – meat was generally reserved for times of celebration. Tobacco and syphilis were not known during Egyptian times, and thus can be ruled out as causes for arterial lesions. Conversely, both beer and wine were consumed, and Egyptians did get drunk based on drawings and ancient artworks. Stress, while certainly different in nature, did exist. But the degree to which it is responsible for disease is a matter of argument. Unlike the Egyptians, the ancient Alaskans ate meat almost exclusively.

Kelly D. Hedlund, MS, CCP

The Michael E. DeBakey
Heart Institute of Kansas

Hays, Kansas

Alas, the presence of atherosclerosis in both ancient groups suggests that diet alone may not be a critical factor. The theory that excessive hard work during Egyptian times promoted atherosclerosis has largely been dismissed. The time-tables of Egyptian workmen showed they toiled no more than eight hours a day, and took a holiday every seven days. Perhaps Ruffer sums it up best when he states, "I cannot therefore at present give a definite reason why arterial disease should have been so common in ancient times. It is interesting, however, that it is similar both in prevalence and in anatomical characters".

References

Ruffer MA. On arterial lesions found in Egyptian mummies. *J Pathol Bacteriol* 1911;15:453-462.

Ruffer MA. Remarks on the histology and pathological anatomy of Egyptian mummies. *Cairo Scientific J* 1910;4:3-7.

Scientific J 1910;4:3-7.

Zimmerman MR. The paleopathology of the cardiovascular system. *Tex Heart Inst J* 1993;20:252-257.

In Memoriam Robert O. Pfefferkorn

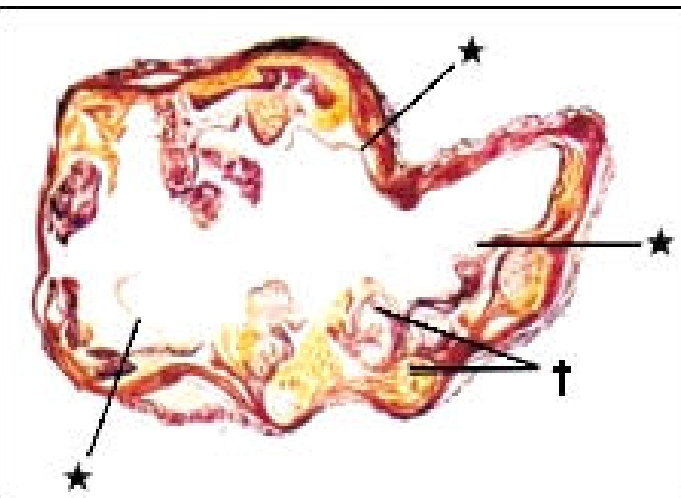


Robert O. Pfefferkorn

Born in San Diego, California on July 21, 1943. Died in Annapolis, Maryland on July 20, 2009 from pulmonary complications following quadruple bypass in April of last year. He is survived by three children: Christopher Pfefferkorn, Portland, OR, Eric Pfefferkorn, Harmony, FL, and Heather Pfefferkorn, Mobile, AL and three grandchildren: Halie, Hunter & Conner Pfefferkon.

Bob was a perfusionist of the first order who generously shared his skills and knowledge with the perfusion community. He was a member of the American Academy of Cardiovascular Perfusion, a lifetime member in the American Society of Extra-Corporeal Technology, and an officer on the American Board of Cardiovascular Perfusion. He co-authored the pediatric perfusion education module for AmSECT, the first of its kind in the profession, and conducted research in the field.

Aside from his work, his passion was the sea. He will go back there. His life was too short but he left it without regrets.



Cross section of a peroneal artery from an Egyptian mummy

★ Depicts endothelial lesions

■ Depicts calcified patches

(from Ruffer's private collection of published drawings)

PRE-REGISTRATION FORM
The 2010 Annual Meeting of The American Academy of Cardiovascular Perfusion
January 28 - 31, 2010

Please read and comply with all instructions and information on opposite page before completing this form.

MEMBER	FEE	Amount
Registration Fee	\$330.00	_____
2010 Annual Dues	\$145.00	_____
Adult Guest to Workshop	\$25.00	_____

NON-MEMBER (perfusionists, physicians, nurses, technologists)	FEE	Amount
Registration Fee	\$380.00	_____
Adult Guest to Workshop	\$25.00	_____

STUDENT PERFUSIONIST	FEE	Amount
Registration Fee	\$30.00*	_____
Adult Guest to Workshop	\$25.00	_____

**MUST include a letter from the school director*

To take advantage of the Student rate of \$30.00, you must be a current Student Member of The Academy.

FELLOW or SENIOR MEMBER	FEE	Amount
Registration Fee	\$400.00	_____
2010 Annual Dues	\$170.00	_____
Guest to Formal Dinner	\$100.00	_____
Adult Guest to Workshop	\$25.00	_____

FIRESIDE CHAT REGISTRATION

Thursday Sessions (make 3 choices each day)

- 1) _____
 2) _____
 3) _____

Friday Sessions (make 3 choices each day)

- 1) _____
 2) _____
 3) _____

Saturday Sessions (make 3 choices each day)

- 1) _____
 2) _____
 3) _____

Sunday Sessions (make 3 choices each day)

- 1) _____
 2) _____
 3) _____

Choices will be assigned in the order they are received in the national office.

Each Fireside Chat must be limited to 30 attendees per session, each day.

Print or Type

AACP 1009

NAME _____

ADDRESS _____

CITY _____ **STATE** _____ **ZIP** _____

HOME PHONE _____ **WORK PHONE** _____ **FAX** _____

E-MAIL ADDRESS _____ *(Required for confirmation)*

ANTICIPATED ARRIVAL DATE IN NASHVILLE _____

Please read all instructions and information before completing this form.

If you have questions completing this form, please call the national office. Hotel Reservations must be made separately through the hotel.

TOTAL AMOUNT OF PAYMENT \$ _____ **Method of Payment:** ___ **Check*** ___ **Money Order** ___ **VISA/MC**

VISA/MasterCard # _____ **Exp. Date** _____ **3-digit security code** _____

Credit card billing address if different from above.

ADDRESS _____

CITY _____ **STATE** _____ **ZIP** _____

Signature _____

***There will be a \$25.00 service charge for any check returned for insufficient funds.**

INSTRUCTIONS and INFORMATION

o Complete each appropriate section of this form by printing or typing.

This form may be copied, but must include both pages.

o Members must pay their 2010 Annual Dues along with their registration fees by completing that portion of the form.

o You will receive acknowledgment of your pre-registration by January 15, 2010—bring it with you to the meeting.

o No pre-registration will be processed after December 29, 2009.

— **After this date you must register at the meeting.**

o Your receipt and meeting credentials will be available for you at the Pre-Registration desk at the meeting.

o There will be **NO ADMISSION to any Fireside Chat without proper admission credentials.**

o If you are joining The Academy with your registration you must:

1) complete appropriate areas of the form;

2) you **MUST INCLUDE** the membership application form;

3) include the \$25 filing fee;

4) include \$145 for the 2010 Annual Dues;

(Your membership begins with the closing business meeting)

o ONLY VISA/MasterCard credit cards are accepted - with VISA/MasterCard you may FAX your registration to (717) 867-1485

o The AACP Federal Tax ID Number: 63-0776991 (for hospital use only)

o Refund policy: Anyone that is pre-registered for this meeting and is unable to attend will receive a full refund minus \$50.00 for handling, mailing, and processing upon written request before January 12, 2010.

o **Make checks payable to AACP (US dollars). Mail completed pre-registration form and check to:**

AACP

515A East Main Street

Annville, PA 17003

IF YOU HAVE QUESTIONS FILLING OUT THIS FORM, PLEASE CONTACT THE NATIONAL OFFICE (717) 867-1485.

o **If paying by VISA/MasterCard you may FAX this form to (717) 867-1485 or mail to above address.**

**Deadline for Pre-Registration
is December 29, 2009.**

**Hotel Registration Deadline is
December 29, 2009**



The Academy Meeting Registration Fees

PRE-REGISTRATION is available until December 29, 2009. After this date ON-SITE Fees apply.

Registration fee includes entire meeting, including the Fireside Chats, lunch on Friday and Saturday and The Sponsor's Hands-On Workshop.

The following fees will apply:

	Pre-Registration	On-Site
ACTIVE MEMBERS	\$400	\$450
ASSOCIATE MEMBERS. .	\$330	\$380
NON-MEMBERS	\$380	\$430
STUDENTS*	\$ 30	\$ 75
GUEST to Workshop	\$ 25	\$ 25

**requires letter from school director*

Recertification Point Assignment

ABCP

The Program Committee for the Annual Seminar of The American Academy has complied with the rules for CEUs of the ABCP. Signature sheets will be available at various times throughout the weekend. Opening announcements will have further information regarding the sign in sheets. Each attendee will receive a letter of certification after the meeting stating the final CEUs that they signed in for, with a copy to the ABCP. No CEUs may be given without a signature of the attendee for the event. These are Category I CEUs.

NURSING

The American Academy has applied to the California Board of Registered Nursing for contact hours for this program.

The Student Section

CONDITION T

Julie Aluise, Elise Bertoti, Tiffany Nguyen, Elizabeth O'Malley, Mara Roman, Sarah Zygmuncik and Allison Zyra

UPMC Shadyside School of Cardiovascular Perfusion Class of 2009

Condition Transplant (Condition T) is a collaborative initiative involving the University of Pittsburgh Medical Center Presbyterian Shadyside Hospital (UPMC) and the Center of Organ Recovery and Education (CORE), as well as the Peter M. Winter Institute of Simulation Education and Research (WISER Center), OrganDonor.Gov, and the United Network for Organ Sharing. These organizations have cooperated in establishing a rapid team response protocol to specifically address the circumstances that previously excluded emergency department (ED) patients as potential organ donors. The Condition T rapid response team consists of a social worker, Condition T physician, perfusionist, and an Organ Procurement Organization Coordinator (OPOC).

When it is definitively established that an organ donor patient has expired in the ED, the ED charge nurse will officially notify the Organ Procurement Organization Coordinator (OPOC) with a potential Condition T. The OPOC then alerts the Condition T response team, who proceeds immediately to the ED. The Condition T physician then proceeds to insert a 17F arterial inflow catheter into the femoral artery by use of dynamic ultrasound guidance. Once the catheter is properly positioned and secured, 120 ml of blood is withdrawn for tissue typing analysis. A 23F venous outflow cannula is subsequently inserted into the femoral vein using the same technique.

The Condition T circuit is aseptically assembled using a modified Liver/VAD perfusion tubing system. This standard pack consists almost entirely of sterile tubing, a centrifugal pump with accompanying flow probe and terminates with a pair of spikes with pinch clamps to prime the system. This pack is connected to a single Bioconsole with a flow transducer.

Modifications to the standard liver perfusion system begin with adding in two spike lines proximal to the centrifugal pump. Two Y connectors are piggybacked on the venous side of the circuit. From here a small section of tubing is placed on each Y connector and a step down connector is attached. The spike lines are at-

tached to these connectors. The first line closest to the centrifugal pump is used as the preservation solution infusion line and connected to the 5-liter bag of preservation solution. The second line closest to the sterile tubing loop is used as the drain line and connected to a vacuum canister. The bypass line connecting the two Y connectors makes the system a closed circuit. A heat exchanger is cut in distal to the centrifugal pump on the arterial side by using two connectors. The heat exchanger is connected to inflow and outflow water lines coming from a heater/cooler.

The system is primed using a portion of the 5-liter bag of preservation solution, HTK (histidine tryptophan ketoglutarate). Anticoagulant must be added to the prime, therefore, 50,000 units of heparin is added to the first cold 5 liter HTK bag. The HTK bag is hung on an IV pole near the centrifugal pump and spiked into the venous line. The system is gravity primed and circulated at less than 1500 RPMs to remove all the remaining air from the circuit. After the system is primed, the inlet and the outlet of the HTK solution bag will be clamped and the pinch clamps closed on arterial and venous lines.

The color-keyed spikes will be removed from the HTK bag and the primed spike from the HTK infusion line is placed into the second 5-liter HTK bag. The spike from the drain line is cut off and attached to the tubing of the inlet of the suction canister. All four vacuum canisters in the ring stand are connected to each other and sealed off. The wall vacuum line is attached to the first canister and suction is set at -10 to -20 mmHg. The negative suction pressure may need to be increased if there is no venous return. The suction canisters will be used to hold the blood being drained from the patient, which is then replaced by the preservation solution, HTK. A tubing clamp is placed on the venous bypass line between the drain line and HTK infusion line and flow transducer is placed on flow probe. Flow transducer is zeroed and the heater/cooler is filled with ice and water.

With donor cannulas in place and the Condition T system available, the sterile (patient)

component of the modified VAD circuit is presented to the surgical field and the loop separated to distinguish arterial (inflow) and venous (outflow) for proper connection to the appropriate vascular cannulas. A semi-closed arterial/venous system has now been established and initiation of the donor preservation solution infusion and blood displacement process can begin. This is accomplished by clamping the arterial/venous connecting tubing of the bridge assembly. The preservation solution bag (spike line closest to the pump) is then opened and the centrifugal pump (arterial side) is used to perfuse preservation fluid to the donor. Vacuum-assisted exsanguination is simultaneously achieved by opening the canister-collecting system (spike line closest to the venous cannula). The infusion/exsanguination process will continue until the perfusionist observes that all donor blood has been displaced by preservation solution. When complete exsanguination is verified, the solution infusion and blood evacuation lines are clamped and the arterial/venous connecting bridge reopened. A completely closed arterial/venous system is now established for continuous perfusion of cooled preservation solution through the donor's vasculature. The concept and design of the procedure is to help assure prolonged viability of donor organs for improved transplantation outcome.

The Condition T perfusionist is additionally responsible for managing the perfusion system during donor transport to the operating room, and then transfers responsibility to the OPOC who manages the donor organs until they have been procured. This includes maintaining the perfusate volume and temperature, as well as monitoring flow and resistance parameters. All events are meticulously documented on a Condition T perfusion flow sheet.

Organs initially targeted for ER recovery utilizing the Condition T procedure include the liver and kidneys. Following are CORE transplantation facts for how long these organs remain viable after conventional procurement, but before transplantation:

- Liver 18 Hours to 24 Hours
- Kidneys 48 Hours to 72 Hours

It is anticipated that the Condition T rapid response protocol will significantly reduce donor organ ischemic times well below the CORE standards. As discussed, the Condition T objective is to enable organ donation in the ED.

In conclusion, Condition T was conceived to enable organ donation in the ED and to increase organs available for transplantation. The Condition T initiative will provide an additional source for organ donor availability. It is the intention of the UPMC School of Cardiovascular Perfusion Class of 2009 to follow this introduction to Condition T with actual results of our first few experiences in implementing the Condition T rapid response protocol. Stay tuned.

Acknowledgements

The authors would like to acknowledge Robert Rush, CCP and Dr. Michael DeVita for their input and guidance on this paper.

Important Academy Dates

The ACADEMY ANNUAL MEETING DEADLINES

ABSTRACT DEADLINE	October 15, 2009
MEMBERSHIP DEADLINE	November 28, 2009
PRE-REGISTRATION	December 29, 2009
HOTEL REGISTRATION	December 29, 2009
2010 ANNUAL MEETING	January 28 - 31, 2010

Others Meetings

Update on Perfusion Devices

October 22-24, 2009

Medical University of South Carolina

Charleston, South Carolina

Website: <http://sites.google.com/site/perfusiondevices/>

Contact Phone: 843-792-2445

Contact Email: acselljr@musc.edu

CSCP 2009 Annual General Meeting and Scientific Sessions

October 24-28, 2009

Shaw Conference Center

City, State, Zip: Edmonton, Alberta, CANADA

Website: www.cscp.ca

Contact Phone: 1-888-496-2727

Contact Email: eric.laliberte@hotmail.com

*The American Academy of Cardiovascular Perfusion
Greatly Appreciates These Sponsoring Members for
their support of all Academy Programs.*

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MAQUET CARDIOPULMONARY

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SORIN GROUP USA, INC.

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TERUMO CARDIOVASCULAR SYSTEMS

All About our Corporate Partners

The New MAQUET Cardiovascular: Your Partner in Innovative Perfusion Products

Over the last two years, MAQUET Cardiovascular has grown significantly in size, expanding our product offerings, sales force, and customer service and educational programs. MAQUET Cardiovascular was formed when we combined our existing Cardiopulmonary business with the Cardiac Surgery and Vascular Surgery businesses that we acquired from Boston Scientific and Guidant in 2008 and from Datascope in 2009. MAQUET Cardiovascular is divided into four groups: Cardiopulmonary (perfusion products), Cardiac Assist (Datascope), Cardiac Surgery (Clampless Beating Heart and Endoscopic Vessel Harvesting) and Vascular Interventions. We now have nearly 200 dedicated sales representatives in the United States to assist our customers.

Our Cardiopulmonary group, which includes our perfusion products, is dedicated to offering systems that support perfusion needs and improve patient outcomes. We recently implemented a new dedicated customer service department in New Jersey. Furthermore, we have enlisted former Datascope service representatives to support MAQUET hardware, ensuring the fast and reliable technical service our customers need.

We employ 100 sales personnel located throughout the country, including 10 dedicated Perfusion Territory Managers, to support your product education and training needs. In addition, we have a 5000-square foot Surgical Academy at our U.S. headquarters in Wayne N.J., where customers can view first-hand our innovative products and participate in regularly scheduled educational programs.

MAQUET Cardiopulmonary offers a broad range of innovative products to support the work of perfusionists and help ensure optimal patient outcomes. These products include:

QUADROX-i

Where Integration Meets Innovation

MAQUET's QUADROX-i generation is an evolving family of oxygenators. QUADROX-i has FDA clearance for use with anesthetic gases and boasts a reduced prime volume while maintaining maximum heat exchange and gas transfer. The unique membrane construction is responsible for the industry's lowest pressure drop (40 mmHg at 4 lpm). Like our earlier generation oxygenators, this new generation of oxygenators is surface coated. The QUADROX-i is available with MAQUET's SOFTLINE polymer coating, which has been in use in Europe since 2006 and is also available in BIOLINE, our covalently bonded heparin coating. The QUADROX-i is available with or without MAQUET's new integrated 40 micron arterial line filter, which allows the user to further reduce prime while maintaining safety standards.



QUADROX D

Innovative Engineering and Extensive Clinical Experience

The QUADROX D with diffusion membrane provides constant, optimum safety especially in the case of prolonged perfusion. Its tight hollow-fibres made of polymethylpentene eliminate plasma leaks and effectively prevent the formation of microbubbles. For optimum blood handling QUADROX D is available with BIOLINE or SAFELINE COATING. Our standard SAFELINE COATING minimizes transmembrane pressure increases with exceptional reliability. Our long established BIOLINE COATING shows a significant improved hemocompatibility. Thrombocyte adhesion and activation are considerably reduced with BIOLINE COATING.

Tom Shannon

*Cardiopulmonary Group
Marketing Manager*

MAQUET Cardiovascular

Wayne, New Jersey



ROTAFLOW Centrifugal Pump Unique Design and Unparalleled Performance

MAQUET's ROTAFLOW Centrifugal Pump has a spinning rotor with a flow channel design that imparts rotary motion to the incoming blood, directing it through a spiral housing to the outflow port. The rotor of the ROTAFLOW Centrifugal Pump is suspended by a permanent magnetic field. The one-point sapphire bearing and the 32 ml priming volume combined with the spiral chamber assure smooth blood handling and optimized blood flow.

The centrifugal head incorporates an integral flow and bubble detection mechanism that combined with its drive unit, the ROTAFLOW Console, can be used either stand-alone or in combination with our HL20 Heart Lung Machine.

MECC: Minimized Extracorporeal Circulation Pioneering Minimally Invasive Perfusion

Maximizing patient outcomes requires a team and systems approach to making Cardiopulmonary Bypass less invasive. The MECC system is a closed, small volume system that incorporates a BIOLINE coated QUADROXi, ROTAFLOW and VENOUS BUBBLE TRAP. This preconfigured low volume system can be further enhanced using Retrograde priming (RAP) and or Antegrade (AAP) priming techniques to minimize hemodilution and support blood conservation.

By removing the venous reservoir and the accompanying air-blood interfaces you can reduce the activation of systemic inflammatory mediators thereby reducing co-morbidities associated with cardiopulmonary bypass.¹⁻⁴



The VBT 160 is a dynamic bubble trap that optimizes bubble elimination as blood is directed smoothly and gently into and through the bubble trap. The use of centrifugal flow and bubble buoyancy principles results in active and efficient bubble removal. The unique combination of these two bubble trapping principles is a result of outstanding MAQUET development and engineering. The unique de-airing function of both sides of the internal 175 μ m mesh screen enables the perfusionist to handle and eliminate trapped air rapidly and reliably. Incorporating the VBT in the MECC system contributes significantly to increased perfusion and patient safety.

Clinical benefits of the MECC System include:

- Reduced systemic inflammatory response^{1,2}
- Reduced hemodilution^{3,4}
- Greater hematocrit and hemoglobin preservation^{3,4}
- Reduced intraoperative transfusion^{1,3,4}
- Decreased myocardial injury^{1,3}

Continued on Page 12

Continued from Page 11

PLEGIOX Cardioplegia Systems **Powerful, Efficient and Safe**

MAQUET's PLEGIOX uses polyurethane fiber technology to provide optimal biocompatibility and heat exchange for both blood and crystalloid cardioplegia delivery. MAQUET offers both standard 4:1 preassembled and custom configurations of this 31 ml heat exchanger.

PLEGIOX incorporates a unique Hot Shot function to immediately administer normothermic blood or enriched blood cardioplegia. An integrated bubble trap allows safe and efficient separation of air while visibility of the flow path and low pressure drop further increase safety and reliability.



Cannulae and Tubing Packs **Comprehensive First Class Offerings in Line with Hospital and Patients Needs**

MAQUET focuses on quality safety and reliability when fulfilling our customer's needs for cannulae and tubing packs – from single components to the entire set. We offer an assortment of standard and customized tubing packs in addition to a full line of adult, pediatric and ECMO Cannulae.

Our new dedicated tubing pack personnel in our New Jersey facility will help support you and construct your next perfusion system using quality components including options for biocompatible surface coatings and DEHP free tubing.

MAQUET supplies an array of antegrade and retrograde cardioplegia needles and cannulae in addition to specialty items such as the double lumen ECMO and ostial perfusion catheters.

HL20 Heart Lung Machine **Proven Reliability and User Friendly**

The ultimate data acquisition heart lung machine can be configured in a 2-position, 4-position or 5-position base and easily integrates the ROTAFLOW centrifugal console. The system is managed via a single control panel with integrated multiple safety features. The HL20 combines complex technology needed for modern cardiopulmonary bypass with the clear operation and handling necessary for safe and effective patient and operator management. Data management is handled via the JOCAP XL Data Management System, which can integrate inputs from multiple OR devices and accurately interface with Hospital Information Systems if desired.

As we look forward to 2010, MAQUET Cardiopulmonary will continue to invest in the development of innovative technology that will benefit patients. We will be launching several new adult and pediatric perfusion products in the U.S., demonstrating our continued commitment to supporting positive patient outcomes.



For more information, please contact:

MAQUET Cardiovascular
 45 Barbour Pond Drive
 Wayne, NJ 07470
 Phone: 1-973-709-7000
 Toll Free: 1-888-627-8383, option 2
 Fax: 201-995 8910
www.maquet.com

GETINGE Group is a leading global provider of equipment and systems that contribute to quality enhancement and cost efficiency within healthcare and life sciences. We operate under the three brands of ArjoHuntleigh, GETINGE and MAQUET.

- ArjoHuntleigh focuses on patient handling and hygiene, disinfection, DVT prevention, medical beds, therapeutic surfaces and diagnostics.
- GETINGE provides solutions for infection control and prevention within healthcare and life sciences.
- MAQUET specializes in therapeutic applications, products, solutions and services for OR and ICU.

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Nashville's Key Attractions

Belle Meade Plantation

Once a world-renowned 5400-acre thoroughbred horse farm, the plantation showcases the 1853 Greek Revival mansion filled with original furnishings and a large antique carriage collection.

Country Music Hall of Fame and Museum

The world's largest music museum is also an exciting and entertaining destination with something for everyone.

General Jackson Showboat

The greatest entertainment afloat
Lunch and dinner cruises with country music shows and a variety of entertainment.

Adventure Science Center

Go on a scientific adventure the entire family will enjoy. Take a journey through the human body and see what goes on beneath the skin at BodyQuest. Blast off into the sky at BlueMax. If you still have energy, visit the Adventure Tower - scale a wall of skin, lift a car and let your imagination go wild.

Grand Ole Opry

The Grand Ole Opry has hosted thousands of prestigious and memorable performance and events from the CMA Awards and the Gospel Music Awards to special appearances by Dolly Parton, Elton John and Bruce Springsteen. See the concierge for schedules.

The Hermitage

Explore the site that former President Andrew Jackson once called home. Wander through the halls of this mansion and visit the formal garden, slave quarters and the original log cabin the Jacksons once occupied. The plantation was home to more than 150 slaves who worked the farms, cultivated livestock and tended gardens. Take a voyage into the past with Stories from the Slave Community and get a glimpse into the lives of those that contributed to the maintenance of the country's most authentic presidential home.

Nashville Zoo at Grassmere

Explore a wild kingdom with more than 350 species of exotic animals, including Bengal tigers, zebras, cheetahs, ostriches and river otters. Discover the habitats the animals call home and get up close and personal with the critters in the petting zoo.

Ryman Auditorium

The original home of the Grand Ole Opry, the Ryman Auditorium has showcased some of the country's best talent, from Roy Acuff to James Brown and Patsy Cline to Sheryl Crow.

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