Bone marrow cells may contribute to growth of new blood vessels

By Darrell E. Ward

Newborn animals grow rapidly, and they must develop new blood vessels fast enough to keep pace with that growth.

Researchers in the School of Medicine have found that a kind of immature cell that develops in the bone marrow and circulates in the blood contributes to the growth of new blood vessels during the neonatal period.

The researchers also found that a substance produced by the body known as vascular endothelial growth factor (VEGF) causes the immature cells to form new blood vessels at a faster rate.

The findings were published in the Sept. 3 issue of Proceedings of the National Academy of Sciences.

Volleyball coach wins 700th career game

By Tony Fitzpatrick

"This finding has important implications for tumor biology, gene therapy and the treatment of various congenital disorders," said Principal investigator Mark S. Sands, Ph.D., associate professor of medicine and of genetics and a member of the hematopoietic development and malignancy research program at the Alvin J. Sirman Cancer Center at Barnes-Jewish Hospital and the medical school.

Generally, scientists have believed that the cells known as endothelial progenitor cells (EPCs) contribute to new blood vessel growth only after birth. The work of EPCs mature into flat, spindly endothelial cells that form capillaries and fine blood vessels. Later in life, EPCs also are

Washington University in St. Louis

Education receives NSF teaching grant

By Neil Schoenher

The Department of Education in Arts & Sciences has been awarded a $10 million grant from the National Science Foundation (NSF) to create the St. Louis Center for Inquiry in Science Teaching and Learning (CISTL) at the University.

As one of 10 NSF-funded centers for learning and teaching, CISTL will serve as a national model for improving science education through research and researched practice.

"This is a unique opportunity for the St. Louis community to support and to advance the development of an urban learning alliance in science education that links a major research university to important repositories of scientific knowledge in the community," said William Tate, Ph.D., professor of education and chair of that department. "I view this National Science Foundation award to Washington University as significant in developing models of excellence in teacher education and in advancing science education in our schools."

150th anniversary plans under way

The official kickoff of the University of Missouri-Columbia Sesquicentennial celebration is about a year away, but various committees already have jump-started their plans for a successful celebration.

The official kickoff of the celebration will be events during George Washington's birthday this coming spring — Feb. 22, 2003. This event would be a means to reinforce the history of the University.

Novelist Rushdie will visit

Hampton as Hurst Professor

Indian-born novelist and essayist Salman Rushdie will visit the University Oct. 5 and 6 as a Hurst Professor in the Department of English in Arts & Sciences. In addition to the English department, his visit is being sponsored by University Libraries and the Interna-tional Writers Center in Arts & Science.

Most of his appearances will be events associated by the English department. An interview-style talk led by Frishma Pool, Ph.D., assistant professor of English, will be held at 4 p.m., Oct. 5 in Graham Chapel.

However, the public can attend Rushdie's book signing, sponsored by Left Bank Books, the

Limited admission

Due to anticipated high demand and security considerations, only those with a current University identification card will be eligible to attend the Graham Chapel event.

at 7 p.m., Oct. 4 in Steinfeld Auditorium in Steinberg Hall. Call Left Bank Books at 367-6731 for details about the book signing.

Best known for his controversial fourth novel, The Satanic Verses, Rushdie is the author of an impressive number of works of fiction, including Midnight's Children, which won the prestigious Booker Prize. The

See Rushdie, Page 6

See Cella, Page 3

See Cella, Page 3

See Rushdie, Page 6

Bears volleyball coach wins

Neville Mathews posted his 700th coaching win in the Bears' 3-0 victory over Georgia State Aug. 18. He becomes just the 11th active NCAA coach at any level to reach the 700-win plateau.

"Hitting 700 matches is a testament to the incredible players I've been blessed to work with, both at Washington University and the University of St. Francis," Mathews said. "I'm the luckiest guy in the world. This team is such a joy to coach. I've been waiting for this squad all my life." For more sports, see Page 6

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Gaining steam

East Asian professionals program welcomes 3 Journalists

By GERRY EVERDING

THE University's newly created Visiting East Asian Professionals (VEAP) program in Arts & Sciences gains steam this semester with short courses and workshops, visits by prominent Asian journalists and new resources for the East Asian Library.

Established last year in response to a four-year, $1,342,560 grant from the Freeman Foundation of New York, the VEAP program here is part of larger effort by the foundation to support undergraduate Asian studies around the country.

"Our Freeman-funded programs are designed to support undergraduate students to contemporary knowledge about East Asian cultures," said VEAP program coordinator Rebecca L. Copeland, Ph.D., associate professor of Japanese language and literature in Arts & Sciences.

"The program provides our East Asian Studies faculty with a marvelous opportunity to stimulate cross-disciplinary dialogue with colleagues and students in departments that have historically had limited contact with Asia."

The Freeman Grant is the largest single-foundation grant for the promotion of Asian studies that the University has ever received.

This semester, the program will feature visits to campus by three East Asian journalists whose expertise involves issues of finance, public policy and contemporary politics.

• SANG-HUN CHOE, a reporter with The Associated Press in South Korea, won the 2000 Pulitzer Prize for his expose of the Korean War massacre of No Gun Ri (an honor he shared with his two American co-authors). Cho, who arrives on campus in early November, will be a guest lecturer in the East Asian Studies core seminar.

From Oct. 15-Nov. 5, the VEAP program will feature the visiting Asian journalists in a University in Arts & Sciences short course titled "Covering East Asian Journalism East and West."

Offered on four straight Tuesday evenings, the short course will compare perspectives in the East and West.

Elizabeth Tuorenko, Ph.D., senior lecturer in history and director of East Asian studies in Arts & Sciences, will lead the first session; each following session will be led by a visiting journalist.

The course is open to the public and registration is $80. For more information on the course or to register, call University College at 935-6759 or visit artsci.wustl.edu/college.

Faculty members interested in inviting one of these guests to participate in a class may contact the VEAP program, 935-8772.

On Nov. 9 VEAP will host a series of campus workshops and conferences, following an announcement from the Asian journalists and counterparts, both in Arts & Sciences.
Bladder cancer returns sooner with each recurrence

BY DARIEL E. WARD

A study by researchers in the School of Medicine has found that the number of months between recurrences of superficial bladder cancer progressively shrinks with each recurrence.

The study also identified two proteins in tumor cells that may help predict the risk of a first or second recurrence.

The findings were published online Sept. 3 in the journal Cancer and in the Sept. 15 print edition.

"Our findings may help improve the guidelines doctors use for follow-up care for superficial bladder cancer," said lead author Yan Yan, M.D., Ph.D., assistant professor of surgery. "They also could lead to a better understanding of why these tumors recur."

Doctors will diagnose some 56,500 new cases of bladder cancer this year, according to the American Cancer Society. It is the fourth-most-common cancer in men and the ninth-most-common in women. About 40 percent of those cases are superficial bladder cancer, which is cancer that has not yet invaded the deeper layers of the bladder wall. The disease recurs in more than half of those patients and has a fatality rate of 1 percent.

"Little is known about the biology of multiple sequential recurrent tumors or about which patients are most at risk for sequential recurrences," said Yan, who also is a member of the Cancer Prevention and Control Program at the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and the medical school.

The study involved 270 patients with superficial bladder cancer who were treated between January 1994 and April 1999; follow-up time ranged from one to 54 months. Of these patients, 47 percent had one or more recurrences, 14 percent had two or more recurrences and 5 percent had three or more recurrences.

The researchers found that the average time from initial treatment to first recurrence was 13 months, while the time to second and third recurrence was 13 and 13 months, respectively.

The investigators also tested blood vessels known as angiogenesis in the newborn period," said Sands. "It raises questions that might lead to a better understanding of the mechanics of recurrence."

The study also confirmed that a tumor's stage and grade remain the most important factors in determining a patient's prognosis and probability of recurrence.

Tumor stage refers to the degree to which a tumor has penetrated the bladder wall and the number of lymph nodes involved. The American Joint Committee for Cancer staging system is the most widely accepted system for classifying bladder cancer.

"Patients must decide for themselves if they want to review their medical records with information and help as they make the decision," he said.

The trigger effect

EPCs contribute to new blood-vessel growth in mice that received cells at four weeks of age. This suggests that bone-marrow-derived EPCs contribute to new blood-vessel formation in the newborn period," Young said.

The researchers also found that high-dose VEGF increased the density of blood vessels in the heart by more than five times two weeks after the injection, almost eight times after eight weeks compared to animals that received marrow cells and no VEGF. They found a smaller but significant increase in the liver.

"Overall, the study suggests that there may be a window during which VEGF regulates the development of new blood vessels," Sands said.

The study has important implications for pediatrics medicine, said the paper's editor, M. Judith Folkman, M.D., the Julia Dyckman Andrus Professor of Pediatric Surgery at Boston Children's Hospital and Harvard Medical School and a specialist in blood-vessel development.

For example, some infants develop benign tumors of the blood vessels known as hemangiomas that can be very dangerous.

"This study suggests that endothelial cells may be trafficking into those tumors, enabling them to grow," Folkman said. "Perhaps by measuring the number of endothelial progenitor cells in the blood, we can predict which babies have high amounts of VEGF, as some, it would make it easier for endothelial cells to settle in that tumor and form new blood vessels," Folkman said.
Andrews brings Happiness to Edison Theatre Oct. 5-6

BY LIAM OTTEN

aurie Anderson, the superstar techs (of international performance art, will return to the Edison Theatre OYIA-
TENS Series with Happiness, a rare autobiographically inflected centerpiece.

Since the early 1980s, Anderson has pioneered a unique blend of pop music, visual art, and social commentary and innovative technology. Her one-person piece involved stringing her voice with pristine electronic sound, and later works frequently employed electronic filters that transformed her voice from breathtakingly pure to authoritarian male — a her-voice from breathtakingly pure to authoritarian male — a

Many tales center on Anderson's beloved New York City — writing its entry in the Encyclopedia Britannica: "Women's Building 1985: Birth of a Movement". This was first described for her appearance artist, a profession she describes as "anything that does nought but isn't straightforward acting or dancing."

Anderson's previous shows include: United States 1 (1983), Electronic Facebook (1995), and Songs and Songs for Patsy (1996)

She has released close to a dozen albums, including"Wishes" (1987) and Mushroom Warhead (in a Bag) (1992); and Nudie's Official Fashion Show in Chicago in 1947, Anderson earned a bachelor's degree in science

Buddhists can freeze to work on an Amish farm to a youthful stent in their children's hospital.

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Buddhists can freeze to work on an Amish farm to a youthful stent in their children's hospital.
Helfman works on display at Givens

**Sports**

**Women runners win St. Olaf Invitational**

The St. Olaf Invitational cross-country team placed four runners in the top 10 on the 6.5K race route to the St. Olaf Invitational Championship in Northfield, Minn. on Sept. 21. The No. 17 men's team also had a solid showing coming in fourth place. The women's team placed first out of 17 teams with 46 points, second better than second place St. Olaf College. Junior timers Larkelius was the top Bears finisher as she finished fourth in 22:57, Senior Brooke Lane and freshmen Andrea Moorland and Catherine Ogorzaly also turned in top-10 finishes. Junior Matt Hoelle finished fourth for the lone top-10 finish for the men.

**Other updates**

The volleyball team improved to 3-0 on the season with four victories. On Sept. 18, the Bears traveled to Springfield, Ill., to take on августе. College of Sacred Heart-Griffin High School. Senior Rebecca Roseni had 42 assists and nine kills in her return to SHG. Saturday, Aug. 14, 2002, the Bears crossed east for the weekend and post a 5-2 record at the first University Athletic Association Round Robin in 41.

The football team overcame early turnovers and miscues to seemingly put away a last-minute win, only to have Illinois Wesleyan University tie the game on the final play of regulation and win the contest, 31-24, in overtime. The Bears trailed 17-16 late in the fourth quarter with 5:43 left on the clock. Brad Dunagin, with a 21-yard touchdown pass with just 19 seconds left to play, Sep connected with Genovese for the two-point conversion to make it 24-17. The Bears regained a 25-24 lead in the final minute, though, and scored a touchdown as time expired to send it to overtime. Illinois Wesleyan scored first in the overtime and the Bears couldn’t convert on their attempt. Sep connected with Cas and ended up with a score. Beatty capped off the drive with a two-point conversion, sending the Bears to their in 1-0 lead. But Princeton’s Brandon Frank capped on a Bears error to end the game at 1-0. September 3, 2002, the Bears couldn’t win the B flight doubles title. The Bears swept the two doubles flights at the championship, while Eric Genovese took the C flight singles title and teamed with Becky Rovner to win the B flight doubles title. The Bears swept the two doubles flights at the championship, while Eric Genovese took the C flight singles title and teamed with Becky Rovner to win the B flight doubles title.

**Olin School part of new show on KETC**

From entrepreneurial triumphs to Fortune 500 strategies, there is almost no business topic that will not be explored in a new weekly half-hour business magazine series to debut tonight on KETC-TV Channel 9. Produced in cooperation with the Olin School of Business, the show will air weekly with an estimated audience of 17,000. The premiere episode, on sports marketing, includes interviews with NBC broadcaster Bob Costas and the Olin School’s Ambar Rao, Ph.D., the Fossett Distinguished Professor of Marketing. The second episode, on business ethics and an interview with Olin School Dean Stuart I. Fabrikant, is set to air Sept. 21. The No. 17 men’s championship in Northfield, Minn., will air at 11 a.m. on Friday, Sept. 21. The No. 17 men’s championship in Northfield, Minn., will air at 11 a.m. on Friday, Sept. 21. The No. 17 men’s championship in Northfield, Minn., will air at 11 a.m. on Friday, Sept. 21. The No. 17 men’s championship in Northfield, Minn., will air at 11 a.m. on Friday, Sept. 21. The No. 17 men’s championship in Northfield, Minn., will air at 11 a.m. on Friday, Sept. 21. The No. 17 men’s championship in Northfield, Minn., will air at 11 a.m. on Friday, Sept. 21.
Education

CISTL will focus on inquiry-based teaching — from Page 1

Submissions of the grant is the link between issues that range from the departments of education and biology, both in Arts & Sciences. Ph.D., clinical associate in education, serves as a principal investigator and a link between departments.

"Because of its focus on authentic partnerships, this grant gives us an advantage to bring together research and practice in unique and exciting ways," Balcerzak said.

"We value the opportunity to work with Sarah C.R. Elgin, Ph.D., professor of biology and Victoria May, director of the science center's biology, has worked to bridge the gap between education and science, providing a solid foundation for the new center's work."

"Our primary goal is to improve science learning and teaching at the high school level," Klein said. "This includes pre-service and in-service teachers, staff at local science institutions, doctoral and post-doctoral fellows, and even high school youth planning to go into this field."

One key piece of research through CISTL is the collaboration with several national and international universities, said the University's Tyson Research Center, the Saint Louis Science Center, the Saint Louis Zoo, Missouri Botanical Garden, University of Missouri-St. Louis, St. Louis Community College, the Association of Science-Technology Centers and five school districts in suburban St. Louis City, St. Louis Public Schools, Riverbend Gardens, Maplewood-Richmond Heights School District, and Kirkwood.

Rushdie, a former resident of Britain, is known for his controversial 1988 fatwa, which called for his assassination. The fatwa was issued by Ayatollah Khomeini, the Supreme Leader of Iran, in response to Rushdie's book "The Satanic Verses." Rushdie has been living in hiding for nearly a decade due to threats from Islamic militants.

"My interest in education stems from my early experiences, and school choices I made as a child," she said. "As a teacher and as a researcher, I believe that the magic of education is the use of large sets of genetic data to analyze gene-gene interactions, patterns of gene expression and gene function. New genomics is moving the research of science like Elgin forward farther and faster than they had dreamed possible. Elgin wants to share the magic of the undergraduate students and even younger students.

Elgin's research focuses on the role that chromosome structure — the packaging of the DNA in the nucleus — plays in gene regulation in fruit flies.

She has edited the international Gordon Research Conference on Nuclear Protein, Chromatin Structure and Gene Regulation, served on the editorial board of several journals and served on the National Advisory Council for the National Institutes of Health (NIH), but Elgin considers her role as a teacher equally as important.

"We're trying to create informed consumers of genomic information, particularly as it relates to health," said Elgin. "If we want to make researchers aware of DNA and their own unique genome, middle school is the right place to start. I want to help teachers lay a useful foundation for every child.

"The body of work Rushdie has produced makes him arguably the most important novelist in English today," wrote David Lawson, Ph.D., professor in medicine.

"Our primary goal is to improve science learning and teaching across the educational continuum."

CHRISTE KLEIN

CISTL will focus on supporting inquiry-based teaching and learning in science education through professional development.

"Design a self-assessment tool for science educators to help them understand and improve their science teaching; provide internships in schools for teachers, science-institute staff and postdoctoral fellows and pre-service teachers; conduct research studies in science education; offer doctoral and postdoctoral fellowships in science education and science education.
I. Introduction and Policy Statement

A. Chancellor and General Counsel (935-5152).

II. Standards of Conduct

A. The manufacture, possession, sale, distribution and use of illicit drugs is prohibited by city and county ordinance, state law and federal statute. Punishments range from fines of $500 to life imprisonment. The statutes and definitions are based on the “Drug law of Missouri” and the Revised Statutes of Missouri. The manufacture, distribution, possession or use of illegal drugs is prohibited by city and county ordinance, state law and federal statute. Punishments range from fines of $500 to life imprisonment.

III. Legal Sanctions

A. The manufacture, sale, distribution and possession of alcohol is prohibited by city and county ordinance, state law and federal statute. Punishments range from fines of $500 to life imprisonment. The statutes and definitions are based on the “Drug law of Missouri” and the Revised Statutes of Missouri. The manufacture, distribution, possession or use of illegal drugs is prohibited by city and county ordinance, state law and federal statute. Punishments range from fines of $500 to life imprisonment.

IV. Health Risks

A. Abuse of alcohol can produce severe health risks, including:

1. Severe health risks, including death, are associated with the use of illicit drugs. Below are some of the health risks related to each substance. For more information, contact the University Health Services (Hilltop Campus, 935-6666; Medical Campus, 935-7605).

2. Hallucinogens - Large doses of phencyclidine (PCP) may result in a convulsive seizure, coma and death. Mood disorders occur and the user may become violent, irrational and potentially harmful to self and others. Lysergic acid (LSD), mescaline and psilocybin cause sensations and feelings of being changed. The user may experience confusion, anxiety, depersonalization and loss of control. Withdrawal symptoms can include severe agitation, hallucinations and convulsions. Alcohol withdrawal can be life-threatening. Long-term consumption of alcohol can result in irreversible physiological changes. Symptoms are extremely uncomfortable; however, they are seldom life-threatening.

3. Stimulants - High doses of stimulants result in immediate dizziness, tremors, shakiness, dilated pupils and increased heart rate. In addition, stimulants are addictive and withdrawal is difficult. The depressant effects of the drug experience after use has ceased, may occur.

4. Tobacco - Tobacco cigarettes, cigars and pipes are the most widely used drugs in the U.S. They are addictive and the user may experience changes in the brain, heart and lungs. They can cause cancer, lung disease, heart disease and strokes.

5. Cannabinoids - The mood-altering effects of marijuana are the result of the chemical tetrahydrocannabinol (THC). THC is fat-soluble and can remain in the body up to several days. Marijuana can produce mood changes, decreased concentration, memory impairments, impaired motor skills and hallucinations. A single marijuana cigarette contains the same amount of THC as 40 cigarettes. In addition, marijuana use is associated with a higher risk of heart disease, stroke and lung cancer.

B. Alcohol and other depressants can produce severe health risks, including:

1. Severe alcohol poisoning can occur if the person ingests too much alcohol too quickly. This can lead to death. Syncope, or a loss of consciousness, can occur when the blood pressure drops. Convulsions, coma and death can result.

2. Depression - The use of depressants can result in a variety of physical and psychological effects. Depression can cause fatigue, loss of appetite, changes in sleep patterns and mood changes.

3. Valium and alcohol (or other depressants) will potentiate the depressant effects, which can result in death.

C. Physical dependence and tolerance to depressants can develop with repeated use. Withdrawal symptoms, including severe anxiety, tremors, hallucinations, restlessness, agitation and insomnia, can occur when depressants are abruptly discontinued. Withdrawal symptoms can be severe and can result in death.

D. Abuse of alcohol can produce severe health risks, including:

1. Alcohol dependence can cause a variety of physical and psychological changes. In addition, alcohol can affect the brain, liver and heart. Alcohol dependence can cause liver damage, brain damage, and other serious health problems.

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Keith H. Bridwell, M.D., says the stress and challenge of spine surgery have made his long career at the University even more rewarding

By Jim Dreiden

help advance the surgical treatment of patients with complex spinal deformities. Bridwell enjoys a challenge. In addition, it is one of the things he likes best about his job in the stress. He knows from experience that when dealing with the spine, even the best operations don’t always work. "That risk is the bad part of it, but the good part is that because of the stress and the difficulty involved, if you do make someone better, to some extent there’s a higher sense of gratification," he says. Most of his patients are adults and children with scoliosis, a condition in which the spine is curved — not the normal curves that round the shoulders and make the lower back curve slightly inward. Patients with scoliosis have spines that curve side to side. The problem cannot be corrected simply by having to stand up straight.

"Usually physical therapy can’t work," Bridwell explains. "It may help some of the pain symptoms that go along with the deformity, but it can’t really correct the problem. In a growing child, spinal braces can sometimes either stop it from getting worse, but in adults they really don’t help very much."

For those patients, the pre-scribed treatment usually is surgical. Most of the time, that means five hours or more in the operating room as Bridwell uses various techniques — first to loosen up the spine somewhat, then to straighten and stabilize it with bone grafts or with implants that become bone and fuse together segments of the spine.

Spine specialist

Bridwell doesn’t remember exactly how he set out to become a doctor. Like a well-aligned spine, his career path seemed to fall into place naturally. He says support from his parents was critical to his success. Both, by the way, were University alumni.

He decided to specialize in orthopedics primarily because he liked the other residents in orthopedic surgery. Eventually, he settled on spine surgery because it would allow him the opportunity to operate through the abdomen and the chest like cardio-thoracic surgeons, the sub-specialty that was his second choice.

"Keith is one of those very bright, driven people who makes the most of whatever situation he is in," says Richard H. Gelberman, M.D., the Fred C. Reynolds Professor and chief of the Department of Orthopaedic Surgery. "He’s just a remarkable individual — modest, quiet and very effective. And although he has encountered enormous personal tragedy, he has handled it with amazing equanimity and grace."

"He is arguably the most productive spine surgeon in the world. He’s just a remarkable individual — modest, quiet and very effective. And although he has encountered enormous personal tragedy, he has handled it with that kind of people you hope that your children grow up to be." Gelberman says of people helping me."

"Just seem like I belong"

Mala Guerman Bridwell also had University connections, having earned a bachelor’s degree and then graduating from the School of Law as valedictorian in 1979.

Over the years, she became closely acquainted with Bridwell’s colleagues in the community of spine specialists, even attending the annual meetings of the Scoliosis Research Society with her husband. Earlier this month, at the society’s annual meeting in Seattle, she was named president, but Mala was not in attendance. She died in January 2001 after a long illness.

"At least she was able to see me named the first vice president of the society, and she knew it was normal to progress from there to president-elect and then to president," says Bridwell. "She was very interested in the Scoliosis Research Society, and she went to almost every SRS meeting that I attended."

"Colleagues have been impressed with Bridwell’s abilities as a surgeon and clinical researcher for many years, but since Mala’s death, they see even more impressed.

It’s a lot of different people — nurses, physicians, radiology techs, office workers — everybody I’ve interacted with over the years," says, "This place and these people are just so familiar to me. I’ve known since I was a medical student, it just seems like I belong."

Keith H. Bridwell, M.D.

Born: May 4, 1963, in St. Louis
Education: Undergraduate: 1982, A.B., biology and psychology, Washington University; graduate: 1987, M.D., Washington University School of Medicine
Universities attended: Asa C. and Dorothy W. Jones Professor: Chief, Department of Orthopaedic Surgery
Family: Daughter, Grace, 10