Scientists read first 'chapter,' unraveling chromosome 22

"Washington University has viewed Y2K as a serious matter, and we have pursued an aggressive compliance program for nearly four years," said Chancellor Mark S. Wrighton in a letter to deans, directors and department heads. "We are confident that the University is prepared to meet any challenges. We also have many staff who will be working over the New Year's weekend to ensure that any problems that may arise are dealt with promptly and effectively.

"We intend to enter the new year with no significant problems associated with computer hardware, software applications, embedded systems or any services that depend on computer-assisted operation," Wrighton said. "All critical systems and activities that might be affected by the change in year have been evaluated, and where necessary, upgraded. We plan to deal with minor, readily correctable problems in non-essential areas." Hilltop and medical computing services have plans to suspend operations temporarily Dec. 31, a scheduled holiday, so that additional system backups and final Y2K testing can be performed. This is important because it means that users are temporarily unable to connect to a particular system. Most Hilltop systems will be operational by then.

The medical school will be working closely with the BJC hospitals to bring down and back up certain critical medical data systems. Those needing access to medical records will include an article by a new Washington University Small Animal Imaging Research or WUMAR, for five years at $3.2 million. The PET/MRI resource is located on the Medical Campus in the radiology department.

University carpenter Joe Reid crafted this mocked-up version of a proposed new campus sign, to be located at the corner of Forsyth and Skinker boulevards. Reid's woodworking and the painting skills of two other facilities employees combined to make a convincing replica of the collegiate gothic design.

Campus carpenter mock-ups monumental sign

BY CHRISTINE FARMER

Facilities employees have built and painted a large wooden replica of a monumental new Washington University sign that will greet people at the southeast entrance to the Hilltop Campus.

The mocked-up, 15 feet tall, will be erected at the corner of Forsyth and Skinker boulevards this month. The University welcomes comments and input about the design, which should be directed to Ralph Thaman at 935-5831.

"We need better signage to let visitors know where campus sta--" said Steve G. Racker, manager of capital projects and records in Facilities, Planning and Management. "Usually a mock-up is done by the consultant who conceived the idea, but I suggested we do this in-house, since Joe Reid is a really good carpenter." Reid spent three weeks constructing the sign, using 14 sheets of plywood.

"This is definitely the most challenging job I've ever done," Reid said. "I didn't think it would take long, but when I got into that archway it got tedious. This is like something they would build over at Edison Theatre as a prop."

Two other facilities employees, Willie Hoffer and Clayton Utzler, painted the sign in a week and a half using sponges and three different colors to make the wood resemble granite.

"We drove around and looked at some of the buildings and different stones to get the shape and color right," Hoffer said. "This is more like stage props and a nice change instead of doing halls and rooms."

A Rhodes Scholar

At press time, the Record received word that Benjamin E. Cannon, a 1999 graduate and former Student Life editor-in-chief, has received a Rhodes Scholarship to the University of Oxford, England. The Jan. 26, 2000, Record will include an article about Cannon and his selection.
Medicine, Professor and director of the Medical School. She is a member of the American Academy of Arts and Sciences, the National Academy of Sciences, and the Institute of Medicine. Her research focuses on the development of new therapeutic strategies for the treatment of cancer.

Sylvia A. Anderson has been named the new dean of the law school. She comes from the University of Pennsylvania, where she served as associate dean for academic affairs.

The law school has announced that it will create two new positions to support its growing environmental law program. The positions will be funded through an additional $100,000 grant from the Environmental Protection Agency.

The law school has also launched a new program for students interested in public interest law. The program, called "Lawyering for Change," will provide students with practical experience in representing low-income clients.

The law school has received a $250,000 grant from the Ford Foundation to support its work in environmental law. The grant will be used to fund additional stipends for law students working in the field.

In other news, the law school has announced that it will celebrate its 150th anniversary in 2003. The celebration will include a variety of events, including a symposium, a lecture series, and a special issue of the law school's journal.

The law school has also announced that it will begin offering a new course on human rights law. The course will be taught by Professor John Horgan, who is a leading expert in the field.

The law school has also received a $100,000 grant from the Ford Foundation to support its work in environmental law. The grant will be used to fund additional stipends for law students working in the field.

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Spinal cord injury

BY LINDA SAGE

School of Medicine scientists have developed a treatment that reverses the locomotion of rats when administered more than one week after spinal cord injury. They turned embryonic stem cells into precursors of nerve cells and transplanted the precursors into the injury site. In the rats that received the cells, some of the cells survived and developed into the three major types of cells needed for spinal cord repair. In the future, the researchers hope to use this approach to develop therapeutic strategies for humans.

"This is a huge breakthrough," said John W. McDonald, M.D., Ph.D. "This is a hard problem that has not been crossed." McDonald and colleagues report the advance in the December issue of Nature Medicine. McDonald is an assistant professor of neurology and director of the Spinal Cord Injury Center at the medical school and Barnes-Jewish Hospital.

"The biggest problem in treating spinal cord damage is by the time they see existing injuries, it's too late," said Dennis W. Choi, M.D., Ph.D., the Arthritis Foundation-E. C. and Gertie Winnie Professor and head of neurology. "This paper is the first to report delayed treatment that promotes recovery." Between 250,000 and 500,000 Americans have spinal cord injuries, and since many of them are young, they will spend decades in paralysis unless new therapies can be developed. "You might need to repair only a small fraction of the cord's damaged connections to convey valuable information to the brain," said Choi, who is also a neurologist-in-chief at Barnes-Jewish Hospital.

The neurons in the spinal cord have arms called axons that extend several feet in length. As telephones wirelessly carry messages between the brain and the rest of the body, but traumatic injury to the spinal cord can kill neurons or sever their axons, interrupting this flow of information. "One of the biggest limitations to recovery is that the information central nervous system isn't capable of generating a sufficient number of cells to replace those that are lost through injury," McDonald said. "So the real question is, can spinal cord transplantation seem like a possible solution?"

Unlike hearts or kidneys, pieces of adult spinal cord don't survive transplantation. So researchers have tried transplanting embryonic stem cells, which survives but doesn't divide and may form only limited numbers of replacement cells. Building on this initial promise, McDonald and colleagues are exploring the transplantation of nerve precursors isolated from the adult nervous system.

"We've developed a mini spinal cord," said McDonald. "These precursors are very exciting cells," said Choi, "because in gene expression, morphology and physiology they are indistinguishable from real neurons."

The research team treated rats two weeks after a thoracic-level spinal cord injury that affected the animal's hind legs. They transplanted about 1 million nerve cell precursors — derived from mouse ES cells — to a fluid-filled cavity that had developed at the injury site. To prevent rejection, they also gave the animals the immunosuppressant drug cyclosporine, which is used for organ transplantation in humans. Two weeks to five weeks later, the researchers looked for signs of transplanted cells by matching them with markers in real neurons.

They also used special techniques to identify any axons that had properly received signals from the transplanted cells. Some of the cells survived. By two weeks, the transplanted cells had filled the cavity, and some had migrated up to 1 centimeter in two different directions, a distance that is quite substantial for spinal cord fibres. By five weeks, the cells were not as dense, but the injured side still contained mouse axons.

By following the injured cord's chemical cues, the precursors differentiated into some of the appropriate cells for repair: neurons, which transmit information; oligodendrocytes, which wrap the axons of neurons in the fatty sheath needed for efficient conduction; and astrocytes, which maintain an optimal environment for nerve cell function.

Some of the cells had divided into tumors. "This is an exciting field of locomotor tests to assess voluntary locomotion, the researchers compared the performance of the transplanted rats with the performance of injured rats that had undergone sham operations. One month after the surgery, the hind limbs of the control rats could move but not in a coordinated fashion. They also were unable to support the weight of the body. But the hind limbs of the transplanted rats had regained some coordinated movements. They also were partly able to support the body's weight."

Their walking certainly wasn't normal," McDonald said. "But this functional recovery was especially encouraging because the precursor cells were transplanted after the spinal cord injury — a time period that has not been explored before. Moreover, because there is only a small percentage of the transplanted cells that survive, if even some of their survival could be enhanced, it might be possible to restore bowel and bladder control or even walking."

To approach this goal, the researchers plan to generate designer ES cells through genetic manipulation. They identified two enzymes that address lysosomal enzymes with a specific sugar marker. And he identified one enzyme that is critical for the cell to recognize the sugar marker on proteins present in the tissues that the receptor is thought to play an important role in immune immunity. Recent studies suggest the receptor might have additional biological roles.

Baenziger will determine how different receptors recognize different sugar chains, and they plan to test whether embryonic and adult cells can express the different receptors. To gain further insights into the receptor's biological significance, he also will examine the relationship of the different receptors to the types of sugar-bearing proteins present in the tissues where the receptor is found.

In addition, he will generate mice that no longer express the receptor to determine its role in reproduction and innate immunity.

A flock of cranes
Cranes dot the skyline of the Washington University Medical Center during the $320-million multi-year Campus Integration Project. The project includes construction of the new Medical Care Center, which the National Institute of Diabetes and Digestive and Kidney Diseases is conducting, the project, which also includes renovation of existing buildings and removal of older, inefficient structures, is to improve health-care services and make them more accessible.

Jacques Baenziger receives MERIT status

Jacques U. Baenziger, M.D., Ph.D., professor of pathology and of cell biology, has been honored for his specific contributions to the field of glycobiology by receiving MERIT status for his laboratory. The grant from the National Cancer Institute will provide more than $2.5 million during the initial five years of support. It is the second time that Baenziger has been awarded MERIT status from the institute for this grant. The funding enables him to continue studies of a multidrug-resistant receptor that recognizes specific sugar chains protruding from antigen biophysics.

Kornfeld given glycobiology award at meeting

Suzanne A. Kornfeld, M.D., professor of medicine and of biochemistry and molecular biology, has recently received the Karl Meyer Award from the American Academy of Arts and Sciences for her contributions to the glycobiology field.

Kornfeld, who also co-directs the Division of Hematology, has made groundbreaking discoveries about how sugars direct protein movement within cells. These antigen-like attachments allow proteins to be routed to their correct destinations or the way an immune system determines whether a molecule is signalled. Kornfeld's early research uncovered the structures of many sugar chains and the steps involved in forming sugar chains that are linked to the amino acid asparagine. He continued this work in collaboration with his wife, Rosalind Kornfeld, Ph.D., also professor of medicine and of biochemistry.

Stuart A. Kornfeld, M.D., professor of medicine and of biochemistry and molecular biology, has recently received the luteinizing hormone (LH), which is involved in reproduction. The receptor plays an important role in reproduction by regulating an LH's lifetime in the blood.

When the same receptor is expressed on macrophages, it recognizes other sugar chains that are frequently found on the surfaces of pathogens such as yeast, bacteria and viruses. This form of the receptor is thought to play an important role in innate immunity. Recent studies suggest the receptor also have additional biological roles.

Kornfeld will determine how different receptors recognize different sugar chains, and they plan to test whether embryonic and adult cells can express the different receptors. To gain further insights into the receptor's biological significance, he also will examine the relationship of the different receptors to the types of sugar-bearing proteins present in the tissues where the receptor is found.

In addition, he will generate mice that no longer express the receptor to determine its role in reproduction and innate immunity.

Kornfeld has received numerous other honors, including the Passano Award in 1991, the Karl Meyer Award from the American Academy of Arts and Sciences and the American Association of Immunologists. He has also been honored by several honorary societies, including the National Academy of Sciences, the Institute of Medicine, the American Academy of Arts and Sciences and the Association of American Physicians. He has served on numerous editorial and advisory boards.

Kornfeld received a medical degree from Washington University in 1962. After spending two years as a research associate at the National Institute of Arthritis and Metabolic Diseases in Washington, D.C., he returned to the University as a faculty member in 1966. He became a professor of medicine in 1972 and of biochemistry in 1976, the same year he became a co-director of the hematology division. He directed the Medical Student Training Program from 1991 until 1997.
University Events

Fetal Alcohol Syndrome • The Population Dilemma • Zebrafish • Lieder

Thursday, Dec. 9

7 p.m. Filmboard Feature Series. "A Christmas Carol". Shaun Coughlin, prof, of seminar.

Friday, Dec. 10

9:30 a.m. in Anatomy and neurobiology seminar. "The Mechanism of Programmed Cell Death", Bruno Rotman, assoc. prof, of neurology and of pediatrics.

Saturday, Dec. 11

5 p.m. Biochemistry seminar. "Electrostatic Signaling in the Nervous System," Thierry Gauthier, assoc. prof, of physiology and of pharmacology.

Sunday, Dec. 12


Monday, Dec. 13

9 a.m. in Molecular biology and pharmacology seminar. "DNA-protein Interactions," Gary D. Stormo, prof, of genetics.

Tuesday, Dec. 14

10 a.m. in Molecular microbiology and Pathogen Seminar Series. "Bacterial Virulence Factors," Robert Green, assoc. prof, of microbiology and of molecular biology.

Wednesday, Dec. 15


Thursday, Dec. 16


Friday, Dec. 17

9 a.m. in Neurology and neurological surgery seminar. "Protein Oxidation in Alzheimer's Disease," Michael Rosen, the Gustavus A. and Mary E. Davis Professor of Biology, MIT. Cori Aud., 4565 McKinley Ave. 362-7489.
**MLK observance planned Jan. 17**

Martin Luther King Jr.'s dream of harmony and racial equality will be revisited Jan. 17, in an event commemorating the Jan. 15, 1959, birthdate of the slain civil rights leader.

The 13th annual celebration, titled "Where Do We Go from Here? Chaos or Community?" will take place at 4:30 p.m. in Graham Chapel. The program will feature gospel choir music, and student speakers. A reception will follow in Umrich Lounge.

The program, sponsored by the Martin Luther King Commission, is open to the public. For more information, call 935-7105.

**Tuesday, Dec. 21**

4 p.m. Chemistry seminar. "Flickations and Disappearances in the Molecular Protein Folding Trajectory." Daniel W. Wilcox, University of Oregon. Room 311 McMullan Hall. 935-7166.

**Friday, Jan. 7**

8:30 and 9:30 a.m. Travel Lecture Series. "Route 66: A Road to Equality." George T. Holtzman, the Selma and Herman Seldin Professor of Preventive Medicine and Community Health, U. of Missouri Health Sciences Campus. Room 448 Graham Hall. Call 534-7841.

**Monday, Jan. 10**


**Thursday, Dec. 9**


**Friday, Dec. 10**


**Saturday, Dec. 11**

3:30 p.m. Continuing Medical Education seminar. "Sleep Disorders: The Role of Food in the Sleep Process."

**Imaging**

New resource to provide state-of-the-art facilities from page 1

The two are collaborators in several research projects, along with numerous faculty in the medical school and in Arts & Sciences. Both hold joint appointments, Ackerman in internal medicine and Welch in radiology. In Welch's chemistry, WUSAS research will examine small laboratory animals such as transgenic mice — animals whose genomes have been altered — to assist researchers in the study of various aspects of normal and abnormal physiology, including cancers and other diseases. For instance, one project, already begun in collaboration with Jeffrey D. Miller, Ph.D., professor of pathology, and Jeffrey L. Gordon, Ph.D., professor and chair of the molecular biology and pharmacology department, will use PET and MRI imaging to monitor the development of metastatic cancer in transgenic mice predisposed to develop prostate cancer. Images taken repetitively can show the progression of the disease and the progress of the therapy.

**Employment**

Use the World Wide Web to obtain complete job descriptions. Go to www.wustl.edu/Alumni/Hilltop or medicine.wustl.edu/medrec/ (Medrec). AADP staff will be on hand at the party to accept the contribution. The canned goods will be part of a “Food For the Poor” campaign. Washington University Police also invites employees of the company and those who work in the area to the party, including those who work in the area. The auction is being conducted by the University Police, with the proceeds to be used to support the Saint Louis Crisis Nursery.

**Trustees elect Brown, get go-ahead for admissions news**

The University's Board of Trustees named Melvin E. Brown, Commodore Towers, to the board of directors on Dec. 3, according to reports. The University also is expected to receive a contribution of $25,000 from the Saint Louis Post-Dispatch’s 100 Neediest Cases program.

**Holiday giving**

A&D staff raise money for needy

The spirit of giving is, fittingly, alive and well among the staff of Alumni and Development Programs, who have worked throughout the year to raise money for a holiday donation to the Saint Louis Crisis Nursery. The crisis nursery provides a safe haven for children as well as child abuse prevention services.

Through bake sales, a flea market and a bake sale luncheon, the staff have raised nearly $800. A silent auction Wednesday, Dec. 8, will provide the bulk of the earnings, which staff members hope will exceed last year's record collection of almost $2,000. Additionally, employees contribute large quantities of canned goods, which they will deliver to Room 300 in Brookings Hall at the time of their holiday party Friday, Dec. 10.

Matthew Collins, director of the crisis nursery and a 1998 alumnus of the George Warren Brown School of Social Work, will be on hand at the party to accept the contribution. The canned goods will be part of a “Food For the Poor” campaign. Washington University Police also invites employees of the company and those who work in the area to the party, including those who work in the area. The auction is being conducted by the University Police, with the proceeds to be used to support the Saint Louis Crisis Nursery.

**Washington University in St. Louis**

The following incidents were reported to University Police from Nov. 26-Dec. 8, S. Students with full-time status. This release is provided as a public service to prevent safety hazards and is available on the World Wide Web site at www.wupolice.wustl.edu.

**Dec. 3**

2:42 a.m. — A student was apprehended taking a chair from Bryan Hall, intending to use it in her residence. The chair was returned to Bryan Hall.

2:44 a.m. — A group of students leaving a party in Bryan Hall observed breaking down two 10-foot light poles.

University Police also reported for four internal theft reports of thieves, three auto accidents, a small fire and one report of a false alarm.

Hilltop Campus

Hilltop Campus was 1992 a graduate in social work, and Mark received a law degree in 1995.
Sterling H. Schoen, 81, dies

Sterling H. Schoen, Ph.D., a noted manager of management for the John M. Olin School of Business, died Saturday, Nov. 20, 1999, at Missouri Baptist Medical Center after suffering a heart attack. He was 81.

From 1950 until he retired in 1988, Schoen was a professor of management for the Graduate School of Business, named the John M. Olin School of Business, and the Consortium for Graduate Study in Management in 1976, it was named Man of the Year by the Association for the Integration of Management in 1976 for his distinguished Service and Leadership by the consortium in 1991 and chosen as 1998 Teacher of the Year by the University's MBA students. Schoen, who lived in St. Louis, was born in Daggert, Mich., and reared in Des Peres, Wis. He earned a bachelor's degree in economics (magna cum laude) from Lawrence College (now University) in Appleton, Wis., a master's degree in economics from the University of Wisconsin in Madison, and both a master's of business administration degree in management with distinction and a doctoral degree in management from the University of Michigan in Ann Arbor.

Schoen was a member of Phi Beta Kappa and was active in many professional, honorary and social organizations.

He was survived by his wife of 45 years, Patricia Schoen; two sons, Chris Schoen of Canton, Ohio, and Richard Schoen of St. Louis, Ill; a daughter, Jennifer Jeffery of St. Louis, a sister, Norma Meidfield of Madison, Wis; and three grandchildren.

Genome

Scientists sequence first human chromosome

from page 1

additional ones likely. If represen-
tative of other chromosomes, this
suggests that the total
number of genes on all human chromosomes
will not be substantially more or less than
the previously estimated number of
80,000.

The genes range in size from 1 to 1,000,000 bases of DNA in the
human genome, and a mean size of 190,000 bases.

Several gene families appear to have arisen by tandem duplica-
tion. There are families of genes that are interspersed among other
genes and distributed over large chromosomal regions.

There is unexpected long-
range complexity of the chromo-
some with an elaborate array of repeat sequences near its cen-
trome. The existence of so much
repetitive DNA information could help explain how this chromo-
some rearranges or reshuffles its DNA leading to human disorders such as DiGeorge syndrome, which includes a form of mental retardation, and how chromo-
some structure changes over time.

The sequencing of the DNA of chromosome 22 was conducted as part of the international Human Genome Project, which involves scientists in the United States, England, Japan, France, Germany and China.

School of Medicine recognizes employees for years of dedication (The list of 10-year employees will appear in the next issue.)

35 years of service

Joan K. Labrey
Suzanne R. Winker
Sarah Delaney
Katherine C. Fulwider
Andrea M. Sykes
Karen S. Flavin
Don J. Zygmund
Cheryl L. Zmaila
Glenda K. Wiman
Teresa Y. Worley
Sarah Delaney
Richard A. Anderson
Joann K. Labruyer
James M. Hanson
Karen S. Flavin
Glenda K. Wiman
Faye H. Zehlbauer
30 years of service

Sterling H. Schoen
Catherine G. Warner
Rosa T. Vandersand
Maxine Whiteside
Glen K. Wiman
Joanne K. Labruyer
30 years of service

Sterling H. Schoen
Catherine G. Warner
Rosa T. Vandersand
Maxine Whiteside
Glen K. Wiman
Joanne K. Labruyer
30 years of service

Sterling H. Schoen
Catherine G. Warner
Rosa T. Vandersand
Maxine Whiteside
Glen K. Wiman
Joanne K. Labruyer
30 years of service

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Catherine G. Warner
Rosa T. Vandersand
Maxine Whiteside
Glen K. Wiman
Joanne K. Labruyer
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Maxine Whiteside
Glen K. Wiman
Joanne K. Labruyer
30 years of service

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30 years of service

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Joanne K. Labruyer
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Maxine Whiteside
Glen K. Wiman
Joanne K. Labruyer
30 years of service

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Maxine Whiteside
Glen K. Wiman
Joanne K. Labruyer
30 years of service

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Rosa T. Vandersand
Maxine Whiteside
Glen K. Wiman
Joanne K. Labruyer
30 years of service

Sterling H. Schoen
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Jill Stratton goes through job descriptions faster than the University is able to write them down.

For the fourth trip to the campus stationery store in six years, Stratton's business card now reads "associate director of residential life." But already she has a more descriptive title in mind: deputy mayor.

"I really look at it. South 40 is like a small town," she said in a disarming twang that reveals her own small-town Kentucky roots. "Justin Carroll is the mayor. I'm the deputy mayor. I think about it, we deal with all the things that small towns do."

A town of 2,913 — with the vast majority of the residents between the ages of 18 and 20. A town where vibrant energy bubbles and occasionally boils over. A town where the proximity is tight and the intimacy is tighter. A town in dynamic transformation, both physically and philosophically.

Keeping it all in check with a delicate touch are "Mayor" Carroll — more formally known as assistant administrator and dean of students — and Stratton, who personally and personally oversees a network of 11 residential college directors (RCDs), chiefly trained staff professionals, international college directors (RCDs), chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly trained staff professionals, chiefly 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