The report looks at the challenges specific recommendations that were Nine major themes departments and fields of study were suggests directions and recommends desirable and feasible, Macias says. A series of suggested actions that could areas for action, the document provides people thinking about the future.

"We don't know what the future holds, concludes the Committee to Prepare for the 21st Century mentioned the joint degree program as an example of interdisciplinary education that has been highly successful here and encouraged more cross-disciplinary activity at the University. After graduating with his two degrees, Jones plans to join a law firm in Asia, working in intellectual property law.

A University Agenda’ Committee presents recommendations to meet future challenges

Washington University has made excellent progress in the last five decades, concludes the Committee to Prepare for the 21st Century in its final report to the University community. For the University’s future success, the committee presents a number of recommendations intended to make Washington University an even more dynamic institution for the 21st century.

The committee’s recommendations are included in the report, “A University Agenda for the 21st Century,” which was released by Provost Edward S. Macias on April 13. “We can’t see into the future and this is not a futuristic document,” says Macias, who chaired the committee.

“We don’t know what the future holds, but we want to be prepared for whatever the challenges of the future are. This is not a strategic plan. It’s a series of suggested actions that could lead us to be a much stronger University. It’s planning with a small ‘p,’ it’s people thinking about the future.”

Not a wish list for the future, the report focuses on four areas where improvements are both desirable and feasible, Macias says. The report looks at the challenges facing the University as a whole; suggests directions and recommends “next steps.” Individual programs, departments and fields of study were not the focus of the study, he says.

Nine major themes After outlining nine major themes and areas for action, the document gives specific recommendations that were identified as essential to the University in meeting the challenges of the future.

The nine areas are:

1. The University Community, which focuses on creating effective communication strategies and building a sense of community among all members of Washington University, including faculty, staff and students.
2. Undergraduate life and study, which focuses on providing undergraduates learning experiences of the highest quality both in and out of the classroom, and which gives special attention to the experience of the first-year student.
3. Graduate Study, with the aim of improving and expanding Ph.D. education and the preparation of the next generation of scholars, teachers and researchers.
4. Faculty, with a goal of continued success in recruiting and retaining high quality and diverse faculty members, including new ways of thinking about faculty appointments, tenure and career paths.
5. Cross-Disciplinary Activity, which recognizes that although separate disciplines are the foundation of a strong university, significant research and teaching initiatives develop when individuals step across the boundaries of traditional disciplines.
6. Graduate students to take courses in any division of the University, while preserving the strengths of the current reserve system.
7. Cross-Disciplinary Activity, which recognizes that although separate disciplines are the foundation of a strong university, significant research and teaching initiatives develop when individuals step across the boundaries of traditional disciplines.
8. Drawing on the experiences of already successful interdisciplinary research and teaching activities on campus, the report recommends further collaborative efforts in composite areas like biomedical engineering, cognitive science, environmental studies, materials science, performance studies and visual arts, and business economics.

These collaborative activities might include joint appointments for faculty, widespread information on faculty research interests, and academic clusters in the following areas: the arts, the sciences, medicine and engineering; and the social sciences and the professional schools.

International Activities, which recognizes the increasingly interdependent world and calls for the preparation of students for work beyond the boundaries of the United States.

St. Louis, which calls for the continuation of the University’s role as a good neighbor and a constructive, contributing member of the St. Louis community.

Planning, which emphasizes the importance of long-term planning as a guide in establishing priorities, making wise choices and taking advantage of opportunities.

The Process

The report, written as an internal document, reflects the thoughts and work of a broadly based committee of students, faculty and administrators. Beyond the 22-member committee, additional members of the faculty also served on eight subcommittees, and many more members of the Washington University community carefully read a working draft of the report and submitted their reactions and thoughts to the committee.

Gene Brucker, a leading American authority on the social history of medieval and Renaissance Florence, will give a lecture from 3 to 4 p.m. on Monday, April 27, in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex. The talk, which will be held at 1:30 p.m. in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex. The talk, which will be held at 1:30 p.m. in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex.

The lecture is co-sponsored by the Center for American Indian Studies, the Harvard University Center for Advanced Studies in Princeton, NJ, and the American Indian Studies Center.

At least 40 American Indian tribes are represented in the St. Louis metropolitan area. For more information about the event, call the Center for American Indian Studies at 935-4510.

Social historian discusses life cycle in Renaissance Florence

Gene Brucker, a leading American authority on the social history of medieval and Renaissance Florence, will give a lecture from 3 to 4 p.m. on Monday, April 27, in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex. The talk, which will be held at 1:30 p.m. in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex.

The lecture is co-sponsored by the Center for American Indian Studies, the Harvard University Center for Advanced Studies in Princeton, NJ, and the American Indian Studies Center.

At least 40 American Indian tribes are represented in the St. Louis metropolitan area. For more information about the event, call the Center for American Indian Studies at 935-4510.

Social historian discusses life cycle in Renaissance Florence

Gene Brucker, a leading American authority on the social history of medieval and Renaissance Florence, will give a lecture from 3 to 4 p.m. on Monday, April 27, in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex. The talk, which will be held at 1:30 p.m. in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex.

The lecture is co-sponsored by the Center for American Indian Studies, the Harvard University Center for Advanced Studies in Princeton, NJ, and the American Indian Studies Center.

At least 40 American Indian tribes are represented in the St. Louis metropolitan area. For more information about the event, call the Center for American Indian Studies at 935-4510.

Social historian discusses life cycle in Renaissance Florence

Gene Brucker, a leading American authority on the social history of medieval and Renaissance Florence, will give a lecture from 3 to 4 p.m. on Monday, April 27, in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex. The talk, which will be held at 1:30 p.m. in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex.

The lecture is co-sponsored by the Center for American Indian Studies, the Harvard University Center for Advanced Studies in Princeton, NJ, and the American Indian Studies Center.

At least 40 American Indian tribes are represented in the St. Louis metropolitan area. For more information about the event, call the Center for American Indian Studies at 935-4510.

Social historian discusses life cycle in Renaissance Florence

Gene Brucker, a leading American authority on the social history of medieval and Renaissance Florence, will give a lecture from 3 to 4 p.m. on Monday, April 27, in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex. The talk, which will be held at 1:30 p.m. in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex.

The lecture is co-sponsored by the Center for American Indian Studies, the Harvard University Center for Advanced Studies in Princeton, NJ, and the American Indian Studies Center.

At least 40 American Indian tribes are represented in the St. Louis metropolitan area. For more information about the event, call the Center for American Indian Studies at 935-4510.

Social historian discusses life cycle in Renaissance Florence

Gene Brucker, a leading American authority on the social history of medieval and Renaissance Florence, will give a lecture from 3 to 4 p.m. on Monday, April 27, in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex. The talk, which will be held at 1:30 p.m. in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex.

The lecture is co-sponsored by the Center for American Indian Studies, the Harvard University Center for Advanced Studies in Princeton, NJ, and the American Indian Studies Center.

At least 40 American Indian tribes are represented in the St. Louis metropolitan area. For more information about the event, call the Center for American Indian Studies at 935-4510.

Social historian discusses life cycle in Renaissance Florence

Gene Brucker, a leading American authority on the social history of medieval and Renaissance Florence, will give a lecture from 3 to 4 p.m. on Monday, April 27, in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex. The talk, which will be held at 1:30 p.m. in room 200 Steinberg Hall, part of the University’s Arts and Sciences Complex.

The lecture is co-sponsored by the Center for American Indian Studies, the Harvard University Center for Advanced Studies in Princeton, NJ, and the American Indian Studies Center.

At least 40 American Indian tribes are represented in the St. Louis metropolitan area. For more information about the event, call the Center for American Indian Studies at 935-4510.
Postseason play is a realistic goal for baseball Bears

As the 1992 regular season winds down, Washington University's baseball squad remains in contention for the NAIA Division III national championship. For the third straight season, the Bears have compiled a 19-11-1 overall record. Against non-NAIA Division III competition, Washington is 19-8-1.

With 10 regular season games remaining, postseason play is a challenging, yet realistic goal for the Bears. An improved defense and consistent pitching have been the keys to what could be Washington's first NCAA baseball tournament bid since 1983.

"We played a strong first-half schedule and I'm hoping that will make us a more seasonal team down the stretch," says third-year varsity coach Ken Berend. "If we start hitting like we did earlier this season, I think we can make a serious run."

Last month at the Fourth Annual University Athletic Association Tournament in Cocoa, Fla., the Bears turned in their finest performance, finishing with a 5-3 record. The Bears came within a couple runs, however, of claiming a share of first place. If the Red and Green could have defeated eventual champion Johns Hopkins in their final tournament game, a championship was guaranteed. Instead, the favored Bears were matched with a 6-4 victory in the 1992 UAA title game.

The Bears' strong showing did not go unnoticed as four Washington players earned all-UAA accolades. Three of the four honorees - junior shortstop John Tanner, freshman outfielder Brian Steiner and sophomore pitcher Bo Wallace - garnered first-team honors. Second-team recognition went to senior catcher Bryan Marshall.

"It is because of our strengths that university seniors feel positive about their job search," Washington University career counselor, will speak to the students on Monday, April 27, about finding a job during a recession. Figler's talk, titled "The Secrets to a Successful Job Search," is scheduled for 1 p.m. in Graham Chapel. During his talk, Figler will discuss how to conduct a successful job search campaign. He will also talk about alternatives to traditional jobs for graduates. The event, which is open to the University community, is sponsored by the Career Center in cooperation with the senior class.

In an effort to help Washington University seniors feel positive about their job search, Howard Figler, a nationally known career consultant, will speak to the students on Monday, April 27, about finding a job during a recession.

Figler's talk, titled "The Secrets to a Successful Job Search," is scheduled for 1 p.m. in Graham Chapel. During his talk, Figler will discuss how to conduct a successful job search campaign. He will also talk about alternatives to traditional jobs for graduates. The event, which is open to the University community, is sponsored by the Career Center in cooperation with the senior class.

"The purpose of the presentation is to help graduating seniors regain a sense of hope about finding a job in a difficult market," says Alfreda Brown, director of the Career Center. "Some of our seniors have secured jobs, others have received rejection letters from employers and graduate schools, while others have given up on finding a job before even trying to conduct a search. The program is designed to help motivate and encourage our students to feel positive about life after Washington University."

Figler, of Sacramento, Calif., is the author of the 1988 best seller "The Complete Job Search Handbook and Career Education and Careers Today, which he wrote in 1989. A licensed psychologist, he is a career consultant for businesses, professional associations, non-profit organizations and universities. He was the director of career counseling at the University of Texas in Austin and at Dickinson College in Carlisle, Pa., for a combined period of 20 years.

As part of his visit, Figler also will speak to local alumni and University staff at 5 p.m. April 27 in the Mary Auditorium, Simon Hall. This session also is open to the University community. For more information on Figler's visit, call the Career Center at 935-9590.

A comedic feast: Performing arts students will present 'The Art of Dining,' a play all about food, at 8 p.m. April 23-25 and at 2 and 7 p.m. April 26. Cast members are (back row, l. to r.) Meredith Welsh, Lauren Golden, Wilmeen Deet, Chris Mathews, David Backer; (front row) Adena Brenner, Nicki Smith, Winona Hall and Kathy Hefley. The event will be staged in the Mallinckrodt Center Drama Studio, Room 206. For ticket information, call 935-5645.

Career expert shares secrets to successful job hunt

In an effort to help Washington University seniors feel positive about their job search, Howard Figler, a nationally known career consultant, will speak to the students on Monday, April 27, about finding a job during a recession.

Figler's talk, titled "The Secrets to a Successful Job Search," is scheduled for 1 p.m. in Graham Chapel. During his talk, Figler will discuss how to conduct a successful job search campaign. He will also talk about alternatives to traditional jobs for graduates. The event, which is open to the University community, is sponsored by the Career Center in cooperation with the senior class.

"The purpose of the presentation is to help graduating seniors regain a sense of hope about finding a job in a difficult market," says Alfreda Brown, director of the Career Center. "Some of our seniors have secured jobs, others have received rejection letters from employers and graduate schools, while others have given up on finding a job before even trying to conduct a search. The program is designed to help motivate and encourage our students to feel positive about life after Washington University."

Figler, of Sacramento, Calif., is the author of the 1988 best seller "The Complete Job Search Handbook and Career Education and Careers Today, which he wrote in 1989. A licensed psychologist, he is a career consultant for businesses, professional associations, non-profit organizations and universities. He was the director of career counseling at the University of Texas in Austin and at Dickinson College in Carlisle, Pa., for a combined period of 20 years.

As part of his visit, Figler also will speak to local alumni and University staff at 5 p.m. April 27 in the Mary Auditorium, Simon Hall. This session also is open to the University community. For more information on Figler's visit, call the Career Center at 935-9590.

A comedic feast: Performing arts students will present 'The Art of Dining,' a play all about food, at 8 p.m. April 23-25 and at 2 and 7 p.m. April 26. Cast members are (back row, l. to r.) Meredith Welsh, Lauren Golden, Wilmeen Deet, Chris Mathews, David Backer; (front row) Adena Brenner, Nicki Smith, Winona Hall and Kathy Hefley. The event will be staged in the Mallinckrodt Center Drama Studio, Room 206. For ticket information, call 935-5645.
Medical school dean elected AAAS fellow
William A. Peck, M.D., vice chancellor for medical affairs and dean of the School of Medicine, and president of the Washington University Medical Center, has been elected to the rank of fellow by the American Association for the Advancement of Science (AAAS).
A fellow of the association is defined as "a member whose efforts on behalf of the advancement of science or its applications are scientifically or socially distinguished."

The citation that accompanied Peck's nomination read: "In recognition of his distinguished research in bone and mineral metabolism and for leadership in developing an internationally acclaimed center of clinical investigation at Washington University."

Peck is an internationally recognized expert in the study and treatment of osteoporosis, a progressive bone disease that is believed to affect over 20 million Americans — usually women — who may suffer bone loss and who may have severe skeletal and health problems. His contributions to academic medicine include clinical patient care, research, teaching and administration. Peck is the author of more than 140 articles, abstracts and other publications; particularly regarding bone metabolism and osteoporosis.

Peck serves on the board of the National Osteoporosis Foundation and was president of the organization from 1985-91. He serves on the National Antich, Musculoskel- ental and Skin Diseases Advisory Council of the National Institutes of Health and is on the advisory panel for assessment of Policy issues and the Prevention and Treatment of Osteoporosis with the Office of Technology Assessment.

He is on the editorial boards of several scientific journals, and is a member of numerous academic and scientific societies, including the American Society for Clinical Investigation, the Association of American Physicians, and the American Society for Bone and Mineral Research. He was president of the latter in 1983.

Nominated to his current position in 1986, Peck is the first person to serve as both vice chancellor for medical affairs and dean of the School of Medicine.

Volunteers needed for diabetes study
Researchers at the School of Medicine are seeking participants for several diabetes studies. Persons over age 30 who have non-insulin dependent diabetes and are currently being treated with either diet or oral medications are needed for investigations of experimental oral drugs. Three oral medications will be provided.

Persons with either Type I or Type II diabetes who have open foot ulcers are needed for a study evaluating the effectiveness of a new medication for chronic wounds. Laboratory tests, examinations and medications will be provided.

Persons with either Type I or Type II diabetes who have high blood sugar are also needed for a study evaluating the effectiveness of a new medication for controlling blood sugar. Laboratory tests, examinations and medications will be provided.

All studies are being conducted by Janet B. McGill, M.D., instructor in medicine and pediatrics, who also directs the Diabetes and Hypertension Study Group. For more information, call 362-8681.

MEDICAL RECORD

Medical school dean elected AAAS fellow

William A. Peck, M.D., vice chancellor for medical affairs and dean of the School of Medicine, and president of the Washington University Medical Center, has been elected to the rank of fellow by the American Association for the Advancement of Science (AAAS). A fellow of the association is defined as "a member whose efforts on behalf of the advancement of science or its applications are scientifically or socially distinguished."

The citation that accompanied Peck's nomination read: "In recognition of his distinguished research in bone and mineral metabolism and for leadership in developing an internationally acclaimed center of clinical investigation at Washington University."

Peck is an internationally recognized expert in the study and treatment of osteoporosis, a progressive bone disease that is believed to affect over 20 million Americans — usually women — who may suffer bone loss and who may have severe skeletal and health problems. His contributions to academic medicine include clinical patient care, research, teaching and administration. Peck is the author of more than 140 articles, abstracts and other publications; particularly regarding bone metabolism and osteoporosis.

Peck serves on the board of the National Osteoporosis Foundation and was president of the organization from 1985-91. He serves on the National Antich, Musculoskel- ental and Skin Diseases Advisory Council of the National Institutes of Health and is on the advisory panel for assessment of Policy issues and the Prevention and Treatment of Osteoporosis with the Office of Technology Assessment.

He is on the editorial boards of several scientific journals, and is a member of numerous academic and scientific societies, including the American Society for Clinical Investigation, the Association of American Physicians, and the American Society for Bone and Mineral Research. He was president of the latter in 1983.

Nominated to his current position in 1986, Peck is the first person to serve as both vice chancellor for medical affairs and dean of the School of Medicine.

Volunteers needed for diabetes study

Researchers at the School of Medicine are seeking participants for several diabetes studies. Persons over age 30 who have non-insulin dependent diabetes and are currently being treated with either diet or oral medications are needed for investigations of experimental oral drugs. Three oral medications will be provided.

Persons with either Type I or Type II diabetes who have open foot ulcers are needed for a study evaluating the effectiveness of a new medication for chronic wounds. Laboratory tests, examinations and medications will be provided.

Persons with either Type I or Type II diabetes who have high blood sugar are also needed for a study evaluating the effectiveness of a new medication for controlling blood sugar. Laboratory tests, examinations and medications will be provided.

All studies are being conducted by Janet B. McGill, M.D., instructor in medicine and pediatrics, who also directs the Diabetes and Hypertension Study Group. For more information, call 362-8681.

Pump you up

Professional athletes are paid to win. Some, however, take their fervor to extremes by using drugs to enhance performance. The most common are anabolic steroids, which are banned in professional, amateur and college and high school athletics. Routine screening of athletes for steroid use has led some to seek a substitute for steroids — one that would be untraceable in routine tests. That search has led many to human growth hormone.

Human growth hormone is produced in our pituitary glands. We produce the greatest quantities during adolescence, and as the name suggests, the hormone is responsible for spurting growth in our muscles, bone and connective tissue. Those athletes who use it believe that human growth hormone will give their muscles a kind of "jump start" and add to the effectiveness of their regular workout. That's the idea anyway, but it doesn't work, according to a study published in the March 1992 issue of the American Journal of Physiol- ogy (Endocrinology and Metabolism).

The study, conducted by Kevin Yarasheski, Ph.D., a research instructor in medicine at the School of Medicine, concludes that growth hormone does not help muscles grow any faster or operate more efficiently than does exercise alone. His study is the first to examine the combined effect of growth hormone and resistance exercise in a population of normal, healthy young men. He says the reason that such a study hasn't been done before is the relative youth of synthetic growth hormone. For a long time human growth hormone could be obtained only from human cadavers. Its use was limited strictly to short-stature children. In the last decade, however, recombinant DNA techniques have led to wider availability of growth hormone and given researchers the chance to study other potential uses.

Yarasheski's study looked at 16 men between the ages of 21 and 34. The men did 12 weeks of heavy resis- tance training on Nautilus weight-lifting machines. The participants worked on all of their major muscle groups, alter- nating daily between upper- and lower-body workouts. The participants, says Yarasheski, "started lifting weights at about 75 percent of their max and worked up to about 85 to 90 percent of their maximum strength. This kind of high-intensity, low-repetition work- out has been shown to improve muscle strength and enhance muscle growth."

When the workouts were over and the final measurements were taken, Yarasheski discovered no significant differences between the men who had only lifted weights and those who had lifted weights and taken growth hor- mone. Their muscles grew at about the same rate. Their strength increased a similar percentage. The only discern- able difference between the two groups was in the measurement of fat-free mass. The people who took growth hormone had less body fat, but they didn't get bigger muscles. Some of their increase in fat-free mass was caused by fluid retention, according to Yarasheski.

"These were unexpected results," Yarasheski says. "I was surprised that growth hormone had so little impact on the muscles of the men studied." Yarasheski says, "I believed a lot of the preconceived notions about growth hormone, that it would enhance muscle growth tremen- dously, but it didn't. He theorizes a potential reason for that, saying, "Muscles can grow at an increased rate, but perhaps there is a limit. When you give a person resistance exercise, you promote muscle growth, but if you add another potential muscle growth en- hancer like growth hormone, you may not get any added growth."

Yarasheski says growth hormone is probably not the "magic bullet" that would improve quality of life by making people stronger and healthier. It does reduce body fat and increase fat-free mass, but it seems to have no effect on muscle function. In addition, there are side effects. The most common appears to be a water problem known as renal tunnel compression. It is caused by pressure on the nerve in the wrist, and its victims suffer from numbness or tingling in the fingers of the affected hand. Yarasheski reported a couple of cases of renal tunnel compression in his study of young men. He's had several more cases in the ongoing study of older men and women.

Another side effect related to fluid retention is high blood pressure, thus growth hormone can cause problems for those who suffer from hypertension. The hormone also makes test subjects slightly glucose intolerant, but Yarasheski says that condition ends when the injections stop. Some evi- dence also shows that people in the early stages of cancer could see more rapid tumor growth if they get growth hormone. In particular, says Vance, too much growth hormone can be related to colon polyps or colon and stomach cancer.

Neither Yarasheski nor growth hormone researcher Mary Lee Vance, M.D., of the University of Virginia Medical Center in Charlottesville, be- lieve the hormone is related to the brain cancer that former athlete Lyle Alzado has developed.

The retired National Football League defensive lineman says he took growth hormone after switching from steroids, and he blames the hormone for his inoperable brain cancer. Yarasheski says that's highly unlikely. He cites the more than 30,000 children who have received synthetic growth hormone and notes that "No child has ever developed the type of brain cancer that Lyle Alzado has." In addition, says Yarasheski, it is likely that while Alzado thought he was using growth hormone, he probably did not get the real thing. Researchers who have attempted to acquire growth hormone on the black market have discovered that in most cases, dealers are selling "water or sugar, or water, or sugar," according to Yarasheski. Vance believes that in the former All-Pro lineman's case, "Lyle Alzado got lymphoma .... period."

According to Yarasheski's findings, even if Alzado had used actual growth
Fishing for a cure

Scientists study how stress triggers lethal disease in salmon

Paul Levine, Ph.D., professor of genetics, and Jacqueline E. Snider, medical research bacteriologist, hope to create a preventive vaccine by inserting a disabled bacterial protein into a compound that provokes an immune response.

Scientists studying how stress subverts the human body's disease-fighting capability are turning to an unlikely source - rainbow trout and salmon - for guidance. No mere fish story, the research could save countless fish, stem the loss of millions of dollars each year for aquaculture, and possibly tell scientists why people under stress are more likely to become ill.

Researchers at the School of Medicine have been monitoring a deadly kidney disease caused by *R. salmoninarum*, a bacterium that kills countless thousands of salmon each year. Recently, Paul Levine, Ph.D., professor of genetics at the medical school, reported progress in identifying one of the bacterial toxins that may be responsible for causing the illness. The results were presented last year at the 33rd Western Fish Disease Conference held in Newport, Ore.

Levine is pinning his hopes on a vaccine that salmon farmers from Seattle to Vancouver to Oslo currently have no cure for the disease.

And there might be something in it for humans as well. These studies also could provide insight into the mechanisms that allow various human pathogens to lie dormant for years before making their assault. Such a payoff - if it ever comes - is many years away. But the work could be of more immediate benefit if it helps curtail the spread of the bacterial disease in the salmon population, an urgent and practical goal, Levine believes.

Help in the form of a vaccine couldn't come at a more opportune time. Already a major economic problem for fish farms and hatcheries in the United States, Canada, Norway and Chile, *R. salmoninarum* is responsible for the loss of millions of dollars worth of Atlantic and Pacific salmon, rainbow and brown trout yearly.

Scientists hope to slow the current rate of destruction, and in the process learn why fish carrying the bacteria can appear perfectly healthy before suddenly dying. A popular theory suggests that salmon harbor *R. salmoninarum* and it is only when the fish are stressed that the bacterial toxins ravage the fish, ultimately killing them. "We do not know what triggers these events," Levine says, "but stress is clearly important."

Knowing that crowding, temperature swings, transport and predators are the main causes of stress in fish does not make the job of stopping the bacteria any easier. And it certainly doesn't help to know that fish are very easily stressed. What would help most is a better knowledge of how the salmon immune system works, Levine says.

"Our main problem is that we don't know much about the fish immune system as we ought to," he adds. "This is where Levine comes in.

Having spent much of his career studying the complement proteins of the human immune system, Levine switched to studying fish about two years ago. In general, he says, the fish immune system is similar to that of humans - T-cells, B-cells and a repertoire of blood cells. The difference is in the detail. For example, the site where immune system proteins are manufactured is different, complicating the application of much of the knowledge gleaned from human immunology, Levine explains.

Scientists do know, however, that once *R. salmoninarum* enters a fish, it targets a group of white blood cells known as macrophages. *R. salmoninarum* resides inside macrophages - like the organisms that cause tuberculosis and leprosy - and somehow restricts the macrophages' ability to eliminate foreign objects. Researchers don't know whether this preemptive strike on macrophages is the master stroke that limits the fish's ability to mount an immune response. Levine hopes there's some way to help the macrophages overcome this assault by bringing other components of the immune system to the rescue.

Levine is pinning his hopes on a chemical compound that can shuttle a disabled bacterial protein from *R. salmoninarum* inside the fish, creating a vaccine that primes the immune system to search for and destroy the invading bacteria. The crucial chemical carrier - already known to be a potent stimulator of the immune response - comes from the South American tree, *Quillaja saponaria*. The Food and Drug Administration recently approved the use of the extract, QS-21, in a feline leukemia virus vaccine, and the compound also will see its first human trials in an experimental vaccine to treat melanoma.

Levine hopes that an oral vaccine may provide the boost needed to stimulate the immune system to produce killer T-cells, which might help fight infection. The fish already produce antibodies against the bacterium's antigens, but they do not appear to be protective.

Selecting the right bacterial protein to use in the vaccine has been another problem. So far one protein, p 57, has received the bulk of attention in Levine's lab, and he believes it's a good candidate for use in a vaccine.

The clock is ticking. Research during the last few years has shown that p 57 is passed "vertically" to the next generation of fish via infected eggs. "This could potentially lead to global distribution of the disease," Levine notes. There has been debate among scientists as to whether there is such a thing as a "negative fish" - a fish that may show no evidence of bacterial antigens in kidney tissue, but has the antigens present in its eggs.

In Levine's lab, Snider has found evidence that p 57 is present in the eggs of fish carrying the disease. Although concerned by the possibility that there might be a negative fish, Levine thinks the question must be explored very carefully. "We're looking at a lot of eggs from a lot of fish," he adds.

Having made the jump from studying the human immune system to examining the stress response in fish, has allowed Levine to set out into the "field" - from British Columbia to the trout hatchery 90 miles west of St. Louis. He compares the task of collecting trout to a trip to the local pet store. "We fill our plastic bags with water, put oxygen in the water, add the fish, tie the bag with a rubber band and stick it in a cooler. It's just like buying a goldfish," he notes.

Although there is only a small number of researchers devoted to solving the devastating problem of fish diseases, Levine is optimistic that, with help from industry, a vaccine will soon be developed.
Raichle garners awards for breakthrough brain research

Marcus E. Raichle, M.D., a neurologist at the School of Medicine, has received two awards for his breakthrough research on the function of the human brain.

Raichle was presented the 1992 Decade of the Brain Medal by the National Foundation for Brain Research at the organization's third annual Decade of the Brain Symposium on May 19 at the National Press Club in Washington, D.C. The foundation presented the award to Raichle as a person who has demonstrated leadership and excellence in the advancement of the brain sciences. The brain sciences award commemorates the late Silvio O. Conte, the late senator from Massachusetts whose efforts resulted in President Bush naming 1990–2000 as the "Decade of the Brain." Raichle, professor of neurology and radiology, heads a team of scientists who track and record the brain's function using positron emission tomography (PET). Developed at Washington University during the 1970s, PET allows researchers to look safely at the living human brain and to track and record its functions. Analyzing data from PET images, Raichle and his colleagues are mapping with great precision the functional organization of the brain. For example, groundbreaking investigations of the School of Medicine have pinpointed the abnormality in brain activity that occurs with panic attack and have revealed the location in the brain of that anxiety. Other studies using PET are revealing important information about language processing, thought and attention.

Sanes elected fellow of science association

Joshua R. Sanes, Ph.D., professor of anatomy and neurobiology at the School of Medicine, has been elected to the rank of fellow by the American Association for the Advancement of Science (AAAS). The AAAS indicated that the association is defined as a "member whose efforts on behalf of the advancement of science or its applications have been of socially distinguished merit." The citation for Sanes reads: "For many insights into the vertebrate neuromuscular system. His research addresses an issue that has become increasingly important in neurobiology. What molecules do neurons use to recognize each other, leading to the highly complex patterns of synaptic connections that form during development? In addition, Sanes has studied the genecology of neural cells, seeking to learn how environmental and inherited influences interact to determine which of the hundreds of types of neurons that are generated in the brain. Eventually, Sanes hopes to use the information he gathers to help form hypotheses about when, where, and how the cells are formed and become linked to each other.

Sanes joined Washington University in 1986 as professor of physiology and biophysics, and was named professor of anatomy and neurobiology in 1988.

Volunteers needed for Parkinson's study

Researchers at the School of Medicine need volunteers to participate in clinical trials for an investigational drug used for Parkinson's disease.

The experimental drug, Lazabemide, will be studied for its safety and effect on symptoms of Parkinson's Disease, a progressive neurological disease characterized by slowness and tremors. Lazabemide, being developed by Hoffman-La Roche of Nutley, N.J., may hold promise in slowing the progression of the disease.

The School of Medicine is one of 18 medical centers and hospitals across the United States and Canada that will begin controlled clinical trials of Lazabemide. Overall, 300 subjects will participate. Director of the local study is Joann S. Perlmutter, M.D., associate professor of neurology. Perlmutter expects to enroll about 17 subjects.

"We are fortunate to be able to offer patients with mild symptoms of Parkinson's disease the opportunity to participate in this research. This study is an initial step to determine whether Lazabemide can slow the progression of Parkinson's disease," Perlmutter said. Subjects must be newly diagnosed with Parkinson's and have very mild symptoms. Participants in the double-blind study will be randomly assigned to take either a placebo or Lazabemide but have an 80 percent chance of receiving the experimental medication. They will be treated for up to 13 months.

Parkinson's disease is a progressively disabling illness caused by damage to a part of the brain called the substantia nigra. Drugs now used for treating patients treat symptoms, such as slow movement, tremors, stooped posture and unsteady balance. But currently approved medications slow or stop progression of the underlying disease.

There is no cost to participate in the study. Persons in the St. Louis area interested in participating may call Lori McGee-Minnich at 314-362-7148.

Diabetes Bike-A-Thon set for May 9

For the second consecutive year, the School of Medicine is organizing a team of cyclists to ride in the 20th annual American Diabetes Association (ADA) Bike-A-Thon Saturday, May 9. Between 50 and 60 School of Medicine students and employees took part last year and raised $7,500 for ADA-sponsored diabetes research. Organizers this year say they hope to double the number of participants and exceed the amount of money raised.

Persons with all levels of cycling experience are encouraged to take part. Faculty, students and staff on the Hilltop Campus also are invited to participate.

Those interested in riding with the team should meet at the Gateway, I-70, commuter parking lot between 8:30 and 9:30 a.m., the day of the event. The 21-mile course winds along the Great River Road, but cyclists are not confined to the course. Others who want to ride on their own, on behalf of Washington University, can do so on any of the other six routes. Permutt has brochures with route information and sponsor forms.

Participants are expected to either make a small donation to the ADA or get pledges per mile ridden. Jerseys are provided by Hoechst Pharmaceuticals and embroidered with Team Washington University. The scientists are to share their work, they need to be speaking the same diagnostic language." That effort, if successful, would set objective standards for diagnoses which in the future would be judged by a research effort succeeds, and some kind of standardization is achieved, both patients and scientists will be better served.

Researchers at the medical school have teamed with the World Health Organization (WHO) in a global effort to standardize the criteria doctors use to diagnose various mental disorders.

"Scientists are trying to better define what differentiates one illness from another and develop universally accepted criteria upon which doctors can decide how to diagnose various diseases," says Norman Sartorius, M.D., Ph.D., director of the WHO division of mental health, is visiting St. Louis and working with the School of Medicine's Department of Psychiatry. Sartorius, who has had a long relationship with the medical school, says his visit here will strengthen what he considers an already solid and productive working relationship.

"I am talking to several people and trying to understand what they are doing," says Sartorius, who adds he has been impressed with the work he has observed. "What they are doing confirms the excellent impressions I have been about this university for a long time."

While here, Sartorius will work closely with epidemiologist Linda D. Cotter, Ph.D., assistant professor of psychiatry, and her team of researchers which is working on standardizing the definitions of substance abuse.

NORMAN SARTORIUS, M.D., Ph.D., director of the WHO division of mental health, is in St. Louis to work with the medical school's Department of Psychiatry.

'A diagnostic language'

Scientists strive for global standards

"What constitutes a particular disease in the United States might not quite fit with the criteria somewhere else," says Cotter. "Our job is to standardize those criteria for global definitions of drug abuse variations in criteria can divide researchers as deeply as language and ethnic differences divide people around the world. "It is important," says Sartorius, that researchers and doctors "can understand each other and are saying and what goes on in different places." If a researcher in one part of the world develops a successful treatment for a given disease, it does little good to patients elsewhere "if doctors don't agree on the definition of the disease," he says.

Cotter agrees, and adds, "If researchers are to share their work, they need to be speaking the same diagnostic language." That effort, if successful, would set objective standards for diagnoses which in the future would be judged by a research effort succeeds, and some kind of standardization is achieved, both patients and scientists will be better served.
Judith Cho, the African-American church and who care for Alzheimer's patients as African-American Caregivers of family as a source of support to assess the unmet needs of 50 people and laypersons. The program will Elderly Alzheimer's Patients."

Brenda Haire-Joshu, Ph.D., professor of social work and adjunct consultant dietitian and research coordinator at the University of Florida's College of Medicine. She is the U.S. House of Representatives Advisory Board. In that role he

foetidissima, student, traveled to Bangladesh as a graduate student in technical engineering and Policy, had her student in the Department of "Fuel to Burn" published in the Post-Dispatch's Everyday section. The article, written as part of an independent study in technical engineering and Policy, had her student in the Department of

Leonard Berg, M.D., professor of neurology, is chair of the Alzheimer's Association's Medical and Scientific Advisory Board. In that role he testified on Capitol Hill at a joint hearing on Alzheimer's disease held by the Select Committee on Aging of the U.S. Senate and the Subcommittee on Aging of the U.S. House of Representatives. Two researchers from the Center of Health Behavior Research at the School of Medicine will assist in the study. John LaMott, Ph.D., director of the Diabetes Education Center, and Cheryl Houston, adjunct instructor for Allied Health Professionals, a con- nual dietetic and research coordi-

Letha A. Chadiha, Ph.D., assistant professor of social work and adjunct assistant professor of anthropology, and Nancy Morrow- Howel, Ph.D., assistant professor of social work, have been awarded a $25,000 pilot grant to research the needs of African-Americans who care for Alzheimer's disease. The grant, awarded through the national office of the Alzheimer's Association, is titled "Increasing the Awareness of Alzheimer's Disease and Assessing the United Need of Strengths of African-American Caregivers of Elderly Alzheimer's Patients." Chadiha and Morrow-Howell, with the help of the St. Louis University's Alzheimer's Association's Alzheimer's Sensitivity awareness program on the disease, will assess the needs of 50 people with Alzheimer's disease and 50 family as a source of support to caregivers.

Judith Cho, a senior medical student, traveled to Bangladesh as one of 26 applicants chosen to receive the MAP/Reader's Digest International Fellowship. The fellowship, given semiannually by MAP, is a Christian grant that health and development organization, provides residents, interns and senior residents from 45 countries, who travel to North America the opportunity to serve as residents, interns and seniors in institutions of developing countries.

Andrew D. Dimarogonas, Ph.D., William Palm Professor of Mechani- cal Development, authored a book titled "Vibration for Engineers." The book, which he wrote with S.D. Haddad of Stanford University, was published by Prentice Hall, Englewood Cliffs, N.J.

Patrick Gibbons, Ph.D., professor of physics, and Thomas Bernatowicz, Ph.D., research associate professor of physics, were panels for the National Research Council's Association Program in Washington, D.C. The panel reviewed applications for fellowships tenable in the United States for federal research laboratories. The qualities- ordered evaluations they produce are those that are under the awards made by the council.

Jane Loewinger, Ph.D., William R. Stuckenberg Professor of Human Values Education, gave a talk on "Conformity and Conscientiousness: One for the Stages" at the conference in Palm Springs, Calif. The conference topic was "Living Together: The Future." The symposium was sponsored by the American Psychological Association, the Department of Psychology of the University of California, Riverside, and the Murray Research Center of Radcliffe College. She also gave a talk on the same topic at a Harvard University semi- nary sponsored by the Department of Human Development and Psychol- ogy of the Graduate School of Education. She recently co-authored a chapter on "Development of the Self" in a book on "Self and Self." Her chapter on "Personality Structure and Social-Acting: Controversy: On the Uses of Low Correlations" appeared in a book titled "Personality and Social-psychological Theory.

Michel Rybalka, Ph.D., professor of French, has been promoted by the French government to Chevalier of the Order of Academic Palms. He received the distinction of chevalier in 1983. He was a keynote speaker at an international colloquium, "Les Universitaires Vian, Queneau, and Pretend at the University of Virginia, British Colum- bia. He also served as chair of the American Psychological Association conference in Vancouver. Three of his editions of Jean-Paul Sartre's work, "Oeuvres romanesques," in the Plon edition, "Oeuvres de jeunesse," and "L'homme de circonstance," have been reprinted in revised form by Gallimard in Paris. He is organizing an international colloquium, sched- uled for October at the University, to mark the 70th birthday of writer Alain Robbie-Griot, who will be teaching at Washington during the fall semester.

Marc H. Schieber, M.D., Ph.D., assistant professor of psychology and neurology, delivered an invited talk titled "Distributed Neuronal Activity in the Cerebral Cortex Affects During Visually Cued Individualized Finger Movements." His video "Rejection" and "Distance" were shown at the Fifth Certamen through Time. It was sponsored by the Department of Neurology and the same topic at a seminar held in Copenhagen, Denmark, that was sponsored by Oticon Corp.

Peter H. Rude, J.D., general coun- sel, was a speaker at the 13th annual National Conference on Law and Higher Education in Clearwater, Fla. The event was sponsored by the Commission for Higher Education Department of Stetson University's College of Law. Rude spoke at a session titled "Telecommunications Law."

Matthew R. Moyhian, assistant professor of architecture, received the American Society of Landscape Architects Award of Excellence for the design of the Fox/ Sauer award was received the society's Honor Award for design of the Fox/ Sauer award was received the society's Honor Award for design of the

Henry L. Schvey, Ph.D., professor and chair of performing arts, delivered a paper titled "Medieval Epic." He is one of two presenters in a symposium, "Greed and Avarice in Ben Jonson's 'Volpone' and David Mamet's "A Life," during the annual Mid- America Theatre Conference held in Chicago. Schneyer was named co-chair of the Theatre History Symposium for the 1993 conference.

Kathy Stein-Leang, director of the International Office, and Jillian C. Fernandez, J.D., adjunct professor in the School of Law, spoke at a seminar titled "The New Immigration Act. The Regulations Are Finally Out. The seminar, held in St. Louis, was pre- sented by the Immigration Law Coun- cil of the Bar Association of Metro- politan St. Louis in cooperation with the Missouri/Kansas Chapter of the Ameri- can Immigration Lawyers Association. Mary Troy, lecturer in English, read from her story "Turning Golder" at the Missouri Psychological Association meeting held in St. Louis. Her story titled "The Alibi Cafe" was published in the Missouri Psychological Association Literary Review. Her paper titled "Jean Vlaminck: A Painter at the Crossroads" at the recent South Central Modern Language Association annual meeting.

Michael Valente, Ph.D., assistant clinical psychology, gave an invited speech titled "Differentiation: What Digital Programming Health Aids" at the Conference on Encyclopedia of Medicine Disorders in Memphis, Tenn., and at the annual meeting of the American Academy of Psychoanalysis.

Guido L. Weiss, Ph.D., professor of mathematics, delivered the Mandel Lecture at the University of Wisconsin-Madison. The lecture is named for the late chairman of the department of Mathematics at UW-Madison, and a former graduate student, was titled "Why Fourier Never." He also delivered a public lecture on the history of mathematics in St. Louis. He also delivered a public lecture on the history of mathematics in St. Louis. His Critics," to be published by Basil Blackwell.

Michel Rybalka, Ph.D., professor of French, has been promoted by the French government to Chevalier of the Order of Academic Palms. He received the distinction of chevalier in 1983. He was a keynote speaker at an international colloquium, "Les Universitaires Vian, Queneau, and Pretend at the University of Virginia, British Colum- bia. He also served as chair of the American Psychological Association conference in Vancouver. Three of his editions of Jean-Paul Sartre's work, "Oeuvres romanesques," in the Plon edition, "Oeuvres de jeunesse," and "L'homme de circonstance," have been reprinted in revised form by Gallimard in Paris. He is organizing an international colloquium, sched- uled for October at the University, to mark the 70th birthday of writer Alain Robbie-Griot, who will be teaching at Washington during the fall semester.

Marc H. Schieber, M.D., Ph.D., assistant professor of psychology and neurology, delivered an invited talk titled "Distributed Neuronal Activity in the Cerebral Cortex Affects During Visually Cued Individualized Finger Movements." His video "Rejection" and "Distance" were shown at the Fifth Certamen through Time. It was sponsored by the Department of Neurology and the same topic at a seminar held in Copenhagen, Denmark, that was sponsored by Oticon Corp.

Carl Wellman, Ph.D., professor of the Humanities, recently served for two weeks as the Killeen Chair Resident Scholar at Saint Norbert College in DePere, Wis. In addition to delivering a public lecture on the grounds of roziall fights, he participated in a series of discussions with local residents and talked to 13 classes in philosophy or social theory.

Have you done something noteworthy?

Congratulations! You have won a award! You are now a named University in the 1990s. You will be awarded a check in the amount of $25,000. You will also be invited to participate in a series of lectures, workshops, and symposiums. You will be asked to give a public lecture on your work.
Journal devoted to Lewis' career; students write tribute

Walter H. Lewis, Ph.D., professor of biology, recently retired in May, is the focus of the Annals of the Missouri Botanical Garden. The proceedings of 14 papers, most of which contained botanical research, were organized and edited by John Edward McCarthy, Ph.D., professor of education, and Leslie Chambers Strohm, M.S., professor of community and social forestry program researcher for the Medicaid Program of the Missouri Department of Health and Social Services, and co-author of the paper, "Gathering the papers into an issue of Annals of the Missouri Botanical Garden, is like putting the day into an album of sorts."

Lewis' students included in the issue are: Nowick, curator of botany at the Tennessee Museum, Washington, D.C.; D'Arcy, curator of botany, Missouri Botanical Garden; Botnen, curator of botany, Illinois Natural History Survey and adjunct professor of botany, University of Illinois at Urbana-Champaign; professor of biology, University of Waterloo, Waterloo, Ontario, Canada; Crot, A. Kevin Williams, M.D., professor of neurosurgery, has been elected to the Washington University Board of Trustees, Chancellor, and deputy general counsel, Danforth said. Shi Hui Huang's research interests include the impact of the environment on neurocognition and the role of neuroplasticity in the development of neurodegenerative diseases.

John Edward McCarthy, Ph.D., professor of mathematics, comes to Washington University from the State University of New York at Buffalo, where he held the same position. He received a bachelor's degree in mathematics in 1983 and a master's degree in mathematics in 1985, both from the University of California, Berkeley. He has published many articles and translations as well as book reviews. His book "The Sound of the Wind: the Life and Work of Friedrich Schiller," was published this year.

Shi Hui Huang, M.D., an international prominent industrialist and social policy, planning and administration, has recently been appointed to the Board of Trustees of the University of Missouri-St. Louis. He also is chairman of the board of directors of the Ching Dynasty, the largest Chinese restaurant in the United States, and has served on the board of directors of the Chinese Chamber of Commerce of the United States.

On the death of his father in 1979, Huang embarked on a career in the pharmaceutical industry and continued his professional contribution to medicine as professor of medicine at Taipei Medical College and to the University of Nebraska, Lincoln. In 1990 he received a Distinguished Alumni Award at the Washington University Foundation's Banquet. This honor is bestowed on prominent alumni "in recognition of outstanding professional achievement, contribution in areas of public service, and outstanding service to the University."


**CALENDAR**

**Thursday, April 23**


**Friday, April 24**


**Saturday, April 25**


**Friday, April 24**

3:30-5:30 p.m. Seminar on the Study of Data Processing, and Martin Steinberg. 8 p.m. Performing Arts Dept. Presents "The Art of Dining." (Also April 24, 25, same time, and April 26 at 2 and 7 p.m.) Edison Theatre. 11 a.m. Dept. of Mathematics Ph.D. Oral. "Characterization of the Bovine Species via the Genealogy," Charles Cohn, node developer for New York, Wash U. and Wash Hall Building.

**Thursday, April 23**


**Friday, April 24**


**Saturday, April 25**


**Friday, April 24**

3:30-5:30 p.m. Seminar on the Study of Data Processing, and Martin Steinberg. 8 p.m. Performing Arts Dept. Presents "The Art of Dining." (Also April 24, 25, same time, and April 26 at 2 and 7 p.m.) Edison Theatre. 11 a.m. Dept. of Mathematics Ph.D. Oral. "Characterization of the Bovine Species via the Genealogy," Charles Cohn, node developer for New York, Wash U. and Wash Hall Building.

**Thursday, April 23**


**Friday, April 24**


**Saturday, April 25**


**Friday, April 24**

3:30-5:30 p.m. Seminar on the Study of Data Processing, and Martin Steinberg. 8 p.m. Performing Arts Dept. Presents "The Art of Dining." (Also April 24, 25, same time, and April 26 at 2 and 7 p.m.) Edison Theatre. 11 a.m. Dept. of Mathematics Ph.D. Oral. "Characterization of the Bovine Species via the Genealogy," Charles Cohn, node developer for New York, Wash U. and Wash Hall Building.

**Thursday, April 23**