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Two profound demographic shifts will influence health care in the coming decades. More people are living longer, thanks to successes in medical care and public health. Second, the “baby boomers” are beginning to enter their senior years. As a result, people over age 65 represent the most rapidly expanding segment of the population. This will require a greater emphasis on health care for the elderly.

The College of Physicians & Surgeons is prepared to meet that challenge. A broad and deep commitment to geriatrics and gerontology assures that P&S researchers, clinicians, and students can help aging Americans live full and healthy lives. The stories in the following pages illustrate the commitment of P&S to meeting the unique needs of elderly patients.

At the Taub Center for Alzheimer’s Disease Research, scientists are studying the disease from all angles: from the inner workings of neurons to large-scale trends in populations. At the new Center for the Active Life of Minority Elders, promising minority researchers learn from established researchers as they work with the residents of Northern Manhattan to bridge the gap in knowledge about aging minorities. Stroke patients will face a reduced risk of pneumonia thanks to a new diagnostic device invented by P&S faculty. P&S researchers are investigating a promising new therapy for both prostate cancer and breast cancer, the most common cancers among elderly men and women. The unique needs of the aging mind are being addressed at the Late Life Depression Center, the largest outpatient clinic at the New York State Psychiatric Institute.

Other articles describe work on Huntington’s disease, amyotrophic lateral sclerosis, osteoporosis, and end-of-life care. But they represent only some of the research, clinical care, and training that make P&S a leader in all branches of geriatrics and gerontology. As the challenges of health care change, the College of Physicians & Surgeons changes with them.
found that patients taking the tricyclic antidepressant nortriptyline experienced a significantly increased heart rate and suffered more “serious adverse cardiac events,” such as tachycardia and angina. The serotonin reuptake inhibitor paroxetine did not appear to cause a significant change in heart function.

The connection between depression and co-existing diseases, such as vascular disease and memory disorders, is another focus of the center. “We certainly know that they negatively interact,” says Dr. Roose. Depression is associated with higher morbidity and mortality for patients with co-existing diseases. Abnormalities in blood flow to the brain are strongly associated with depression. “For older people, depression can be a form of cerebrovascular disease,” says Dr. Roose. Ischemic heart disease and depression also influence each other. Not only can ischemic heart disease cause depression, but evidence indicates that depression makes the blood coagulate more easily.

The third focus of the clinic is on chronic depression in elderly people. Initial studies describe two distinct populations of depressed elderly. Some have suffered repeated bouts of depression since early adulthood. But associate clinical professor Dr. Davangere Devanand showed in 1994 that many elderly people suffering a form of chronic depression known as dysthymia didn’t suffer their first depressive episode until their 50s or 60s. The causes may be associated with vascular changes common among older people. Dr. Devanand recently received a grant to study effective treatments for this group.

The fourth focus is studying late life depression among people over 75 years of age. In the past year, Dr. Roose received a grant to lead a multicenter study on the treatment of depression among people in that age group.

The Late Life Depression Research Center has grown so rapidly that in 1998 the researchers spun off a new clinic called the Brain-Behavior Clinic. Directed by Drs. Sarah Lisanby and Stuart Seidman, the center relies on junior faculty and research fellows who are getting some of the first grants of their careers. “It’s a center where we train young faculty,” says Dr. Roose. “To us, that is a very critical function.”

Among the studies undertaken by researchers at the Brain-Behavior Clinic is one on testosterone replacement for older men. Much research has been done on estrogen replacement for older women but little has been done for men, whose testosterone levels drop by about two-thirds between the ages of 40 and 65. Research suggests that dropping levels play a role in both depression and cognitive impairment of aging men.
Alzheimer’s 4.4 times as often as whites and Hispanics developed the disease about 2 times as often. Thus APOE-e4 presents a higher risk of Alzheimer’s for whites only, and Hispanics and African-Americans face an increased risk of the disease no matter what form of the gene they carry.

“It means there are other genes or environmental factors involved,” says Dr. Mayeux. He has begun a study of elderly Hispanics in an attempt to tease out those other factors.

“This research highlights an important point: When something is found to be true among whites, we can’t automatically assume it will be true for other ethnic groups as well.”

During the year researchers also built on previous findings. Dr. Mary Sano, associate professor of clinical neuropsychology and former Irving scholar, made preparations for a follow-up study to one of the center’s biggest findings in recent years—that women can delay or decrease the risk of developing Alzheimer’s disease by taking estrogen after menopause. The finding, originally reported in Lancet in late 1996, indicated that estrogen taken after menopause can reduce a woman’s chance of developing the disease by as much as 5 percent a year. Thus women who used estrogen for 10 years would reduce their risk by 50 percent.

The new study will be a clinical trial of just under 1,000 elderly women with a family history of Alzheimer’s disease. By carefully controlling estrogen dosage and randomly assigning women to different dosage groups, the clinical trial should provide evidence of cause rather than association that the original observational study did. In addition to P&S, the Mayo Clinic in Jacksonville, Fla., and Johns Hopkins University in Baltimore will participate in the research led by Dr. Sano.

In spite of the many advances made so far, researchers have been unable to predict the length of time from onset of Alzheimer’s disease to important milestones, such as the need for nursing home care and death. In 1997, Dr. Yaakov Stern, professor of clinical neurology, published an algorithm that can be used to make such predictions. Duration of illness, age at onset, extrapyramidal signs, psychotic symptoms, and cognition as measured by the Mini-Mental State Examination can be used to develop an index for nursing home care and one for death. The index scores are then used to predict when 25 percent, 50 percent, and 75 percent of patients with the same score are likely to either need nursing home care or to die. “It gives people a ballpark idea of what to expect,” says Dr. Stern. “This will let people plan their lives; this was one thing we could do for patients and their families.”

Since the initial publication in the Journal of the American Medical Association, Dr. Stern and his colleagues have been refining the algorithm. They have been evaluating additional predictive signs that might improve it and have begun testing it on additional patients to further validate it.
received 13 applications from young researchers at P&S and several other institutions in the New York area. The four recipients are studying health risks and social isolation among elderly blacks; loss of muscle mass among elderly blacks and Hispanics infected with HIV; the efficacy of tobacco cessation interventions for minority elderly; and oral health in central Harlem. CALME staff also helps young researchers apply for other grants, such as Minority Development Grants.

Pilot-grant recipients are paired with mentors, experienced researchers who help guide the young researchers. All grant recipients meet regularly with other established P&S researchers to review experimental protocols, data gathering, and analysis. Drs. Richard Mayeux, Steven Shea, Jeanne Teresi, and Mindy Fullilove provide the kind of input and advice that can be difficult for young researchers to find.

The researchers also benefit from the strong connections P&S researchers such as Dr. Mayeux and Dr. Lantigua have already established with the minority community in Northern Manhattan. These connections provide an invaluable pool of potential research subjects. And CALME staff works to strengthen those ties with regular presentations to community groups and a newsletter that informs community residents about the benefits and results of aging research as well as CALME activities.

The minority researchers fostered by CALME have knowledge and insights that help them develop culturally sensitive strategies and measurement tools to better understand the elderly minority populations. For example, many of the elderly Hispanic people near P&S immigrated to the United States when they were adults and learned little or no English. Even among those who do understand English, a Hispanic researcher is more likely to draw out subtle but important details that might evade a researcher working only in English.

Assistant professor of medicine Dr. Olveen Carrasquillo is studying the functional status of elderly Hispanics. The research requires elderly Hispanics to fill out questionnaires about daily activities and health. Most existing surveys ask respondents to answer many questions either excellent, very good, fair, or poor. But in Spanish, no word clearly corresponds to fair. Thus, Dr. Carrasquillo uses surveys designed for Hispanics, which ask these questions using a 1-to-10 rating system instead.

Assessing functional status also involves testing for dementia. Standard questions might be “Who is president of the United States?” or “What is the tall building on 34th Street?” Recent immigrants who do not speak English and are not demented may know very little about the United States. Dr. Carrasquillo asks questions that are more relevant to their everyday experience, such as ones about their home country or their neighborhood.
Drs. Jonathan Aviv and John Martin developed a surgical technique to restore feeling in the throats of stroke victims. He wanted to attach to the throat a sensory nerve originally attached to the earlobe. But Dr. Mohr told him that no one was even sure patients with swallowing problems suffer sensory deficits in their throats. Dr. Mohr said that Dr. Aviv needed a test for sensation in the throat before he would consider approving any such operation. (Dr. Aviv has since twice performed the operation successfully.)

Dr. Aviv approached Dr. Martin, an expert in sensory systems in primates, and the two developed a prototype of their Air Pulse Sensory Stimulator. The prototype persuaded both the dean’s office and the Office of Clinical Trials to support further work on the device. Drs. Aviv and Martin filed a patent application in April 1993 with help from Columbia Innovation Enterprise, the university’s technology transfer office. In April 1995, Pentax Precision Instrument Co. purchased licensing rights to manufacture and sell the device in North and South America. In October 1997, the FDA gave its approval and Pentax began selling the device.

“I think what’s so amazing is how fast this all happened,” says Sara Gusik, associate director of Columbia Innovation Enterprise. “Most new inventions don’t make it to market. It happened this way because it is a very creative idea, it’s right on target, and it’s very non-invasive.”

The Air Pulse Sensory Stimulator is a flexible endoscopic tube about the diameter of spaghetti that can be threaded through the nose down to the throat. A generator sends air pulses of varying intensity and duration through the tube to the back of the throat. A person with intact sensation responds to these pulses with an involuntary reflex that closes the vocal cords and protects the airway. People with numbness in their throats do not respond to the air pulses. The fiber optic endoscope also can be used to evaluate a person’s ability to swallow. With the endoscope still in place, people eat food that has been dyed green. The physician can see if any food goes down the trachea.

“We can immediately assess the patient’s ability to protect the airway,” says Dr. Aviv. “If there is a problem, we can prescribe dietary and behavioral alterations to ensure a safe swallow.” The entire test costs about half as much as an X-ray swallowing test, which does not evaluate sensation and exposes both patient and medical personnel to radiation. Using flexible endoscopic evaluation of swallowing with sensory testing, two people can test a patient at bedside, while the modified barium swallow requires at least three people in an office with an X-ray machine. The lower cost, more reliable results, and portability of the device and test are expected to lead to more common testing of elderly stroke patients, resulting in better therapy and less pneumonia.
years. At that point no treatment has been shown to significantly extend a man’s life beyond the nine- to 12-month median survival.

But the combination of estramustine and docetaxel has made a significant impact on the survival of metastatic prostate cancer patients for whom hormone therapy has failed. In Phase I trials, patient survival more than doubled to a median of 24 months, says Dr. Petrylak. More than 60 percent of the patients saw their levels of prostate specific antigen (PSA), a measure of prostate cancer, drop by half or more. And more than half the patients who were taking narcotic pain medications when they began the trials were able to stop after taking the combination chemotherapy. Phase II trials, which have not yet been completed, have had similar promising results, says Dr. Petrylak. “I am extremely excited about this work because it represents a potential tripling of the survival rate previously seen in such patients,” says Dr. Carl A. Olsson, chairman of the urology department.

After Dr. Petrylak demonstrated in the Phase I trials that the two drugs could be taken safely with relatively mild side effects, Dr. Tiersten began a Phase II trial of the same drugs for metastatic breast cancer patients for whom other therapies had been ineffective. Tumor volume dropped by half for about one-third of those patients, while the disease stabilized for another third of the patients in the trial. Estramustine is a combination of estrogen and nitrogen mustard. Docetaxel, also known as taxotere, is a taxane, a chemical derived from taxol, the chemotherapeutic agent originally found in the bark and needles of the yew tree. Both chemicals act on microtubules, a sort of cellular scaffolding inside the cell. During cell division microtubules act as spindle fibers, helping to separate duplicated chromosomes. In non-dividing cells microtubules form a constantly shifting structure that serves as a rail system for transportation of molecules within the cell. Estramustine promotes the inappropriate disassembly of microtubules, while docetaxel disrupts the constant adjustment of the microtubules by locking them in place. In addition, Dr. Tiersten says that estramustine may block a cell’s ability to excrete docetaxel, the mechanism cells use when they develop resistance to the drug. In combination the two drugs appear to have a synergistic effect on both breast and prostate cancers. Dr. Petrylak is beginning nationwide Phase III trials in 1999.
Dr. Robert A. Solomon is named chairman of the Department of Neurological Surgery, succeeding Dr. Bennett Stein. Dr. Solomon, who joined P&S as a neurological surgery resident in 1980, is a pioneer in the treatment of giant cerebral aneurysms, badly deformed and ballooned vessels in the brain that are likely to rupture and cause death. In October Dr. Solomon was appointed the Byron Stookey Professor of Neurological Surgery.

October 1997

Dr. Donald W. Landry, associate professor of medicine, reports in the journal Circulation that a deficiency of the hormone vasopressin is responsible for the shock (low blood pressure) associated with cardiopulmonary bypass. Administration of vasopressin restores blood pressure in critically ill patients with this disorder.

P&S Dean Dr. Herbert Pardes is honored by the Institute of Medicine with the 1997 Rhoda and Bernard Sarnat Prize for outstanding contributions to the field of mental health. Dr. Pardes, also chairman of the P&S Department of Psychiatry, has been noted for building one of the leading research programs in genetics and psychiatric disorders, schizophrenia, and child psychiatric and geriatric disorders.

Dr. Monica Peacocke, associate professor of medicine, reports in the American Journal of Human Genetics that mutations in the gene P-TEN can increase a woman’s risk of breast cancer. The findings identify the third breast cancer susceptibility gene; the other two are BRCA1 and BRCA2. P-TEN was originally identified in March 1997 by a team of researchers led by Dr. Ramon Parsons, assistant professor of pathology and medicine.

Dr. Richard Mayeux, the Gertrude H. Sergievsky Professor of Psychiatry and professor in public health, is presented with the Rita Hayworth Award for his role as a “true pioneer” in the study of Alzheimer’s disease.

November 1997

Drs. Arthur Bank, Haralambos Raftopoulos, and Maureen Ward publish a paper in the journal Blood showing efficient gene transfer and long-term, high-level expression of a human beta globin gene in mice. This indicates the potential feasibility of gene therapy for sickle cell disease and beta thalassemia.

Dr. Eric Kandel receives the Charles A. Dana Award for Pioneering Achievement in Health. Dr. Kandel also receives the Gerard Prize for Outstanding Achievement in Neuroscience.
Dr. John Mann, professor of psychiatry, reports in the journal *Nature Medicine* that low levels of the neurotransmitter serotonin in the brain may point to an increased risk for suicide. In a review of existing scientific literature, Dr. Mann found that autopsies performed on the brains of suicide victims often reveal lower levels of serotonin activity in the brain region called the prefrontal cortex than in brains of people who died from other causes.

Dr. Timothy A. Pedley is appointed chairman of the Department of Neurology, succeeding Dr. Lewis P. Rowland. Dr. Pedley, who joined Columbia in 1979, is a specialist in epilepsy and has been regularly named to “best doctors” lists in the United States.

**February 1998**

Dr. Richard Axel, Higgins Professor of Biochemistry and Molecular Biophysics, professor of pathology, and Howard Hughes investigator, is presented with the 1997 New York Mayor’s Award for Excellence in Science and Technology. Early in his career, Dr. Axel developed gene transfer techniques that permitted the introduction of virtually any gene into any cell. He later identified genes responsible for eliciting innate behavior in a marine snail, suggesting how behavioral patterns may be encoded in genetic material. Recently, he has concentrated on understanding the molecular logic of olfactory perception.

**March 1998**

Columbia University establishes two programs in cognitive neuroscience. The Charles A. Dana Foundation provides a $1.5 million gift to P&S to support a postdoctoral training program in brain behavior research, primarily in cognitive neuroscience. The W.M. Keck Foundation provides a $3.5 million grant to establish the Keck Center in Behavioral Plasticity, which will bring three new faculty to the Center for Neurobiology and Behavior at P&S and two to the Department of Psychology on Columbia’s Morningside Heights campus.

An advanced radiosurgical instrument, called a gamma knife, is used for the first time at P&S. The gamma knife allows radiation from many sources of cobalt to be focused on brain tumors with minimal damage to surrounding tissue. Dr. Steven Isaacson, associate professor of radiation oncology and otolaryngology/head & neck surgery, and Dr. Michael Sisti, assistant professor of neurological surgery, co-direct the gamma knife program.

On Match Day 1998, 144 students from the class of 1998 learn where they will begin their residencies in July. Nationwide 13,656 medical school seniors successfully matched for first-year training positions. For the first time since 1994, the number of available positions grew from the previous year.
The P&S operating budget reflected strong performance in 1997-98 and finished the year at $590 million, a 5.5 percent increase over the previous year. Much of this growth was the result of particularly strong revenue performance in fund raising, research grants, and patent income. This enabled the school to make important new investments in academic programs, including recruitment and retention of faculty and expansion of its capital program.

P&S academic programs remain extremely competitive and continue to attract highly qualified students. Currently, almost 1,300 students are enrolled in P&S programs, with the M.D., M.D./Ph.D., and Ph.D. programs comprising approximately 1,000 candidates. The remaining 300 candidates are enrolled in the occupational therapy, physical therapy, human nutrition, and psychoanalytic research programs. The number of applications to P&S remains significant, although consistent with national trends 1997-98 showed a small decline from the previous year.

P&S has been especially successful in its fund-raising efforts, receiving a total of $70.1 million in endowment contributions and other gifts in 1997-98. Along with robust fund raising, the continued strong growth in the P&S endowment will also assure the school’s long-term future. During the past year, the market value of the school’s endowment grew to $690 million, an increase of $81 million (13 percent) over the prior year. This growth primarily reflects a vigorous investment market, but it also includes new contributions to principal, particularly endowed chairs and professorships.

The market value of the school’s endowment grew to $690 million, an increase of $81 million (13 percent) over the prior year.
Opinions may differ as to whether one or two years are left until the end of the millennium, but whenever that event occurs it will complete a historic period of fund raising at the College of Physicians & Surgeons. Fiscal year 1998 has already set its own records, thanks to the unprecedented philanthropy of alumni, grateful patients and their families, and friends who are dedicated to supporting medical science and treatment. Most important of all was the indispensable fund-raising role played by P&S faculty. With further assistance from Dean Herbert Parades’ office, the Office of Alumni Relations, and the Health Sciences Development Office, private gifts to the medical school in 1997-98 reached $87.9 million, bringing P&S a total of 79 named chairs throughout its departments and helping to raise the school’s endowment to $690 million.

The success of this teamwork was instrumental in fulfilling Dr. Parades’ mission to rebuild and reinforce the medical school’s physical infrastructure while also developing new research, teaching, and clinical programs.

The school’s largest single gift in 1997-98 came from G. Holbrook Barber Jr., whose bequest honored three generations of his family—great-grandfather, grandfather, and father, all P&S graduates. The Barber legacy, which created an endowment to establish the Calvin F. Barber Professorship in the Faculty of Medicine, will also endow the medical school’s M.D./Ph.D. program in perpetuity.

In addition to the Barber estate, significant bequests and trusts from the Donaldson Charitable Trust, Kent Ellis, M.D., Irma T. Hirschl, M.anice DeForest Lockwood, and Marian E. Treacy infused the campus with support related to radiology, AIDS, arthritis, cancer, ophthalmology, and urology. Help for donors in planning for gifts of this sort is made possible by the Health Sciences Development Office’s “Giving Well” program.

Long time supporters and new friends made gifts of endowment to help provide stability for P&S. Contributions were made to the Leonard Harber Professorship in Dermatology by Bennet S. Harber; to the J.H. Livingston Professorship in Orthopaedics by the St. Giles Foundation; to help establish a fund to create the Anthony P. Donn Professorship in Ophthalmology by the Blanchette Hooker Rockefeller Fund; to complete the Lewis Rowland Professorship in Neurology by major donors M.r. and M.rs. Stanley P. Kaufelt; and to the James F. M Churty III Professorship in Neurosurgery by M.r. and M.rs. Edward Yawney. The Seymour Milstein Family provided funds to establish the David Habif Professorship in Surgery, a gift to increase endowment for the Kenneth Forde Professorship in Surgery came from John McCrane, and the Robert Sonneborn Fund established a professorship in Dr. Sonneborn’s name. Other endowment support went to the Augustus C. Long Health Sciences Library.
organizations, the Charles A. Dana Foundation, the Eleanor Naylor Dana Charitable Trust, and the W.M. Keck Foundation. Other foundations made significant awards to assure the quality of work on which P&S has built its reputation for excellence. In 1997-98, the van Ameringen Foundation supported the Department of Psychiatry, the Commonwealth Fund was a substantial donor to research on women’s health, the Fan Fox and Leslie R. Samuels Foundation helped a variety of projects move forward, and the Arnold P. Gold Foundation carried on its support for the Arnold P. Gold Foundation and Angelica Berrie Gold Foundation Assistant Professorships, as well as contributing to other research and educational projects at P&S. The Banbury Fund continued to fund studies on Alzheimer’s disease, the James S. McDonnell Foundation supported the Herbert Irving Comprehensive Cancer Center, the Howard Hughes Institute remained a chief underwriter of achievements in basic science on the campus, the Ara Parseghian Medical Research Foundation fostered work on the rare Nieman-Pick disease, and the V. Kann Rasmussen Foundation supported the Department of Pediatrics. The May and Samuel Rudin Foundation gave to a number of areas including pediatrics, the Louis and Rachel Rudin Foundation made student aid available, the S.H. and Helen R. Scheuer Foundation continued to sponsor the Michael Cohen Breast Cancer Scholars program, Deanna and Hirschell Levine initiated a new funding phase of their support for the Hypertension Control Program through the Beatrice and Samuel Seaver Foundation, the Henry and Marilyn Taub Foundation took ongoing responsibility for Alzheimer’s research at the Taub Center, and the Colleen Giblin Foundation maintained its leadership interest in pediatric neurology. The Louis V. Gerstner Jr. Foundation provided support for the Department of Ophthalmology, the William J. Matheson Foundation gave aid to basic science research in cardiology, and the G. Harold & Leila Y. Mathers Charitable Foundation contributed to studies in schizophrenia.

Ensuring P&S’s ability to attract and aid the most promising men and women in the next generation of biomedical scientists, several donors directed gifts to establish and maintain fellowship programs. They included distributions from the Paul & Madge Bilka Fund; Mrs. Mary Eddy Schlesinger’s creation of the Schlesinger Fellows Program in honor of her late husband, neurologist Edward Schlesinger, M.D.; Dr. Ines Mandl’s Fellowship Fund in the Department of Medicine; and contributions to the Wu Fellowship Fund from Dr. Clyde Wu and family. The J.T. Tai & Co. Foundation continued its major annual support for medical students. Other scholarship funds came from the Chicago Community Trust’s Searle Scholars Grant.

Two areas of P&S received particularly strong funding from the private sector. A substantial gift from Mrs. Jane Chace Carroll made it possible for the Department of Orthopaedic Surgery to enhance its new quarters with a handsome conference room named in honor of her husband, the recently retired chief of hand surgery Dr. Robert...
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Dystonia Research Center: Stanley Fahn, M.D.
Eleanor and Lou Gehrig ALS Center: Lewis P. Rowland, M.D.
Huntington's Disease Center: Karen S. Marder, M.D.
Multiple Sclerosis Care Center: James R. Miller, M.D.
Parkinson's Disease Center: Stanley Fahn, M.D.

DEPARTMENT OF OBSTETRICS & GYNECOLOGY
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Center for Menopause and Hormonal Disorders: Michelle Warren, M.D.

DEPARTMENT OF NEUROLOGY
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DEPARTMENT OF ORTHOPAEDIC SURGERY
Anne Youle Stein Center for Orthopaedic Education and Research: Louis U. Bigliani, M.D.

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DEPARTMENT OF PEDIATRICS
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Programs in Occupational Therapy: Cynthia Harris, Ph.D.
Program in Physical Therapy: Joan Edelstein