

New Autism Center will emphasize early diagnosis, treatment

Research shows that, if diagnosed at a young age and given intensive early behavioral intervention, many children with autism can achieve a substantial increase in intellectual capacity, daily functioning and emotional response, compared to children who do not receive the benefits of such early treatment.

The frustration for many families is the difficulty of finding centers that can adequately treat their children. Nationwide, there is a serious lack of resources for diagnosing and treating children with autism and related disorders, and insufficient training of medical and educational professionals in the community.

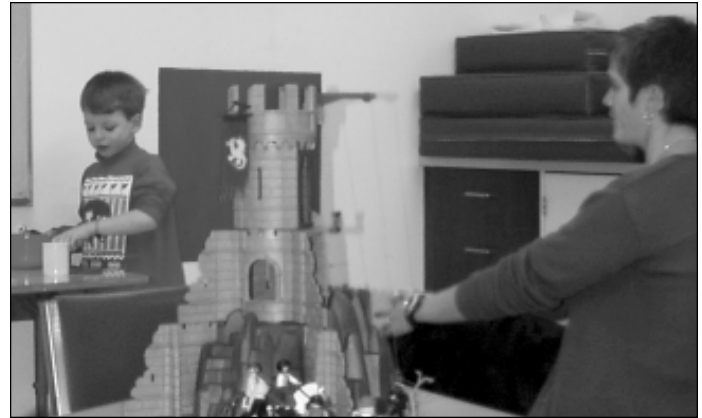
At the Center on Human Development and Disability at the University of Washington, a new Autism Center will significantly expand opportunities for early diagnosis and intervention, training of professionals and community outreach. The center is a component of CHDD's University Center for Excellence in Developmental Disabilities and a major expansion of its longstanding Autism Program.

The new center is the outgrowth of a \$10 million endowment given to CHDD last year by Richard and Susan Fade and another donor. Richard Fade is a Microsoft vice president who has a child with autism. The center will serve children with autism spectrum disorders, including autism, Aspergers syndrome and pervasive developmental disorder. These neurologically-based disorders are characterized by significant impairments in social and communicative abilities and a restricted range of activities.

Statistics show the number of children diagnosed with autism in Washington State has increased by 133 percent in recent years. Autism occurs in about one person in 500, and four times more often in boys than in girls. More than half a million people in the United States have autism or a related disorder. Family income, lifestyle and educational levels do not affect its occurrence. Autism typically manifests itself during the first three years of life, but can be detected as early as 18 months of age, offering hope for intervention during the period when the brain is most plastic.

The center's director is Dr. Geraldine Dawson, UW professor of psychology and a CHDD research affiliate, and a pioneer in the early detection of autism. "We hope to have a major impact on the lives of many children with autism and their families," she said. "The response to early intervention can be dramatic. We plan to expand our public information and outreach program, so health care providers locally and across the country can identify autism in younger children, when they can most benefit from treatment."

The associate director is Dr. Julie Osterling, a child clinical psychologist who is responsible for day-to-day management of the



Six-year-old Sam attends a weekly therapeutic play group at CHDD for children with autism. Psychology trainee Allison Brooks looks on.

center. She will supervise an expanded staff that will include six Ph.D. professionals in special education, applied behavioral analysis, developmental psychology and neuropsychology. In addition to Dawson and Osterling, the staff includes Drs. Kathleen Zanolli, Stacey Shook, Bonnie McBride and Ilene Schwartz. Masters-level professionals will manage day-to-day programs, while paraprofessionals will provide hands-on treatment.

"We are assembling a gold-standard team to serve as a model for the community, to provide services, to disseminate information and to keep abreast of the latest research," said Dawson. "We have a mandate to serve the Puget Sound region, but our goal is to become a national model."

MOST HEALTH PROFESSIONALS do not recognize autism in children younger than 4 years, by which time the opportunity for effective intervention may be lost, said Dawson. "Even when autism is diagnosed early, few intervention services are available. Families face tremendous challenges in finding services."

Osterling noted that such intensive intervention is financially out of reach for most families, and medical insurance rarely covers it. Autism Center services will be offered on a sliding scale, using endowment funds to subsidize some children's programming.

The center will focus on social and emotional development, autism's core impairments. "Many programs focus on cognitive development, academic progress and language skills," said Osterling. "But social and emotional development is the hardest area in which to make progress. Our goal is to further develop existing treatments."

CHDD *OUTLOOK* is published by the Center on Human Development and Disability (CHDD) at the University of Washington Health Sciences Center. An electronic version is available at <http://depts.washington.edu/chdd/OUTLOOK/OUTLOOK.html>

CHDD is an interdisciplinary center dedicated to the prevention and amelioration of developmental disabilities through research, training, clinical service and community outreach. The Center includes the University Affiliated Program (UAP) and the Mental Retardation and Developmental Disabilities Research Center (MRDDRC).

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New Autism Center opens

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Intervention starts in a high-support environment in the clinic, involving repetition and reward. The focus initially is on basic skills, like learning to make eye contact. The therapist sets up a situation where social information is made more salient to the child, who is rewarded for paying attention and responding to people. "The challenge is taking complex processes and breaking them down into their basic elements," said Dawson. "Unlike typically developing babies, those with autism are not naturally attracted to faces."

The center opens its doors in March, initially serving about 50 families. The plan is to provide a seamless experience: Children accepted at the center will come to CHDD with their home intervention team for intensive training. An individualized program will be established for each child, and training of community resource people will begin, facilitating continuation of the child's therapy in the community setting. As the child graduates to community-based intervention, the family will maintain frequent contact with the Autism Center.

The initial focus will be on toddlers 18 months and above, through transition to kindergarten. A long-term goal is to expand activities to include infants and develop new approaches for dealing with the youngest children, when intervention can have the greatest effect on the developing brain.

The center will work closely with CHDD's Clinical Training Unit, establishing an integrated diagnosis and treatment program. The hope is to expand services for older children who are currently seen through CHDD's Autism Spectrum Disorders Clinic and Developmental Neuropsychiatry Clinic.

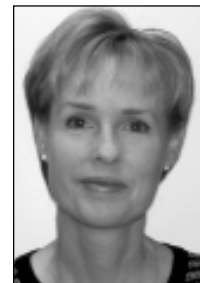
A TRAINING PROGRAM for professionals and paraprofessionals will be an integral component of the new center. "We are polling school districts, mental health providers, other medical professionals, hospitals and community health centers to determine their needs, and we are establishing a professional certification program that may be unique in the country," said Osterling.

The first certification program will begin this fall, and the second program will be offered beginning the following spring. Paraprofessionals will receive training to enhance their skills as educational assistants in school classrooms or as tutors working directly with families. "Many classroom aides who work with autistic children have no training in autism," said Dawson. "We're meeting with school district directors of special education to design a user-friendly program."

Paraprofessional certification will be offered as a part-time program, and will likely include one academic quarter of didactic education, one quarter in an onsite practicum at CHDD's Experimental Education Unit (which enrolls many preschoolers and kindergartners with autism), and one quarter in a community setting. Educational workshops appropriate for parents will also be offered.

Professional-level certification will be offered to people with masters or higher degrees in education, psychology, occupational therapy, speech and language specialties and other related disciplines. "We hope to have someone from each school district in the region enrolled in the program, for purposes of capacity building in the community," said Dawson.

For more information on the Autism Center, call 206-221-6806 or see its web site at <http://depts.washington.edu/uwautism>. ♦



Dr. Geraldine Dawson



Dr. Julie Osterling

CHDD researcher studies primary immunodeficiency

Of the myriad causes of developmental disabilities, a category of inherited diseases known as primary immunodeficiency diseases (PID) may be among the least known.

People born with these diseases inherit a faulty immune system caused by a mutated gene. More than 70 different PIDs have been identified, some deadly and others so mild that some people may never realize they have a disorder. PIDs are categorized according to the defective part of the immune system: B cell (antibody) deficiencies, T cell deficiencies, combined B and T cell deficiencies, phagocyte (white blood cell) deficiencies, and complement (blood protein) deficiencies. The common thread is an increased susceptibility to infection.

PID is rooted in the genes, in contrast to acquired immune deficiency, which results from assaults to the immune system such as HIV infection or chemotherapy or radiation treatments. An estimated 25,000 to 50,000 people in the United States have PID. Perhaps the most famous was “the bubble boy,” who lived his short life in an isolation chamber to avoid exposure to infection.

Dr. Hans Ochs, University of Washington professor of pediatrics in the Division of Immunology and Rheumatology and a research affiliate of the Center on Human Development and Disability, is both a researcher and a clinician specializing in primary immunodeficiency diseases. He has an immunodeficiency clinic at Children’s Hospital and Regional Medical Center, treating both pediatric and adult patients. He is an editor of a definitive text, *Primary Immunodeficiency Diseases, a Molecular and Genetic Approach* (Oxford University Press, 1999).

“Research advances give new hope for treatments and even cures,” said Ochs. “We can combat infection by giving an antibiotic or an antifungal drug. In some cases we can replace what is missing by giving gammaglobulin (immunoglobulin). Gamma interferon, alpha interferon and Interleukin-2 are highly potent new products that interfere with the natural immune system. Many immune deficiency diseases can be cured with bone marrow transplant, and there is future hope for more extensive gene therapy.”

In their clinical practice, Ochs and his colleagues depend on community-based physicians to recognize the possibility of a genetic disease in a patient and make referrals for specialized diagnosis and treatment. In many cases, as infections run wild, time is of the essence to save a life or prevent permanent damage.

PIDs that can cause central nervous system disorders include:

- **Adenosine deaminase (ADA) deficiency**, a severe combined immunity disease (SCID) that results from lack of ADA, an enzyme involved in purine metabolism that helps cells rid the body of toxic byproducts. Babies with early-onset disease are diagnosed with marked developmental delay and “failure to thrive.” Infections may cause additional neurologic abnormalities.

- **Purine nucleoside phosphorylase (PNP) deficiency**, another form of SCID, a very rare disorder caused by T-cell defects and abnormal B cell function. About half of patients have severe central nervous system disorders, including spasticity, ataxia, tremor,

retarded motor development, decreased muscle tone or extreme muscle tension, behavioral difficulties, and mental retardation.

- **Ataxia telangiectasia (AT)**, an autosomal recessive disorder that causes severe neurologic deficits and moderate mental retardation. Patients have neurologic abnormalities resulting in an unsteady gait (ataxia), and dilated blood vessels of the eyes and skin (telangiectasia) caused by combined B-cell and T-cell deficiencies. Children with the disorder are often misdiagnosed with cerebral palsy when they begin to walk, and accurate diagnosis is delayed until the appearance of other defining symptoms, including writhing and jerking movements, abnormalities in eye movements, muscle weakness and speech difficulties.

“Research advances give new hopes for treatments and even cures.”

Dr. Hans Ochs



- **Chediak-Higashi syndrome (CHS)**, a very rare disorder caused by a flaw in three types of cells: phagocytes (which combat infection), platelets (which control bleeding) and melanocytes (which give pigmentation to the skin, hair and eyes). Among the many manifestations of the disease, there may be neurologic problems including seizures, cognitive difficulties or progressive intellectual decline, cranial nerve palsies, progressive tremor, muscle weakness and abnormal gait.

- **DiGeorge syndrome (DGS)**, also called DiGeorge anomaly, arising from a birth defect in which fetal cells destined to become various components of the head and neck develop abnormally as a result of a deletion on chromosome 22. The brain, face, thymus and heart can be affected, and the diagnosis includes speech and palate abnormalities as well as cognitive, neurologic and psychiatric difficulties. An underdeveloped parathyroid gland can cause low calcium levels, leading to convulsions if untreated.

- **X-linked agammaglobulinemia (XLA)**, the first immunodeficiency disease to be identified, in 1952. Patients inherit an inability to produce antibodies, an integral part of the body’s defenses against bacteria and viruses. Enterovirus infections cause chronic inflammation of the brain and the lining of the brain, resulting in neurological symptoms and altered cognitive functions.

Ochs’ laboratory focuses on molecular analysis of XLA and four other X-linked PIDs, caused by mutations of genes on the X chromosome. A woman with such a mutation usually does not develop the disease (because she also has a normal X chromosome) but can pass it along to her children. In addition to XLA, disorders studied in the Ochs lab are X-linked hyper IgM syndrome; Wiskott-Aldrich syndrome; polyendocrinopathy, enteropathy, X-linked inheritance (IPEX); and X-linked lymphoproliferative syndrome. The lab also studies autosomal recessive syndromes: leukocyte adhesion defect 1 (LAD1) and hyper IgM syndrome.

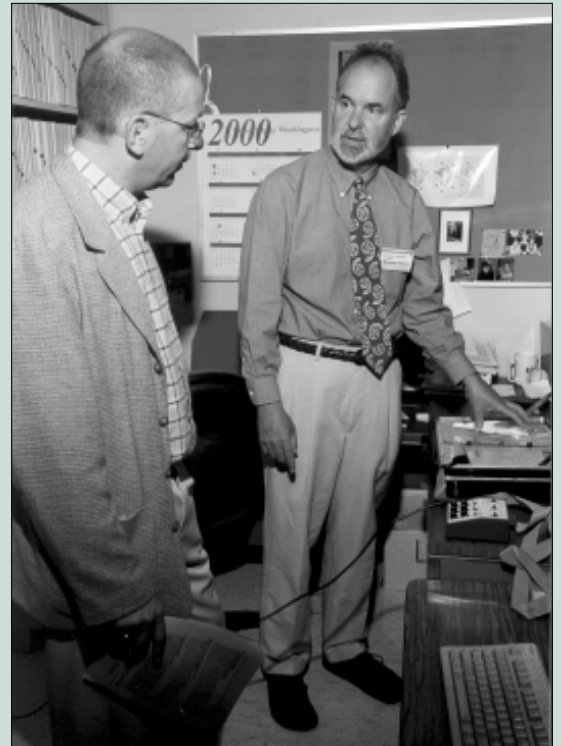
“Our studies have led to a better understanding of these disorders at the molecular level, and have facilitated identification of carriers and prenatal diagnosis,” said Ochs. “Ultimately these investigations will lead to effective gene therapy.”

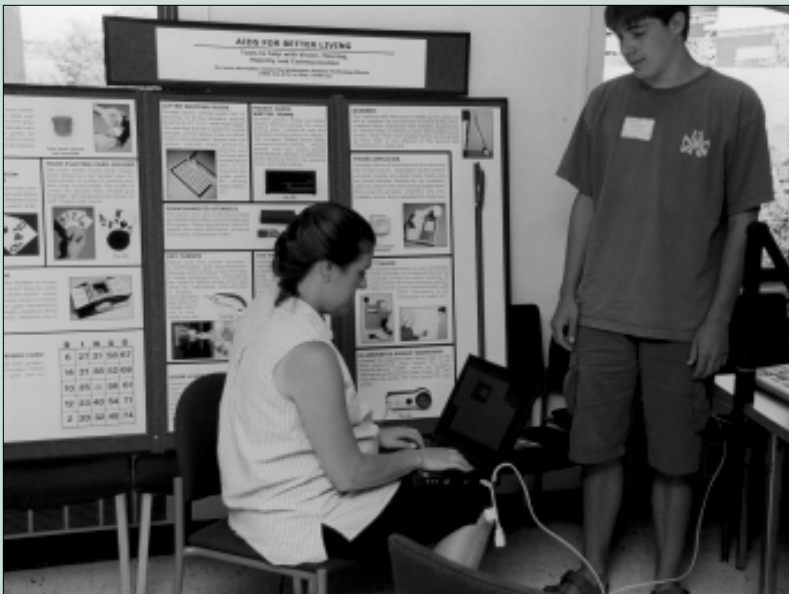
For more information on PID, visit the web sites of the Jeffrey Modell Foundation at www.jmfworld.com and the Immune Deficiency Foundation at www.primaryimmune.org. ♦



CHDD Open House welcomes scientists from around the world to the UW campus

The UW Center on Human Development and Disability hosted an Open House on August 1, 2000, offering hundreds of scientists from around the world the opportunity to network with CHDD researchers and learn about the center and its work. Visitors were delegates to the 11th World Congress of the International Association for the Scientific Study of Intellectual Disabilities (IASSID), held in Seattle August 1-6. NICHD officials, as well as directors and administrators of Mental Retardation and Disabilities Research Centers across the U.S.—of which CHDD is one—were special guests.





OPPOSITE: Top, Dr. Richard Folsom talks to a visitor about physiological and behavioral tests of infants' hearing. Middle left, Dr. Michael Guralnick, CHDD director, welcomes Dr. Felix de la Cruz, chief of the Mental Retardation & Developmental Disabilities Branch of the National Institute of Child Health & Human Development (NICHD). Middle right, Dr. Kenneth Maravilla explains MRI images created in the Brain Imaging Laboratory. Lower left, an Open House visitor examines another MRI image. Lower right, CHDD administrator Lois Winters welcomes guests at the registration desk.

THIS PAGE: Top left, media services specialist Sally Schuh shows state-of-the-art videotaping equipment used in the Parent-Child Laboratory. Top right, Dr. de la Cruz chats with Dr. Duane Alexander, director of the NICHD. Middle left, staff from the Center for Technology and Disability Studies demonstrate assistive devices for persons with disabilities. Middle right, Dr. Cathryn Booth discusses her research into the effects of childcare on young children with disabilities. Right, Open House visitors observe a classroom in the Experimental Education Unit through a one-way mirror.



Employment Training Program prepares people with disabilities for responsible jobs in the community

If you've never held a job because of a developmental disability, how do you cope with the challenges of finding employment, acquiring the needed skills, and performing up to an employer's standards? The prospect of earning a living—or even learning how to ride a bus to work—can be daunting.

The University of Washington's Employment Training Program (ETP) has served people with disabilities, and the employers who hire them, for almost 25 years. Under the auspices of the Center on Human Development and Disability (CHDD) and the School of Medicine's Department of Rehabilitation Medicine, the program has a long record of placing people with developmental disabilities in competitive employment and supporting them as they become productive workers. It was the first such training program in the country.

"It's very exciting when one of our clients brings home that first paycheck," said Dr. Pat Brown, director of the program and a UW clinical assistant professor of rehabilitation medicine. "Placing clients successfully is very satisfying to all of us."



Dr. Pat Brown

The program includes seven employment specialists, as well as four additional staff working under the direction of Brown and Dr. Kurt Johnson, principal investigator for the ETP, associate professor of rehabilitation medicine, and director of the UW's Center on Technology and Disability Studies.

"Although most people with disabilities can work, and would prefer to work, they have often been excluded from the workplace based on presumptions about their disability," said Johnson. "Our program provides support, advocacy, and teaching to assist people with all kinds of disabilities in achieving their goals for independence."

The program serves people who in the past have been considered unemployable because of disabilities such as mental retardation, Down syndrome, autism, traumatic brain injury, stroke, cerebral palsy and spinal cord injury. Currently, the program has almost 100 clients.

"Our clients range from students transitioning out of high school to people nearing retirement age, generally in their early to mid-fifties," said Brown. "We don't turn anyone away in the long term, although there may be a short-term delay of up to a month if our caseloads are at a maximum."

Clients come from a variety of sources. They may be referred from school transition programs serving students with disabilities, or from rehabilitation clinics at UW Medical Center and Harborview Medical Center. Some clients are self-referred, with the help of parents or guardians. Most clients have been accepted for services by the state Division of Vocational Rehabilitation and, if long term follow-up is needed, by the King County Developmental Dis-

abilities Division. Some clients pay for ETP services themselves, occasionally using Social Security Work Incentives such as Plans for Achieving Self-Support (PASS) or Impairment Related Work Expenses (IRWEs) to help pay for services.

Once a client is accepted into the program, an employment specialist does an assessment of his or her abilities, usually in concert with vocational rehabilitation counselors at UW Medical Center.

"It's very exciting when one of our clients brings home that first paycheck. Placing clients successfully is very satisfying to all of us."

Dr. Pat Brown

After assessment, clients may spend about a month working at "job stations" on the UW campus, allowing them to sample various entry-level jobs such as filing, sorting papers, delivering mail, folding laundry, washing glassware in labs, preparing food, and dish-washing.

During the work trial, clients are evaluated for various skills such as eye-hand coordination, motor development, ability to follow directions, social appropriateness, ability to cooperate, speed of learning, speed of movement, ability to adjust to changes in the work setting and decision-making capacity. These evaluations help the employment counselors make the most appropriate job matches.

"We work with clients' preferences," explained Brown. "Do they prefer to work alone or with other people? For example, in a restaurant setting, someone who prefers to work alone might choose a job in the kitchen over a job in the dining room. The clients understand that they do have choices."

"Perhaps for the first time, the person with a disability is being asked, 'What do *you* want?' The family is involved during the intake interviews, but we tell the clients the important thing is what *they* want. We teach them how to make those choices. They're actively involved in their own job searches, often making their own phone calls and setting up their own interviews."

Clients make their first visits to the prospective job accompanied by the employment specialist, but not by parents or other support people. "It is essential that the employer relate to his prospective employee as an independent person," the program reminds parents.

Clients are taught the important skill of getting to work independently. "Many of our clients have never gotten on a bus before," said Brown. "The first thing we do is ensure that they know how to take public transportation. Once they learn how to get to work by bus, they can also use a bus to go to a movie or shopping. For many clients, there's a blossoming independence."

After working in dentists' offices for eight years, Sharon Gowdey, a longtime ETP client who has Down syndrome, took a

new job last year as an office assistant at the King County District Court. She and her parents credit ETP for helping her achieve success in the workplace.

"The counselors train me in my jobs and help me to be more confident," she said. "I have a lot of independence. I can go to work by bus and I have a lot of friends at my job. I make my own mistakes and I learn from them. I can think on my feet."

"Sharon has been involved at (CHDD) since she was a year old," said her father, Dwight Gowdey. "As an adult, counseling from the Employment Training Program has helped her handle jobs effectively."

"Sharon is quite independent," said Scott Heartfield, her current employment specialist. "She's been in our program for 15 years and understands the work environment. Her supervisor at the District Court,

Helen Grayson, has worked with our clients for a number of years. I may visit Sharon only every couple of months and hold a formal review every six months. Many of our clients need more support."

Brown notes that many ETP clients are working full time, and none is earning less than minimum wage. "These are people who can do the job," she said. "Sometimes accommodations are made, but disability shouldn't be an issue." Clients are employed in a wide range of entry-level jobs: in a bindery, delivering architectural plans, doing promotions for sports teams, doing office work, working in a veterinary office, in retail, in telemarketing. Employers include Nordstrom, Safeco, Xerox, Starbucks, Safeway, the UW, King County District Court and others.

Once clients' skills have been assessed and once they have job-sampled and gained a better idea of what type of work they would like, employment specialists assist with job placement. They look for full time entry-level positions with benefits, in stable businesses with supportive staff.

They contact various employers to find a good fit. ETP works with company employment specialists, helps with the interview process, and works with prospective co-workers and the person who would be the client's direct supervisor. Prospective employers are assured that ETP clients have been screened and assessed; and are given one-to-one training. "We promise employers capable, committed employees," the program tells clients. "When we place you in the job you choose, we expect you to honor this promise."

"We're a supported-employment vendor," explains Brown. "We place people first and then train them in specific skills in the job environment, where they can respond to the social cues and

other situations."

Once a placement is made, the employment specialist may initially work full-time with the client, accompanying him or her by bus to the work site and working alongside all day. The employment specialist structures the new worker's daily schedule, developing step-by-step procedures for each task. As the employee becomes more independent, the presence of the employment specialist is gradually reduced.

While each client is an independent employee, ETP continues to stay in close touch. "We're not standing next to them," says Brown, "but we do check in. As in any job, supervisors change, duties change, co-workers change. We help our clients get ready for transitions: job changes, promotions, new circumstances in their personal lives. For example, a client might have worked for a company for a long

time, then there's a merger and the local office is closed, leaving her without a job. Or a dishwasher might be ready to move up and do prep cooking; this is a big step for him."

Brown credits companies and other employers who make the extra effort to hire people with disabilities. She and others in the program are actively involved in outreach, making presentations to employer groups and civic organizations such as the Chamber of Commerce, Rotary and Kiwanis, as well as to parent support groups. For the last two years, they have taught weeklong workshops for teachers who run school-to-work transition programs as part of the Secondary Summer Institute in Bellingham.

"It's unfulfilling for people to sit at home and not be able to contribute meaningfully," said Brown. "Fortunately, employers and the community have come to believe that there is a place for everyone to contribute. It's very gratifying to be able to play a part in that effort." ♦

"The counselors train me in my jobs and help me to be more confident. I have a lot of independence. I can go to work by bus and I have a lot of friends at my job. I make my own mistakes and I learn from them. I can think on my feet."

Sharon Gowdey



Employment Training Program client Sharon Gowdey works as an office assistant at King County District Court. Her employment specialist is Scott Heartfield.

New research affiliates join CHDD during fall quarter

Dr. Raimondo D'Ambrosio, research assistant professor in neurological surgery, holds a doctorate in physiology and biochemistry from the University of Milan. He was a post-doctoral fellow in the UW Department of Neurological Surgery from 1995 to 1998.



D'Ambrosio

D'Ambrosio's research focuses on the alterations that take place in glial cells as a result of epileptic seizures or traumatic brain injury. A major goal of his research is to understand how glial cells influence the excitability and function of neurons, under both normal and pathological conditions. D'Ambrosio and colleagues have begun to elucidate the alterations that take place in the ability of glial cells to regulate the brain's ionic environment, either when there is chronic alteration of glial function as a result of epilepsy, or following traumatic brain injury. They find that pathophysiological changes in glial cells contribute to the generation of synchronous discharge of hippocampal neurons.

The hope is that increased knowledge of the pathophysiological changes of glial cells following insult to the central nervous system will lead to development of new strategies to minimize neuronal cell death and restore lost function. ♦

Dr. Zhengui Xia received bachelors and masters degrees in biochemistry from Wuhan University in her native China, and received a Ph.D. in Pharmacology from the University of Washington in 1991. She did postdoctoral fellowships at the UW and Harvard. In 1997, she was appointed the Sheldon Murphy Assistant Professor of Environmental Health at the UW. She is an adjunct assistant professor of Pharmacology.



Xia

Her research focuses on neuronal apoptosis, which plays an important role in the development of the nervous system and in maintaining a balance between cell proliferation and cell death. Abnormal apoptosis may contribute to various neurodegenerative disorders, including stroke, epilepsy, Parkinson's disease, Huntington's disease and Alzheimer's disease.

Xia and colleagues are focused specifically on the role of various kinase signaling pathways on neuronal survival and apoptosis. These include the P13 kinase pathway, the DAP (death-associated protein) kinases, and members of the mitogen-activated protein (MAP) kinase family, the ERK1/2 (extracellular signal regulated kinase), the ERK5, the JNK (c-Jun NH2-terminal protein kinase), and p38. ♦

Dr. Steven C. Cramer received a medical degree from the University of Southern California and holds a master of medical sciences degree from Harvard. He did residencies in internal medicine at UCLA, a residency in neurology at Massachusetts General Hospital, and a fellowship in cerebrovascular disease. He was appointed a UW assistant professor of neurology in 1997.



Cramer

Cramer is researching restorative processes that occur during stroke recovery, using functional magnetic resonance imaging (fMRI) to precisely measure brain restorative processes. Changes observed through fMRI are correlated with neurological and functional assessments of recovery. While the research targets adults with ischemic strokes, the same principles likely extend to brain injuries caused by oxygen deprivation around the time of birth that lead to developmental disabilities such as those related to cerebral palsy.

Cramer is also using fMRI in a pilot study of the brain's ability to compensate for damage caused by multiple sclerosis. The same issues likely extend to dysmyelinating and demyelinating diseases that occur during childhood and cause developmental problems. ♦

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